

IBM Predictive Customer Intelligence
Version 1.0.0

*Installation Guide for Linux Operating
Systems*



Note

Before using this information and the product it supports, read the information in "Notices" on page 109.

Product Information

This document applies to IBM Predictive Customer Intelligence Version 1.0.0 and may also apply to subsequent releases.

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Introduction

IBM® Predictive Customer Intelligence gives you the information and insight that you need to provide proactive service to your customers. The information can help you to develop a consistent customer contact strategy and improve your relationship with your customers.

Audience

This guide is intended to provide users with an understanding of how the IBM Predictive Customer Intelligence solution works. It is designed to help people who are planning to implement IBM Predictive Customer Intelligence know what tasks are involved.

Finding information

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

You can also access PDF versions of the documentation from the Predictive Customer Intelligence web page (www.ibm.com/support/docview.wss?uid=swg27041723).

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 IBM Predictive Customer Intelligence have accessibility features.

IBM Predictive Customer 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. IBM Predictive Customer Intelligence

IBM Predictive Customer Intelligence brings together in a single solution the ability to do the following tasks:

- Determine the best offer for a customer.
- Retain customers that are likely to churn.
- Segment your customers, for example, by family status and salary.
- Identify the most appropriate channel to deliver an offer, for example, by email, telephone call, or application.

This solution ensures that all interactions with customers are coordinated and optimized. Predictive customer intelligence gives you the ability to sift quickly through millions of subscribers and know who to contact, when, and with what action.

The following steps define the process:

1. Understand the customer. Predictive modeling helps you to understand what market segments each customer falls into, what products they are interested in, and what offers they are most likely to respond to.
2. Define possible actions and the rules and models that determine which customers are eligible for which offers.
3. After the best action is identified, deliver the recommendation to the customer.

Integration with the IBM Enterprise Marketing Management (EMM) suite

IBM Predictive Customer Intelligence integrates with the following solutions:

- IBM Campaign, a web-based solution that enables users to design, run, and analyze direct marketing campaigns.
- IBM Interact, which provides personalized offers and customer profile information in real time.
- IBM Marketing Platform, which provides security, configuration, and dashboard features for IBM EMM products.

IBM Predictive Customer Intelligence provides two connectors between IBM Interact and IBM SPSS® Collaboration and Deployment Scoring Service:

- The External Callout connector calls an IBM SPSS model at run time, and is contained within the expression of an advanced rule for a marketer score, overriding the score that is supplied by the EMM campaign.
- The External Learning connector extends IBM Interact's native learning module to monitor visitor actions and propose optimal offers. It prioritizes IBM Campaign offers based on an IBM SPSS model's prediction of their final score. The connector passes specific configurable parameters as input to the IBM SPSS Scoring Service.

Integration with the IBM Next Best Action Optimizer

IBM Next Best Action Optimizer (NBAOPT) segregates customers by lifetime value, and then provides recommended actions to retain customers, which are based on their lifetime value segment.

You can integrate NBAOPT with the IBM Predictive Customer Intelligence solution. Install the NBAOPT connector to add an NBAOPT item to the IBM SPSS Modeler **Tools** menu. You can start the NBAOPT Studio from this menu, and you can generate a stream from PMML files.

Solution architecture

The IBM Predictive Customer Intelligence solution uses several different nodes, where each node provides a specific function for the solution. Each node represents a separate computer or a separate virtual machine image from the other nodes. A default environment installation of uses four nodes.

The following diagram shows the nodes in the architecture, with the software installed on each node.

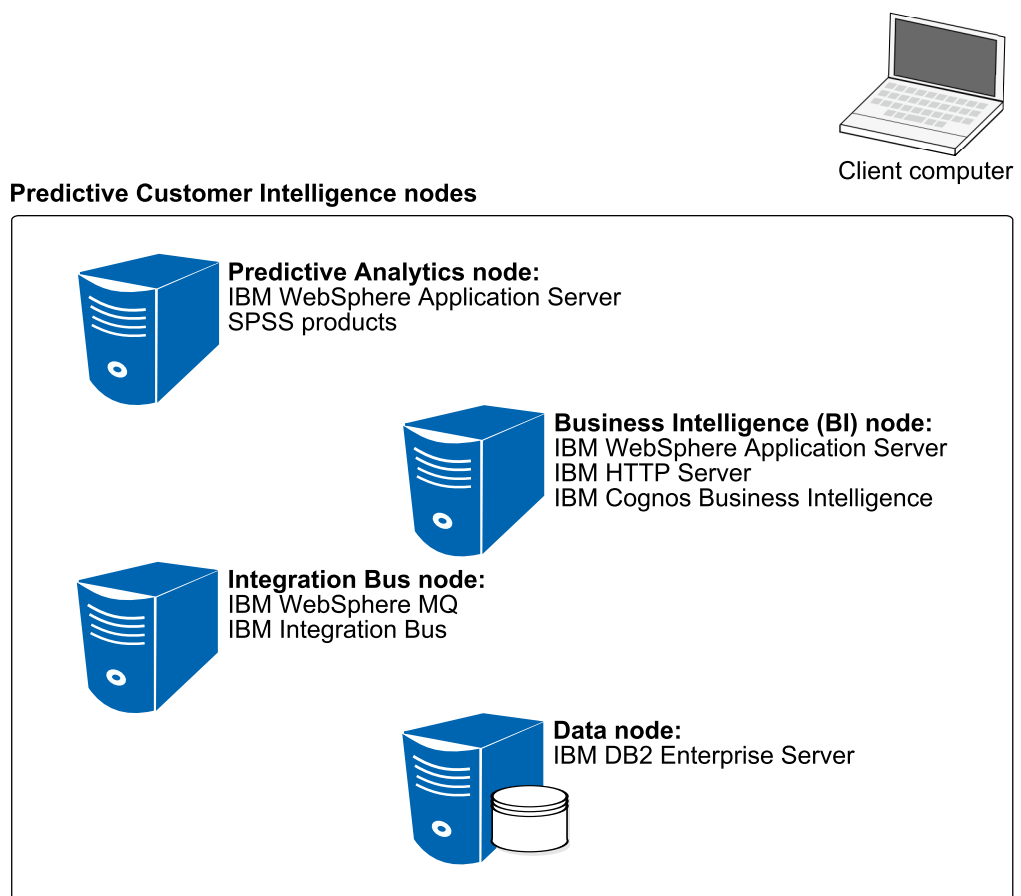


Figure 1. Predictive Customer Intelligence nodes

Predictive Analytics node

The Analytics node provides predictive scores and offers recommendations.

This node has the following software installed:

- IBM WebSphere® Application Server Network Deployment
- IBM SPSS Collaboration and Deployment Services
- IBM SPSS Modeler Server
- IBM SPSS Modeler Collaboration and Deployment Services Adapter

- IBM SPSS Modeler Server Social Network Analysis
- IBM SPSS Statistics Server
- IBM Analytic Decision Management
- IBM SPSS Text Analytics Server
- IBM SPSS Data Access Pack
- IBM DB2[®] Client

Optionally, you can distribute the Analytics node components onto additional computers in your environment. For example, you can add a node on which only IBM SPSS Collaboration and Deployment Services is installed. Distributing components can be done only after you complete a default environment installation.

Business Intelligence node

The BI node provides dashboards and reports.

This node has the following software installed:

- IBM WebSphere Application Server Network Deployment
- IBM HTTP Server
- IBM Cognos[®] Business Intelligence
- IBM DB2 Client

Optional components are also available, such as IBM Cognos Mobile and IBM Cognos Real-time Monitoring.

Integration Bus node

The Integration Bus node processes events, updates the content for IBM Cognos Business Intelligence, and triggers predictive scoring and decision management. It also loads master data into the solution.

This node has the following software installed:

- IBM WebSphere MQ
- IBM Integration Bus
- IBM Integration Bus Explorer
- IBM Integration Toolkit
- IBM DB2 Client

data node

The data node provides the database server that contains the databases that are used by other products in the solution. The database acts as an event store and holds calculated key performance indicators (KPIs) and profiles. It also contains supporting master data for the solution.

This node has the following software installed:

- IBM DB2 Enterprise Server Edition

Chapter 2. Installation prerequisites and preparation

Before you install IBM Predictive Customer Intelligence, ensure that the computers that you use meet the minimum requirements for operating systems, prerequisite software, processing, and disk space.

You must also install additional prerequisite software on some computers, including the Business Intelligence (BI) node and the Integration Bus node computers.

Important: The computers or virtual machines that you use for Predictive Customer Intelligence nodes must not have any of the included software already installed.

Supported operating systems and hardware requirements

Review the minimum hardware and operating system requirements before you install IBM Predictive Customer Intelligence. The requirements apply for all computers or virtual machines that you use for the installation.

Server computers

The Predictive Customer Intelligence server components must be installed on computers that are running the 64-bit Red Hat Enterprise Linux Server Edition version 6.5 (x86_64) operating system.

You must have the **Legacy UNIX compatibility** package installed. The package is selected when the operating system is set up. The components of this package must be installed on each computer or virtual machine image on which you install a Predictive Customer Intelligence node.

Hardware requirements

At a minimum, each computer or virtual machine that hosts a Predictive Customer Intelligence server component, or node, must have the following hardware requirements:

- 4 processors
- 32 GB of RAM
- 300 GB of hard disk space

The computer from which you run the installation must have sufficient disk space that is allotted to the / directory. For the computer where you are running the installation, the minimum recommended disk space for the / directory is 150 GB. Each node computer should have a minimum of 100 GB of disk space that is allocated to the / directory.

Important: If you are installing from the universal serial bus (USB) hard disk drive, you must have 300 GB of disk space allocated to the / directory.

If you are expecting to store large volumes of data, you might need to increase your disk size.

Each node must be installed on a separate computer or on a separate virtual machine image.

User requirements

You must have **root** or **sudo** access to all of the computers on which you install a Predictive Customer Intelligence node, including the computer from which you run the installation.

Client computers

The Predictive Customer Intelligence client components must be installed on computers that run Microsoft Windows 7 operating systems.

Clients can be installed on 32-bit or 64-bit computers. 64-bit is recommended.

At a minimum, each Predictive Customer Intelligence client computer and the computer where you run the Deployment Wizard for the client components, must have the following hardware requirements:

- 2 processors
- 8 GB of RAM
- 150 GB of hard disk space

Modifying the sudoers file for the user who runs the installation

To run the IBM Predictive Customer Intelligence 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 Predictive Customer Intelligence node.

Installing required operating system packages

Specific operating system packages must be installed on each computer or virtual machine where you install an IBM Predictive Customer Intelligence node.

Ensure that the following packages are installed:

- sshpass-1.05-1.el6.i686.rpm
- libXext-1.1-3.el6.i686.rpm
- libXft-2.1.13-4.1.el6.i686.rpm
- libXi-1.3-3.el6.i686.rpm
- libXp-1.0.0-15.1.el6.i686.rpm
- libXpm-3.5.8-2.el6.i686.rpm
- libXrender-0.9.5-1.el6.i686.rpm
- libXtst-1.0.99.2-3.el6.i686.rpm
- compat-libstdc++-33-3.2.3-69.el6.i686.rpm
- compat-libstdc++-296-2.96-144.el6.i686.rpm
- expat-2.0.1-11.el6_2.i686.rpm
- fontconfig-2.8.0-3.el6.i686.rpm
- freetype-2.3.11-6.el6_2.9.i686.rpm
- libstdc++-4.4.6-4.el6.i686.rpm
- libX11-1.3-2.el6.i686.rpm
- libXau-1.0.5-1.el6.i686.rpm
- libxcb-1.5-1.el6.i686.rpm
- libICE-1.0.6-1.el6.i686.rpm
- libuuid-2.17.2-12.7.el6.i686.rpm
- libSM-1.1.0-7.1.el6.i686.rpm
- libXt-1.0.7-1.el6.i686.rpm
- libXmu-1.0.5-1.el6.i686.rpm
- libjpeg-6b-46.el6.i686.rpm
- libpng-1.2.49-1.el6_2.i686.rpm
- zlib-1.2.3-27.el6.i686.rpm
- glibc-2.12-1.80.el6.i686.rpm
- openmotif-2.3.3-4.el6.i686.rpm

You can download the packages from a site such as pkgs.org or rpm.pbone.net.

Procedure

1. Log on to the computer as the **root** user or as a user with **sudo** permissions.
2. Type the following command to verify that an operating system package is installed:

```
rpm -qi full_package_name
```

For example, to verify that `sshpass-1.05-1.el6.i686` is installed, type `rpm -qi sshpass-1.05-1.el6.i686`.

Note: You might have to use `sudo` to run the command successfully.

For example, enter `sudo rpm -qi full_package_name`.

3. Install any package that is not already installed.

You must download any missing package, and then install the downloaded package by typing the following command:

```
rpm -ihv full_package_name.rpm
```

For example, to install `sshpass-1.05-1.el6.i686`, type `rpm -ihv sshpass-1.05-1.el6.i686.rpm`.

4. Repeat these steps on each computer on which you install a Predictive Customer Intelligence node.

Verifying that the Legacy UNIX compatibility package is installed

Legacy UNIX compatibility must be installed on each computer or virtual machine where you install an IBM Predictive Customer Intelligence node.

You must verify that the following packages are installed:

- `authd-1.4.3-30.e16.x86_64.rpm`
- `cups-lpd-1.4.2-48.e16.x86_64.rpm`
- `dump-0.4-0.6.b42.e16.x86_64.rpm`
- `finger-0.17-39.e16.x86_64.rpm`
- `finger-server-0.17-39.e16.x86_64.rpm`
- `krb5-appl-servers-1.0.1-7.e16_2.1.x86_64.rpm`
- `ksh-20100621-16.e16.x86_64.rpm`
- `mksh-39-7.e16.x86_64.rpm`
- `ncompress-4.2.4-54.e16_2.1.x86_64.rpm`
- `rsh-0.17-60.e16.x86_64.rpm`
- `rsh-server-0.17-60.e16.x86_64.rpm`
- `rusers-0.17-61.e16.x86_64.rpm`
- `rusers-server-0.17-61.e16.x86_64.rpm`
- `rwho-0.17-34.e16.x86_64.rpm`
- `talk-0.17-34.e16.x86_64.rpm`
- `talk-server-0.17-34.e16.x86_64.rpm`
- `tcp_wrappers-7.6-57.e16.x86_64.rpm`
- `telnet-0.17-47.e16.x86_64.rpm`
- `telnet-server-0.17-47.e16.x86_64.rpm`
- `tftp-0.49-7.e16.x86_64.rpm`
- `xinetd-2.3.14-34.e16.x86_64.rpm`

You can download the packages from a site such as pkgs.org or rpm.pbone.net.

Procedure

1. Log on to the computer as the **root** user or as a user with **sudo** permissions.
2. Type the following command to verify that an operating system package is installed:

```
rpm -qi full_package_name
```

For example, to verify that `authd-1.4.3-30.e16.x86_64` is installed, type `rpm -qi authd-1.4.3-30.e16.x86_64`.

Note: You might have to use `sudo` syntax to run the command successfully. For example, enter `sudo rpm -qi full_package_name`.

3. Install any package that is not already installed.

You must download any missing package, and then install the downloaded package by typing the following command:

```
rpm -ihv full_package_name.rpm
```


For example, to install `authd-1.4.3-30.el6.x86_64`, type `rpm -ihv authd-1.4.3-30.el6.x86_64.rpm`.

4. Repeat these steps on each computer on which you install a Predictive Customer Intelligence node.

Installing prerequisite operating system packages on the BI node computer

Specific operating system packages must be installed on the Business Intelligence (BI) node computer or virtual machine before you install IBM Predictive Customer Intelligence.

The following packages must be installed:

- `libselinux-2.0.94-5.3.el6.i686.rpm`
- `cracklib-2.8.16-4.el6.i686.rpm`
- `db4-4.7.25-17.el6.i686.rpm`
- `audit-libs-2.2-2.el6.i686.rpm`
- `pam-1.1.1-13.el6.i686.rpm`
- `apr-util-1.3.9-3.el6_0.1.x86_64`
- `compat-expat1-1.95.8-8.el6.i686`
- `openmotif-2.3.3-6.1.el6_4.i686`
- `compat-expat1.x86_64`

Procedure

1. Log on to the BI node computer as the **root** user or as a user with **sudo** permissions.
2. Install the RPM packages.
 - a. Type the following command to verify that an operating system package is installed:

```
rpm -qi full_package_name
```

For example, to verify that `libselinux-2.0.94-5.3.el6.i686` is installed, type `rpm -qi libselinux-2.0.94-5.3.el6.i686`.

- b. Install any package that is not already installed.

You must download any missing package, and then install the downloaded package by typing the following command:

```
rpm -ihv full_package_name.rpm
```

For example, to install `libselinux-2.0.94-5.3.el6.i686`, type `rpm -ihv libselinux-2.0.94-5.3.el6.i686.rpm`.

Important: To install `pam-1.1.1-13.el6.i686.rpm`, use the following command: `rpm --force -ivh pam-1.1.1-13.el6.i686.rpm`.

Adding each node computer to the hosts file

To ensure that each IBM Predictive Customer Intelligence node computer can communicate properly, you must add all node computers to the `hosts` file on each node computer.

For example, the `hosts` file on the data node computer must include the Predictive Analytics node, the Business Intelligence (BI) node, and the Integration Bus node computers.

Procedure

1. On each node computer, open the `/etc/hosts` file.
2. Ensure that each node computer is listed in the file. For example, ensure that your hosts file contains values such as the following values:

```
127.0.0.1 localhost.localdomain localhost
###.###.### node_server1.domain.com node_server1
###.###.### node_server2.domain.com node_server2
###.###.### node_server3.domain.com node_server3
###.###.### node_server4.domain.com node_server4
```
3. Save and close the file.

Installing Java on the Predictive Analytics node computer

You must install a Java™ Runtime Environment (JRE) on the computer you use as the IBM Predictive Customer Intelligence Analytics node.

You must install Java version 1.7 or later on the Analytics node computer.

Installing IBM Data Server Driver on the Integration Bus node computer

Before you can deploy IBM Predictive Customer Intelligence, you must install the IBM Data Server Driver for ODBC and CLI on the Integration Bus node computer.

Procedure

1. Go to the IBM driver and client download page (www.ibm.com/support/docview.wss?uid=swg21385217).
2. Click the link for **IBM Data Server Driver for ODBC and CLI (CLI Driver)**.
3. If prompted, log in with your IBM account.
4. Select **IBM Data Server Driver for ODBC and CLI (Linux AMD64 and Intel EM64T)**.
5. Click **Continue**, and download the driver.
6. Go to the directory where you downloaded the driver.
7. Type the following command to extract the files:

```
tar -zxf ibm_data_server_driver_for_odbc_cli_linuxx64_v10.1.tar.gz
```

The files are extracted to the `odbc_cli/clidriver` directory.
8. Copy the `odbc_cli` directory to the `var` directory to match the default location in the server installer. For example, ensure the path is `/var/odbc_cli`.

Ensuring connectivity between the Analytics node and the data node computers

In IBM Predictive Customer Intelligence, if the task for configuring the IBM SPSS Collaboration and Deployment Services displays a database initialization error, you may have to run the `traceroute` command to ensure communication between the Predictive Analytics node and the data node.

Procedure

1. On the Analytics node computer, enter the following command:

```
traceroute data_node_name
```

Where `data_node_name` is the name or IP address of the data node computer.

2. Try the task again.

Setting ulimit values on nodes where WebSphere Application Server is to be installed

Before you install IBM Predictive Customer Intelligence, you must ensure that you have appropriate ulimit values on each node where WebSphere Application Server is to be installed.

Procedure

1. Log in to the Business Intelligence (BI) node computer as the **root** user or as a user with **sudo** permissions.
 - a. Go to the `/etc/security` directory.
 - b. Open the `limits.conf` file for editing.
 - c. Add the following lines to the file:

```
@root soft nofile 10000
@root hard nofile 16384
* soft nofile 10000
* hard nofile 16384
```
 - d. Save and close the file.
 - e. Restart the computer for the changes to take effect.
2. Log in to the Predictive Analytics node computer as the **root** user or as a user with **sudo** permissions.
 - a. Go to the `/etc/security` directory.
 - b. Open the `limits.conf` file for editing.
 - c. Add the following lines to the file:

```
@root soft nofile 10000
@root hard nofile 16384
* soft nofile 10000
* hard nofile 16384
```
 - d. Save and close the file.
 - e. Restart the computer for the changes to take effect.

Disabling SELinux on all target computers

You must disable the Security-Enhanced Linux (SELinux) feature on all computers where you install an IBM Predictive Customer Intelligence node.

SELinux can be re-enabled after the installation is complete.

Procedure

1. Log on to the computer as the **root** user or as a user with **sudo** permissions.
2. Type `getenforce` and press Enter. The resulting message should say Disabled.
3. If the status is not Disabled, do the following.
 - a. Go to the `/etc/sysconfig` directory.
 - b. Open the `selinux` file for editing.
 - c. Change the `SELINUX` value to disabled.
For example:

```
SELINUX=disabled
```
 - d. Save and close the file.
 - e. Restart the computer for the changes to take effect.

4. Repeat these steps on each computer on which you install a Predictive Customer Intelligence node.

Computer firewall settings required for the installation

The **Deployment Wizard** requires bidirectional communication with each IBM Predictive Customer Intelligence 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.

Text files that contain the commands you can use to open the ports that are used by IBM Predictive Customer Intelligence are provided with the installation. The `Initial-firewall-settings.txt` file contains the port information that you must set before you run the installation. The `Initial-firewall-settings.txt` file contains the port information that you must set after the installation is complete. The files are available in the `disk1` directory.

Configuring your firewall settings for the Deployment Wizard

On each computer on which you install an IBM Predictive Customer Intelligence node, you must open two ports to allow the bidirectional communication that is required by the **Deployment Wizard**. After you open the ports in your firewall, you can then enter these port values in the **Deployment Wizard**.

Procedure

1. Log on to the computer 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. Add rules for the two ports that are required by the **Deployment Wizard** with the following command:

```
iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport 35000 -j ACCEPT
iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport 30000 -j ACCEPT
```

where port 35000 and 30000 are available port numbers on your computers. You do not have to use these port numbers, but you must use available port numbers.

If you do not use ports 35000 and 30000, ensure that you change only the port number values in the commands.

Tip: For consistency, use the same port numbers for each target computer.

4. Type the following command to save your firewall settings:
`/etc/init.d/iptables save`
5. Type the following command to restart your firewall.
`/etc/init.d/iptables restart`
6. Verify that your changes have been applied with the following command:
`iptables -L`

The added port should appear in the list.

7. Repeat these steps on each computer on which you install a Predictive Customer Intelligence node, and on the computer from where you run the installation if it is not one of the node computers.

Configuring your firewall settings for the data node installation and configuration

Before you install and configure the IBM Predictive Customer Intelligence data node, you must ensure that the database server port number is open on the data node computer.

Procedure

1. Log in to the data node computer 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. Add rules for the port with the following command:
`iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport port -j ACCEPT`

For example, to open 50000, the default port number for IBM DB2, type the following command

```
iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport 50000 -j ACCEPT
```

Note: If you use a port number other than 50000 for your database server, ensure that you open the appropriate port number.

4. Type the following command to save your firewall settings:
`/etc/init.d/iptables save`
5. Type the following command to restart your firewall.
`/etc/init.d/iptables restart`
6. Verify that your changes have been applied with the following command:
`iptables -L`

The added ports should appear in the list.

Configuring your firewall settings for all nodes

On each computer on which you install an IBM Predictive Customer Intelligence node, you must open specific ports.

The following ports must be open:

- vnc-server
- x11
- 5901
- 5902
- 5903
- 6001
- 6002
- 6003
- 22

Procedure

1. Log on to the computer 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. Add rules for the ports with the following command:

```
iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport port -j ACCEPT
```

For example, to open vnc-server, type the following command

```
iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport vnc-server -j ACCEPT
```

4. Type the following command to save your firewall settings:

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

```
/etc/init.d/iptables restart
```
6. Verify that your changes have been applied with the following command:

```
iptables -L
```

The added port should appear in the list.
7. Repeat these steps on each computer on which you install a Predictive Customer Intelligence node.

Disabling your computer's firewall during the installation

If you choose to temporarily disable your computer's firewall during the installation of IBM Predictive Customer Intelligence, ensure that you enable the firewall on each node after the installation is complete.

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.

Mounting the USB hard disk drive

The installation files for IBM Predictive Customer Intelligence are provided on a universal serial bus (USB) hard disk drive. You can run the installation from the USB or you can copy the files to your computer before you start the installation. Before you do either, you must mount the USB hard disk drive.

For more information about mounting USB hard disk drives, see the Red Hat Customer Portal (<https://access.redhat.com/home>).

Chapter 3. Installation of the server components

The installation program installs the required software on each computer that you identify as an IBM Predictive Customer Intelligence node. The installation program can be run from one of the computers that will be a node, or it can be run from another computer.

Installation process

With the IBM Predictive Customer Intelligence installation program, you can select the individual computers on which each solution node is to be installed and enter configuration information for each software component.

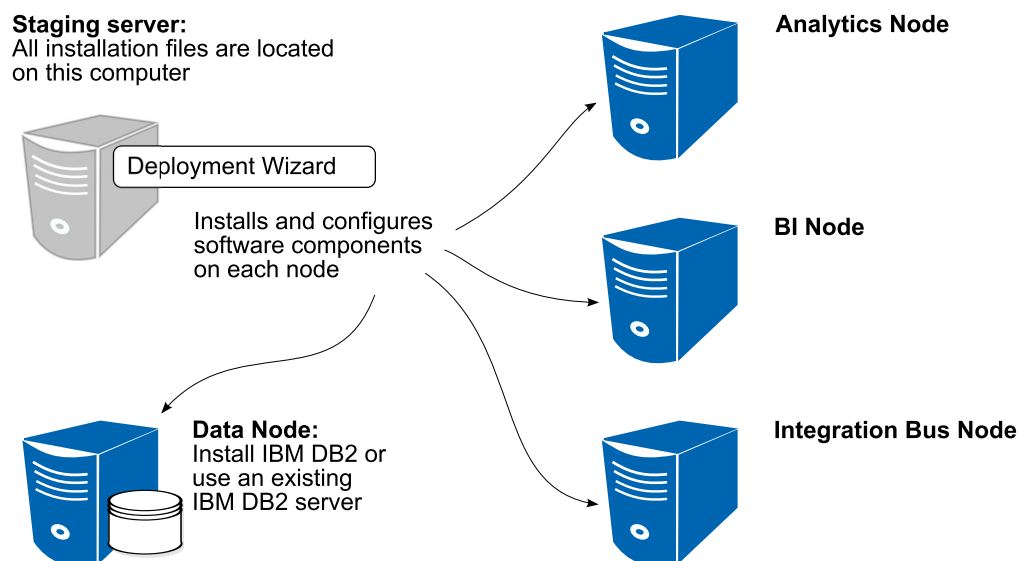


Figure 2. IBM Predictive Customer Intelligence installation process

In the diagram, the staging server represents the computer from which you run the installation. In your installation, the staging server can also be used as a node computer. If you use a separate computer as the staging server, that computer must also use the same operating system as the other computers on which you install a node. It must also have the same prerequisites.

Starting the Launchpad for the server components

Use the Launchpad to start the IBM Predictive Customer Intelligence installation.

Before you begin

Ensure that you are logged in as **root** or a user with **sudo** permissions.

You must have a Firefox web browser that is installed and set as your default web browser on the computer from where you run the IBM Predictive Customer Intelligence installation. Firefox must be version 17 as a minimum and version 20 at the latest.

Procedure

1. Go to the directory where you downloaded the installation files.
 2. Decompress the installation files. For example, in a terminal window enter `tar -xvf filename.tar.gz` or `sudo tar -xvf filename.tar.gz`.
 3. Go to the `disk1` directory where you decompressed the files.
 4. If you are installing as a user with **sudo** permissions, enter the following command to ensure that the Launchpad and Deployment Wizard open correctly:

```
export DISPLAY=ipaddress:vnctdisplay
```

where *ipaddress* is the IP address of the computer where you are running the installation, and *vnctdisplay* is the VNC display ID for the user who is running the installation. For example, enter `export DISPLAY=127.0.0.1:2`
 5. If you are installing as a user with **sudo** permissions, enter the following command:

```
xhost +
```
 6. Enter the following command:

```
./launchpad.sh
```
- Important:** Do not enter `sudo` in front of the command.
7. Review the information in the Launchpad panels.

Selecting the installation type

You can choose a default installation or you can choose to distribute the Analytics node components.

A **Default Environment** installation installs IBM Predictive Customer Intelligence onto four node computers. A **Distributed Environment (Analytics Node only)** lets you add Analytics node components on additional node computers.

You can only use a **Distributed Environment (Analytics Node only)** installation after you have completed a **Default Environment** installation. You must run a **Distributed Environment (Analytics Node only)** installation for each additional Analytics node component you want to add to your environment.

Procedure

1. Select one of the following options:
 - **Default Environment**
If you are installing IBM Predictive Customer Intelligence for the first time, you must select **Default Environment**.
After you have completed a **Default Environment** installation, you can select a **Distributed Environment (Analytics Node only)** installation.
 - **Distributed Environment (Analytics Node only)**
See Chapter 4, “Distribute Analytics node components,” on page 35 for more information.
2. Click Next.

Validating your target computers

Use the Launchpad to validate that your IBM Predictive Customer Intelligence target computers have all of the prerequisite libraries installed.

If you are using a **Distributed Environment (Analytics Node only)** installation, you are prompted only for the additional Analytics node computers you are adding to the environment.

Before you begin

You must have `sshpass-1.05-1.el6.i686.rpm` installed on each node computer to be able to validate the target computers. You can download `sshpass-1.05-1.el6.i686.rpm` from a site such as `pkgs.org` or `rpm.pbone.net`.

Procedure

1. In the **Launchpad**, click **Next** until the **Validate the Data Node Computer** page.
2. Enter the server name or IP address of the data node computer in the **Computer Name** box.
 - a. Enter a user name and password for a user on the target computer in the **User Name** and **Password** boxes.
 - b. Click **Validate Node**.
 - c. If there are any missing prerequisites, use the `CheckLib_output.txt` file to help you install or configure the prerequisites, and try the validation again. The `CheckLib_output.txt` is in the `/var/PCITemp` directory.
 - d. If the validation succeeds, click **Next**.
3. Repeat the step for each node computer.

Starting the Deployment Wizard for the server components

Use the Launchpad to start the IBM Predictive Customer Intelligence server **Deployment Wizard**.

Procedure

1. In the **Launchpad**, on the **Install and Configure** page, click one of the following options:
 - a. If you are installing as a user with **sudo** permissions, select **Start the Deployment Wizard as a Sudo User**.
 - In the **Computer Name** box, enter the name or IP address of the computer on which you are running the **Deployment Wizard**.
 - In the **VNC Display ID** box, enter the display for the user. For example, enter 1 or 2.
 - b. If you are installing as **root**, select **Start the Deployment Wizard as the Root User**.
2. Click **Start Deployment Wizard**.

Setting ports for the Deployment Wizard to use

If you install IBM Predictive Customer Intelligence components while your Linux iptables run, you must set the ports that you opened in the **Deployment Wizard**.

Procedure

1. In the **Deployment Wizard**, click **Edit > Preferences**.
The **Deployment Preferences** window appears.
2. Enter 30000 in the **Data Port Number** box.

Important: Ensure that you enter the port number that you opened if you selected a port other than 30000.

3. Enter 35000 in the **Communication Port Number** box.

Important: Ensure that you enter the port number that you opened if you selected a port other than 35000.

4. If you use the computer on which you run the installation as a node, do the following steps:
 - a. Click **Target Computer Settings**.
 - b. Select **localhost** in the **Target Computer** field.
 - c. Enter the communication port number that you set in the **Communication Port** field. For example, enter 35000.

Note: The **RMI Registry Port** is unavailable if you use localhost as a node.

Specifying the target computers to install the server components

You must specify a different target computer for each IBM Predictive Customer Intelligence node. A node can be installed on a computer or virtual machine, but each node must be installed on a separate computer or virtual machine.

Before you begin

You must have **root** access on each computer on which you install a node.

You might have to change a setting in a configuration file on your target computer to allow the **Deployment Wizard** to access the computer as **root**. Use the following steps if you receive a message that says the connection to the target computer was refused:

1. On the target computer, go to the `/etc/ssh` directory and open `sshd_config` for editing.
2. Change the `PermitRootLogin` property to `yes`.
3. Save the file, and restart the server for the change to take effect.

Procedure

1. On the **Specify Target Computers** pages of the **Deployment Wizard**, enter the name or IP address of the computer on which you install a node in the **Target Computer** box.

The **Deployment Wizard** prompts you for each node computer.

If you install a node on the computer where you run the **Deployment Wizard**, you can enter `localhost`.

2. Click **Add**.

When you enter a computer other than `localhost`, in the **Target Computer Credentials** box, do the following steps:

- a. Enter the **User ID** and **Password** for the **root** user or a user with **sudo** permissions.

Important: Ensure that you enter the credentials for the **root** user or a user with **sudo** permissions on the target computer.

- b. Click **Test Login**.
- c. Click **Add**.

The computer that you entered appears in the **Selected target computers** box.

3. Do the following steps if you install while your Linux iptables run.
 - a. Click **Edit > Preferences**.
 - b. Click **Target Computer Settings**.
 - c. Select the computer name or IP address in the **Target Computer** field.
 - d. Enter the communication port number that you set in the **Communication Port** field. For example, enter 35000.
 - e. Enter the Data Port Number that you set in the **RMI Registry Port** field. For example, enter 30000.

Note: If you use localhost as a node in the installation, the **RMI Registry Port** is unavailable.

4. In the **Selected target computers** box, select the target computer, and click **Test Connections**.

Important: **Test Connections** tests the connection, tests the credentials, and locates or enables a deployment agent on the target computer. You must have an active deployment agent on each target computer.

If you receive an error message after you click **Test Connections**, you might have to change some settings on your computers.

- Edit your iptable settings or temporarily disable your firewall. For more information, see “Computer firewall settings required for the installation” on page 12.
 - Compare and correct your domain name system (DNS) settings for each computer. For example, type `sudo system-config-network`. Select **DNS configuration**, and ensure that your host name domain and DNS search path settings are correct.
 - Ensure that the `/etc/hosts` file has the correct entries. For an example, see “Test Connections validation errors” on page 70.
5. Click **Next**.
 6. Repeat the steps for each computer on which you install a node.

Configuring parameters for the server components installation

The **Deployment Wizard** displays some default values for each component of IBM Predictive Customer Intelligence. You can accept the default values or change them to suit your environment.

If you are prompted for users, the **Deployment Wizard** creates the users on the appropriate target node computer, if they do not exist. For example, IBM DB2 requires a DB2 administrator user, an instance owner user, and a fenced user. Each of these users is created on the data node computer.

Procedure

Enter values in each field on each page of the **Deployment Wizard**:

- Click **Browse** to browse the target computer's file system. It does not browse the local computer from where you run the **Deployment Wizard**.
- For some values, such as passwords, default values are not provided. Ensure that you enter all values on each page of the **Deployment Wizard**.

- On the **Configure IBM DB2 Enterprise Edition** page, enter a name for each database that is to be created by the **Deployment Wizard**.

Important: You cannot use the same user for the IBM DB2 administrative user and the instance owner. They must be different users.

Table 1 includes the configuration parameters for IBM DB2.

Table 1. IBM DB2 configuration parameters for a new database server installation

Field	Default or example value	Description
DB2 Server Installation Directory	/opt/ibm/db2/V10.1	The location where IBM DB2 is to be installed on the data node computer.
DB2 Database Port Number	50000	The port number that is used by IBM DB2.
DB2 Server Administrative User Name	dasusr1	The user ID that runs the administration server.
DB2 Server Administrative Password	There is no default value for this field.	The password for the user ID that runs the administration server. The password cannot contain more than 8 characters.
DB2 Server Administrative Home Directory	/home/dasusr1	The home directory for the user ID that runs the administration server. This directory is on the data node computer's file system.
DB2 Instance Owner User Name	db2inst1	The user ID that controls the DB2 processes and owns the directories that are used by the database instance.
DB2 Instance Owner Password	There is no default value for this field.	The password for the DB2 instance owner user. The password cannot contain more than 8 characters.
DB2 Instance Owner Home Directory	/home/db2inst1	The home directory for the DB2 instance owner user. This directory is on the data node computer's file system.
DB2 Fenced User Name	db2fenc1	The user ID that can run user-defined functions and store procedures.
DB2 Fenced Password	There is no default value for this field.	The password for the DB2 instance owner user. The password cannot contain more than 8 characters.
DB2 Fenced User Home Directory	/home/db2fenc1	The home directory for the DB2 instance owner user. This directory is on the data node computer's file system.

Table 2 on page 21 includes the database names that are created.

Table 2. IBM DB2 configuration parameters: Database names

Field	Default or example value	Description
SPSS Database Name	SPSSDB	The SPSS database that is used by the components that are installed on the Predictive Analytics node computer.
Cognos Database Name	COG102CS	The IBM Cognos content store database.

Table 3 includes the configuration parameters for the IBM DB2 client.

Note: The values apply to all nodes where the IBM DB2 client is installed.

Table 3. IBM DB2 client parameters

Field	Default or example value	Description
DB2 Client Installation Directory	/opt/ibm/db2/V10.1	The location where the IBM DB2 client is to be installed. This directory is on the Business Intelligence (BI) node and Analytics node computer's file system.
DB2 Client Instance User Name	db2inst1	The user ID for the DB2 client.
DB2 Client Instance Password	There is no default value for this field.	The password for the DB2 client instance owner user.
DB2 Client Instance Home Directory	/home/db2inst1	The home directory for the DB2 client instance owner user on each node.

Table 4 includes the configuration parameters for WebSphere Application Server.

Table 4. WebSphere Application Server installation parameters

Field	Default or example value	Description
WebSphere Installation Directory	/opt/IBM/WebSphere/AppServer	The location where the WebSphere Application Server is to be installed. The location is the same for each node where WebSphere is installed.

Table 5 includes the configuration parameters for IBM HTTP Server.

Table 5. IBM HTTP Server installation parameters

Field	Default or example value	Description
HTTP Server Installation Directory	/opt/IBM/HTTPServer	The location where IBM HTTP Server is to be installed. This directory is on the BI node computer's file system.
HTTP Port Number	80	The port number that is used by HTTP Server.

Table 5. IBM HTTP Server installation parameters (continued)

Field	Default or example value	Description
IBM Installation Manager Installation Directory	/opt/IBM/InstallationManager/eclipse/tools/imcl	The location where IBM Installation Manager is to be installed. This directory is on the BI node computer's file system.

Table 6 includes the installation location for IBM Cognos Business Intelligence.

Table 6. IBM Cognos BI installation parameters

Field	Default or example value	Description
Cognos BI Installation Location	/opt/ibm/cognos/c10_64	The location where IBM Cognos BI is to be installed. This directory is on the BI node computer's file system.

Table 7 includes the configuration parameters for the WebSphere Application Server profile that is used for IBM Cognos Business Intelligence.

Table 7. WebSphere Application Server profile for IBM Cognos BI parameters

Field	Default or example value	Description
WebSphere Application Server Profile Directory	/opt/IBM/WebSphere/AppServer/profiles	The location where the WebSphere profile is to be created. This directory is on the BI node computer's file system.
WebSphere Application Server Cognos Profile Name	COGNOSProfile	The name of the WebSphere profile that is used for IBM Cognos BI.
Cognos Business Intelligence Server Host Name	This value is automatically entered.	The name or IP address of the BI node computer.
WebSphere Application Server Profile Template Directory	/opt/IBM/WebSphere/AppServer/profileTemplates/default	The location where the WebSphere profile templates are located.

Table 8 includes the configuration parameters for IBM Cognos Business Intelligence.

Table 8. IBM Cognos BI Server parameters

Field	Default or example value	Description
Database Host Name	This value is automatically entered.	The name or IP address of the data node computer.
IBM WebSphere Application Server BI Node Host Name	This value is automatically entered.	The name or IP address of the BI node.
Cognos Dispatcher Application Server Port	9080	The HTTP transport port number for the WebSphere Application Server where IBM Cognos is running.
Database Server Host Name	This value is automatically entered.	The name or IP address of the data node.

Table 8. IBM Cognos BI Server parameters (continued)

Field	Default or example value	Description
IBM Cognos Mobile Server Installation Directory	/opt/IBM/PCI/Server/CognosMobile	The location where the IBM Cognos Mobile installation files are copied. To use IBM Cognos Mobile, you must install the product manually.
Cognos Real Time Monitoring Installable Directory	/opt/IBM/PCI/Server/CognosRTM	The location where the IBM Cognos Real-time Monitoring installation files are copied. To use IBM Cognos Real-time Monitoring, you must install the product manually.

Table 9 includes the configuration parameters for IBM Integration Bus.

Table 9. IBM Integration Bus installation parameters

Field	Default or example value	Description
WebSphere Message Broker Installation Location	/opt/ibm/mqsi/9.0.0.1	The location where IBM Integration Bus is to be installed. This directory is on the Integration Bus node computer's file system. IBM Integration Bus was previously named WebSphere Message Broker.
WMB ODBC Database Extender Install Location	/opt/ibm/IE02/2.0.1	The location where IBM Integration Bus ODBC Database Extender is to be installed. This directory is on the Integration Bus node computer's file system.
WebSphere Message Broker Explorer Installation Directory	/opt/IBM/IBExplorer	The location where IBM Integration Explorer is to be installed. This directory is on the Integration Bus node computer's file system. IBM Integration Explorer was previously named WebSphere Message Broker.

Table 10. IBM SPSS Collaboration and Deployment Server parameters

Field	Default or example value	Description
SPSS Collaboration and Deployment Services Server Installation Directory	/opt/IBM/SPSS/Deployment/6.0/Server	The location where IBM SPSS Collaboration and Deployment Services is to be installed. This location is on the Analytics node computer's file system.

Table 10. IBM SPSS Collaboration and Deployment Server parameters (continued)

Field	Default or example value	Description
IBM Installation Manager Installation Directory	/opt/IBM/InstallationManager/eclipse/tools/imcl	The location where IBM Installation Manager is to be installed. This directory is on the Analytics node computer's file system.
WebSphere Profile Location	/opt/IBM/WebSphere/AppServer/profiles	The location where the WebSphere profile is to be created. This directory is on the Analytics node computer's file system.
WebSphere Profile Default Template Location	/opt/IBM/WebSphere/AppServer/profileTemplates/default	The location where the WebSphere profile templates are located. This directory is on the Analytics node computer's file system.
WebSphere Host Name	This value is automatically entered.	The name or IP address of the Analytics node computer.
SPSS DB2 Database Host Name	This value is automatically entered.	The name or IP address of the data node computer.
SPSS Collaboration and Deployment Service Server Administrative User Name	admin	The IBM SPSS Collaboration and Deployment Services administrative user.
SPSS Collaboration and Deployment Service Server Administrative Password	There is no default value for this field.	The password for the IBM SPSS Collaboration and Deployment Services administrative user.
SPSS Modeler Server Installation Directory	/usr/IBM/SPSS/ModelerServer/16.0	The directory where the IBM SPSS Modeler Server is to be installed. This directory is on the Analytics node computer.
SPSS Data Access Pack Installation Directory	/root/SDAP71	The directory where the IBM SPSS Data Access Pack is to be installed. This directory is on the Analytics node computer.
SPSS Statistics Server Installation Directory	/opt/IBM/SPSS/StatisticsServer22	The directory where the IBM SPSS Statistics Server is to be installed. This directory is on the Analytics node computer.
SPSS Modeler Premium Solution Publisher Installation Directory	/opt/IBM/SPSS/ModelerSolutionPublisher/16.0	The directory where the IBM SPSS Modeler Premium Solution Publisher is to be installed. This directory is on the Analytics node computer.
SPSS Modeler Solution Publisher Installation Directory	/opt/IBM/SPSS/ModelerSolutionPublisher/16.0	The directory where the IBM SPSS Modeler Solution Publisher is to be installed. This directory is on the Analytics node computer.

Starting the installation

After you enter all of the required fields in the **Deployment Wizard**, you can start the installation and configuration of the IBM Predictive Customer Intelligence components.

Procedure

On the **Summary Panel** of the **Deployment Wizard**, click **Deploy all**. If you choose to deploy the tasks individually, you must click **Deploy task** for each task in the order that the tasks appear on the **Summary** panel.

Note: The time to deploy the software is estimated by the **Deployment Wizard**. The actual time required depends on a variety of factors, such as network speed. In most cases, the deployments will take significantly less time than what is initially displayed by the **Deployment Wizard**.

Optional installation of more IBM Cognos components

IBM Cognos Mobile and IBM Cognos Real-time Monitoring installation files are provided with your installation of IBM Predictive Customer Intelligence. You can optionally install these server components to extend your solution capabilities.

The installation files for these products are available in the `/opt/IBM/PCI/Server` directory on the Business Intelligence (BI) node computer.

For information about installing these products, see their respective documentation.

Configure the server components and test the installation

After the installation of the IBM Predictive Customer Intelligence server components is complete, you must perform some additional configuration tasks and then test the installation.

Testing the database installation and configuration

You can test the database installation and configuration by logging in to the IBM Predictive Customer Intelligence data node computer and listing the databases on the server. You can also list the databases available on each node computer where the IBM DB2 client was installed.

Procedure

Log on to the data node computer.

1. Open a terminal window, and change to the database instance owner user. For example, `su - db2inst1`.
2. Enter the following command to list the databases on the computer:

```
db2 list database directory
```

The following databases are listed:

- COG102DB
- SPSSDB

Configuring WebSphere Application Server for IBM Cognos BI

To complete the installation of the IBM Predictive Customer Intelligence server components, you must configure properties in IBM WebSphere Application Server for IBM Cognos Business Intelligence.

Procedure

1. Open a web browser.
2. In the address bar, type the address for the WebSphere Admin Console that was installed on the BI node computer.
The Admin console address is: `http://bi_node_name:9060/ibm/console` where `bi_node_name` is the name or IP address for the BI node computer.
3. Leave the **User ID** box empty, and click **Log in**.
4. Expand **Servers > Server Types > WebSphere application servers**, and click **server1**.
5. Under **Server Infrastructure**, expand **Java and Process Management**, and click **Process Definition**.
6. Under **Additional Properties**, click **Environment Entries**.
7. Click **LD_LIBRARY_PATH**.
8. In the **Value** box, add the following value to the path:
`:/opt/ibm/db2/V10.1/lib32/`
This path points to the IBM DB2 32-bit library file `libdb2.so`.

Important: If you did not use the default installation locations, ensure you use the paths that you entered.

For example, the **Value** box, should include the following path:

```
/opt/ibm/cognos/c10_64/bin64:/opt/ibm/db2/V10.1/lib32/
```

9. Click **Apply**, and then click **Save**.

Saving your IBM Cognos Configuration settings

You must save the configuration settings in IBM Cognos Configuration before you can start the IBM Cognos application in WebSphere Application Server for IBM Predictive Customer Intelligence.

Procedure

1. Log in to the BI node computer as **root**.
2. Enter the following command to load the profile that is needed for IBM Cognos BI, and press Enter:
`~/.bash_profile`
The `.bash_profile` file contains the environment variables that are needed to start IBM Cognos Configuration.
3. Go to the `/opt/ibm/cognos/c10_64/bin64` directory.
4. Type the following command:
`./cogconfig.sh`
IBM Cognos Configuration starts.
5. Click **File > Save**.
6. Close IBM Cognos Configuration.

Important: If you are prompted to start the Cognos Content Database service, click **No**.

7. Click **File > Exit**.

Starting the services on the BI node computer

For IBM Predictive Customer Intelligence, start the IBM Cognos BI services by starting the WebSphere Application Server profile. You must also start IBM HTTP Server.

The WebSphere Application Server profile is automatically started by the installation. You must restart the profile after you save the IBM Cognos configurations settings. Restarting the profile starts the IBM Cognos BI services.

Procedure

1. Log in to the BI node computer as the **root** user.
2. Go to the WebSphere Application Server Profile Location. For example, go to the `/opt/IBM/WebSphere/AppServer/profiles/COGNOSProfile/bin` directory if you used the default path in the **Deployment Wizard**.
3. Type `./stopServer.sh server1` to stop WebSphere Application Server.
4. Type `./startServer.sh server1` to start WebSphere Application Server.

It can take several minutes for all of the IBM Cognos services to start for the first time.

Setting the password for the mqm user on the Integration Bus node computer

You must set the password for the **mqm** user on the Integration Bus node computer for IBM Predictive Customer Intelligence.

Procedure

1. Log in to the Integration Bus node computer as the **root** user or as a user with **sudo** permissions.
2. Type the following command:

```
passwd mqm
```
3. Enter **mqm** and the new password.

You do not have to use **mqm**. It is only a suggestion. If you do use **mqm**, you will see a message saying that your password is too weak. But, you can ignore the message.

Configure the Integration Bus node components

To configure the Integration Bus node components, you must create a broker, a queue manager, and an execution group. You must also set authorizations for the user that runs the broker and queue manager. Authorization is required when the client is running on a different computer than the server components.

Creating a broker and queue manager

You create a broker for IBM Predictive Customer Intelligence from the command line. A queue manager is automatically created when you create the broker.

You must assign a user for the broker and queue manager. The user must be a local administrator user.

Some additional settings might be required to configure WebSphere MQ. For more information, see the WebSphere MQ documentation (www.ibm.com/support/knowledgecenter/SSFKSJ_7.5.0/com.ibm.mq.ins.doc/q008520_.htm?lang=en).

Procedure

1. In a terminal window, go to the *installation_location/mqsi/9.0.0.1/bin* directory. For example, if you installed to the default location, go to the */opt/ibm/mqsi/9.0.0.1/bin* directory.
2. Change to the mqm user. For example, `su mqm`.
3. Enter the following command to load the profile that is needed for the mqm user, and press Enter:
`. ~/.bash_profile`
4. Enter the following command to create and start the broker and queue manager:
`mqsicreatebroker broker_name -q queue_manager_name`
For example, to create a broker that is named `pcibroker` and a queue manager that is named `pciqmgr`, enter:
`mqsicreatebroker pcibroker -q pciqmgr`
5. Enter the following command to start the broker:
`mqsisstart broker_name`
For example, to start a broker that is named `pcibroker`, enter:
`mqsisstart pcibroker`
6. Enter the following command to create an execution group:
`mqsicreateexecutiongroup broker_name -e executiongroupname`
For example, to create an execution group that is named `pciegroup`, enter:
`mqsicreateexecutiongroup pcibroker -e pciegroup`

Enabling remote access for the queue manager

For IBM Predictive Customer Intelligence, you must start the queue manager command line processor to enable remote access to the queue manager.

Procedure

1. As the mqm user, enter the following command to start the queue manager:
`runmqsc queue_manager_name`
For example, if your queue manager is named `pciqmgr`, enter:
`runmqsc pciqmgr`
2. Enter the following lines, and press Enter after each line:
`START LISTENER`
`ALTER QMGR CHLAUTH(ENABLED)`
`SET CHLAUTH(SYSTEM.BKR.CONFIG) TYPE(ADDRESSMAP) ADDRESS('*')`
`MCAUSER('mqm')`
`SET CHLAUTH(SYSTEM.BKR.CONFIG) TYPE(BLOCKUSER) USERLIST('*NOACCESS')`
`END`

Important: The `ADDRESS('*')` value in the command allows connections from any IP address. Consider restricting the access to a single computer. For more information about these values, see the WebSphere MQ documentation.

3. If you want to use a specific port number for the listener, enter the following command:
`runmqslsr -t tcp -m queue_manager_name -p port_number`
Ensure that you open the listener port number. If you did not specify a port number, the default port number is 1414 for the first broker you create.

Testing the installation of the server components

You can test the installation of the IBM Predictive Customer Intelligence server components by accessing some of the component portals.

For example, you can open the IBM Cognos BI portal on the BI node. If the portal opens, IBM Cognos BI is installed and running. You can also access the SPSS configuration tool on the Analytics node computer.

Procedure

1. Open a web browser.

2. In the address bar, type the address for the IBM Cognos Content Manager status page.

The address is `http://bi_node_name:9080/p2pd/servlet`, where *bi_node_name* is the name or IP address for the BI node computer.

The Content Manager status says **Running**.

3. In the address bar, type the address for the IBM Cognos BI portal.

The address is `http://bi_node_name/ibmcognos/`, where *bi_node_name* is the name or IP address for the BI node computer.

Note: Ensure that you add the trailing / to the URL.

IBM Cognos Connection appears.

4. In the address bar, type the address for the SPSS administration console.

The address is `http://analytics_node_name:9080/config`, where *analytics_node_name* is the name or IP address for the Analytics node computer.

The SPSS administration console appears.

Computer firewall settings to run the server components

Each IBM Predictive Customer Intelligence node computer requires certain ports to be opened for the server components to operate in a multi-computer solution, and you must configure your firewall settings for each specific node.

Text files that contain the commands you can use to open the ports that are used by IBM Predictive Customer Intelligence are provided with the installation. The `Initial-firewall-settings.txt` file contains the port information that you must set before you run the installation. The `Initial-firewall-settings.txt` file contains the port information that you must set after the installation is complete. The files are available in the `disk1` directory.

Configuring your firewall settings for the Analytics node computer

You must ensure that certain ports are open on the Predictive Analytics node computer for IBM Predictive Customer Intelligence.

The following ports must be open:

- 45088
- 58313
- 28053
- tungsten-https
- glrpc

- corbaloc
- 59356
- 9043
- 9060

Procedure

1. Log in to the Analytics node computer 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. Add rules for the ports with the following command:
`iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport port -j ACCEPT`

For example, to open 45088, type the following command

```
iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport 45088 -j ACCEPT
```

4. Repeat the previous step for each of the required port values.
5. Type the following command to save your firewall settings:
`/etc/init.d/iptables save`
6. Type the following command to restart your firewall.
`/etc/init.d/iptables restart`
7. Verify that your changes have been applied with the following command:
`iptables -L`
The added ports should appear in the list.

Configuring your firewall settings for the BI node computer

You must ensure that certain ports are open on the Business Intelligence (BI) node computer for IBM Predictive Customer Intelligence.

The following ports must be open:

- 9362
- vrace
- 9663
- corbaloc
- 9043
- glrpc
- http
- tungsten-https
- 9060

Procedure

1. Log in to the BI node computer 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. Add rules for the ports with the following command:
`iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport port -j ACCEPT`

For example, to open 9362, type the following command

- ```
iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport 9362 -j ACCEPT
```
- Repeat the previous step for each of the required port values.
  - Type the following command to save your firewall settings:  

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

```
/etc/init.d/iptables restart
```
  - Verify that your changes have been applied with the following command:  

```
iptables -L
```

The added ports should appear in the list.

## Configuring your firewall settings for the Integration Bus node computer

You must ensure that certain ports are open on the Integration Bus node computer for IBM Predictive Customer Intelligence.

The following ports must be open:

- boks
- boks\_clntd
- boks\_servm
- boks\_servc
- ibm-mqseries

### Procedure

- Log in to the Integration Bus node computer as the **root** user or as a user with **sudo** permissions.
- Back up your existing firewall settings by typing the following command:  

```
/etc/init.d/iptables save
```
- Add rules for the ports with the following command:  

```
iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport port -j ACCEPT
```

For example, to open boks, type the following command

```
iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport boks -j ACCEPT
```

- Repeat the previous step for each of the required port values.
- Type the following command to save your firewall settings:  

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

```
/etc/init.d/iptables restart
```
- Verify that your changes have been applied with the following command:  

```
iptables -L
```

The added ports should appear in the list.

## Configuring your firewall settings for the data node computer

You must ensure that certain ports are open on the data node computer for IBM Predictive Customer Intelligence.

The following ports must be open:

- ibm-db2
- db2c\_db2inst1

## Procedure

1. Log in to the data node computer 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. Add rules for the ports with the following command:  
`iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport port -j ACCEPT`

For example, to open `ibm-db2`, type the following command

```
iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport ibm-db2 -j ACCEPT
```

4. Type the following command to save your firewall settings:  
`/etc/init.d/iptables save`
5. Type the following command to restart your firewall.  
`/etc/init.d/iptables restart`
6. Verify that your changes have been applied with the following command:  
`iptables -L`  
The added ports should appear in the list.

---

## Configuring NFS mount settings for the Integration Bus node and Analytics node computers

You must configure network file system (NFS) mounts on the Integration Bus node and the Predictive Analytics node computers to allow file transfers between these nodes.

## Procedure

1. Log in to the computer as the **root** user.

**Note:** You must perform these steps on both the Integration Bus node and Analytics node computers.

2. Go to the `/etc/sysconfig` directory, and open the `nfs` file in a text editor.
3. Add the following lines to the file or uncomment the lines if they already exist in the file:

```
RQUOTAD_PORT=875
LOCKD_TCPPORT=32803
LOCKD_UDPPORT=32769
MOUNTD_PORT=892
STATD_PORT=662
STATD_OUTGOING_PORT=2020
```

4. Save and close the file.
5. Enter the following commands to restart the Linux services. Press Enter after each command.

```
service portmap restart
service nfs restart
service rpcsvcgssd restart
```

6. Open the `iptables` file in a text editor.
7. Add the following lines to the file before the final LOG and DROP lines in the `RH-Firewall-1-INPUT` chain.

```
-A RH-Firewall-1-INPUT -s 192.168.1.0/24 -m state -state
NEW -p udp -dport 111 -j ACCEPT
-A RH-Firewall-1-INPUT -s 192.168.1.0/24 -m state -state NEW -p tcp
-dport 111 -j ACCEPT
```



```
-A RH-Firewall-1-INPUT -s 192.168.1.0/24 -m state --state NEW -p tcp
-dport 2049 -j ACCEPT
-A RH-Firewall-1-INPUT -s 192.168.1.0/24 -m state --state NEW -p tcp
-dport 32803 -j ACCEPT
-A RH-Firewall-1-INPUT -s 192.168.1.0/24 -m state --state NEW -p udp
-dport 32769 -j ACCEPT
-A RH-Firewall-1-INPUT -s 192.168.1.0/24 -m state --state NEW -p tcp
-dport 892 -j ACCEPT
-A RH-Firewall-1-INPUT -s 192.168.1.0/24 -m state --state NEW -p udp
-dport 892 -j ACCEPT
-A RH-Firewall-1-INPUT -s 192.168.1.0/24 -m state --state NEW -p tcp
-dport 875 -j ACCEPT
-A RH-Firewall-1-INPUT -s 192.168.1.0/24 -m state --state NEW -p udp
-dport 875 -j ACCEPT
-A RH-Firewall-1-INPUT -s 192.168.1.0/24 -m state --state NEW -p tcp
-dport 662 -j ACCEPT
-A RH-Firewall-1-INPUT -s 192.168.1.0/24 -m state --state NEW -p udp
-dport 662 -j ACCEPT
```

8. Save and close the file.
9. Enter the following command to restart the iptables.  
service iptables restart



---

## Chapter 4. Distribute Analytics node components

After you complete a default environment installation, you can optionally add Analytics node components. Adding Analytics node components can improve the performance of the solution.

You must run a new distributed environment installation for each Analytics node component that you want to add to your environment.

---

### Creating a database for an additional Collaboration and Deployment Services instance

You must create a database for each instance of SPSS Collaboration and Deployment Services Server you add to your environment using a **Distributed Environment (Analytics Node only)** installation.

Each instance of SPSS Collaboration and Deployment Services Server requires its own database. You cannot use the same database for multiple instances of SPSS Collaboration and Deployment Services Server.

#### Procedure

1. Go to the directory where you downloaded the installation files, and go to the `IBMPCI_Distributed\disk1` directory.
2. Copy the script that is named `pci-spssdbcreation.sh` to the data node computer.
3. Log on to the data node computer as **root** user.
4. Run the following command to create the database.

```
./pci-spssdbcreation.sh database_name database_instance
```

Where *database\_name* is the name of the database you want to create for the new instance of SPSS Collaboration and Deployment Services and *database\_instance* is the database instance in which you are creating the database.

For example,

```
./pci-spssdbcreation.sh SPSSDB1 db2inst1
```

---

### Starting the Launchpad for the Distributed Environment installation

Use the Launchpad to start the IBM Predictive Customer Intelligence installation.

#### Before you begin

Ensure that you are logged in as **root** or a user with **sudo** permissions.

You must have a Firefox web browser that is installed and set as your default web browser on the computer from where you run the IBM Predictive Customer Intelligence installation. Firefox must be version 17 as a minimum and version 20 at the latest.

## Procedure

1. Ensure that you include each new Analytics node computer in the `hosts` file on the computer from where you are running the installation and the data node computer. Also, ensure that the `hosts` file on each new Analytics node computer includes the data node computer.

For more information, see “Adding each node computer to the `hosts` file” on page 9.

2. Go to the directory where you decompressed the installation files.
3. Go to the `disk1` directory where you decompressed the files.
4. If you are installing as a user with `sudo` permissions, enter the following command to ensure that the Launchpad and Deployment Wizard open correctly:

```
export DISPLAY=ipaddress:vncdisplay
```

where *ipaddress* is the IP address of the computer where you are running the installation, and *vncdisplay* is the VNC display ID for the user who is running the installation. For example, enter `export DISPLAY=127.0.0.1:2`

5. If you are installing as a user with `sudo` permissions, enter the following command:

```
xhost +
```

6. Enter the following command:

```
./launchpad.sh
```

**Important:** Do not enter `sudo` in front of the command.

7. Review the information in the Launchpad panels.

---

## Selecting the installation type for a distributed installation

Choose a **Distributed Environment (Analytics Node only)** installation to add Analytics node components to your environment.

You can only use a **Distributed Environment (Analytics Node only)** installation after you have completed a **Default Environment** installation. You must run a **Distributed Environment (Analytics Node only)** installation for each additional Analytics node component you want to add to your environment.

### Procedure

1. Select **Distributed Environment (Analytics Node only)**.
2. Click Next.

---

## Validating your target computers

Use the Launchpad to validate that your IBM Predictive Customer Intelligence target computers have all of the prerequisite libraries installed.

If you are using a **Distributed Environment (Analytics Node only)** installation, you are prompted only for the additional Analytics node computers you are adding to the environment.

### Before you begin

You must have `sshpass-1.05-1.e16.i686.rpm` installed on each node computer to be able to validate the target computers. You can download `sshpass-1.05-`

1.e16.i686.rpm from a site such as pkgs.org or rpm.pbone.net.

### Procedure

1. In the **Launchpad**, click **Next** until the **Validate the Data Node Computer** page.
2. Enter the server name or IP address of the data node computer in the **Computer Name** box.
  - a. Enter a user name and password for a user on the target computer in the **User Name** and **Password** boxes.
  - b. Click **Validate Node**.
  - c. If there are any missing prerequisites, use the `CheckLib_output.txt` file to help you install or configure the prerequisites, and try the validation again. The `CheckLib_output.txt` is in the `/var/PCITemp` directory.
  - d. If the validation succeeds, click **Next**.
3. Repeat the step for each node computer.

---

## Starting the Deployment Wizard for the server components

Use the Launchpad to start the IBM Predictive Customer Intelligence server **Deployment Wizard**.

### Procedure

1. In the **Launchpad**, on the **Install and Configure** page, click one of the following options:
  - a. If you are installing as a user with **sudo** permissions, select **Start the Deployment Wizard as a Sudo User**.
    - In the **Computer Name** box, enter the name or IP address of the computer on which you are running the **Deployment Wizard**.
    - In the **VNC Display ID** box, enter the display for the user. For example, enter 1 or 2.
  - b. If you are installing as **root**, select **Start the Deployment Wizard as the Root User**.
2. Click **Start Deployment Wizard**.

---

## Setting ports for the Deployment Wizard to use

If you install IBM Predictive Customer Intelligence components while your Linux iptables run, you must set the ports that you opened in the **Deployment Wizard**.

### Procedure

1. In the **Deployment Wizard**, click **Edit > Preferences**.  
The **Deployment Preferences** window appears.
2. Enter 30000 in the **Data Port Number** box.

**Important:** Ensure that you enter the port number that you opened if you selected a port other than 30000.

3. Enter 35000 in the **Communication Port Number** box.

**Important:** Ensure that you enter the port number that you opened if you selected a port other than 35000.

4. If you use the computer on which you run the installation as a node, do the following steps:

- a. Click **Target Computer Settings**.
- b. Select **localhost** in the **Target Computer** field.
- c. Enter the communication port number that you set in the **Communication Port** field. For example, enter 35000.

**Note:** The **RMI Registry Port** is unavailable if you use localhost as a node.

---

## Selecting the Analytics node components you are adding

For a **Distributed Environment (Analytics Node only)** installation, you can select the components that you want to add to the environment.

You can install more IBM SPSS Collaboration and Deployment Services Server instances. Or you can install more Analytics node instances without IBM SPSS Collaboration and Deployment Services Server.

Each instance of IBM SPSS Collaboration and Deployment Services Server requires a separate database on the database server on the data node computer.

### Procedure

1. **Distributed Environment (Analytics Node only)**
2. Select one of the following options:
  - **Deploy another instance of the SPSS Collaboration & Deployment Service Server**
  - **Deploy other Analytical Server components**
3. Click **Next**.

---

## Specifying the target computers to install the server components

You must specify a different target computer for each IBM Predictive Customer Intelligence node. A node can be installed on a computer or virtual machine, but each node must be installed on a separate computer or virtual machine.

### Before you begin

You must have **root** access on each computer on which you install a node.

You might have to change a setting in a configuration file on your target computer to allow the **Deployment Wizard** to access the computer as **root**. Use the following steps if you receive a message that says the connection to the target computer was refused:

1. On the target computer, go to the `/etc/ssh` directory and open `sshd_config` for editing.
2. Change the `PermitRootLogin` property to `yes`.
3. Save the file, and restart the server for the change to take effect.

### Procedure

1. On the **Specify Target Computers** pages of the **Deployment Wizard**, enter the name or IP address of the computer on which you install a node in the **Target Computer** box.

The **Deployment Wizard** prompts you for each node computer.

If you install a node on the computer where you run the **Deployment Wizard**, you can enter `localhost`.

2. Click **Add**.

When you enter a computer other than localhost, in the **Target Computer Credentials** box, do the following steps:

- a. Enter the **User ID** and **Password** for the **root** user or a user with **sudo** permissions.

**Important:** Ensure that you enter the credentials for the **root** user or a user with **sudo** permissions on the target computer.

- b. Click **Test Login**.
- c. Click **Add**.

The computer that you entered appears in the **Selected target computers** box.

3. Do the following steps if you install while your Linux iptables run.

- a. Click **Edit > Preferences**.
- b. Click **Target Computer Settings**.
- c. Select the computer name or IP address in the **Target Computer** field.
- d. Enter the communication port number that you set in the **Communication Port** field. For example, enter 35000.
- e. Enter the Data Port Number that you set in the **RMI Registry Port** field. For example, enter 30000.

**Note:** If you use localhost as a node in the installation, the **RMI Registry Port** is unavailable.

4. In the **Selected target computers** box, select the target computer, and click **Test Connections**.

**Important:** **Test Connections** tests the connection, tests the credentials, and locates or enables a deployment agent on the target computer. You must have an active deployment agent on each target computer.

If you receive an error message after you click **Test Connections**, you might have to change some settings on your computers.

- Edit your iptable settings or temporarily disable your firewall. For more information, see “Computer firewall settings required for the installation” on page 12.
- Compare and correct your domain name system (DNS) settings for each computer. For example, type `sudo system-config-network`. Select **DNS configuration**, and ensure that your host name domain and DNS search path settings are correct.
- Ensure that the `/etc/hosts` file has the correct entries. For an example, see “Test Connections validation errors” on page 70.

5. Click **Next**.

6. Repeat the steps for each computer on which you install a node.

---

## Configuring parameters for a distributed installation

The **Deployment Wizard** displays some default values for each component of IBM Predictive Customer Intelligence. You can accept the default values or change them to suit your environment.

If you are prompted for users, the **Deployment Wizard** creates the users on the appropriate target node computer, if they do not exist.

## Procedure

Enter values in each field on each page of the **Deployment Wizard**:

- Click **Browse** to browse the target computer's file system. It does not browse the local computer from where you run the **Deployment Wizard**.
- For some values, such as passwords, default values are not provided. Ensure that you enter all values on each page of the **Deployment Wizard**.

Table 11 includes the configuration parameters for IBM DB2.

*Table 11. IBM DB2 configuration parameters for IBM DB2 client*

| Field                                     | Default or example value                  | Description                                                                                                     |
|-------------------------------------------|-------------------------------------------|-----------------------------------------------------------------------------------------------------------------|
| <b>DB2 Client Installation Directory</b>  | /opt/ibm/db2/V10.1                        | The location where IBM DB2 client is to be installed on the target computer.                                    |
| <b>DB2 Client Instance User Name</b>      | db2inst1                                  | The user ID for the DB2 client.                                                                                 |
| <b>DB2 Instance Owner Password</b>        | There is no default value for this field. | The password for the DB2 client instance owner user.<br><br>The password cannot contain more than 8 characters. |
| <b>DB2 Client Instance Home Directory</b> | /home/db2inst1                            | The home directory for the DB2 client instance owner user on each node.                                         |

Table 12 includes the configuration parameters for WebSphere Application Server.

*Table 12. WebSphere Application Server installation parameters*

| Field                                   | Default or example value     | Description                                                             |
|-----------------------------------------|------------------------------|-------------------------------------------------------------------------|
| <b>WebSphere Installation Directory</b> | /opt/IBM/WebSphere/AppServer | The location where the WebSphere Application Server is to be installed. |

Table 13 includes the configuration parameters for IBM SPSS Collaboration and Deployment Server.

*Table 13. IBM SPSS Collaboration and Deployment Server parameters*

| Field                                                                           | Default or example value                              | Description                                                                           |
|---------------------------------------------------------------------------------|-------------------------------------------------------|---------------------------------------------------------------------------------------|
| <b>SPSS Collaboration and Deployment Services Server Installation Directory</b> | /opt/IBM/SPSS/Deployment/6.0/Server                   | The location where IBM SPSS Collaboration and Deployment Services is to be installed. |
| <b>WebSphere Profile Location</b>                                               | /opt/IBM/WebSphere/AppServer/profiles                 | The location where the WebSphere profile is to be created.                            |
| <b>WebSphere Profile Default Template Location</b>                              | /opt/IBM/WebSphere/AppServer/profileTemplates/default | The location where the WebSphere profile templates are located.                       |
| <b>WebSphere Profile Name</b>                                                   | SPSSProfile                                           | The name of the WebSphere profile that is to be used.                                 |
| <b>WebSphere Host Name</b>                                                      | This value is automatically entered.                  | The name or IP address of the Analytics node computer.                                |
| <b>WebSphere Profile Node Name</b>                                              | Node01                                                | The name for the WebSphere Application Server node.                                   |



Table 13. IBM SPSS Collaboration and Deployment Server parameters (continued)

| Field                                                                     | Default or example value                                                                                                                                                                                                                                                                                                                       | Description                                                                                              |
|---------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------|
| WebSphere Profile Cell Name                                               | Cel101                                                                                                                                                                                                                                                                                                                                         | The name for the WebSphere Application Server cell.                                                      |
| SPSS DB2 Database Host Name                                               | There is no default value for this field.                                                                                                                                                                                                                                                                                                      | The name or IP address of the data node computer.                                                        |
| SPSS DB2 Database Port Number                                             | 50000                                                                                                                                                                                                                                                                                                                                          | The port number that is used by IBM DB2.                                                                 |
| SPSS DB2 Database Name                                                    | SPSSDB<br><b>Important:</b> You must change this name. SPSSDB is the default value that is used by the Analytics node components that were configured as part of the <b>Default Environment</b> installation. You must use another database name.<br><br>You must create this database by running a script after the installation is complete. | The SPSS database that will be used by the Analytics node components.                                    |
| SPSS DB2 Server Instance User Name                                        | db2inst1                                                                                                                                                                                                                                                                                                                                       | The user ID that owns the database instance.                                                             |
| SPSS DB2 Server Instance Password                                         | There is no default value for this field.                                                                                                                                                                                                                                                                                                      | The password for the DB2 instance owner user.<br><br>The password cannot contain more than 8 characters. |
| SPSS Collaboration and Deployment Service Server Administrative User Name | admin                                                                                                                                                                                                                                                                                                                                          | The IBM SPSS Collaboration and Deployment Services administrative user.                                  |
| SPSS Collaboration and Deployment Service Server Administrative Password  | There is no default value for this field.                                                                                                                                                                                                                                                                                                      | The password for the IBM SPSS Collaboration and Deployment Services administrative user.                 |

Table 14 includes the configuration parameters for IBM SPSS Collaboration and Deployment Server.

Table 14. IBM SPSS Collaboration and Deployment Server parameters

| Field                                        | Default or example value         | Description                                                                                                             |
|----------------------------------------------|----------------------------------|-------------------------------------------------------------------------------------------------------------------------|
| SPSS Modeler Server Installation Directory   | /usr/IBM/SPSS/ModelerServer/16.0 | The directory where the IBM SPSS Modeler Server is to be installed. This directory is on the Analytics node computer.   |
| SPSS Data Access Pack Installation Directory | /opt/ibm/SDAP71                  | The directory where the IBM SPSS Data Access Pack is to be installed. This directory is on the Analytics node computer. |

Table 14. IBM SPSS Collaboration and Deployment Server parameters (continued)

| Field                                                                 | Default or example value                    | Description                                                                                                                               |
|-----------------------------------------------------------------------|---------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------|
| <b>SPSS Modeler Premium Solution Publisher Installation Directory</b> | /opt/IBM/SPSS/ModelerSolutionPublisher/16.0 | The directory where the IBM SPSS Modeler Premium Solution Publisher is to be installed. This directory is on the Analytics node computer. |
| <b>SPSS Statistics Server Installation Directory</b>                  | /opt/IBM/SPSS/StatisticsServer22            | The directory where the IBM SPSS Statistics Server is to be installed. This directory is on the Analytics node computer.                  |

---

## Chapter 5. Installation of the client components

There are several client components that are included with IBM Predictive Customer Intelligence. You can install the components as you require.

**Important:** Install the client components only after you successfully install the server components.

---

### Client components

Client components for IBM Predictive Customer Intelligence are available to be installed.

For more information about installing and using the client components, see the documentation provided with the component.

**Important:** After the client installation files are copied to your computer, some paths for the compressed files can be long. You might need to use a decompression utility other than the one provided by Microsoft Windows to decompress the files.

#### Database connectivity

IBM Data Server Runtime Client must be installed to enable connectivity to the databases.

#### Predictive modeling and decision management

Install the following components so that you can modify or create predictive models and so that you can perform decision management tasks:

- IBM SPSS Collaboration and Deployment Services Deployment Manager
- IBM SPSS Modeler Client Premium

Optionally, install the following components:

- IBM SPSS Statistics Client
- IBM SPSS Collaboration and Deployment Services Documentation
- IBM Analytical Decision Management Documentation
- IBM SPSS Modeler Premium Documentation

#### Business intelligence

Install IBM Cognos Framework Manager so that you can modify the reporting model metadata.

**Note:** You must install IBM Data Server Runtime Client before you can use IBM Cognos Framework Manager. Ensure that you restart the computer after you install the IBM Data Server Runtime Client, and that you catalog the databases before you use Framework Manager. Framework Manager is a 32-bit application, and requires the 32-bit IBM Data Server Runtime Client.

Optionally, install the following components:

- IBM Cognos Business Intelligence Samples

- IBM Cognos Dynamic Query Analyzer
- IBM Cognos for Microsoft Office
- IBM Cognos Lifecycle Manager
- IBM Cognos Software Development Kit
- IBM Cognos Supplementary Languages Documentation

## Integration Bus

Install the following components:

- Integration Bus Toolkit
- WebSphere MQ for Windows

Use the Integration Bus Toolkit to create, manage, deploy, and delete message flows and associated resources in a development environment.

---

## Starting the Launchpad for the client components

Use the IBM Predictive Customer Intelligence **Launchpad** to start the **Deployment Wizard**.

### Procedure

1. Go to the directory where you downloaded the artifacts installation files.
2. Decompress the installation files.
3. Go to the disk1 directory where you decompressed the files.
4. Double-click Launchpad.exe or Launchpad64.exe.

---

## Changing the temporary location for installation files

The Deployment Wizard uses a temporary directory for installation source files. You must ensure that you are using a location that has adequate disk space for the installation source files. If you do not have enough disk space in the default location, you can change the location.

For example, the default location is . If space is limited on your C drive, you can change the temporary location to another drive.

The temporary files include jar files that are used during the installation, which you might want to delete after you complete the installation.

### Procedure

1. In the **Deployment Wizard**, click **Edit > Preferences**.  
The **Deployment Preferences** window appears.
2. In the **Deployment Package Path** box, select an existing location.
3. Click **OK**.

---

## Starting the Deployment Wizard and installing the client components

Use the IBM Predictive Customer Intelligence **Deployment Wizard** to copy the client installation files to your computer. You must run each installation program individually after the client installation files are copied to your computer.

**Tip:** You might need to adjust your Windows User Access Control (UAC) settings so that you can run the installation program for the client components.

### Procedure

1. In the **Launchpad**, click **Deploy Client > Start the Predictive Customer Intelligence Client Deployment Wizard**.
2. On the **Select Tasks** panel, select whether you want 32- or 64-bit clients installed, and click **Next**.
3. Select the clients for which you want to deploy the installation files, and click **Next**.
4. Enter a location for each client component installer to be copied to. The default is C:\IBM\PCI\.
5. On the **Summary Panel**, click **Deploy all**.

**Note:** The time to deploy the software is estimated by the **Deployment Wizard**. The actual time required depends on a variety of factors, such as network speed. In most cases, the deployments will take significantly less time than what is initially displayed by the **Deployment Wizard**.

6. After the client installers are copied to your computer, you must install each client individually by using its installer.

---

## Installing IBM SPSS Collaboration and Deployment Services Deployment Manager

You must install IBM SPSS Collaboration and Deployment Services Deployment Manager to complete the configuration of IBM Predictive Customer Intelligence.

### Procedure

1. Go to the *install\_location*\Client\Analytics\IBM SPSS Collaboration and Deployment Services Deployment Manager directory.  
By default, the *install\_location* is C:\IBM\PCI\.
2. Decompress the installation files.
3. In the decompressed folder, double-click `install.exe` to start the IBM SPSS Collaboration and Deployment Services Deployment Manager installation.
4. Follow the steps in the wizard to install the client component.

For more information about the installation of Deployment Manager, see the IBM SPSS documentation ([www.ibm.com/support/knowledgcenter/SS69YH\\_6.0.0](http://www.ibm.com/support/knowledgcenter/SS69YH_6.0.0)).

## Adding server connections for IBM SPSS Collaboration and Deployment Services

You must add a connection to your IBM SPSS Collaboration and Deployment Services repository in the IBM SPSS Collaboration and Deployment Services Deployment Manager client.

After you add the connection, the server folder displays in the **Content Explorer**, and you can log in to the server.

### Procedure

1. Click **Start > All Programs > IBM SPSS Collaboration and Deployment Services > Deployment Manager > Deployment Manager 6.0**.

2. Click **File > New > Content Server Connection**.
3. In the **Connection Name** box, enter a name for your Collaboration and Deployment Services repository. For example, enter SPSS.
4. In the **Server URL** box, enter the name or IP address of the Predictive Analytics node computer and the port number, and click **Finish**.  
The default port number that is used by the WebSphere Application Server instance is 9080.
5. Double-click the connection name that you created.
6. In the **User ID** box, enter admin.
7. In the **Password** box, enter admin.
8. Click **OK**.
9. Click **File > New > Administered Server Connection**.
10. In the **Name** box, enter a name for the repository server, and click **Next**. For example, enter SPSS.
11. In the **Server URL** box, enter the name or IP address of the Predictive Analytics node computer and the port number, and click **Finish**.  
The default port number that is used by the WebSphere Application Server instance is 9080.
12. Double-click the server connection name that you created.
13. In the **User ID** box, enter admin.
14. In the **Password** box, enter admin.
15. Click **OK**.

## Adding users and groups and server definitions to IBM SPSS Collaboration and Deployment Services

You use IBM SPSS Collaboration and Deployment Services Deployment Manager to manage users and groups. You must add an administrator user and a modeler user for IBM Predictive Customer Intelligence. You must also add a server definition.

### Procedure

1. In Deployment Manager, on the **Content Explorer** tab, expand **Resource Definition**.
2. Add an admin user.
  - a. Right-click **Credentials**, and click **New > Credentials Definition**.
  - b. In the **Name** box, enter admin, and click **Next**.
  - c. In the **User ID** box, enter admin.
  - d. In the **Password** box, enter a password. For example, enter spss.
  - e. In the **Security Provider** box, select **Local User Repository**.
  - f. Click **Finish**.
3. Add a modeler user.
  - a. Right-click **Credentials**, and click **New > Credentials Definition**.
  - b. In the **Name** box, enter modeler, and click **Next**.
  - c. In the **User ID** box, enter a local user on the Predictive Analytics node computer.
  - d. In the **Password** box, enter a password for that user.
  - e. In the **Security Provider** box, select **Local User Repository**.
  - f. Click **Finish**.

4. Add a localhost server definition.
  - a. Right-click **Servers**, and click **New > Server Definition**.
  - b. In the **Name** box, enter localhost.
  - c. In the **Type** box, select **Content Repository Server**.
  - d. Click **Next**.
  - e. In the **Server URL** box, enter the name or IP address of the Analytics node computer and the port number, and click **Finish**.

The default port number that is used by the WebSphere Application Server instance is 9080.
5. Add a modeler server definition.
  - a. Right-click **Servers**, and click **New > Server Definition**.
  - b. In the **Name** box, enter modeler, and click **Next**.
  - c. In the **Type** box, select **Modeler Server**, and click **Next**.
  - d. In the **Host** box, enter the name or IP address of the Analytics node computer.
  - e. In the **Port** box, enter 28053.

**Note:** If the connection is not successful, restart Modeler Server.
  - f. In the **Default data path** box, enter the path to the data folder on Analytics node computer. For example, enter C:\Program Files\IBM\SPSS\ModelerServer\16.
  - g. Click **Finish**.

---

## Installing IBM SPSS Modeler Client

You must install IBM SPSS Modeler Client to configure the Next Best Action Optimizer connectors for IBM Predictive Customer Intelligence.

### Procedure

1. Go to the *install\_location*\Client\Analytics\IBM SPSS Modeler Client directory.

By default, the *install\_location* is C:\IBM\PCI\.
2. Decompress the installation files.
3. Double-click setup.exe to start the IBM SPSS Modeler Client installation.
4. Follow the steps in the wizard to install the client component.

---

## Installation of the Integration Bus clients

For IBM Predictive Customer Intelligence, you must install MQ Explorer, Integration Toolkit, and Integration Explorer.

### Installing MQ Explorer

IBM Integration Explorer client application requires that MQ Explorer is installed on the same computer.

### Procedure

1. Go to the *install\_location*\Client\Integration Bus\IBM Integration Bus directory.

By default, the *install\_location* is C:\IBM\PCI\.

2. Decompress the installation file that is named  
IIB\_IBToolkit\_WS\_MQ\_WINDOWS\_X86-64.zip.
3. In the decompressed directory, go to the integrationbus\  
WebSphere\_MQ\_V7.5.0.1 directory, and double-click MQLaunch.exe.
4. Click **Software Requirements**, and ensure that you are using a supported  
operating system.
5. Click **Network Configuration**, and select **No** for **Configuring WebSphere MQ  
for Windows domain users**.
6. Click **WebSphere MQ Installation**, and click **Launch IBM Websphere MQ  
Installer**.
7. On the **Setup Type** page, select **Custom**, and click **Next**.
8. On the **Features** page, select only **MQ Explorer** to be installed.  
Ensure that all other features are set to **Do not install this feature**.
9. Click **Next**.
10. Click **Install**, and click **Finish**.

## Installing the Integration Bus client applications

Install the IBM Predictive Customer Intelligence Integration Bus client applications. The applications include IBM Integration Toolkit and IBM Integration Explorer.

### Before you begin

Ensure that MQ Explorer is already installed.

### Procedure

1. Go to the directory where you decompressed the Integration Bus client  
application installers.
2. In the decompressed directory, in the integrationbus directory, double-click  
mqsilaunchpad.exe.
3. Select the check boxes for **IBM Integration Toolkit**, and **IBM Integration  
Explorer**. Clear the check box for **IBM Integration Bus**.  
If it is not already installed, IBM Installation Manager is installed with IBM  
Integration Toolkit.
4. Click **Launch Installation for IBM Integration Bus**.  
IBM Installation Manager appears.
5. Follow the steps in IBM Installation Manager to install IBM Integration Toolkit.
6. When you are prompted to open a product, select **None**, and click **Finish**.  
The installer for IBM Integration Explorer appears.
7. Follow the steps in the wizard to install IBM Integration Explorer.

## Connecting to your WebSphere MQ broker

Connect to the queue manager you created on the IBM Predictive Customer Intelligence Integration Bus node computer.

### Procedure

1. From the **Start** menu, click **All Programs > IBM WebSphere MQ >  
WebSphere MQ Explorer**.  
The first time that you start WebSphere MQ Explorer, you are prompted for a  
workspace location.



2. In the **MQ Explorer - Navigator**, under **IBM WebSphere MQ**, right-click **Queue Managers**, and select **Add Remote Queue Manager**.
3. Enter the name of your queue manager, select **Connect directly**, and click **Next**. For example, enter `pciqmgr`.
4. In the **Connection details** section, enter the following information, and click **Next**.
  - a. In the **Host name or IP address** box, enter the information for your Integration Bus node computer.
  - b. In the **Port number** box, enter the listener port number. The default is 1414.
  - c. In the **Server-connection channel** box, enter `SYSTEM.BKR.CONFIG`
5. On the **Specify user identification details** page, select **Enable user identification**.
6. In the **Userid** box, enter `mqm`.
7. The first time that you add a user, you must enable password saving. Click **Passwords Preferences Page**, and then select **Save passwords to file** to enable the feature, and click **OK**.
8. Click **Enter password**.
9. Enter the user's password, and click **OK**.
10. Click **Finish**. The queue manager appears in the list, and the status appears as running.

---

## Installing Framework Manager for IBM Predictive Customer Intelligence

Install IBM Cognos Framework Manager to create or edit models and publish packages for IBM Cognos Business Intelligence.

### Procedure

1. Go to the `install_location\Client\Business Intelligence\IBM Cognos Framework Manager` directory.  
By default, the `install_location` is `C:\IBM\PCI\`.
2. Decompress `fm_10.2.1_win_m1.tar.gz`, and then decompress `fm_10.2.1_win_m1.tar`.
3. Go to the `win32` directory, and double-click the `issetup.exe` file.
4. Follow the steps in the wizard to install the product.
5. When notified with an information message about installing the Supplementary Languages Documentation, click **OK**.
6. On the last page of the installation wizard, select **Start IBM Cognos Configuration** to configure Cognos Framework Manager.
7. Click **Finish**.
8. In IBM Cognos Configuration, in the **Explorer** panel, select **Environment**.
9. In the **Gateway URI** value, change `localhost` to the name or IP address of the Business Intelligence (BI) node computer.
10. In the **Dispatcher URI for external applications** value, change `localhost` to the name or IP address of the Business Intelligence (BI) node computer.
11. In the **Dispatcher URI for external applications** value, change `9300` to `9080`. `9080` is the port number that is used by WebSphere Application Server for IBM Cognos Business Intelligence.
12. Click **File > Save**.



---

## Chapter 6. Installation of the artifacts

The artifacts include report content and workflows for IBM Predictive Customer Intelligence.

You must install the artifacts onto a computer that is running a Microsoft Windows operating system. Then, you must copy the artifacts to their respective node computers.

---

### Starting the Deployment Wizard to install the artifacts

Use the Launchpad to start the IBM Predictive Customer Intelligence artifacts Deployment Wizard.

You must run the Deployment Wizard on a computer that is running a Microsoft Windows operating system.

**Tip:** You might need to adjust your Windows User Access Control (UAC) settings so that you can run the installation program for the client components.

**Tip:** You can change the temporary location that the **Deployment Wizard** uses for the installation files. For more information, see “Changing the temporary location for installation files” on page 44.

#### Procedure

1. Go to the directory where you downloaded the artifacts installation files.
2. Decompress the installation files.
3. Go to the disk1 directory where you decompressed the files.
4. Double-click Launchpad.exe or Launchpad64.exe.
5. Click **Deploy Artifacts > Start the Predictive Customer Intelligence Artifact Deployment Wizard**.

**Important:** In some cases, after you accept the license agreement, the **Deployment Wizard** might appear behind other open windows. If you do not see the **Deployment Wizard**, check for the icon in the taskbar.

---

### Configuring parameters for the artifacts installation

You can select the installation location for the IBM Predictive Customer Intelligence artifacts.

#### Procedure

1. On the **Select Tasks** page, click **Next**.
2. On the **Configure Parameters** page, enter the location to install the artifacts on the computer from where you are running the installation.  
The default is C:\IBM\PCI. All of the artifacts are installed to the same location.
3. Click **Next**.

---

## Starting the installation of the artifacts

After you enter all of the required fields in the **Deployment Wizard**, you can start the installation of the artifacts.

### Procedure

On the **Summary Panel** of the **Deployment Wizard**, click **Deploy all**. If you choose to deploy the tasks individually, you must click **Deploy task** for each task in the order that the tasks appear on the **Summary** panel.

**Note:** The time to deploy the software is estimated by the **Deployment Wizard**. The actual time required depends on a variety of factors, such as network speed. In most cases, the deployments will take significantly less time than what is initially displayed by the **Deployment Wizard**.

---

## Configure IBM Predictive Customer Intelligence artifacts

To configure the Predictive Customer Intelligence artifacts, you must create a database, publish content to IBM Cognos Business Intelligence, and copy files to the Predictive Analytics node and to the computer running Enterprise Marketing Management.

### Creating the IBM Predictive Customer Intelligence database

You must run a script to create the Predictive Customer Intelligence database, and then run another to populate the database.

The scripts create and populate a database that is named PCI on your IBM DB2 database server. The scripts are available in the directory where you installed the artifacts.

### Procedure

1. Copy the artifacts from the computer where you installed them to the data node computer and decompress the artifact files. For example, decompress the artifacts to a directory on the data node computer that is named `/opt/ibm/PCI/Database`.
2. Log on to the data node computer as **root** user.
3. Open a terminal window, and go to the directory where you installed the artifacts. For example, go to the `/opt/ibm/PCI/Database` directory.
4. Type the following command to change the permissions for the files:  

```
chmod -R 755 *
```
5. Change to the database instance owner. For example, `su db2inst1`.
6. Run `sh ./Install_DB.sh` to create the database.
7. Run `sh ./Load_Data.sh` to populate the database.

### Configure the BI node artifacts

To configure the IBM Predictive Customer Intelligence artifacts for the Business Intelligence node, you must move some files to the IBM Cognos BI installation location, create a connection to the PCI database, and deploy IBM Cognos reports.

#### Moving content to the IBM Cognos BI installation location

After you install the IBM Predictive Customer Intelligence artifacts, you must move some files to the IBM Cognos Business Intelligence installation location.

## Procedure

1. Copy the artifacts from the computer where you installed them to the Business Intelligence node computer. For example, copy the artifacts to a directory named `/opt/ibm/PCI/Business Intelligence/`.
2. Log on to the BI node computer.
3. Go to the Exports directory where you installed the BI artifacts. For example, go to the `/opt/ibm/PCI/Business Intelligence/Exports` directory.
4. Copy the IBM PCI Cognos Content.zip file to the IBM Cognos BI `installation_location/deployment` directory.
5. Go to the Report Images directory where you installed the artifacts. For example, go to the `/opt/ibm/PCI/Business Intelligence/Report Images` directory.
6. Extract the Report Images.zip file to the IBM Cognos BI `installation_location/webcontent` directory.  
You should have an `installation_location/webcontent/ReportImages` directory that contains the image files.

**Important:** The ReportImages directory must not have a space in the name after you copy it to the IBM Cognos BI `installation_location\webcontent` directory.

## Creating a database connection to the PCI database

To connect to the PCI database on your Business Intelligence node computer, you must first catalog the database server, and then catalog the PCI database. Then, you must create a database connection in IBM Cognos Administration.

### Procedure

1. Log on to the BI node computer.
2. In a terminal window, change to the database instance owner. For example, `su db2inst1`.
3. 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.
4. Enter the following command to catalog the PCI database:  
`db2 catalog database PCI at node NODE_NAME authentication server`

## Creating a data source connection to the PCI database in IBM Cognos BI

You must create a data source connection to the PCI database in IBM Cognos BI, and then you must deploy the reports.

### 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. Create a data source connection to the PCI database.
  - a. Click the **Configuration** tab, and click **Data Source Connections**.
  - b. Click the **New Data Source** button.
  - c. In the **Name** box, type **PCI** and then click **Next**.

- d. In the connection page, select **IBM DB2**, ensure that **Configure JDBC connection** is selected, and click **Next**.  
The connection string page for the selected database appears.
- e. In the **DB2 database name** field, enter **PCI**.
- f. Leave **DB2 connect string** blank.
- g. Under **Signons**, select both **Password** and **Create a signon that the Everyone group can use**, type the user ID and password for the DB2 instance owner user that you used to create the database, and click **Next**.
- h. In the **Server name** box, enter the name or IP address of your data node computer.
- i. In the **Port number** box, enter the DB2 port number. The default is 50000.
- j. In **Database name**, enter **PCI**.

**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.

- k. Click **Close**, **Close**, and then **Finish**.
5. Deploy the IBM Cognos BI reports.
  - a. On the **Configuration** tab, click **Content Administration**.
  - b. On the toolbar, click the **New Import** button.
  - c. In the **Deployment Archive** pane, select **IBM PCI Cognos Content**, and click **Next**.
  - d. In the **Public Folders Content** pane, select **IBM Predictive Customer Intelligence**, leave the **Options** as default, and click **Next**.
  - e. In the **Specify the general options** pane, accept the defaults, and click **Next**.
  - f. On the **Review the summary** page, click **Next**.
  - g. On the **Select an action** page, select **Save and run once**, and click **Finish**.
  - h. On the **Run with options** page, accept the defaults, and click **Run**, and then click **OK**.
  - i. Click the **Home** button in IBM Cognos Administration.  
The Predictive Customer Intelligence reports are available from the home page.

## Configuring the Next Best Action Optimizer connectors

Use the Next Best Action Optimizer (NBAOPT) connectors with IBM SPSS Modeler for IBM Predictive Customer Intelligence. With the NBAOPT connectors installed, you can run NBAOPT Studio from IBM SPSS Modeler.

You must copy the NBAOPT connectors to the location where IBM SPSS Modeler Client is installed.

For more information about using the NBAOPT connectors, see the *IBM Predictive Customer Intelligence Solution Guide*.

### Procedure

Copy the `pci.NBAOPT` directory where you installed the NBAOPT artifacts to the `ext\lib` directory where IBM SPSS Modeler Client is installed. For example, copy the `pci.NBAOPT` directory to the `C:\Program Files\IBM\SPSS\Modeler\16\ext\lib` directory.

After you copy the folder, you should have the following path:  
`C:\Program Files\IBM\SPSS\Modeler\16\ext\lib\pci.NBAOPT`

## Configuring the Enterprise Marketing Management connectors

If you are using IBM Enterprise Marketing Management (EMM), IBM Predictive Customer Intelligence provides two connectors between IBM Interact and IBM SPSS Collaboration and Deployment Scoring Service. The connectors override the score that is supplied by the IBM EMM campaign and also extend IBM Interact's learning module to monitor visitor actions and propose optimal offers.

To configure the connectors, you must copy them to the EMM installation location.

Do not configure the connectors if you are not using IBM Enterprise Marketing Management.

**Important:** The EMM connectors can be used only with IBM Enterprise Marketing Management version 9.0 or 9.1.

### Procedure

Copy the artifacts from the EMMConnectors directory where you installed the EMM artifacts to the Connectors directory where EMM is installed. For example, copy the files to the `/opt/IBM/EMM/Interact/Connectors` directory.





---

## Chapter 7. Copying the license files to each component computer

After you install IBM Predictive Customer Intelligence, you must ensure that a `swidtag` file and `license` directory exists on each computer on which you installed a Predictive Customer Intelligence component.

The `swidtag` file and `license` directory must exist on each server node computer and each computer on which you install a client that is used with Predictive Customer Intelligence.

**Important:** Do not rename the directories or files.

### Procedure

1. Copy the `swidtag` file from the `iso-swid` directory where you installed the artifacts to each computer where you installed a Predictive Customer Intelligence component.

For example, copy the file so that you have an `/opt/IBM/PCI/iso-swid` directory that contains a `swidtag` file.

If a `iso-swid` directory exists on the computer, do not overwrite the directory. Add the `swidtag` file to the existing directory.

2. Copy the `license` directory from the directory where you installed the artifacts to each component computer.

For example, copy the directory and contents so that you have an `/opt/IBM/PCI/license` directory that contains the license files.

If the `license` directory exists on the computer, you do not need to replace it.

### Results

The following folders must exist on each computer on which you installed a Predictive Customer Intelligence component:

- On server computers:
  - `/opt/IBM/PCI/license` (containing the product license files)
  - `/opt/IBM/PCI/iso-swid` (containing the product `swidtag` file)
- On client computers:
  - `C:\IBM\PCI\license` (containing the product license files)
  - `C:\IBM\PCI\iso-swid` (containing the product `swidtag` file)



---

## Chapter 8. Stop and start solution software services

IBM Predictive Customer Intelligence is an integrated solution that includes many products. If you must stop the services, you must do so in the correct order. The product services must also be started in the correct order.

---

### Stop solution services

Stop the IBM Predictive Customer Intelligence node services in the following order:

1. Business Intelligence (BI) node
2. Integration Bus node
3. Predictive Analytics node
4. data node

### Stopping services on the BI node computer

You must stop the IBM Cognos Business Intelligence services and IBM HTTP Server on the IBM Predictive Customer Intelligence Business Intelligence (BI) node computer.

You stop the IBM Cognos BI services by stopping the WebSphere Application Server profile where IBM Cognos BI is running.

#### Procedure

1. Log in to the BI node computer as **root**.
2. Go to the WebSphere Application Server profile directory when IBM Cognos BI is running. For example, go to `/opt/IBM/WebSphere/AppServer/profiles/COGNOSProfile/bin`.
3. Enter the following command:  
`./stopServer.sh server1`
4. Go to the IBM HTTP Server bin directory. For example, go to `/opt/IBM/HTTPServer/bin`.
5. Enter the following command:  
`./apachectl -f ./conf/httpd.conf -k stop`

### Stopping services on the Integration Bus node computer

You must stop the IBM Integration Bus services on the IBM Predictive Customer Intelligence Integration Bus node computer.

#### Procedure

1. Log in to the Integration Bus node computer as **root**.
2. Change to the **mqm** user. For example, enter the following command:  
`su -mqm`
3. Go to the IBM Integration Bus bin directory. For example, go to `/opt/ibm/mqsi/9.0.0/bin`.
4. Enter the following command:  
`./mqsistop pcibroker -i`

5. Enter the following command to verify that the services are stopped:  
`./mqsilist pcibroker -e pcigroup`

## Stopping services on the Analytics node computer

You must stop the IBM SPSS services on the IBM Predictive Customer Intelligence Predictive Analytics node computer.

### Procedure

1. Log in to the Analytics node computer as **root**.
2. Go to the WebSphere Application Server SPSSProfile/bin directory. For example, go to `/opt/IBM/WebSphere/AppServer/profiles/SPSSProfile/bin`.
3. Enter the following command:  
`./stopServer.sh server1`
4. Go to the IBM SPSS Modeler Server directory. For example, go to `/usr/IBM/SPSS/ModelerServer/16.0`.
5. Enter the following command:  
`./modelersvr.sh stop`
6. To verify whether any services are still running enter the following command:  
`ps -ef | grep statisticsd`
7. To stop any services that are still running enter the following command:  
`kill -9 'cat statisticsd.pid'`

## Stopping services on the data node computer

You must stop the IBM DB2 instance on the IBM Predictive Customer Intelligence data node computer.

### Procedure

1. Log in to the data node computer as **root**.
2. In a terminal window, type the following command to change the DB2 instance owner:  
`su - db2inst1`
3. Enter the following command to stop the DB2 administration server:  
`db2stop`

---

## Start solution services

Start the IBM Predictive Customer Intelligence node services in the following order:

1. data node
2. Predictive Analytics node
3. Integration Bus node
4. Business Intelligence (BI) node

## Starting services on the data node computer

You must start the IBM DB2 instance on the IBM Predictive Customer Intelligence data node computer.

### Procedure

1. Log in to the data node computer as **root**.

2. In a terminal window, type the following command to change the DB2 instance owner:  
`su - db2inst1`
3. Enter the following command to stop the DB2 administration server:  
`db2start`

## Starting services on the Analytics node computer

You must start the IBM SPSS services on the IBM Predictive Customer Intelligence Predictive Analytics node computer.

### Procedure

1. Log in to the Analytics node computer as **root**.
2. Go to the WebSphere Application Server SPSSProfile/bin directory. For example, go to `/opt/IBM/WebSphere/AppServer/profiles/SPSSProfile/bin`.
3. Enter the following command:  
`./startServer.sh server1`
4. Go to the IBM SPSS Modeler Server directory. For example, go to `/usr/IBM/SPSS/ModelerServer/16.0`.
5. Enter the following command:  
`./modelersrv.sh start`

## Starting services on the Integration Bus node computer

You must start the IBM Integration Bus services on the IBM Predictive Customer Intelligence Integration Bus node computer.

### Procedure

1. Log in to the Integration Bus node computer as **root**.
2. Change to the **mqm** user. For example, enter the following command:  
`su -mqm`
3. Go to the IBM Integration Bus bin directory. For example, go to `/opt/ibm/mqsi/9.0.0.1/bin`.
4. Enter the following command:  
`./mqsistart pcibroker -i`
5. Enter the following command to verify that the services are started:  
`./mqsilist pcibroker -e pcigroup`

## Starting services on the BI node computer

You must start the IBM Cognos Business Intelligence services and IBM HTTP Server on the IBM Predictive Customer Intelligence Business Intelligence (BI) node computer.

You start the IBM Cognos BI services by starting the WebSphere Application Server profile where IBM Cognos BI is running.

### Procedure

1. Log in to the BI node computer as **root**.
2. Go to the WebSphere Application Server profile directory when IBM Cognos BI is running. For example, go to `/opt/IBM/WebSphere/AppServer/profiles/COGNOSProfile/bin`.

3. Enter the following command:  
`./startServer.sh server1`
4. Go to the IBM HTTP Server bin directory. For example, go to `/opt/IBM/HTTPServer/bin`.
5. Enter the following command:  
`./apachectl -f ./conf/httpd.conf -k start`

---

## Chapter 9. Switch software tags for your installation

If you change your usage of IBM Predictive Customer Intelligence, such as to a non-production environment from a production environment, you must switch the software tags for your installation.

---

### Starting the ILMT Utility to change software tags

Use the artifacts Launchpad to start the IBM Licence Metric Tool (ILMT) Utility to change IBM Predictive Customer Intelligence software tags.

#### Procedure

1. Go to the directory where you downloaded the artifacts installation files.
2. Decompress the installation files.
3. Go to the disk1 directory where you decompressed the files.
4. Double-click `Launchpad.exe` or `Launchpad64.exe`.
5. Click **Switch Software Tags > Start the IBM Predictive Customer Intelligence ILMT Utility**.

**Important:** If a message directs you to verify that the application was installed correctly or to reinstall it, you can safely ignore this message. The utility will function correctly.

---

### Switching software tags

Switch your IBM Predictive Customer Intelligence software tags if your usage changes. For example, if you installed the solution initially as a non-production environment but want to move it to a production environment, you must switch the software tags.

#### Procedure

1. On the **Select Tasks** page of the **Deployment Wizard**, select the option to switch your tags:
  - Select **Switch from Production to Non-Production** if you initially installed Predictive Customer Intelligence to a production environment.
  - Select **Switch from Non-Production to Production** if you initially installed Predictive Customer Intelligence to a non-production environment.
2. Click **Next**.
3. On the **Configuration Parameters** page, enter the location to where you want to deploy the updated software tags, and click **Next**.
4. Click **Deploy all**.

After the software tag file is deployed, you must copy it to each computer on which a Predictive Customer Intelligence node or client is installed.

---

### Updating your software tag file

After you use the ILMT utility to change your IBM Predictive Customer Intelligence software tag, you must copy the updated file to each computer on which a component is installed. You must replace the existing file with the updated file.

Copy the software tag file to each computer on which a Predictive Customer Intelligence server or client component is installed.

### Procedure

1. Copy the iso-swid directory and contents from the directory where you updated the license files to each computer on which you install a Predictive Customer Intelligence component.

For example, copy the directory and contents so that you replace the /opt/IBM/PCI/iso-swid directory. The iso-swid directory should contain a swidtag file.

2. Delete the existing swidtag file.

You should have only one swidtag file in the directory for the IBM Predictive Customer Intelligence components.

If you deployed the samples, you should also have a swidtag file for the samples in the directory.

**Note:** If you run the ILMT Utility on a computer where you installed a Predictive Customer Intelligence component, and you use the same directory, the .swidtag is overwritten with the updated file. You must, however, still copy the new .swidtag file to all of the other computers that have a Predictive Customer Intelligence component installed.



---

## Chapter 10. Uninstallation of the server components

Follow the uninstall instructions for each of the IBM Predictive Customer Intelligence components to uninstall the product.

---

### Uninstalling components from the Predictive Analytics node computer

Follow the uninstall instructions for each component on the IBM Predictive Customer Intelligence Analytics node computer.

#### Procedure

1. To uninstall the IBM DB2 client, see the IBM DB2 documentation ([www.ibm.com/support/knowledgecenter/SSEPGG\\_10.1.0](http://www.ibm.com/support/knowledgecenter/SSEPGG_10.1.0)).
2. To uninstall IBM SPSS Collaboration and Deployment Services, see the IBM SPSS documentation ([www.ibm.com/support/knowledgecenter/SS69YH\\_6.0.0](http://www.ibm.com/support/knowledgecenter/SS69YH_6.0.0)).
  - a. Go to the `/opt/ibm/InstallationManager/eclipse` directory, and run IBMIM.
  - b. Click **Uninstall**, and follow the steps to uninstall the product.
3. To uninstall WebSphere Application Server, see the WebSphere documentation ([www.ibm.com/support/knowledgecenter/SSEQTP\\_8.5.5](http://www.ibm.com/support/knowledgecenter/SSEQTP_8.5.5)).
  - a. Go to the `/opt/ibm/InstallationManager/eclipse` directory, and run IBMIM.
  - b. Click **Uninstall**, and follow the steps to uninstall the product.

**Note:** If WebSphere Application Server processes are running and prevent you from uninstalling the product, you must stop the server process. Go to the `/opt/ibm/WebSphere/AppServer/profiles/profile_name/bin` directory, and type `./stopServer.sh server1`.

4. To uninstall IBM Installation Manager, see the IBM Installation Manager information center ([pic.dhe.ibm.com/infocenter/install/v1r6](http://pic.dhe.ibm.com/infocenter/install/v1r6)).
  - a. Go to the `/var/ibm/InstallationManager/uninstall` directory, and run `uninstall`.
  - b. Follow the steps to uninstall IBM Installation Manager.
5. Remove the `licence` and `iso-swid` directories. For example, if you used the default path, `/opt/IBM/PCI`, remove the `/opt/IBM/PCI/licence` and `/opt/IBM/PCI/iso-swid` directories.

---

### Uninstalling components from the BI node computer

Follow the uninstall instructions for each component on the IBM Predictive Customer Intelligence Business Intelligence (BI) node computer.

#### Procedure

1. To uninstall the IBM DB2 client, see the IBM DB2 documentation ([www.ibm.com/support/knowledgecenter/SSEPGG\\_10.1.0](http://www.ibm.com/support/knowledgecenter/SSEPGG_10.1.0)).
2. To uninstall IBM Cognos Business Intelligence, see the IBM Cognos BI documentation ([www.ibm.com/support/knowledgecenter/SSEP7J\\_10.2.1](http://www.ibm.com/support/knowledgecenter/SSEP7J_10.2.1)).
  - a. Go to the `/opt/ibm/cognos/c10_64/uninstall` directory.
  - b. Type `./uninst -u`, and press Enter.
  - c. From the **Start** menu, click **All Programs > IBM Cognos 10 - 64 > Uninstall IBM Cognos > Uninstall IBM Cognos**.

- d. Follow the steps to uninstall the product.
3. To uninstall IBM HTTP Server, see the IBM HTTP Server for WebSphere Application Server documentation ([www.ibm.com/support/knowledgecenter/SSEQTJ\\_8.5.5](http://www.ibm.com/support/knowledgecenter/SSEQTJ_8.5.5)).
  - a. Go to the `/opt/ibm/InstallationManager/eclipse` directory, and run IBMIM.
  - b. Click **Uninstall**, and follow the steps to uninstall the product.
4. To uninstall WebSphere Application Server, see the WebSphere documentation ([www.ibm.com/support/knowledgecenter/SSEQTP\\_8.5.5](http://www.ibm.com/support/knowledgecenter/SSEQTP_8.5.5)).
  - a. Go to the `/opt/ibm/InstallationManager/eclipse` directory, and run IBMIM.
  - b. Click **Uninstall**, and follow the steps to uninstall the product.

**Note:** If WebSphere Application Server processes are running and prevent you from uninstalling the product, you must stop the server process. Go to the `/opt/ibm/WebSphere/AppServer/profiles/profile_name/bin` directory, and type `./stopServer.sh server1`.

5. To uninstall IBM Installation Manager, see the IBM Installation Manager information center ([pic.dhe.ibm.com/infocenter/install/v1r6](http://pic.dhe.ibm.com/infocenter/install/v1r6)).
  - a. Go to the `/var/ibm/InstallationManager/uninstall` directory, and run `uninstall`.
  - b. Follow the steps to uninstall IBM Installation Manager.
6. Remove the `licence` and `iso-swid` directories. For example, if you used the default path, `/opt/IBM/PCI`, remove the `/opt/IBM/PCI/licence` and `/opt/IBM/PCI/iso-swid` directories.

---

## Uninstalling components from the Integration Bus node computer

Follow the uninstall instructions for each component on the IBM Predictive Customer Intelligence Integration Bus node computer.

### Procedure

1. To uninstall the IBM DB2 client, see the IBM DB2 documentation ([www.ibm.com/support/knowledgecenter/SSEPGG\\_10.1.0](http://www.ibm.com/support/knowledgecenter/SSEPGG_10.1.0)).
2. To uninstall IBM Integration Bus, see the IBM Integration Bus documentation ([www.ibm.com/support/knowledgecenter/SSMKHH\\_9.0.0](http://www.ibm.com/support/knowledgecenter/SSMKHH_9.0.0)).
3. To uninstall WebSphere MQ, see the WebSphere MQ documentation ([www.ibm.com/support/knowledgecenter/SSFKSJ\\_7.5.0](http://www.ibm.com/support/knowledgecenter/SSFKSJ_7.5.0)).
4. Remove the `licence` and `iso-swid` directories. For example, if you used the default path, `/opt/IBM/PCI`, remove the `/opt/IBM/PCI/licence` and `/opt/IBM/PCI/iso-swid` directories.

---

## Uninstalling components from the data node computer

Follow the uninstall instructions for each component on the IBM Predictive Customer Intelligence data node computer.

### Procedure

1. To uninstall IBM DB2, see the IBM DB2 documentation ([www.ibm.com/support/knowledgecenter/SSEPGG\\_10.1.0](http://www.ibm.com/support/knowledgecenter/SSEPGG_10.1.0)).
2. Remove the `licence` and `iso-swid` directories. For example, if you used the default path, `/opt/IBM/PCI`, remove the `/opt/IBM/PCI/licence` and `/opt/IBM/PCI/iso-swid` directories.

---

## Appendix A. Troubleshooting

This section contains troubleshooting information for the IBM Predictive Customer Intelligence 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 15. 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.

---

## Launchpad does not launch

If the IBM Predictive Customer Intelligence Launchpad does not launch, ensure that you have completed all of the prerequisite tasks and installed all of the required rpm packages.

---

## Launchpad does not start

You must have a Firefox web browser that is installed and set as your default web browser on the computer from where you run the IBM Predictive Customer Intelligence installation. Firefox must be version 17 as a minimum and version 20 at the latest.

If you have another browser that is set as your default and want to keep your existing default browser, you can temporarily use a supported browser for the installation.

### Procedure

1. On the computer from where you run the installation, download a supported web browser. For example, download Firefox version 20.
2. Decompress the downloaded file if necessary.
3. In a terminal window, type the following command:  
`export BROWSER=/path_to_supported_browser`
4. Then, start the Launchpad by typing the following command:  
`./launchpad.sh`

The Launchpad should appear in the supported browser.

---

## Deployment Wizard does not save configurations

If you save your configurations in Deployment Wizard, use **Save As** instead of **Save**.

If you click **File > Save**, any values that you entered are not saved when you reopen the Deployment Wizard.

You can resolve this issue by clicking **File > Save As** to save your configuration. Ensure that you enter a new name for the saved configuration.

When you open the Deployment Wizard, and open your saved configuration, the settings you entered appear.

---

## Test Connections validation errors

If you click the **Test Connections** button in the IBM Predictive Customer Intelligence installer and you receive an error, use the following tips to verify communication between the **Deployment Wizard** and the target computer.

- Ensure that you entered a valid host name or IP address.
- Ensure that you can ping the target computer from the computer where you are running the installation.
- Ensure that your firewall is disabled or that the ports required for the Deployment Wizard are open on all computers.
- Ensure that all of your node computers have valid entries in the `/etc/hosts` file on each node. You must include each node computer in the `/etc/hosts` files.

For example, ensure that your hosts file contains values such as the following values:

```
127.0.0.1 localhost.localdomain localhost
###.###.### node_server1.domain.com node_server1
###.###.### node_server2.domain.com node_server2
###.###.### node_server3.domain.com node_server3
###.###.### node_server4.domain.com node_server4
```

- Ensure that you have correct entries in the `/etc/resolv.conf` file.

---

## Timeout errors during installation

If you encounter timeout errors during the installation, you can continue the installation by running each deployment task individually.

Depending on your computer's network speed, you might encounter timeouts as processes can take some time to complete. If timeout errors do occur, in the **Deployment Wizard**, click **Back** to return to the list of deployment tasks, and run each of the remaining tasks individually.

**Important:** Do not rerun the task where the timeout occurred. The task is complete, and running it again causes other errors.

---

## Viewing log files

Log files for the IBM Predictive Customer Intelligence installation can be displayed in the **Deployment Wizard**.

If you want to view log files directly, the log files are saved to the `/tmp/SL_####/SolutionEnabler` directory.

### Procedure

1. To view log files in the **Deployment Wizard**, select the message, and click **Detailed messages** or **Master log**.
2. If you clicked **Detailed messages**, select a message, and click **View Details**.

---

## Temporary file locations

Temporary files are created during the IBM Predictive Customer Intelligence installation. You can find the location for the temporary files from the **Deployment Wizard**.

The temporary files include jar files that are used during the installation, which you might want to delete after you complete the installation.

### **Procedure**

In the **Deployment Wizard**, click **Edit > Preferences**.

The path to the location for the temporary files is shown in the **Path** box.

---

## **Modeler Server type not displaying in resource definitions**

In IBM Predictive Customer Intelligence, if the **Modeler Server** type does not display in resource definitions in IBM SPSS Collaboration and Deployment Services Deployment Manager, try closing Deployment Manager and opening it again.

---

## **Error installing IBM Cognos BI**

The IBM Cognos Business Intelligence installer requires a specific library file in order to run.

If you encounter this error installing IBM Predictive Customer Intelligence, see the IBM support page (<http://www.ibm.com/support/docview.wss?uid=swg21612290>) for information on how to correct the error.





---

## Appendix B. Integration with the IBM Enterprise Marketing Management suite

IBM Predictive Customer Intelligence integrates with the IBM Enterprise Marketing Management suite. The components that Predictive Customer Intelligence integrates with are IBM Campaign, IBM Interact and IBM Marketing Platform.

### **IBM Campaign**

IBM Campaign is a web-based Enterprise Marketing Management (EMM) solution that enables users to design, run, and analyze direct marketing campaigns.

### **IBM Interact**

With IBM Interact, users can retrieve personalized offers and customer profile information in real-time.

### **IBM Marketing Platform**

The IBM Marketing Platform provides security, configuration, and dashboard features for IBM Enterprise Marketing Management products.

---

## IBM Interact connectors

IBM Interact integrates with customer facing systems (touchpoints) such as web sites and call centers, and enables users to retrieve personalized offers and visitor profile information in real time.

IBM Predictive Customer Intelligence provides two connectors between IBM Interact and IBM SPSS Collaboration and Deployment Scoring Service:

- The External callout connector calls an SPSS model at runtime, and is contained within the expression of an advanced rule for a Marketer Score, overriding the score supplied by the IBM Enterprise Marketing Management campaign.
- The External learning connector extends IBM Interact's native learning module to monitor visitor actions and propose optimal offers. It prioritizes IBM Campaign offers based on an SPSS model's prediction of their final score. The connector passes specific configurable parameters as input to the SPSS Scoring Service.

---

## The External Learning connector

The External Learning connector is used to override the marketer's score in IBM Interact with a customized score from IBM SPSS Collaboration and Deployment Services. The customized score is used to prioritize the offers for customers. When the customer facing touchpoint puts in an offer request to IBM Interact, it triggers the external learning connector. A touchpoint can be a call center web application, a mobile application, a batch command, and so on.

The following process is initiated:

1. The connector Java class calls the IBM SPSS Collaboration and Deployment Services scoring service that is based on the configuration setting of the current channel.
2. If, in the configuration file, the current channel is set to be monitored, the corresponding channel in the IBM SPSS Scoring Service is configured to update the channel offers' score number.

3. The External Learning connector uses IBM Interact runtime session profile data as SPSS Scoring Service input parameters.
4. The connector gets the scores from the SPSS scoring service and overwrites the Interact offers scores with the SPSS scores.
5. After the Interact offer's score is updated by the SPSS score, the offer list is sorted by the new final scoring number in descending order. The offer list is returned as the final offer list.

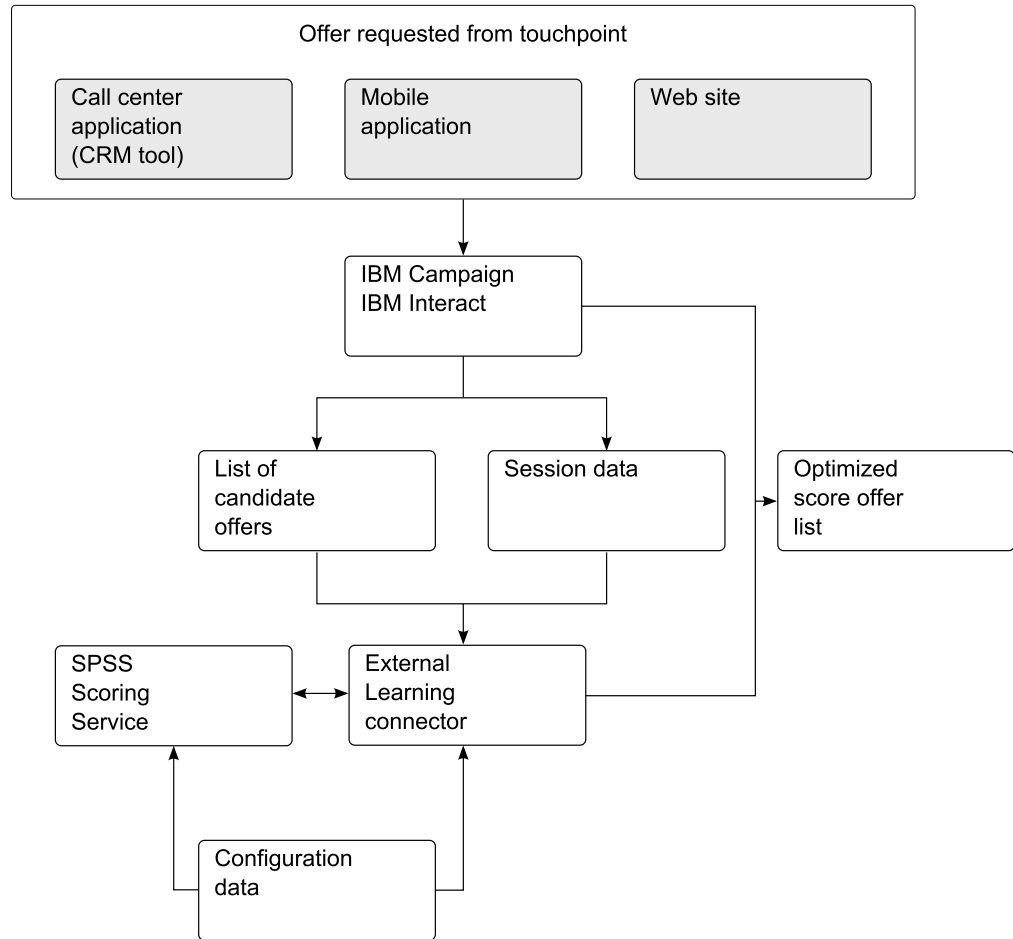


Figure 3. How the external learning connector works

## Configuring the External Learning connector configuration file

An interactive channel is a touchpoint with your customer, such as a call center or a website. It is the communication channel with your customers. By using the IBM Interact API, you integrate IBM Interact with your touchpoints to present offers to customers based on their action in the touchpoint.

### Procedure

1. Stop the IBM Enterprise Marketing Management (EMM) runtime server.
2. Create the following file structure on your IBM EMM server:

For Windows operating systems:

- `<EMM Interact Installation Folder>\connectors`
- `<EMM Interact Installation Folder>\logs`

By default, the installation folder is \IBM\EMM\Interact

For Linux operating systems:

- <EMM Interact Installation Folder>/connectors/
- <EMM Interact Installation Folder>/logs

By default, the installation folder is /opt/IBM/EMM/Interact

3. Copy the LearningConnector\_config.properties file and UnicaSPSSLearningConnector.jar to the Connectors folder.
4. Edit the LearningConnector\_config.properties file for your environment. For more information, see “Sample External Learning connector configuration file.”
5. In the runtime environment for the IBM Marketing Platform tool, select **Settings, Configuration**, and expand **IBM EMM, Interact**, and **offerserving**.
6. Set **optimizationType** to ExternalLearning.
7. Configure the External Learning class:
  - a. Under **offerserving**, select **External Learning Config**.
  - b. Set **class** to the Java class name. For example:  
<com.ibm.unica.connector.>SPSSLearning
  - c. Set **classPath** to the Java JAR file location. For example, for Windows:  
<Interact\_Install\_location>\UnicaSPSSLearningConnector.jar, and for Linux: <Interact\_Install\_location>/UnicaSPSSLearningConnector.jar
8. Restart the IBM EMM runtime server for these changes to take effect.

## Sample External Learning connector configuration file

The following example is a sample External Learning connector configuration file. Modify this sample for your environment.

```
CADS_ADDRESS=<Collaboration_deployment_services_server_address>
CADS_PORT=9080
CADS_USER=admin
CADS_PASSWORD=spss
UNICA_INTERACTJSSERVICE_URL=http://<IBM_EMM_URL>:9080/
interact/servlet/InteractJSService
LEARNING_CHANNELS=Mobile,Mob;Telco,Telco Call Center;Insurance,Insurance

SERVICENAME_Telco=ExternalLearning
INPUTTABLE_Telco=db2admin@TELCO
PARAMETERS_Telco=CUSTOMERID,double,CUSTOMERID;CHURN_SCORE,double,CHURN_SCORE;
CUSTOMER_LIFE_TIME_VALUE_RATIO,double,CUSTOMER_LIFE_TIME_VALUE_RATIO;
SENTIMENT_SCORE,double,SENTIMENT_SCORE;NUMBER_OF_CLOSED_COMPLAINTS,integer,
NUMBER_OF_CLOSED_COMPLAINTS;NUMBER_OF_OPEN_COMPLAINTS,integer,
NUMBER_OF_OPEN_COMPLAINTS;GROUP_LEADER_TYPE2,double,GROUP_LEADER_TYPE2;
GROUP_LEADER_CONFIDENCE_TYPE2,DOUBLE,GROUP_LEADER_CONFIDENCE_TYPE2;
INFLUENCER_SCORE,double,INFLUENCER_SCORE;SEGMENT,string,SEGMENT;
RESPONSE,integer,#VALUE#null;OFFER_CATEGORY_NAME,string,#VALUE#null
OUTPUTNAME_Telco=FinalScore
INPUT_OFFERNAMECOL_Telco=OFFER

SERVICENAME_Insurance=INSU_CHURN
INPUTTABLE_Insurance=INSURNC.INSURANCE_VIEW
PARAMETERS_Insurance=POLICYHOLDER_ID,integer,#VALUE#1016091;GENDER,string,#VALUE#F;
EMPLOYMENT_STATUS,string,#VALUE#employed;INCOME,double,#VALUE#144541;
HOUSEHOLD_NUMBER_OF_CHILDREN,integer,#VALUE#2;HOUSEHOLD_NUMBER_OF_INSURED_CARS,integer,
#VALUE#0;NUMBER_OF_POLICIES_IN_HOUSEHOLD,integer,#VALUE#1;HOUSEHOLD_TENURE,double,
#VALUE#5.15;INSURANCE_LINES,integer,#VALUE#1;LATEST_NOTE_ATTITUDE,double,#VALUE#3;
AVERAGE_NOTE_ATTITUDE,double,#VALUE#2;NUMBER_OF_CLAIMS_FILED,double,#VALUE#2;
CUSTOMER_FINANCIAL_SEGMENT,string,#VALUE#Financially Sophisticated;
OUTPUTNAME_Insurance=CHURN_SCORE
INPUT_OFFERNAMECOL_Insurance=#NONE#
```

```
SERVICENAME_Mobile=SequenceAnalysis
INPUTTABLE_Mobile=NBA.CUSTOMER_RELATIONSHIP_HISTORY
PARAMETERS_Mobile=CUSTOMERID,integer,CUSTOMERID;SEQUENCE,integer,#VALUE#1;
PRODUCT,string,LASTOFFER;
OUTPUTNAME_Mobile=RECOMMENDATION
INPUT_OFFERNAMECOL_Mobile=#NONE#
```

For information on how to modify this file, see “Add a new learning channel,” and “Add an IBM SPSS Scoring Service to an offer (External Learning connector).” Also, see *IBM Interact Administrator’s Guide*.

## Add a new learning channel

To add a new learning channel, add the learning name and channel name to the **LEARNING\_CHANNELS** parameter.

For example:

```
LEARNING_CHANNELS=Mobile,Mob;Telco,Telco Call Center;Insurance,Insurance
```

Where:

- The first value is the learning channel name (Telco), the second value is the channel name (Telco Call Center).
- Values are separated by commas and parameters are separated by semi-colons.

## Add an IBM SPSS Scoring Service to an offer (External Learning connector)

To add an IBM SPSS Scoring Service, add the following parameters to the LearningConnector\_config.properties file.

- **SERVICENAME\_%THE LEARNING NAME%**
- **INPUTTABLE\_%THE LEARNING NAME%**
- **PARAMETERS\_%THE LEARNING NAME%**
- **OUTPUTNAME\_%THE LEARNING NAME%**
- **INPUT\_OFFERNAMECOL\_%THE LEARNING NAME%**

The parameter name has three elements that are separated by commas:

- The input parameter name.
- The data type and the source column name (profile table column name).
- The direct value that uses #VALUE# to identify it. You can also use the channel profile table column value as SPSS input parameter values.

You can set the input parameter to null, by using #VALUE# of null, for example:

```
RESPONSE,integer,#VALUE#null;OFFER_CATEGORY_NAME,string,#VALUE#null
```

Parameters are separated by semicolons.

The value for **OUTPUTNAME\_%THE LEARNING NAME%** can be "DEFAULT". You do not need to provide the name of the output column name; the first output parameter is taken as the output score results.

For example, you can set the output columns with either method that is shown, and you get the same result:

- OUTPUTNAME\_Mobile=RECOMMENDATION

- OUTPUTNAME\_Mobile=DEFAULT

The value of **INPUT\_OFFERNAMECOL\_%THE LEARNING NAME%** can be an input parameter column name or "#NONE#". When the value is set to a specific input parameter column name, the External Learning connector passes the IBM Interact channel offer name to the corresponding column for the SPSS scoring service as an input parameter to get the specific offer name score to update the corresponding offer for Interact channel final score. When the input offer name column is set to "#NONE#", only the first IBM Interact channel offer final score is updated with the IBM SPSS Scoring Service score.

For example, when three offers are requested from a touchpoint, IBM Interact returns three offers, shown in the following table.

*Table 16. Example showing the scores returned from IBM Interact and from the IBM SPSS Scoring Service*

| Offer name             | IBM Interact final score | IBM SPSS score |
|------------------------|--------------------------|----------------|
| Premium phone          | 90                       | 85             |
| Premium family plan    | 80                       | 88             |
| Add a second line free | 70                       | 65             |

The External Learning connector passes all of the configured parameters and the offer name to the SPSS Scoring Service. It returns three new scores: 85, 88 and 65 from IBM SPSS for these three offers.

The IBM SPSS score is used as the final score and is sorted in descending order, shown in the following table.

*Table 17. Example showing the final score and sort order*

| Offer name             | IBM Interact final score |
|------------------------|--------------------------|
| Premium family plan    | 88                       |
| Premium phone          | 85                       |
| Add a second line free | 65                       |

---

## The External Callout connector

By using the External Callout connector, you can override a single offer's score by calling an IBM SPSS Scoring Service. Also, using the External Callout connector, you can invoke the IBM SPSS score to present eligible offers.

To enable the External Callout connector, perform the following steps:

1. Register the External Callout connector in the IBM Enterprise Marketing Management (EMM) configuration.
2. Add the IBM SPSS Scoring Service information to the External Callout connector's configuration file.

## Configuring the External Callout connector

IBM Interact helps customers get offers based on user characteristics and history. The offers are generated by algorithms. You can configure IBM Interact to override the offer's score by calling an SPSS Model.

## Procedure

1. Stop the IBM Enterprise Marketing Management (EMM) runtime server.
2. Create the following file structure on your IBM EMM server:
  - *<EMM Interact Installation Folder>/connectors/*
  - *<EMM Interact Installation Folder>/logs*By default, the installation folder is */opt/IBM/EMM/Interact*
3. Copy the ExternalConnector\_config.properties file and UnicaSPSSExternalConnector.jar to the Connectors folder.
4. Edit the ExternalConnector\_config.properties file for your environment. For more information, see "Sample External Callout connector configuration file" on page 79.
5. In the runtime environment for the IBM Marketing Platform, select **Settings, Configuration**, and expand **IBM EMM, Interact, Flowchart**, and **External Callouts**.
6. To set the configuration properties, click **External Callout** and configure the parameters as follows:

### Category name

GetSPSSscore

**class** com.ibm.unica.connector.GetSPSSScore

### classpath

- *<EMM Interact Installation Folder>/connectors/UnicaSPSSExternalConnector.jar*

By default, the installation folder is */opt/IBM/EMM/Interact*

Save the changes.

7. Select the campaign settings, by clicking **Campaign, Campaigns**.
8. Select the link for the campaign that you are configuring, such as Insurance.
9. Click the *<Campaign name>* **Strategy** tab, for example, **Insurance Strategy**.
10. For each **Eligible Segment**, such as Insurance High Risk Customer, Insurance High Value Customer, click **Adv Opt**.
11. In the **Advanced Options** window, select **Use the following expression as the marketing score**.
12. In the Expression box, type an expression to be used for the marketing score. You can either use modified versions of the examples shown, or from the **Functions, Variables and Operators** list, select **Extension Functions, EXTERNALCALLOUT** and click **Use**. For more information, see "About the ExternalCallout API" topic in the *IBM Interact 9.1 Administrator's Guide*.

Example expression for an Insurance campaign:

```
NUMBER(EXTERNALCALLOUT('GetSPSSscore','GetChurnScore',db2admin.CUSTOMERID,db2admin.GENDER,db2admin.EMPLOYMENT_STATUS,db2admin.INCOME,1,db2admin.NUMBER_OF_INSURED_CARS,db2admin.NUMBER_OF_POLICIES_IN_HOUSEHOLD,db2admin.HOUSEHOLD_TENURE,db2admin.INSURANCE_LINES,db2admin.LATEST_NOTE_ATTITUDE,db2admin.AVERAGE_NOTE_ATTITUDE,db2admin.NUMBER_OF_CLAIMS_FILED,db2admin.CUSTOMER_SEGMENTS,0))*100
```

The External Callout API has a mandatory number of configurable arguments that must be provided. The mandatory number of arguments setting in the configuration file is as set in the value of the property **ExternalConnector\_NumberOfArguments**. In the example shown, the value is 15.

When there are fewer SPSS scoring service input parameters than the configure setting of **ExternalConnector\_NumberOfArguments**, add ",0" to the expression to ensure that there are the same number of arguments in the external callout expression.

13. Deploy the changes to the server.
14. Restart the IBM EMM runtime server.

## Sample External Callout connector configuration file

The following example is a sample External Callout connector configuration file. Modify this sample for your environment.

```
CADS_ADDRESS=<Collaboration_deployment_services_server_address>
CADS_PORT=9080
CADS_USER=admin
CADS_PASSWORD=spss
ExternalConnector_NumberOfArguments=15

SERVICENAME_GetChurnScore=INSU_CHURN
INPUTTABLE_GetChurnScore=INSURNC.INSURANCE_VIEW
PARAMETERS_GetChurnScore=POLICYHOLDER_ID,double;GENDER,string;
EMPLOYMENT_STATUS,string;INCOME,double;HOUSEHOLD_NUMBER_OF_CHILDREN,integer;
HOUSEHOLD_NUMBER_OF_INSURED_CARS,integer;NUMBER_OF_POLICIES_IN_HOUSEHOLD,integer;
HOUSEHOLD_TENURE,double;INSURANCE_LINES,integer;LATEST_NOTE_ATTITUDE,double;
AVERAGE_NOTE_ATTITUDE,double;NUMBER_OF_CLAIMS_FILED,double;
CUSTOMER_FINANCIAL_SEGMENT,string;
OUTPUTNAME_GetChurnScore=CHURN_SCORE

SERVICENAME_GetCreditRating=dWStream
INPUTTABLE_GetCreditRating=trainingdata.csv
PARAMETERS_GetCreditRating=Age,double;Income_level,string;Education,string;
Car_loans,string;
OUTPUTNAME_GetCreditRating=DEFAULT

SERVICENAME_GetReco=SequenceAnalysis
INPUTTABLE_GetReco=NBA.CUSTOMER_RELATIONSHIP_HISTORY
PARAMETERS_GetReco=CUSTOMERID,integer;SEQUENCE,integer;PRODUCT,string;
OUTPUTNAME_GetReco=RECOMMENDATION

SERVICENAME_GetCreditScore=CreditCardDefault
INPUTTABLE_GetCreditScore=NBA.CUSTOMER
PARAMETERS_GetCreditScore=CUSTOMERID,integer;AGE,integer;EDUCATION,string;
YEARSEMPLOYED,integer;INCOME,integer;CARDDEBT,double;OTHERDEBT,double;
DEFAULTED,integer;ADDRESS,string;
OUTPUTNAME_GetCreditScore=DEFAULTPROPENSITY
```

For information about how to add an IBM SPSS Scoring Service to this file, see “Add an IBM SPSS Scoring Service to an offer (External Callout connector).” Also, see *IBM Interact Administrator’s Guide*.

## Add an IBM SPSS Scoring Service to an offer (External Callout connector)

To add an IBM SPSS Scoring Service, add the following parameters to the ExternalConnector\_config.properties file.

- **SERVICENAME\_%THE EXTERNAL CONFIG NAME%**
- **INPUTTABLE\_%THE EXTERNAL CONFIG NAME%**
- **PARAMETERS\_%THE EXTERNAL CONFIG NAME%**
- **OUTPUTNAME\_%THE EXTERNAL CONFIG NAME%**

The parameter name has two elements that are separated by commas:

- The input parameter name
- The data type

The parameters are separated by a semicolon.

The value for **OUTPUTNAME\_%THE SCORING SERVICE FUNCTION%** can be "DEFAULT". You do not need to provide the name of the output column name; the first output parameter is taken as the output scoring results. For example, the following methods of setting the output column get the same result:

- OUTPUTNAME\_GetReco=RECOMMENDATION
- OUTPUTNAME\_GetReco=DEFAULT

---

## Troubleshooting EMM connector deployments

If you run IBM Enterprise Marketing Management version 9.0, there is an error in the deployment section for IBM Campaign and IBM Interact. The error applies to deploying WAR files.

### About this task

Make the following configuration changes for IBM Campaign and IBM Interact WAR files.

### Procedure

1. On the server where IBM EMM is installed, go to the WebSphere Integrated Solutions Console.
2. In the server's **Application > Enterprise Applications** section, select the WAR file that you deployed.
3. Select **Class loading and update detection** and set the following **General Properties** on the **Configuration** tab:
  - For **Class loader order**, select **Classes loaded with local class loader first (parent last)**.
  - For **WAR class loader policy**, select **Class loader for each WAR file in application**.



---

## Appendix C. Installation of the server components in silent mode

You can install the IBM Predictive Customer Intelligence server components in silent mode.

---

### Editing the properties files for a silent installation of the server components

You must edit the properties files for the silent mode installation of the IBM Predictive Customer Intelligence server components.

#### Procedure

1. Go to the `disk1/IBMPCI_Server/disk1` directory where you decompressed the installation files.
2. Edit the license properties file.
  - a. Open the `IRU_install_properties` file in a text editor.
  - b. Add the following line after `licenseType=LICR`:  
`licenseAccepted=9`
  - c. Save and close the file.
3. Edit the installation properties file.
  - a. Go to the `disk1/IBMPCI_Server/disk1/taskFile` directory where you decompressed the installation files.
  - b. Open the properties file for the type of installation you want to run.
    - For an express installation, edit `Express_task.xml`.
    - For a custom installation, edit `Custom_task.xml`.
  - c. In the `task.xml` file, remove `<!--` and `-->` surrounding the `<credentialsSet>` section of the file to uncomment the section.
  - d. Enter the user credentials for each node computer in the `userID` and `password` values in the `<credentialsSet>` section of the file.
  - e. Change all instances of `AnalyticsNode.sample.com` to the fully qualified domain name of the Predictive Analytics node computer.
  - f. Change all instances of `BINode.sample.com` to the fully qualified domain name of the Business Intelligence (BI) node computer.
  - g. Change all instances of `DataNode.sample.com` to the fully qualified domain name of the data node computer.
  - h. Change all instances of `ESBNode.sample.com` to the fully qualified domain name of the Integration Bus node computer.
  - i. For a custom installation, enter or confirm the remaining values in the `task.xml` file.
  - j. Save and close the file.

---

### Starting the silent installation

You start the IBM Predictive Customer Intelligence silent installation by running a command.

## Procedure

1. Go to the `disk1/IBMPCI_Server/disk1` directory where you downloaded the installation files.
2. Enter the following command to install the server components:

```
./LinuxSetup
-responseFile /path_to_install_files/disk1/IBMPCI_Server/disk1
/IRU_install.properties
-taskFile /path_to_install_files/disk1/IBMPCI_Server/disk1/
taskFile/xxxx_task.xml -silent
```

Where `xxxx_task.xml` is task file you modified.

Log messages for the installation are saved to `/opt/SolutionFiles/logs/IRU_progress.log`. If the log file contains `Progress=88`, that means that all of components were successfully deployed.

---

## Appendix D. Use the Predictive Customer Intelligence samples

You can install samples for the following industries: Telecommunications, Retail, Insurance, Banking, and Energy and Utilities.

All samples except for the Banking sample contain the following components:

- IBM DB2 databases.
- IBM Analytical Decision Management templates and applications.
- IBM SPSS project streams, models, and rules.
- IBM Cognos reports and Framework Manager models and packages.

The Banking sample contains IBM DB2 databases and an IBM SPSS project stream. It does not contain IBM Analytical Decision Management templates and applications or IBM Cognos reports and Framework Manager packages. Therefore, you do not need to install the Analytical Decision Management templates and applications or the IBM Cognos Content if you are using this sample.

The Telecommunications, and Energy and Utilities samples contain report images that must be installed.

To install the samples, you must perform the following steps for each sample that you are using.

1. Run the Deployment wizard to deploy the samples on a computer with a Microsoft Windows operating system installed.
2. Create the sample databases on the Data node.
3. Install the Analytical Decision Management templates and applications on the Predictive Analytics node.
4. Import the SPSS project streams, models, and rules on the Predictive Analytics node.
5. Configure the data view for SPSS models on the Predictive Analytics node.
6. Install the IBM Cognos Content on the Business Intelligence node.

**Important:** There are no touchpoints included with the samples. For example, no call center applications or web sites are included.

---

### Sample prerequisites

Before you install the samples, you must have a fully configured environment.

You must have administration rights and have the ability to copy files between servers and platforms.

The IBM Predictive Customer Intelligence Sample Deployment Wizard must be run on a computer that is running a Microsoft Windows operating system.

The steps to install each sample must be completed in the order shown.

---

## Installing the samples

The IBM Predictive Customer Intelligence Sample Deployment Wizard copies the samples to your computer. You must configure each sample individually after it is copied to your computer.

Use the Predictive Customer Intelligence Sample Deployment Wizard on a computer that is running a Microsoft Windows operating system.

### Procedure

1. Go to the directory where you downloaded the samples installation files.
2. Decompress the installation files.
3. Double-click `Launchpad.exe` or `Launchpad64.exe`.
4. Follow the steps in the wizard to copy the samples.

The Deployment wizard prompts you for the location to copy the samples. If you select the default, the samples are copied to `c:\IBM\PCI\samples\sample_name`.

5. Click **Deploy All**.

---

## Creating the sample databases

The IBM Predictive Customer Intelligence samples include sample databases. You must run a script to create a database, and then run another to populate the databases for each sample that you are using.

### Procedure

1. Log on to the data node computer as **root** user.
2. Create a folder on the data node computer to contain the samples. For example, `/opt/IBM/PCI`.
3. Copy the samples files from the computer where you installed them to the data node computer:
  - The Telecommunications sample is in `Telco\Database\IBM_PCI_Telco_Data.zip`.
  - The Retail sample is in `Retail\Database\IBM_PCI_Retail_Data.zip`.
  - The Insurance sample is in `Insurance\Database\IBM_PCI_Insurance_Data.zip`.
  - The Banking sample is in `Banking\Database\IBM_PCI_Banking_Data.zip`.
  - The Energy and Utilities sample is in `Energy and Utilities\Database\IBM_EU_Data.zip`.
4. On the data node computer, decompress the files.
5. Open a terminal window, and go to the directory where you decompressed the sample files.
6. Type the following command to change the permissions for the files:  
`chmod -R 755 *`
7. Change to the database instance owner. For example, `su db2inst1`.
8. In the uncompressed directory, run `sh ./Install_DB.sh` to create the database.

**Note:** For the Energy and Utilities sample, two databases are created: `EUTIL` and `PCI_UTIL`.

9. Run `sh ./Load_Data.sh` to populate the database.

## 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.

The log file is in the db2inst1 home directory.

Search for “rows were rejected” in the log file. The value should be zero, if it is not, there are data load issues.

---

## Installing Analytical Decision Management templates and applications

The following Predictive Customer Intelligence samples include IBM Analytical Decision Management templates and applications: Telecommunications, Retail, Insurance, and Energy and Utilities. The Banking sample does not include IBM Analytical Decision Management templates and applications.

### Procedure

1. Log on to the Predictive Analytics node computer.
2. From the computer where you deployed the samples, copy the Analytical Decision Management applications and templates for the samples that you are using from the following locations:
  - Telecommunications
    - Application: Telco\Analytics\Applications\IBM\_PCI\_Telco\_App.zip
    - Template: Telco\Analytics\Templates\TelcoCallCenter.xml
  - Retail
    - Application: Retail\Analytics\Applications\IBM\_PCI\_Retail\_App.zip
    - Template: Retail\Analytics\Templates\Retail.xml
  - Insurance
    - Application: Insurance\Analytics\Applications\IBM\_PCI\_Insurance\_App.zip
    - Template: Insurance\Analytics\Templates\Insurance.xml
  - Energy and Utilities
    - Application: Energy and Utilities\Analytics\Applications\IBM\_PCI\_Energy\_and\_Utilities\_App.zip
    - Template: Energy and Utilities\Analytics\Templates\Energy and Utilities.xml

Copy files to the Applications or Templates folder as appropriate on the Predictive Analytics node computer.

The default location is /opt/IBM/SPSS/Collaboration and Deployment Services/6.0/Server/components/decision-management/Applications, or/Templates.

3. Decompress the files to the Applications directory.
4. In a browser, go to the IBM Analytical Decision Management launch page: [http://SPSS\\_server\\_name:port\\_number/DM](http://SPSS_server_name:port_number/DM)
5. Click **Add Application**, and select the appropriate application. For example, **Telco Call Center**.

---

## Importing project streams, models, and rules

Project streams, models, rules and other artifacts are contained in a repository export file for each sample. Copy the export file to the Predictive Analytics node where IBM SPSS Collaboration and Deployment Manager is installed.

### Procedure

1. Log on to the Predictive Analytics node computer using an administrator account.
2. From the computer where you deployed the samples, copy the `IBM_PCI_sample_name pes` file to the Predictive Analytics node computer. For example, copy the file to a `/opt/IBM/PCI` directory.

The files are located in the following folders:

- Telecommunications: `\Telco\Analytics\IBM_PCI_Telco pes`
  - Retail: `Retail\Analytics\IBM_PCI_Retail pes`
  - Insurance: `Insurance\Analytics\IBM_PCI_Insurance pes`
  - Banking: `Banking\Analytics\IBM_PCI_Banking pes`
  - Energy and Utilities: `Energy and Utilities\Analytics\IBM_PCI_EU pes`
3. In IBM SPSS Collaboration and Deployment Manager, import the `IBM_PCI_sample_name pes` file with the following settings selected:
    - **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.

### Results

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

---

## Configuring the data view for SPSS models

To configure the data view, IBM SPSS Modeler must be connected to the samples databases through an ODBC data source. You must perform extra steps for the Insurance and Retail samples.

### About this task

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 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.

### 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 DATABASE_NAME at node NODE_NAME authentication server`  
 Where the *Database\_names* are as shown in the following table:

Table 18. Sample DSN names and database names

| Sample             | DSN and database names |
|--------------------|------------------------|
| Telecommunications | TELCO                  |
| Retail             | RETAIL                 |
| Insurance          | INSURNC                |
| Banking            | BANKING                |

You must use the same *node\_name* that you used in the **db2 catalog database** command.

2. Create an ODBC DSN to point to each sample database listed in the table. The database account that is provided in the ODBC connection must be the same user that was used for creating tables.

**Tip:** On a computer with Microsoft Windows installed, in the Windows Control Panel, select **Administrative Tools** and click **Data Sources**. Click the **System DSN** tab.

The following steps are for the Retail and Insurance samples only.

These samples use the Analytic Data View and JDBC source connections for accessing IBM Analytical Decision Manager. When the Retail or Insurance samples are imported through IBM SPSS Collaboration and Deployment Services Deployment Manager, a new version of the Enterprise View is created that contains only the tables that are related to the samples.

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.
4. In **Resource Definitions, Data Sources**, open the data source for the sample, either **RETAIL\_JDBC**, or **INSURANCE\_JDBC**, and update the IP address and port to point to the IBM Predictive Customer Intelligence Data node. The default DB2 port is 50000.
5. Open the data source, either **RETAIL\_ODBC**, or **INSURANCE\_ODBC**, and verify that the data source name corresponds to the ODBC name created for the sample database.
6. Verify that the Application View and the Data Provider Definition are working properly. Open the **RETAIL\_CUSTOMER\_ATTRIBUTES\_DPD**, or **INSURANCE\_DPD**, and click **Validate**. To retrieve a previous version of the Enterprise View, right-click **Enterprise View** in Deployment Manager and click **Open Version**.
7. To create a single view that combines the solution tables with any tables that existed previously, right-click **Enterprise View** in Deployment Manager and click **Merge Versions**.

## Configuring ODBC for IBM SPSS Modeler Server on Linux

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

### Procedure

1. Stop the IBM SPSS Modeler Server.
2. Download the relevant compressed archive for IBM SPSS Modeler Server installed. This driver is part of IBM Predictive Customer Intelligence Server deployment.
3. Extract the archive.
4. Run the `setodbcpath.sh` script to update the ODBC path in the scripts.
5. 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.

6. This step is for the 64-bit version of IBM SPSS Modeler Server only. 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.

7. 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.



8. Save modelersrv.sh.
9. Configure the SPSS Modeler Server to use the ODBC wrapper named libspssodbc\_datadirect.so.
  - a. Navigate to the SPSS Modeler Server Installation directory/bin folder.
  - b. Remove the existing link file named libspssodbc.so 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
```
10. Configure the db2cli.ini file in <db2 instance home>/sqllib/cfg/db2cli.ini to add the following lines to define a DB2 client alias for your database:
 

```
[Data Source Name]
Database=DB name
Protocol=TCPIP
DriverUnicodeType=1
Port=50000
Hostname=ip or hostname
UID=username
PWD=password
```
11. In the odbc.ini file, create a new ODBC data source for the DB2 database. The data source name must be the same as specified for the DB2 client alias. Also, specify DriverUnicodeType=1 to avoid buffer overflow errors when connecting to the database.
 

For example:

```
Data Source Name = DB2 ODBC Driver

[Data Source Name]
Driver=/opt/ibm/db2/V10.1/lib64/libdb2o.so
DriverUnicode=1
Database=TELC0
Hostname=<host name>
Port=50000
Protocol=TCPIP
```

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

If you are unable to connect to the data source, see *IBM SPSS Modeler Server 16 Administration and Performance Guide* Appendix B for more information.

## Installing IBM Cognos content

The following IBM Predictive Customer Intelligence samples include IBM Cognos content: Telecommunications, Retail, Insurance, and Energy and Utilities.

Perform these tasks for each sample that you are using.

There is no IBM Cognos content for the Banking sample.

### Procedure

1. Copy the IBM Cognos content from the computer where you installed it to the locations specified in the following table.

Table 19. IBM Cognos content

| Cognos content                                                                                                                                                                                                                                                                        | Copy to                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Cognos deployment package:\<sample_name>\Business Intelligence\IBM PCI<sample_name> Cognos Content                                                                                                                                                                                    | Business Intelligence node, in the folder <Cognos_Install_location>\Deployment                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Cognos report images: \<sample_name>\Business Intelligence\IBM PCI<sample_name> IBM PCI <sample_name> Report Images<br><b>Note:</b> This is for the Telecommunications and Energy and Utilities sample only. The Retail, Insurance, and Banking samples do not include report images. | Business Intelligence node, in the folder <Cognos_Install_location>\webcontent\samples<br><br>Decompress the files to the following folders:<br><br><b>For Telecommunications</b><br><Cognos_Install_location>\webcontent\samples\images\Telco<br><br><b>For Energy and Utilities</b><br><Cognos_Install_location>\webcontent\samples\images\EU<br><br><b>Tip:</b> To decompress a file on a computer with a Linux operating system installed, type "unzip <"zip file name">". The zip file name must be enclosed by quotation marks because it contains spaces. |
| Cognos Framework Manager packages: \<sample_name>\Business Intelligence\IBM PCI<sample_name> IBM PCI <sample_name> Model                                                                                                                                                              | The Windows computer where Framework Manager is installed.<br><br>Decompress the files.                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |

2. 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 *DATABASE\_NAME* at node *NODE\_NAME* authentication server  
Where the *Database\_names* are as shown in the following table:

Table 20. Sample DSN names and database names

| Sample             | Database names |
|--------------------|----------------|
| Telecommunications | TELCO          |

Table 20. Sample DSN names and database names (continued)


| Sample               | Database names    |
|----------------------|-------------------|
| Retail               | RETAIL            |
| Insurance            | INSURNC           |
| Energy and Utilities | EUTIL<br>PCI_UTIL |

You must use the same *node\_name* that you used in the **db2 catalog database** command.

Configure IBM Cognos to point to the new databases.

3. Open a web browser.
4. Go to the IBM Cognos BI portal URL. For example, go to [http://bi\\_node\\_name/ibmcognos/](http://bi_node_name/ibmcognos/).
5. On the **Welcome** page, click **Administer IBM Cognos Content**.
6. Create a data source connection to the samples database. This step must be done twice for Energy and Utilities, once for each database in the sample, and once for each of the other industry samples.
  - a. Click the **Configuration** tab, and click **Data Source Connections**.



- b. Click the **New Data Source**  button.
- c. In the **Name** box, type the sample database name, for example **TELCO** and then click **Next**.
- d. In the connection page, select **IBM DB2**, ensure that **Configure JDBC connection** is selected, and click **Next**.  
The connection string page for the selected database appears.
- e. In the **DB2 database name** field, type the sample database name. For example **TELCO**.
- f. Leave **DB2 connect string** blank.
- g. Under **Signons**, select both **Password** and **Create a signon that the Everyone group can use**, 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.

- h. In the **Server name** box, enter the name or IP address of your data node computer.
- i. In the **Port number** box, enter the DB2 port number. The default is 50000.
- j. In **Database name**, type the sample database name. For example **TELCO**.

**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.


- k. Click **Finish**.

Import the Cognos content for the sample.

7. Deploy the IBM Cognos BI reports.
  - a. On the **Configuration** tab, click **Content Administration**.
  - b. On the toolbar, click the **New Import** button.
  - c. In the **Deployment Archive** pane, select **IBM PCI < Sample\_name > Content**, and click **Next**.

- d. In the **Public Folders Content** pane, select **IBM PCI < Sample\_name >**, leave the **Options** as default, and click **Next**.
- e. In the **Specify the general options** pane, accept the defaults, and click **Next**.
- f. On the **Review the summary** page, click **Next**.
- g. On the **Select an action** page, select **Save and run once**, and click **Finish**.
- h. On the **Run with options** page, accept the defaults, and click **Run**, and then click **OK**.
- i. Select **View the details of this import after closing this dialog** and click **OK**. The next screen displays the status of the import. After a few second, click **Refresh** and ensure that the status is "Succeeded".
- j. In IBM Cognos Administration, click the **Home** button.

For the Retail sample only, install the portal pages

8. In IBM Cognos Connections, click the Public Folders tab.
9. Click **IBM PCI Retail Portal Pages**.
10. For each of the reports, click  .

## What to do next

You can use the following test customer IDs for samples where a Customer ID is required. When you run some reports, you are prompted for a customer ID.

- For the Telecommunications, and Energy and Utilities sample, type 21.
- For the Insurance sample, use the following inputs for the specified report:
  - CaseReportInsurance, Churn and Sentiment Scores, Churn Propensity, ClaimsReport, and PolicyDetails: 1001920.
  - SMA Insight: AaronBBailey@trashymail.com
  - Social and Web Analytics: 1006598

## Sample reports and portal pages

A number of Predictive Customer Intelligence reports and portal pages can be installed with the samples.

The following industry samples include reports: Telecommunications, Retail, Insurance, and Energy and Utilities. The Banking sample does not include reports.

You can customize the reports and portal pages using IBM Cognos Report Studio. Cognos Report Studio is a report design and authoring tool. Report authors can use Report Studio to create, edit, and distribute a wide range of professional reports. For more information see IBM Cognos Report Studio User Guide ([http://www.ibm.com/support/knowledgecenter/SSEP7J\\_10.2.1/com.ibm.swg.ba.cognos.ug\\_cr\\_rptstd.10.2.1.doc/c\\_rs\\_introduction.html](http://www.ibm.com/support/knowledgecenter/SSEP7J_10.2.1/com.ibm.swg.ba.cognos.ug_cr_rptstd.10.2.1.doc/c_rs_introduction.html)).

The metadata that the report displays comes from the package that is created in IBM Cognos Framework Manager. The example Framework Manager project folder contains the compiled project file (.cpf). When you open the .cpf file, Framework Manager displays the modeled relationships of the data and the package definitions, which are made available to the reporting studios when published. You can modify the metadata for the report by using Framework Manager. For more information, see IBM Cognos Framework Manager User Guide

([http://www-01.ibm.com/support/knowledgecenter/SSEP7J\\_10.2.1/com.ibm.swg.ba.cognos.ug\\_fm.10.2.1.doc/c\\_ug\\_fm\\_introduction.html%23ug\\_fm\\_Introduction](http://www-01.ibm.com/support/knowledgecenter/SSEP7J_10.2.1/com.ibm.swg.ba.cognos.ug_fm.10.2.1.doc/c_ug_fm_introduction.html%23ug_fm_Introduction)).

## Reports available in the Telecommunications, and Energy and Utilities samples

The following Predictive Customer Intelligence reports are available from the home page for the Telecommunications, and Energy and Utilities samples.

### BillingReports

The **Billing** report displays the customer billing history, calculated bill amount, and potential savings.

### CaseDetailReports

The **CaseReport** shows the open and closed case history of the customer: a bar chart that plots the case status per month, a list with detail case information and a list that shows social media posts.

### NetworkReports

The **StoresMapReport** shows the location of nearest stores for a specified location, in a map report.

### ProfileReports

The **Dials** report shows the analytics key performance indicators (KPIs) for a customer.

For the Telecommunications sample only, the **SocialNetworkChart** report shows the social network chart for a customer ID.

### UsageReports

The **Usage** report shows the voice and data usage of the customer.

## Portal pages available in the Retail sample

The following Predictive Customer Intelligence portal pages are available from the home page for the Retail sample.

### Customer Online Activity Analysis

Shows detailed analysis of the customer's online activities with the following charts:

- Purchase Activity Analysis (Traditional) shows a distribution of purchase activities across different product lines.
- All Online Activity Analysis shows a relative comparison of all online activities for all product lines.
- Relative Activity Conversion Analysis shows a stacked chart to analyze the conversions between different online activities, such as Page Views, Products Browsed, Products Carted, Products Abandoned, Products Purchased, for all product lines.
- Analyzing Online Activities by Customer Segments allows you to analyze the online activities for different customer segments and combinations of customer segments.
- Analyzing Online Activities for Demographic Cluster shows a detailed analysis of online activities for a demographic cluster. For example, for a selected product line which cluster has highest products browsed activity.

### Customer Response Analysis

Contains two charts that are based on the data available from a customer's

response to product satisfaction and various offers that were made through the IBM Analytical Decision Management application.

Contains a dial chart that shows how the customers rated a particular product line or a product. It also contains a column chart that shows the relative comparison of the probability of accepting different offers.

#### **Market Basket Analysis**

Shows the products that are likely to be bought together. This report can also be filtered for individual products.

#### **Understanding the Customer**

Shows a distribution of a customer's online activities across different product lines, and customer segmentation. Customer segments are shown by using a customer's demographic data, online activity data, and their purchasing behavior.

### **Reports available in the Insurance sample**

The following Predictive Customer Intelligence reports are available from the home page for the Insurance sample.

#### **CaseReportInsurance**

Shows the cases by month for the selected client.

#### **Churn and Sentiment Scores**

The Dial report shows churn propensity and sentiment score.

#### **Churn Propensity**

Shows the churn propensity ratio (the willingness of the client to leave the provider) for the selected client.

#### **ClaimsReport**

The list report shows customer claims information.

#### **Complaints**

The bar chart and list report shows customer complaints information.

#### **PolicyDetails**

The list report shows customer policy information.

#### **SMA Insight**

Shows the social media activity for the selected client.

#### **Social and Web Analytics**

The pie chart and list report show customer social media post and insurance product browsing summary information.

---

## **Copying the samples license files to each computer**

After you install the samples, you must copy the swidtag file and license directory to each computer on which you use an IBM Predictive Customer Intelligence sample.

**Important:** Do not rename the directories or files.

### **Procedure**

1. Copy the swidtag file from the iso-swid directory where you installed the samples to each computer on which you install a Predictive Customer Intelligence component.

For example, copy the file so that you have an `/opt/IBM/PCI/iso-swid` directory that contains a `swidtag` file on each node computer. And a `C:\IBM\PCI\iso-swid` directory that contains a `swidtag` file on each client computer.

If a `iso-swid` directory already exists on the computer, do not overwrite the directory. Add the `swidtag` file to the existing directory.

After you copy the IBM Predictive Customer Intelligence sample software tag file, your `iso-swid` directory should have two `swidtag` files. One `swidtag` file is for the product and the other `swidtag` file is for the samples.

2. Copy the `license` directory from the directory where you installed the samples to each computer on which a IBM Predictive Customer Intelligence component is installed.

For example, copy the directory and contents so that you have an `/opt/IBM/PCIsamples/license` directory that contains the license files on each node computer. And a `C:\IBM\PCIsamples\license` directory that contains the license files on each client computer.

## Results

After you install the samples, the following folders must exist on each computer on which you installed a Predictive Customer Intelligence component:

- On server computers:
  - `/opt/IBM/PCI/license` (containing the product license files)
  - `/opt/IBM/PCIsamples/license` (containing the samples license files)
  - `/opt/IBM/PCI/iso-swid` (containing a product `swidtag` file and a samples `swidtag` file)
- On client computers:
  - `C:\IBM\PCI\license` (containing the product license files)
  - `C:\IBM\PCIsamples\license` (containing the samples license files)
  - `C:\IBM\PCI\iso-swid` (containing a product `swidtag` file and a samples `swidtag` file)





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## Appendix E. Products installed with IBM Predictive Customer Intelligence

The following products are installed with or available to be installed with Predictive Customer Intelligence.

### Server components

- IBM DB2 Enterprise Server Edition 10.1 Fix Pack 3
- IBM Data Server Runtime Client 10.1 Fix Pack 3
- IBM WebSphere Application Server Network Deployment 8.5.5
- IBM Installation Manager 1.6.2
- IBM Cognos Business Intelligence Server 10.2.1 Fix Pack 1
- IBM Integration Bus 9.0 Fix Pack 1
- IBM WebSphere MQ 7.5 Fix Pack 2
- IBM SPSS Collaboration and Deployment Services Server 6.0
- IBM SPSS Collaboration and Deployment Services 6.0 Deployment Manager
- IBM SPSS Collaboration and Deployment Services Enterprise View Driver 6.0
- IBM SPSS Modeler Server 64-bit 16.0
- IBM SPSS Data Access Pack 7.1
- IBM SPSS Text Analytics Server 16.0
- IBM SPSS Modeler Collaboration and Deployment Services Adapter 16.0
- IBM SPSS Analytical Decision Management 8.0
- IBM SPSS Statistics Server 22.0
- IBM SPSS Statistics 22.0 Collaboration and Deployment Services Adapter 6.0
- IBM SPSS Modeler Solution Publisher 16.0
- IBM SPSS Modeler Premium Solution Publisher 16.0

### Client and optional components

In the Predictive Customer Intelligence license, these components are referred as “Supporting Programs - Client Installation”.

- IBM Data Server Runtime Client 10.1 Fix Pack 3
- IBM Cognos Framework Manager 10.2.1
- IBM Cognos Business Intelligence Samples 10.2.1
- IBM Cognos Supplementary Languages Documentation 10.2.1
- IBM Cognos Dynamic Query Analyzer 10.2.1
- IBM Cognos for Microsoft Office 10.2.0
- IBM Cognos Lifecycle Manager 10.2.1
- IBM Cognos Mobile 10.2.1 Fix Pack 2
- IBM Cognos Real-time Monitoring 10.2.1 Fix Pack 1
- IBM Cognos Software Development Kit 10.2.1
- IBM SPSS Collaboration and Deployment Services Deployment Manager 6.0
- IBM SPSS Modeler Client 16.0
- IBM SPSS Text Analytics Client 16.0

- IBM SPSS Data Access Pack 7.1
- IBM SPSS Social Network Analysis 16.0
- IBM SPSS Statistics Client 22.0
- IBM Integration Bus Toolkit 9.0.0.1
- IBM Installation Manager 1.6.2
- IBM WebSphere MQ Client 7.5 Fix Pack 2
- IBM SPSS Concurrent Licensing Tools 9.5.0.1

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## Appendix F. Programs not authorized by the IBM Predictive Customer Intelligence license

The following programs are not installed with IBM Predictive Customer Intelligence, and the use of these programs is not authorized by the Predictive Customer Intelligence license.

- IBM Cognos Analysis for Microsoft Excel (IBM Cognos Business Intelligence Architect 10.2.1)
- IBM Cognos Analysis Studio (of IBM Cognos Business Intelligence Architect 10.2.1)
- IBM Cognos Business Intelligence Transformer (of IBM Cognos Business Intelligence Architect 10.2.1)
- IBM Cognos Connection Installer for IBM Cognos Insight (of IBM Cognos Business Intelligence Architect 10.2.1)
- IBM Cognos Cube Designer (of IBM Cognos Business Intelligence Architect 10.2.1)
- IBM Cognos Data Manager Connector (of IBM Cognos Business Intelligence Architect 10.2.1)
- IBM Cognos Insight (of IBM Cognos Business Intelligence Architect 10.2.1)
- IBM Cognos Metric Designer (of IBM Cognos Business Intelligence Architect 10.2.1)
- IBM Cognos Metric Studio (of IBM Cognos Business Intelligence Architect 10.2.1)
- IBM Cognos Metrics Manager (of IBM Cognos Business Intelligence Architect 10.2.1)
- IBM Cognos Migration Tools (of IBM Cognos Business Intelligence Architect 10.2.1)
- IBM Cognos PowerPlay<sup>®</sup> Client (of IBM Cognos Business Intelligence Architect 10.2.1)
- IBM Cognos PowerPlay Server (of IBM Cognos Business Intelligence Architect 10.2.1)
- IBM Cognos PowerPlay Studio (of IBM Cognos Business Intelligence Architect 10.2.1)
- IBM Cognos Query Studio (of IBM Cognos Business Intelligence Architect 10.2.1)
- IBM Cognos TM1<sup>®</sup> Package Connector (of IBM Cognos Business Intelligence Architect 10.2.1)
- IBM Connections (of IBM Cognos Business Intelligence Architect 10.2.1)
- IBM DB2 Workgroup Server Edition (of IBM Cognos Business Intelligence Architect 10.2.1, IBM Cognos Real-time Monitoring 10.2.1)
- IBM Tivoli<sup>®</sup> Directory Integrator Identity Edition (of IBM Cognos Business Intelligence Architect 10.2.1)
- IBM SPSS Data Collection Survey Reporter Developer Kit 7.x (of IBM SPSS Modeler Premium 16.0, IBM SPSS Modeler Server Premium 16.0, IBM SPSS Statistics Standard 22.0, IBM SPSS Statistics Server Standard 22.0)
- IBM SPSS Modeler Client Entity Analytics (of IBM SPSS Modeler Premium 16.0)
- IBM SPSS Modeler Server Entity Analytics (of IBM SPSS Modeler Server Premium 16.0)

- BM SPSS Data Collection Developer Library 7.x (of IBM SPSS Statistics Standard 22.0, IBM SPSS Statistics Server Standard 22.0)
- IBM SPSS Statistics Data File Drivers 22.x (IBM SPSS Statistics Server Standard 22.0)
- IBM SPSS Statistics Diagnostic Utility 22.x (of IBM SPSS Statistics Standard 22.0)
- IBM SPSS Statistics-.Net Integration Plug-In 22.x (of IBM SPSS Statistics Standard 22.0, IBM SPSS Statistics Server Standard 22.0)
- IBM DB2 Workgroup Server Edition 10.5 (IBM DB2) (of IBM SPSS Modeler Premium 16.0, IBM SPSS Modeler Server Premium 16.0)
- IBM WebSphere Application Server Developer Tools for Eclipse (of IBM WebSphere Application Server Network Deployment 8.5.5)
- IBM WebSphere eXtreme Scale (of IBM WebSphere Application Server Network Deployment 8.5.5)
- IBM Rational® Application Developer for WebSphere Software (of WebSphere Application Server Network Deployment 8.5.5)
- J2SE Rule Execution Server (of IBM Integration Bus 9.0)
- IBM Data Studio 3.2 (of IBM DB2 Enterprise Server Edition 10.1)
- IBM WebSphere MQ 7.1 (of IBM DB2 Enterprise Server Edition 10.1)
- pureScale® Feature (of IBM DB2 Enterprise Server Edition 10.1)
- IBM General Parallel File System (GPFS™) for AIX® 3.5 (of IBM DB2 Enterprise Server Edition 10.1)
- IBM General Parallel File System (GPFS) for Linux Multiplatform 3.5 (of IBM DB2 Enterprise Server Edition 10.1)
- IBM Mobile Database 7.0.1 (of IBM DB2 Enterprise Server Edition 10.1)
- IBM Mobile Database Sync 1.0 (of IBM DB2 Enterprise Server Edition 10.1)
- IBM Tivoli Storage Flashcopy Manager 2.2 (of IBM DB2 Enterprise Server Edition 10.1)
- Embedded version of IBM WebSphere Application Server ("embedded WebSphere Application Server") 6.1 (of IBM Tivoli System Automation for Multiplatforms 3.2 (of IBM DB2 Enterprise Server Edition 10.1))
- IBM Cloudscape 10 (of IBM Tivoli System Automation for Multiplatforms 3.2 (of IBM DB2 Enterprise Server Edition 10.1))
- Embedded WebSphere Application Server 7.0 (of IBM Tivoli Directory Server 6.3 - Client Only (component) (of IBM DB2 Enterprise Server Edition 10.1))
- IBM InfoSphere® Change Data Capture 6.2 (of IBM InfoSphere Data Replication 10.1 (component) (of IBM DB2 Enterprise Server Edition 10.1))
- IBM InfoSphere Change Data Capture 6.5 (of IBM InfoSphere Data Replication 10.1 (component) (of IBM DB2 Enterprise Server Edition 10.1))
- IBM InfoSphere Replication Server 9.7 (of IBM InfoSphere Data Replication 10.1 (component) (of IBM DB2 Enterprise Server Edition 10.1))
- IBM Tivoli Directory Integrator 7.1 (of IBM Tivoli Directory Server 6.3 - Client Only (component) (of IBM DB2 Enterprise Server Edition 10.1))
- WebSphere Application Server 7.0 (of IBM Tivoli Directory Server 6.3 - Client Only (component) (of IBM DB2 Enterprise Server Edition 10.1))
- IBM DB2 Workgroup Server Edition 9.7 (of IBM Tivoli Directory Server 6.3 - Client Only (component) (of IBM DB2 Enterprise Server Edition 10.1))
- IBM DB2 Enterprise Server Edition 9.7 (of IBM Tivoli Directory Server 6.3 - Client Only (component) (of IBM DB2 Enterprise Server Edition 10.1))

- IBM InfoSphere Data Replication 10.1 (component) (of IBM InfoSphere Federation Server 10.1 (component) (of IBM DB2 Enterprise Server Edition 10.1))
- IBM WebSphere MQ 7.1 (of IBM InfoSphere Federation Server 10.1 (component) (of IBM DB2 Enterprise Server Edition 10.1))
- IBM DB2 Connect™ 10.1, Application Server Edition (of IBM InfoSphere Federation Server 10.1 (component) (of IBM DB2 Enterprise Server Edition 10.1))



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## Appendix G. Performance tuning for IBM Predictive Customer Intelligence

The topics in this appendix provide examples of configuration changes that might help improve performance of your Predictive Customer Intelligence installation.

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### Tune WebSphere Application Server for Predictive Customer Intelligence

Performance tuning settings for WebSphere Application Server include JVM tuning, thread pools, connection pools, web container settings, logging, and web server monitoring.

#### JVM tuning

Setting an appropriate Java virtual machine (JVM) heap size can improve performance for IBM Predictive Customer Intelligence. Also, garbage collection is an integral Java runtime service. Increasing the JVM heap size can reduce the number of garbage collection occurrences and provide a 10 percent gain in performance.

#### Heap size

The heap size should be set to an optimal value. It should not exceed 80% of the physical memory available on the computer. Doing so would enable paging and increase processor usage, which affects the performance of WebSphere Application Server.

For Predictive Customer Intelligence, use 4096 MB.

The Max Heap Size is the maximum heap size that would be allocated to the server. It is important that the value is less than the available physical memory.

For Predictive Customer Intelligence, use 7128 MB.

#### Garbage collection

Parallel garbage collection is a technique that uses several dedicated threads for garbage collection. This method improves garbage collection pause time, which increases processor efficiency and improves performance.

This process can be activated by setting the `-Xgcthreads` value to the number of processors on the computer. For example, set `-Xgcthreads:number_of_processors`. However, this method is not entirely suited for concurrent users.

For concurrent users, use `-Xgcpolicy:optavgpause`.

#### Thread pools

Thread pools enable server components to reuse threads. Reusing threads eliminates the need to create new threads at run time, and creating new threads expends time and resources.

## Web container thread pool

The web container thread pool is used for HTTP requests that come from the client. Set the number of threads to double the number of users that might be expected to access the application concurrently.

For example, for IBM Predictive Customer Intelligence, set the minimum value to 3000 and the maximum to 5000.

## Connection pools

Connection pools are associated with data source configuration for web applications, and it is used to direct JDBC calls within the application.

When a user makes a request over the web to a resource, the resource accesses the data source. Because users connect and disconnect frequently with applications on the internet, the application requests for data access can surge to considerable volume. Consequently, the total data store overhead quickly becomes high for web-based applications, and performance deteriorates. However, when connection pooling capabilities are used, the web applications can realize performance improvements of up to 20 times the normal results.

With data sources, most user requests do not incur the overhead of creating a new connection because the data source can locate and use an existing connection from a pool of connections. When the request is satisfied and the response is returned to the user, the resource returns the connection to the connection pool for reuse.

For example, for IBM Predictive Customer Intelligence, set the minimum value to 1000 and the maximum to 3000.

## Web container configuration

Web container configuration settings can improve IBM Predictive Customer Intelligence performance.

### Enable servlet caching

The server caches servlet output during application execution. A cache entry contains not only the output, but also the side effects of the invocation. These side effects include calls to other servlets and metadata about the entry, such as timeout and entry priority information.

## Web container custom properties

For the `HTTPQueueInboundDefault` property, there are two settings:

### Maximum pool connections

The number of connections that are expected to be responded to by the application server. Ideally, this value should be equal to or more than the number of clients that are expected to use the system. The maximum number that can be set is 20000.

### Maximum persistent requests per connection

Persistent connections specify that an outgoing HTTP response should use a persistent connection instead of a connection that closes after one request



or response exchange occurs. A performance boost can be achieved by increasing the number of persistent connections that are allowed on a single HTTP connection.

## Logging and performance monitoring

For IBM Predictive Customer Intelligence, turning off logging and performance monitoring in a production environment can improve performance.

---

## Tune IBM Unica for Predictive Customer Intelligence

You can improve performance of IBM Predictive Customer Intelligence by modifying settings for IBM Unica.

### EHCache configuration settings

EHCache is the built-in cache manager for IBM Unica Interact that is used to improve performance. It is possible to configure the settings that are used by EHCache to optimize its value for the runtime server group.

The number of sessions in memory depends on the following factors:

- The expected number of sessions per second.
- The total amount of time each session is supposed to last.

For example, if you expect 50 sessions a second, and each session is expected to last 20 minutes, then modify the settings to support 60,000 sessions at a time.

### Java Serialization API rather than SOAP API

For IBM Predictive Customer Intelligence, the Java Serialization API provides better throughput and a shorter response time than the SOAP API.

### Threads for interactive flowcharts

Every interactive flowchart requires at least one thread to run.

IBM Predictive Customer Intelligence, set the `MaxNumberOfFlowchartThreads` value to be at least the maximum number of concurrent users that are expected on the IBM Interact client. And set the `MinNumberOfFlowchartThreads` value to be the same as the maximum value. Set the `MaxNumberOfProcessThreads` value to be at least the `MaxNumberOfFlowchartThreads`.

For example, set the `MaxNumberOfFlowchartThreads` and `MinNumberOfFlowchartThreads` to 500. And set `MaxNumberOfProcessThreads` to 550.



## Appendix H. Administration tool and product portal reference

The administrative tools and portals for IBM Predictive Customer Intelligence are located in several locations.

Access information for the tools and portals is provided in the following table.

Table 21. Administration tool and product portal reference

| Administration tool or portal and description                                                                                                                                                                                                                                                                                          | URL or location                                                                                                                                                                                                                                                |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>WebSphere Integrated Solutions Console</b></p> <p>The <b>WebSphere Integrated Solutions Console</b> is the administration tool for WebSphere.</p> <p>The <b>WebSphere Integrated Solutions Console</b> is running on each node computer where WebSphere is installed.</p> <p>Use the console to start and stop applications.</p> | <p><code>http://server_node_name:9060/ibm/console</code></p> <p>Where <i>server_node_name</i> is the name or IP address of a node computer where WebSphere is installed.</p> <p>Leave the <b>User ID</b> box blank.</p>                                        |
| <p><b>IBM Cognos Configuration</b></p> <p>Use <b>IBM Cognos Configuration</b> to configure settings for IBM Cognos Business Intelligence.</p>                                                                                                                                                                                          | <p><code>/opt/IBM/cognos/c10_64/bin64/cogconfig.sh</code></p> <p><b>IBM Cognos Configuration</b> is installed on the Business Intelligence (BI) node computer.</p>                                                                                             |
| <p><b>IBM Cognos Connection</b></p> <p>Use <b>IBM Cognos Connection</b> to access reports.</p> <p><b>IBM Cognos Administration</b></p> <p>Use <b>IBM Cognos Administration</b> to configure IBM Cognos BI, such as add data source connections and set security.</p>                                                                   | <p><code>http://bi_node_name/ibmcognos/</code></p> <p>Where <i>bi_node_name</i> is the name or IP address of BI node computer.</p>                                                                                                                             |
| <p><b>IBM SPSS Collaboration and Deployment Services Deployment Manager</b></p> <p>Use <b>IBM SPSS Collaboration and Deployment Services Deployment Manager</b> to configure IBM SPSS server settings.</p>                                                                                                                             | <p><code>http://analytics_node_name:9080/config</code></p> <p>Where <i>analytics_node_name</i> is the name or IP address of Predictive Analytics node computer.</p> <p>The default user name is <b>admin</b>.</p> <p>The default password is <b>admin</b>.</p> |

---

## Default users for an express deployment

The following user names and passwords are used in an express deployment of IBM Predictive Customer Intelligence.

- On the data node computer:
  - The IBM DB2 administrative user name is dasusr1. The password is dasusr1.
  - The IBM DB2 instance owner user name is db2inst1. The password is db2inst1.
  - The IBM DB2 fenced user name is db2fenc1. The password is db2fenc1.
- On the Analytics node computer:
  - The SPSS user name is admin. The password is admin.

---

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