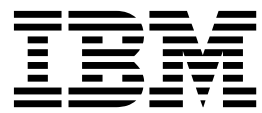IBM Predictive Customer Intelligence
Version 1.1.0

IBM Predictive Customer Intelligence Installation Guide

IBM

Product Information

This document applies to IBM Predictive Customer Intelligence Version 1.1.0 and may also apply to subsequent releases.

Contents

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.

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. IBM Predictive Customer Intelligence gives you the ability to sift quickly through millions of customers 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.

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 (www.ibm.com/support/knowledgecenter/SSCJHT_1.1.0).

PDF versions of the documents are available from the Predictive Customer Intelligence version 1.1 product documentation page (www.ibm.com/support/docview.wss?uid=swg27046802).

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 Intelligence 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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What's new?

The following new features are available in IBM Predictive Customer Intelligence version 1.1.

Solution installer

A new solution installer is available for installations on Red Hat Enterprise Linux operating systems. The solution installer provides some common installation configurations for typical IBM Predictive Customer Intelligence installations. You can also create your own configurations.

For more information, see Chapter 3, "Install on a Red Hat Linux operating system," on page 15.

Installations on SUSE Linux operating systems

Support for SUSE Linux is added in this version. To install IBM Predictive Customer Intelligence on a SUSE Linux operating system, you must install the components manually.

For more information, see Chapter 4, "Manually install on Microsoft Windows or Linux operating systems," on page 35.

Analytic Solution Foundation

You can use the Analytic Solution Foundation to extend the customer analytics data model that is provided with IBM Predictive Customer Intelligence or to create orchestrations that define how data flows from an event to a customer profile.

For more information, see "Configure the Analytic Solution Foundation" on page 83.

Chapter 1. Prerequisites and installation 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.

On Linux operating systems, 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 on which you install IBM Predictive Customer Intelligence nodes using the solution installer, must not have any of the included software already installed.

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 typical production environment uses four nodes.

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

Figure 1. IBM Predictive Customer Intelligence nodes

Client computer

Predictive Customer Intelligence nodes

Predictive Analytics node:
IBM WebSphere Application Server
SPSS products

Business Intelligence (BI) node:
IBM WebSphere Application Server
IBM HTTP Server
IBM Cognos Business Intelligence

Integration Bus node:
IBM MQ
IBM Integration Bus

Data node:
IBM DB2 Enterprise Server
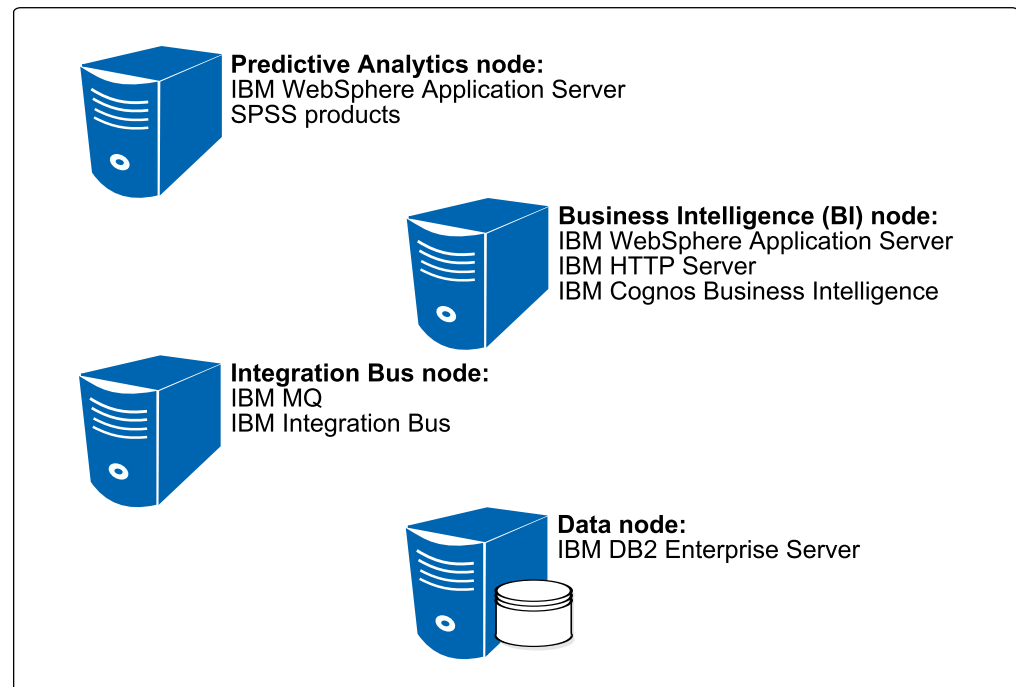
Predictive Analytics node

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 Statistics Server
- IBM Analytic Decision Management
- IBM SPSS Data Access Pack
- IBM Data Server Runtime Client

Optionally, you can distribute the Analytics node components onto other computers in your environment. For example, you can add a node on which only IBM SPSS Collaboration and Deployment Services is installed.

Optional server components are also available, such as IBM SPSS Analytic Server, including Analytic Catalyst, and IBM ILOG® CPLEX® Enterprise Server, including Optimization Studio. For information about installing these products, see their respective documentation.

If you install IBM SPSS Analytic Server, do not install it on a computer where another IBM Predictive Customer Intelligence node is installed.

Business Intelligence node

The BI node provides dashboards and reports.

This node has the following software installed:
- IBM WebSphere Application Server Network Deployment (optional for installations on Microsoft Windows operating systems)
- IBM HTTP Server
- IBM Cognos® Business Intelligence
- IBM Data Server Runtime Client

Optional components are also available, such as IBM Cognos Software Development Kit. For information about installing these products, see their respective documentation.

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 MQ (formerly WebSphere MQ)
- IBM Integration Bus
- IBM Data Server Runtime Client

Data node

The data node provides the database server that contains the databases that are used by other products in the solution.

This node has the following software installed:
- IBM DB2® Enterprise Server Edition

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.

For an up-to-date list of environments that are supported by IBM Predictive Customer Intelligence, see the IBM Software Product Compatibility Reports (www.ibm.com/support/docview.wss?uid=swg27044319).

Server computers

To use the solution installer, the IBM Predictive Customer Intelligence server components must be installed on computers that are running a 64-bit Red Hat Enterprise Linux Server Edition version 6 (x86_64 with update 5, 6, or 7) operating system.

Alternatively, you can manually install IBM Predictive Customer Intelligence on 64-bit SUSE Linux, Microsoft Windows 2008 Server (x86_64), or Microsoft Windows 2012 Server (x86_64) operating systems.

Important: If you use the solution installer to install on Red Hat Enterprise Linux operating systems, the operating system for the computer where you run the solution installer must be set to use English as the language. The solution installer does not run on other languages. Also, the client computers must also be using English as the language.

Hardware requirements

If you are using four or five node configuration, each computer or virtual machine that hosts an IBM Predictive Customer Intelligence server component, or node, must have the following hardware requirements:
- 2 processors
- 16 GB of RAM
- 60 GB of hard disk space

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

The computer on which you run the solution installer should have a minimum of 80 GB of free hard disk space so that you can decompress the installation files.

If you are installing on a single node, such as for a test or demonstration environment, the computer must have:
- 4 processors
- 32 GB of RAM
- 250 GB of hard disk space

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

User requirements

On Linux operating systems, you must have **root** or **sudo** access to all of the computers on which you install an IBM Predictive Customer Intelligence node, including the computer from which you run the installation.

On Microsoft Windows operating systems, you must have administrator access to all of the computers on which you install an IBM Predictive Customer Intelligence node.

Client computers

The IBM Predictive Customer Intelligence client components must be installed on computers that run Microsoft Windows 7 or Microsoft Windows 8 operating systems.

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

Installing required operating system packages on the BI node computer

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

For a complete list of software requirements for IBM Cognos Business Intelligence, see the Cognos Business Intelligence 10.2.2 Supported Software Environments page (www.ibm.com/support/docview.wss?uid=swg27042164).

Ensure that the following 32-bit packages are installed. These are the minimum versions required:
- `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`

If you are installing the product manually, you must also install the OpenMotif library to run the installation wizard for IBM Cognos Business Intelligence. For more information, see Cannot install Cognos BI using issetup on Linux. libXm.so.4 is missing (www.ibm.com/support/docview.wss?uid=swg21612290).

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

Procedure

1. Log on to the BI node 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 *package_name*

For example, to verify that `libselinux` is installed and what version you have, type `rpm -qi libselinux`.

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 `libselinux-2.0.94-5.3.el6.i686`, type `rpm -ihv libselinux-2.0.94-5.3.el6.i686.rpm`.

To install `pam-1.1.1-13.el6.i686.rpm`, use the following command: `rpm -ihv -force` *full_package_name*`.rpm`.

Tip: If you have yum repositories configured for your Linux operating system computers, you can use the following command to install all of the pre-requisite RPMs:

`yum -y install libselinux.i686 cracklib.i686 db4.i686 audit-libs.i686 pam.i686`

If you are installing IBM Cognos Business Intelligence manually, you can install the OpenMotif with the following command:

`yum -y install openmotif.i686`

Installing required operating system packages on the Integration Bus node computer

Specific operating system packages must be installed on the Linux operating system computer or virtual machine where you install the IBM Predictive Customer Intelligence Integration Bus node node.

Ensure that the following 32-bit packages are installed. These are the minimum versions required:
- `gtk2-2.24.23-6.el6.i686.rpm`
- `libXtst-1.0.99.2-3.el6.i686.rpm`
- `glibc-2.12-1.80.el6.i686.rpm`
- `libgcc-4.8.3-9.el7.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` *package_name*

For example, to verify that `gtk2` is installed and what version you have, type `rpm -qi gtk2`.

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 `gtk2-2.24.23-6.el6.i686`, type `rpm -ihv gtk2-2.24.23-6.el6.i686.rpm`.

Tip: If you have yum repositories configured for your Linux operating system computers, you can use the following command to install all of the pre-requisite RPMs:
```
yum -y install gtk2.i686 libXtst.i686 glibc.i686 libgcc.i686
```

Setting ulimit values on the node computers

Before you install IBM Predictive Customer Intelligence on Linux operating systems, you must ensure that you have appropriate ulimit values on each node.

You must perform these steps on the Business Intelligence node, the Predictive Analytics node, and the Integration Bus node computers.

Note: IBM MQ requires these minimum settings during installation. If they are not set an error message is displayed during installation.

Procedure

Log in to the computer as the **root** user or as a user with **sudo** permissions.
1. Go to the `/etc/security` directory.
2. Open the `limits.conf` file for editing.
3. Add the following lines to the file:
   ```
   @root soft nofile 10240
   @root hard nofile 16384
   * soft nofile 10240
   * hard nofile 16384
   ```
4. Save and close the file.
5. Restart the computer for the changes to take effect.

Adding each node computer to the hosts file on all computers

If you are installing on a Red Hat Enterprise Linux operating system by using the solution installer, you must ensure that each 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` files contain entries in the following pattern:
   ```
   127.0.0.1 localhost.localdomain localhost
   ##.##.##.##  analytics_node_name.domain.com  analytics_node_name
   ##.##.##.##  bi_node_name.domain.com  bi_node_name
   ##.##.##.##  data_node_name.domain.com  data_node_name
   ##.##.##.##  integrationbus_node_name.domain.com  integrationbus_node_name
   ```
3. Save and close the file.

Modifying the sudoers file for the user who runs the installation

To install IBM Predictive Customer Intelligence on a Red Hat Enterprise Linux operating system by using the solution installer, you must be either the **root** user or be a user with **sudo** permissions on each node computer. To run the installation as a user with **sudo** permissions, you must add that user to the sudoers file on each node computer.

Procedure

1. Log in as **root** user.
2. Open the sudoers file for editing. For example, enter `visudo -f /etc/sudoers`.
3. Add the following line for your user:

   username `ALL=(ALL) ALL`

4. Save and close the file.
5. Repeat these steps on each computer on which you install an IBM Predictive Customer Intelligence node.

Synchronizing the time on each Linux node computer

If you are installing on a Red Hat Enterprise Linux operating system by using the solution installer, you must ensure that each node computer is synchronized to the same time.

For more information, see the Red Hat documentation (https://access.redhat.com/documentation/en-US/Red_Hat_Enterprise_Linux/6/html/Deployment_Guide/sect-Date_and_Time_Configuration-Command_Line_Configuration-Network_Time_Protocol.html).

Chapter 2. Migrating from IBM Predictive Customer Intelligence Version 1.0.1 to Version 1.1

There are two supported migration paths on Windows: in-place migration, and parallel migration.

If your environment supports the bundled software included in IBM Predictive Customer Intelligence Version 1.1, you can perform an in-place migration and reuse the existing servers. Otherwise, perform a parallel migration where the bundled software is installed on different servers and migrate the content separately.

In-place migration path

If your environment supports the bundled software included in IBM Predictive Customer Intelligence Version 1.1, you can perform an in-place migration and reuse the existing servers.

Before you begin

It is important to complete the following migration tasks in the order in which they are shown to ensure a seamless migration:

1. Common components across nodes
2. Data node
3. Predictive analytics node
4. Business intelligence node
5. Integration bus node

Common components across nodes

All nodes have the same migration path for common components. You must upgrade the common components before upgrading the individual nodes.

About this task

The two common components across nodes are the IBM DB2 Runtime Client and IBM Installation Manager.

Procedure

1. Upgrading an existing Runtime Client copy to DB2 Version 10.5 requires that you install a DB2 Version 10.5 Data Server Runtime Client copy and then upgrade your client instance. For more information, see Upgrade to DB2 Version 10.5.

   a. Create a configuration profile containing only database- and node-relation information using the **db2cfexp** command. For instance, **db2cfexp <filename> MAINTAIN**.

   b. Follow the instructions as you would for a new installation of IBM DB2 Server Runtime Client. See "Installing IBM DB2 client software on the Analytics node computer" on page 38.

    c. On the **DB2 Setup - IBM Data Server Runtime Client - DB2COPY2** window, accept the new copy name, and set this as the default DB2 copy on this machine. Click **Next**.

    d. Upgrading the DB2 instance. Click **Start** > **All Programs** > **IBM DB2 DB2COPY2 (Default)** > **Command Window - Administrator**and use the `db2iupgrade` command to upgrade the DB2 instance: `%DB2PATH%\bin\ db2iupgrade <InstName> /u:<user>,<password>`. DB2PATH is the location that you specified during the DB2 Version 10.5 Data Server Runtime Client installation and `InstName` is the name of the instance. For instance, `db2iupgrade DB2 /u:db2admin,password`.

    e. Import the configuration profile. Click **Start > All Programs > IBM DB2 DB2COPY2 (Default) > Command Window - Administrator** and use the `db2cfimp` command to migrate the connectivity configuration: `%DB2PATH%\bin\db2cfimp <filename>`. DB2PATH is the location that you specified during the DB2 Version 10.5 Data Server Runtime Client installation and `filename` is the configuration profile file name.

2. Installing IBM Installation Manager. Upgrading replaces the only installation of Installation Manager on a server with the latest release. Follow the instructions as you would for a new installation of IBM Installation Manager. See "Installing IBM Installation Manager on the Predictive Analytics node computer" on page 38.

Data node

The Data node computer typically consists of a DB2 Enterprise Server.

Before you begin

Back up existing databases on the Data node computer, including the SPSS repository, content store, and user databases. For more information, see Backup database command, DB2 Version 10.1 for Linux, UNIX, and Windows.

Procedure

1. Stop the DB2 instance.

    a. Log on to the Data node computer as a DB2 administrator, `db2admin`.

    b. Stop the WebSphere Application Server running the SPSS components on the Predictive Analytics node computer. Click **Start** > **All Programs** > **IBM WebSphere** > **IBM WebSphere Application Server V8.5** > **Profiles** > **AppSrv01** > **Stop the server**.

    c. Stop the Cognos service on the Business Intelligence node computer. Click **Start** > **All Programs** > **IBM Cognos 10 - 64** > **IBM Cognos Configuration** > **Stop.** .

    d. Run `db2stop` to stop the DB2 instance.

2. Installing the DB2 Enterprise Server.

Upgrading your DB2 server requires that you install a DB2 Version 10.5 copy and then upgrade all the instances and databases to be able to run them under the DB2 Version 10.5 copy. For more information, see Upgrade to DB2 Version 10.5.

    a. Follow the instructions as you would for a new installation of IBM DB2 Enterprise Server "Installing IBM DB2 Enterprise Server" on page 36

    b. In the **Install a Product** window, click **Work with Existing** under **DB2 Version 10.5 Fix Pack 5 Workgroup, Enterprise and Advanced Editions**.

    c. In the **Work with an Existing DB2 Copy** window, select **DB2COPY1 (default)**. Click **Launch DB2 Setup wizard**.

3. Adding the DB2 License. Follow the instructions described in "Adding the IBM DB2 license" on page 36

4. Upgrading the DB2 databases. The DB2 instance is automatically upgraded. The databases must be upgraded manually before they can be used:

    a. Click **Start** > **All Programs** > **IBM DB2 DB2COPY1 (default)** > **Command Window - Administrator** and run db2 UPGRADE DATABASE <database> USER db2admin USING <password>. Repeat for each local database.

Predictive analytics node

The Predictive Analytics Node computer typically consists of SPSS server products, a WebSphere Application Sever, and a DB2 Server Runtime Client.

Before you begin

Backup your existing SPSS repository database. For more information, see Backup database command, DB2 Version 10.1 for Linux, UNIX, and Windows.

Follow the instructions as you would for a new installation to update the WebSphere Application Server to WebSphere Application Server Version 8.5.5.6 "Upgrading WebSphere Application Server" on page 39.

Procedure

1. Manually create a profile in the WebSphere Application server.

    a. Click **Start** > **All Programs** > **IBM WebSphere** > **IBM WebSphere Application Server V8.5** > **Tools** > **Profile Management Tool**.

    b. On the **WebSphere Customization Toolbox 8.5** window, click **Create**.

    c. On the **Environment Selection** window, select **Application server**, and click **Next**.

    d. On the **Profile Creation Options** window, select **Typical profile creation**, and click **Next**.

    e. Enter the administrator credentials on the **Administrative Security** window, and click **Next**.

    f. Note the **HTTP transport port** on the **Profile Creation Summary** window, and click **Create**.

    g. Deselect **Launch the First steps console** check box on the **Profile Creation Complete** window, and click **Finish**.

2. Installing IBM SPSS Collaboration and Deployment Services Server. Upgrading SPSS Collaboration and Deployment Services Server requires that you install IBM SPSS Collaboration and Deployment Services 7.0 in a different location than the original installation. For more information, see IBM SPSS Collaboration and Deployment Services Repository Migration.

    a. Follow the instructions as you would for a new installation of IBM SPSS Collaboration and Deployment Services Server "Installing IBM SPSS Collaboration and Deployment Services Modeler adapters" on page 43.

    b. In the **Application Server** window, click **Browse** to select the root directory of the profile you created earlier.

    c. In the **Existing data** window, select **Preserve existing data** and click **Next**. Follow the remaining steps in the wizard.

3. Follow the instructions as you would for a new installation to install the adapters and packages.

Business intelligence node

The Business Intelligence Node computer typically consists of a WebSphere Application Server Network Deployment, an HTTP Server, and IBM Cognos Business Intelligence and an IBM DB2 Runtime Client.

Before you begin

Follow the instructions as you would for a new installation to update IBM HTTP Server to Version 8.5.5.6 "Upgrading IBM HTTP Server on the BI node computer" on page 50.

Procedure

1. Follow the instructions as you would for a new installation of IBM Cognos Business Intelligence Server and IBM Cognos Business Intelligence Server Updater. See "Installing IBM Cognos Business Intelligence" on page 51.
2. On the **Installation Location** window, install the product into a different installation directory. For instance, Files\ibm\cognos\c1022_64, and select **Production** for the **Server Use Type**. Click **Next**.
3. On the **Shortcut Folder** window, change the **Program folder** to **IBM Cognos 10.2.2 - 64** and click **Next**.
4. Configuring the IBM Cognos Business Intelligence Server.
   a. Export the IBM Cognos configuration from the original Cognos Business Intelligence installation and save it as cogstartup.xml.
   b. Copy the cogstartup.xml file to /configuration folder in the Cognos Business Intelligence 10.2.2 installation root folder.
   c. Click **Start** > **All Program Files** > **IBM Cognos 10.2.2 - 64** > **IBM Cognos Configuration**.
   d. Change the port number and service name.
5. Update the http.conf file to use the Cognos Business Intelligence 10.2.2 installation. For instance:

```
ScriptAlias /ibmcognos/cgi-bin/ "C:/Program Files/IBM/cognos/c1022_64/cgi-bin/"
<Directory "C:/Program Files/IBM/cognos/c1022_64/cgi-bin/">
    Options Indexes MultiViews
    AllowOverride None
    Order allow,deny
    Allow from all
</Directory>

Alias /ibmcognos/ "C:/Program Files/IBM/cognos/c1022_64/webcontent/"
<Directory "C:/Program Files/IBM/cognos/c1022_64/webcontent/">
    Options Indexes MultiViews
    AllowOverride None
    Order allow,deny
    Allow from all
</Directory>
```

6. Stop the original IBM Cognos service.

Integration bus node

The Integration Bus node computer typically consists of IBM WebSphere MQ, IBM Integration Bus, and the IBM DB2 Server Runtime Client.

Before you begin

1. Back up your application code.

2. Stop local WebSphere MQ applications.

3. Stop all the queue managers and listeners. Click **Start** > **All Programs** > **IBM Integration Console 9.0.0.1** > **IBM Integration Console 9.0.0.1** and run `mqsistop -q <broker>`.

About this task

Procedure

1. Installing IBM WebSphere MQ. Upgrading (single-stage) replaces the only installation of WebSphere MQ on a server with the latest release. For further information, see Migrating and Updating WebSphere MQ 8.0.0.

2. Follow the instructions as you would for a new installation of IBM DB2 Enterprise Server "Installing IBM DB2 Enterprise Server" on page 36.

   a. On the **WebSphere MQ Setup** window, select **Upgrade 7.5.0.2 Installation 'Installation1'** and click **Next**.

   b. On the **WebSphere MQ V8.0.0.2 Setup** window, select **Update** and click **Next**.

3. Run the **strmqm** command to start the queue managers and migrate them to the latest version of the product.

4. Upgrading the Integration Bus requires installing IBM Integration Bus Version 10.0 on the same computer as the current version and then upgrading your integration node. For more information, see Migrating IBM Integration Bus

   a. Stop the integration node by using the **mqsistop** command.

   b. Follow the instructions as you would for a new installation of IBM Integration Bus. "Installing IBM Integration Bus" on page 58.

   c. Run the **mqsimigratecomponents** command to migrate the integration node. For instance, **mqsimigratecomponents <component>**.

   d. Copy all additional custom environment settings from your original environment into your Version 10.0 environment from the `MQSI_FILENODES_ROOT_DIRECTORY`.

   e. Start the integration node by using the **mqsistart** command.

Parallel migration path

Perform a parallel migration if your environment does not support the bundled software included in IBM Predictive Customer Intelligence Version 1.1.

Important: This is the only supported migration path when using the solution installer on Linux RedHat.

A parallel migration path requires that you install and configure IBM Predictive Customer Intelligence Version 1.1. The content must be migrated separately to the different node computers.

Chapter 3. Install on a Red Hat Linux operating system

Use the solution installer to deploy the IBM Predictive Customer Intelligence component programs on computers or virtual machines that are running Red Hat Enterprise Linux operating systems.

Important: If you are installing IBM Predictive Customer Intelligence from the USB hard disk drive, download and use the Solution Installer 1.1 Linux Red Hat English component from IBM Passport Advantage® to ensure that you are using the latest version of the installer. For more information about downloading components, see Downloading IBM Predictive Customer Intelligence 1.1 (http://www.ibm.com/support/docview.wss?uid=swg24040382).

The solution installer runs on a Red Hat Enterprise Linux operating system. It provides a web interface that you use to define, validate, and install your environment.

You define your environment by identifying node computers, and dragging the component programs onto the nodes. The solution installer provides guidance for where you can add components and you can use it to validate the environment that you define.

If you want to deploy the IBM Predictive Customer Intelligence component programs on SUSE Linux or Microsoft Windows operating systems, you must use a manual installation. For more information, see Chapter 4, "Manually install on Microsoft Windows or Linux operating systems," on page 35.

Note: If you want to customize the installation of certain components, such as distributing IBM Cognos Business Intelligence on different computers, you can use the manual installation instructions. For more information, see the installation documentation for the component.

Also, if you want to configure multiple nodes of IBM SPSS Collaboration and Deployment Services, you must use a manual installation of IBM Predictive Customer Intelligence. The solution installer allows only one instance of IBM SPSS Collaboration and Deployment Services in a configuration.

For more information about manually installing IBM Predictive Customer Intelligence, see Chapter 4, "Manually install on Microsoft Windows or Linux operating systems," on page 35.

Important: If you use the solution installer to install on Red Hat Enterprise Linux operating systems, the operating system for the computer where you run the solution installer must be set to use English as the language. The solution installer does not run on other languages. Also, the client computers must also be using English as the language.

Downloading and decompressing the installation files

You must download the IBM Predictive Customer Intelligence solution from IBM Passport Advantage, and then decompress the files to run the solution installer.

For more information about the files that you must download, see Downloading IBM Predictive Customer Intelligence 1.1 (http://www.ibm.com/support/docview.wss?uid=swg24040382).

Procedure

1. Access the IBM Passport Advantage web site.

   Tip: If you receive an error, try using a different web browser to access Passport Advantage.
2. Sign in and navigate to the software downloads page.
3. Find the eImages for IBM Predictive Customer Intelligence.
4. Download an eImage by selecting the check box beside the name. When the download is complete, a **Download Complete** message is displayed. The location of the downloaded files are displayed in the message window.
5. Decompress the eImage files.
6. Decompress the `prd_cust_intel_sol_install_1.1_l86_en.tar.gz` file.

   The file is decompressed to a directory that is named `PCI_1.1_linux`. You must copy the server `tar.gz` files into the `PCI_1.1_linux` directory.
7. Copy the 3 other `tar.gz` files to the `PCI_1.1_linux/SolutionInstaller/NodeRoot/Downloads/Software` directory.

   The 3 `tar.gz` files that you need are named `prd_cust_intel_svr_1.1_1_l86_en.tar.gz`, `prd_cust_intel_svr_1.1_2_l86_en.tar.gz`, and `prd_cust_intel_svr_1.1_3_l86_en.tar.gz`.
8. You can manually decompress the files, or run the `PCI1.1_UncompressTarball.sh` script to decompress the files.

   To run the script, enter `sh PCI1.1_UncompressTarball.sh`.

   To manually decompress the files, enter `tar xvf `*`filename`*`.tar.gz`.

Opening firewall ports for the solution installer

You can run the `firewall.sh` script to open the ports that are required on the computer on which you are running the IBM Predictive Customer Intelligence solution installer.

You must also open ports on the target, or client, computers on which you are installing a IBM Predictive Customer Intelligence node. You can use the `client_firewall.sh` script to open the required ports.

The `firewall.sh` script opens the following ports on the solution installer computer:
- 8080 incoming
- 443 incoming
- 9683 incoming
- 22 outgoing

On the target, or client computers, the `client_firewall.sh` script opens the following ports:
- 8080 outgoing
- 443 incoming
- 9683 outgoing

- 22 incoming

Procedure

1. Log on to the computer that contains the solution installer node as the root user or as a user with sudo permissions.
2. Back up your existing firewall settings by typing the following command: `/etc/init.d/iptables save`.
3. Go to the directory where you decompressed the solution installer files, and run the firewall script by typing the following command: `sh firewall.sh`. For example, go to the `PCI_1.1_linux/SolutionInstaller` directory.
4. Copy the `client_firewall.sh` file onto each computer on which you are going to install an IBM Predictive Customer Intelligence node.
5. Log on to each computer on which you are going to install an IBM Predictive Customer Intelligence node as the root user or as a user with sudo permissions.
6. Back up your existing firewall settings by typing the following command: `/etc/init.d/iptables save`.
7. Go to the directory where you copied the `client_firewall.sh` file, and run the script by typing the following command: `sh client_firewall.sh`.

Starting the solution installer

You run the IBM Predictive Customer Intelligence solution installer on a Red Hat Enterprise Linux operating system. Use the solution installer to define the environment you want to install. After the solution installer is running, you can access the installer interface from another computer by using a web browser and start defining the environment.

Note: Ensure that you copy the solution installer files to a directory in which you have permissions to execute files.

Important: Ensure that the operating system on which you run the solution installer is set to use English as the language. The solution installer does not run on other languages. Also, the client computers must also be using English as the language.

Procedure

1. Log on to the computer where you decompressed the installation files as the root user or as a user with sudo permissions.
2. Go to the `SolutionInstaller` directory where you decompressed the solution installer files.
3. Enter the following command: `sh setup.sh`.

   After the solution installer starts, open a web browser on another computer, and go to the solution installer URL: `https://servername:8080/UI/index.html`.

   Important: Do not use a web browser on the computer on which you are running the solution installer or any computer on which a IBM Predictive Customer Intelligence component is being installed. You must use a web browser on another computer.

   The computer on which you are using the browser to access the solution installer must have a screen resolution that is greater than 1024 by 760.

   The solution installer runs on Google Chrome 44, or later, or Mozilla Firefox 38 or later, web browsers. It does not run on Internet Explorer.

Ensure that you are using an English language web browser to access the solution installer URL.

Using the solution installer

You use the solution installer to define your IBM Predictive Customer Intelligence environment you want to install.

You define the environment by identifying node computers and adding the software that you want installed on each node. You create an installation configuration for your solution by dragging nodes onto a canvas and then dragging components into the nodes.

You can save your configurations. For more information, see "Saving and opening configurations" on page 24.

You can also load predefined configurations. For more information, see "Using predefined configurations" on page 24.

Note: You cannot install more than one instance of IBM SPSS Collaboration and Deployment Services by using the solution installer. If you want to install multiple IBM SPSS Collaboration and Deployment Services instances, you must install them manually. For more information, see Chapter 4, "Manually install on Microsoft Windows or Linux operating systems," on page 35.

Important: The solution installer runs on Google Chrome 44 or later or Mozilla Firefox 38 or later. It does not run on Internet Explorer.

For more information about supported software, see the IBM Software Product Compatibility Reports (www.ibm.com/support/docview.wss?uid=swg27044319).

Procedure

1. Open the solution installer in a web browser.

   After the solution installer is running, you can access the URL from any computer from a Firefox or Chrome web browser.

   The URL is `https://servername:8080/UI/index.html`, where *servername* is the name of the computer where you ran the solution installer.

   Important: Do not use a web browser on the computer on which you are running the solution installer or any computer on which a IBM Predictive Customer Intelligence component is being installed. You must use a web browser on another computer.

   Ensure that you are using an English language web browser to access the solution installer URL.

2. On the license information page, click **Accept**.

   CAUTION:
   Declining the license allows you to uninstall the solution installer and remove all of the files from the solution installer directory.

3. Select **New Configuration**, and click **OK**.

4. From the **Mandatory Software List** pane, drag a **Node** object onto the **Configuration Editor** pane.

   A visual representation of an empty node is displayed.

If you are installing IBM Predictive Customer Intelligence on four nodes, you must drag four **Node** objects onto the **Configuration Editor** pane.

5. In the **Property Editor** pane, select the node object, and enter the following information.

   a. Enter a name for the node in **Name**. For example, enter BI node.

   b. Enter the server name in **Host Name**.

      Important: Unless you are using a single node configuration, ensure that the host names or IP addresses are for different computers. Do not use the same computer for more than one **Node** object.

   c. Enter the user who has access to install the components in **User Name**. For example, enter root or a user with sudo permissions.

   d. Enter the user's password in **User Password**.

   e. Repeat these steps for each node object that you add. For example, if you are installing IBM Predictive Customer Intelligence on four nodes, you must repeat these steps for each of the four node objects.

   Important: You must enter any mandatory information for nodes and other objects as indicated. Ensure that you review all of the properties to ensure that the values, both mandatory and optional, are valid.

6. From the **Mandatory Software List** pane, create your environment by dragging each object onto the appropriate node in the **Configuration Editor** pane.

   Tip: Valid drop zones are indicated in the **Configuration Editor** pane.

   Some restrictions are built into the placement of the objects. For example, if you are adding **IBM Cognos BI Server** to a node, then you must already have **WebSphere Application Server** on that node, and the **IBM Cognos BI Server** object must be placed within the **WebSphere Application Server** object.
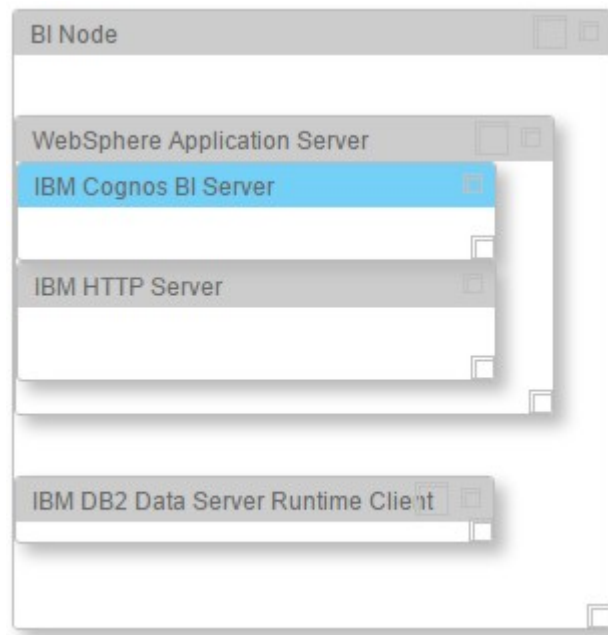
   Tip: Example environments are provided in the predefined configurations that are included with the installation files. For more information, see "Using predefined configurations" on page 24.

Note: If you add the **IBM DB2 Data Server Runtime Client** component to the same node as the **IBM DB2 Enterprise Server** component, the **IBM DB2 Data Server Runtime Client** component will not be installed.

7. After you add an object, select it, and modify any values in the **Property Editor** pane.

   For example, when you add WebSphere Application Server to a node, you must provide the following information:

   - **WebSphere Install Directory** is the location where WebSphere Application Server is to be installed.
   - **WebSphere Application Port** is the port number that you want to use for WebSphere Application Server.
   - **WAS Profile Admin User Name** is the administrator user's user name for WebSphere Application Server.
   - **WAS Profile Admin Password** is the password for the administrator user.

8. From the **Optional Software List**, drag the objects to the node on which you want the installation files copied. The optional software is not installed by the solution installer. You must install the software manually. The installation files are copied to the node you drag them to.

   The optional software installation files are copied to the `/opt/IBM/OptSoftware` directory on the node computer, unless you change the default path.

9. As you build your environment, click **Validate** to identify errors or incomplete information.

10. After all nodes are defined and each node is validated, click **Run**.

    Important: If you click **Validate** before all the mandatory content is added, a message indicates that the node is not valid. For example, if you validate the BI Node before you add the **IBM DB2 Data Server Runtime Client** component, then a message indicates that the node is not yet valid.

Configuration properties for the solution installer

You must provide some configuration properties for each of the mandatory software components.

If you select any components from the **Optional Software List**, you must provide a deployment location for the installation files. You must manually install any item that you select from the **Optional Software List**.

IBM DB2 Enterprise Server properties

DB2 Server Install Directory
> The location where IBM DB2 is to be installed on the data node computer.
>
> Default: `/opt/ibm/db2/V10.5`

DB2 Database Port Number
> The port number that is used by IBM DB2.
>
> Default: `50000`

DB2 Server Admin User Name
> The user ID that runs the administration server.
>
> Default: `dasusr1`
>
> This user must not exist on the computer.

DB2 Server Admin Password
> The password for the user ID that runs the administration server.
>
> The password cannot contain more than 8 characters and it must be lowercase.

DB2 Server Admin Home Directory
> The home directory for the user ID that runs the administration server. This directory is on the data node computer's file system.
>
> Default: `/home/dasusr1`

DB2 Instance Owner User Name
> The user ID that controls the DB2 processes and owns the directories that are used by the database instance.
>
> Default: `db2inst1`
>
> This user must not exist on the computer.

DB2 Instance Owner Password
> The password for the DB2 instance owner user.
>
> The password cannot contain more than 8 characters and it must be lowercase.

DB2 Instance Owner Home Directory
> The home directory for the DB2 instance owner user. This directory is on the data node computer's file system.
>
> Default: `/home/db2inst1`

DB2 Fenced User Name
> The user ID that can run user-defined functions and store procedures.
>
> Default: `db2fenc1`
>
> This user must not exist on the computer.

DB2 Fenced User Password
> The password for the DB2 fenced user.
>
> The password cannot contain more than 8 characters and it must be lowercase.

DB2 Fenced User Home Directory
The home directory for the DB2 fenced user.

Default: /home/db2fenc1

Database: SPSS properties

SPSS Database Name
The SPSS database that is used by the components that are installed on the Predictive Analytics node computer.

This component must be contained within **IBM DB2 Enterprise Server.**

Default: SPSSDB

Database: BI Content Manager properties

Content Manager Database Name
The IBM Cognos content store database.

This component must be contained within **IBM DB2 Enterprise Server.**

Default: COG102CS

IBM DB2 Data Server Runtime Client properties

The **IBM DB2 Data Server Runtime Client** component must be installed on each node, except for the data node computer.

Note: If you add the **IBM DB2 Data Server Runtime Client** component to the same node as the **IBM DB2 Enterprise Server** component, the **IBM DB2 Data Server Runtime Client** component will not be installed.

DB2 RTC Install Directory
The location where the IBM DB2 client is to be installed.

Default: /opt/ibm/db2/V10.5

DB2 RTC Instance User Name
The user ID for the DB2 client.

Default: db2inst1

This user must not exist on the computer.

DB2 RTC Instance Password
The password for the DB2 client instance owner user.

DB2 Client Instance Home Directory
The home directory for the DB2 client instance owner user.

Default: /home/db2inst1

WebSphere Application Server properties

WebSphere Application Server must be installed on the nodes where you install IBM Cognos Business Intelligence and IBM SPSS Collaboration and Deployment Services Server.

WebSphere Install Directory
The location where the WebSphere Application Server is to be installed.

Default: /opt/IBM/WebSphere/AppServer

WebSphere Application Port
The HTTP port number that is used by the WebSphere Application Server profile.

Default: 9080

WAS Profile Admin User Name
The administrative user name for the WebSphere Application Server profile.

WAS Profile Admin Password
The password for the administrative user.

IBM HTTP Server properties

IBM HTTP Server must be installed on the computer where you install IBM Cognos Business Intelligence.

HTTP Server Install Directory
The location where IBM HTTP Server is to be installed.

Default: /opt/IBM/HTTPServer

HTTP Server Port Number
The port number that is used by HTTP Server.

Default: 81

IBM Cognos BI Server

IBM Congos BI Server must be contained within **WebSphere Application Server** in the **Configuration Editor**.

IBM Cognos BI Server Install Directory
The location where IBM Cognos BI is to be installed.

Default: /opt/ibm/cognos/c10_64

IBM SPSS Modeler Server properties

SPSS Modeler Server Install Directory
The location where IBM SPSS Modeler Server is to be installed.

Default: /opt/IBM/SPSS/ModelerServer/17.0

IBM SPSS Statistics Server properties

SPSS Statistics Server Install Directory
The location where IBM SPSS Statistics Server is to be installed.

Default: /opt/IBM/SPSS/StatisticsServer23

IBM SPSS Data Access Pack properties

SPSS Data Access Pack Install Directory
The location where IBM SPSS Data Access Pack is to be installed.

Default: /root/SDAP711

IBM SPSS C&DS Server (including ADM) properties

IBM SPSS C&DS Server (including ADM) must be contained within **WebSphere Application Server** in the **Configuration Editor**.

SPSS C&DS Server Install Directory
> The location where IBM SPSS Collaboration and Deployment Services Server and Analytic Decision Management are to be installed.

> Default: `/opt/IBM/SPSS/Deployment/7.0/Server`

SPSS C&DS Server Admin User Name
> The IBM SPSS Collaboration and Deployment Services administrative user.

> Default: `admin`

SPSS C&DS Server Admin Password
> The password for the IBM SPSS Collaboration and Deployment Services administrative user.

> Default: `admin`

WebSphere MQ properties

WebSphere MQ Home Directory
> The WebSphere MQ home directory.

> Default: `/home`

WebSphere MQ Account User Name
> The WebSphere MQ user.

> Default: `mqmuser`

WebSphere MQ Account Password
> The WebSphere MQ user account password.

IBM Integration Bus properties

IBM Integration Bus must be contained within **WebSphere MQ** in the **Configuration Editor**.

Integration Bus Install Directory
> The location where IBM Integration Bus is to be installed.

> Default: `/opt/IBM`

Saving and opening configurations

You can save IBM Predictive Customer Intelligence configurations and open existing configurations in the solution installer.

Procedure

1. To save a configuration:
    a. In the solution installer, define your configuration.
    b. Enter a name in the **Save Configuration** box, and click the **Save Configuration** icon .
2. To open a saved configuration:
    a. Click **Open**, and browse to the saved configuration file, and click **Open**.

Using predefined configurations

You can use predefined configurations to help you define your IBM Predictive Customer Intelligence environment. Predefined configurations are provided for common IBM Predictive Customer Intelligence environments.

Procedure

1. Open the solution installer in a web browser.

   After the solution installer is running, you can access the URL from any computer from a Firefox or Chrome web browser.

   The URL is `https://servername:8080/UI/index.html`, where *servername* is the name of the computer where you ran the solution installer.

   Important: Do not use a web browser on the computer on which you are running the solution installer or any computer on which a IBM Predictive Customer Intelligence component is being installed. You must use a web browser on another computer.

   Ensure that you are using an English language web browser to access the solution installer URL.

2. Select **Predefined Configurations**, and click **OK**.

3. Select the configuration that you want to install, and click **OK**.

   - A **PCI 4 Node Configuration** provides a typical IBM Predictive Customer Intelligence environment on four nodes: a data node, a Business Intelligence node, an Analytics node, and an Integration Bus node.

   - A **PCI Distributed CDS Node Configuration** provides an environment on five nodes, where IBM SPSS Collaboration and Deployment Services is installed on its own node rather than on the Analytics node computer as in the **PCI 4 Node Configuration**.

   - A **PCI Single Node Configuration** provides an environment where all of the components are installed on a single computer.

   Note: A single-node configuration is intended for a demonstration or testing environment. It should not be used for a production environment.

   The configuration is displayed in the **Configuration Editor** pane.

   Icons appear on each component where configuration information is required. For example, where you must provide user names or passwords.
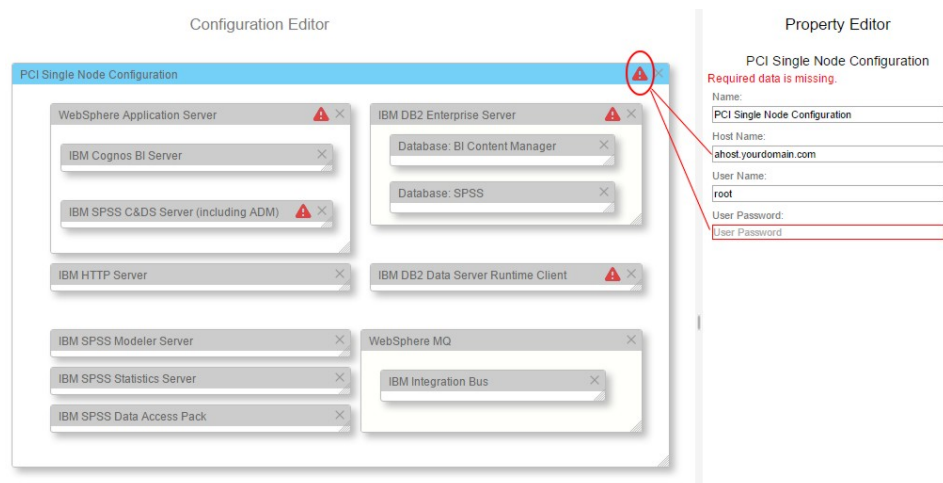
   Important: Ensure that you change the server names to an actual server in your environment. Default values are provided.

4. Ensure all of the properties are valid for your environment for each of the components and the nodes in the configuration.

Starting the installation

The IBM Predictive Customer Intelligence solution installer installs the component products on each node computer. Before you start the installation, you can validate the configuration.

Procedure

1. In the solution installer, open the configuration that you want to install.
2. Click **Validate**.

   Any errors or missing information is displayed. You must correct the error or provide the information before you can run the installation.
3. Click **Run**.

Computer firewall settings for the server components after installation

Each IBM Predictive Customer Intelligence node that is installed on a Linux operating system requires certain ports to be opened for the server components to operate in a multi-computer solution. You must configure your firewall settings for each specific node.

Opening the firewall ports for a single node configuration

If you installed IBM Predictive Customer Intelligence on a single node, you must open ports for all of the components.

The following ports must be open:
- 45088
- 58313
- 28054
- tungsten-https
- glrpc
- corbaloc
- 59356
- 9043
- 9044
- 9060
- 9061
- 9080
- 9081
- 9362
- vrace
- 9663
- http
- 81 (if you used the default port number for HTTP Server in the solution installer)
- boks
- boks_clntd
- boks_servm
- boks_servc
- ibm-mqseries

- ibm-db2
- db2c_db2inst1

For more information about IBM SPSS Modeler port numbers, see the How many ports are utilized when a Modeler Client connects to Modeler Server? document (www.ibm.com/support/docview.wss?uid=swg21488421).

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 commands:

   ```
   iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport 45088 -j ACCEPT
   iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport 58313 -j ACCEPT
   iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport 28054 -j ACCEPT
   iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport tungsten-https -j ACCEPT
   iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport glrpc -j ACCEPT
   iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport corbaloc -j ACCEPT
   iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport 59356 -j ACCEPT
   iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport 9043 -j ACCEPT
   iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport 9044 -j ACCEPT
   iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport 9060 -j ACCEPT
   iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport 9061 -j ACCEPT
   iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport 9080 -j ACCEPT
   iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport 9081 -j ACCEPT
   iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport 9362 -j ACCEPT
   iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport vrace -j ACCEPT
   iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport 9663 -j ACCEPT
   iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport http -j ACCEPT
   iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport 81 -j ACCEPT
   iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport boks -j ACCEPT
   iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport boks_clntd -j ACCEPT
   iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport boks_servm -j ACCEPT
   iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport boks_servc -j ACCEPT
   iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport ibm-mqseries -j ACCEPT
   iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport ibm-db2 -j ACCEPT
   iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport db2c_db2inst1 -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 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
- 28054

- tungsten-https
- glrpc
- corbaloc
- 59356
- 9043
- 9060
- 9080

For more information about IBM SPSS Modeler port numbers, see the How many ports are utilized when a Modeler Client connects to Modeler Server? document (www.ibm.com/support/docview.wss?uid=swg21488421).

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. For example, /etc/init.d/iptables save.
3. Add rules for the ports with the following commands:
   ```
   iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport 45088 -j ACCEPT
   iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport 58313 -j ACCEPT
   iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport 28054 -j ACCEPT
   iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport tungsten-https -j ACCEPT
   iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport glrpc -j ACCEPT
   iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport corbaloc -j ACCEPT
   iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport 59356 -j ACCEPT
   iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport 9043 -j ACCEPT
   iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport 9060 -j ACCEPT
   iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport 9080 -j ACCEPT
   ```
4. Save your firewall settings. For example, /etc/init.d/iptables save.
5. Restart your firewall. For example, /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 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
- 9080

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. For example, /etc/init.d/iptables save.
3. Add rules for the ports with the following commands:

```
iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport 9362 -j ACCEPT
iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport vrace -j ACCEPT
iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport 9663 -j ACCEPT
iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport corbaloc -j ACCEPT
iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport 9043 -j ACCEPT
iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport glrpc -j ACCEPT
iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport http -j ACCEPT
iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport tungsten-https -j ACCEPT
iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport 9060 -j ACCEPT
iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport 9080 -j ACCEPT
```

4. Save your firewall settings. For example, /etc/init.d/iptables save.
5. Restart your firewall. For example, /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 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

1. Log in to the Integration Bus node computer as the **root** user or as a user with **sudo** permissions.
2. Back up your existing firewall settings. For example, /etc/init.d/iptables save.
3. Add rules for the ports with the following commands:

```
iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport boks -j ACCEPT
iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport boks_clntd -j ACCEPT
iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport boks_servm -j ACCEPT
iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport boks_servc -j ACCEPT
iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport ibm-mqseries -j ACCEPT
```

4. Save your firewall settings. For example, /etc/init.d/iptables save.
5. Restart your firewall. For example, /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 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
- 50001

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. For example, /etc/init.d/iptables save.
3. Add rules for the ports with the following commands:

   ```
   iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport ibm-db2 -j ACCEPT
   iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport db2c_db2inst1 -j ACCEPT
   iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport 50001 -j ACCEPT
   ```

4. Save your firewall settings. For example, /etc/init.d/iptables save.
5. Restart your firewall. For example, /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.

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

   For an installation on a Red Hat Linux operating systems that used the solution installer, the following databases are listed:
   - COG102DB
   - SPSSDB

Configuring IBM Cognos BI on a single node installation

If you installed IBM Predictive Customer Intelligence on a single node by using the solution installer, you must add the IBM Cognos Business Intelligence and DB2 client paths to the **LD_LIBRARY_PATH** environment variable in WebSphere Application Server.

Procedure

1. Open a web browser.
2. In the address bar, type the address for the WebSphere Admin Console.

   The Admin console address is: `http://servername:9060/ibm/console` where *servername* is the name or IP address for the computer where you installed the IBM Predictive Customer Intelligence server components.
3. If security is enabled, enter the **User ID** and **Password**, 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:

   `/opt/ibm/cognos/c10_64/bin64/:/opt/ibm/db2/V10.5/lib32/`

   Important: If you did not use the default installation locations, ensure that you use the appropriate paths.
9. Click **Apply**, and then click **Save**.
10. Restart the WebSphere Application Server instance.

Configuring IBM HTTP Server for IBM Cognos BI

You can optionally configure IBM HTTP Server to use as the IBM Cognos Business Intelligence portal. IBM HTTP Server is installed by the solution installer, but you must configure it.

Procedure

1. Go to the HTTP Server `conf` directory. For example, go to the `/opt/IBM/HTTPServer/conf` directory.
2. Open the `httpd.conf` file in a text editor.
3. Add the following lines to file:

```
ScriptAlias /ibmcognos/cgi-bin "Cognos_installation/cgi-bin"
<Directory "Cognos_installation/cgi-bin">
   Options Indexes MultiViews
   AllowOverride None
   Order allow,deny
   Allow from all
</Directory>

Alias /ibmcognos "Cognos_installation/webcontent"
<Directory "Cognos_installation/webcontent">
   Options Indexes MultiViews
   AllowOverride None
   Order allow,deny
   Allow from all
</Directory>
```

Note: Ensure that you add the /ibmcognos/cgi-bin ScriptAlias before the /ibmcognos Alias.

For example, add the following lines:

```
ScriptAlias /ibmcognos/cgi-bin "/opt/ibm/cognos/c10_64/cgi-bin"
<Directory "/opt/ibm/cognos/c10_64/cgi-bin">
   Options Indexes MultiViews
   AllowOverride None
   Order allow,deny
   Allow from all
</Directory>

Alias /ibmcognos "/opt/ibm/cognos/c10_64/webcontent"
<Directory "/opt/ibm/cognos/c10_64/webcontent">
   Options Indexes MultiViews
   AllowOverride None
   Order allow,deny
   Allow from all
</Directory>
```

4. Save and close the file.
5. Go to the HTTP Server `bin` directory. For example, go to the /opt/IBM/HTTPServer/bin directory.
6. Enter the following commands: **./apachectl stop**.
7. Enter the following commands: **./apachectl start**.

Results

After the services start, you can access the IBM Cognos BI portal by going to http://*servername*:81/ibmcognos in a web browser.

If you changed the default port number to 80 for IBM HTTP Server, you do not have to include the port number in the URL. For example, you can enter http://*servername*/ibmcognos.

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.

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

On Linux operating systems, some additional settings might be required to configure WebSphere MQ. For more information, see the WebSphere MQ documentation (www.ibm.com/support/knowledgecenter/SSFKSJ_8.0.0/com.ibm.mq.ins.doc/q008520_.htm).

Procedure

1. Log onto the Integration Bus node and, in a terminal window, change to the user that you created. For example, **su mqmuser**.
2. Enter the following command to create the queue manager: `crtmqm queue_manager_name`.

For example, to create a queue manager that is named **pciqmgr**, enter: `crtmqm pciqmgr`.

3. Enter the following command to start the queue manager: `strmqm queue_manager_name`.

   For example, to start the queue manager that is named **pciqmgr**, enter: `strmqm pciqmgr`.

4. Enter the following command to create an integration node: `mqsicreatebroker broker_name -q queue_manager_name`.

   For example, to create a broker that is named **pcibroker**, enter: `mqsicreatebroker pcibroker -q pciqmgr`.

5. Enter the following command to start the broker: `mqsistart broker_name` For example, to start a broker that is named **pcibroker**, enter: `mqsistart 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. Log onto the Integration Bus node and, in a terminal window, change to the user that you created. For example, **su mqmuser**.

2. Enter the following command to start the queue manager: `runmqsc queue_manager_name`

   The command line processor is running after you see the message "`Starting MQSC for queue manager queue_manager_name`".

3. 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('mqmuser')
   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.

4. If you want to use a specific port number for the listener, enter the following command:

   `runmqlsr -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 on a single node installation

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. 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://servername:9080/p2pd/servlet`, where *bi_node_name* is the name or IP address for the computer where you installed the IBM Predictive Customer Intelligence server components.

   The Content Manager status says **Running**.
3. In the address bar, type the address for the IBM Cognos BI portal.

   Alternatively, if you did not configure IBM HTTP Server, you can access the IBM Cognos BI portal from the dispatcher URL: `http://servername:9080/p2pd/servlet/dispatch/`.

   Alternatively, if you configured IBM HTTP Sever, the address is `http://servername:81/ibmcognos`.
4. In the address bar, type the address for the SPSS administration console.

   The address is `http://analytics_node_name:9081/config`, where *analytics_node_name* is the name or IP address for the Analytics node computer.

Chapter 4. Manually install on Microsoft Windows or Linux operating systems

If you are installing on a Microsoft Windows or SUSE Linux operating system, you must manually install each IBM Predictive Customer Intelligence component by using the installation program that is provided with that component.

If you want to install multiple IBM SPSS Collaboration and Deployment Services instances on a Red Hat Enterprise Linux operating system, you must manually install the components. The solution installer does not allow you to install more than one instance, however, you can manually install others if you require.

Downloading and decompressing the installation files

You must download the IBM Predictive Customer Intelligence solution files from IBM Passport Advantage. For an installation on Microsoft Windows or SUSE Linux operating systems, you must install each component manually.

For more information about the files that you must download, see Downloading IBM Predictive Customer Intelligence 1.1 (http://www.ibm.com/support/docview.wss?uid=swg24040382).

Procedure

1. Access the IBM Passport Advantage web site.

   Tip: If you receive an error, try using a different web browser to access Passport Advantage.
2. Sign in and navigate to the software downloads page.
3. Find the eImages for IBM Predictive Customer Intelligence.
4. Download an eImage by selecting the check box beside the name. When the download is complete, a **Download Complete** message is displayed. The location of the downloaded files is displayed in the message window.
5. Decompress the eImage files.
   * For an installation on Microsoft Windows operating systems, decompress the `prd_cust_intel_svr_1.1_1_win_en.tar.gz`, `prd_cust_intel_svr_1.1_2_win_en.tar.gz`, and `prd_cust_intel_svr_1.1_3_win_en.tar.gz` files.
   * For an installation on SUSE Linux operating systems, decompress the `prd_cust_intel_svr_1.1_1_l86_en.tar.gz`, `prd_cust_intel_svr_1.1_2_l86_en.tar.gz`, and `prd_cust_intel_svr_1.1_3_l86_en.tar.gz` files.
6. Copy the component installation files to each computer on which you want to install the component.

Install IBM DB2 software on the data node computer

You must install IBM DB2 Enterprise Server Edition version 10.5 Fix Pack 5. IBM DB2 is used for product databases, such as the IBM Cognos Business Intelligence content store database, the IBM SPSS database, and for client application data.

After you install the database software, you must create a database for the IBM SPSS components.

Installing IBM DB2 Enterprise Server

You must install IBM DB2 Enterprise Server Edition.

Note: On Linux operating systems, the setup wizard is a graphical installer that requires an X Windows System (X11) to display the graphical user interface.

Procedure

1. Go to the `DB2` directory where you decompressed the IBM Predictive Customer Intelligence installation files.
2. On Microsoft Windows operating systems:
   a. Double-click `v10.5fp5_ntx64_server_t.exe` to decompress the installation files.
   b. Go to the `SERVER_T` directory where you decompressed the files, and double-click `setup.exe`.
3. On Linux operating systems:
   a. Decompress the `v10.5fp5_linuxx64_server_t.tar.gz` by using the following command: `tar xvf v10.5fp5_linuxx64_server_t.tar.gz`.
   b. Go to the `server_t` directory.
   c. Start the installer: `./db2setup`.
4. In the **DB2 Setup Launchpad**, click **Install a Product**.
5. Under **DB2 Version 10.5 Fix Pack 5 Workgroup, Enterprise and Advanced Editions**, click **Install New**.
6. Select **Typical** for the installation type.
7. On the **Select the installation, response file creation, or both** page, accept the default or select **Install DB2 Server Edition on this computer**.
8. Follow the steps in the wizard to install and configure your database server. For more information about any of the settings, see the IBM DB2 documentation on IBM Knowledge Center (www.ibm.com/support/knowledgecenter/SSEPGG_10.5.0/com.ibm.swg.im.dbclient.install.doc/doc/c0023452.html).

Adding the IBM DB2 license

You must add the DB2 license after you install IBM DB2 Enterprise Server for IBM Predictive Customer Intelligence.

Procedure

1. Go to the `DB2` folder where you decompressed the IBM Predictive Customer Intelligence installation files.
2. Decompress the file that is named `DB2_ESE_AUSI_QS_Activ_10.5.0.5.zip`.
3. On Microsoft Windows operating systems:
   a. Click **Start** > **IBM DB2 DB2COPY1 (Default)** > **DB2 Command Window - Administrator**.
   b. Type the following command and press Enter:
      `db2licm -a` *decompressed_folder_location*`\ese_u\db2\license\db2ese_u.lic` For example, if you decompressed the file in the default

location, the command would be: db2licm -a C:\IBM\PCI\
PCI_1.1_Server_SW\DB2\DB2_ESE_AUSI_QS_Activ_10.5.0.5\ese_u\db2\
license\db2ese_u.lic

   c. Type the following command to validate that the license was added:

```
db2licm -l
```

4. On SUSE Linux operating systems:

   a. Change to the database administrator user. For example, su db2inst1.

   b. Go to the directory where you decompressed the DB2_ESE_AUSI_QS_Activ_10.5.0.5.zip file.

   c. Type the following command and press Enter:

```
db2licm -a ese_u/db2/license/db2ese_u.lic
```

   d. Type the following command to validate that the license was added:

```
db2licm -l
```

Creating a database for the SPSS components

After you install the IBM DB2 database server for IBM Predictive Customer Intelligence, you must create a database for the SPSS components.

Procedure

1. On the computer where you installed IBM DB2, do one of the following:

   - On Microsoft Windows operating systems, log on as the DB2 instance owner user, and click **Start** > **IBM DB2** > **DB2COPY1 (Default)** > **DB2 Command Window - Administrator**.

   - On Linux operating systems, open a terminal window.

2. Enter the following command to create a database:

```
DB2 CREATE DATABASE SPSSDB ON path USING CODESET UTF-8
   TERRITORY US COLLATE USING SYSTEM
```

   path can be a file path or just a drive letter. For example, on Microsoft Windows operating systems:

```
DB2 CREATE DATABASE SPSSDB ON C: USING CODESET UTF-8
   TERRITORY US COLLATE USING SYSTEM
```

3. Connect to the database you created by using the following command:

```
DB2 CONNECT TO SPSSDB
```

4. Enter the following commands to create the bufferpools for the database. Enter each command individually.

```
DB2 CREATE Bufferpool CDS8K IMMEDIATE SIZE 250 AUTOMATIC PAGESIZE 8 K

DB2 CREATE REGULAR TABLESPACE CDS8K PAGESIZE 8 K MANAGED BY AUTOMATIC
   STORAGE EXTENTSIZE 8 OVERHEAD 10.5 PREFETCHSIZE 8 TRANSFERRATE 0.14
   BUFFERPOOL CDS8K DROPPED TABLE RECOVERY ON

DB2 CREATE Bufferpool CDSTEMP IMMEDIATE SIZE 250 PAGESIZE 32 K

DB2 CREATE SYSTEM TEMPORARY TABLESPACE CDSTEMP PAGESIZE 32 K MANAGED BY AUTOMATIC
   STORAGE EXTENTSIZE 16 OVERHEAD 10.5 PREFETCHSIZE 16 TRANSFERRATE 0.14
   BUFFERPOOL "CDSTEMP"
```

Install software on the Predictive Analytics node computer

For IBM Predictive Customer Intelligence, install SPSS software on the Predictive Analytics node computer.

Installing IBM DB2 client software on the Analytics node computer

You must install IBM DB2 client software on the IBM Predictive Customer Intelligence Predictive Analytics node computer.

Note: On Linux operating systems, the setup wizard is a graphical installer that requires an X Windows System (X11) to display the graphical user interface.

Procedure

1. Go to the `DB2` folder where you decompressed the IBM Predictive Customer Intelligence installation files.
2. On Microsoft Windows operating systems:
   a. Double-click `v10.5fp5_ntx64_rtcl.exe` and follow the steps in the wizard.
   b. Click **Install**.
3. On Linux operating systems:
   a. Decompress the `v10.5fp5_linuxx64_rtcl.tar.gz` file by using the following command: `tar xvf v10.5fp5_linuxx64_rtcl.tar.gz`.
   b. Go to the `rtcl` directory.
   c. Start the installer: `./db2setup`.
   d. In the DB2 Setup Launchpad, click **Install a Product**.
   e. Under **IBM Data Server Runtime Client Version 10.5 Fix Pack 5**, click **Install New**.
   f. Select **Typical** for the installation type.
   g. Select **Install Data Server Runtime Client on this computer**.

Installing IBM Installation Manager on the Predictive Analytics node computer

Install IBM Installation Manager before you install other IBM Predictive Customer Intelligence software.

Procedure

1. Go to the `InstallationMgr` directory where you decompressed the IBM Predictive Customer Intelligence installation files.
2. Decompress the Installation Manager installation file.
3. Start the installer:
   - On Microsoft Windows operating systems, double-click `install.exe`.
   - On Linux operating systems, enter `./install`.
4. Follow the steps to install IBM Installation Manager.

Installing WebSphere Application Server on the Predictive Analytics node computer

You install WebSphere Application Server by using IBM Installation Manager.

Procedure

1. Go to the `WAS` directory where you decompressed the IBM Predictive Customer Intelligence installation files.
2. Decompress the WebSphere Application Server installation files.

You must decompress all of the compressed files: `WASND_v8.5.5_1of3.zip`, `WASND_v8.5.5_2of3.zip`, and `WASND_v8.5.5_3of3.zip`.

3. Start IBM Installation Manager.
   - On Microsoft Windows operating systems, click **Start** > **All Programs** > **IBM Installation Manager** > **IBM Installation Manager**.
   - On Linux operating systems, start IBM Installation Manager from the **Application Browser** or go to the `/opt/IBM/InstallationManager/eclipse` directory, and run `./IBMIM`.
4. Click **File** > **Preferences**.
5. Click **Add Repository**.
6. Browse to the location where you decompressed the WebSphere Application Server installation files.
7. In the directory where you decompressed the installation files, select `repository.config`, click **OK** to close the dialog.
8. In IBM Installation Manager, click **Install**.
9. Under **IBM WebSphere Application Server Network Deployment**, select **Version 8.5.5.0**.
10. Click **Next**, and follow the steps in IBM Installation Manager to install the product.
11. When prompted for **Which program do you want to start?**, select **Profile Management Tool to create a profile**, and click **Finish**.
12. In the **WebSphere Customization Toolbox 8.5** window, click **Create**.
13. Select **Application Server**, and click **Next**.
14. Select **Typical profile creation**, and click **Next**.
15. Follow the steps in the wizard to configure your application server. For more information about any of the settings, see the WebSphere Application Server documentation.

    Note: After the installation is complete, do not start the WebSphere Application Server services.

Upgrading WebSphere Application Server

You update the WebSphere Application Server by using IBM Installation Manager.

Procedure

1. Go to the `WAS` directory where you decompressed the IBM Predictive Customer Intelligence installation files.
2. Decompress the WebSphere Application Server fix pack installation files.

   You must decompress all of the compressed files: `8.5.5-WS-WAS-FP0000006-part1.zip` and `8.5.5-WS-WAS-FP0000006-part2.zip`.
3. Start IBM Installation Manager.
   - On Microsoft Windows operating systems, click **Start** > **All Programs** > **IBM Installation Manager** > **IBM Installation Manager**.
   - On Linux operating systems, start IBM Installation Manager from the **Application Browser** or go to the `/opt/IBM/InstallationManager/eclipse` directory, and run `./IBMIM`.
4. Click **File** > **Preferences**.
5. Click **Add Repository**.
6. Browse to the location where you decompressed the installation files.

7. In the directory where you decompressed the WebSphere Application Server fix pack installation files, select repository.config, click **OK** to close the dialog.

8. In **IBM Installation Manager**, click **Update**.

9. Select **IBM WebSphere Application Server V8.5**, and click **Next**.

10. Follow the steps in **IBM Installation Manager** to install the product.

11. Click **Finish**.

Installing IBM SPSS Collaboration and Deployment Services Server

You install IBM SPSS Collaboration and Deployment Services Server on the IBM Predictive Customer Intelligence Predictive Analytics node computer.

If you want to install multiple IBM SPSS Collaboration and Deployment Services instances, see the product documentation (www.ibm.com/support/knowledgecenter/SS69YH_7.0.0/cads_config_ddita/model_management/thin/pes_clustering.dita).

Procedure

1. Go to the SPSS_CDS directory where you decompressed the IBM Predictive Customer Intelligence installation files.

2. Decompress the spss_cnds_svr_7.0_mp_ml.zip file.

3. Start IBM Installation Manager.
   - On Microsoft Windows operating systems, click **Start** > **All Programs** > **IBM Installation Manager** > **IBM Installation Manager**.
   - On Linux operating systems, start IBM Installation Manager from the **Application Browser** or go to the /opt/IBM/InstallationManager/eclipse directory, and run **./IBMIM**.

4. Click **File** > **Preferences**.

5. Click **Add Repository**.

6. Browse to the location where you decompressed the installation files.

7. In the Server_Repository directory where you decompressed the installation files, select repository.config, click **OK** to close the dialog.

8. In IBM Installation Manager, click **Install**.

9. Under **Installation Packages**, select the following components.
   - **IBM SPSS Collaboration and Deployment Services - Remote Scoring Server**
   - **IBM SPSS Collaboration and Deployment Services - Repository Server**
   - **IBM SPSS PMML Scoring Adapter**

10. Click **Next**, and follow the steps in IBM Installation Manager to install the products.

11. On the **Common Configurations** page, enter the following information:

    URL   Enter the name or IP address of the Predictive Analytics node computer and the port number and click **Finish**. For example, enter http://*servername*:9080.

    Username
    Enter the SPSS admin user name that you used when you installed the IBM SPSS Collaboration and Deployment Services Server.

Password

Enter the SPSS admin user's password.

12. Click **Install**.
13. In the **Which programs do you want to start** box, select **IBM SPSS Collaboration and Deployment Services Configuration Tool**, and click **Finish**.
14. In the **IBM SPSS Collaboration and Deployment Services Configuration Tool**, click **Next**.
15. On the **Application Server** page, enter the information for IBM WebSphere Application Server, and click **Next**.

    For the **WebSphere profile directory** value, the default location on Microsoft Windows operating systems is C:\Program Files (x86)\IBM\WebSphere\ AppServer\profiles\AppSrv01. On Linux operating systems, the default is /opt/IBM/WebSphere/AppServer/profiles/AppSrv01.
16. On the **Database** page, enter the information for the SPSSDB database, and click **Next**.

    The default port number on Microsoft Windows operating systems is 50000. On Linux operating systems, the default port number is 50001.
17. On the **Encryption** page, enter a password, and click **Next**.
18. On the **Repository Admin** page, enter a password for the SPSS admin user, and click **Next**.
19. On the **Deployment mode** page, select **Automatic**, and click **Next**.
20. On the **Configuration summary** page, click **Configure**.
21. Click **Finish**.

Installing IBM SPSS Enterprise View Driver software

Install IBM SPSS Collaboration and Deployment Services Enterprise View Driver software on the IBM Predictive Customer Intelligence Predictive Analytics node computer.

Procedure

1. Go to the SPSS_CDS\Drivers directory where you decompressed the IBM Predictive Customer Intelligence installation files.
2. Decompress the installation files.
3. Go to the Enterprise_View_Driver_64 directory.
4. Start the installer.
   - On Microsoft Windows operating systems, double-click setupWindows64-amd64.exe.
   - On SUSE Linux operating systems, enter the following command: ./setupLinux64-amd64.bin.

     If you cannot run the executable, change the permissions by entering the following before you run the command: chmod +x setupLinux64-amd64.bin.
5. Follow the steps in the wizard to install the driver.

Installing IBM SPSS Modeler Server software

Install and update IBM SPSS Modeler Server software on the IBM Predictive Customer Intelligence Predictive Analytics node computer.

Procedure

1. Go to the `SPSS_Modeler_Server` directory where you decompressed the IBM Predictive Customer Intelligence installation files.

2. Start the installer.
   - On Microsoft Windows operating systems, decompress the `spss_mod_svr_17.0_win_ml.zip` file, and double-click `setup.exe`.
   - On Linux operating systems, enter the following command: `./spss_mod_svr_17.0_lx86_ml.bin`.

     If you cannot run the executable, change the permissions by entering the following before you run the command: `chmod +x spss_mod_svr_17.0_lx86_ml.bin`.

3. On the **Server Mode** page, select **Production Mode**.

4. Follow the steps in the wizard to install the server.

5. Go to the `SPSS_Modeler_Server` directory where you decompressed the IBM Predictive Customer Intelligence installation files.

6. Install the updater.
   - On Microsoft Windows operating systems, decompress the `17.0-IM-S17MODELERS-WIN64-FP001.zip` file, and double-click `setup.exe`.
   - On Linux operating systems, copy `17.0-IM-S17MODELERS-Linuxx8664-FP001.bin` to the directory where SPSS Modeler Server is installed, and enter the following command: `./17.0-IM-S17MODELERS-Linuxx8664-FP001.bin`.

     SPSS Modeler Server is installed to `/usr/IBM/SPSS/ModelerServer/17.0` by default.

     If you cannot run the executable, change the permissions by entering the following before you run the command: `chmod +x s17.0-IM-S17MODELERS-WIN64-FP001`.

7. Follow the steps in the wizard to update the server.

8. Click **Finish**.

9. Install the interim fix.
   - On Microsoft Windows operating systems, go to the `SPSS_Modeler_Server\Interim_Fix` directory, decompress the `17.0-IM-S17MODELERS-WIN64-FP01-IF011.zip` file, and follow the instructions in `17.0-IM-S17MODELERS-Win64-FP01-IF011.txt` to apply the interim fix.
   - On Linux operating systems, go to the `SPSS_Modeler_Server/Interim_Fix` directory, decompress the `17.0-IM-S17MODELERS-LINUX8664-FP01-IF011.zip` file, and follow the instructions in `17.0-IM-S17MODELERS-LINUX8664-FP01-IF011.txt` to apply the interim fix.

Installing IBM SPSS Modeler Premium Server software

Install and update IBM SPSS Modeler Premium Server software on the IBM Predictive Customer Intelligence Predictive Analytics node computer

Before you begin

Ensure that you install IBM SPSS Modeler Server software before you install IBM SPSS Modeler Premium Server software.

Procedure

1. Go to the `SPSS_Modeler_Server` directory where you decompressed the IBM Predictive Customer Intelligence installation files.

2. Start the installer.
   - On Microsoft Windows operating systems, decompress the
     `spss_mod_prm_svr_17.0_win_ml.zip` file, and double-click `setup.exe`.
   - On SUSE Linux operating systems, decompress the
     `spss_mod_prm_svr_17.0_lx86_ml.zip` file, and enter the following command:
     `./premium_server_linux64.bin`.

     If you cannot run the executable, change the permissions by entering the
     following before you run the command: `chmod +x
     premium_server_linux64.bin`.
3. Follow the steps in the wizard to install the server.
4. Install the fix pack.
   - On Microsoft Windows operating systems, decompress the
     `17.0-IM-S17MODELERPS-WIN64-FP001.zip` file, and double-click `setup.exe`.
   - On SUSE Linux operating systems, copy `17.0-IM-S17MODELERPS-Linux8664-`
     `FP001.bin` to the directory where SPSS Modeler Server is installed, and enter
     the following command: `./17.0-IM-S17MODELERPS-Linux8664-FP001.bin`.

     SPSS Modeler Server is installed to `/usr/IBM/SPSS/ModelerServer/17.0` by
     default.

     If you cannot run the executable, change the permissions by entering the
     following before you run the command: `chmod +x 17.0-IM-S17MODELERPS-`
     `Linux8664-FP001.bin`.
5. Follow the steps in the wizard to update the server.
6. Click **Done**.

   For more information about any of the settings, see the IBM SPSS Modeler
   Premium 17 Installation and Configuration Guide.

Installing IBM SPSS Collaboration and Deployment Services Modeler adapters

Install IBM SPSS Collaboration and Deployment Services Adapter software on the
IBM Predictive Customer Intelligence Predictive Analytics node computer.

Procedure
1. Go to the `SPSS_CDS/Adapters` directory where you decompressed the IBM
   Predictive Customer Intelligence server installation files.
2. Decompress the installation files.
   - On Microsoft Windows operating systems, decompress
     `spss_mod_17.0_cndsadp_7.0_win_ml.zip`.
   - On Linux operating systems, decompress
     `spss_mod_17.0_cndsadp_7.0_lx86ml.zip`.
3. Start IBM Installation Manager.
   - On Microsoft Windows operating systems, click **Start** > **All Programs** >
     IBM Installation Manager > **IBM Installation Manager**.
   - On Linux operating systems, start IBM Installation Manager from the
     Application Browser or go to the `/opt/IBM/InstallationManager/eclipse`
     directory, and run `./IBMIM`.
4. Click **File** > **Preferences**.
5. Click **Add Repository**.
6. Browse to the location where you decompressed the installation files.
7. In the `disk1` folder, select `diskTag.inf`, click **OK** to close the dialog.

8. In IBM Installation Manager, click **Install**.

9. Under **Installation Packages**, select **IBM SPSS Modeler Adapters for Collaboration and Deployment Services**.

10. Click **Next**, and follow the steps in IBM Installation Manager to install the product.

11. On the **Install Packages** page, select **Use the existing package group**, select **IBM SPSS Collaboration and Deployment Services 7.0**, and click **Next**.

12. On the **Common Configurations** page, enter the SPSS administrator user and password, and click **Next**.

13. Click **Install**, and click **Finish**.

Upgrading IBM SPSS Collaboration and Deployment Services Modeler adapters

You update the IBM SPSS Collaboration and Deployment Services Modeler adapter by using IBM Installation Manager

Procedure

1. Go to the SPSS_CDS/Adapters directory where you decompressed the IBM Predictive Customer Intelligence server installation files.

2. Decompress the installation files: 17.0-IM-S17MODELERCDS70-MP-FP001.zip.

3. Start IBM Installation Manager.
   - On Microsoft Windows operating systems, click **Start** > **All Programs** > **IBM Installation Manager** > **IBM Installation Manager**.
   - On Linux operating systems, start IBM Installation Manager from the **Application Browser** or go to the /opt/IBM/InstallationManager/eclipse directory, and run ./IBMIM.

4. Click **File** > **Preferences**.

5. Click **Add Repository**.

6. Browse to the location where you extracted the installation files.

7. In the repository directory, select repository.config, and click **OK** to close the dialog.

8. In **IBM Installation Manager**, click **Update**.

9. Select **IBM SPSS Collaboration and Deployment Services 7.0**, and click **Next**.

10. Click **Next**, and follow the steps in **IBM Installation Manager** to update the product.

11. On the **Common Configurations page**, enter the SPSS administrator user and password, and click **Next**.

12. Click **Update**, and then click **Finish**.

Installing IBM Analytical Decision Management software

Install IBM Analytical Decision Management software on the IBM Predictive Customer Intelligence Predictive Analytics node computer.

A sample Analytical Decision Management application is provided with the installation files. The sample application is provided in a compressed file that is named ADM_80_Demo.zip. For more information about the sample file, see the Analytical Decision Management documentation (www.ibm.com/support/knowledgecenter/SS6A3P_8.0.0).

Procedure

1. Go to the ADM directory where you decompressed the IBM Predictive Customer Intelligence server installation files.
2. Decompress the installation files: ibm_adm_17.0_mp_ml.zip.
3. Start IBM Installation Manager.
   - On Microsoft Windows operating systems, click **Start** > **All Programs** > **IBM Installation Manager** > **IBM Installation Manager**.
   - On Linux operating systems, start IBM Installation Manager from the **Application Browser** or go to the /opt/IBM/InstallationManager/eclipse directory, and run ./IBMIM.
4. Click **File** > **Preferences**.
5. Click **Add Repository**.
6. Browse to the location where you decompressed the installation files.
7. In the adm_repository folder, select repository.config, and click **OK** to close the dialog.
8. In IBM Installation Manager, click **Install**.
9. Under **Installation Packages**, select **IBM Analytical Decision Management**.
10. Click **Next**, and follow the steps in IBM Installation Manager to install the product.
11. On the **Install Packages** page, select **Use the existing package group**, select **IBM SPSS Collaboration and Deployment Services 7.0**, and click **Next**.
12. On the **Install Packages** page, select **Production** for the **Installation Type**.

    Ensure that all of the options under **IBM Analytical Decision Management Applications** are selected.
13. On the **Common Configurations** page, enter the SPSS administrator user and password, and click **Next**.
14. Click **Install**.
15. Click **Finish**.

Installing IBM SPSS Data Access Pack

Install the IBM SPSS Data Access Pack software on the IBM Predictive Customer Intelligence Predictive Analytics node computer.

Before you begin

You must stop the IBM WebSphere Application Server profile where IBM SPSS products are installed and stop IBM SPSS Modeler Server before you install the Data Access Pack.

Procedure

1. Stop the WebSphere Application Server instance.
   - On Microsoft Windows operating systems, click **Start** > **All Programs** > **IBM WebSphere** > **Profiles** > **AppSrv01** > **Stop the server**.
   - On Linux operating systems, go to the WebSphere Application Server profile bin directory, and enter the following command: ./stopServer.sh server1.

     The default path to is /opt/IBM/WebSphere/AppServer/profiles/AppSrv01/bin.
2. Stop IBM SPSS Modeler Server.

- On Microsoft Windows operating systems, stop the service from **Control Panel** > **Administrative Tools** > **Services**.
- On Linux operating systems, go to the `/usr/IBM/SPSS/ModelerServer/17.0` directory, and enter the following command: `./modelersrv.sh stop`.

  For more information, see the IBM SPSS Modeler documentation (www.ibm.com/support/docview.wss?uid=swg27043831).

3. Go to the `SPSS_DAP` directory where you decompressed the IBM Predictive Customer Intelligence server installation files.
4. Decompress the installation file `SPSS_DATA_ACCESS_PACK_7.1.1_MP_EN.zip`.
5. Start the installer.
   - On Microsoft Windows operating systems, go to the `Win64` directory, and double-click `SDAP_7.1_win64.exe`.
   - On Linux operating systems, go to the `Linux` directory, and run the following command: `./SDAP_7.1_Linux64.bin`.

     If you cannot run the executable, change the permissions by entering the following before you run the command: `chmod +x SDAP_7.1_Linux64.bin`.
6. Follow the steps in the wizard to install the Data Access Pack.
7. Start the WebSphere Application Server instance.
   - On Microsoft Windows operating systems, click **Start** > **All Programs** > **IBM WebSphere** > **Profiles** > **AppSrv01** > **Start the server**.
   - On Linux operating systems, go to the WebSphere Application Server profile `bin` directory, and enter the following command: `./startServer.sh server1`.

     The default path is `/opt/IBM/WebSphere/AppServer/profiles/AppSrv01/bin`.
8. Start IBM SPSS Modeler Server.
   - On Microsoft Windows operating systems, start the service from **Control Panel** > **Administrative Tools** > **Services**.
   - On Linux operating systems, go to the `/usr/IBM/SPSS/ModelerServer/17.0` directory, and enter the following command: `./modelersrv.sh start`.

Installing IBM SPSS Statistics Server software

Install IBM SPSS Statistics Server software on the IBM Predictive Customer Intelligence Predictive Analytics node computer.

Procedure

1. Go to the `SPSS_Stats_Server` directory where you decompress the IBM Predictive Customer Intelligence server installation files.
2. Start the installer.
   - On Microsoft Windows operating systems, decompress `SPSSS_SERVER_23.0_MW_ML.zip`, and in the `SPSSS_SERVER_23.0_MW_ML` directory, double-click `setup.exe`.
   - On SUSE Linux operating systems, enter the following command: `./SPSSSS23_LINUX_X86-64_ML.bin`.

     If you cannot run the executable, change the permissions by entering the following before you run the command: `chmod +x SPSSSS23_LINUX_X86-64_ML.bin`.
3. Follow the steps in the wizard to install the software.
4. On the **Server Mode** page, select **Production Mode**.
5. On the **IBM SPSS Statistics - Essentials for Python** page, click **Yes**, and then click **Next**.

Installing IBM SPSS Statistics Collaboration and Deployment Services adapters

Install IBM SPSS Statistics Collaboration and Deployment Services adapter software on the IBM Predictive Customer Intelligence Predictive Analytics node computer.

Procedure

1. Go to the `SPSS_CDS\Adapters` directory where you decompressed the IBM Predictive Customer Intelligence server installation files.
2. Decompress `SPSSS_23.0_CDSA_7.0_MP_ML.zip`.
3. Start IBM Installation Manager.
   - On Microsoft Windows operating systems, click **Start** > **All Programs** > **IBM Installation Manager** > **IBM Installation Manager**.
   - On Linux operating systems, start IBM Installation Manager from the **Application Browser** or go to the `/opt/IBM/InstallationManager/eclipse` directory, and run `./IBMIM`.
4. Click **File** > **Preferences**.
5. Click **Add Repository**.
6. Browse to the location where you decompressed the installation files.
7. In the `CnDS70/repository` directory, select `repository.config`, and click **OK** to close the dialog.
8. In IBM Installation Manager, click **Install**.
9. Under **Installation Packages**, select **IBM SPSS Collaboration and Deployment Services - Server Adapter for Statistics**.
10. Click **Next**, and follow the steps in IBM Installation Manager to install the product.
11. On the **Install Packages** page, select **Use the existing package group**, select **IBM SPSS Collaboration and Deployment Services 7.0**, and click **Next**.
12. On the **Common Configurations** page, enter the SPSS administrator user and password, and click **Next**.
13. Click **Install**.
14. Click **Finish**.

Install software on the Business Intelligence node computer

You must install an IBM DB2 client, IBM HTTP Server, and IBM Cognos Business Intelligence on the IBM Predictive Customer Intelligence Business Intelligence node computer.

If you want to customize the installation of IBM Cognos Business Intelligence, such as distributing the installation among different computers, see the product documentation (www.ibm.com/support/knowledgecenter/SSEP7J_10.2.2/com.ibm.swg.ba.cognos.inst_cr_winux.10.2.2.doc/c_installservercompsdistributed.html).

Installing IBM DB2 client software on the BI node computer

You must install IBM DB2 client software on the IBM Predictive Customer Intelligence Business Intelligence node computer.

Note: On Linux operating systems, the setup wizard is a graphical installer that requires an X Windows System (X11) to display the graphical user interface.

Procedure

1. Go to the `DB2` folder where you decompressed the IBM Predictive Customer Intelligence installation files.
2. On Microsoft Windows operating systems:
   a. Double-click `v10.5fp5_ntx64_rtcl.exe` and follow the steps in the wizard.
   b. Click **Install**.
3. On Linux operating systems:
   a. Decompress the `v10.5fp5_linuxx64_rtcl.tar.gz` file by using the following command: `tar xvf v10.5fp5_linuxx64_rtcl.tar.gz`.
   b. Go to the `rtcl` directory.
   c. Start the installer: `./db2setup`.
   d. In the DB2 Setup Launchpad, click **Install a Product**.
   e. Under **IBM Data Server Runtime Client Version 10.5 Fix Pack 5**, click **Install New**.
   f. Select **Typical** for the installation type.
   g. Select **Install Data Server Runtime Client on this computer**.

Installing IBM Installation Manager on the BI node computer

Install IBM Installation Manager before you install other IBM Predictive Customer Intelligence software.

Procedure

1. Go to the `InstallationMgr` directory where you decompressed the IBM Predictive Customer Intelligence installation files.
2. Decompress the Installation Manager installation file.
3. Start the installer:
   - On Microsoft Windows operating systems, double-click `install.exe`.
   - On Linux operating systems, enter `./install`.
4. Follow the steps to install IBM Installation Manager.

Installing WebSphere Application Server on the BI node computer

On Linux operating systems, you deploy IBM Cognos Business Intelligence to WebSphere Application Server. You install WebSphere Application Server by using IBM Installation Manager.

On Microsoft Window operating systems, you can use the default application server that is provided with IBM Cognos Business Intelligence. You can skip this task.

Procedure

1. Go to the `WAS` directory where you decompressed the IBM Predictive Customer Intelligence installation files.
2. Decompress the WebSphere Application Server installation files.

   You must decompress all of the compressed files: `WASND_v8.5.5_1of3.zip`, `WASND_v8.5.5_2of3.zip`, and `WASND_v8.5.5_3of3.zip`.
3. Start IBM Installation Manager.
   - On Microsoft Windows operating systems, click **Start** > **All Programs** > **IBM Installation Manager** > **IBM Installation Manager**.

- On Linux operating systems, start IBM Installation Manager from the
  Application Browser or go to the `/opt/IBM/InstallationManager/eclipse`
  directory, and run `./IBMIM`.

4. Click **File** > **Preferences**.
5. Click **Add Repository**.
6. Browse to the location where you decompressed the WebSphere Application
   Server installation files.
7. In the directory where you decompressed the installation files, select
   `repository.config`, click **OK** to close the dialog.
8. In IBM Installation Manager, click **Install**.
9. Under **IBM WebSphere Application Server Network Deployment**, select
   Version 8.5.5.0.
10. Click **Next**, and follow the steps in IBM Installation Manager to install the
    product.
11. When prompted for **Which program do you want to start?**, select **Profile
    Management Tool to create a profile**, and click **Finish**.
12. In the **WebSphere Customization Toolbox 8.5** window, click **Create**.
13. Select **Application Server**, and click **Next**.
14. Select **Typical profile creation**, and click **Next**.
15. Follow the steps in the wizard to configure your application server. For more
    information about any of the settings, see the WebSphere Application Server
    documentation.

    Note: After the installation is complete, do not start the WebSphere
    Application Server services.

Upgrading WebSphere Application Server

You update the WebSphere Application Server by using IBM Installation Manager.

Procedure

1. Go to the `WAS` directory where you decompressed the IBM Predictive
   Customer Intelligence installation files.
2. Decompress the WebSphere Application Server fix pack installation files.

   You must decompress all of the compressed files: `8.5.5-WS-WAS-FP0000006-
   part1.zip` and `8.5.5-WS-WAS-FP0000006-part2.zip`.
3. Start IBM Installation Manager.
   - On Microsoft Windows operating systems, click **Start** > **All Programs** >
     IBM Installation Manager > **IBM Installation Manager**.
   - On Linux operating systems, start IBM Installation Manager from the
     Application Browser or go to the `/opt/IBM/InstallationManager/eclipse`
     directory, and run `./IBMIM`.
4. Click **File** > **Preferences**.
5. Click **Add Repository**.
6. Browse to the location where you decompressed the installation files.
7. In the directory where you decompressed the WebSphere Application Server
   fix pack installation files, select `repository.config`, click **OK** to close the
   dialog.
8. In **IBM Installation Manager**, click **Update**.
9. Select **IBM WebSphere Application Server V8.5**, and click **Next**.
10. Follow the steps in **IBM Installation Manager** to install the product.

11. Click **Finish**.

Installing IBM HTTP Server on the BI node computer

You install IBM HTTP Server by using IBM Installation Manager.

Procedure

1. Go to the `WAS_HTTP_Server` directory where you decompressed the IBM Predictive Customer Intelligence server installation files.
2. Decompress the HTTP Server installation files.

   You must decompress all of the compressed files: `WAS_v8.5.5_SUPPL_1_of_3.zip`, `WAS_v8.5.5_SUPPL_2_of_3.zip`, and `WAS_v8.5.5_SUPPL_3_of_3.zip`.
3. Start IBM Installation Manager.
   - On Microsoft Windows operating systems, click **Start** > **All Programs** > **IBM Installation Manager** > **IBM Installation Manager**.
   - On Linux operating systems, start IBM Installation Manager from the **Application Browser** or go to the `/opt/IBM/InstallationManager/eclipse` directory, and run `./IBMIM`.
4. Click **File** > **Preferences**.
5. Click **Add Repository**.
6. Browse to the location where you extracted the installation files.
7. Select `repository.config`, and click **OK** to close the dialog box.
8. In IBM Installation Manager, click **Install**.
9. Select **IBM HTTP Server for WebSphere Application Server**.
10. Click **Next**, and follow the steps in IBM Installation Manager to install the product.
    a. On the **Configuration for IBM HTTP Server for WebSphere Application Server 8.5.5.0** page, change the **HTTP port** value only if you have another web server that is running on your computer and is already using port 80.

       Note: If you use a port other than 80, you must change the port number in the **Gateway URI** in IBM Cognos Configuration.

Upgrading IBM HTTP Server on the BI node computer

You update IBM HTTP Server by using IBM Installation Manager.

Procedure

1. Go to the `WAS_HTTP_Server` directory where you decompressed the IBM Predictive Customer Intelligence server installation files.
2. Decompress the installation files.

   You must decompress `8.5.5-WS-WASSupplements-FP0000006-part1.zip` and `8.5.5-WS-WASSupplements-FP0000006-part2.zip`.

   Ensure that you decompress the files into the same directory.
3. Start IBM Installation Manager.
   - On Microsoft Windows operating systems, click **Start** > **All Programs** > **IBM Installation Manager** > **IBM Installation Manager**.
   - On Linux operating systems, start IBM Installation Manager from the **Application Browser** or go to the `/opt/IBM/InstallationManager/eclipse` directory, and run `./IBMIM`.
4. Click **File** > **Preferences**.

5. Click **Add Repository**.
6. Browse to the location where you decompressed the installation files.
7. Select `repository.config`, and click **OK** to close the dialog box.
8. In **IBM Installation Manager**, click **Update**.
9. Select **IBM HTTP Server V8.5**, and click **Next**.
10. Follow the steps in **IBM Installation Manager** to install the product.
11. Click **Finish**.

Installing IBM Cognos Business Intelligence

Install IBM Cognos Business Intelligence software on the IBM Predictive Customer Intelligence Business Intelligence node computer.

For more information about IBM Cognos Business Intelligence, see the product documentation (www.ibm.com/support/knowledgecenter/SSEP7J_10.2.2).

Before you begin

On Linux operating systems, the setup wizard is a graphical installer that requires an X Windows System (X11) to display the graphical user interface. And, you must also install the OpenMotif library to run the installation wizard for IBM Cognos Business Intelligence. For more information, see Cannot install Cognos BI using issetup on Linux. libXm.so.4 is missing (www.ibm.com/support/docview.wss?uid=swg21612290).

Alternatively, you can install IBM Cognos BI by using an unattended installation. For more information, see the Cognos documentation on IBM Knowledge Center (www.ibm.com/support/knowledgecenter/SSEP7J_10.2.2/com.ibm.swg.ba.cognos.inst_cr_winux.10.2.2.doc/t_inst_settingupanunattendedinstallationandconfiguration.html%23inst_SettingUpAnUnattendedInstallationandConfiguration).

Procedure

1. Install IBM Cognos BI.
   a. Go to the BI directory where you decompressed the IBM Predictive Customer Intelligence server installation files.
   b. On Microsoft Windows operating systems, decompress `bi_svr_64b_10.2.2_win_ml.tar.gz`. On Linux operating systems, decompress `bi_svr_10.2.2_l86_ml.tar.gz`.

      On Microsoft Windows operating systems, decompressing the IBM Cognos installation files is a two-step process. You must decompress the `tar.gz` file, and then decompress the `tar` file.
   c. On Microsoft Windows operating systems, go to the folder where you decompressed the file, and decompress `bi_svr_64b_10.2.2_win_ml.tar`.
   d. On Microsoft Windows operating systems, go to the `win64h` directory and double-click `issetup.exe`. On Linux operating systems, go to the `linuxi38664h` directory, and enter `./issetup`.
   e. Follow the steps in the wizard to install the server software.
   f. On the **Component Selection** page, select the following components:
      - **Application Tier Components**
      - **Gateway**
      - **Content Manager**

> **Note:** Do not install the **Cognos Content Database** component.

    g. Clear the **Start IBM Cognos Configuration** box, and click **Finish**.

2. Install the IBM Cognos BI fix pack.

    Important: Ensure that you decompress the fix pack to a different location than the IBM Cognos BI installation files. Some directories will be overwritten if you use the same location.

    a. Go to the `BI` folder where you installed the IBM Predictive Customer Intelligence server installation files.

    b. On Microsoft Windows operating systems, decompress `up_bisrvr_winx64h_10.2.6102.54_ml.tar.gz`, and then decompress `up_bisrvr_winx64h_10.2.6102.54_ml.tar`.

      On Linux operating systems, decompress `up_bisrvr_linuxi38664h_10.2.6102.54_ml.tar.gz`.

    c. On Microsoft Windows operating systems, go to the `win64h` directory and double-click `issetup.exe`. On Linux operating systems, go to the `linuxi38664h` directory, and enter `./issetup`.

    d. Follow the steps in the wizard to install the server software.

    e. On the **Installation Location** page, browse to the location where you installed IBM Cognos BI. For example, `C:\Program Files\ibm\cognos\c10_64` or `/opt/IBM/cognos/c10_64`.

    f. Click **Finish**.

Configure and start IBM Cognos BI

After you install IBM Cognos Business Intelligence, you must create a content store database, save your configuration settings, and start the services.

Copying the JDBC files for IBM DB2

You must copy two `jar` files from your IBM DB2 installation to your IBM Cognos Business Intelligence installation location.

Procedure

Copy the following files from the *DB2_client_installation*\java directory to the *Cognos_installation*\webapps\p2pd\WEB-INF\lib directory:

- `db2jcc.jar`
- `db2jcc_license_cu.jar`

Configuring IBM Cognos BI

You configure IBM Cognos Business Intelligence by using IBM Cognos Configuration.

For more information about configuring IBM Cognos BI, see the *IBM Cognos Business Intelligence Installation and Configuration Guide* on IBM Knowledge Center (www.ibm.com/support/knowledgecenter/SSEP7J_10.2.2).

Before you begin

On Linux operating systems, you must have a **JAVA_HOME** value set. Set **JAVA_HOME** to the Java™ that is provided with WebSphere Application Server. For example, set your **JAVA_HOME** environment variable to `/opt/IBM/WebSphere/AppServer/java`.

Procedure

1. Start IBM Cognos Configuration.
   - On Microsoft Windows operating systems, click **Start** > **All Programs** > **IBM Cognos 10_64** > **IBM Cognos Configuration**.
   - On Linux operating systems, go to the *Cognos_install_location*/bin64 directory, and enter the following command: ./cogconfig.sh.

     For example, go to /opt/ibm/cognos/c10_64/bin64.

2. On Microsoft Windows operating systems, in the **Explorer** pane, select **Environment**, and replace localhost with the name or IP address of your computer in the following fields:
   - **Gateway URI** (If you are using a port number other than 80 for the web server, ensure that you also change the port number value to the port number for IBM HTTP Server.)
   - **Dispatcher URIs for Gateway**
   - **External dispatcher URI**
   - **Internal dispatcher URI**
   - **Dispatcher URI for external applications**
   - **Content Manager URIs**

3. On Linux operating systems:
   a. In the **Explorer** window, under **IBM Cognos** services, right-click **IBM Cognos**, and click **Delete**.
   b. Right-click **IBM Cognos Service**, click **New resource** > **Configuration**.
   c. Enter a **Name**, select **WebSphere** in the **Type** box, and click **OK**.
   d. In the **WebSphere Application Server location** box, click the browse icon, and select the location of your IBM WebSphere Application Server installation. For example, /opt/IBM/WebSphere/AppServer.
   e. In the **Profile** box, select the name of the profile into which you want IBM Cognos BI installed.
   f. In the **Server instance** box, select the server instance for your IBM WebSphere profile.
   g. Right-click the name that you gave your IBM WebSphere configuration, and click **Build**.

      The **Build Application Wizard** appears. Follow the instructions in the wizard and click the **Help** icon for more information for each page. Use the wizard to build the application and install it to the IBM WebSphere profile.
   h. When prompted, select **Install the IBM Cognos** application, click **Finish**, and follow the steps in the wizard.

      The application is configured to run. For example, the path values are added and the correct JVM settings are applied.
   i. On the **Configure IBM Cognos for WebSphere** page, ensure that you enter the correct port numbers for the IBM WebSphere profile. These values are applied to the IBM Cognos Configuration **Environment** settings.

      Ensure that you enter the HTTP transport port number in the URLs:
      - **Internal dispatcher URI**
      - **External dispatcher URI**
      - **Content Manager URIs**
      - **Dispatcher URIs for gateway**
      - **Dispatcher URI for external applications**

For example, change `http://localhost:9300/p2pd/servlet/dispatch` to `http://servername:9080/p2pd/servlet/dispatch`.

For the **Content Manager URIs** and **Dispatcher URIs for Gateway** values, click the edit icon to change the values.

In the **Gateway URI** box, change **localhost** to the name or IP address of your computer, and leave the port number as 80.

   j. Click **Next**, and the click **Finish**

4. Leave IBM Cognos Configuration open.

Creating a content store database for IBM Cognos BI

You create a database script on your IBM Predictive Customer IntelligenceBusiness Intelligence node computer when you configure IBM Cognos BI. You use the script to create the content store database on your data node computer.

Procedure

1. In IBM Cognos Configuration, configure a content store database.

   Note: The information that you enter is used to generate a script that you use to create the content store database on the data node computer.

   a. In the **Explorer** pane, under **Data Access** > **Content Manager**, click **Content Store**.

   b. In the **Database server and port number** field, enter the name of the computer and the port number on which you installed IBM DB2 Enterprise Server. For example, enter *servername*:50000, where *servername* is the name of the data node computer and 50000 is the default port number that is used by IBM DB2.

   On Linux operating systems, the default port number is 50001.

   c. Click the **Value** field next to the **User ID and password** property, click the edit icon, and enter the **User ID** and **Password** for your IBM DB2 user, and click **OK**.

   d. In the **Properties** pane, for the **Database name** property, enter a name for your content store database.

   The default name is cm.

   Restriction: Do not use a name longer than 8 characters and use only letters, numbers, underscores, or hyphens in the name.

2. Right-click **Content Store**, and click **Generate DDL**.

   The DDL file, `createDb.sql`, is created in the *Cognos_installation*\ `configuration\schemas\content\db2` directory.

3. Copy `createDb.sql` from the BI node computer to the data node computer.

4. On your data node computer, create the content store database.

   a. Log on to the data node computer as a DB2 user with privileges to create a database or change to the database instance owner.

   b. On Microsoft Windows operating systems, click **Start** > **IBM DB2** > **DB2COPY1 (Default)** > **DB2 Command Window - Administrator**.

   c. On Linux operating systems, open a terminal window.

   d. Type db2 `-tvf` *path*\createDb.sql, and press Enter.

5. In IBM Cognos Configuration, click **File** > **Save**.

6. Test the connection to the content store database. In IBM Cognos Configuration, in the **Explorer** pane, under **Data Access** > **Content Manager**, right-click **Content Store**, and click **Test**.

Note: If the connection does not succeed, you must correct any issues before you can start the IBM Cognos BI services.

7. On Microsoft Windows operating systems, leave IBM Cognos Configuration open.

Starting the IBM Cognos BI services

On Microsoft Windows operating systems, you start the IBM Cognos BI services by using IBM Cognos Configuration. On Linux operating systems, you start IBM Cognos by restarting the WebSphere Application Server profile.

Procedure

1. On Microsoft Windows operating systems, in IBM Cognos Configuration, click **Actions** > **Start**.
2. On Linux operating systems:
   a. Log in to the BI node computer as **root**.
   b. Go to the WebSphere Application Server profile directory when IBM Cognos BI is running. For example, go to `/opt/IBM/WebSphere/AppServer/profiles/AppSrv01/bin`.
   c. Enter the following command: `./startServer.sh server1`

   Note: It can take some time for the IBM Cognos BI services to start for the first time.

Configuring IBM HTTP Server for IBM Cognos BI

If you manually installed IBM Predictive Customer Intelligence, you must configure the IBM Cognos Business Intelligence gateway on your web server.

Procedure

1. Go to the HTTP Server `conf` directory. For example, On Microsoft Windows operating systems, go to the `C:\Program Files (x86)\IBM\HTTPServer\conf` directory. On Linux operating systems, go to the `/opt/IBM/HTTPServer/conf` directory.
2. Open the `httpd.conf` file in a text editor.
3. Add the following lines to file:

```
ScriptAlias /ibmcognos/cgi-bin "Cognos_installation/cgi-bin"
<Directory "Cognos_installation/cgi-bin">
   Options Indexes MultiViews
   AllowOverride None
   Order allow,deny
   Allow from all
</Directory>

Alias /ibmcognos "Cognos_installation/webcontent"
<Directory "Cognos_installation/webcontent">
   Options Indexes MultiViews
   AllowOverride None
   Order allow,deny
   Allow from all
</Directory>
```

   Note: Ensure that you add the `/ibmcognos/cgi-bin` ScriptAlias before the `/ibmcognos` Alias.
   For example, if you use the default installation location on Microsoft Windows operating systems, add the following lines:

```
ScriptAlias /ibmcognos/cgi-bin "C:/Program Files/IBM/cognos/c10_64/cgi-bin"
<Directory "C:/Program Files/IBM/cognos/c10_64/cgi-bin">
   Options Indexes MultiViews
   AllowOverride None
   Order allow,deny
   Allow from all
</Directory>

Alias /ibmcognos "C:/Program Files/IBM/cognos/c10_64/webcontent"
<Directory "C:/Program Files/IBM/cognos/c10_64/webcontent">
   Options Indexes MultiViews
   AllowOverride None
   Order allow,deny
   Allow from all
</Directory>
```

If you use the default installation location on Linux operating systems, add the following lines:

```
ScriptAlias /ibmcognos/cgi-bin "/opt/ibm/cognos/c10_64/cgi-bin"
<Directory "/opt/ibm/cognos/c10_64/cgi-bin">
   Options Indexes MultiViews
   AllowOverride None
   Order allow,deny
   Allow from all
</Directory>
Alias /ibmcognos "/opt/ibm/cognos/c10_64/webcontent"
<Directory "/opt/ibm/cognos/c10_64/webcontent">
   Options Indexes MultiViews
   AllowOverride None
   Order allow,deny
   Allow from all
</Directory>
```

4. Save and close the file.

5. On Microsoft Windows operating systems:

   a. Click **Start** > **All Programs** > **IBM HTTP Server V8.5** > **Stop HTTP Server**.

   b. Click **Start** > **All Programs** > **IBM HTTP Server V8.5** > **Start HTTP Server**.

6. On Linux operating systems:

   a. Go to the IBM HTTP Server `bin` directory, and enter the following commands: `./apachectl stop`.

   b. Enter the following commands: `./apachectl start`.

Results

After the services start, you can access the IBM Cognos BI portal by going to `http://servername/ibmcognos` in a web browser.

If you did not use port 80 when you installed IBM HTTP Server, you must add the port number. For example, `http://servername:port/ibmcognos`, where *port* is the port number that you used for the web server. For example, if you used the solution installer, the default port number is 81, and the URL is `http://servername:81/ibmcognos`.

Install software on the Integration Bus node computer

You must install WebSphere MQ and IBM Integration Bus on the IBM Predictive Customer Intelligence Integration Bus node computer.

Installing IBM DB2 client software on the Integration Bus node computer

You must install IBM DB2 client software on the IBM Predictive Customer Intelligence Integration Bus node computer.

Procedure

1. Go to the DB2 folder where you decompressed the IBM Predictive Customer Intelligence installation files.
2. On Microsoft Windows operating systems:
   a. Double-click v10.5fp5_ntx64_rtcl.exe and follow the steps in the wizard.
   b. Click **Install**.
3. On Linux operating systems:
   a. Decompress the v10.5fp5_linuxx64_rtcl.tar.gz file by using the following command: tar xvf v10.5fp5_linuxx64_rtcl.tar.gz.
   b. Go to the rtcl directory.
   c. Start the installer: ./db2setup.
   d. In the DB2 Setup Launchpad, click **Install a Product**.
   e. Under **IBM Data Server Runtime Client Version 10.5 Fix Pack 5**, click **Install New**.
   f. Select **Typical** for the installation type.
   g. Select **Install Data Server Runtime Client on this computer**.

Installing IBM MQ

Install IBM MQ (formerly WebSphere MQ) on the IBM Predictive Customer Intelligence Integration Bus node computer.

Note: If you are installing the software as a domain user account instead of a local administrator, you must provide a domain user account with authority to query information about user accounts. For more information, see the IBM MQ documentation (www.ibm.com/support/knowledgecenter/SSFKSJ_8.0.0).

Procedure

1. Log on to the computer where you are installing IBM MQ as a local administrator on Microsoft Windows operating systems, or as root or a user with sudo permissions on Linux operating systems.
2. Go to the MQ directory where you decompressed the IBM Predictive Customer Intelligence server installation files.
3. Decompress the installation files.
   - On Microsoft Windows operating systems, decompress WS_MQ_V8.0.0.2_FOR_WINDOWS_EIMAGE.zip.
   - On Linux operating systems, decompress WS_MQ_V8.0.0.2_LINUX_ON_X86_64_I.tar.gz.
4. On Microsoft Windows operating systems:
   a. Go to the directory where you decompressed the files, and double-click Setup.exe.
   b. Click **Software Requirements**, and ensure that you are using a supported operating system.
   c. Click **Network Configuration,** and select **No for Configuring WebSphere MQ for Windows domain users**.

d. Click **WebSphere MQ Installation**, and click **Launch IBM Websphere MQ Installer**.

e. Select **Typical** for the **Setup Type**, and follow the steps in the wizard to install the server software.

f. When the installation is complete, click **Finish**.

   The **Prepare WebSphere MQ Wizard** appears.

g. Follow the steps in the wizard.

   When you are prompted to identify a domain controller, select **No** if you are installing as a local administrator account, and click **Next**.

h. Click **Finish**.

5. On Linux operating systems:

a. Go to the `server` directory where you decompressed the files.

b. Run the `mqlicense.sh` script, and accept the agreement. For example, enter `./mqlicense.sh`.

c. To install all of the components to the default location, `/opt/mqm`, enter the following command: `rpm -ivh MQSeries*.rpm`.

   For more information and examples, see the IBM MQ documentation on IBM Knowledge Center (www.ibm.com/support/knowledgecenter/SSFKSJ_8.0.0/com.ibm.mq.ins.doc/q008640_.htm).

Updating IBM MQ

Follow these steps to install the IBM MQ Fix Pack.

Procedure

1. Go to the `MQ` directory where you decompressed the IBM Predictive Customer Intelligence server installation files.

2. Decompress the IBM MQ fix pack installation files.
   - On Microsoft Windows operating systems, decompress `8.0.0-WS-MQ-Windows-FP0003b.zip`.
   - On Linux operating systems, decompress `8.0.0-WS-MQ-LinuxX64-FP0003b.tar.gz`.

3. Run the installer:
   - On Microsoft Windows operating systems, double-click `WS-MQ-8.0.0-FP0003.exe`.

     In the **Installation type** page, select **Load files** and **apply fix pack**.
   - On Linux operating systems, install the `rpm` packages.

     To install all of the fix pack files, enter the following command: `rpm -ivh MQSeries*.rpm`.

     For more information, see the IBM MQ documentation on IBM Knowledge Center (www.ibm.com/support/knowledgecenter/SSFKSJ_8.0.0/com.ibm.mq.mig.doc/q008050_.htm)

Installing IBM Integration Bus

Install IBM Integration Bus and IBM Integration Explorer on the IBM Predictive Customer Intelligence Integration Bus node computer.

Before you begin

Ensure that you install WebSphere MQ before you install IBM Integration Bus.

On Linux operating systems, you must set up the appropriate user security to install IBM Integration Bus. For more information, see IBM Knowledge Center (www.ibm.com/support/knowledgecenter/SSMKHH_10.0.0/ com.ibm.etools.mft.doc/bh26031_.htm).

Procedure

1. Go to the `IntegrationBus` directory where you decompressed the IBM Predictive Customer Intelligence server installation files.
2. On Microsoft Windows operating systems, double-click `10.0.0-IIB-WINX64-FP0001.exe`, and follow the steps in the IBM Integration Bus installation wizard.
3. On Linux operating systems:
   a. Decompress `10.0.0-IIB-LINUXX64-FP0001b.tar.gz`.
   b. Copy the `iib-10.0.0.1` directory where you decompressed the files to the program directory. For example, copy the `iib-10.0.0.1` directory to the `/opt/IBM` directory.
   c. In the `iib-10.0.0.1` directory, enter `./iib make registry global accept license` and click **Accept** to accept the license agreement and complete the software installation.

      Tip: After the installation is complete, enter the following to verify the installation: `./iib verify all`.
   d. Create a user for the software, and add the user to the `mqm` and `mqbrkrs` groups that were created during the installation. For example, create a user that is named `mqmuser`.

Creating a broker and queue manager

You create a broker for IBM Predictive Customer Intelligence from the command line.

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

On Linux operating systems, some additional settings might be required to configure WebSphere MQ. For more information, see the WebSphere MQ documentation (www.ibm.com/support/knowledgecenter/SSFKSJ_8.0.0/ com.ibm.mq.ins.doc/q008520_.htm).

Procedure

1. On Microsoft Windows operating systems, log on to the Integration Bus node as a local administrator user. On Linux operating systems, change to the user that you created. For example, change to the `mqmuser`.
2. Enter the following command to create the queue manager: `crtmqm queue_manager_name`.

   For example, to create a queue manager that is named **pciqmgr** on Microsoft Windows operating systems, enter: `crtmqm pciqmgr`.

   On Linux operating systems, depending on your profile, you might have to go to the `/opt/mqm/bin` directory and enter `./crtmqm pciqmgr`.
3. Enter the following command to start the queue manager: `strmqm queue_manager_name`.

   For example, to start the queue manager that is named **pciqmgr** on Microsoft Windows operating systems, enter: `strmqm pciqmgr`.
4. Start the mqsi console:

- On Microsoft Windows operating systems, go to the `installation_location\IIB\10.0.0.1\server\bin` directory, and run `mqsiCommandConsole.exe`.
- On Linux operating systems, go to the `server/bin` directory were you copied the IBM Integration Bus files, and source the `mqsiprofile` file. For example, go to the `/opt/IBM/iib-10.0.0.1/server/bin` directory, and enter the following command: `source mqsiprofile`.

5. Create a broker or integration node:
   - On Microsoft Windows operating systems, enter the following command to create a broker: `mqsicreatebroker broker_name -i LocalSystem -q queue_manager_name`.
   - On Linux operating systems, enter the following command to create an integration node: `mqsicreatebroker broker_name -q queue_manager_name`.

   For example, to create a broker that is named **pcibroker** on Microsoft Windows operating systems, enter: `mqsicreatebroker pcibroker -i LocalSystem -q pciqmgr`.
6. Enter the following command to start the broker: `mqsistart broker_name` For example, to start a broker that is named **pcibroker**, enter: `mqsistart pcibroker`.
7. 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. On Microsoft Windows operating systems, in the `mqsiCommandConsole`, enter the following command to start the queue manager: `runmqsc queue_manager_name`
2. On Linux operating systems, as the user you created, enter the following command to start the queue manager: `runmqsc queue_manager_name`

   The command line processor is running after you see the message "`Starting MQSC for queue manager queue_manager_name`".
3. 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('mqmuser')
   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.
4. If you want to use a specific port number for the listener, enter the following command:
   ```
   runmqlsr -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.

Computer firewall settings for the server components after installation

Each IBM Predictive Customer Intelligence node that is installed on a Linux operating system requires certain ports to be opened for the server components to operate in a multi-computer solution. You must configure your firewall settings for each specific node.

Configuring your firewall settings for the Analytics node computer

On Linux operating systems, 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
- 28054
- tungsten-https
- glrpc
- corbaloc
- 59356
- 9043
- 9060
- 9080

For more information about IBM SPSS Modeler port numbers, see the How many ports are utilized when a Modeler Client connects to Modeler Server? document (www.ibm.com/support/docview.wss?uid=swg21488421).

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. For example, on SUSE Linux operating systems, enter `iptables-save`. On Red Hat Enterprise Linux operating systems, enter `/etc/init.d/iptables save`.
3. Add rules for the ports with the following commands:

```
iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport 45088 -j ACCEPT
iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport 58313 -j ACCEPT
iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport 28054 -j ACCEPT
iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport tungsten-https -j ACCEPT
iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport glrpc -j ACCEPT
iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport corbaloc -j ACCEPT
iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport 59356 -j ACCEPT
iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport 9043 -j ACCEPT
iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport 9060 -j ACCEPT
iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport 9080 -j ACCEPT
```

4. Save your firewall settings. For example, on SUSE Linux operating systems, enter `iptables-save`. On Red Hat Enterprise Linux operating systems, enter `/etc/init.d/iptables save`.
5. Restart your firewall. For example, on SUSE Linux operating systems, enter `SuSEfirewall2 start`. On Red Hat Enterprise Linux operating systems, enter `/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 the BI node computer

On Linux operating systems, 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
- 9080

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. For example, on SUSE Linux operating systems, enter `iptables-save`. On Red Hat Enterprise Linux operating systems, enter `/etc/init.d/iptables save`.
3. Add rules for the ports with the following commands:
   ```
   iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport 9362 -j ACCEPT
   iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport vrace -j ACCEPT
   iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport 9663 -j ACCEPT
   iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport corbaloc -j ACCEPT
   iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport 9043 -j ACCEPT
   iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport glrpc -j ACCEPT
   iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport http -j ACCEPT
   iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport tungsten-https -j ACCEPT
   iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport 9060 -j ACCEPT
   iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport 9080 -j ACCEPT
   ```
4. Save your firewall settings. For example, on SUSE Linux operating systems, enter `iptables-save`. On Red Hat Enterprise Linux operating systems, enter `/etc/init.d/iptables save`.
5. Restart your firewall. For example, on SUSE Linux operating systems, enter `SuSEfirewall2 start`. On Red Hat Enterprise Linux operating systems, enter `/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 the Integration Bus node computer

On Linux operating systems, 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

1. Log in to the Integration Bus node computer as the **root** user or as a user with **sudo** permissions.
2. Back up your existing firewall settings. For example, on SUSE Linux operating systems, enter `iptables-save`. On Red Hat Enterprise Linux operating systems, enter `/etc/init.d/iptables save`.
3. Add rules for the ports with the following commands:
   ```
   iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport boks -j ACCEPT
   iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport boks_clntd -j ACCEPT
   iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport boks_servm -j ACCEPT
   iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport boks_servc -j ACCEPT
   iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport ibm-mqseries -j ACCEPT
   ```
4. Save your firewall settings. For example, on SUSE Linux operating systems, enter `iptables-save`. On Red Hat Enterprise Linux operating systems, enter `/etc/init.d/iptables save`.
5. Restart your firewall. For example, on SUSE Linux operating systems, enter `SuSEfirewall2 start`. On Red Hat Enterprise Linux operating systems, enter `/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 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
- 50001

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. For example, on SUSE Linux operating systems, enter `iptables-save`. On Red Hat Enterprise Linux operating systems, enter `/etc/init.d/iptables save`.
3. Add rules for the ports with the following commands:
   ```
   iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport ibm-db2 -j ACCEPT
   iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport db2c_db2inst1 -j ACCEPT
   iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport 50001 -j ACCEPT
   ```
4. Save your firewall settings. For example, on SUSE Linux operating systems, enter `iptables-save`. On Red Hat Enterprise Linux operating systems, enter `/etc/init.d/iptables save`.

5. Restart your firewall. For example, on SUSE Linux operating systems, enter `SuSEfirewall2 start`. On Red Hat Enterprise Linux operating systems, enter `/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.

Chapter 5. Client component installation

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

Important: The client components must be installed on computers running the Microsoft Windows 7 64-bit operating system. 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.

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 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.

Downloading and decompressing the client installation files

You must download the IBM Predictive Customer Intelligence client installation files from IBM Passport Advantage. You must install each client component manually.

For more information about the files that you must download, see Downloading IBM Predictive Customer Intelligence 1.1 (http://www.ibm.com/support/docview.wss?uid=swg24040382).

Procedure

1. Access the IBM Passport Advantage web site.

   Tip: If you receive an error, try using a different web browser to access Passport Advantage.
2. Sign in and navigate to the software downloads page.
3. Find the eImages for IBM Predictive Customer Intelligence.
4. Download an eImage by selecting the check box beside the name. When the download is complete, a **Download Complete** message is displayed. The location of the downloaded files is displayed in the message window.
5. Decompress the eImage files.

   Decompress the `prd_cust_intel_clt_1.1_1_win_en.tar.gz` and `prd_cust_intel_clt_1.1_2_win_en.tar.gz` files.
6. Copy the component installation files to each computer on which you want to install the component.

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 directory where you decompressed the client installation files.
2. In the `SPSS_CDS` directory, decompress `spss_cnds_depmgr_64b_7.0_win_ml.zip`.
3. In the `Deployment_Manager_64` directory, double-click `install.exe`.
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 Collaboration and Deployment Services Deployment Manager 7 Installation (www.ibm.com/support/knowledgecenter/SS69YH_7.0.0/cads_manager_install_ddita/model_management/thick/thick_install_overview.dita).

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 7.0** > **Deployment Manager 7.0**.
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**. For example, enter http://*servername*:9080.

   You can use the *servername* or the IP address for the Analytics node computer.

   The default port number that is used by the WebSphere Application Server instance is 9080. If another port number was used, ensure that you use the correct port number.
5. Double-click the connection name that you created.
6. In the **User ID** box, enter the SPSS admin user that you used when you installed IBM SPSS Collaboration and Deployment Services Server.
7. In the **Password** box, enter the SPSS admin user's password.
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**. For example, enter http://*servername*:9080.

    The default port number that is used by the WebSphere Application Server instance is 9080. If another port number was used, ensure that you use the correct port number.
12. Double-click the server connection name that you created.
13. In the **User ID** box, enter the SPSS admin user that you used when you installed IBM SPSS Collaboration and Deployment Services Server.
14. In the **Password** box, enter the SPSS admin user's password.
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, double-click the SPSS connection that you created. Log in if you are prompted to.
2. Expand **Resource Definiton**.
3. Add an administrator 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.
   e. In the **Security Provider** box, select **Local User Repository**.
   f. Click **Finish**.
4. Add a modeler user. The user is a local user account on the Predictive Analytics node computer.
   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**.
5. Add a **Content Repository Server** server definition.
   a. In **Resource Definitions**, 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**. For example, enter http://*servername*:9080

      The default port number that is used by the WebSphere Application Server instance is 9080.
6. 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 28054.

      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\17`.

g. Click **Finish**.

7. On the **Server Administration** tab, expand **Users and Groups**, and double-click **Local User Repository**.

8. Click **New Group**.

   a. In **Group Name**, enter `administrator`.

   b. Select **Show all available users**.

   c. In **Available Users**, select `admin`, and move the user to the **Group contains Users** box.

   d. Click **OK**.

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.

To use SPSS Modeler Client, you must obtain a license. For more information about obtaining a Modeler Client license, see the Welcome to GetSPSS web site (www.ibm.com/software/analytics/spss/support/get_spss.html).

Procedure

1. Go to the directory where you decompressed the client installation files.

2. Install SPSS Modeler client.

   a. In the `SPSS_Modeler_Client` directory, decompress `spss_modgld_keyls_64b17.0_win_ml.zip`.

   b. In the decompressed folder, double-click `setup.exe`.

   c. Follow the steps in the wizard to install the client component.

3. Install the fix pack.

   a. In the `SPSS_Modeler_Client` directory, decompress `17.0-IM-S17MODELERC-WIN64-FP001.zip`.

   b. In the decompressed folder, double-click `setup.exe`.

4. Install the interim fix.

   a. In the `SPSS_Modeler_Client\Interim_Fix` directory, decompress `17.0-IM-S17MODELERC-WIN64-FP01-IF011.zip`.

   b. In the decompressed folder, follow the steps in `17.0-IM-S17MODELERC-WIN64-FP01-IF011.txt` to apply the fix.

Installing the Integration Bus client

Install the IBM Predictive Customer Intelligence Integration Bus client.

Procedure

1. Go to the directory where you decompressed the client installation files.

2. In the `IntegrationBus` directory, decompress the installation file that is named `IIB_10.0.0.1_WINDOWS_X86-64.zip`.

3. In the decompressed directory, go to the `EAsmbl_Image` directory and double-click `IIBSetup10.0.0.1.exe`.

4. Follow the directions, and click **Install**.

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.

On Microsoft Windows operating systems, if you install Framework Manager to the same computer as where you installed IBM Cognos Business Intelligence, you must install Framework Manager to a different location. Framework Manager is a 32-bit application and cannot be installed to the same location as the 64-bit IBM Cognos Business Intelligence server components.

Procedure

1. Go to the directory where you decompressed the client installation files.
2. In the `BI` directory, decompress `fm_10.2.2_win_ml.tar.gz`, and then decompress `fm_10.2.2_win_ml.tar`.

   Important: Ensure that you decompress the installation files to a different location than any other IBM Cognos BI installation files. Some directories are overwritten if you use the same location.
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.

   If you installed the server components on Red Hat Enterprise Linux using the solution installer and you did not configure IBM HTTP Server, the **Gateway URI** should be `http://servername:9080/p2pd/servlet/dispatch`.
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. Artifacts installation

The IBM Predictive Customer Intelligence artifacts include Next Best Action Optimizer (NBAOPT) and IBM Enterprise Marketing Management (EMM) connectors. You must copy the connectors to the computers on which the components are installed.

The artifacts also include the Analytic Solution Foundation.

Downloading and decompressing the artifact installation files

The IBM Predictive Customer Intelligence artifact installation files are provided with the solution installation files. You must deploy the artifact content manually.

For more information about the files that you must download, see Downloading IBM Predictive Customer Intelligence 1.1 (http://www.ibm.com/support/docview.wss?uid=swg24040382).

Procedure

1. Access the IBM Passport Advantage web site.

   Tip: If you receive an error, try using a different web browser to access Passport Advantage.
2. Sign in and navigate to the software downloads page.
3. Find the eImages for IBM Predictive Customer Intelligence.
4. Download an eImage by selecting the check box beside the name. When the download is complete, a **Download Complete** message is displayed. The location of the downloaded files is displayed in the message window.
5. Decompress the artifact eImage file `prd_cust_intel_art_1.1_win_en.tar.gz`.

Integration with Next Best Action Optimizer

You can integrate IBM Next Best Action Optimizer (NBAOPT) with your IBM Predictive Customer Intelligence solution to further optimize your recommended actions.

NBAOPT segregates customers by lifetime value, and then provides recommendations to retain customers.

Next Best Action Optimizer (NBAOPT)

Many companies across many industries (such as telecommunications, retail, and insurance) classify customers into different groups for marketing campaigns, targeted actions, and optimized use of resources. Classification helps Customer Relationship Management (CRM) departments to conduct promotional campaigns to retain customers, cross-sell, and up sell.

Traditional methods of classifying customers use standard customer and product segmentation strategies along with manually defined rules on an ad hoc basis. Often, the processes that govern these methods do not consider the following factors:

- Uncertainty in the behavior of the target entities
- Value and response to the prior actions
- The current state of the entity in relation to the organization
- Expected long-term rewards

NBAOPT addresses these problems by using a scalable data analytics and optimization engine. NBAOPT automatically generates an action allocation policy that is optimized for long term expected reward, subject to resource, legal and business constraints. The allocation policy can be used for targeted marketing, CRM, debt collection, retention, cross-sell, up-sell, and so on.

For more information, see *Next Best Action Optimizer (NBAOPT) Lifetime Value Maximizer & Collections Maximizer User Guide*.

How NBAOPT is used in a Predictive Customer Intelligence solution

NBAOPT works alongside IBM SPSS Modeler. When the NBAOPT connector is installed, NBAOPT connector items are added to the IBM SPSS Modeler menu so that you can run the NBAOPT Studio. In NBAOPT Studio, you set up the data for analysis. Then, you start the analysis, which performs the following actions:
- Segregates customers by lifetime value
- Provides recommended actions to retain customers, which are based on their lifetime value segment

This analytical process exports model nuggets in PMML format (Predictive Model Markup Language, an XML-based file format). Model nuggets can be used for scoring data for prediction, or analyzing data. From the PMML file that is created in NBAOPT Studio, you create an enhanced SPSS streaming SPSS Modeler that contains segmentation and recommendations. You can also generate visualizations of the results.

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.

Procedure

Copy the `pci.NBAOPT` directory where you decompressed the 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`

Open NBAOPT Studio from IBM SPSS Modeler

You can open IBM Next Best Action Optimizer (NBAOPT) Studio from IBM SPSS Modeler.

Before you begin

NBAOPT, and the NBAOPT connector must be installed. For information on installing the NBAOPT connector, see *IBM Predictive Customer Intelligence Installation Guide*.

Procedure

1. In IBM SPSS Modeler, click **Tools** > **NBA Optimizer**, and select **NBAOPT Studio**.
2. The first time that you start NBAOPT Studio, you are asked to specify the location of the NBAOPT Studio executable file. Click **Browse** to locate the file, and click **Select**.

What to do next

In NBAOPT Studio, you set up data for analysis and generate the PMML files that the NBAOPT connector creates the IBM SPSS streams from. For information on how to use NBAOPT Studio, see the *Next Best Action Optimizer (NBAOPT) Lifetime Value Maximizer & Collections Maximizer User Guide*, and the *Next Best Action Optimizer (NBAOPT) Lifetime Value Maximizer & Collections Maximizer Tutorial Guide*.

Generating streams from PMML files

IBM Next Best Action Optimizer (NBAOPT) model results are generated in PMML format, an XML format that can be used by a number of tools, including IBM SPSS Modeler. The NBAOPT engine generates SPSS-compliant PMML files for scoring.

Procedure

1. In IBM SPSS Modeler, click **Tools** > **NBA Optimizer**, and select **Generate Stream from the PMML Files**.
2. Browse for the PMML file location, for example: `C:\NBAOPT\Configurations\demo_insurance\Modeling\Model1\SPSS`. If multiple PMML files are present in the folder, multiple streams are generated.

   The generated streams can have multiple branches. The number of branches depends on the number of action groups that are specified for a configuration. For example, if there are two actions, Channel and Product, two actions are specified during the scoring process.
3. Click **Generate Stream**.

   In the example, two streams are generated and are named based on the PMML file names. The number of streams created is dependent on the number of PMML files.

   These files are stored in *<model_folder>*/SPSS.

What to do next

After the stream is generated, and before you run the stream, configure the stream.

Example SPSS stream

This is an example of an IBM SPSS stream that is generated from PMML files
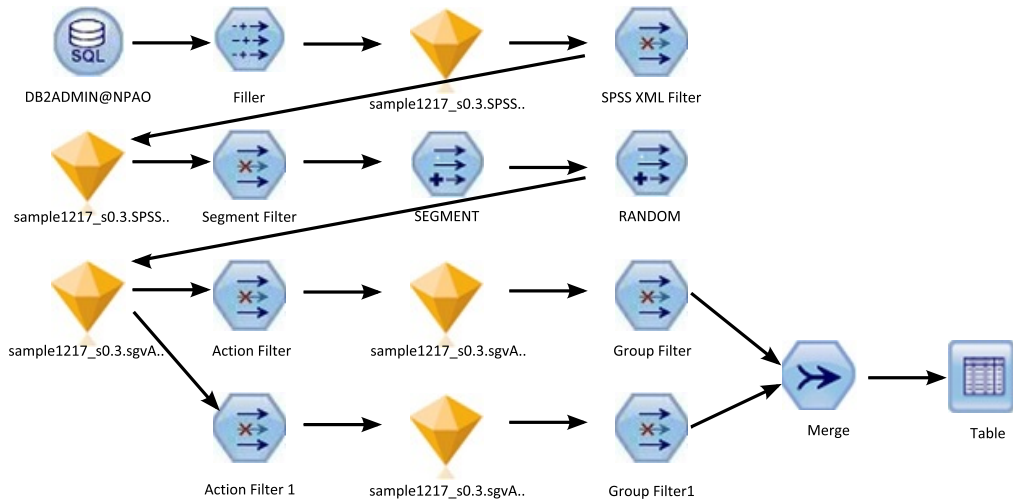
Figure 2. Example IBM SPSS stream generated from PMML files

Database source node

The database source node is used to import data from ODBC sources.

Model nuggets

A model nugget is a container for a model. It is used for scoring data to generate predictions or to allow further analysis of the model properties.

The nuggets are imported via PMML files that are generated from the NBAOPT engine.

Filler nodes

Filler nodes are used to replace field values and change storage.

Filter nodes

Filter nodes are used to filter (discard) fields, rename fields, and map fields from one source node to another.

Derive node

The derive node gives you the ability to create new fields from existing fields.

Merge node

The merge node merges multiple action group nugget branches.

For more information, see IBM SPSS Modeler Help (www.ibm.com/support/knowledgecenter/SS3RA7_17.0.0/modeler_mainhelp_client_ddita-gentopic1.dita).

Configuring the IBM SPSS stream

When an IBM SPSS stream is generated from PMML files, you must configure the stream before you can deploy it.

Procedure

1. In IBM SPSS Modeler, open the stream to configure.
2. Double-click the database source node and add the **Data source** name and the **Table name** to the database source node (mandatory).
3. Verify the database settings by clicking **Preview**.
4. Double-click the filter nodes to exclude fields that are not to be included in the stream.
5. Double-click the merge node to set the merge key (mandatory if there is a merge node). In the **Merge** tab, move fields into the **Keys for merge** list.
6. Set the filler node to replace database blank values (optional). For example, you can replace blank values with an empty string, such as to_string(@FIELD).
7. Add extra nodes to the stream if required.

   For example, if a field has a different data type in the database table, and the NBAOPT Studio Mining Type configuration, you must add a derive node to convert the character type to numeric.

   Check that the derive field name matches the model nugget field name, if it does not, change the derive field name to match.
8. Run the stream to verify the stream output table. In IBM SPSS Modeler, from the **Tools** menu, click **Run**.

   For more information, see IBM SPSS Modeler Help (www.ibm.com/support/knowledgecenter/SS3RA7_17.0.0/clementine/buildingstreams_container.dita).

What to do next

Add the configured stream to the IBM Collaboration and Deployment Services repository file, and configure the scoring service. For more information, see IBM SPSS Collaboration and Deployment Services User Guide (www.ibm.com/support/knowledgecenter/SS69YH_7.0.0/cads_manager_ddita/model_management/thick/scoring_configuration_overview.dita).

After the scoring service is configured, the IBM Collaboration and Deployment Services can access the scoring service, and other applications can use the scoring service to get the next best action based on the input fields values.

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.

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 decompressed the artifacts to the `Connectors` directory where EMM is installed. For example, Microsoft Windows operating systems, copy the files to the `IBM_EMM_Interact_install_location\Connectors` directory. On Linux operating systems, copy the files to the `/opt/IBM/EMM/Interact/Connectors`.

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.

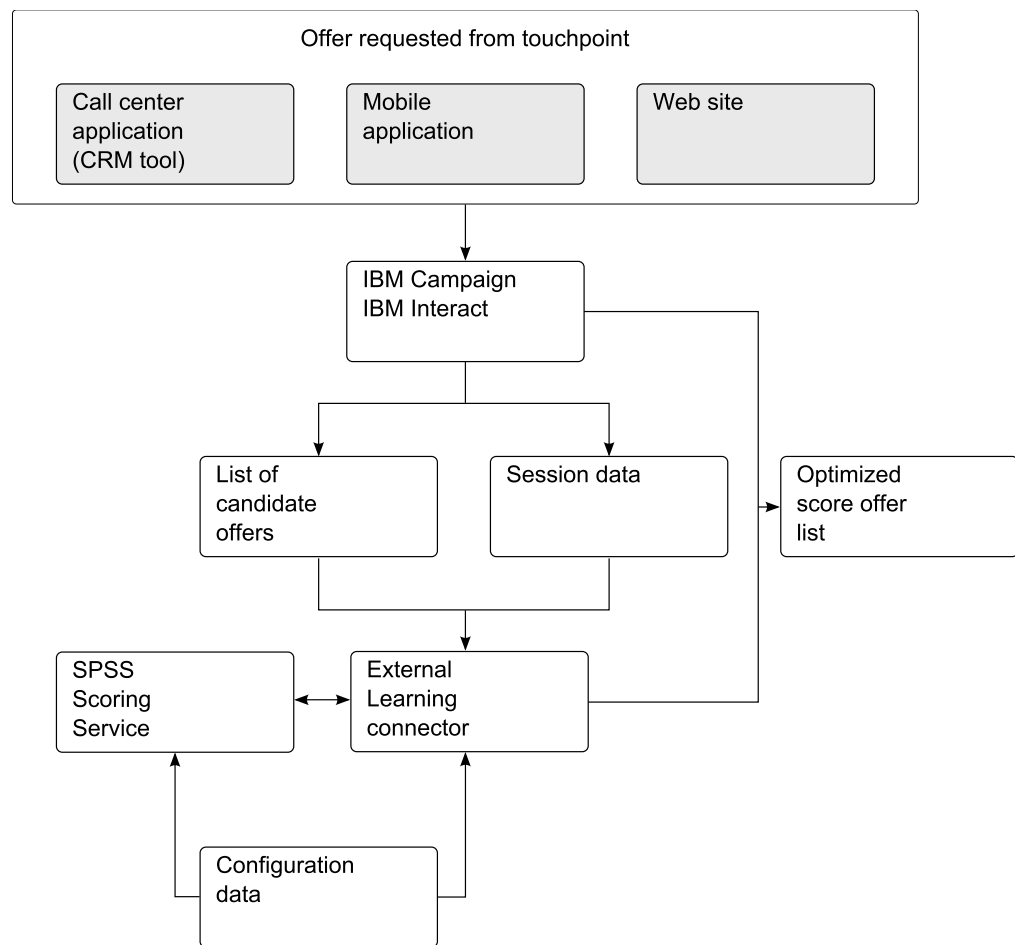*Figure 3. How the external learning connector works*

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 1. 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 2. 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 82.
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,ineger;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**.

Configure the Analytic Solution Foundation

You can deploy the Analytic Solution Foundation to your IBM Predictive Customer Intelligence environment.

You can use the Analytic Solution Foundation to extend the customer analytics database that is provided with IBM Predictive Customer Intelligence or to create orchestrations that define how data flows from an event to a customer profile.

The Analytic Solution Foundation is composed of a data model and a web application that must be deployed in WebSphere Application Server with Java SDK 1.7.

A data dictionary is available for the IBM Predictive Customer Intelligence data model that is provided with the solution. You can download the data dictionary (PCI1.1_DataModel.xls) from the Predictive Customer Intelligence 1.1.0 product documentation page (www.ibm.com/support/docview.wss?uid=swg27046802).

For more information about the Analytic Solution Foundation, see the Analytic Solution Foundation Developer Guide (www.ibm.com/support/docview.wss?uid=swg27045826).

Creating the Analytic Solution Foundation database and loading the data

You must create a database and load the metadata so that you can view the data model from the Analytic Solution Foundation web application.

Procedure

1. Go to the directory where you decompressed the IBM Predictive Customer Intelligence artifact files, and in the `Analytic_Solution_Foundation_1.5.1.0/ASF_1.5.1.0` directory, copy `create-foundation-ui-schema-for-db2.ddl` to the data node computer.
2. In the `PCIDataModel` directory, copy the `PCI_ASF_metadata.zip` file to the data node computer, and decompress the file.
3. On the computer where you installed IBM DB2, do one of the following:
   - On Microsoft Windows operating systems, log on as the DB2 instance owner user, and click **Start** > **IBM DB2** > **DB2COPY1 (Default)** > **DB2 Command Window - Administrator**.
   - On Linux operating systems, open a terminal window.
4. Enter the following command to create a database:

   ```
   DB2 CREATE DATABASE DB_NAME ON path USING CODESET UTF-8
      TERRITORY US COLLATE USING SYSTEM PAGESIZE 8 K
   ```

   DB_NAME is a name for your database. The name must be 8 characters or less. *path* can be a file path or just a drive letter.

   For example, on Microsoft Windows operating systems if your database name is **FNDTUI**:

   ```
   DB2 CREATE DATABASE FNDTUI ON C: USING CODESET UTF-8
      TERRITORY US COLLATE USING SYSTEM PAGESIZE 8 K
   ```
5. Connect to the database you created by using the following command:

   ```
   DB2 CONNECT TO DB_NAME
   ```
6. Go to the directory where you copied the `create-foundation-ui-schema-for-db2.ddl` file.
7. Enter the following command to create the tables in the database:

   ```
   db2 –tvf create-foundation-ui-schema-for-db2.ddl
   ```
8. Go to the directory where you decompressed the `PCI_ASF_metadata.zip` file.
9. Enter the following command to create the tables and load the data:
   - On Microsoft Windows operating systems, enter `Load_Data.bat DB_NAME`.
   - On Linux operating systems, enter `sh Load_Data.sh DB_NAME`.

Installing IBM Installation Manager for the Analytic Solution Foundation

You must install IBM Installation Manager on the computer where you install WebSphere Application Server with Java SDK 1.7 for the Analytic Solution Foundation application.

Procedure

1. Go to the `InstallationMgr` directory where you decompressed the IBM Predictive Customer Intelligence installation files.

2. Decompress the Installation Manager installation file.
3. Start the installer:
   - On Microsoft Windows operating systems, double-click `install.exe`.
   - On Linux operating systems, enter `./install`.
4. Follow the steps to install IBM Installation Manager.

Installing IBM WebSphere SDK Java Technology Edition for Analytic Solution Foundation

You install IBM WebSphere SDK Java Technology Edition into an existing WebSphere Application Server instance.

Procedure

1. Go to the `WAS_JDK` directory where you decompressed the IBM Predictive Customer Intelligence installation files.
2. Decompress the installation files.

   You must decompress `7.1.3.0-WS-IBMWASJAVA-part1.zip` and `7.1.3.0-WS-IBMWASJAVA-part2.zip`.
3. Start IBM Installation Manager.
   - On Microsoft Windows operating systems, click **Start** > **All Programs** > **IBM Installation Manager**.
   - On SUSE Linux operating systems, start IBM Installation Manager from the **Application Browser** or go to the `/opt/IBM/InstallationManager/eclipse` directory, and run `./IBMIM`.
4. Click **File** > **Preferences**.
5. Click **Add Repository**.
6. Browse to the location where you decompressed the Java SDK installation files.
7. In the directory where you decompressed the installation files, select `repository.config`, click **OK** to close the dialog.
8. In IBM Installation Manager, click **Install**.
9. Select **IBM WebSphere SDK Java Technology Edition (Optional)**.
10. Click **Next**, and follow the steps in IBM Installation Manager to install the product.

Configuring IBM WebSphere SDK Java Technology Edition for Analytic Solution Foundation

After you install IBM WebSphere SDK Java Technology Edition, you must configure it for the Analytic Solution Foundation.

Procedure

1. Open a web browser.
2. In the address bar, type the address for the WebSphere Admin Console for the instance where you installed IBM WebSphere SDK Java Technology Edition.

   The Admin console address is `http://servername:9060/ibm/console`.
3. If security is enabled, enter the **User ID** and **Password**, and click **Log in**.
4. Expand **Servers** > **Server Types** > **WebSphere application servers**, and click **server1**.
5. Under **Server Infrastructure**, expand **Administration**, and click **Java SDKs**.

6. Select **1.7.1_64**, and click **Make Default**.

7. Click **Save**.

8. Restart the WebSphere Application Server instance.

Installing the Analytic Solution Foundation web application

You must install the Analytic Solution Foundation web application to WebSphere Application Server.

For more information about installing the web application, see the Analytic Solution Foundation Developer Guide (www.ibm.com/support/docview.wss?uid=swg27045826).

Chapter 7. Product license files

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

Copying the component license files to each component computer

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 IBM Predictive Customer Intelligence.

`swidtag` files are provided for both production and non-production use of IBM Predictive Customer Intelligence. You must copy the appropriate `swidtag` file for your usage.

Note: Do not rename the directory or files

If you installed on a Red Hat Enterprise Linux operating system by using the solution installer, the license files are automatically copied to each server node computer.

Procedure

1. On the computer where you decompressed the artifact files, go to the `iso-swid` or `iso-swid_NonProduction` directory, and decompress the file, if applicable.
2. Copy the `swidtag` file to each computer on which you installed an IBM Predictive Customer Intelligence component.

   For example, on Microsoft Windows operating systems, copy the file so that you have a `C:\IBM\PCI1.1\iso-swid` directory that contains a `swidtag` file. On Linux operating systems, you would have an `/opt/IBM/PCI1.1/iso-swid` directory that contains a `swidtag` file.
3. From the directory where you decompressed the artifact files, decompress the `license.zip` file, and then copy the `license` directory to each computer where you installed an IBM Predictive Customer Intelligence component.

   For example, On Microsoft Windows operating systems, copy the directory and contents so that you have a `C:\IBM\PCI1.1\license` directory that contains the license files. On Linux operating systems, you would have an `/opt/IBM/PCI1.1/license` directory that contains the license files.

Results

The following folders must exist on each computer on which you installed an IBM Predictive Customer Intelligence component:
- On Microsoft Windows operating systems (both server and client components):

   `C:\IBM\PCI1.1\license` (containing the product license files)

   `C:\IBM\PCI1.1\iso-swid` (containing the product `swidtag` file)
- On Linux operating systems where a server component is installed:

   `/opt/IBM/PCI1.1/license` (containing the product license files)

   `/opt/IBM/PCI1.1/iso-swid` (containing the product `swidtag` file)

Updating your software tag file if you change product usage

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.

You must copy the appropriate software tag file to each computer on which an IBM Predictive Customer Intelligence server or client component is installed.

Procedure

1. On the computer where you decompressed the artifact files, go to the `iso-swid` or `iso-swid_NonProduction` directory, and decompress the file, if applicable.

2. Copy the `swidtag` file to each computer on which you installed an IBM Predictive Customer Intelligence component and replace the existing file.

   For example, on Microsoft Windows operating systems, copy the file so that you have a `C:\IBM\PCI1.1\iso-swid` directory that contains a `swidtag` file. On Linux operating systems, you would have an `/opt/IBM/PCI1.1/iso-swid` directory that contains a `swidtag` file.

Chapter 8. Use accelerators and industry customer intelligence solutions

To help you get started with IBM Predictive Customer Intelligence, you can download and install accelerators. To get started with production ready applications, you can also download and install industry customer intelligence solutions.

Downloading and installing accelerators

Accelerators are available to help you apply your IBM Predictive Customer Intelligence solution to your business needs. You must download the accelerators from IBM AnalyticsZone.

Procedure

1. Go to IBM AnalyticsZone (www.ibm.com/analyticszone).
2. Click **Downloads**, and under **Predictive Customer Intelligence Accelerators**, click **View all PCI downloads**.
3. Click **More details** for the accelerator that you want to download.
4. If you are not signed in, click **Sign In to Download**.

   You must enter your IBM ID. If you do not have an IBM ID, you must register to create one.
5. Click **Download**.

What to do next

Information about installing the accelerators is provided in a separate document for each accelerator. The documents are available from the **More detail** link for the accelerator on IBM AnalyticsZone. Each document is also available on IBM Knowledge Center (www.ibm.com/support/knowledgecenter/SSCJHT_1.1.0), under the **Create and Author** section.

Downloading and installing industry customer intelligence solutions

Industry customer intelligence solutions are also available for IBM Predictive Customer Intelligence. You must download the solutions from IBM Passport Advantage.

Procedure

1. Go to IBM Passport Advantage (www.ibm.com/software/passportadvantage).
2. Sign in and navigate to the software download page.
3. Find and download the eAssembly for your industry customer intelligence solution.

What to do next

Information about installing and using the industry customer intelligence solution is available from IBM Knowledge Center (www.ibm.com/support/knowledgecenter/SSCJHT_1.0.1).

Chapter 9. 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

You must stop the IBM Predictive Customer Intelligence node services in a specific order.

Stop the 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.

On Linux operating systems, or if you installed IBM Cognos Business Intelligence to WebSphere Application Server on Microsoft Windows operating systems, you stop the IBM Cognos BI services by stopping the WebSphere Application Server profile where IBM Cognos BI is running.

Procedure

1. On Microsoft Windows operating systems:
   a. Click **Start** > **All Programs** > **IBM Cognos 10_64** > **IBM Cognos Configuration**.
   b. Click **Actions** > **Stop**.
   c. Click **Start** > **All Programs** > **IBM HTTP Server V8.5** > **Stop HTTP Server**.

   Note: If you installed IBM Cognos Business Intelligence to WebSphere Application Server, click **Start** > **All Programs** > **IBM WebSphere** > **IBM WebSphere Application Server V8.5** > **Profiles** > **AppSrv01** > **Stop the server** to stop both the WebSphere Application Server profile and the IBM Cognos Business Intelligence services.

2. On Linux operating systems:
   a. Log in to the BI node computer as **root**.
   b. Go to the WebSphere Application Server profile directory when IBM Cognos BI is running. For example, go to `/opt/IBM/WebSphere/AppServer/profiles/AppSrv01/bin`, if you used the default name, or `/opt/IBM/WebSphere/AppServer/profiles/CustomProfile/bin`, if you used the solution installer.
   c. Enter the following command:

      `./stopServer.sh server1`
   d. Go to the IBM HTTP Server `bin` directory. For example, go to `/opt/IBM/HTTPServer/bin`.

e. Enter the following command:

```
./apachectl 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. On Microsoft Windows operating systems:
   a. Go to the IBM Integration Bus `bin` directory.
   b. Run `mqsiCommandConsole.exe`.
   c. Enter the following command: `mqsistop` *pcibroker*.
   d. Enter the following command to verify that the services have stopped: `mqsilist` *pcibroker*.
2. On Linux operating systems:
   a. Log in to the Integration Bus node computer as **root**.
   b. Change to the **mqmuser** user. For example, enter the following command: `su - mqmuser`.
   c. Go to the IBM Integration Bus `bin` directory.
   d. Enter the following command: `./mqsistop` *pcibroker* `-i`.
   e. Enter the following command to verify that the services have 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. On Microsoft Windows operating systems:
   a. Click **Start** > **All Programs** > **IBM WebSphere** > **IBM WebSphere Application Server V8.5** > **Profiles** > **AppSrv01** > **Stop the server**.
   b. Click **Start** > **Control Panel** > **Administrative Tools** > **Services**.
   c. Select **IBM SPSS Modeler Server 17.0**, and click **Stop Service**.
2. On Linux operating systems:
   a. Log in to the Analytics node computer as **root**.
   b. Go to the WebSphere Application Server profile `bin` directory. For example, go to `/opt/IBM/WebSphere/AppServer/profiles/AppSrv01/bin`, if you used the default name, or `/opt/IBM/WebSphere/AppServer/profiles/CustomProfile/bin`, if you used the solution installer.
   c. Enter the following command: `./stopServer.sh server1`
   d. Go to the IBM SPSS Modeler Server directory. For example, go to `/opt/IBM/SPSS/ModelerServer/17.0`.

      If you manually installed and accepted the defaults, the path is `/usr/IBM/SPSS/ModelerServer/17.0`.
   e. Enter the following command: `./modelersrv.sh stop`
   f. To verify whether any services are still running enter the following command: `ps -ef | grep statisticsd`
   g. 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. On Microsoft Windows operating systems:
   a. Log in to the data node computer as the IBM DB2 administrator user.
   b. Click **Start** > **IBM DB2** > **DB2COPY1 (Default)** > **DB2 Command Window - Administrator**.
   c. Enter the following command to stop the DB2 administration server:
      db2stop

2. On Linux operating systems:
   a. Log in to the data node computer as **root**.
   b. In a terminal window, type the following command to change the DB2 instance owner: su - db2inst1
   c. Enter the following command to stop the DB2 administration server:
      db2stop

Start solution services

You must start the IBM Predictive Customer Intelligence node services in a specific order.

Start the 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. On Microsoft Windows operating systems:
   a. Log in to the data node computer as the IBM DB2 administrator user.
   b. Click **Start** > **IBM DB2** > **DB2COPY1 (Default)** > **DB2 Command Window - Administrator**.
   c. Enter the following command to stop the DB2 administration server:
      db2start

2. On Linux operating systems:
   a. Log in to the data node computer as **root**.
   b. In a terminal window, type the following command to change the DB2 instance owner: su - db2inst1
   c. 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. On Microsoft Windows operating systems:
   a. Click **Start** > **All Programs** > **IBM WebSphere** > **IBM WebSphere Application Server V8.5** > **Profiles** > **AppSrv01** > **Start the server**.
   b. Click **Start** > **Control Panel** > **Administrative Tools** > **Services**.
   c. Select **IBM SPSS Modeler Server 17.0**, and click **Start Service**.
2. On Linux operating systems:
   a. Log in to the Analytics node computer as **root**.
   b. Go to the WebSphere Application Server profile `bin` directory. For example, go to `/opt/IBM/WebSphere/AppServer/profiles/AppSrv01/bin`, if you used the default name, or `/opt/IBM/WebSphere/AppServer/profiles/CustomProfile/bin`, if you used the solution installer.
   c. Enter the following command: `./startServer.sh server1`
   d. Go to the IBM SPSS Modeler Server directory. For example, go to `/opt/IBM/SPSS/ModelerServer/17.0`.

      If you manually installed and accepted the defaults, the path is `/usr/IBM/SPSS/ModelerServer/17.0`.
   e. 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. On Microsoft Windows operating systems:
   a. Go to the IBM Integration Bus `bin` directory.
   b. Run `mqsiCommandConsole.exe`.
   c. Enter the following command: `mqsistart` *pcibroker*.
   d. Enter the following command to verify that the services have started: `mqsilist` *pcibroker*.
   e. Enter the following commands:

      `START LISTENER`

      `END`
2. On Linux operating systems:
   a. Log in to the Integration Bus node computer as **root**.
   b. Change to the **mqmuser** user. For example, enter the following command: `su - mqmuser`.
   c. Go to the IBM Integration Bus `bin` directory.
   d. Enter the following command: `./mqsistart` *pcibroker* `-i`.
   e. Enter the following command to verify that the services have started: `./mqsilist` *pcibroker* `-e` *pcigroup*.
   f. Enter the following commands:

      `START LISTENER`

      `END`

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.

On Linux operating systems, or if you installed IBM Cognos Business Intelligence to WebSphere Application Server on Microsoft Windows operating systems, you start the IBM Cognos BI services by starting the WebSphere Application Server profile where IBM Cognos BI is running.

Procedure

1. On Microsoft Windows operating systems:
   a. Click **Start** > **All Programs** > **IBM Cognos 10_64** > **IBM Cognos Configuration**.
   b. Click **Actions** > **Start**.
   c. Click **Start** > **All Programs** > **IBM HTTP Server V8.5** > **Start HTTP Server**.

   Note: If you installed IBM Cognos Business Intelligence to WebSphere Application Server, click **Start** > **All Programs** > **IBM WebSphere** > **IBM WebSphere Application Server V8.5** > **Profiles** > **AppSrv01** > **Start the server** to stop both the WebSphere Application Server profile and the IBM Cognos Business Intelligence services.

2. On Linux operating systems:
   a. Log in to the BI node computer as **root**.
   b. Go to the WebSphere Application Server profile directory when IBM Cognos BI is running. For example, go to `/opt/IBM/WebSphere/AppServer/profiles/AppSrv01/bin`, if you used the default name, or `/opt/IBM/WebSphere/AppServer/profiles/CustomProfile/bin`, if you used the solution installer.
   c. Enter the following command:

      `./startServer.sh server1`
   d. Go to the IBM HTTP Server `bin` directory. For example, go to `/opt/IBM/HTTPServer/bin`.
   e. Enter the following command: `./apachectl start`

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 IBM DB2, see the IBM DB2 documentation (www.ibm.com/support/knowledgecenter/SSEPGG_10.5.0/com.ibm.db2.luw.qb.server.doc/doc/c0059726.html).

2. To uninstall IBM SPSS Collaboration and Deployment Services, see the IBM SPSS documentation (www.ibm.com/support/knowledgecenter/SS69YH_7.0.0).

   a. On Microsoft Windows operating systems, from the **Start** menu, click **All Programs** > **IBM Installation Manager** > **IBM Installation Manager**.

   b. On Linux operating systems, go to the `/opt/IBM/InstallationManager/eclipse` directory, and run `./IBMIM`.

   c. 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).

   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 (www.ibm.com/support/knowledgecenter/SSDV2W_1.8.3/com.ibm.silentinstall12.doc/topics/r_uninstall_cmd.html).

   a. On Microsoft Windows operating systems, in the Control Panel, click **Programs and Features**, select **IBM Installation Manager**, and click **Uninstall**.

   b. On Linux operating systems, go to the `/var/ibm/InstallationManager/uninstall` directory, and run `uninstall`.

   c. Follow the steps to uninstall IBM Installation Manager.

5. Remove the `licence` and `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 IBM DB2, see the IBM DB2 documentation (www.ibm.com/ support/knowledgecenter/SSEPGG_10.5.0/com.ibm.db2.luw.qb.server.doc/ doc/c0059726.html).

2. To uninstall IBM Cognos Business Intelligence, see the IBM Cognos BI documentation (www.ibm.com/support/knowledgecenter/SSEP7J_10.2.2/ com.ibm.swg.ba.cognos.inst_cr_winux.10.2.2.doc/ c_uninstallingcognos8single.html%23UninstallingCognos8Single).

   a. On Microsoft Windows operating systems, drom the **Start** menu, click **All Programs** > **IBM Cognos 10 - 64** > **Uninstall IBM Cognos** > **Uninstall IBM Cognos**, and follow the steps to uninstall the product.

   b. On Linux operating systems, go to the `/opt/ibm/cognos/c10_64/uninstall` directory, type `./uninst -u`, and press Enter.

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).

   a. On Microsoft Windows operating systems, from the **Start** menu, click **All Programs** > **IBM Installation Manager** > **IBM Installation Manager**.

   b. On Linux operating systems, go to the `/opt/IBM/InstallationManager/ eclipse` directory, and run `./IBMIM`.

   c. 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).

   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 (www.ibm.com/support/knowledgecenter/SSDV2W_1.8.3/ com.ibm.silentinstall12.doc/topics/r_uninstall_cmd.html).

   a. On Microsoft Windows operating systems, in the Control Panel, click **Programs and Features**, select **IBM Installation Manager**, and click **Uninstall**.

   b. On Linux operating systems, go to the `/var/ibm/InstallationManager/ uninstall` directory, and run `uninstall`.

   c. Follow the steps to uninstall IBM Installation Manager.

6. Remove the `licence` and `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 IBM DB2, see the IBM DB2 documentation (www.ibm.com/ support/knowledgecenter/SSEPGG_10.5.0/com.ibm.db2.luw.qb.server.doc/ doc/c0059726.html).

2. To uninstall IBM Integration Bus, see the IBM Integration Bus documentation (www.ibm.com/support/knowledgecenter/SSMKHH_10.0.0/com.ibm.etools.mft.doc/ah01860_.htm).

3. To uninstall WebSphere MQ, see the WebSphere MQ documentation (www.ibm.com/support/knowledgecenter/SSFKSJ_8.0.0/com.ibm.mq.ins.doc/q009410_.htm).

4. Remove the `licence` and `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_10.5.0/com.ibm.db2.luw.qb.server.doc/doc/c0059726.html).

2. Remove the `licence` and `iso-swid` directories.

Uninstalling the solution installer

If you used the solution installer to install the IBM Predictive Customer Intelligence on Red Hat Enterprise Linux operating systems, you can uninstall the solution installer by running a script.

When you uninstall the solution installer, the processes that are used by the solution installer are stopped and removed from your computer. Also, all of the files in the solution installer directory are removed. This includes the IBM Predictive Customer Intelligence server component installation files that you copied into the solution installer directory. If you want to preserve those files, you must copy them to another directory before you uninstall the solution installer.

Also, you can run a script on each node computer where you installed an IBM Predictive Customer Intelligence component to remove the solution installer processes. Ensure that you copy the `cleanupClient.sh` file before you uninstall the solution installer.

Note: Uninstalling the solution installer does not uninstall the IBM Predictive Customer Intelligence component applications. If you want to uninstall those components, you must use each component's uninstallation programs.

Procedure

1. To remove the solution installer processes on the client node computers, do the following steps:

   a. From the `SolutionInstaller` directory, copy the `cleanupClient.sh` file onto each computer on which you installed an IBM Predictive Customer Intelligence component.

   b. Go to the directory where you copied the file.

   c. Enter the following command: `sh cleanupClient.sh`.

2. To remove the solution installer, do the following steps:

   a. Optional: Go to the `PCI_1.1_linux/SolutionInstaller/NodeRoot/Downloads/Software` directory, and copy `prd_cust_intel_svr_1.1_1_l86_en.tar.gz`, `prd_cust_intel_svr_1.1_2_l86_en.tar.gz`, and

prd_cust_intel_svr_1.1_3_l86_en.tar.gz to another directory, outside of the PCI_1.1_linux/SolutionInstaller directory.

b. Go to the PCI_1.1_linux/SolutionInstaller directory.

c. Enter the following command: sh cleanup.sh.

Appendix A. Accessibility features

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

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

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

Report output

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

Appendix B. 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 3. 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 **Search support** box (http://www.ibm.com/support/entry/portal/).	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).

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® 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® 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.

Solution installer error "Deployment failed by the error occurred due to => FATAL;"

You are using the solution installer to install on a Red Hat Enterprise Linux operating system, and you see the following error message: "Deployment failed by the error occurred due to => FATAL;".

This message can occur for several reasons.

1. The operating system is not compatible with the solution installer. You must be using 64-bit Red Hat Enterprise Linux Server Edition version 6.5 or 6.6 (x86_64) operating systems.

   For more information, see the IBM Software Product Compatibility Reports (www.ibm.com/support/docview.wss?uid=swg27044319).

2. The required RPMs are not installed on the target computer.

   For more information, see "Installing required operating system packages on the BI node computer" on page 4 and "Installing required operating system packages on the Integration Bus node computer" on page 5.

3. The required ports are not open in the operating system firewall.

   For more information, see "Opening firewall ports for the solution installer" on page 16.

4. If you are installing to a single-node or four-node architecture, and the log file indicates that there is a missing database parameter for the IBM SPSS Collaboration and Deployment Services Server configuration, go back to the solution installer and click **Run** again.

Solution installer error "There is no connection to the server"

You are using the solution installer to install on a Red Hat Enterprise Linux operating system, and you see the following error message: "There is no connection to the server".

This message can occur for several reasons.

1. The required ports are not open in the operating system firewall.

   For more information, see "Opening firewall ports for the solution installer" on page 16.

2. NodeJS is not running on the computer where you are running the solution installer.

   Check whether there are any processes still running by running the following command: `ps -elf | grep node`.

Enter the following command to stop the processes: `killall node`.

Then, restart NodeJS by going to the `SolutionInstaller` directory, and running the following command: `nohup node NodeJS/server.js > NodeJS/server.log 2>&1 &`

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.

"The port 9683 is already in use" error when you run the solution installer after you reinstalled it

You have reinstalled the solution installer after you used the `cleanup.sh` script, and when you run the solution installer you get the following error message:

`The port 9683 is already in use. You must run the solution installer on a system where the port 9683 is not in use.`

This message occurs because one of the services that is used by the solution installer is still running.

To resolve this error, restart you machine, and then run the `setup.sh` script again.

Saving IBM Cognos BI report files to local file system

Use the following procedure to save IBM Predictive Customer Intelligence reports generated in IBM Cognos Business Intelligence to the local file system. For example, if you want to save the CSV output for the top 250 subscriber list in the Telecommunications Customer Management with Mobile Service Insights industry accelerator, you can configure IBM Cognos BI to save the file each time the report is run. The report is saved on the BI node computer.

Procedure

1. Log on to the Business Intelligence node computer.
2. Create a directory in which to save your report outputs.
3. Enable saving report output to the file system in IBM Cognos Configuration.
   a. 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.
   b. Go to the `/opt/ibm/cognos/c10_64/bin64` directory.

c. Type the following command:

   `./cogconfig.sh`

   IBM Cognos Configuration starts.

   d. Click **Actions** > **Edit Global Configuration**.

   e. On the **General** tab, enter the path to the directory you created in **Archive Location File System Root**.

      The path must be in the format of `file://(file-system-path)`. For example, `file:///usr/reports`.

   f. Click **OK**.

   g. In the **Explorer** window, expand **Data Access**, and click **Content Manager**.

   h. Set **Save report outputs to a file system** to **True**.

   i. In the **Explorer** window, click **Environment**, and ensure that the server name or IP address for the BI node computer is used in the URI settings. Using `localhost` in the URI settings can cause errors if you are saving the report output to a shared directory.

   j. Click **File** > **Save**.

   k. Restart the IBM Cognos services.

4. Enable saving reports in IBM Cognos Administration.

   a. Open a web browser.

   b. Go to the IBM Cognos BI portal URL. For example, go to `http://bi_node_name/ibmcognos/`.

   c. On the **Welcome** page, click **Administer IBM Cognos Content**.

   d. On the **Configuration** tab, click **Dispatchers and Services**.

   e. Click the **Define File Systems Locations** button .

   f. Click **New**.

   g. In **Name**, enter a name for the location. This name will appear when you run the reports.

   h. In **File system location**, enter the path to the directory you created. For example, `/usr/reports`.

   i. Click **Finish**, and **Close**.

5. Select the output location for a report.

   a. In IBM Cognos Connection, select a report, and click **Schedule**.

   b. In the **Options** section, select **Override the default values**.

   c. In the **Delivery** section, enable **Save to the file system**, and click **Edit the options**.

   d. On the options page, in **Location**, select the output location.

   e. Click **OK**.

      After the report is run, the output will be available in the file system directory you configured.

Appendix C. Supporting programs licensed with IBM Predictive Customer Intelligence

The following supporting programs are licensed with IBM Predictive Customer Intelligence.

Supporting programs

IBM Predictive Customer Intelligence Samples

IBM Cognos Business Intelligence Analytics Administrator

IBM Cognos Business Intelligence Software Development Kit

IBM Cognos Cube Designer

IBM Cognos Framework Manager

IBM Cognos Business Intelligence Samples

IBM Cognos Lifecycle Manager

IBM Cognos for Microsoft Office

IBM Cognos Supplementary Languages Documentation

IBM Cognos Dynamic Query Analyzer

IBM SPSS Analytical Decision Management

IBM SPSS Analytical Decision Management Application

IBM SPSS Analytic Server

IBM SPSS Modeler Premium

IBM SPSS Modeler Server Premium

IBM SPSS Modeler Solution Publisher

IBM SPSS Statistics Standard

IBM SPSS Statistics Server Standard

IBM SPSS Statistics - Essentials for Python

IBM SPSS Collaboration and Deployment Services Adapters for Statistics

IBM SPSS Collaboration and Deployment Services

IBM SPSS Collaboration and Deployment Services Deployment Manager

IBM SPSS Collaboration and Deployment Services - Real Time Scoring

IBM SPSS Collaboration and Deployment Services Deployment Portal

IBM SPSS Data Access Pack

IBM SPSS Concurrent Licensing Tools

IBM DB2 Enterprise Server Edition Version

IBM WebSphere Application Server Network Deployment

IBM WebSphere MQ

IBM Integration Bus

IBM Installation Manager and Packaging Utility for the Rational® Software Development Platform

IBM ILOG CPLEX Optimization Studio

IBM ILOG CPLEX Enterprise Server

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

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

IBM Cognos Analysis for Microsoft Excel

IBM Cognos Analysis Studio

IBM Cognos Business Intelligence Transformer

IBM Cognos Connection Installer for IBM Cognos Insight

IBM Cognos Data Manager Connector

IBM Cognos Insight

IBM Cognos Metric Designer

IBM Cognos Metric Studio

IBM Cognos Metrics Manager

IBM Cognos Migration Tools

IBM Cognos PowerPlay® Client

IBM Cognos PowerPlay Server

IBM Cognos PowerPlay Studio

IBM Cognos Query Studio

IBM Cognos TM1® Package Connector

IBM Connections

IBM DB2 Workgroup Server Edition

IBM Tivoli® Directory Integrator Identity Edition

IBM DB2 Workgroup Server Edition Version (IBM DB2) (of IBM SPSS Modeler Premium, IBM SPSS Modeler Server Premium)

IBM WebSphere Application Server Developer Tools for Eclipse (of IBM WebSphere Application Server Network Deployment)

J2SE Rule Execution Server (of IBM WebSphere Application Server Network Deployment)

IBM Data Studio (of IBM DB2 Enterprise Server Edition)

IBM WebSphere MQ (of IBM DB2 Enterprise Server Edition)

pureScale® Feature (of IBM DB2 Enterprise Server Edition)

IBM General Parallel File System (GPFS™) for AIX® (of IBM DB2 Enterprise Server Edition)

IBM General Parallel File System (GPFS) for Linux Multiplatform (of IBM DB2 Enterprise Server Edition)

IBM Mobile Database (of IBM DB2 Enterprise Server Edition)

IBM Mobile Database Sync (of IBM DB2 Enterprise Server Edition)

IBM Tivoli Storage Flashcopy Manager (of IBM DB2 Enterprise Server Edition)

Embedded version of IBM WebSphere Application Server ("embedded WebSphere Application Server") (of IBM Tivoli System Automation for Multiplatforms (of IBM DB2 Enterprise Server Edition)

IBM Cloudscape V10 (of IBM Tivoli System Automation for Multiplatforms 3.2 (of IBM DB2 Enterprise Server Edition Version))

Embedded WebSphere Application Server (of IBM Tivoli Directory Server 6.3 - Client Only (component) (of IBM DB2 Enterprise Server Edition Version))

IBM InfoSphere® Change Data Capture (of IBM InfoSphere Data Replication (component) (of IBM DB2 Enterprise Server Edition))

IBM InfoSphere Change Data Capture (of IBM InfoSphere Data Replication (component) (of IBM DB2 Enterprise Server Edition)

IBM InfoSphere Replication Server (of IBM InfoSphere Data Replication (component) (of IBM DB2 Enterprise Server Edition))

IBM Tivoli Directory Integrator (of IBM Tivoli Directory Server - Client Only (component) (of IBM DB2 Enterprise Server Edition))

WebSphere Application Server (of IBM Tivoli Directory Server - Client Only (component) (of IBM DB2 Enterprise Server Edition))

IBM DB2 Workgroup Server Edition Version (of IBM Tivoli Directory Server - Client Only (component) (of IBM DB2 Enterprise Server Edition Version))

IBM DB2 Enterprise Server Edition Version (of IBM Tivoli Directory Serve - Client Only (component) (of IBM DB2 Enterprise Server Edition Version))

IBM InfoSphere Data Replication (component) (of IBM InfoSphere Federation Server (component) (of IBM DB2 Enterprise Server Edition Version))

IBM WebSphere MQ (of IBM InfoSphere Federation Server (component) (of IBM DB2 Enterprise Server Edition Version))

IBM DB2 Connect™, Application Server Edition (of IBM InfoSphere Federation Server (component) (of IBM DB2 Enterprise Server Edition Version))

IBM WebSphere eXtreme Scale (of IBM WebSphere Application Server Network Deployment)

The Intelligent Management functions (of WebSphere Application Server Network Deployment): Application Edition Management, Server Health Management, SLA Based Dynamic Clustering, Intelligent Routing and SLA Enforcement

Appendix E. Performance tuning for IBM Predictive Customer Intelligence

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

Tune WebSphere Application Server for IBM 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 IBM 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 IBM 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 IBM 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.

Tuning IBM Cognos BI for IBM Predictive Customer Intelligence

You can apply settings in IBM Cognos Business Intelligence to improve performance for IBM Predictive Customer Intelligence reports. The settings are made in IBM Cognos Administration.

Additionally, if you are using IBM Cognos Business Intelligence 10.2.1 with Fix Pack 3 or higher, it is recommended that you modify settings in a configuration file on the BI node computer.

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. On the **Configuration** tab, click **Dispatchers and Services**.

5. Click the name of your IBM Cognos BI dispatcher instance. For example, click **http://***bi_node_name***:9080/p2pd**.

6. Click the **Set Properties** button for the **QueryService**.

7. Click the **Settings** tab.

8. Change the following settings so that the value is 1/3 of the total physical memory of the BI node computer.
   - **Initial JVM heap size for the query service (MB)**
   - **JVM heap size limit for the query service (MB)**

9. Click **OK**.

10. If you are using IBM Cognos Business Intelligence 10.2.1 with Fix Pack 3 or higher installed, do the following steps:

    a. On the BI node computer, go to the `configuration\xqe` directory where IBM Cognos BI is installed. For example, go to . For example, `/opt/IBM/cognos/c10_64/configuration/xqe`.

    b. Open `dmr.properties` in a text editor.

    c. Ensure that the following options are set:
       - `cacheResultSets=false`
       - `pushdownExtAggregatesToRelational=true`
       - `enablePushdownThroughCustomSet=true`
       - `pushdownTopBottomCountToRelational=true`
       - `pushdownTopPercentSumToRelational=true`

    d. Save and close the file.

11. Restart the IBM Cognos BI services.

12. Additionally, the following options might also provide performance benefits:
    - Increasing the Business Intelligence and data node computer hardware configuration, such as adding memory or CPUs. For example, increasing to 128 GB of RAM for the BI node computer.
    - Upgrading IBM Cognos Business Intelligence to the latest fix packs.
    - Tuning your database server to have the best query performance.
    - When you use Top Count against a large data set, you might want to create additional data marts that identify and preload the top N dimensions by the relevant measures. Schedule the loading process for off hours.
    - If you develop custom list reports and need to improve performance, use relational query subjects, rather than the dimensional model. For an example, see the Subscriber List report in the Telecommunications Customer Management with Mobile Service Insights industry accelerator.

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