IBM Predictive Maintenance and Quality
Version 2.0

Installation Guide

Note
Before using this information and the product it supports, read the information in "Notices" on page 91.

Product Information

This document applies to IBM Predictive Maintenance and Quality 2.0 and may also apply to subsequent releases.

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Introduction

IBM® Predictive Maintenance and Quality uses data from multiple sources to give you the information that you need to make informed operational, maintenance, repair, or component replacement decisions.

IBM Predictive Maintenance and Quality provides you with operational intelligence data, which enables you to perform the following tasks:

- Understand, monitor, predict, and control product and process variability.
- Perform in-depth root cause failure analysis.
- Identify incorrect operating practices.
- Enhance equipment and process diagnostics capabilities.

It also provides you with asset performance management capabilities that help you to achieve these goals:

- Have forward visibility into equipment and process performance.
- Increase asset uptime.
- Identify safety issues.
- Identify improper maintenance procedures
- Optimize maintenance intervals and procedures.

Audience

This document is intended to help users install Predictive Maintenance and Quality.

Finding information

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

Accessibility features

Accessibility features help users who have a physical disability, such as restricted mobility or limited vision, to use information technology products. Some of the components included in the IBM Predictive Maintenance and Quality solution have accessibility features. For more information, see Appendix A, “Accessibility features,” on page 69.

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

Forward-looking statements

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

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Chapter 1. Predictive Maintenance and Quality

With IBM Predictive Maintenance and Quality, you can monitor, analyze, and report on information that is gathered from devices. In addition, recommendations for actions can be generated by Predictive Maintenance and Quality.

IBM Predictive Maintenance and Quality is an integrated solution that you can use to perform the following tasks:

- Predict the failure of an instrumented asset so that you can prevent costly unexpected downtime.
- Make adjustments to predictive maintenance schedules and tasks to reduce repair costs and minimize downtime.
- Quickly mine maintenance logs to determine the most effective repair procedures and maintenance cycles.
- Identify the root cause of asset failure faster so that you can take corrective actions.
- Identify quality and reliability issues definitively and in a timely way.

Instrumented assets generate data such as device ID, timestamp, temperature, and status code. This data can be collected and used with maintenance records and other data in models that predict when an asset is likely to fail.

Examples of instrumented assets are manufacturing equipment, mining equipment, drilling equipment, farming equipment, security equipment, cars, trucks, trains, helicopters, engines, cranes, oil platforms, and wind turbines.

For example, an oil refinery is a system that combines thousands of interlocking pieces. It is critical that such a system is able to work safely and efficiently. You can use IBM Predictive Maintenance and Quality to monitor and track the lifecycle of each piece of the refinery, such as each pipe, pump, compressor, valve, furnace, turbine, tank, heat exchange unit, and boiler. Reports give you the information to ensure that you have the right parts available and can schedule repairs during downtimes.

Predictive maintenance

In predictive maintenance, you look for patterns in the usage and environmental information for equipment that correlate with failures that take place. This information is used to create predictive models to score incoming new data. You can predict the likelihood of failure. Scores are generated from this information that give you an indication of the health of the piece of equipment. In addition, key performance indicators (KPIs) are collected, which are used for reporting. KPIs help you to identify assets that do not conform to normal patterns of behavior. You can define rules to generate recommendations when a piece of equipment is identified as having a high probability of failure. Recommendations can be fed into other systems so that people are alerted to them automatically.

Predictive quality in manufacturing

Past operations data, environmental data, and historical defect data can be used to identify the causes of elevated defect rates. This information is used in predictive models, so that when incoming data is fed into the models, you can predict the

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likely defect rates. The predicted values are then used for analysis and reporting and to drive recommendations such as modification to inspection patterns, or recalibration of machinery. Scoring can be done on a near real-time basis.

Predictive Maintenance and Quality can also detect quality and reliability problems faster than traditional techniques.

Solution architecture

The IBM Predictive Maintenance and Quality solution is divided into nodes, where each node provides a specific function for the solution. Each node must be installed on a separate computer or on a separate virtual machine image from other nodes.

For a complete list of products included with Predictive Maintenance and Quality, see Appendix E, "Products installed with IBM Predictive Maintenance and Quality," on page 83.

The following diagram shows the nodes.

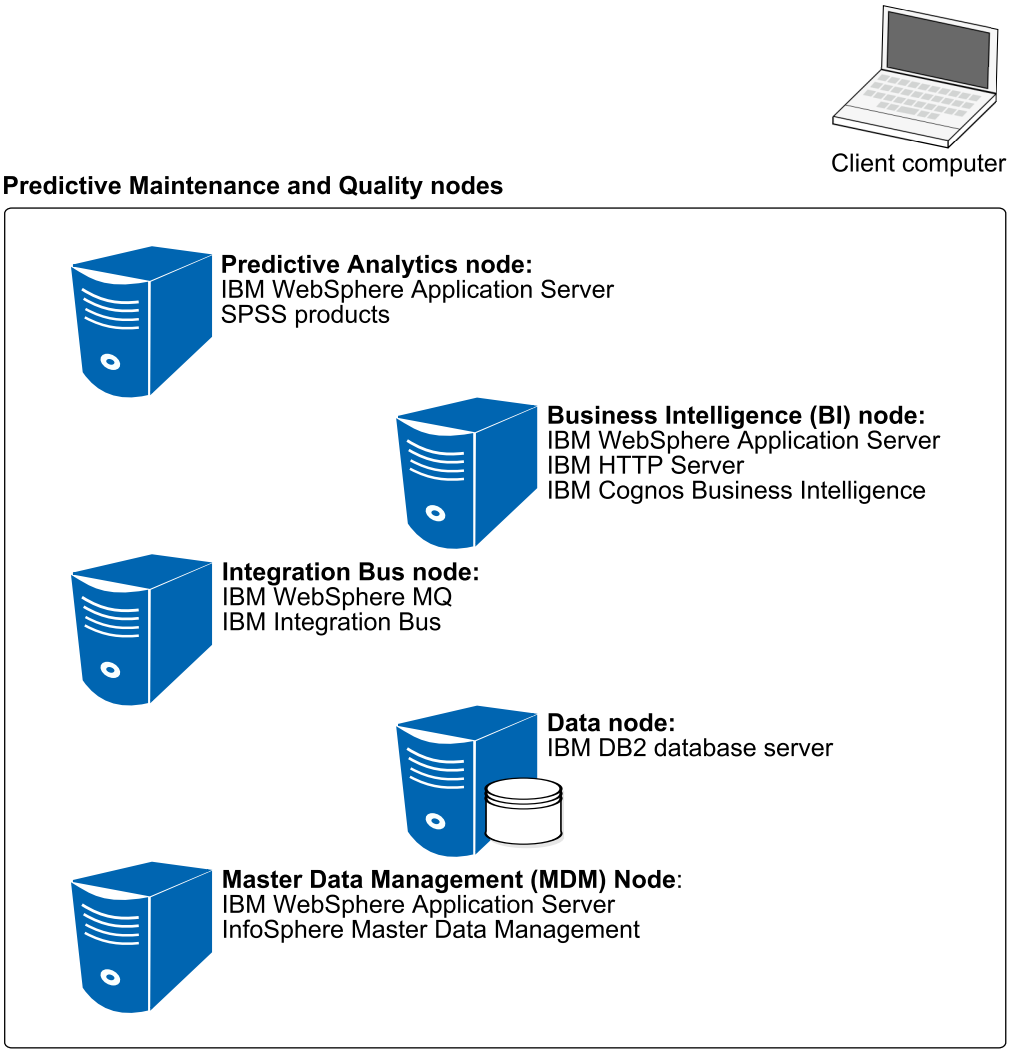

Figure 1. Predictive Maintenance and Quality nodes

Predictive Analytics node

The Analytics node provides predictive scores and offers recommendations.

This node has the following software installed:

- IBM WebSphere® Network Deployment
- IBM SPSS® Collaboration and Deployment Services
- IBM SPSS Modeler Server
- IBM SPSS Data Access Pack
- IBM SPSS Text Analytics Server
- IBM SPSS Modeler Collaboration and Deployment Services Adapter
- IBM SPSS Decision Management
- IBM SPSS Statistics Server
- IBM SPSS Statistics Collaboration and Deployment Services Adapter
- IBM DB2® Client

Business Intelligence (BI) node

The BI node provides dashboards and reports.

This node has the following software installed:

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

Integration Bus node

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

This node has the following software installed:

- IBM WebSphere MQ
- IBM Integration Bus
- IBM Integration Explorer
- IBM Integration Bus ODBC Database Extender

Master Data Management (MDM) node

The MDM node manages the master data for the solution. The master data includes the set of devices that supply events to the solution and their locations. It also includes metadata that is used to determine how events are processed by the solution.

This node has the following software installed:

- IBM WebSphere Network Deployment
- IBM InfoSphere® Master Data Management Collaboration Edition
- IBM DB2 Client

data node

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

This node has the following software installed:

- IBM DB2 Enterprise Server Edition

Chapter 2. Installation prerequisites and preparation

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

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

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

Critical installation and configuration issues

To review a list of critical installation and configuration issues for IBM Predictive Maintenance and Quality version 2.0 as of the date of release, see the document titled Critical installation and configuration issues for IBM Predictive Maintenance and Quality version 2.0 (http://www.ibm.com/support/docview.wss?uid=swg21667391).

Supported operating systems and hardware requirements

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

Server computers

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

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

Hardware requirements

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

- 4 processors
- 8 GB of RAM
- 500 GB of hard disk space

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

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

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

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

User requirements

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

Client computers

The Predictive Maintenance and Quality client components must be installed on computers that run Microsoft Windows 7 operating systems.

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

- 2 processors
- 4 GB of RAM
- 200 GB of hard disk space

Modifying the sudoers file for the user who runs the installation

To run the IBM Predictive Maintenance and Quality installation you must be either **root** user or have **sudo** permission on each node computer, and you must disable `requiretty` during the installation.

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

Procedure

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

Installing required operating system packages

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

Ensure that the following packages are installed:

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

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

Procedure

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

   `rpm -qi` *`full_package_name`*

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

   Note: You might have to use `sudo` to run the command successfully. For example, enter `sudo rpm -qi` *`full_package_name`*.
3. Install any package that is not already installed.

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

`rpm -ihv full_package_name.rpm`

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

4. Repeat these steps on each computer on which you install a Predictive Maintenance and Quality node.

Verifying that the Legacy UNIX compatibility package is installed

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

You must verify that the following packages are installed:

- `authd-1.4.3-30.el6.x86_64.rpm`
- `cups-lpd-1.4.2-48.el6.x86_64.rpm`
- `dump-0.4-0.6.b42.el6.x86_64.rpm`
- `finger-0.17-39.el6.x86_64.rpm`
- `finger-server-0.17-39.el6.x86_64.rpm`
- `krb5-appl-servers-1.0.1-7.el6_2.1.x86_64.rpm`
- `ksh-20100621-16.el6.x86_64.rpm`
- `mksh-39-7.el6.x86_64.rpm`
- `ncompress-4.2.4-54.el6_2.1.x86_64.rpm`
- `rsh-0.17-60.el6.x86_64.rpm`
- `rsh-server-0.17-60.el6.x86_64.rpm`
- `rusers-0.17-61.el6.x86_64.rpm`
- `rusers-server-0.17-61.el6.x86_64.rpm`
- `rwho-0.17-34.el6.x86_64.rpm`
- `talk-0.17-34.el6.x86_64.rpm`
- `talk-server-0.17-34.el6.x86_64.rpm`
- `tcp_wrappers-7.6-57.el6.x86_64.rpm`
- `telnet-0.17-47.el6.x86_64.rpm`
- `telnet-server-0.17-47.el6.x86_64.rpm`
- `tftp-0.49-7.el6.x86_64.rpm`
- `xinetd-2.3.14-34.el6.x86_64.rpm`

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

Procedure

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

   `rpm -qi full_package_name`

   For example, to verify that `authd-1.4.3-30.el6.x86_64` is installed, type `rpm -qi authd-1.4.3-30.el6.x86_64`.

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

3. Install any package that is not already installed.

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

   `rpm -ihv full_package_name.rpm`

   For example, to install `authd-1.4.3-30.el6.x86_64`, type `rpm -ihv authd-1.4.3-30.el6.x86_64.rpm`.
4. Repeat these steps on each computer on which you install a Predictive Maintenance and Quality node.

Installing prerequisite operating system packages on the BI node computer

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

The following packages must be installed:

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

Procedure

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

      `rpm -qi full_package_name`

      For example, to verify that `libselinux-2.0.94-5.3.el6.i686` is installed, type `rpm -qi libselinux-2.0.94-5.3.el6.i686`.
   b. Install any package that is not already installed.

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

      `rpm -ihv full_package_name.rpm`

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

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

Adding each node computer to the `hosts` file

To ensure that each IBM Predictive Maintenance and Quality 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, the Master Data Management (MDM) node, and the Integration Bus node computers.

Procedure

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

```
127.0.0.1 localhost.localdomain localhost
##.##.##.## node_server1.domain.com node_server1
##.##.##.## node_server2.domain.com node_server2
##.##.##.## node_server3.domain.com node_server3
##.##.##.## node_server4.domain.com node_server4
##.##.##.## node_server5.domain.com node_server5
```

3. Save and close the file.

Installing Java on the Predictive Analytics node computer

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

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

Installation of Perl on the MDM node computer

You must install a version of Perl on the Master Data Management (MDM) node computer for IBM Predictive Maintenance and Quality.

In the **Deployment Wizard**, you are prompted for a location on the MDM node computer where you installed Perl.

For more information about installing Perl for IBM InfoSphere Master Data Management, see the MDM documentation (www.ibm.com/support/knowledgecenter/SSWSR9_10.1.0).

Note: For Predictive Maintenance and Quality, the minimum version of Perl is 5.10.

Installing IBM Data Server Driver on the Integration Bus node computer

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

Procedure

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

7. Type the following command to extract the files:

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

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

Ensuring connectivity between the Analytics node and the data node computers

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

Procedure

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

   `traceroute` *`data_node_name`*

   Where *`data_node_name`* is the name or IP address of the data node computer.
2. Try the task again.

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

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

Procedure

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

      ```
      @root soft nofile 10000
      @root hard nofile 16384
      * soft nofile 10000
      * hard nofile 16384
      ```

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

      ```
      @root soft nofile 10000
      @root hard nofile 16384
      * soft nofile 10000
      * hard nofile 16384
      ```

   d. Save and close the file.
   e. Restart the computer for the changes to take effect.

3. Log in to the Master Data Management (MDM) node computer as the **root** user or as a user with **sudo** permissions.
   a. Go to the `/etc/security` directory.
   b. Open the `limits.conf` file for editing.
   c. Add the following lines to the file:

      ```
      @root soft nofile 10000
      @root hard nofile 16384
      * soft nofile 10000
      * hard nofile 16384
      ```

   d. Save and close the file.
   e. Restart the computer for the changes to take effect.

Disabling SELinux on all target computers

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

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

Procedure

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

      For example:

      ```
      SELINUX=disabled
      ```

   d. Save and close the file.
   e. Restart the computer for the changes to take effect.
4. Repeat these steps on each computer on which you install a Predictive Maintenance and Quality node.

Computer firewall settings required for the installation

The **Deployment Wizard** requires bidirectional communication with each IBM Predictive Maintenance and Quality node when you install a server component or server artifact component, and your firewall can interfere with this communication.

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

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

Configuring your firewall settings for the Deployment Wizard

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

Procedure

1. Log on to the computer as the **root** user or as a user with **sudo** permissions.
2. Back up your existing firewall settings by typing the following command:

   ```
   /etc/init.d/iptables save
   ```
3. Add rules for the two ports that are required by the **Deployment Wizard** with the following command:

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

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

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

   Tip: For consistency, use the same port numbers for each target computer.
4. Type the following command to save your firewall settings:

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

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

   ```
   iptables -L
   ```

   The added port should appear in the list.
7. Repeat these steps on each computer on which you install a Predictive Maintenance and Quality node, and on the computer from where you run the installation if it is not one of the node computers.

Configuring your firewall settings for the data node installation and configuration

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

Procedure

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

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

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

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

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

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

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

Configuring your firewall settings for all nodes

On each computer on which you install an IBM Predictive Maintenance and Quality node, you must open specific ports.

The following ports must be open:

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

Procedure

1. Log on to the computer as the **root** user or as a user with **sudo** permissions.
2. Back up your existing firewall settings by typing the following command:
   `/etc/init.d/iptables save`
3. Add rules for the ports with the following command:
   `iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport port -j ACCEPT`

   For example, to open vnc-server, type the following command
   `iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport vnc-server -j ACCEPT`
4. Type the following command to save your firewall settings:
   `/etc/init.d/iptables save`
5. Type the following command to restart your firewall.
   `/etc/init.d/iptables restart`
6. Verify that your changes have been applied with the following command:
   `iptables -L`
   The added port should appear in the list.
7. Repeat these steps on each computer on which you install a Predictive Maintenance and Quality node.

Disabling your computer's firewall during the installation

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

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

Procedure

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

What to do next

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

Mounting the USB hard disk drive

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

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

Chapter 3. Installation of the server components

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

Installation process

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

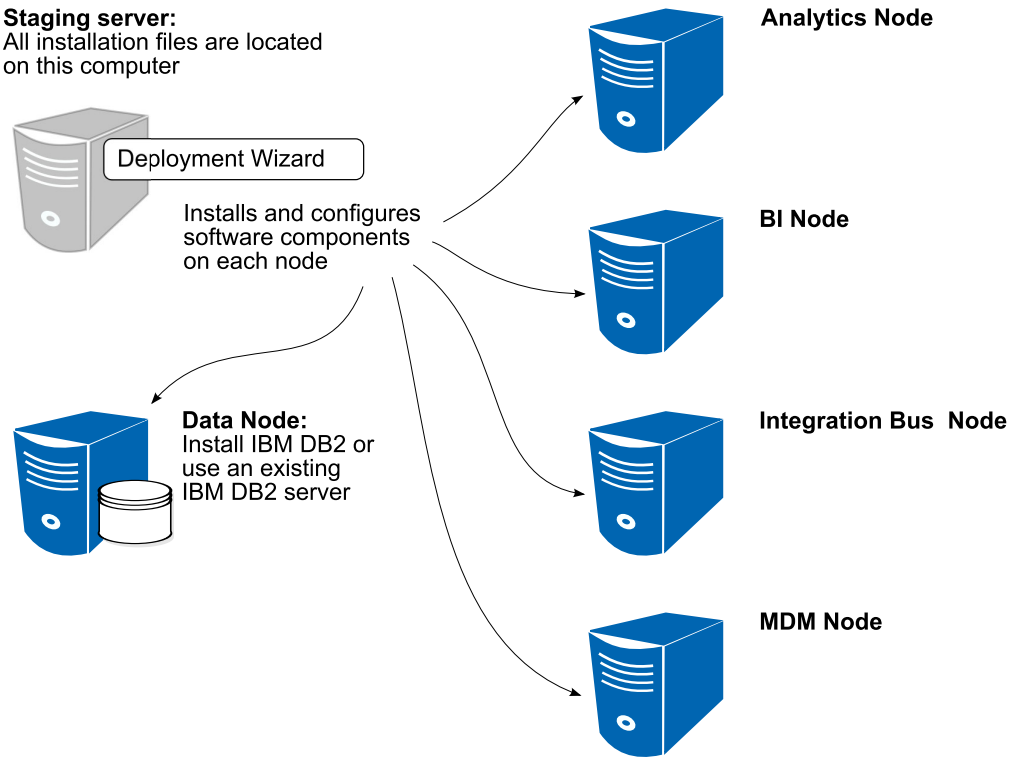

Figure 2. IBM Predictive Maintenance and Quality installation process

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

Starting the Launchpad for the server components

Use the Launchpad to start the IBM Predictive Maintenance and Quality installation.

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Before you begin

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

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

Procedure

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

   `export DISPLAY=ipaddress:vncdisplay`

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

   `xhost +`
6. Enter the following command:

   `./launchpad.sh`

   Important: Do not enter `sudo` in front of the command.
7. Review the information in the Launchpad panels.

Validating your target computers

Use the Launchpad to validate that your IBM Predictive Maintenance and Quality target computers have all of the prerequisite libraries installed.

Validating your target computers is optional. If you do not want to validate your target computers, select the **If you want to skip the validation** check box, and click **Next**.

Before you begin

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

Procedure

1. In the **Launchpad**, click **Next** until the **Validate the Data Node Computer** page.
2. Enter the server name of IP address of the data node computer in the **Computer Name** box.
   a. Enter a user name and password for a user on the target computer in the **User Name** and **Password** boxes.
   b. Click **Validate Node**.

c. If there are any missing prerequisites, use the `CheckLib_output.txt` file to help you install or configure the prerequisites, and try the validation again.

   The `CheckLib_output.txt` is in the `/var/PMQTemp` directory.

d. If the validation succeeds, click **Next**.

3. Repeat the step for each node computer.

Starting the Deployment Wizard for the server components

Use the Launchpad to start the IBM Predictive Maintenance and Quality server **Deployment Wizard**.

Procedure

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

   b. If you are installing as **root**, select **Start the Deployment Wizard as the Root User**.
2. Click **Start the Predictive Maintenance and Quality Server Deployment**.

Setting ports for the Deployment Wizard to use

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

Procedure

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

   The **Deployment Preferences** window appears.
2. Enter `30000` in the **Data Port Number** box.

   Important: Ensure that you enter the port number that you opened if you selected a port other than 30000.
3. Enter `35000` in the **Communication Port Number** box.

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

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

Selecting the installation type

You can select an **Express Deployment** or a **Custom Deployment** when you install IBM Predictive Maintenance and Quality.

An **Express Deployment** uses default settings for all installed components. For a **Custom Deployment**, you can select installation locations, port numbers, and some component users and their passwords.

In a **Custom Deployment**, you can also choose to not install IBM InfoSphere Master Data Management. This component is optional for IBM Predictive Maintenance and Quality.

Procedure

1. Select one of the following options:
   - **Express Deployment**
   - **Custom Deployment**
2. Click **Next**.
3. If you do not want to install IBM InfoSphere Master Data Management, clear that option on the **Custom Deployment** page.
4. Click **Next**.

Specifying the target computers to install the server components

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

Before you begin

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

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

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

Procedure

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

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

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

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

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

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

b. Click **Test Login**.

c. Click **Add**.

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

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

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

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

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

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

   - Edit your iptable settings or temporarily disable your firewall. For more information, see "Computer firewall settings required for the installation" on page 12.
   - Compare and correct your domain name system (DNS) settings for each computer. For example, type `sudo system-config-network`. Select **DNS configuration**, and ensure that your host name domain and DNS search path settings are correct.
   - Ensure that the `/etc/hosts` file has the correct entries. For an example, see "Test Connections validation errors" on page 71.

5. Click **Next**.
6. Repeat the steps for each computer on which you install a node.

Configuring parameters for the server components installation

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

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

Procedure

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

- Click **Browse** to browse the target computer's file system. It does not browse the local computer from where you run the **Deployment Wizard**.
- For some values, such as passwords, default values are not provided. Ensure that you enter all values on each page of the **Deployment Wizard**.
- On the **Configure IBM DB2 Enterprise Edition** page, enter a name for each database that is to be created by the **Deployment Wizard**.

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

Table 1 includes the configuration parameters for IBM DB2.

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

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

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

Field	Default or example value	Description
DB2 Fenced Password	There is no default value for this field.	The password for the DB2 instance owner user. The password cannot contain more than 8 characters.
DB2 Fenced User Home Directory	`/home/db2fenc1`	The home directory for the DB2 instance owner user. This directory is on the data node computer's file system.

Table 2 includes the database names that are created.

Table 2. IBM DB2 configuration parameters: Database names

Field	Default or example value	Description
SPSS Database Name	`SPSSDB`	The SPSS database that is used by the components that are installed on the Predictive Analytics node computer.
Cognos Database Name	`COG102CS`	The IBM Cognos content store database.
MDM Database Name	`MDMDB`	The Master Data Management (MDM) node database.

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

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

Table 3. IBM DB2 client parameters

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

Table 4 on page 24 includes the configuration parameters for WebSphere Application Server.

Table 4. WebSphere Application Server installation parameters

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

Table 5 includes the configuration parameters for IBM HTTP Server.

Table 5. IBM HTTP Server installation parameters

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

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

Table 6. IBM Cognos BI installation parameters

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

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

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

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

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

Table 8. IBM Cognos BI Server parameters

Field	Default or example value	Description
Database Host Name	This value is automatically entered.	The name or IP address of the data node computer.
IBM WebSphere Application Server BI Node Host Name	This value is automatically entered.	The name or IP address of the BI node.
Cognos Dispatcher Application Server Port	`9080`	The HTTP transport port number for the WebSphere Application Server where IBM Cognos is running.
Database Server Host Name	This value is automatically entered.	The name or IP address of the data node.
IBM Cognos Mobile Server Installation Directory	`/opt/IBM/PMQ/Server/CognosMobile`	The location where the IBM Cognos Mobile installation files are copied. To use IBM Cognos Mobile, you must install the product manually.
Cognos Real Time Monitoring Installable Directory	`/opt/IBM/PMQ/Server/CognosRTM`	The location where the IBM Cognos Real-time Monitoring installation files are copied. To use IBM Cognos Real-time Monitoring, you must install the product manually.

Table 9 includes the configuration parameters for IBM Integration Bus.

Table 9. IBM Integration Bus installation parameters

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

Table 9. IBM Integration Bus installation parameters (continued)

Field	Default or example value	Description
WebSphere Message Broker Explorer Installation Directory	`/opt/IBM/IBExplorer`	The location where IBM Integration Explorer is to be installed. This directory is on the Integration Bus node computer's file system. IBM Integration Explorer was previously named WebSphere Message Broker.

Table 10 includes the configuration parameters for InfoSphere Master Data Management.

Table 10. InfoSphere Master Data Management parameters

Field	Default or example value	Description
WebSphere Application Server Profile Template Location	`/opt/IBM/WebSphere/AppServer/profileTemplates/default`	The location for the WebSphere profile templates.
WebSphere Application Server Profile Type	`Stand-Alone`	The type of WebSphere Application Server installation. Do not change the default value.
WebSphere Application Server Profile Name	`MDMProfile`	The name of the WebSphere profile that is used for InfoSphere Master Data Management.
WebSphere Application Server Profile Node Name	`Node01`	The name for the WebSphere Application Server node on the MDM node computer.
WebSphere Application Server Cell Name	`Cell01`	The name for the WebSphere Application Server cell on the MDM node computer.
WebSphere Application Server Host Name	This value is automatically entered.	The name or IP address of the MDM node computer.
WebSphere Application Server Profile Administrative User Name	`admin`	The WebSphere Application Server administrative user name.
WebSphere Application Server Profile Administrative Password	There is no default value for this field.	The WebSphere Application Server administrative user password.
WebSphere Application Server Profile SOAP Port Number	`8880`	The WebSphere Application Server port number used for Master Data Management.
Database Server Host Name	This value is automatically entered.	The name or IP address of the data node computer.
IBM Installation Manager Path	`/opt/IBM/InstallationManager/eclipse/tools/imcl`	The location where IBM Installation Manager is to be installed. This directory is on the BI node computer's file system.

Table 10. InfoSphere Master Data Management parameters (continued)

Field	Default or example value	Description
Perl Installation Directory	`/opt/ActivePerl-5.16`	The location where you installed Active Perl. This location on the MDM node computer.

Table 11 includes the configuration parameters for IBM SPSS Collaboration and Deployment Server.

Table 11. IBM SPSS Collaboration and Deployment Server parameters

Field	Default or example value	Description
SPSS Collaboration and Deployment Services Server Installation Directory	`/opt/IBM/SPSS/Deployment/6.0/Server`	The location where IBM SPSS Collaboration and Deployment Services is to be installed. This location is on the Analytics node computer's file system.
IBM Installation Manager Installation Directory	`/opt/IBM/InstallationManager/eclipse/tools/imcl`	The location where IBM Installation Manager is to be installed. This directory is on the Analytics node computer's file system.
WebSphere Profile Location	`/opt/IBM/WebSphere/AppServer/profiles`	The location where the WebSphere profile is to be created. This directory is on the Analytics node computer's file system.
WebSphere Profile Default Template Location	`/opt/IBM/WebSphere/AppServer/profileTemplates/default`	The location where the WebSphere profile templates are located. This directory is on the Analytics node computer's file system.
WebSphere Host Name	This value is automatically entered.	The name or IP address of the Analytics node computer.
SPSS DB2 Database Host Name	This value is automatically entered.	The name or IP address of the data node computer.
SPSS Collaboration and Deployment Service Server Administrative User Name	`admin`	The IBM SPSS Collaboration and Deployment Services administrative user.
SPSS Collaboration and Deployment Service Server Administrative Password	There is no default value for this field.	The password for the IBM SPSS Collaboration and Deployment Services administrative user.
SPSS Modeler Server Installation Directory	`/usr/IBM/SPSS/ModelerServer/16.0`	The directory where the IBM SPSS Modeler Server is to be installed. This directory is on the Analytics node computer.
SPSS Data Access Pack Installation Directory	`/root/SDAP71`	The directory where the IBM SPSS Data Access Pack is to be installed. This directory is on the Analytics node computer.

Table 11. IBM SPSS Collaboration and Deployment Server parameters (continued)

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

Starting the installation

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

Procedure

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

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

Optional installation of more IBM Cognos components

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

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

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

Configure the server components and test the installation

After the installation of the IBM Predictive Maintenance and Quality 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 Maintenance and Quality data node computer and listing the databases on the server. You can also list the databases available on each node computer where the IBM DB2 client was installed.

Procedure

Log on to the data node computer.

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

   ```
   db2 list database directory
   ```

   The following databases are listed:

   - `COG102DB`
   - `MDMDB`
   - `SPSSDB`

Configuring WebSphere Application Server for IBM Cognos BI

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

Procedure

1. Open a web browser.
2. In the address bar, type the address for the WebSphere Admin Console that was installed on the BI node computer.

   The Admin console address is: `http://`*`bi_node_name`*`:9060/ibm/console` where *`bi_node_name`* is the name or IP address for the BI node computer.
3. Leave the **User ID** box empty, and click **Log in**.
4. Expand **Servers** > **Server Types** > **WebSphere application servers**, and click **server1**.
5. Under **Server Infrastructure**, expand **Java and Process Management**, and click **Process Definition**.
6. Under **Additional Properties**, click **Environment Entries**.
7. Click **LD_LIBRARY_PATH**.
8. In the **Value** box, add the following value to the path:

   ```
   :/opt/ibm/db2/V10.1/lib32/
   ```

   This path points to the IBM DB2 32-bit library file `libdb2.so`.

   Important: If you did not use the default installation locations, ensure you use the paths that you entered.
   For example, the **Value** box, should include the following path:

   ```
   /opt/ibm/cognos/c10_64/bin64/:/opt/ibm/db2/V10.1/lib32/
   ```
9. Click **Apply**, and then click **Save**.

Saving your IBM Cognos Configuration settings

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

Procedure

1. Log in to the BI node computer as **root**.
2. Enter the following command to load the profile that is needed for IBM Cognos BI, and press Enter:

   ```
   . ~/.bash_profile
   ```

   The `.bash_profile` file contains the environment variables that are needed to start IBM Cognos Configuration.
3. Go to the `/opt/ibm/cognos/c10_64/bin64` directory.
4. Type the following command:

   ```
   ./cogconfig.sh
   ```

   IBM Cognos Configuration starts.
5. Click **File** > **Save**.
6. Close IBM Cognos Configuration.

   Important: If you are prompted to start the Cognos Content Database service, click **No**.
7. Click **File** > **Exit**.

Starting the services on the BI node computer

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

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

Procedure

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

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

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

You must set the password for the **mqm** user on the Integration Bus node computer for IBM Predictive Maintenance and Quality.

Procedure

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

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

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

Testing the installation of the server components

You can test the installation of the IBM Predictive Maintenance and Quality server components by accessing some of the component portals.

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

Procedure

1. Open a web browser.
2. In the address bar, type the address for the IBM Cognos Content Manager status page.

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

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

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

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

   IBM Cognos Connection appears.
4. In the address bar, type the address for the SPSS administration console.

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

   The SPSS administration console appears.

Computer firewall settings to run the server components

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

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

Configuring your firewall settings for the Analytics node computer

You must ensure that certain ports are open on the Predictive Analytics node computer for IBM Predictive Maintenance and Quality.

The following ports must be open:

- 45088
- 58313

- 28053
- tungsten-https
- glrpc
- corbaloc
- 59356
- 9043
- 9060

Procedure

1. Log in to the Analytics node computer as the **root** user or as a user with **sudo** permissions.
2. Back up your existing firewall settings by typing the following command:
   `/etc/init.d/iptables save`
3. Add rules for the ports with the following command:
   `iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport port -j ACCEPT`

   For example, to open 45088, type the following command
   `iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport 45088 -j ACCEPT`
4. Repeat the previous step for each of the required port values.
5. Type the following command to save your firewall settings:
   `/etc/init.d/iptables save`
6. Type the following command to restart your firewall.
   `/etc/init.d/iptables restart`
7. Verify that your changes have been applied with the following command:
   `iptables -L`
   The added ports should appear in the list.

Configuring your firewall settings for the BI node computer

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

The following ports must be open:

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

Procedure

1. Log in to the BI node computer as the **root** user or as a user with **sudo** permissions.
2. Back up your existing firewall settings by typing the following command:
   `/etc/init.d/iptables save`

3. Add rules for the ports with the following command:
   `iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport port -j ACCEPT`

   For example, to open 9362, type the following command
   `iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport 9362 -j ACCEPT`
4. Repeat the previous step for each of the required port values.
5. Type the following command to save your firewall settings:
   `/etc/init.d/iptables save`
6. Type the following command to restart your firewall.
   `/etc/init.d/iptables restart`
7. Verify that your changes have been applied with the following command:
   `iptables -L`
   The added ports should appear in the list.

Configuring your firewall settings for the Integration Bus node computer

You must ensure that certain ports are open on the Integration Bus node computer for IBM Predictive Maintenance and Quality.

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 by typing the following command:
   `/etc/init.d/iptables save`
3. Add rules for the ports with the following command:
   `iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport port -j ACCEPT`

   For example, to open boks, type the following command
   `iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport boks -j ACCEPT`
4. Repeat the previous step for each of the required port values.
5. Type the following command to save your firewall settings:
   `/etc/init.d/iptables save`
6. Type the following command to restart your firewall.
   `/etc/init.d/iptables restart`
7. Verify that your changes have been applied with the following command:
   `iptables -L`
   The added ports should appear in the list.

Configuring your firewall settings for the MDM node computer

You must ensure that certain ports are open on the Master Data Management (MDM) node computer for IBM Predictive Maintenance and Quality.

The following ports must be open:

- tungsten-https
- 50498
- 9634
- 9633
- 57537
- 49888
- 53343
- 41950
- 60573
- 43420
- 40187
- netsteward
- corbaloc
- glrpc
- 44152
- 43830
- 39188
- 9043
- 7507
- 49298
- 8881
- cddbp-alt
- 40752
- 50512
- 35086
- bacula-dir
- jetdirect
- 55052
- 32970
- commplex-link
- 37253
- 9060

Procedure

1. Log in to the MDM node computer as the **root** user or as a user with **sudo** permissions.
2. Back up your existing firewall settings by typing the following command:
   `/etc/init.d/iptables save`
3. Add rules for the ports with the following command:
   `iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport port -j ACCEPT`

   For example, to open 9060, type the following command
   `iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport 9060 -j ACCEPT`
4. Repeat the previous step for each of the required port values.
5. Type the following command to save your firewall settings:

```
/etc/init.d/iptables save
```

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

Configuring your firewall settings for the data node computer

You must ensure that certain ports are open on the data node computer for IBM Predictive Maintenance and Quality.

The following ports must be open:

- ibm-db2
- db2c_db2inst1

Procedure

1. Log in to the data node computer as the **root** user or as a user with **sudo** permissions.
2. Back up your existing firewall settings by typing the following command:
   ```
   /etc/init.d/iptables save
   ```
3. Add rules for the ports with the following command:
   ```
   iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport port -j ACCEPT
   ```
   For example, to open ibm-db2, type the following command
   ```
   iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport ibm-db2 -j ACCEPT
   ```
4. Type the following command to save your firewall settings:
   ```
   /etc/init.d/iptables save
   ```
5. Type the following command to restart your firewall.
   ```
   /etc/init.d/iptables restart
   ```
6. Verify that your changes have been applied with the following command:
   ```
   iptables -L
   ```
   The added ports should appear in the list.

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

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

Procedure

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

   Note: You must perform these steps on both the Integration Bus node and Analytics node computers.
2. Go to the `/etc/sysconfig` directory, and open the `nfs` file in a text editor.
3. Add the following lines to the file or uncomment the lines if they already exist in the file:

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

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

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

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

```
-A RH-Firewall-1-INPUT -s 192.168.1.0/24 -m state -state
NEW -p udp -dport 111 -j ACCEPT
-A RH-Firewall-1-INPUT -s 192.168.1.0/24 -m state -state NEW -p tcp
-dport 111 -j ACCEPT
-A RH-Firewall-1-INPUT -s 192.168.1.0/24 -m state -state NEW -p tcp
-dport 2049 -j ACCEPT
-A RH-Firewall-1-INPUT -s 192.168.1.0/24 -m state -state NEW -p tcp
-dport 32803 -j ACCEPT
-A RH-Firewall-1-INPUT -s 192.168.1.0/24 -m state -state NEW -p udp
-dport 32769 -j ACCEPT
-A RH-Firewall-1-INPUT -s 192.168.1.0/24 -m state -state NEW -p tcp
-dport 892 -j ACCEPT
-A RH-Firewall-1-INPUT -s 192.168.1.0/24 -m state -state NEW -p udp
-dport 892 -j ACCEPT
-A RH-Firewall-1-INPUT -s 192.168.1.0/24 -m state -state NEW -p tcp
-dport 875 -j ACCEPT
-A RH-Firewall-1-INPUT -s 192.168.1.0/24 -m state -state NEW -p udp
-dport 875 -j ACCEPT
-A RH-Firewall-1-INPUT -s 192.168.1.0/24 -m state -state NEW -p tcp
-dport 662 -j ACCEPT
-A RH-Firewall-1-INPUT -s 192.168.1.0/24 -m state -state NEW -p udp
-dport 662 -j ACCEPT
```

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

```
service iptables restart
```

Chapter 4. Installation of the server artifacts

The server artifacts include report content and workflows for IBM Predictive Maintenance and Quality.

Starting the Deployment Wizard for the server artifacts

Use the Launchpad to start the IBM Predictive Maintenance and Quality server artifacts Deployment Wizard.

Before you begin

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

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

Procedure

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

   `export DISPLAY=ipaddress:vncdisplay`

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

   `xhost +`
6. Enter the following command:

   `./launchpad.sh`

   Important: Do not enter `sudo` in front of the command.
7. Review the information in the Launchpad panels.
8. Click **Install Server Artifacts** > **Predictive Maintenance and Quality Server Artifacts Accelerator** to start the **Deployment Wizard** to install the server artifacts.
9. Follow the prompts to install the server artifacts.
10. On the **Select Tasks** page, select all of the artifacts.

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Setting ports for the Deployment Wizard to use

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

Procedure

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

   The **Deployment Preferences** window appears.
2. Enter `30000` in the **Data Port Number** box.

   Important: Ensure that you enter the port number that you opened if you selected a port other than 30000.
3. Enter `35000` in the **Communication Port Number** box.

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

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

Specifying the target computers on which to install the artifacts

You must specify a computer on which to install the IBM Predictive Maintenance and Quality artifacts.

Install the server artifacts on the appropriate node computer. For example, install the database artifacts to the data node computer.

Before you begin

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

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

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

Procedure

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

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

If you installed a node on the computer where you are running the **Deployment Wizard**, enter `localhost`.

2. Click **Add**.

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

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

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

   b. Click **Test Login**.

   c. Click **Add**.

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

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

   a. Click **Edit** > **Preferences**.

   b. Click **Target Computer Settings**.

   c. Select the computer name or IP address in the **Target Computer** field.

   d. Enter the communication port number that you set in the **Communication Port** field. For example, enter `35000`.

   e. Enter the Data Port Number that you set in the **RMI Registry Port** field. For example, enter `30000`.

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

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

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

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

   - Edit your iptable settings or temporarily disable your firewall. For more information, see "Computer firewall settings required for the installation" on page 12.
   - Compare and correct your domain name system (DNS) settings for each computer. For example, type `sudo system-config-network`. Select **DNS configuration**, and ensure that your host name domain and DNS search path settings are correct.
   - Ensure that the `/etc/hosts` file has the correct entries. For an example, see "Test Connections validation errors" on page 71.

5. Click **Next**.

6. Repeat the steps for each node computer.

Configuring parameters for the server artifacts installation

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

Procedure

Use the following table to verify or enter values in each field on each page of the **Deployment Wizard**.

Table 12. data node parameters

Field	Default or example value	Description
Data Node Deployment Location	`/opt/IBM/PMQ/Data`	The location where the server artifacts are to be installed on the data node computer. The artifacts are deployed to the location in a directory with a date and time stamp. For example, `/opt/IBM/PMQ/Data`*`dateandtime`*
DB2 Instance Owner User Name	`db2inst1`	The user ID that controls the DB2 processes and owns the directories that are used by the database instance.
DB2 Instance Owner Password	There is no default value for this field.	The password for the DB2 instance owner user. **Note:** Ensure that you use the same password as you provided during the server installation.

Table 13. Integration Bus node parameters

Field	Default or example value	Description
Install Location of IIB	`/opt/ibm/mqsi/9.0.0.1`	The location where IBM Integration Bus is installed. This directory is on the Integration Bus node computer's file system.
WebSphere Message Queue Location	`/opt/mqm`	The location where WebSphere Message Queue is installed. This directory is on the Integration Bus node computer's file system.
DB2 Client Install Location	`/opt/ibm/db2/V10.1`	The location where the IBM DB2 client is installed on the Integration Bus node computer.
Enterprise Service Bus Deployment Location	`/var/PMQ`	The location where the server artifacts are to be installed on the Integration Bus node computer. The artifacts are deployed to the location in a directory with a date and time stamp.

Table 13. Integration Bus node parameters (continued)

Field	Default or example value	Description
Cognos Install Location	`/opt/ibm/cognos/c10_64`	The location where IBM Cognos BI is installed. This directory is on the BI node computer's file system.
Broker Name	`pmqbroker`	The broker name that you created.
Queue Manager Name	`pmqmanager`	The Queue Manager name that you created.
Execution Group 1	`pmqgroup1`	The name of a group of message flows that are assigned to a broker that you created.
Execution Group 2	`pmqgroup2`	The name of a group of message flows that are assigned to a broker that you created.
Business Intelligence Node IP	There is no default value for this field.	The IP address of the BI node computer.
Analytics Node IP	There is no default value for this field.	The IP address of the Predictive Analytics node computer.
Analytics Node HTTP Transport Port	`9080`	The WebSphere Application Server port number that is used on the Analytics node computer.
DB2 Port Number	`50000`	The port number that is used by the IBM DB2 server on the data node computer.
Database Node IP	There is no default value for this field.	The IP address of the data node computer.
DB2 Username	`db2inst1`	The user ID that controls the DB2 processes and owns the directories that are used by the database instance.
DB2 Database Server Instance Password	There is no default value for this field.	The password for the DB2 instance owner user. **Note:** Ensure that you use the same password as you provided during the server installation.

Table 14. Business Intelligence (BI) node parameters

Field	Default or example value	Description
Business Intelligence Deployment Location	`/opt/IBM/PMQ/BI`	The location where the server artifacts are to be installed on the BI node computer. The artifacts are deployed to the location in a directory with a date and time stamp. For example, `/opt/IBM/PMQ/BI`*`dateandtime`*
Cognos Install Location	`/opt/ibm/cognos/c10_64`	The location where IBM Cognos BI is installed. This directory is on the BI node computer's file system.
WebSphere Install Location	`/opt/IBM/WebSphere/AppServer`	The location where WebSphere is installed. This directory is on the BI node computer's file system.
DB2 Instance Home Directory	`/home/db2inst1`	The home directory of the database instance owner.
DB2 Client Install Location	`/opt/ibm/db2/V10.1`	The location where the IBM DB2 client is installed on the BI node computer.
WebSphere Cognos Profile Name	`COGNOSProfile`	The WebSphere Application Server profile name that is used for IBM Cognos Business Intelligence.
Cognos BI Dispatcher URI	`http://`*`bi_node_name`*`:9080/p2pd/servlet/dispatch`	The URL to the IBM Cognos BI dispatcher, where *`bi_node_name`* is the name or IP address of the BI node computer.
DB2 Database Instance User Name	`db2inst1`	The user ID for the IBM Cognos content store database.
DB2 Database Instance Password	There is no default value for this field.	The password for the database instance owner user.
DB2 Database Port Number	`50000`	The port number for the IBM DB2 database server.
Database Node IP	There is no default value for this field.	The IP address of the data node computer.
Integration Bus Node IP	There is no default value for this field.	The IP address of the Integration Bus node computer.

Table 15. Analytics node parameters

Field	Default or example value	Description
Analytics Deployment Location	`/opt/IBM/PMQ/Analytics`	The location where the server artifacts are to be installed on the Analytics node computer. The artifacts are deployed to the location in a directory with a date and time stamp. For example, `/opt/IBM/PMQ/Analytics`*`dateandtime`*
Modeler Server Install Location	`/usr/IBM/SPSS/ModelerServer/16.0`	The location where the Modeler Server is installed.
SPSS Data Pack Installation Location	`/opt/IBM/SDAP71`	The directory where the IBM SPSS Data Access Pack is installed. This directory is on the Analytics node computer.
Collaboration and Deployment Services Install Location	`/opt/IBM/SPSS/Deployment/6.0/Server`	The location where IBM SPSS Collaboration and Deployment Services is installed. This location is on the Analytics node computer.
Integration Bus Node IP	There is no default value for this field.	The IP address of the Integration Bus node computer.
Database Node IP	There is no default value for this field.	The IP address of the data node computer.
Database Username	`db2inst1`	The user ID for the IBM Cognos content store database.
Database Password	There is no default value for this field.	The password for the database instance owner user.
Database Port	`50000`	The port number for the IBM DB2 database server.

Table 16. Master Data Management (MDM) node parameters

Field	Default or example value	Description
Master Data Deployment Location	`/opt/IBM/PMQ/MDM`	The location where the server artifacts are to be installed on the MDM node computer. The artifacts are deployed to the location in a directory with a date and time stamp. For example, `/opt/IBM/PMQ/MDM`*`dateandtime`*

Starting the installation of the server artifacts

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

Procedure

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

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

Complete the configuration of the server components

After you have installed the IBM Predictive Maintenance and Quality server artifacts, you can complete the configuration of the server components.

Verifying the configuration of IBM SPSS Collaboration and Deployment Services

To complete the configuration of IBM SPSS Collaboration and Deployment Services Server, you must verify the **URL Prefix** value for your environment.

Procedure

1. Open a web browser.
2. In the address bar, type the address for the Collaboration and Deployment administration console.

   The address is `http://`*`analytics_node_name`*`:9080/config`, where *`analytics_node_name`* is the name or IP address for the Predictive Analytics node computer.
3. Enter the **Login name** and **Password** for the administrator user, and click **Login**.

   The default **Login name** is `admin`, and the default **Password** is `admin`.
4. On the **Configuration** panel, under **Setup**, click **URL Prefix**.
5. In the **URL Prefix** box, verify that the address is `http://`*`analytics_node_name`*`:9080`, where *`analytics_node_name`* is the name or IP address of the Analytics node computer.
6. If the value is correct, you do not have to complete the remaining steps in this task.
7. If the value is not correct, enter the name or IP address of the Analytics node computer, and click **Set**.
8. Open the WebSphere Administrative Console in your web browser.

   The address is `http://`*`analytics_node_name`*`:9060/ibm/console`, where *`analytics_node_name`* is the name or IP address for the Analytics node computer. 9060 is the default port number for the WebSphere Administrative Console.
9. Click **Log in**.

   You do not need to enter a value in the **User ID** box.

10. Under **Applications** > **Application Types** > **WebSphere Enterprise Applications**, select **IBM_SPSS_Collaboration_and_Deployment_Services_5.0**, and click **Stop**.
11. Select **IBM_SPSS_Collaboration_and_Deployment_Services_5.0**, and click **Start** to restart the application and apply the changes.

Configuring the MDM node

To configure the Master Data Management (MDM) node, you must log in to the MDM administration console and import content files.

The content files are installed onto the MDM node computer by the Server Artifact installer. You must copy the content files from the MDM node to a computer where you have Microsoft Internet Explorer installed.

Procedure

1. Copy the MDM node contents to your Microsoft Windows-based computer with an FTP client or by using a shared directory.

   The contents files are installed to `/opt/ibm/PMQ` by default on the MDM node computer. The contents file is named `IBMPMQ.zip`.
2. In Microsoft Internet Explorer, go to the MDM administration console.

   The address is `http://`*`mdm_node_name`*`:7507/utils/enterLogin.jsp`, where *`mdm_node_name`* is the name or IP address of the MDM node computer.
3. In **User name**, enter `Admin`.

   Note: These values are case-sensitive.
4. In the **Password** box, enter `trinitron`.
5. In the **Company** box, enter `IBMPMQ`.
6. Click **Login**.
7. Click **System Administrator** > **Import Environment**.
8. In the **Import Company Environment** box, browse to and select the `IBMPMQ.zip` file that you copied.
9. Click **Import**.
10. Log out, and log back in to the MDM administration console to ensure that the import was completed.

Configure the Integration Bus node components

To configure the Integration Bus node components, you must enable remote access for the queue manager.

Enabling remote access for the queue manager

For IBM Predictive Maintenance and Quality, you must start the queue manager command line processor to enable remote access to the queue manager.

Procedure

1. In a terminal window, go to the *`installation_location`*`/mqsi/9.0.0.1/bin` directory. For example, if you installed to the default location, go to the `/opt/ibm/mqsi/9.0.0.1/bin` directory.
2. Change to the mqm user. For example, `su mqm`.
3. Enter the following command to load the profile that is needed for the mqm user, and press Enter:

   ```
   . ~/.bash_profile
   ```

4. As the mqm user, enter the following command to start the queue manager:
   `runmqsc queue_manager_name`
   For example, to use the default queue manager named pmqmanager, enter:
   `runmqsc pmqmanager`
5. Enter the following lines, and press Enter after each line:

```
START LISTENER
ALTER QMGR CHLAUTH(ENABLED)
SET CHLAUTH(SYSTEM.BKR.CONFIG) TYPE(ADDRESSMAP) ADDRESS('*')
MCAUSER('mqm')
SET CHLAUTH(SYSTEM.BKR.CONFIG) TYPE(BLOCKUSER) USERLIST('*NOACCESS')
END
```

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

Enabling IBM Maximo Asset Management integration

To enable IBM Maximo® Asset Management integration with IBM Predictive Maintenance and Quality, you must manually modify configuration files and deploy the `PMQMaximoIntegration.bar` file.

Procedure

1. Log on to the Integration Bus node computer as the **mqm** user.
2. Go to the `/var/mqsi/shared-classes/orchestrations` directory.
3. To enable IBM Maximo work order creation:
   a. Open `PMQ_orchestration_definition_measurement.xml` in a text editor.
   b. Uncomment the second `service_invocation_configuration` element in the service adapter section.
   c. Save and close the file.
4. To enable IBM Maximo work order updating:
   a. Open `PMQ_orchestration_definition_maintenance.xml` in a text editor.
   b. Uncomment the last `step` element in the file.
   c. Save and close the file.
5. Restart the pmqbroker.
   a. Go to the `/opt/ibm/mqsi/9.0.0.1/bin` directory.
   b. Enter the following command to stop the broker:
      `./mqsistop pmqbroker`
   c. Enter the following command to restart the broker:
      `./mqsistart pmqbroker`
6. Set the URL for IBM Maximo.
   a. Go to the `/var/PMQ/MQSIFileInput/properties` directory.
   b. Open the `PMQMaximoIntegration.properties` file in a text editor.
   c. Enter the IP address of the IBM Maximo host computer in the `webServiceURL`. For example, change `localhost` to the IBM Maximo host IP address.
   d. Save and close the file.
7. Update the `PMQMaximoIntegration.bar` file.

a. Go to the /opt/ibm/mqsi/9.0.0.1/bin directory.
b. Enter the following command:

```
./mqsiapplybaroverride -b /var/PMQ/MQSIFileInput/server/
PMQMaximoIntegration.bar -k PMQMaximoIntegration -p
/var/PMQ/MQSIFileInput/properties/PMQMaximoIntegration.properties
```

8. Deploy the PMQMaximoIntegration.bar file.
   a. Go to the /opt/ibm/mqsi/9.0.0.1/bin directory.
   b. Enter the following command:

```
./mqsideploy pmqbroker -e pmqgroup1 -a /var/PMQ/MQSIFileInput/server/
PMQMaximoIntegration.bar
```

Chapter 5. Installation of the client components

There are several client components that are included with IBM Predictive Maintenance and Quality. 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.

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

Client components

Client components for IBM Predictive Maintenance and Quality are available to be installed.

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

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

Database connectivity

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

Predictive modeling and decision management

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

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

Optionally, install the following components:

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

Business intelligence

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

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

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Optionally, install the following components:

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

Integration Bus

Install the following components:

- Integration Bus Toolkit
- WebSphere MQ for Windows

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

Starting the Launchpad for the client components

Use the IBM Predictive Maintenance and Quality **Launchpad** to start the **Deployment Wizard**.

Procedure

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

Changing the temporary location for installation files

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

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

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

Procedure

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

Starting the Deployment Wizard and installing the client components

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

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

Procedure

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

   Note: The time to deploy the software is estimated by the **Deployment Wizard**. The actual time required depends on a variety of factors, such as network speed. In most cases, the deployments will take significantly less time than what is initially displayed by the **Deployment Wizard**.
6. After the client installers are copied to your computer, you must install each client individually by using its installer.

Installing IBM SPSS Collaboration and Deployment Services Deployment Manager

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

Install IBM SPSS Collaboration and Deployment Services Deployment Manager on a computer running the Microsoft Windows 7 operating system.

Procedure

1. Go to the *install_location*`\Client\Analytics\IBM SPSS Collaboration and Deployment Services Deployment Manager` directory.

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

   For more information about the installation of Deployment Manager, see the IBM SPSS documentation (www.ibm.com/support/knowledgecenter/SS69YH_6.0.0).

Adding a content server connection 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. On your Microsoft Windows computer, start IBM SPSS Collaboration and Deployment Services Deployment Manager. For example, click **Start** > **Deployment Manager**.
2. Click **File** > **New** > **Content Server Connection**.
3. In the **Connection Name** box, enter a name for your Collaboration and Deployment Services repository.
4. In the **Host** box, enter the name or IP address of the Predictive Analytics node computer.
5. In the **Port** box, enter `9080`.

   The default port number that is used by the WebSphere Application Server instance is 9080.
6. Click **Finish**.
7. Click the connection name that you created.
8. In the **User ID** box, enter `admin`.
9. In the **Password** box, enter `admin`.
10. Click **OK**.

Adding users and groups 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 for IBM Predictive Maintenance and Quality.

Procedure

1. In Deployment Manager, click **Tools** > **Server Administration**.
2. Click **Click here to define a new administrative server connection**.
3. In the **Name** box, enter a name for your server, and click **Next**.
4. In the **Host** box, enter the name or IP address of Predictive Analytics node computer.
5. In the **Port** box, enter the port number of for the WebSphere instance. The default value is `9080`.
6. Click **Finish**.
7. Double-click the connection name that you created.
8. In the **User ID** box, enter `admin`.
9. In the **Password** box, enter `admin`.
10. Click **OK**.
11. Expand **Users and Groups**, and double-click **Local User Repository**.
12. Select **Show all available users/groups**.
13. Click **New Group**.
    a. Enter `administrator`.
    b. Select **Show all available users**.
    c. Under **Available users**, move the **admin** user to **Groups contains users**.
    d. Click **OK**.
14. Click **New Group**.
    a. Enter `DM Administrator`.
    b. Select **Show all available users**.

c. Under **Available users**, move the **admin** user to **Groups contains users**.
d. Click **OK**.

15. Click **New Group**.
    a. Enter `DM Users`.
    b. Select **Show all available users**.
    c. Under **Available users**, move the **admin** user to **Groups contains users**.
    d. Click **OK**.
16. Double-click **Roles**.
17. Click **New Role**.
    a. In the **Role Name** box, enter `DM Administrator`.
    b. Click **Select All** to add all actions for this user role.
    c. Click **OK**.
    d. Select the **DM Administrator** role, and click **Edit Users and Groups**.
    e. Click **Show all available users/groups**.
    f. Under **Available users**, move the **DM Administrator** group to **Users/Groups Assigned to Role**.
    g. Click **OK**.
18. Click **New Role**.
    a. In the **Role Name** box, enter `DM User`.
    b. Click **Select All** to add all actions for this user role.
    c. Click **OK**.
    d. Select the **DM User** role, and click **Edit Users and Groups**.
    e. Click **Show all available users/groups**.
    f. Under **Available users**, move the **DM Users** group to **Users/Groups Assigned to Role**.
    g. Click **OK**.

Importing the resource definitions into IBM SPSS Collaboration and Deployment Services

Predictive Maintenance and Quality resource definitions include credential definitions, data source definitions, message domains, promotion policies, server definitions, and server cluster specifications. These resources are required for running jobs.

You must import these resource definitions into IBM SPSS Collaboration and Deployment Services Deployment Manager.

The resource files are installed onto the Predictive Analytics node computer by the Server Artifact installer. You must copy the content files from the Analytics node to the computer where you installed Deployment Manager.

Procedure

1. Copy the Analytics node contents to your Windows-based computer by using either an FTP client or by using a shared directory.

   The contents files are installed to `/opt/ibm/PMQ` by default on the Analytics node computer.
2. Start Deployment Manager, and select the **Content Explorer** tab.
3. Right-click **Content Repository**, and click **Import**.

4. Browse to and select the `pes` files from the Analytics node server artifacts.
   The artifacts include the following files:
   - `IBMPMQ_MAINTENANCE_ANALYTICS.pes`
   - `IBMPMQ_INTEGRATED_ANALYTICS.pes`
   - `IBMPMQ_SENSOR_ANALYTICS.pes`
   - `IBMPMQ_QEWSL.pes`
   - `IBMPMQ_TOP_FAILURE_PREDICTORS.pes`
5. Click **Open**.
6. Accept the default options in the **Import** window, and click **OK**.
7. Repeat the above steps to import each `pes` file.

Adding credential definitions to IBM SPSS Collaboration and Deployment Services

You must add user credential definitions in IBM SPSS Collaboration and Deployment Services Deployment Manager. You must add the credentials for your IBM SPSS admin user, the database instance owner, and the root user on the Predictive Analytics node computer.

Procedure

1. In Deployment Manager, click **Content Explorer**.
2. Expand **Resource Definitions** > **Credentials**.
3. Right-click **Credentials**, and click **New** > **Credentials Definition**.
   a. In the **Name** box, enter `admin`, and click **Next**.
   b. In the **User ID** box, enter `admin`.
   c. In the **Password** box, enter the password you entered for the **WebSphere Application Server Profile Administrative User Name**.
   d. In the **Security Provider** box, select **Local User Repository**.
   e. Click **Finish**.
4. Right-click **Credentials**, and click **New** > **Credentials Definition**.
   a. In the **Name** box, enter `db2inst1`, and click **Next**.
   b. In the **User ID** box, enter `db2inst1`.
   c. In the **Password** box, enter the password for your **`db2inst1`** user.
   d. Leave the **Security Provider** box blank.
   e. Click **Finish**.
5. Right-click **Credentials**, and click **New** > **Credentials Definition**.
   a. In the **Name** box, enter `modeler`, and click **Next**.
   b. In the **User ID** box, enter `root`.
   c. In the **Password** box, enter the password for the **`root`** user on the Analytics node computer.
   d. Leave the **Security Provider** box blank.
   e. Click **Finish**.

Adding server definitions to IBM SPSS Collaboration and Deployment Services

You must add server definitions in Deployment Manager.

If you are not using a computer that is running the Microsoft Windows 7 operating system, some entries, such as server types, may not display correctly.

Procedure

1. In Deployment Manager, click **Content Explorer**.
2. Expand **Resource Definitions**.
3. Right-click **Servers**, and click **New** > **Server Definition**.
   a. In the **Name** box, enter `localhost`, and click **Next**.
   b. In the **Type** box, select **Content Repository Server**.
   c. Click **Next**.
   d. In the **Host** box, enter the name or IP address of Analytics node computer.
   e. In the **Port** box, enter `9080`.
   f. Click **Finish**.
4. Right-click **Servers**, and click **New** > **Server Definition**.
   a. In the **Name** box, enter `modeler`, and click **Next**.
   b. In the **Type** box, select **Modeler Server**.
   c. Click **Next**.
   d. In the **Host** box, enter the name or IP address of Analytics node computer.
   e. In the **Port** box, enter `28053`.
   f. In the **Default data path** box, enter the path to the data directory on Analytics node computer. For example, enter `/usr/IBM/SPSS/ModelerServer/16.0/demos`
   g. Click **Finish**.

Installation of the Integration Bus clients

For IBM Predictive Maintenance and Quality, you must install MQ Explorer, Integration Toolkit, and Integration Explorer.

Installing MQ Explorer

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

Procedure

1. Go to the *install_location*`\Client\Integration Bus\IBM Integration Bus` directory.

   By default, the *install_location* is `C:\IBM\PMQ\`.
2. Decompress the installation file that is named `IIB_IBToolkit_WS_MQ_WINDOWS_X86-64.zip`.
3. In the decompressed directory, go to the `integrationbus\WebSphere_MQ_V7.5.0.1` directory, and double-click `MQLaunch.exe`.
4. Click **Software Requirements**, and ensure that you are using a supported operating system.
5. Click **Network Configuration**, and select **No** for **Configuring WebSphere MQ for Windows domain users**.
6. Click **WebSphere MQ Installation**, and click **Launch IBM Websphere MQ Installer**.
7. On the **Setup Type** page, select **Custom**, and click **Next**.
8. On the **Features** page, select only **MQ Explorer** to be installed.

Ensure that all other features are set to **Do not install this feature**.

9. Click **Next**.
10. Click **Install**, and click **Finish**.

Installing the Integration Bus client applications

Install the IBM Predictive Maintenance and Quality Integration Bus client applications. The applications include IBM Integration Toolkit and IBM Integration Explorer.

Before you begin

Ensure that MQ Explorer is already installed.

Procedure

1. Go to the directory where you decompressed the Integration Bus client application installers.
2. In the decompressed directory, in the `integrationbus` directory, double-click `mqsilaunchpad.exe`.
3. Select the check boxes for **IBM Integration Toolkit**, and **IBM Integration Explorer**. Clear the check box for **IBM Integration Bus**.

   If it is not already installed, IBM Installation Manager is installed with IBM Integration Toolkit.
4. Click **Launch Installation for IBM Integration Bus**.

   IBM Installation Manager appears.
5. Follow the steps in IBM Installation Manager to install IBM Integration Toolkit.
6. When you are prompted to open a product, select **None**, and click **Finish**.

   The installer for IBM Integration Explorer appears.
7. Follow the steps in the wizard to install IBM Integration Explorer.

Connecting to your WebSphere MQ broker

Connect to the queue manager you created on the IBM Predictive Maintenance and Quality Integration Bus node computer.

Procedure

1. From the **Start** menu, click **All Programs** > **IBM WebSphere MQ** > **WebSphere MQ Explorer**.

   The first time that you start WebSphere MQ Explorer, you are prompted for a workspace location.
2. In the **MQ Explorer - Navigator**, under **IBM WebSphere MQ**, right-click **Queue Managers**, and select **Add Remote Queue Manager**.
3. Enter the name of your queue manager, select **Connect directly**, and click **Next**. For example, enter `pmqmanager`.
4. In the **Connection details** section, enter the following information, and click **Next**.
   a. In the **Host name or IP address** box, enter the information for your Integration Bus node computer.
   b. In the **Port number** box, enter the listener port number. The default is 1414.
   c. In the **Server-connection channel** box, enter `SYSTEM.BKR.CONFIG`

5. On the **Specify user identification details** page, select **Enable user identification**.
6. In the **Userid** box, enter `mqm`.
7. The first time that you add a user, you must enable password saving. Click **Passwords Preferences Page**, and then select **Save passwords to file** to enable the feature, and click **OK**.
8. Click **Enter password**.
9. Enter the user's password, and click **OK**.
10. Click **Finish**. The queue manager appears in the list, and the status appears as running.

Installing Framework Manager for IBM Predictive Maintenance and Quality

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

Procedure

1. Go to the *install_location*`\Client\Business Intelligence\IBM Cognos Framework Manager` directory.

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

Copying the license files to each client computer

After you install the IBM Predictive Maintenance and Quality client components, you must copy the `swidtag` file and `license` directory from where you installed the artifacts to the computers on which you install an IBM Predictive Maintenance and Quality client.

Important: Do not rename the directories or files.

Procedure

1. Copy the `swidtag` file from the `iso-swid` directory where you installed the artifacts to each computer on which you install a client.

   For example, copy the file so that you have a `C:\IBM\PMQ\iso-swid` directory that contains a `swidtag` file.

2. Copy the `license` directory from the directory where you installed the artifacts to each computer on which you install a client.

   For example, copy the directory and contents so that you have a `C:\IBM\PMQ\license` directory that contains the license files.

Chapter 6. Stop and start solution software services

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

Stop solution services

Stop the IBM Predictive Maintenance and Quality node services in the following order:

1. Master Data Management (MDM) node
2. Business Intelligence (BI) node
3. Integration Bus node
4. Predictive Analytics node
5. data node

Stopping services on the MDM node computer

You must stop the services on the Master Data Management (MDM) node before you stop services on other nodes.

Procedure

1. Log in to the MDM node computer as **root**.
2. Go to the MDM installation location. For example, go to `/opt/IBM/MDMPIM`.
3. Go to the `/bin/go` directory.
4. Enter the following command:
   ```
   ./stop_local.sh
   ```
5. Go to the WebSphere Application Server profile directory when MDM is running. For example, go to `/opt/IBM/WebSphere/AppServer/profiles/MDMProfile/bin`.
6. Enter the following command:
   ```
   ./stopServer.sh server1
   ```

Stopping services on the BI node computer

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

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

Procedure

1. Log in to the BI node computer as **root**.
2. Go to the WebSphere Application Server profile directory when IBM Cognos BI is running. For example, go to `/opt/IBM/WebSphere/AppServer/profiles/COGNOSProfile/bin`.
3. Enter the following command:
   ```
   ./stopServer.sh server1
   ```

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4. Go to the IBM HTTP Server `bin` directory. For example, go to `/opt/IBM/HTTPServer/bin`.
5. Enter the following command:

   ```
   ./apachectl -f ./conf/httpd.conf -k stop
   ```

Stopping services on the Integration Bus node computer

You must stop the IBM Integration Bus services on the IBM Predictive Maintenance and Quality Integration Bus node computer.

Procedure

1. Log in to the Integration Bus node computer as **root**.
2. Change to the **mqm** user. For example, enter the following command:

   ```
   su -mqm
   ```

3. Go to the IBM Integration Bus `bin` directory. For example, go to `/opt/ibm/mqsi/9.0.0.0/bin`.
4. Enter the following command:

   ```
   ./mqsistop pmqbroker -i
   ```

5. Enter the following command to verify that the services are stopped:

   ```
   ./mqsilist pmqbroker –e pmqgroup
   ```

Stopping services on the Analytics node computer

You must stop the IBM SPSS services on the IBM Predictive Maintenance and Quality Predictive Analytics node computer.

Procedure

1. Log in to the Analytics node computer as **root**.
2. Go to the WebSphere Application Server `SPSSProfile/bin` directory. For example, go to `/opt/IBM/WebSphere/AppServer/profiles/SPSSProfile/bin`.
3. Enter the following command:

   ```
   ./stopServer.sh server1
   ```

4. Go to the IBM SPSS Modeler Server directory. For example, go to `/usr/IBM/SPSS/ModelerServer/16.0`.
5. Enter the following command:

   ```
   ./modelersvr.sh stop
   ```

6. To verify whether any services are still running enter the following command:

   ```
   ps -ef | grep statisticsd
   ```

7. To stop any services that are still running enter the following command:

   ```
   kill -9 'cat statisticsd.pid'
   ```

Stopping services on the data node computer

You must stop the IBM DB2 instance on the IBM Predictive Maintenance and Quality data node computer.

Procedure

1. Log in to the data node computer as **root**.
2. In a terminal window, type the following command to change the DB2 instance owner:

   ```
   su - db2inst1
   ```

3. Enter the following command to stop the DB2 administration server:
   `db2stop`

Start solution services

Start the IBM Predictive Maintenance and Quality node services in the following order:

1. data node
2. Predictive Analytics node
3. Integration Bus node
4. Business Intelligence (BI) node
5. Master Data Management (MDM) node

Starting services on the data node computer

You must start the IBM DB2 instance on the IBM Predictive Maintenance and Quality data node computer.

Procedure

1. Log in to the data node computer as **root**.
2. In a terminal window, type the following command to change the DB2 instance owner:
   `su - db2inst1`
3. Enter the following command to stop the DB2 administration server:
   `db2start`

Starting services on the Analytics node computer

You must start the IBM SPSS services on the IBM Predictive Maintenance and Quality Predictive Analytics node computer.

Procedure

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

Starting services on the Integration Bus node computer

You must start the IBM Integration Bus services on the IBM Predictive Maintenance and Quality Integration Bus node computer.

Procedure

1. Log in to the Integration Bus node computer as **root**.
2. Change to the **mqm** user. For example, enter the following command:
   `su -mqm`

3. Go to the IBM Integration Bus `bin` directory. For example, go to `/opt/ibm/mqsi/9.0.0.1/bin`.
4. Enter the following command:

   ```
   ./mqsistart pmqbroker -i
   ```

5. Enter the following command to verify that the services are started:

   ```
   ./mqsilist pmqbroker –e pmqgroup
   ```

Starting services on the BI node computer

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

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

Procedure

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

   ```
   ./startServer.sh server1
   ```

4. Go to the IBM HTTP Server `bin` directory. For example, go to `/opt/IBM/HTTPServer/bin`.
5. Enter the following command:

   ```
   ./apachectl -f ./conf/httpd.conf -k start
   ```

Starting services on the MDM node computer

Start the services on the Master Data Management (MDM) node after you start services on other nodes.

Procedure

1. Log in to the MDM node computer as **root**.
2. Go to the MDM installation location. For example, go to `/opt/IBM/MDMPIM`.
3. Go to the `/bin/go` directory.
4. Enter the following command:

   ```
   ./start_local.sh
   ```

5. Go to the WebSphere Application Server profile directory when MDM is running. For example, go to `/opt/IBM/WebSphere/AppServer/profiles/MDMProfile/bin`.
6. Enter the following command:

   ```
   ./startServer.sh server1
   ```

Chapter 7. Switch software tags for your installation

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

Starting the ILMT Utility to change software tags

Use the server artifacts Launchpad to start the IBM Licence Metric Tool (ILMT) Utility to change IBM Predictive Maintenance and Quality software tags.

Before you begin

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

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

Procedure

1. Go to the directory where you downloaded the artifacts installation files.
2. If you are installing as a user with **sudo** permissions, enter the following command to ensure that the Launchpad and Deployment Wizard open correctly:

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

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

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

   ```
   ./launchpad.sh
   ```

   Important: Do not enter `sudo` in front of the command.
5. Review the information in the Launchpad panels.
6. Click **Switch Software Tags**.
7. Do one of the following steps:
   - If you are installing as a user with **sudo** permissions, select **Start the ILMT Deployment Wizard as a Sudo User**.
     - In the **Computer Name** box, enter the name or IP address of the computer on which you are running the **Deployment Wizard**.
     - In the **VNC Display ID** box, enter the display for the user. For example, enter 1 or 2.
   - If you are installing as **root**, select **Start the ILMT Deployment Wizard as the Root User**.
8. Click **Start the ILMT Deployment Wizard**.

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Switching software tags

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

Procedure

1. On the **Select Tasks** page of the **Deployment Wizard**, select the option to switch your tags:
   - Select **Switch from Production to Non-Production** if you initially installed Predictive Maintenance and Quality to a production environment.
   - Select **Switch from Non-Production to Production** if you initially installed Predictive Maintenance and Quality to a non-production environment.
2. Click **Next**.
3. Specify the target computers where a Predictive Maintenance and Quality node is deployed.

   For more information, see "Specifying the target computers on which to install the artifacts" on page 38.
4. On the **Configuration Parameters** page, enter the location to where you want to deploy the updated software tags, and click **Next**.
5. Click **Deploy all**.

Updating your software tags on client computers

After you use the ILMT utility to change your IBM Predictive Maintenance and Quality software tags, you must copy the updated file to each client computer. You must replace the existing file on the client computer with the updated software tag file.

Procedure

1. Copy the `iso-swid` directory and contents from a directory where you updated the software tag file to each computer on which you installed a Predictive Maintenance and Quality client component.

   For example, copy the directory and contents so that you replace the `/opt/IBM/PMQ/iso-swid` directory. The `iso-swid` directory should contain one `swidtag` file.
2. Delete the existing `swidtag` file.

   You should have only one `swidtag` file in the directory.

Chapter 8. Uninstallation of the server components

Follow the uninstall instructions for each of the IBM Predictive Maintenance and Quality components to uninstall the product.

Uninstalling components from the Predictive Analytics node computer

Follow the uninstall instructions for each component on the IBM Predictive Maintenance and Quality Analytics node computer.

Procedure

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

   Note: If WebSphere Application Server processes are running and prevent you from uninstalling the product, you must stop the server process. Go to the `/opt/ibm/WebSphere/AppServer/profiles/`*`profile_name`*`/bin` directory, and type `./stopServer.sh server1`.
4. To uninstall IBM Installation Manager, see the IBM Installation Manager information center (pic.dhe.ibm.com/infocenter/install/v1r6).
   a. Go to the `/var/ibm/InstallationManager/uninstall` directory, and run `uninstall`.
   b. Follow the steps to uninstall IBM Installation Manager.
5. Remove the `licence` and `iso-swid` directories. For example, if you used the default path, `/opt/IBM/PMQ`, remove the `/opt/IBM/PMQ/license` and `/opt/IBM/PMQ/iso-swid` directories.

Uninstalling components from the BI node computer

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

Procedure

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

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d. Follow the steps to uninstall the product.

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

   Note: If WebSphere Application Server processes are running and prevent you from uninstalling the product, you must stop the server process. Go to the `/opt/ibm/WebSphere/AppServer/profiles/`*`profile_name`*`/bin` directory, and type `./stopServer.sh server1`.
5. To uninstall IBM Installation Manager, see the IBM Installation Manager information center (pic.dhe.ibm.com/infocenter/install/v1r6).
   a. Go to the `/var/ibm/InstallationManager/uninstall` directory, and run `uninstall`.
   b. Follow the steps to uninstall IBM Installation Manager.
6. Remove the `licence` and `iso-swid` directories. For example, if you used the default path, `/opt/IBM/PMQ`, remove the `/opt/IBM/PMQ/license` and `/opt/IBM/PMQ/iso-swid` directories.

Uninstalling components from the Integration Bus node computer

Follow the uninstall instructions for each component on the IBM Predictive Maintenance and Quality Integration Bus node computer.

Procedure

1. To uninstall the IBM DB2 client, see the IBM DB2 documentation (www.ibm.com/support/knowledgecenter/SSEPGG_10.1.0).
2. To uninstall IBM Integration Bus, see the IBM Integration Bus documentation (www.ibm.com/support/knowledgecenter/SSMKHH_9.0.0).
3. To uninstall WebSphere MQ, see the WebSphere MQ documentation (www.ibm.com/support/knowledgecenter/SSFKSJ_7.5.0).
4. Remove the `licence` and `iso-swid` directories. For example, if you used the default path, `/opt/IBM/PMQ`, remove the `/opt/IBM/PMQ/license` and `/opt/IBM/PMQ/iso-swid` directories.

Uninstalling components from the MDM node computer

Follow the uninstall instructions for each component on the Master Data Management (MDM) node computer.

Procedure

1. To uninstall the IBM DB2 client, see the IBM DB2 documentation (www.ibm.com/support/knowledgecenter/SSEPGG_10.1.0).
2. To uninstall InfoSphere Master Data Management Server, see the IBM MDM documentation (www.ibm.com/support/knowledgecenter/SSWSR9_11.0.0).
   a. Go to the `/opt/ibm/InstallationManager/eclipse` directory, and run `IBMIM`.

b. Click **Uninstall**, and follow the steps to uninstall the product.

3. To uninstall WebSphere Application Server, see the WebSphere documentation (www.ibm.com/support/knowledgecenter/SSEQTP_8.5.5).
   a. Go to the `/opt/ibm/InstallationManager/eclipse` directory, and run `IBMIM`.
   b. Click **Uninstall**, and follow the steps to uninstall the product.

   Note: If WebSphere Application Server processes are running and prevent you from uninstalling the product, you must stop the server process. Go to the `/opt/ibm/WebSphere/AppServer/profiles/`*`profile_name`*`/bin` directory, and type `./stopServer.sh server1`.
4. To uninstall IBM Installation Manager, see the IBM Installation Manager information center (pic.dhe.ibm.com/infocenter/install/v1r6).
   a. Go to the `/var/ibm/InstallationManager/uninstall` directory, and run `uninstall`.
   b. Follow the steps to uninstall IBM Installation Manager.
5. Remove the `licence` and `iso-swid` directories. For example, if you used the default path, `/opt/IBM/PMQ`, remove the `/opt/IBM/PMQ/license` and `/opt/IBM/PMQ/iso-swid` directories.

Uninstalling components from the data node computer

Follow the uninstall instructions for each component on the IBM Predictive Maintenance and Quality data node computer.

Procedure

1. To uninstall IBM DB2, see the IBM DB2 documentation (www.ibm.com/support/knowledgecenter/SSEPGG_10.1.0).
2. Remove the `licence` and `iso-swid` directories. For example, if you used the default path, `/opt/IBM/PMQ`, remove the `/opt/IBM/PMQ/license` and `/opt/IBM/PMQ/iso-swid` directories.

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 (http://www.ibm.com/support/knowledgecenter).

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Appendix B. Troubleshooting

This section contains troubleshooting information for the IBM Predictive Maintenance and Quality installation.

Launchpad does not launch

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

Launchpad does not start

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

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

Procedure

1. On the computer from where you run the installation, download a supported web browser. For example, download Firefox version 20.
2. Decompress the downloaded file if necessary.
3. In a terminal window, type the following command:

   ```
   export BROWSER=/path_to_supported_browser
   ```
4. Then, start the Launchpad by typing the following command:

   ```
   ./launchpad.sh
   ```

   The Launchpad should appear in the supported browser.

Test Connections validation errors

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

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

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

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

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```
##.##.##.## node_server3.domain.com node_server3
##.##.##.## node_server4.domain.com node_server4
##.##.##.## node_server5.domain.com node_server5
```

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

Timeout errors during installation

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

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

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

Viewing log files

Log files for the IBM Predictive Maintenance and Quality installation can be displayed in the **Deployment Wizard**.

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

Procedure

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

Temporary file locations

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

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

Procedure

In the **Deployment Wizard**, click **Edit** > **Preferences**.
The path to the location for the temporary files is shown in the **Path** box.

Modeler Server type not displaying in resource definitions

In IBM Predictive Maintenance and Quality, 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.

Unable to import the company archive in MDM

If you cannot import the IBM Predictive Maintenance and Quality company archive in the Master Data Management (MDM) console, you can manually import the archive.

Procedure

1. Log in to the MDM node computer as **root**.
2. Copy the IBMPMQ.zip file from /opt/IBM/PMQ/*MDM_version* directory to the /opt/IBM/PMQ directory.
3. Enter the following command:

```
$TOP/bin/importCompanyFromZip.sh --company_code=IBMPMQ
--zipfile_path=/opt/IBM/PMQ/IBMPMQ.zip
```

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 Maintenance and Quality, see the IBM support page (http://www.ibm.com/support/docview.wss?uid=swg21612290) for information on how to correct the error.

Restarting the queue manager and broker

After a IBM Predictive Maintenance and Quality Integration Bus node server restart, you might need to restart the queue manager and broker.

Procedure

1. Log on to the Integration Bus node computer.
2. In a terminal window, go to the *installation_location*/mqsi/9.0.0.1/bin directory. For example, if you installed to the default location, go to the /opt/ibm/mqsi/9.0.0.1/bin directory.
3. Change to the mqm user. For example, su mqm.
4. Enter the following command to load the profile that is needed for the mqm user, and press Enter:

```
. ~/.bash_profile
```

5. Enter the following command to start the queue manager:

```
strmqm queue_manager_name
```

   For example, to start the default broker named pmqmanager, enter:

```
strmqm pmqmanager
```

6. Enter the following command to start the broker:

```
mqsistart broker_name
```

   For example, to start the default broker named pmqbroker, enter:

```
mqsistart pmqbroker
```

Error loading shared libraries: libImbCmdLib.so

An error message that states libImbCmdLib.so: cannot open shared object file: No such file or directory can indicate that environment variables are not correct.

Verify the environment variables, specifically ones that are related to the IBM Integration Bus broker.

Also, ensure that the link inside `/opt/ibm/mqsi/9.0.0.1/lib/headless` is removed.

Errors deploying Cognos BI server artifacts

While you are deploying the IBM Cognos BI server artifacts, you receive error messages in the master log. This issue can be caused by entering the incorrect value for the IBM Cognos BI dispatcher URI in the Deployment Wizard.

The following error message appears in the master log:

```
[exec] java.net.MalformedURLException: For input string: "<port>"
[exec]     at java.net.URL.<init>(URL.java:613)
[exec]     at java.net.URL.<init>(URL.java:476)
[exec]     at java.net.URL.<init>(URL.java:425)
[exec]     at Import_Partial_Whole.connectToReportServer
              (Import_Partial_Whole.java:353)
[exec]     at Import_Partial_Whole.main(Import_Partial_Whole.java:137)
[exec] Exception in thread "main" java.lang.NullPointerException
[exec]     at Import_Partial_Whole.addArchive(Import_Partial_Whole.java:396)
[exec]     at Import_Partial_Whole.deployContent(Import_Partial_Whole.java:238)
[exec]     at Import_Partial_Whole.main(Import_Partial_Whole.java:149)
```

To resolve this problem, you must enter the host name and the port number for the IBM Cognos Dispatcher URI in the Deployment Wizard. For example, `http://`*`hostname`*`:`*`port`*`/p2pd/servlet/dispatch`.

You must enter the correct *`hostname`* value and port number. The default port number is 9080.

Appendix C. Samples

Sample data is provided so that you can see the IBM Predictive Maintenance and Quality solution work end-to-end.

Loading the sample data

Sample data is installed as part of the IBM Predictive Maintenance and Quality server artifact installation. You can load the sample data to see an example of the Predictive Maintenance and Quality solution from end-to-end.

The sample data is provided in different languages. If you want to change the language of the data, you must ensure that the Predictive Maintenance and Quality data store content is deleted, and that you restart your brokers.

Procedure

1. Log in to the Integration Bus node computer as the **mqm** user.
2. Load the master data.
   a. Go to the `/var/PMQ/MQSIFileInput/PMQSampleData/Sample_PMQ/`*`language`*`/Set1-MasterData` directory.
   b. Copy the contents of that directory to the `/var/PMQ/MQSIFileInput/masterdatain` directory one file at a time.

      WebSphere Message Broker automatically loads the files from that directory. The files are automatically removed after they are loaded.

      Important: The files must be coped one at a time.
   c. Go to the `/var/PMQ/MQSIFileInput/PMQSampleData/Sample_PMQ/`*`language`*`/Set2-MasterData` directory.
   d. Copy the contents of that directory to the `/var/PMQ/MQSIFileInput/masterdatain` directory one file at a time.
   e. Go to the `/var/PMQ/MQSIFileInput/PMQSampleData/Sample_PMQ/`*`language`*`/Set3-MasterData` directory.
   f. Copy the contents of that directory to the `/var/PMQ/MQSIFileInput/masterdatain` directory one file at a time.
3. Load the event data.
   a. Go to the `/var/PMQ/MQSIFileInput/PMQSampleData/Sample_PMQ/`*`language`*`/Set4-EventData` directory.
   b. Copy the contents of that directory to the `/var/PMQ/MQSIFileInput/eventdatain` directory one file at a time.
   c. Go to the `/var/PMQ/MQSIFileInput/PMQSampleData/Sample_PMQ/`*`language`*`/Set5-EventData` directory.
   d. Copy the contents of that directory to the `/var/PMQ/MQSIFileInput/eventdatain` directory one file at a time.
4. Load the quality early warning system (QEWS) data.

   Note: QEWS data is provided in English only.
   a. Go to the `/var/PMQ/MQSIFileInput/PMQSampleData/Sample_PMQ/EN/Set6-QEWSData` directory.

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b. Copy the files in the following sequence:
   1) Copy parameter_upsert.csv and resource_production_batch_upsert.csv to the masterdatain directory.
   2) Copy batchdata_inspection.csv to the batchdatain directory.
   3) Copy event_observation_warranty.csv to the eventdatain directory.
   4) Copy qewsrundate.txt to the batchdatain directory.

Modify master data references for blank entries

Some master data, which is not mandatory from a business aspect, are required due to foreign key relationships within the IBM Predictive Maintenance and Quality data model. To overcome this, Predictive Maintenance and Quality uses the concept of an NA (not applicable) master data row entry. As a result, whenever such master data references have a blank value, Predictive Maintenance and Quality uses the -NA- business key code row reference. You must configure the master data tables that require the -NA- entries.

The following table provides the table names that require the -NA- entries and samples master data files that you can use to reference which tables require the entries.

Table 17. Tables that require -NA- entries, and sample files you can reference

Table name	Sample master data file
MASTER_GROUP_DIM	group_dim_upsert.csv
MASTER_LOCATION	location_upsert.csv
MASTER_MATERIAL_TYPE	material_type_upsert.csv
MASTER_PROCESS	process_upsert.csv
MASTER_PRODUCT	product_upsert.csv
MASTER_SOURCE_SYSTEM	source_system_upsert.csv
MASTER_SUPPLIER	supplier_upsert.csv
MASTER_MATERIAL	material_upsert.csv
MASTER_PRODUCTION_BATCH	production_batch_upsert.csv
MASTER_RESOURCE	resource_upsert.csv

Verifying that the sample data loaded

You can verify that the IBM Predictive Maintenance and Quality sample data loaded by checking the error and log directories and viewing reports.

Procedure

1. Check the error directory on the Integration Bus node computer to ensure that there were no errors when the data was loaded.
2. Check the status of the IBM SPSS jobs by reviewing the following files in the Integration Bus node log directory:
   - TopNFailureLog.txt
   - MaintenanceLog.txt
   - Training_HS_in.csv
   - Training_IHS_in.csv
3. The following reports should be populated with the sample data:

Table 18. Sample data and reports

Data	Report or dashboard
Master data	Audit Reports
Resource	Site Overview dashboard Equipment dashboard Advance KPI Trend reports
Process and material	Product Quality dashboard and Material Usage by Production batch report
SPC	SPC - Histogram SPC - X bar R/S chart
QEWS	QEWS Inspection QEWSL Warranty
Maintenance, sensor health score, and integrated health score	Maintenance Overview dashboard Maintenance Health and Failure Detail report Maintenance Advance Sorting report
TopNFailure	Top N Failure Analysis report

Removing sample data

Before you load live production data in IBM Predictive Maintenance and Quality, all sample data must be removed.

This procedure deletes all the contents of the event and master data tables. Its scope is not limited to the supplied sample data and so any additional content that is loaded is also deleted.

Before you begin

If test events were loaded from the sample master data, the test events must also be removed. For more information, see the *IBM Predictive Maintenance and Quality Solution Guide*.

Procedure

1. Type the following command to connect to the **IBMPMQ** datastore:
   ```
   db2 connect to IBMPMQ user user_name using password
   ```
2. Enter the following SQL statements to remove the Predictive Maintenance and Quality data:
   ```
   DELETE SYSREC.LIFETIME_KPI;
   DELETE SYSREC.LIFETIME_PROFILE;
   DELETE SYSREC.PRODUCT_PROFILE;
   DELETE SYSREC.PRODUCT_KPI;
   DELETE SYSREC.RESOURCE_PROFILE;
   DELETE SYSREC.RESOURCE_KPI;
   DELETE SYSREC.MATERIAL_PROFILE;
   DELETE SYSREC.PROCESS_KPI;
   DELETE SYSREC.PROCESS_PROFILE;
   DELETE SYSREC.EVENT_OBSERVATION;
   ```

```
DELETE SYSREC.EVENT;
DELETE SYSREC.MASTER_PRODUCT_PARAMETERS;
DELETE SYSREC.MASTER_RESOURCE_PRODUCTION_BATCH;
DELETE SYSREC.MASTER_PRODUCTION_BATCH;
DELETE SYSREC.SERVICE;
DELETE SYSREC.MASTER_PRODUCT;
DELETE SYSREC.MASTER_RESOURCE_HIERARCHY;
DELETE SYSREC.MASTER_RESOURCE;
DELETE SYSREC.MASTER_PROFILE_VARIABLE;
DELETE SYSREC.MASTER_MATERIAL;
DELETE SYSREC.MASTER_MATERIAL_TYPE;
DELETE SYSREC.MASTER_PROFILE_CALCULATION;
DELETE SYSREC.MASTER_RESOURCE_TYPE;
DELETE SYSREC.MASTER_MEASUREMENT_TYPE;
DELETE SYSREC.MASTER_VALUE_TYPE;
DELETE SYSREC.MASTER_SUPPLIER;
DELETE SYSREC.MASTER_SOURCE_SYSTEM;
DELETE SYSREC.MASTER_PROCESS_HIERARCHY;
DELETE SYSREC.MASTER_PROCESS;
DELETE SYSREC.MASTER_LOCATION;
DELETE SYSREC.MASTER_GROUP_DIM;
DELETE SYSREC.MASTER_EVENT_TYPE;
DELETE SYSREC.MASTER_EVENT_CODE;
DELETE SYSREC.MASTER_OBSERVATION_LOOKUP;
DELETE SYSREC.MAINTENANCE_TRENDS;
DELETE SYSREC.MAINTENANCE_DAILY;
DELETE SYSREC.MAINTENANCE_ADM_RECOMMENDATIONS;
DELETE SYSREC.TOPN_PREDICTORS;
DELETE SYSREC.KEY_LOOKUP;
DELETE SYSREC.LANGUAGE;
DELETE SYSREC.TENANT;
```

3. Enter the following SQL statements to alter tables:

```
ALTER TABLE "SYSREC "."EVENT" ALTER COLUMN "EVENT_ID" RESTART WITH 1;
ALTER TABLE "SYSREC "."LANGUAGE" ALTER COLUMN "LANGUAGE_ID" RESTART WITH 1;
ALTER TABLE "SYSREC "."TENANT" ALTER COLUMN "TENANT_ID" RESTART WITH 1;
ALTER TABLE "SYSREC "."KEY_LOOKUP" ALTER COLUMN "KEY_LOOKUP_ID" RESTART WITH 1;
ALTER TABLE "SYSREC "."MASTER_PROFILE_CALCULATION" ALTER COLUMN
 "MASTER_PROFILE_CALCULATION_ID" RESTART WITH 1;
```

4. Type the following command to disconnect from the database:

```
db2 connect reset
```

5. Restart the **pmqgroup1** integration server (in previous versions, called an execution group).

   For more information, see the IBM Integration Bus documentation.

Appendix D. Installation of the server components in silent mode

You can install the IBM Predictive Maintenance and Quality server components in silent mode.

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

You must edit the properties files for the silent mode installation of the IBM Predictive Maintenance and Quality server components.

Procedure

1. Go to the `disk1/IBMPMQ_Server/disk1` directory where you decompressed the installation files.
2. Edit the license properties file.
   a. Open the `IRU_install_properties` file in a text editor.
   b. Add the following line after `licenseType=LICR`:
      `licenseAccepted=9`
   c. Save and close the file.
3. Edit the installation properties file.
   a. Go to the `disk1/IBMPMQ_Server/disk1/taskFile` directory where you decompressed the installation files.
   b. Open the properties file for the type of installation you want to run.
      - For an express installation, that uses default values for each component, edit `Express_WithMDMNode_task.xml`.
      - For an express installation without IBM Master Data Management, edit `Express_WithoutMDMNode_task.xml`.
      - For a custom installation, where you choose values for all of the components, edit `Custom_WithMDMNode_task.xml`.
      - For a custom installation without IBM Master Data Management, edit `Custom_WithoutMDMNode_task.xml`.
   c. In the `task.xml` file, remove `<!--` and `-->` surrounding the `<credentialsSet>` section of the file to uncomment the section.
   d. Enter the user credentials for each node computer in the `userID` and `password` values in the `<credentialsSet>` section of the file.
   e. Change all instances of `AnalyticsNode.sample.com` to the fully qualified domain name of the Predictive Analytics node computer.
   f. Change all instances of `BINode.sample.com` to the fully qualified domain name of the Business Intelligence (BI) node computer.
   g. Change all instances of `DataNode.sample.com` to the fully qualified domain name of the data node computer.
   h. Change all instances of `ESBNode.sample.com` to the fully qualified domain name of the Integration Bus node computer.
   i. Change all instances of `MDMNode.sample.com` to the fully qualified domain name of the Master Data Management (MDM) node computer.

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j. For a custom installation, enter or confirm the remaining values in the `task.xml` file.
k. Save and close the file.

Editing the properties files for a silent installation of the server artifacts

You must edit the properties files for the silent mode installation of the IBM Predictive Maintenance and Quality server artifacts.

Procedure

1. Go to the `disk1/IBMPMQ_ServerArtifact/disk1` directory where you decompressed the installation files.
2. Edit the license properties file.
   a. Open the `IRU_install_properties` file in a text editor.
   b. Add the following line after `licenseType=LICR`:
      `licenseAccepted=9`
   c. Save and close the file.
3. Edit the installation properties file.
   a. Go to the `disk1/IBMPMQ_ServerArtifact/disk1/task` directory where you decompressed the installation files.
   b. In the `task.xml` file, remove `<!--` and `-->` surrounding the `<credentialsSet>` section of the file to uncomment the section.
   c. Enter the user credentials for each node computer in the `userID` and `password` values in the `<credentialsSet>` section of the file.
   d. In each `<deploy taskNumber="#">` section, edit the values to match your environment. For example, ensure you use the fully qualified domain name ir IP address for each node computer, and that you ensure the passwords and locations are correct.
   e. If you are not installing IBM Master Data Management, comment out the `<deploy taskNumber="5">` element. This element includes `<application id="Master_Data_Management">`.
   f. Save and close the file.

Editing the properties files for a silent installation of the client components

You must edit the properties files for the silent mode installation of the IBM Predictive Maintenance and Quality client components.

The client components silent installation must be run on a computer running a Microsoft Windows operating system.

Procedure

1. Go to the `disk1\IBMPMQ_ServerArtifact\disk1` directory where you decompressed the installation files.
2. Edit the license properties file.
   a. Open the `IRU_install_properties` file in a text editor.
   b. Add the following line after `licenseType=LICR`:
      `licenseAccepted=9`

c. Save and close the file.

3. Edit the installation properties file.
   a. Go to the disk1\IBMPMQ_ServerArtifact\disk1\task directory where you decompressed the installation files.
   b. In the task.xml file, remove <!-- and --> surrounding the <credentialsSet> section of the file to uncomment the section.
   c. Enter the user credentials for the computer in the hostname, userID and password values in the <credentialsSet> section of the file.
   d. In each <deploy taskNumber="#"> section, edit the values for your environment.
   e. Comment out any client components you do not want to install.
   f. Save and close the file.

Starting the silent installation

You start the IBM Predictive Maintenance and Quality silent installation by running a command.

Procedure

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

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

   Where *xxxx*_task.xml is task file you modified.

   Log messages for the installation are saved to /opt/SolutionFiles/logs/IRU_progress.log. If the log file contains Progress=88, that means that all of components were successfully deployed.
3. Enter the following command to install the server artifacts:

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

   Where *xxxx*_task.xml is task file you modified.

   Log messages for the installation are saved to /opt/SolutionFiles/logs/IRU_progress.log. If the log file contains Progress=88, that means that all of components were successfully deployed.
4. On a computer that is running a Microsoft Windows operating system, enter the following command to install the client components:

   ```
   WindowsSetup
   -responseFile path_to_install_files\disk1\IBMPMQ_Client\disk1\
   IRU_install.properties
   -taskFile path_to_install_files\disk1\IBMPMQ_Client\disk1\
   taskFile\xxxx_task.xml -silent
   ```

   Where *xxxx*_task.xml is task file you modified.

   Log messages for the installation are saved to C:\Program Files\Common Files\SolutionFiles\logs\IRU_progress.log. If the log file contains Progress=88, that means that all of components were successfully deployed.

Appendix E. Products installed with IBM Predictive Maintenance and Quality

The following products are installed with or available to be installed with Predictive Maintenance and Quality.

Server components

- IBM DB2 Enterprise Server Edition 10.1 Fix Pack 3
- IBM Data Server Runtime Client 10.1 Fix Pack 3
- IBM WebSphere Application Server Network Deployment 8.5.5
- IBM Installation Manager 1.6.2
- IBM Cognos Business Intelligence Server 10.2.1 Fix Pack 1
- IBM Integration Bus 9.0 Fix Pack 1
- IBM WebSphere MQ 7.5 Fix Pack 2
- IBM SPSS Collaboration and Deployment Services Server 6.0
- IBM SPSS Collaboration and Deployment Services 6.0 Deployment Manager
- IBM SPSS Collaboration and Deployment Services Enterprise View Driver 6.0
- IBM SPSS Modeler Server 64-bit 16.0
- IBM SPSS Data Access Pack 7.1
- IBM SPSS Text Analytics Server 16.0
- IBM SPSS Modeler Collaboration and Deployment Services Adapter 16.0
- IBM SPSS Analytical Decision Management 8.0
- IBM SPSS Statistics Server 22.0
- IBM SPSS Statistics 22.0 Collaboration and Deployment Services Adapter 6.0
- IBM SPSS Modeler Solution Publisher 16.0
- IBM SPSS Modeler Premium Solution Publisher 16.0
- IBM Infosphere Master Data Management Collaborative Edition 11.0

Client and optional components

In the Predictive Maintenance and Quality license, these components are referred as “Supporting Programs - Client Installation”.

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

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

Appendix F. Programs not authorized by the IBM Predictive Maintenance and Quality license

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

- IBM Cognos Analysis for Microsoft Excel (IBM Cognos Business Intelligence Architect 10.2.1)
- IBM Cognos Analysis Studio (of IBM Cognos Business Intelligence Architect 10.2.1)
- IBM Cognos Business Intelligence Transformer (of IBM Cognos Business Intelligence Architect 10.2.1)
- IBM Cognos Connection Installer for IBM Cognos Insight (of IBM Cognos Business Intelligence Architect 10.2.1)
- IBM Cognos Cube Designer (of IBM Cognos Business Intelligence Architect 10.2.1)
- IBM Cognos Data Manager Connector (of IBM Cognos Business Intelligence Architect 10.2.1)
- IBM Cognos Insight (of IBM Cognos Business Intelligence Architect 10.2.1)
- IBM Cognos Metric Designer (of IBM Cognos Business Intelligence Architect 10.2.1)
- IBM Cognos Metric Studio (of IBM Cognos Business Intelligence Architect 10.2.1)
- IBM Cognos Metrics Manager (of IBM Cognos Business Intelligence Architect 10.2.1)
- IBM Cognos Migration Tools (of IBM Cognos Business Intelligence Architect 10.2.1)
- IBM Cognos PowerPlay® Client (of IBM Cognos Business Intelligence Architect 10.2.1)
- IBM Cognos PowerPlay Server (of IBM Cognos Business Intelligence Architect 10.2.1)
- IBM Cognos PowerPlay Studio (of IBM Cognos Business Intelligence Architect 10.2.1)
- IBM Cognos Query Studio (of IBM Cognos Business Intelligence Architect 10.2.1)
- IBM Cognos TM1® Package Connector (of IBM Cognos Business Intelligence Architect 10.2.1)
- IBM Connections (of IBM Cognos Business Intelligence Architect 10.2.1)
- IBM DB2 Workgroup Server Edition (of IBM Cognos Business Intelligence Architect 10.2.1, IBM Cognos Real-time Monitoring 10.2.1)
- IBM Tivoli® Directory Integrator Identity Edition (of IBM Cognos Business Intelligence Architect 10.2.1)
- Global Data Synchronization Component (of IBM InfoSphere Master Data Management Collaboration Server - Collaborative Edition for Non-Financial Services 11.0)
- IBM Cognos Business Intelligence 10.1.1 (of IBM InfoSphere Master Data Management Collaboration Server - Collaborative Edition for Non-Financial Services 11.0)

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- IBM Cognos Business Intelligence Modeling 10.1.1 (of IBM InfoSphere Master Data Management Collaboration Server - Collaborative Edition for Non-Financial Services 11.0)
- IBM Cognos Supplementary Language Documentation 10.1.1 (of IBM InfoSphere Master Data Management Collaboration Server - Collaborative Edition for Non-Financial Services 11.0)
- IBM Content Integrator 8.6 (of IBM InfoSphere Master Data Management Collaboration Server - Collaborative Edition for Non-Financial Services 11.0)
- IBM InfoSphere Blueprint Director 2.2 (of IBM InfoSphere Master Data Management Collaboration Server - Collaborative Edition for Non-Financial Services 11.0)
- IBM InfoSphere Information Server 9.1 for Data Quality (of IBM InfoSphere Master Data Management Collaboration Server - Collaborative Edition for Non-Financial Services 11.0)
- IBM Process Center Express® 8.0.1 (of IBM InfoSphere Master Data Management Collaboration Server - Collaborative Edition for Non-Financial Services 11.0)
- IBM Process Designer 8.0.1 (of IBM InfoSphere Master Data Management Collaboration Server - Collaborative Edition for Non-Financial Services 11.0)
- IBM Process Server Express 8.0.1 (of IBM InfoSphere Master Data Management Collaboration Server - Collaborative Edition for Non-Financial Services 11.0)
- IBM Tivoli Directory Server 6.3 (of IBM InfoSphere Master Data Management Collaboration Server - Collaborative Edition for Non-Financial Services 11.0)
- IBM WebSphere Application Server Base 8.5 (of IBM InfoSphere Master Data Management Collaboration Server - Collaborative Edition for Non-Financial Services 11.0)
- IBM WebSphere Message Broker Connectivity for Healthcare 7.0.0.2 (of IBM InfoSphere Master Data Management Collaboration Server - Collaborative Edition for Non-Financial Services 11.0)
- IBM WebSphere Message Broker 8.0.0.1 (of IBM InfoSphere Master Data Management Collaboration Server - Collaborative Edition for Non-Financial Services 11.0)
- Workflow engine including Collaboration Areas (of IBM InfoSphere Master Data Management Collaboration Server - Collaborative Edition for Non-Financial Services 11.0)
- IBM WebSphere Portal Server 8.0 (of IBM InfoSphere Master Data Management Collaboration Server - Collaborative Edition for Non-Financial Services 11.0)
- Rational® Application Developer for WebSphere Software 8.5 (of IBM InfoSphere Master Data Management Collaboration Server - Collaborative Edition for Non-Financial Services 11.0)
- IBM SPSS Data Collection Survey Reporter Developer Kit 7.x (of IBM SPSS Modeler Premium 16.0, IBM SPSS Modeler Server Premium 16.0, IBM SPSS Statistics Standard 22.0, IBM SPSS Statistics Server Standard 22.0)
- IBM SPSS Modeler Client Entity Analytics (of IBM SPSS Modeler Premium 16.0)
- IBM SPSS Modeler Server Entity Analytics (of IBM SPSS Modeler Server Premium 16.0)
- BM SPSS Data Collection Developer Library 7.x (of IBM SPSS Statistics Standard 22.0, IBM SPSS Statistics Server Standard 22.0)
- IBM SPSS Statistics Data File Drivers 22.x (IBM SPSS Statistics Server Standard 22.0)
- IBM SPSS Statistics Diagnostic Utility 22.x (of IBM SPSS Statistics Standard 22.0)

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

Appendix G. Administration tool and product portal reference

The administrative tools and portals for IBM Predictive Maintenance and Quality are located in several locations.

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

Table 19. Administration tool and product portal reference

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

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Table 19. Administration tool and product portal reference (continued)

Administration tool or portal and description	URL or location
IBM InfoSphere Master Data Management Collaboration Server	`http://`*`mdm_node_name`*`:7507` Where *mdm_node_name* is the name or IP address of Master Data Management (MDM) node computer. The default user name is **Admin**. This value is case sensitive. The default password is **trinitron**. This value is case sensitive. You must also enter a company name. The default company name is `IBMPMQ`.

Default users for an express deployment

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

- On the data node computer:
  - The IBM DB2 administrative user name is dasusr1. The password is dasusr1.
  - The IBM DB2 instance owner user name is db2inst1. The password is db2inst1.
  - The IBM DB2 fenced user name is db2fenc1. The password is db2fenc1.
- On the Master Data Management (MDM) node computer:
  - The WebSphere Application Server administrative user name is admin. The password is admin.
- On the Analytics node computer:
  - The SPSS user name is admin. The password is admin.

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