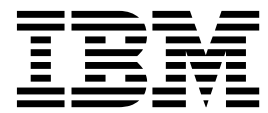


IBM Predictive Maintenance and Quality  
Version 2.5.1

*Installation Guide*



**Note**

Before using this information and the product it supports, read the information in "Notices" on page 131.

**Product Information**

This document applies to IBM Predictive Maintenance and Quality Version 2.5.1 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 99.

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 necessary parts available and can schedule repairs during periods of inactivity.

### **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

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.

---

## Single-server installation

In a single-server IBM Predictive Maintenance and Quality installation, the components for each node are installed to the same computer. But, each node is configured to run on a separate WebSphere® Application Server profile.

For example, the Business Intelligence (BI) node is installed to a WebSphere Application Server profile that is named **COGNOSProfile** that is using port number 9080. Whereas the Predictive Analytics node components are installed to a WebSphere Application Server profile that is named **SPSSProfile** that is using port number 9082. Each profile is running on the same WebSphere Application Server instance.

The following table lists the port numbers for each WebSphere Application Server instance:

*Table 1. Port numbers for WebSphere Application Servers*

Component	Admin port	SSL admin port	Application port
Business Intelligence (BI) node	9060	9040	9080
PMQ Foundation UI	9061	9041	9081
IBM SPSS	9062	9042	9082
MDM	9063	9043	9083

**Important:** A single-server installation should be used only for a test or demonstration environment.

---

## Multiple-server installation

In a multiple-server installation, each IBM Predictive Maintenance and Quality 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.

The following diagram shows the nodes in a multiple-server architecture.



Client computer

## Predictive Maintenance and Quality nodes

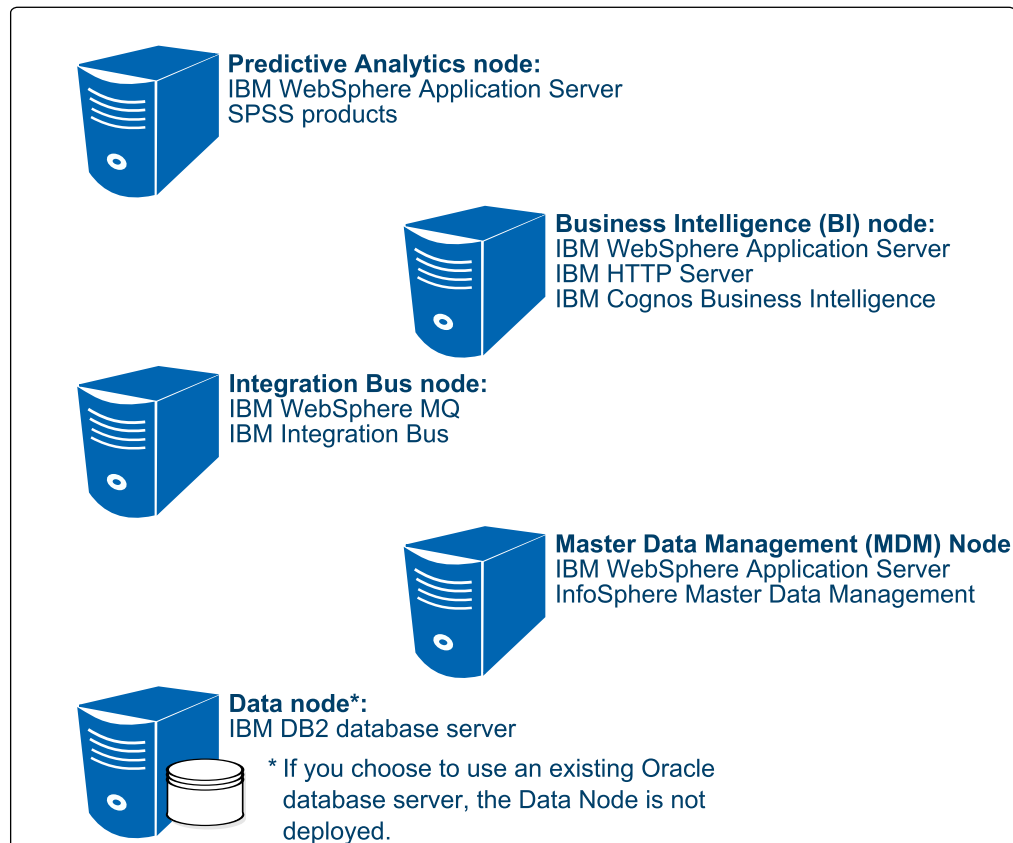


Figure 1. Predictive Maintenance and Quality nodes

### 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 Modeler Solution Publisher
- IBM SPSS Modeler Server Premium
- IBM SPSS Data Access Pack
- 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 (not installed for Oracle Database server installation type)

## 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
- IBM DB2 Client

## 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

The MDM node is an optional node for either an **Express Deployment** or a **Custom Deployment**.

If you install the MDM node, the Deployment Wizard does not show all of the details for the MDM node in the progress messages. For example, the MDM node does not appear during the IBM DB2 Server Runtime Client deployment task. Progress messages for the MDM node are shown only during the Master Data Management deployment task.

## 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

If you choose to use your own Oracle Database server for your Predictive Maintenance and Quality data and reports, then your deployment does not need a separate data node computer. IBM DB2 Enterprise Server Edition is installed on the Analytics node and is used for the MDM, SPSS, and IBM Cognos content store databases.

---

## High-availability installation

You can choose to copy the installation programs for all of the IBM Predictive Maintenance and Quality component programs to a computer, and then manually install the components individually.

This option does not install the programs or configure them. The installation and configuration must be done manually. However, you can use this option to deploy Predictive Maintenance and Quality if you have specific configuration requirements that are not available from the single-server or multiple-server options in the Predictive Maintenance and Quality Deployment Wizard.



---

## Chapter 2. Prerequisites and installation 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 2.5.1 as of the date of release, see the document titled Critical installation and configuration issues for IBM Predictive Maintenance and Quality version 2.5.1 ([www.ibm.com/support/docview.wss?uid=swg21959088](http://www.ibm.com/support/docview.wss?uid=swg21959088)).

---

## 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.

For an up-to-date list of environments that are supported by Predictive Maintenance and Quality, see the IBM Software Product Compatibility Reports ([www.ibm.com/support/docview.wss?uid=swg27041626](http://www.ibm.com/support/docview.wss?uid=swg27041626)).

### 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 for a multiple server environment

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.

**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.

### Hardware requirements for a single-server environment

At a minimum, the computer or virtual machine on which you install Predictive Maintenance and Quality 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 400 GB.

**Important:** A single-server installation should be used only for a test or demonstration environment.

### 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.

## Oracle Database

To use Oracle Database for your Predictive Maintenance and Quality data and reports, instead of IBM DB2, ensure that you have completed the following requirements:

### Install Oracle Database 12c

Install and configure Oracle Database 12c Release 1 (12.1.0.2.0) Enterprise Edition for Microsoft Windows (x64). Ensure that it is available in your network and that you can connect to it.

### Install Oracle Database Client

Install Oracle Database Client on the computer that you will use as the BI node. When you install Oracle Database Client, select the Java™ 6 option.

## Client computers

The Predictive Maintenance and Quality client components must be installed on computers that run Microsoft Windows 7 or Microsoft Windows 8 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 default requiretty in the sudoers file on all the target node before running the installer.

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 32-bit packages are installed. These are the minimum versions required:

- `libXext-1.1-3.e16.i686.rpm`
- `libXft-2.1.13-4.1.e16.i686.rpm`
- `libXi-1.3-3.e16.i686.rpm`
- `libXp-1.0.0-15.1.e16.i686.rpm`
- `libXpm-3.5.8-2.e16.i686.rpm`
- `libXrender-0.9.5-1.e16.i686.rpm`
- `libXtst-1.0.99.2-3.e16.i686.rpm`
- `compat-libstdc++-33-3.2.3-69.e16.i686.rpm`
- `compat-libstdc++-296-2.96-144.e16.i686.rpm`
- `expat-2.0.1-11.e16_2.i686.rpm`
- `fontconfig-2.8.0-3.e16.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
- 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
- unzip-6.0-1.el6.x86\_64

You can download the packages from a site such as [pkgs.org](http://pkgs.org) or [rpm.pbone.net](http://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 `libXext-1.1-3.el6.i686` is installed, type `rpm -qi libXext-1.1-3.el6.i686.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 `libXext-1.1-3.el6.i686`, type `rpm -ihv libXext-1.1-3.el6.i686.rpm`.

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

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

```
yum -y install compat-libstdc++-296.i686 compat-libstdc++-33.i686
expat.i686 fontconfig.i686 freetype.i686 glibc.i686 libICE.i686
libjpeg.i686 libpng.i686 libSM.i686 libstdc++.i686 libuuid.i686
```

```
libX11.i686 libXau.i686 libxcb.i686 libXext.i686 libXft.i686 libXi.i686
libXmu.i686 libXp.i686 libXpm.i686 libXrender.i686 libXt.i686
libXtst.i686 openmotif.i686 zlib.i686 libselinux.i686 cracklib.i686
db4.i686 audit-libs.i686 pam.i686 unzip
```

## 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 64-bit packages are installed:

- authd-1.4.3-30.e16.x86\_64.rpm
- cups-lpd-1.4.2-48.e16.x86\_64.rpm
- dump-0.4-0.6.b42.e16.x86\_64.rpm
- finger-0.17-39.e16.x86\_64.rpm
- finger-server-0.17-39.e16.x86\_64.rpm
- krb5-app1-servers-1.0.1-7.e16\_2.1.x86\_64.rpm
- ksh-20100621-16.e16.x86\_64.rpm
- mksh-39-7.e16.x86\_64.rpm
- ncompress-4.2.4-54.e16\_2.1.x86\_64.rpm
- rsh-0.17-60.e16.x86\_64.rpm
- rsh-server-0.17-60.e16.x86\_64.rpm
- rusers-0.17-61.e16.x86\_64.rpm
- rusers-server-0.17-61.e16.x86\_64.rpm
- rwho-0.17-34.e16.x86\_64.rpm
- talk-0.17-34.e16.x86\_64.rpm
- talk-server-0.17-34.e16.x86\_64.rpm
- tcp\_wrappers-7.6-57.e16.x86\_64.rpm
- telnet-0.17-47.e16.x86\_64.rpm
- telnet-server-0.17-47.e16.x86\_64.rpm
- tftp-0.49-7.e16.x86\_64.rpm
- xinetd-2.3.14-34.e16.x86\_64.rpm
- compat-expat1-1.95.8-8.e16.x86\_64.rpm
- apr-util-1.3.9-3.e16\_0.1.x86\_64.rpm
- nfs-utils-lib-1.1.5-6.e16.x86\_64.rpm
- nfs-utils-1.2.3-39.e16.x86\_64.rpm
- nfs4-acl-tools-0.3.3-6.e16.x86\_64.rpm

You can download the packages from a site such as [pkgs.org](http://pkgs.org) or [rpm.pbone.net](http://rpm.pbone.net).

### Procedure

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

```
rpm -qi full_package_name
```

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

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

3. Install any package that is not already installed.

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

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

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

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

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

```
yum -y install authd cups-lpd dump finger finger-server  
krb5-appl-servers ksh mksh ncompress rsh rsh-server rusers rusers-server  
rwho talk talk-server tcp_wrappers telnet telnet-server tftp xinetd  
compat-espant1 apr-util nfs*
```

## Additional prerequisites for the sudo user

There are additional prerequisites if you use the `sudo` user to install IBM Predictive Maintenance and Quality.

### File system permission requirements

The `/opt`, `/var` and `/etc` directories are owned by the root user and have the following file access permissions:

- `drwxr-xr-x. root root /etc`
- `drwxr-xr-x. root root /usr`
- `drwxr-xr-x. root root /var`

**CAUTION:** Altering the file access permissions on the previously listed file systems can destabilize the operating system. If you see file permissions other than the permissions shown, ask your Linux system administrator to return them to the listed values.

Some of the previously listed prerequisites can create permission issues because normal users do not have permissions to update the files. For example, updating the `/etc/hosts` file. To prevent permission issues, prefix the command with “`sudo`”. For example, type `sudo vi /etc/hosts` and make the necessary changes. Do not change the file access permissions or ownership of the directories to get the permissions you need.

### File access requirements on /tmp

The `/tmp` directory is owned by the root user and has `drwxrwxrwt. root root /tmp` access permissions.

The standard file access settings for `/tmp` directory are `1777`, which the `ls` command shows as `drwxrwxrwt`. Only the owner of a file can remove a file. If you see file permissions other than the permissions shown, run the command `chmod 1777 /tmp` to adjust the file access permissions to default values on all the node servers.

The Predictive Maintenance and Quality installer writes intermediate files, and copies logs, and product images to the /tmp directory on the target nodes. All nodes must have the default operating system permissions on the /tmp directory as described previously.

## Operating system group

Create an operating system group with the same name as the sudo user who installs Predictive Maintenance and Quality. For example, if SVC\_PMQAdmin is a sudo user doing the installation, then you must create an operating system with name SVC\_PMQAdmin. Use the command `sudo groupadd SVC_PMQAdmin`. A group is also created for the new user. If the group does not exist, create one using the same syntax.

---

## 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.

## 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 (multiple server installation)

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 commands:  

```
iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport vnc-server -j ACCEPT
iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport x11 -j ACCEPT
iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport 5901 -j ACCEPT
iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport 5902 -j ACCEPT
iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport 5903 -j ACCEPT
iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport 6001 -j ACCEPT
iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport 6002 -j ACCEPT
iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport 6003 -j ACCEPT
iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport 22 -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.

## Configuring your firewall settings (single server installation)

On the computer on which you install the IBM Predictive Maintenance and Quality nodes, you must open specific ports.

### 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 commands:  

```
iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport ibm-db2 -j ACCEPT
iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport 9362 -j ACCEPT
iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport vrace -j ACCEPT
iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport 9663 -j ACCEPT
iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport corbaloc -j ACCEPT
iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport 9043 -j ACCEPT
iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport glrpc -j ACCEPT
iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport http -j ACCEPT
iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport tungsten-https -j ACCEPT
iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport 9060 -j ACCEPT
iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport 9044 -j ACCEPT
iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport 9061 -j ACCEPT
iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport 9081 -j ACCEPT
iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport 45088 -j ACCEPT
iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport 58313 -j ACCEPT
iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport 28052 -j ACCEPT
iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport 28053 -j ACCEPT
iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport 59356 -j ACCEPT
iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport 9045 -j ACCEPT
iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport 9062 -j ACCEPT
iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport 9082 -j ACCEPT
iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport 50498 -j ACCEPT
iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport 9634 -j ACCEPT
```

```

iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport 9633 -j ACCEPT
iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport 57537 -j ACCEPT
iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport 49888 -j ACCEPT
iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport 53343 -j ACCEPT
iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport 41950 -j ACCEPT
iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport 60573 -j ACCEPT
iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport 43420 -j ACCEPT
iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport 40187 -j ACCEPT
iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport netsteward -j ACCEPT
iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport 44152 -j ACCEPT
iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport 43830 -j ACCEPT
iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport 39188 -j ACCEPT
iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport 9046 -j ACCEPT
iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport 7507 -j ACCEPT
iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport 49298 -j ACCEPT
iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport 8881 -j ACCEPT
iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport cddb-alt -j ACCEPT
iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport 40752 -j ACCEPT
iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport 50512 -j ACCEPT
iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport 35086 -j ACCEPT
iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport bacula-dir -j ACCEPT
iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport jetdirect -j ACCEPT
iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport 55052 -j ACCEPT
iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport 32970 -j ACCEPT
iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport complex-link -j ACCEPT
iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport 37253 -j ACCEPT
iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport 9063 -j ACCEPT
iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport 9083 -j ACCEPT
iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport boks -j ACCEPT
iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport boks_clntd -j ACCEPT
iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport boks_servm -j ACCEPT
iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport boks_servc -j ACCEPT
iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport ibm-mqseries -j ACCEPT
iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport 1414 -j ACCEPT
iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport 1720 -j ACCEPT
iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport 1721 -j ACCEPT
iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport 1722 -j ACCEPT
iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport 1723 -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.

## 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.

---

## 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
###.###.### analytics_node_name.domain.com analytics_node_name
###.###.### bi_node_name.domain.com bi_node_name
###.###.### data_node_name.domain.com data_node_name
###.###.### integrationbus_node_name.domain.com integrationbus_node_name
###.###.### mdm_node_name.domain.com mdm_node_name
```

3. Save and close the file.

---

## Generating and copying RSA keys among all node computers

To ensure that each IBM Predictive Maintenance and Quality node computer can communicate properly, you must generate and copy RSA keys among all of your node computers.

You must generate the RSA key on the staging server (the server from where you run the installation). Then, you must copy the RSA keys to each node computer.

### Procedure

1. In a terminal window, enter the following command:

```
ssh-keygen -t rsa
```

2. Follow the prompts to generate the key. You must provide a file name and a passphrase.

A public and a private key are generated. The public key has `.pub` in the file name.

3. Copy the public key to each node computer, by using the following command:

```
ssh-copy-id username@node_name
```

Where `node_name` is the name or IP address of each node computer.

You must run the command for each node computer. For example,

```
ssh-copy-id root@analytics_node_name
```

```
ssh-copy-id root@bi_node_name
```

```
ssh-copy-id root@data_node_name
```

```
ssh-copy-id root@integrationbus_node_name
ssh-copy-id root@mdm_node_name
```

---

## 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.

---

## Installing Python and PyXML on the Predictive Analytics node computer (optional)

If you want to use Python, then you must install Python and PyXML on the computer you use as the IBM Predictive Maintenance and Quality Analytics node.

Install Python version 2.7.1 or later and PyXML version 0.8.4.

### Procedure

1. Log in to the Analytics node computer as the **root** user or as a user with **sudo** permissions.
2. Download and install Python version 2.7.1. You can download the installer from the Python web site (<https://www.python.org/download/releases/2.7.1>).
3. Download and install PyXML version 0.8.4. You can download the installer from the PyXML web site (<https://pypi.python.org/pypi/PyXML/0.8.4>).

---

## Installing R software on the Predictive Analytics node computer (optional)

If you want to use R, you must install R and Essentials for R software on the computer you use as the IBM Predictive Maintenance and Quality Analytics node.

For more information about R and Essentials for R software for IBM SPSS, see the IBM SPSS documentation ([https://www.ibm.com/developerworks/community/wikis/home?lang=en#!/wiki/We70df3195ec8\\_4f95\\_9773\\_42e448fa9029/page/Downloads%20for%20IBM%C2%AE%20SPSS%C2%AE%20Statistics](https://www.ibm.com/developerworks/community/wikis/home?lang=en#!/wiki/We70df3195ec8_4f95_9773_42e448fa9029/page/Downloads%20for%20IBM%C2%AE%20SPSS%C2%AE%20Statistics)).

### Procedure

1. Log in to the Analytics node computer as the **root** user or as a user with **sudo** permissions.
2. Download and install R software. You can download the installer from The Comprehensive R Archive Network website (<http://cran.r-project.org>).

---

## Install 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.

The Perl in `/usr/bin/perl` cannot be used in Predictive Maintenance and Quality. Download and install a commercially distributed Perl such as ActiveState ActivePerl. You must install a minimum version of 5.10.

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\\_11.4.0/com.ibm.pim.ins.doc/pim\\_tsk\\_installingperl.html?cp=SSWSR9\\_11.4.0%2F1-2-0-1](http://www.ibm.com/support/knowledgecenter/SSWSR9_11.4.0/com.ibm.pim.ins.doc/pim_tsk_installingperl.html?cp=SSWSR9_11.4.0%2F1-2-0-1)).

---

## 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.

### About this task

You must set ulimit values on the Business Intelligence (BI) node, Predictive Analytics node, and the MDM node.

### 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.

---

## 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>).

---

## Update the services file for IBM DB2 ports

You must update the `/etc/services` file before and after you install IBM Predictive Maintenance and Quality.

Fast Communications Manager (FCM) is a feature of IBM DB2 that handles communications between database partition servers. When you install the instance-owning database server on the primary computer, DB2 reserves a port range according to the specified number of logical database partition servers that are participating in the partitioned database environment. The default range is four ports in the range 60000-60003.

DB2 installation on data node fails if these port ranges are allocated to different services. Therefore, you must comment out the service entries that use this port range in the `/etc/services` file until the Predictive Maintenance and Quality installation is complete.

After the installation of Predictive Maintenance and Quality, replace the port range 60000-60003 entries in `/etc/services` file with any other available port ranges (the ports must be sequentially numbered). Uncomment the original service that uses the port range 60000-60003.

For more information about the port range, see *Verifying port range availability on participating computers (Linux and UNIX)* ([www.ibm.com/support/knowledgecenter/SSEPGG\\_10.5.0/com.ibm.db2.luw.qb.server.doc/doc/t0011777.html](http://www.ibm.com/support/knowledgecenter/SSEPGG_10.5.0/com.ibm.db2.luw.qb.server.doc/doc/t0011777.html)).



---

## Chapter 3. Migrate to Predictive Maintenance and Quality version 2.5.1

You can migrate your existing IBM Predictive Maintenance and Quality 2.5 environment to version 2.5.1.

The migration process installs new versions of the software used with Predictive Maintenance and Quality or applies fix packs to the existing versions of software. The new versions are installed to the same node computers as you used in your previous environment. All of the settings that you used are carried over to the 2.5.1 environment.

**Important:** The migration installation process is only for the server components. The artifacts are not automatically migrated so as not to overwrite any of your existing content. If you want the version 2.5.1 content, you must install it manually.

---

### Backing up your databases

Before you migrate your IBM Predictive Maintenance and Quality environment, you must back up your databases.

For more information about backing up your databases, see the IBM DB2 documentation on IBM Knowledge Center ([www.ibm.com/support/knowledgecenter/SSEPGG\\_10.1.0](http://www.ibm.com/support/knowledgecenter/SSEPGG_10.1.0)).

#### Procedure

1. Log in to the data node computer.
2. Open a terminal window, and change to the database instance owner user. For example, `su - db2inst1`.
3. Enter the following commands to back up your Predictive Maintenance and Quality databases.
  - a. `db2 backup db IBMPMQ`
  - b. `db2 backup db COG102DB`
  - c. `db2 backup db SPDDSB`
  - d. `db2 backup db MDMDB`, if you installed the Master Data Management (MDM) node components.

The databases are backed up to the `/home/db2inst1` directory, unless you specified another directory in the command or you ran the command from a directory other than the `/home/db2inst1` directory.

---

### Backing up your content and customized files

Before you migrate your IBM Predictive Maintenance and Quality environment, back up your content files, artifact files, and any customized files on all node computers.

---

### Stopping the server processes

Before you migrate IBM Predictive Maintenance and Quality, you must stop the server processes.

## Procedure

1. Stop the services on the Business Intelligence (BI) node. For more information, see “Stopping services on the BI node computer” on page 87.
2. Stop the services on the Master Data Management (MDM) node. For more information, see “Stopping services on the MDM node computer” on page 87.
3. Stop the services on the Predictive Analytics node. For more information, see “Stopping services on the Analytics node computer” on page 88.

---

## Starting the Launchpad

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

### 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:vnctdisplay
```

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

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

```
./launchpad.sh
```

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

7. Click **Next**. A link to Predictive Maintenance and Quality Knowledge Center is displayed where you can access the product documentation.
8. Click **Next**. A list of server components displays.
9. Click **Next**.  
Select one of the following choices and click **Next**:
  - Install and configure the product
  - Migrate the Product from 2.5 to 2.5.1 (Analytic Server Stack only)
10. Click **Next**.



## What to do next

Perform Validating your target computers.

---

## Starting a migration

Use the **Migrate the Product from 2.5 to 2.5.1 version** option in the Deployment Wizard to migrate your existing version 2.5 server environment to version 2.5.1.

### Procedure

1. Select **Migrate PMQ Server from 2.5 to 2.5.1**.
  2. Click **Next**.
- 

## 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**.

### Procedure

1. In the **Validate Target Node** window, click **Next**.
  2. Enter the server name or the IP address of the data node computer in the **Computer Name** field.
    - a. Click **Validate Node**.
    - b. In the command window, enter the password for the root user on the data 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.
- 

## Specifying the target computers for a migration

You must specify the computers on which each IBM Predictive Maintenance and Quality node is installed.

### Before you begin

You must have **root** access on each computer on which a node is installed.

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 a node is installed in the **Target Computer** box.

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

If a node is the computer on which 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 if your iptables are running during the installation.

- 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 in the **Target Computer Data** window 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 13.
- 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 103.

5. Click **Next**.

- Repeat the steps for each computer on which a node is installed.

---

## Configuring parameters for a migration

Enter the values for your existing IBM Predictive Maintenance and Quality environment in the **Deployment Wizard**.

### Procedure

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

*Table 2. Parameters for Analytics components*

Field	Default or example value	Description
SPSS Collaboration and Deployment Server Install File Location	/opt/IBM/PMQ	The location of the installation files.
IBM Collaboration and Deployment Server Enterprise View Driver Install File Location	/opt/IBM/PMQ	The location of the installation files.
IBM SPSS Modeler Server Install File Location	/opt/IBM/PMQ	The location of the installation files.
IBM SPSS Modeler Server iFix Install File Location	/opt/IBM/PMQ	The location of the installation files.
SPSS Modeler adapter for Collaboration and Deployment Service Server Install File Location	/opt/IBM/PMQ	The location of the installation files.
SPSS Modeler Solution Publisher Install File Location	/opt/IBM/PMQ	The location of the installation files.
IBM SPSS Analytical Decision Management Install File Location	/opt/IBM/PMQ	The location of the installation files.
IBM SPSS Analytical Decision Management Documentation Install File Location	/opt/IBM/PMQ	The location of the installation files.
IBM SPSS Data Access Pack Install File Location	/opt/IBM/PMQ	The location of the installation files.
IBM SPSS Statistics Server Install File Location	/opt/IBM/PMQ	The location of the installation files.
IBM SPSS Statistics Collaboration and Deployment Services Adapter Install File Location	/opt/IBM/PMQ	The location of the installation files.
IBM SPSS Analytic Server Install File Location	/opt/IBM/PMQ	The location of the installation files.

---

## Migrating the Foundation Web UI and configuration files

As part of the migration from IBM Predictive Maintenance and Quality 2.5 to 2.5.1, you must migrate the Foundation UI artifacts and configuration data.

## About this task

In this procedure, you work in the **Foundation Web UI** application. For more information about the **Foundation Web UI**, see the IBM Analytics Solutions Foundation Developer Guide at IBM Analytics Solutions Foundation Developer Guide (<http://www.ibm.com/support/docview.wss?uid=swg27045826>).

## Procedure

1. Log in to the **Foundation Web UI** application and export all of the artifacts. For details about how to do an export, see the help available from **Export** tab in the **Foundation Web UI** application.

2. Log in to the data node computer.

3. Open a terminal window, and change to the database instance owner user. For example, `su - db2inst1`.

4. Drop all database tables and sequences from the PMQSCH schema that have prefix "ASF\_". You can use the following commands to generate the SQL statements to drop the tables and sequences:

```
select 'drop table ' || rtrim(TABSCHEMA) || '.' || rtrim(TABNAME) || ' ' || ' ';  
' from syscat.TABLES where type = 'T' and TABSCHEMA='PMQSCH' and TABNAME like 'ASF%'
```

```
select 'drop sequence ' || rtrim(SEQSCHEMA) || '.' || rtrim(SEQNAME)  
|| ' ' || ' '; 'from syscat.SEQUENCES where SEQSCHEMA='PMQSCH' AND SEQNAME like 'ASF%';
```

5. Verify that all tables and sequences that have prefix "ASF\_" are removed.

6. Create the foundation tables in the PMQSCH schema.

Use the data definition language (DDL) file in `/opt/Ib/PMQ/Data<dateandtimestamp>` to run the following commands:

```
db2 connect to IBMPMQ  
db2 SET CURRENT_SCHEMA=PMQSCH  
db2 -tvf /opt/IBM/PMQ/Data<dateandtimestamp>/  
create-foundation-ui-schema-for-db2.ddl
```

7. Migrate the Predictive Maintenance and Quality solution and orchestration XML files to the **Foundation Web UI**. See "Exporting solution and orchestration definitions" on page 70.

---

## Upgrade SPSS components

You must upgrade your IBM SPSS components to the supported versions.

The following list provides links to documentation that you can use to upgrade your SPSS components:

### IBM SPSS Collaboration and Deployment Service Server 7.0.0

Collaboration and Deployment Service Server migration ([www.ibm.com/support/knowledgecenter/SS69YH\\_7.0.0/cads\\_config\\_ddita/model\\_management/thin/repository\\_migration.dita](http://www.ibm.com/support/knowledgecenter/SS69YH_7.0.0/cads_config_ddita/model_management/thin/repository_migration.dita)).

### IBM SPSS Modeler Server 17.0.0

SPSS Modeler Server documentation ([www.ibm.com/support/knowledgecenter/SS3RA7\\_17.0.0/clementine/knowledge\\_center/product\\_landing.dita](http://www.ibm.com/support/knowledgecenter/SS3RA7_17.0.0/clementine/knowledge_center/product_landing.dita)).

### IBM SPSS Decision Management 17.0.0

SPSS Decision Management installation ([www.ibm.com/support/knowledgecenter/SS6A3P\\_17.0.0/adm\\_install\\_guide\\_ddita/common/installation/ibm\\_im/im\\_install.dita](http://www.ibm.com/support/knowledgecenter/SS6A3P_17.0.0/adm_install_guide_ddita/common/installation/ibm_im/im_install.dita)).

### **IBM SPSS Statistics Server 23.0.0**

SPSS Statistics Server documentation ([www.ibm.com/support/knowledgecenter/SSLVMB\\_23.0.0/spss/product\\_landing.dita](http://www.ibm.com/support/knowledgecenter/SSLVMB_23.0.0/spss/product_landing.dita)).

### **IBM Collaboration and Deployment Server Enterprise View Driver 7.0.0**

IBM Collaboration and Deployment and Deployment Services: Installing the UNIX drivers ([www.ibm.com/support/knowledgecenter/SS69YH\\_7.0.0/cads\\_pev\\_driver/predictivesuite/pev/pev\\_driver\\_installation\\_unix.dita](http://www.ibm.com/support/knowledgecenter/SS69YH_7.0.0/cads_pev_driver/predictivesuite/pev/pev_driver_installation_unix.dita)).

### **IBM SPSS Modeler Solution Publisher 7.0.0**

Installing IBM SPSS Modeler Solution Publisher Runtime ([www.ibm.com/support/knowledgecenter/SS69YH\\_7.0.0/cads\\_publisher\\_ddita/clementine/solutionpublisher/solpub\\_install\\_container.dita](http://www.ibm.com/support/knowledgecenter/SS69YH_7.0.0/cads_publisher_ddita/clementine/solutionpublisher/solpub_install_container.dita)).

### **IBM SPSS Data Access Pack 7.1.1**

IBM SPSS Modeler Server and the Data Access Pack ([www.ibm.com/support/knowledgecenter/SS3RA7\\_17.0.0/clementine/server/adminguidesource/unix\\_sdap.dita](http://www.ibm.com/support/knowledgecenter/SS3RA7_17.0.0/clementine/server/adminguidesource/unix_sdap.dita)).

### **IBM Analytic Server 2.0**

SPSS Analytic Server installation prerequisites ([www.ibm.com/support/knowledgecenter/SSWLKY\\_2.0.0/analytic\\_server\\_install\\_ddita/analytic\\_server\\_install\\_ddita-gentopic3.dita?lang=en](http://www.ibm.com/support/knowledgecenter/SSWLKY_2.0.0/analytic_server_install_ddita/analytic_server_install_ddita-gentopic3.dita?lang=en)).

SPSS Analytic Server migration ([www.ibm.com/support/knowledgecenter/SSWLKY\\_2.0.0/analytic\\_server\\_install\\_ddita/analytic\\_server/installation/migration\\_overview.dita?lang=en](http://www.ibm.com/support/knowledgecenter/SSWLKY_2.0.0/analytic_server_install_ddita/analytic_server/installation/migration_overview.dita?lang=en)).

---

## **Update models and jobs**

You can encounter some errors when you open your models or run streams in the new version of IBM SPSS Modeler.

The following issues can occur after your migration is complete:

### **Stream fails because of a data type mismatch error**

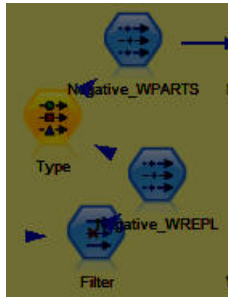
If a stream fails, it might be because of a data type mismatch error. To fix the problem, add a **Type** node and read the data again from the table.

### **Error in Field type**

You must explicitly define the **Field type** field. The **Field type** does not default to **Categorical**.

### **Warranty stream error**

Add a **Type** node between the **Negative\_WREPL** node and the **Negative\_WPARTS** node as shown in the following diagram:



## Maintenance\_Daily stream error

This error occurs only for IBM DB2. On the **Settings** tab, change the **Current&Future** node to `KPI_DATE =@TODAY` or `ISFUTURE=1`.

## Jobs fail in SPSS Collaboration and Deployment Services

You must re-create the jobs in IBM SPSS Collaboration and Deployment Services. Jobs from a previous version of SPSS Collaboration and Deployment Services do not work in the new version.

---

## Importing message flow projects into IBM Integration Bus Toolkit

You can import message flow projects into IBM Integration Bus Toolkit by importing project interchange files.

### About this task

When you import your message flow projects, do not import PQMSLMJava.

### Procedure

1. Copy the project interchange files from the `/var/PMQ/MQSIFileInput/PMQSource` folder on the IBM Predictive Maintenance and Quality Enterprise Service Bus node to the client computer that has IBM Integration Bus Toolkit installed.
2. In IBM Integration Toolkit, select **File > Import > Other > Project Interchange** and then click **Next**.
3. Browse the Project Interchange file, click **Select All** to import all the projects into the workspace, and then click **Finish**.
4. Copy all folders and files from `/var/mqsi/shared-classes` of IBM WebSphere Message Broker to the `shared-classes` folder of the client computer.
5. Update the Environment Variables on the client computer. Add the full directory paths for `MQSIFileInput` and `shared-classes` to the `Classpath` system variable.

---

## Chapter 4. Server component installation

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.

For a complete list of products included with Predictive Maintenance and Quality, see Appendix E, “Supporting programs licensed with IBM Predictive Maintenance and Quality,” on page 121.

---

### 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.

The diagram shows the installation process being run from one server, the staging server, and the IBM Predictive Maintenance and Quality components are being installed to different computers in a multiple server deployment.

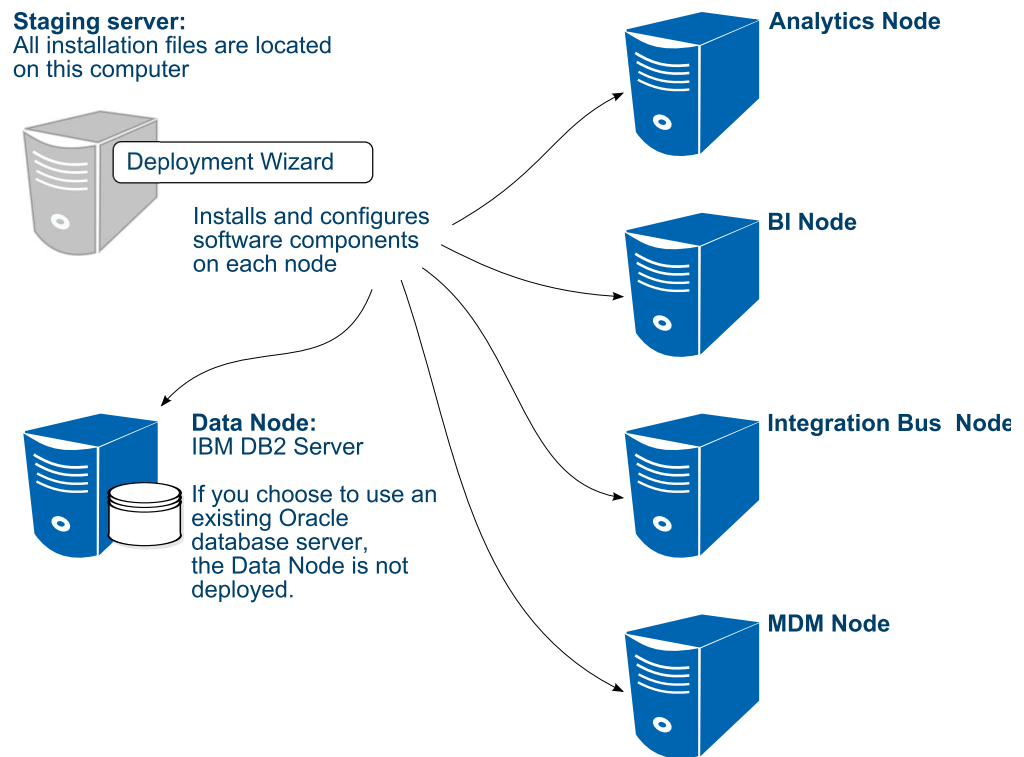


Figure 2. IBM Predictive Maintenance and Quality multiple server installation process

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.

If you are installing Predictive Maintenance and Quality on a single server, you can install the components to the same computer where you are running the installation.

---

## Starting the Launchpad

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

### 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:vnctdisplay
```

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

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

```
./launchpad.sh
```

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

7. Click **Next**. A link to Predictive Maintenance and Quality Knowledge Center is displayed where you can access the product documentation.
8. Click **Next**. A list of server components displays.
9. Click **Next**.  
Select one of the following choices and click **Next**:
  - Install and configure the product
  - Migrate the Product from 2.5 to 2.5.1 (Analytic Server Stack only)
10. Click **Next**.

### What to do next

Perform Validating your target computers.



---

## Starting an installation

Use the **Install and Configure the Product** option in the Deployment Wizard to start the installation.

### Procedure

Select **Install and Configure the Product**.

---

## 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**.

### Procedure

1. In the **Validate Target Node** window, click **Next**.
  2. Enter the server name or the IP address of the data node computer in the **Computer Name** field.
    - a. Click **Validate Node**.
    - b. In the command window, enter the password for the root user on the data 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. On the **Install and Configure Server Computers** 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 Predictive Maintenance and Quality Server Deployment**.
3. In the Software License Agreement window, read the license agreement terms, and click **Accept**.

---

## 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.

5. Click **OK**.
6. Click **Next**.

---

## Selecting the installation type

You can select an express deployment or a custom deployment with an IBM DB2 server when you install IBM Predictive Maintenance and Quality. For IBM DB2, you can also choose to install the components on different computers or on a single computer. You can also do a custom deployment for Oracle on different computers.

An **Express Deployment with DB2 Server - Multi Node** installation uses default settings for all installed components. You must enter the connection information for each computer on which a node is installed.

For a **Custom Deployment with DB2 Server - Multi Node**, you can select installation locations, port numbers, and some component users and their passwords. You must also enter the information for each computer on which a node is installed. You can also choose whether to install IBM InfoSphere Master Data Management. This component is optional for IBM Predictive Maintenance and Quality.

An **Express Deployment with DB2 Server - Single Node** installation uses default settings for all installed components. You must enter the connection information for one computer.

For a **Custom Deployment for Oracle server - Multi Node**, you can select installation locations, port numbers, and some component users and their

passwords. You must also enter the information for each computer on which a node is installed. You can also choose whether to install IBM InfoSphere Master Data Management. This component is optional for IBM Predictive Maintenance and Quality.

**Migrate PMQ Server from 2.5 to 2.5.1** helps you to migrate from Predictive Maintenance and Quality 2.5 to Predictive Maintenance and Quality 2.5.1.

**Provide the IBM Predictive Maintenance & Quality Stack for High Availability** installation copies the installation programs for each of the server components to your target computer. After the installation programs are copied, you must install them individually. The products are not installed and configured for you as with the express or customer installation options.

### Procedure

1. Select one of the following options:
  - **Express Deployment with DB2 Server - Multi Node**
  - **Custom Deployment with DB2 Server - Multi Node**
  - **Express Deployment with DB2 Server - Single Node**
  - **Custom Deployment for Oracle server - Multi Node**
  - **Migrate PMQ Server from 2.5 to 2.5.1**
  - **Provide the IBM Predictive Maintenance & Quality Stack for High Availability**
2. Click **Next**. A list of items to be installed is displayed.
3. If you select **Express Deployment with DB2 Server - Multi Node**, **Custom Deployment with DB2 Server - Multi Node**, or **Custom Deployment for Oracle server - Multi Node**, if you do not want to install IBM InfoSphere Master Data Management, clear that option on the **Custom Deployment** page.
4. If you select **Provide the IBM Predictive Maintenance & Quality Stack for High Availability**, clear the options for each of the product installation programs that you do not want to copy to your target computers.
5. 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.

If you selected **Express Deployment - Single Node** or **Provide the IBM Predictive Maintenance & Quality Stack for High Availability**, you must provide the connection information for only 1 target computer. The target computer can be the computer on which you are running the installation.

### 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 if your iptables are running during the installation.
  - 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 in the **Target Computer Data** window 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 13.

- 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 103.
5. Click **Next**.
  6. Repeat the steps for each computer on which you install a node.

---

## Configuring parameters for a custom deployment of the server components

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.

### About this task

This task applies to a deployment that contains a data node with IBM DB2.

### 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 3 includes the configuration parameters for IBM DB2.

*Table 3. IBM DB2 configuration parameters for a new database server installation*

Field	Default or example value	Description
<b>DB2 Server Installation Directory</b>	<code>/opt/ibm/db2/V10.5</code>	The location where IBM DB2 is to be installed on the data node computer.
<b>DB2 Database Port Number</b>	50000	The port number that is used by IBM DB2.
<b>DB2 Server Administrative User Name</b>	<code>dasusr1</code>	The user ID that runs the administration server.

Table 3. IBM DB2 configuration parameters for a new database server installation (continued)

Field	Default or example value	Description
<b>DB2 Server Administrative Password</b>	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.
<b>DB2 Server Administrative Home Directory</b>	/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.
<b>DB2 Instance Owner User Name</b>	db2inst1	The user ID that controls the DB2 processes and owns the directories that are used by the database instance.
<b>DB2 Instance Owner Password</b>	There is no default value for this field.	The password for the DB2 instance owner user.  The password cannot contain more than 8 characters.
<b>DB2 Instance Owner Home Directory</b>	/home/db2inst1	The home directory for the DB2 instance owner user. This directory is on the data node computer's file system.
<b>DB2 Fenced User Name</b>	db2fenc1	The user ID that can run user-defined functions and store procedures.
<b>DB2 Fenced Password</b>	There is no default value for this field.	The password for the DB2 instance owner user.  The password cannot contain more than 8 characters.
<b>DB2 Fenced User Home Directory</b>	/home/db2fenc1	The home directory for the DB2 instance owner user. This directory is on the data node computer's file system.

Table 4 includes the database names that are created.

Table 4. IBM DB2 configuration parameters: Database names

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

Table 5 on page 39 includes the configuration parameters for the IBM DB2 client.

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

*Table 5. IBM DB2 client parameters*

Field	Default or example value	Description
<b>DB2 Client Installation Directory</b>	/opt/ibm/db2/V10.5	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.
<b>DB2 Client Instance User Name</b>	db2inst1	The user ID for the DB2 client.
<b>DB2 Client Instance Password</b>	There is no default value for this field.	The password for the DB2 client instance owner user.
<b>DB2 Client Instance Home Directory</b>	/home/db2inst1	The home directory for the DB2 client instance owner user on each node.

Table 6 includes the configuration parameters for WebSphere Application Server.

*Table 6. WebSphere Application Server installation parameters*

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

Table 7 includes the configuration parameters for IBM HTTP Server.

*Table 7. IBM HTTP Server installation parameters*

Field	Default or example value	Description
<b>HTTP Server Installation Directory</b>	/opt/IBM/HTTPServer	The location where IBM HTTP Server is to be installed. This directory is on the BI node computer's file system.
<b>HTTP Server Port Number</b>	80	The port number that is used by HTTP Server.
<b>IBM Installation Manager Installation Directory</b>	/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 8 on page 40 includes the installation location for IBM Cognos Business Intelligence.

Table 8. IBM Cognos BI installation parameters

Field	Default or example value	Description
<b>Cognos Business Intelligence Server Installation Directory</b>	/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 9 includes the configuration parameters for the WebSphere Application Server profile that is used for IBM Cognos Business Intelligence.

Table 9. WebSphere Application Server profile for IBM Cognos BI parameters

Field	Default or example value	Description
<b>WebSphere Application Server Profile Directory</b>	/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.
<b>Cognos Business Intelligence Server Host Name</b>	This value is automatically entered.	The name or IP address of the BI node computer.
<b>WebSphere Application Server Profile Template Directory</b>	/opt/IBM/WebSphere/AppServer/profileTemplates/default	The location where the WebSphere profile templates are located.
<b>WebSphere Application Server Cognos Profile Name</b>	COGNOSProfile	The name of the WebSphere profile that is used for IBM Cognos BI.
<b>WebSphere Application Server Cognos Profile Administrative User Name</b>	admin	The administrative user name for the WebSphere Application Server profile.
<b>WebSphere Application Server Cognos Profile Administrative Password</b>	There is no default value for this field.	The password for the administrative user.

Table 10 includes the configuration parameters for the dashboard application that is installed on the Business Intelligence (BI) node computer.

Table 10. PMQ UI WebSphere Application Server profile parameters

Field	Default or example value	Description
<b>WebSphere Application Server Cognos Profile Name</b>	PMQUIProfile	The name of the WebSphere profile that is used for the dashboard application
<b>WebSphere Application Server Profile Template Directory</b>	/opt/IBM/WebSphere/AppServer/profileTemplates/default	The location where the WebSphere profile templates are located.
<b>WebSphere Application Server PMQ UI Profile User Name</b>	admin	The administrative user name for the WebSphere Application Server profile.
<b>WebSphere Application Server PMQ UI Profile Password</b>	There is no default value for this field.	The password for the administrative user.

Table 11 on page 41 for IBM DB2 includes the configuration parameters for IBM Cognos Business Intelligence.



Table 11. IBM Cognos BI Server parameters for IBM DB2

Field	Default or example value	Description
<b>Database Host Name</b>	This value is automatically entered.	The name or IP address of the IBM DB2 data node computer.
<b>Oracle Home Directory</b>	/home/oracle/app/oracle/product/12.1.0/client_1/jdbc/lib	The location of the Oracle home directory. This parameter applies only if your deployment includes an Oracle database.
<b>IBM WebSphere Application Server BI Node Host Name</b>	This value is automatically entered.	The name or IP address of the BI node.
<b>Cognos Dispatcher Application Server Port</b>	9080	The HTTP transport port number for the WebSphere Application Server where IBM Cognos is running.
<b>Database Server Host Name</b>	This value is automatically entered.	The name or IP address of the data node.

Table 12 includes the configuration parameters for IBM Integration Bus.

Table 12. IBM Integration Bus installation parameters for IBM DB2

Field	Default or example value	Description
<b>WebSphere Message Broker Explorer Installation Directory</b>	/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.
<b>Provide the shared classes path</b>	/var/mqsi	The location where the shared classes used for the dashboard application are installed.
<b>IIB Manufacturing Factory Pack Install Directory</b>	/opt/IBM/PMQ/Server/IIBEnterprisePack	The location where the IBM Integration Bus Manufacturing Pack is to be installed.

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

Table 13. IBM SPSS Collaboration and Deployment Server parameters

Field	Default or example value	Description
<b>SPSS Collaboration and Deployment Service Server Installation Directory</b>	/opt/IBM/SPSS/Deployment/7.0/Server	The location where IBM SPSS Collaboration and Deployment Services is to be installed. This location is on the Analytics node computer's file system.

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

Field	Default or example value	Description
<b>IBM Installation Manager Installation Directory</b>	/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.
<b>WebSphere Profile Location</b>	/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.
<b>WebSphere Profile Default Template Location</b>	/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. This parameter applies only if your deployment includes a data node that uses IBM DB2.
<b>WebSphere Host Name</b>	This value is automatically entered.	The name or IP address of the Analytics node computer.
<b>SPSS DB2 Database Host Name</b>	This value is automatically entered.	The name or IP address of the data node computer.
<b>WebSphere Application Server SPSS Profile Administrative User Name</b>	admin	The IBM SPSS Collaboration and Deployment Services administrative user.
<b>WebSphere Application Server SPSS Profile Administrative Password</b>	There is no default value for this field.	The password for the IBM SPSS Collaboration and Deployment Services administrative user.
<b>SPSS Modeler Server Installation Directory</b>	/usr/IBM/SPSS/ModelerServer/17.0	The directory where the IBM SPSS Modeler Server is to be installed. This directory is on the Analytics node computer.
<b>SPSS Data Access Pack Installation Directory</b>	/opt/IBM/SDAP711	The directory where the IBM SPSS Data Access Pack is to be installed. This directory is on the Analytics node computer.
<b>SPSS Statistics Server Installation Directory</b>	/opt/IBM/SPSS/StatisticsServer23	The directory where the IBM SPSS Statistics Server is to be installed. This directory is on the Analytics node computer.
<b>SPSS Modeler Solution Publisher Installation Directory</b>	/opt/IBM/SPSS/ModelerSolutionPublisher/17.0	The directory where the IBM SPSS Modeler Solution Publisher is to be installed. This directory is on the Analytics node computer.

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

Field	Default or example value	Description
<b>Analytic Server Location</b>	/opt/IBM/PMQ	The location where the IBM SPSS Analytic Server installation files are copied.  To use IBM SPSS Analytic Server, you must install the product manually.

Table 14 includes the configuration parameters for the IBM Data Server Client on the Master Data Management (MDM) node computer.

Table 14. IBM Data Server Client parameters

Field	Default or example value	Description
<b>DB2 Client Installation Directory</b>	/opt/ibm/db2/V10.5	The location where the IBM DB2 client is to be installed. This directory is on the MDM node computer.
<b>DB2 Client Instance Home Directory</b>	/home/db2inst1	The home directory for the DB2 client instance owner user on each node.

Table 15 includes the configuration parameters for InfoSphere Master Data Management.

Table 15. InfoSphere Master Data Management parameters

Field	Default or example value	Description
<b>WebSphere Installation Directory</b>	/opt/IBM/WebSphere/AppServer	The location where WebSphere Application Server is to be installed.
<b>MDM Collaboration Server Installation Directory</b>	/opt/IBM/MDM	The location where the InfoSphere Master Data Management Collaboration Server is to be installed.
<b>Master Data Management Server Name</b>	mdmsvr	The server name of the InfoSphere Master Data Management Collaboration Server.
<b>WebSphere Profile Location</b>	/opt/IBM/WebSphere/AppServer/profiles	Location for the WebSphere profile
<b>WebSphere Application Server Profile Template Location</b>	/opt/IBM/WebSphere/AppServer/profileTemplates/default	The location for the WebSphere profile templates.
<b>WebSphere Application Server Profile Type</b>	Stand-Alone	The type of WebSphere Application Server installation.  Do not change the default value.
<b>WebSphere Application Server Profile Name</b>	MDMProfile	The name of the WebSphere profile that is used for InfoSphere Master Data Management.

Table 15. InfoSphere Master Data Management parameters (continued)

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

---

## 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.

### 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 commands:

```
iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport 45088 -j ACCEPT
iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport 58313 -j ACCEPT
iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport 28053 -j ACCEPT
iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport tungsten-https -j ACCEPT
iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport glrpc -j ACCEPT
iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport corbaloc -j ACCEPT
iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport 59356 -j ACCEPT
iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport 9043 -j ACCEPT
iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport 9060 -j ACCEPT
```

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

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

5. Type the following command to restart your firewall.

```
/etc/init.d/iptables restart
```

6. Verify that your changes have been applied with the following command:

```
iptables -L
```

The added ports should appear in the list.

### Configuring your firewall settings for the 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 commands:  

```
iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport 9362 -j ACCEPT
iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport vrace -j ACCEPT
iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport 9663 -j ACCEPT
iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport corbaloc -j ACCEPT
iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport 9043 -j ACCEPT
iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport glrpc -j ACCEPT
iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport http -j ACCEPT
iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport tungsten-https -j ACCEPT
iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport 9060 -j ACCEPT
```
4. Type the following command to save your firewall settings:  
`/etc/init.d/iptables save`
5. Type the following command to restart your firewall.  
`/etc/init.d/iptables restart`
6. Verify that your changes have been applied with the following command:  
`iptables -L`  
The added ports should appear in the list.

## Configuring your firewall settings for the 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 commands:
 

```
iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport boks -j ACCEPT
iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport boks_clntd -j ACCEPT
iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport boks_servm -j ACCEPT
iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport boks_servc -j ACCEPT
iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport ibm-mqseries -j ACCEPT
```
4. Type the following command to save your firewall settings:
 

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

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

```
iptables -L
```

The added ports should appear in the list.

## Configuring your firewall settings for the 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
- cddb-alt
- 40752
- 50512
- 35086
- bacula-dir
- jetdirect
- 55052

- 32970
- complex-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 commands:

```
iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport tungsten-https -j ACCEPT
iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport 50498 -j ACCEPT
iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport 9634 -j ACCEPT
iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport 9633 -j ACCEPT
iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport 57537 -j ACCEPT
iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport 49888 -j ACCEPT
iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport 53343 -j ACCEPT
iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport 41950 -j ACCEPT
iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport 60573 -j ACCEPT
iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport 43420 -j ACCEPT
iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport 40187 -j ACCEPT
iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport netsteward -j ACCEPT
iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport corbaloc -j ACCEPT
iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport glrpc -j ACCEPT
iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport 44152 -j ACCEPT
iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport 43830 -j ACCEPT
iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport 39188 -j ACCEPT
iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport 9043 -j ACCEPT
iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport 7507 -j ACCEPT
iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport 49298 -j ACCEPT
iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport 8881 -j ACCEPT
iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport cddb-alt -j ACCEPT
iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport 40752 -j ACCEPT
iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport 50512 -j ACCEPT
iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport 35086 -j ACCEPT
iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport bacula-dir -j ACCEPT
iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport jetdirect -j ACCEPT
iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport 55052 -j ACCEPT
iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport 32970 -j ACCEPT
iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport complex-link -j ACCEPT
iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport 37253 -j ACCEPT
iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport 9060 -j ACCEPT
```

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

## Configuring your firewall settings for the 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 commands:  
`iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport ibm-db2 -j ACCEPT`  
`iptables -I INPUT -m state --state NEW -m tcp -p tcp --dport db2c_db2inst1 -j ACCEPT`
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.

---

## 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

### 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. In a terminal window, enter the following command:

```
export JAVA_HOME=/WebSphere_Install_location/AppServer/java
```

For example, enter:

```
export JAVA_HOME=/opt/IBM/WebSphere/AppServer/java
```

3. Enter the following command to load the profile for IBM Cognos BI:

```
. ~/.bash_profile
```

The `.bash_profile` file contains the environment variables that are needed to start IBM Cognos Configuration.

4. Go to the `/opt/ibm/cognos/c10_64/bin64` directory and enter 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.

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.

The IBM HTTP Server is automatically started by the installation. However, if it does not start automatically you can start it manually.

### 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.

5. If necessary, perform the following steps to start the IBM HTTP Server:

- a. Go to the IBM HTTP Server bin directory. For example, go to `/opt/IBM/HTTPServer/bin`.

- b. Enter the following command:

```
./apachectl -k restart -f /opt/IBM/HTTPServer/conf/httpd.conf
```

## 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.

**Important:** If you are using a single node installation of Predictive Maintenance and Quality, the port number is 9082. For example, the address is `http://analytics_node_name:9082/config`.

The SPSS administration console appears.

---

## 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. The lines contain an example IP address string. You must modify them to use the value for your network. You must enter each line manually. Copying and pasting the text can add extra characters to the file and cause errors.

```
-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 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
```

If you receive the following error, reboot the computer, and then reissue the command:

```
portmap: unrecognized service
```

---

## Chapter 5. Artifact installation for a deployment that contains a data node

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:vnctdisplay
```

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

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

```
xhost +
```

6. Enter the following command:

```
./launchpad.sh
```

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

7. Click **Documentation and Release Notes**. A link to the Predictive Maintenance and Quality IBM Knowledge Center is displayed, where you can access the product documentation.
8. Click **Artifacts Content**. The Predictive Maintenance and Quality Artifacts Contents is displayed.
9. Click **Deploy Artifacts**, and select 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**.
10. Click **Start the Deployment Wizard**.
  11. In the Software License Agreement window, read the license agreement terms, and click **Accept**. The **Deployment Wizard** opens.
  12. Click **Next**.

---

## Selecting the installation type for the artifacts

You must select the environment into which you install the IBM Predictive Maintenance and Quality server artifacts. For example, whether you are using a multiple-server or a single-server installation. Also, you must choose whether you are using Predictive Maintenance and Quality in a production or a non-production environment.

If you already have Predictive Maintenance and Quality version 2.5 installed, you must manually deploy the version 2.5.1 server artifacts.

### About this task

You can choose from the following installation types:

- **Use IBM Predictive Maintenance and Quality in a production environment (Multi-Node with DB2)**
- **Use IBM Predictive Maintenance and Quality in a non-production environment (Multi-Node with DB2)**. Choose this option if you are installing a test or demonstration environment.
- **Use IBM Predictive Maintenance and Quality in a production environment (Multi-Node with Oracle)**
- **Use IBM Predictive Maintenance and Quality in a non-production environment (Multi-Node with Oracle)**. Choose this option if you are installing a test or demonstration environment.
- **Use IBM Predictive Maintenance and Quality on Single node in a non-production environment**. Choose this option if you are installing a test or demonstration in a single node environment.
- **Existing PMQ 2.5 Customers**. Choose this option if you are upgrading from Predictive Maintenance and Quality 2.5 to Predictive Maintenance and Quality 2.5.1.

### Procedure

1. Select one of the installation types.
2. Click **Next**.
3. Select the artifacts that you want to deploy, and click **Next**.
4. Perform “Specifying the target computers on which to install the artifacts” on page 55.
5. Perform “Configuring parameters for the artifact installation” on page 57.
6. After the client installers are copied to your computer, you must install each client individually by using its installer.

---

## 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.

5. Click **OK**.
6. Click **Next**.

---

## 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 if your iptables are running during the installation.

- 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 in the **Target Computer Data** window 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 13.
- 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 103.

5. Click **Next**.



- Repeat the steps for each node computer.

---

## Configuring parameters for the artifact installation

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

### About this task

The parameters that you specify are identical for the following tasks:

- **Use IBM Predictive Maintenance and Quality in a production environment (Multi-Node with DB2)**
- **Use IBM Predictive Maintenance and Quality in a non-production environment (Multi-Node with DB2)**

The parameters that you specify are identical for the following tasks:

- **Use IBM Predictive Maintenance and Quality in a production environment (Multi-Node with Oracle)**
- **Use IBM Predictive Maintenance and Quality in a non-production environment (Multi-Node with Oracle)**

There are no parameters to specify in the **Deployment Wizard** for the **Use IBM Predictive Maintenance and Quality on a Single Node in a non-production environment** task.

### Procedure

- Use the following tables to verify or enter values in each field on each page of the **Deployment Wizard** for the **Use IBM Predictive Maintenance and Quality in a production environment (Multi-Node with DB2)** and **Use IBM Predictive Maintenance and Quality in a non-production environment (Multi-Node with DB2)** tasks.

Table 16. Parameters for IBM DB2

Field	Default or example value	Description
<b>Data Deployment Location</b>	/opt/IBM/PMQ/ Datadateandtime	The location where the server artifacts are to be copied on the data node computer.  The artifacts are copied to the location in a directory with a date and time stamp.
<b>DB2 Instance Home</b>	/home/db2inst1	The home directory of the database instance owner.
<b>DB Database Instance User Name</b>	db2inst1	The user ID for the IBM Cognos content store database.
<b>DB Database Instance Password</b>	This field does not have a default value.	The password for the database instance owner user.

Table 17. Integration bus parameters for IBM DB2

Field	Default or example value	Description
<b>Install location of IIB</b>	/opt/ibm/mqsi/9.0.0.2	The location where IBM Integration Bus is installed. This directory is on the Integration Bus node computer's file system.
<b>Websphere Message Queue Location</b>	/opt/mqm	The location where WebSphere Message Queue is installed. This directory is on the Integration Bus node computer's file system.
<b>DB2 Client install Location</b>	/opt/ibm/db2/v10.5	The IP address of the Analytics nodecomputer.
<b>Analytics Node IP</b>	There is no default for this field.	The IP address of the Predictive Analytics node computer.
<b>Analytics Node HTTP Transport Port</b>	9080	The WebSphere Application Server port number that is used on the Analytics node computer.
<b>DB2 Port Number</b>	50000	The port number that is used by the IBM DB2 server on the data node computer.
<b>Database Node IP</b>	There is no default for this field.	The IP address of the data node computer.
<b>DB2 Username</b>	pmqsch	The user ID that controls the database processes and owns the directories that are used by the database instance.
<b>DB2 Database Server Instance Password</b>	There is no default for this field.	The user ID that controls the database processes and owns the directories that are used by the database instance.

Table 18. Business Intelligence parameters for IBM DB2

Field	Default or example value	Description
<b>Business Intelligence Deployment Location</b>	/opt/IBM/PMQ/BIdateandtime	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.
<b>Cognos Install Location</b>	/opt/ibm/cognos/c10_64	The location where IBM Cognos BI is installed. This directory is on the BI node computer's file system.
<b>WebSphere Install Location</b>	/opt/IBM/WebSphere/AppServer	The location where WebSphere is installed. This directory is on the BI node computer's file system.

Table 18. Business Intelligence parameters for IBM DB2 (continued)

Field	Default or example value	Description
<b>DB2 Instance Home Directory</b>	/home/db2inst1	The home directory of the database instance owner.
<b>DB2 Client Install Location</b>	/opt/ibm/db2/v10.5	The location where the DB2 client is installed on the BI node computer.
<b>WebSphere Cognos Profile Name</b>	COGNOSProfile	The WebSphere Application Server profile name that is used for IBM Cognos Business Intelligence.
<b>Cognos BI Dispatcher URI</b>	http://localhost:9080/p2pd/servlet/dispatch	The URL to the IBM Cognos BI dispatcher, where <i>bi_node_name</i> is the name or IP address of the BI node computer.
<b>DB2 Instance User Name</b>	db2inst1	The user ID for the IBM Cognos content store database.
<b>DB2 Instance Password</b>	There is no default value for this field.	The password for the database instance owner user.
<b>DB2 Database Port Number</b>	50000	The port number for the DB2 server.
<b>Database Node IP</b>	There is no default value for this field.	The IP address of the Analytics node computer.
<b>Integration Bus Node IP</b>	There is no default value for this field.	The IP address of the Integration Bus node computer.
<b>WebSphere Application Server PMQUI Profile Administrative Username</b>	admin	The administrative user name for the WebSphere Application Server profile that is used for the dashboard application.
<b>WebSphere Application Server PMQUI Profile Administrative Password</b>	There is no default value for this field.	The password for the administrative user for the WebSphere Application Server profile that is used for the dashboard application.
<b>WebSphere Application Server Cognos Profile Administrative Username</b>	admin	The administrative user name for the WebSphere Application Server profile that is used for IBM Cognos Business Intelligence.
<b>WebSphere Application Server Cognos Profile Administrative Password</b>	There is no default value for this field.	The password for the administrative user for the WebSphere Application Server profile that is used for IBM Cognos Business Intelligence.
<b>Business Intelligence Node IP</b>	There is no default value for this field.	The IP address of the Business Intelligence node.

Table 19. Analytics parameters for IBM DB2

Field	Default or example value	Description
<b>Analytics Deployment Location</b>	/opt/IBM/PMQ/ Analyticsdateandtime	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.
<b>Modeler Server Install Location</b>	/usr/IBM/SPSS/ ModelerServer/17.0	The location where the Modeler Server is installed.
<b>SPSS Data Pack Installation Location</b>	/opt/IBM/SDAP71	The directory where the IBM SPSS Data Access Pack is installed. This directory is on the Analytics node computer.
<b>CNDS Install Location</b>	/opt/IBM/SPSS/Deployment/ 7.0/Server	The location where IBM SPSS Collaboration and Deployment Services is installed. This location is on the Analytics node computer.
<b>Integration Bus Node IP</b>	There is no default value for this field.	The IP address of the Integration Bus node computer.
<b>Database Node IP</b>	There is no default value for this field.	The IP address of the data node computer.
<b>Database Username</b>	db2inst1	The user ID for the IBM Cognos content store database.
<b>Database Password</b>	There is no default value for this field.	The password for the database instance owner user.
<b>Database Port</b>	50000	The port number for the database server.

Table 20. Parameters for Master Data Management

Field	Default or example value	Description
<b>Master Data Deployment Location</b>	/opt/IBM/PMQ/ MDMdateandtime	The location where the server artifacts are to be copied on the Master Data Management (MDM) node computer.  The artifacts are copied to the location in a directory with a date and time stamp.

- Use the following tables to verify or enter values in each field on each page of the **Deployment Wizard** for the **Use IBM Predictive Maintenance and Quality in a production environment (Multi-Node with Oracle)** and **Use IBM Predictive Maintenance and Quality in a non-production environment (Multi-Node with Oracle)** tasks.

Table 21. Oracle Database parameters

Field	Default or example value	Description
<b>Data Deployment Location</b>	/opt/IBM/PMQ/ Datadateandtime	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.
<b>Oracle Install Location</b>	/home/oracle/app/oracle/ product/12.1.0	The user ID that controls the database processes and owns the directories that are used by the database instance.
<b>Oracle Installed User Account Home Directory</b>	/home/oracle	The password for the database instance owner user. <b>Note:</b> Ensure that you use the same password that you provided during the server installation.
<b>Oracle Port</b>	1521	The port number used to install Oracle. Default is 1521.
<b>Enter the Oracle Login DB Username</b>	oracle	Oracle installed username.
<b>Enter Sys Password</b>	There is no default value for this field.	Sys password used when you installed Oracle.
<b>Enter System Password</b>	There is no default value for this field.	Current system password.
<b>pmqsch user password</b>	There is no default value for this field.	The pmqsch user is the default user ID for accessing the IBMPMQ database. Enter a password for it.

Table 22. Integration bus parameters for Oracle Database

Field	Default or example value	Description
<b>Install Location of IIB</b>	/opt/ibm/mqsi/9.0.0.2	The location where IBM Integration Bus is installed. This directory is on the Integration Bus node computer's file system.
<b>WebSphere Message Queue Location</b>	/opt/mqm	The location where WebSphere Message Queue is installed. This directory is on the Integration Bus node computer's file system.
<b>Analytics Node IP</b>	There is no default for this field.	The IP address of the Analytics nodecomputer.
<b>Analytics Node HTTP Transport Port</b>	9080	The WebSphere Application Server port number that is used on the Analytics node computer.

Table 22. Integration bus parameters for Oracle Database (continued)

Field	Default or example value	Description
Database Port Number	1521	The port number for the Oracle Database server.
Database Node IP	There is no default for this field.	The IP address of the data node computer.
Database Username	pmqsch	The user ID that controls the database processes and owns the directories that are used by the database instance.
Database Password	There is no default for this field.	The user ID that controls the database processes and owns the directories that are used by the database instance.

Table 23. Business Intelligence parameters for Oracle Database

Field	Default or example value	Description
Business Intelligence Deployment Location	/opt/IBM/PMQ/BIdateandtime	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.
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.
Oracle Client Install Location	/home/oracle/app/oracle/product/12.1.0	The location where the Oracle Database 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://localhost:9080/p2pd/servlet/dispatch	The URL to the IBM Cognos BI dispatcher, where <i>bi_node_name</i> is the name or IP address of the BI node computer.
Database User Name	pmqsch	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.

Table 23. Business Intelligence parameters for Oracle Database (continued)

Field	Default or example value	Description
Database Port Number	1521	The port number for the Oracle Database server.
Database Node IP	There is no default value for this field.	The IP address of 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.
WebSphere Application Server PMQUI Profile Administrative Username	admin	The administrative user name for the WebSphere Application Server profile that is used for the dashboard application.
WebSphere Application Server PMQUI Profile Administrative Password	There is no default value for this field.	The password for the administrative user for the WebSphere Application Server profile that is used for the dashboard application.
WebSphere Application Server Cognos Profile Administrative Username	admin	The administrative user name for the WebSphere Application Server profile that is used for IBM Cognos Business Intelligence.
WebSphere Application Server Cognos Profile Administrative Password	There is no default value for this field.	The password for the administrative user for the WebSphere Application Server profile that is used for IBM Cognos Business Intelligence.
Business Intelligence Node IP	There is no default value for this field.	The IP address of the Business Intelligence node.

Table 24. Analytics parameters for Oracle Database

Field	Default or example value	Description
Analytics Deployment Location	/opt/IBM/PMQ/ Analyticsdateandtime	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.
Modeler Server Install Location	/usr/IBM/SPSS/ ModelerServer/17.0	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.
CNDS Install Location	/opt/IBM/SPSS/Deployment/ 7.0/Server	The location where IBM SPSS Collaboration and Deployment Services is installed. This location is on the Analytics node computer.

Table 24. Analytics parameters for Oracle Database (continued)

Field	Default or example value	Description
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	pmqsch	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 Number	1521	The port number for the database server.

Table 25. Parameters for Master Data Management

Field	Default or example value	Description
Master Data Deployment Location	/opt/IBM/PMQ/ MDMdateandtime	The location where the server artifacts are to be copied on the Master Data Management (MDM) node computer.  The artifacts are copied to the location in a directory with a date and time stamp.

- Use the following table to verify or enter values in each field on each page of the **Deployment Wizard** for the **Existing PMQ 2.5 Customers** task.

Table 26. Parameters for **Existing 2.5 Customer** deployment option

Field	Default or example value	Description
Data Deployment Location	/opt/IBM/PMQ/ Datadateandtime	The location where the server artifacts are to be copied on the data node computer.  The artifacts are copied to the location in a directory with a date and time stamp.
Integration Bus Deployment Location	/opt/IBM/PMQ/ IIBdateandtime	The location where the server artifacts are to be copied on the Integration Bus node computer.  The artifacts are copied to the location in a directory with a date and time stamp.



Table 26. Parameters for Existing 2.5 Customer deployment option (continued)

Field	Default or example value	Description
<b>Business Intelligence Deployment Location</b>	<i>/opt/IBM/PMQ/BIdateandtime</i>	The location where the server artifacts are to be copied on the Business Intelligence (BI) node computer.  The artifacts are copied to the location in a directory with a date and time stamp.
<b>Analytics Deployment Location</b>	<i>/opt/IBM/PMQ/Analyticsdateandtime</i>	The location where the server artifacts are to be copied on the Analytics node computer.  The artifacts are copied to the location in a directory with a date and time stamp.
<b>Master Data Deployment Location</b>	<i>/opt/IBM/PMQ/MDMdateandtime</i>	The location where the server artifacts are to be copied on the Master Data Management (MDM) node computer.  The artifacts are copied to the location in a directory with a date and time stamp.

---

## 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.

**Important:** If you are using a single node installation of Predictive Maintenance and Quality, the port number is 9082. For example, the address is `http://analytics_node_name:9082/config`.

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. Enter admin for both the **User ID** and **Password**, and click **Log in**.
10. Under **Applications > Application Types > WebSphere Enterprise Applications**, select **IBM\_SPSS\_Collaboration\_and\_Deployment\_Services\_7.0**, and click **Stop**.
11. Select **IBM\_SPSS\_Collaboration\_and\_Deployment\_Services\_7.0**, 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/utis/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/9.0.0.2/bin* directory. For example, if you installed to the default location, go to the */opt/ibm/mqsi/9.0.0.2/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/9.0.0.2/bin` directory.
  - b. Enter the following command to stop the broker:

```
./mqsisstop pmqbroker
```
  - c. Enter the following command to restart the broker:

```
./mqsisstart 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/9.0.0.2/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/9.0.0.2/bin` directory.
  - b. Enter the following command:

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

## Starting the Predictive Maintenance and Quality dashboard application

The Predictive Maintenance and Quality dashboard application provides a single interface where users can access IBM Cognos Business Intelligence reports, access the IBM Analytics Solutions Foundation, and view live profile values for a particular resource.

### About this task

The Predictive Maintenance and Quality dashboard application contains the following tabs:

### **Dashboard**

Create and manage dashboards.

### **Reports**

Access the IBM Cognos Business Intelligence reports.

### **Foundation**

Configure Predictive Maintenance and Quality. This tab is visible to users in the Administrator group only.

For the Predictive Maintenance and Quality dashboard application to work properly, master data must be loaded into Predictive Maintenance and Quality. For more information about master data, see the *IBM Predictive Maintenance and Quality Solution Guide*.

### **Procedure**

Access the Predictive Maintenance and Quality dashboard application by typing the following URL:

`http://bi_node_name:port_number/PMQDashboard/pmqui`

*bi\_node\_name* is the name or IP address for the BI node computer.

---

## **Configuring the Analytics node**

You must install and configure IBM SPSS Collaboration and Deployment Services Deployment Manager on the Analytics node.

### **Procedure**

1. Install IBM SPSS Collaboration and Deployment Services Deployment Manager on the Predictive Analytics node. See “Installing IBM SPSS Collaboration and Deployment Services Deployment Manager” on page 77.
2. Add a content server connection. See “Adding a content server connection for IBM SPSS Collaboration and Deployment Services” on page 78.
3. Import the resource definitions. See “Importing the resource definitions into IBM SPSS Collaboration and Deployment Services” on page 80.
4. Add server and resource definitions. See “Adding server and resource definitions to IBM SPSS Collaboration and Deployment Services” on page 81.
5. Perform “Updating database credentials and changing table names”

---

## **Updating database credentials and changing table names**

If you specified a user ID other than the default for the IBM Cognos content store database, then you must update the credentials for the jobs in Deployment Manager.

### **Procedure**

1. Start **Deployment Manager** and select the **Context Explorer** tab.
2. Expand the **Content Repository** folder.
3. Right-click a job and select **Open**.
4. Select a stream on the job and click the **ODBC Data Sources** tab.
5. To change a database table name:
  - a. Click an entry under **ODBC DSN** and click the ellipsis.
  - b. Select either **Use ODBC DSN** or **Create New ODBC**.
  - c. Change the table name or create a new one and then save the job.

6. To update database credentials:
  - a. Click an entry under **Credentials** and click the ellipsis.
  - b. Select either **Use Existing Credential** or **Create New Credential**.
  - c. Change the credentials or create a new one and then save the job.

---

## Exporting solution and orchestration definitions

Use the export utility **PMQExportUtility** to export the solution and orchestration XML files to the **Foundation Web UI** application.

### About this task

**PMQExportUtility** is at `/opt/IBM/PMQ/BIdateandtimestamp/PMQExportUtility`.

### Procedure

1. Create a directory named `/root/migrate_files` on the BI node and put the solution XML files to be migrated into this directory.
2. Create a directory named `/root/migrate_files/orchestrations` on the BI node and put the orchestration XML files to be migrated into this directory.
3. Update the `pmq_export.properties` file to connect to the report database and IBM WebSphere Application Server.

The following code shows examples for Oracle Database and IBM DB2.

```
#-----#
#Properties for data source
#-----#
#Example For Oracle: oracle.jdbc.OracleDriver
#Example For DB2: com.ibm.db2.jcc.DB2Driverpmq_migration_jdbc_driver=
com.ibm.db2.jcc.DB2Driver
#Example For Oracle: <path>/ojdbc7.jar
#Example For DB2: <path>/db2jcc4.jarpmq_migration_jdbc_driver_path=
/opt/ibm/db2/V10.5/java/db2jcc4.jar
#Example For Oracle: jdbc:oracle:thin:@<dbHost>:<dbPort>/<dbName>
#Example For DB2:
jdbc:db2://<dbHost>:<dbPort>/<dbName>;currentSchema=<dbCurentSchema>;
pmq_migration_jdbc_url=jdbc:db2://9.120.120.120:50000/IBMPMQ;currentSchema=PMQSCH;
pmq_migration_jdbc_username=db2inst1pmq_migration_jdbc_password=db2inst1
#-----#
#Properties for WebSphere Application Server
#-----#
pmq_migration_was_root=/opt/IBM/WebSphere/AppServer
pmq_migration_was_profile_name=PMQUIProfile
pmq_migration_was_server_name=server1
```

4. Run the following commands to migrate and export the foundation configuration content to the **Foundation Web UI** application.

```
chmod 744 pmq_export.sh
.pmq_export.sh
```

### Results

The foundation configuration files can be accessed from the following URLs:

#### After a new installation of 2.5.1

`http://host:port/PMQDashboard/pmqui`

#### After upgrade from Predictive Maintenance and Quality 2.5 to Predictive Maintenance and Quality 2.5.1

`http://host:port/PMQFoundation/pmqui`

---

## Chapter 6. Artifact installation for a deployment that contains Oracle Database

For an Oracle Database installation, you must configure IBM Predictive Maintenance and Quality to access the Oracle Database that contains your Predictive Maintenance and Quality data and reports.

---

### Prerequisites

Before you install the artifacts to support Oracle Database, you must perform some tasks on the Predictive Maintenance and Quality nodes.

You must have Oracle Database 12c Release 1 (12.1.0.2.0) Enterprise Edition for Microsoft Windows (x64) installed and configured. Ensure that it is available in your network and that you can connect to it.

Perform the following tasks on the Business Intelligence (BI) node:

- Install Oracle 12.1.0 32 bit client with an **Installation Type** of Runtime.
- Copy `ojdbc6.jar` and `ojdbc7.jar` files from `oracle_home/jdbc/lib` to `cognos_home/webapps/p2pd/web-inf/lib`.

### Installing the JDBC driver

You must install the Oracle JDBC driver on the Integration Bus node.

#### Procedure

1. Log on to the Integration Bus node computer as the `mqm` user.
2. Type the following command:  

```
mkdir -p /var/PMQ/JDBC_jar/
```
3. Copy the Oracle `JDBCjdbc7.jar` file to `/var/PMQ/JDBC_jar/`. Use the `mqm` ID and `755` permissions. The `ojdbc7.jar` file is available from the Oracle web site or your Oracle installation location.

---

### Configuring Cognos Business Intelligence

You must configure Cognos Business Intelligence on the BI node to point to your Oracle Database server.

#### 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. Enter `admin` for both the **User ID** and **Password**, and click **Log in**.
4. Expand **Application Servers > Server1 > Process definition > Environment Entries**.
5. Add the following resources:

Table 27. Resources

Name	Value
ORACLE_HOME	/home/oracle/app/oracle/product/12.1.0/client_1/
TNS_ADMIN	/home/oracle/app/oracle/product/12.1.0/client_1/network/admin/

6. Click **Apply**, and then click **Save**.
7. Restart the services on the BI node computer. See Chapter 8, “Stop and start solution software services,” on page 87.

## Configuring the PMQ UI server

You must configure the PMQ UI to point to your Oracle Database.

### Procedure

1. In a web browser, open the WebSphere Administrative Console. The address is `http://bi_node_name:9060/ibm/console`, where `bi_node_name` is the name or IP address for the BI node computer. 9060 is the default port number for the WebSphere Administrative Console.
2. Enter `admin` for both the User ID and Password, and click **Log in**.
3. Select **Resources > Data sources** and click **New**.
4. Enter a value in the **Data source name** field, enter `dbc/tenx` in the **JNDI name** field, and click **Next**.
5. Click **Create new JDBC provider** and click **Next**.
6. Select values for the following fields and then click **Next**:

Table 28. Database values

Field name	Value
Database type	Oracle
Provider_type	Oracle JDBC driver
Implementation type	XA data source

7. Enter the database driver class path information and click **Next**.  
The `ojdbc7.jar` file must be in the path that you enter.
8. Enter the following **URL** for the data source and click **Next**.  
`jdbc:oracle:thin:@DB_IP_Address:DB_PORT_NUMBER:IBMPMQ`  
  
Contact your database administrator for the values for `DB_IP_Address` and `DB_PORT_NUMBER`.
9. Click **Next** to temporarily ignore the security alias setup. You'll configure the security settings later in this procedure.
10. Click **Finish** and save your changes. The PMQ UI data source displays in the **Data sources** window.
11. Click the PMQ UI data source name and then click **JAAS - J2C authentication data**.
12. Click **New**, type values for **Alias**, **User ID**, and **Password** that are used to connect to Oracle Database and then click **OK**.
13. Go back to the Data sources window and click the PMQ UI data source name.
14. Scroll down to the **Security settings** section.



15. Select the authentication values that you entered in the **JAAS - J2C authentication data** window and click **OK**. Select these values for all fields except **Mapping-configuration alias**.
16. Save the configuration.
17. Click **Test connection** to validate the connection to the data source.

---

## Configuring PMQExportUtility

You must update `pmq_export.properties` so that you can use `PMQExportUtility` for Oracle Database.

### Procedure

Open the `pmq_export.properties` file and make the following changes to it:

1. Update the JDBC driver value.  
`pmq_migration_jdbc_driver=oracle.jdbc.OracleDriver`
2. Update the JDBC driver path value. `pmq_migration_jdbc_driver_path=./lib/ojdbc7.jar`  
Copy the `ojdbc7.jar` into the `/lib` folder of `PMQExportUtility`.
3. Update the JDBC URL value to point to the location of the Oracle Database.  
`pmq_migration_jdbc_url=jdbc:oracle:thin:@dbHost:dbPort/1BMPMQ`  
Contact your database administrator for the values of `dbHost` and `dbPort`.
4. Update the JDBC user name and password values with Oracle Database credentials.  
`pmq_migration_jdbc_username=pmqsch`  
`pmq_migration_jdbc_password=<schema_password>`



---

## Chapter 7. Client component installation

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 or Microsoft Windows 8 32 or 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.

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 Deployment Wizard 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 client installation files.
2. Decompress the installation files.
3. Go to the `disk1` directory where you decompressed the files.
4. Right-click `Launchpad.exe` or `Launchpad64.exe` and then select **Run-as\_Administrator**.  
The **Welcome** page displays.
5. Click **Documentation and Release Notes**.  
A link to the Predictive Maintenance and Quality Knowledge Center is displayed where you can access the product documentation.
6. Click **Client Content**.  
A list of client components displays.
7. Click **Deploy Client**.
8. Click **Start the Predictive Maintenance and Quality Client Deployment Wizard**.
9. In the **Software License Agreement** window, read the license agreement terms, and click **Accept**.  
The **Deployment Wizard** opens.
10. Click **Next**.

---

## 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 tmp/SL\_23621/SolutionEnabler/com/ibm/jsdt/webserver/tree. 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**.

---

## 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.

### About this task

You can choose from the following client deployments:

- PMQ Client Installers - 64 Bit
- PMQ Client Installers - 32 Bit

### Procedure

1. In the **Deployment Wizard**, select one of the deployment options and then click **Next**. A list of the client installers is displayed.
2. Select the installers that you want deploy and click **Next**.
3. For each installer that you selected, change or keep the default installation path that is displayed in the **Client Deployment Image Location** field and click **Next**. The default installation path is C:\IBM\PMQ2.5.1.
4. Click **Deploy all**. You can also deploy individual installers by clicking **Deploy task** beside the installer task.

---

## 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 that has the Microsoft Windows 7 or Microsoft Windows 8 operating systems installed.

### 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\PMQ251\.

2. Decompress the installation package.
3. In the folder containing the installation files, 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 Collaboration and Deployment Services Deployment Manager7 Installation ([www.ibm.com/support/knowledgecenter/SS69YH\\_7.0.0/cads\\_manager\\_install\\_ddita/model\\_management/thick/thick\\_install\\_overview.dita](http://www.ibm.com/support/knowledgecenter/SS69YH_7.0.0/cads_manager_install_ddita/model_management/thick/thick_install_overview.dita)).

## 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.

**Important:** If you are using a single node installation of Predictive Maintenance and Quality, the port number is 9082.

**Note:** If you are using Oracle Database, the default port number is 80.

6. Click **Finish**.
7. Click the connection name that you created.
8. In the **User ID** and **Password** boxes, enter the credentials for the CNDS server.
9. 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.

**Important:** If you are using a single node installation of Predictive Maintenance and Quality, the port number is 9082.

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_ARMOR_ANALYTICS.pes`
  - `IBMPMQ_INTEGRATED_FEATURE_BASED_ANALYTICS.pes`
  - `IBMPMQ_MAINTENANCE_ANALYTICS.pes`
  - `IBMPMQ_SENSOR_ANALYTICS.pes`
  - `IBMPMQ_SENSOR_FEATURE_BASED_ANALYTICS.pes`
  - `IBMPMQ_TOP_FAILURE_PREDICTORS.pes`
  - `IBMPMQ_WARRANTY.pes`
5. Click **Open**.
6. Accept the default options in the **Import** window, and click **OK**.
7. Repeat the previous 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.

### About this task

#### **Important:**

If any of the users already exist, then you must update the user passwords as described in this procedure.



## 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 and resource definitions to IBM SPSS Collaboration and Deployment Services

You must add server and resource definitions in Deployment Manager.

If you are not using a computer that is running Microsoft Windows 7 or Microsoft Windows 8 operating systems, some entries, such as server types, might not display correctly.

## Procedure

- 1.

**Important:** If any of the servers exist, then you must update their properties as described in this procedure.

In Deployment Manager, click **Content Explorer**.

2. Expand **Resource Definitions**.
3. Perform the following steps to add server definitions:
  - a. Double-click **localhost**.
  - b. In the **Server URL** field, type the IP address and HTTP Transport port of the Analytics node. For example, `http://9.109.13.62:9080`.
  - c. Click **Back** and verify that the **Name** is `localhost` and the **Type** is **Content Repository Service**.
  - d. Click **Finish**.
  - e. Double-click **modeler**.

- f. Click **Back** and verify that the **Name** is **modeler** and the **Type** is **Modeler Service**.
  - g. Click **Next**.
  - h. Type the host name in the **Host** field, 28054 in the **Port** field, and the SPSS Modeler Server installation location the **Default data path** field.  
The default SPSS Modeler Server installation path is `/opt/IBM/SPSS/ModelerServer/17.0/demos`.
  - i. Click **Finish**.
4. Perform the following steps to add resource definitions:
    - a. Expand the **Credentials** folder.
    - b. Double-click **admin**.
    - c. If you changed CADS credentials, update them, and click **Finish**. In the **Security Provider** field, select **Local User Repository**.
    - d. Double-click **IBMPMQ**, enter the credentials for your Oracle Database, and click **Finish**.
    - e. Double-click **modeler**, enter the credentials of the target system, and 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. In a terminal window, type the following command (all on one line):  

```
setmqaut -m pmqmanager -t queue -n SYSTEM.MQEXPLORER.REPLY.MODEL -g mqm  
+browse -get +put
```
2. 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.
3. In the **MQ Explorer - Navigator**, under **IBM WebSphere MQ**, right-click **Queue Managers**, and select **Add Remote Queue Manager**.
4. Enter the name of your queue manager, select **Connect directly**, and click **Next**. For example, enter `pmqmanager`.
5. 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`
6. On the **Specify user identification details** page, select **Enable user identification**.

7. In the **Userid** box, enter `mqm`.
8. 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**.
9. Click **Enter password**.
10. Enter the user's password, and click **OK**.
11. 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_10.2.2_win_ml.tar.gz`, and then decompress `fm_10.2.2_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\PMQ2.5.1\license directory that contains the license files.



---

## Chapter 8. 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

You must stop the IBM Predictive Maintenance and Quality node services in a specific order.

Stop the 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
- 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/9.0.0.2/bin.
4. Enter the following command:
  - ./mqsistop pmqbroker -i
5. Enter the following command to verify that the services are stopped:
  - ./mqsilist pmqbroker

## 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/17.0.
5. Enter the following command:
  - ./modelersrv.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:
  - owner:



- ```
su - db2inst1
```
3. Enter the following command to stop the DB2 administration server:  
db2stop

---

## Start solution services

You must start the IBM Predictive Maintenance and Quality node services in a specific order.

Start the node services in the following order:

1. data node
2. Predictive Analytics node
3. Integration Bus node
4. Business Intelligence (BI) node
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/17.0.
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/9.0.0.2/bin`.
4. Enter the following command:  

```
./mqsistart pmqbroker
```
5. Enter the following command to verify that the services are started:  

```
./mqsilist pmqbroker
```

 or 

```
./mqsilist pmqbroker -e pmqgroup
```

. The latter command lists all entries that are running under *pmqgroup*.
6. Enter the following commands:  

```
START LISTENER  
END
```

## Starting services on the BI node computer

You must start the IBM Cognos Business Intelligence services and IBM HTTP Server on the IBM Predictive 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/MDM`.
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 9. 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. Click **Next**. A link to Predictive Maintenance and Quality Knowledge Center is displayed where you can access the product documentation.
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**.

---

## 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 55.
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 10. 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\\_10.5.0/com.ibm.db2.luw.qb.server.doc/doc/c0059726.html?lang=en](http://www.ibm.com/support/knowledgecenter/SSEPGG_10.5.0/com.ibm.db2.luw.qb.server.doc/doc/c0059726.html?lang=en)).
2. To uninstall IBM SPSS Collaboration and Deployment Services, see the IBM SPSS documentation ([www.ibm.com/support/knowledgecenter/SS69YH\\_6.0.0](http://www.ibm.com/support/knowledgecenter/SS69YH_6.0.0)).
  - a. Go to the `/opt/IBM/InstallationManager/eclipse` directory, and run `IBMIM`.
  - b. Click **Uninstall**, and follow the steps to uninstall the product.
3. To uninstall WebSphere Application Server, see the WebSphere documentation ([www.ibm.com/support/knowledgecenter/SSEQTP\\_8.5.5](http://www.ibm.com/support/knowledgecenter/SSEQTP_8.5.5)).
  - a. Go to the `/opt/IBM/InstallationManager/eclipse` directory, and run `IBMIM`.
  - b. Click **Uninstall**, and follow the steps to uninstall the product.

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

4. To uninstall IBM Installation Manager, see the IBM Installation Manager information center ([pic.dhe.ibm.com/infocenter/install/v1r6](http://pic.dhe.ibm.com/infocenter/install/v1r6)).
  - a. Go to the `/var/ibm/InstallationManager/uninstall` directory, and run `uninstall`.
  - b. Follow the steps to uninstall IBM Installation Manager.
5. Remove the `licence` and `iso-swid` directories. For example, if you used the default path, `/opt/IBM/PMQ`, remove the `/opt/IBM/PMQ/licence` 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\\_10.5.0/com.ibm.db2.luw.qb.server.doc/doc/c0059726.html?lang=en](http://www.ibm.com/support/knowledgecenter/SSEPGG_10.5.0/com.ibm.db2.luw.qb.server.doc/doc/c0059726.html?lang=en)).
2. To uninstall IBM Cognos Business Intelligence, see the IBM Cognos BI documentation ([www.ibm.com/support/knowledgecenter/SSEP7J\\_10.2.2/com.ibm.swg.ba.cognos.inst\\_cr\\_winux.10.2.2.doc/c\\_uninstallingcognos8single.html%23UninstallingCognos8Single](http://www.ibm.com/support/knowledgecenter/SSEP7J_10.2.2/com.ibm.swg.ba.cognos.inst_cr_winux.10.2.2.doc/c_uninstallingcognos8single.html%23UninstallingCognos8Single)).

- a. Go to the `/opt/ibm/cognos/c10_64/uninstall` directory.
  - b. Type `./uninst -u`, and press Enter.
  - c. From the **Start** menu, click **All Programs > IBM Cognos 10 - 64 > Uninstall IBM Cognos > Uninstall IBM Cognos**.
  - d. Follow the steps to uninstall the product.
3. To uninstall IBM HTTP Server, see the IBM HTTP Server for WebSphere Application Server documentation ([www.ibm.com/support/knowledgecenter/SSEQTJ\\_8.5.5](http://www.ibm.com/support/knowledgecenter/SSEQTJ_8.5.5)).
    - a. Go to the `/opt/IBM/InstallationManager/eclipse` directory, and run IBMIM.
    - b. Click **Uninstall**, and follow the steps to uninstall the product.
  4. To uninstall WebSphere Application Server, see the WebSphere documentation ([www.ibm.com/support/knowledgecenter/SSEQTP\\_8.5.5](http://www.ibm.com/support/knowledgecenter/SSEQTP_8.5.5)).
    - a. Go to the `/opt/IBM/InstallationManager/eclipse` directory, and run IBMIM.
    - b. Click **Uninstall**, and follow the steps to uninstall the product.
- Note:** If WebSphere Application Server processes are running and prevent you from uninstalling the product, you must stop the server process. Go to the `/opt/IBM/WebSphere/AppServer/profiles/profile_name/bin` directory, and type `./stopServer.sh server1`.
5. To uninstall IBM Installation Manager, see the IBM Installation Manager information center ([pic.dhe.ibm.com/infocenter/install/v1r6](http://pic.dhe.ibm.com/infocenter/install/v1r6)).
    - a. Go to the `/var/ibm/InstallationManager/uninstall` directory, and run `uninstall`.
    - b. Follow the steps to uninstall IBM Installation Manager.
  6. Remove the `licence` and `iso-swid` directories. For example, if you used the default path, `/opt/IBM/PMQ`, remove the `/opt/IBM/PMQ/licence` 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\\_10.5.0/com.ibm.db2.luw.qb.server.doc/doc/c0059726.html?lang=en](http://www.ibm.com/support/knowledgecenter/SSEPGG_10.5.0/com.ibm.db2.luw.qb.server.doc/doc/c0059726.html?lang=en)).
2. To uninstall IBM Integration Bus, see the IBM Integration Bus documentation ([www.ibm.com/support/knowledgecenter/SSMKHH\\_9.0.0](http://www.ibm.com/support/knowledgecenter/SSMKHH_9.0.0)).
3. To uninstall WebSphere MQ, see the WebSphere MQ documentation ([www.ibm.com/support/knowledgecenter/SSFKSJ\\_7.5.0](http://www.ibm.com/support/knowledgecenter/SSFKSJ_7.5.0)).
4. Remove the `licence` and `iso-swid` directories. For example, if you used the default path, `/opt/IBM/PMQ`, remove the `/opt/IBM/PMQ/licence` 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\\_10.5.0/com.ibm.db2.luw.qb.server.doc/doc/c0059726.html?lang=en](http://www.ibm.com/support/knowledgecenter/SSEPGG_10.5.0/com.ibm.db2.luw.qb.server.doc/doc/c0059726.html?lang=en)).
2. To uninstall InfoSphere Master Data Management Server, see the IBM MDM documentation ([www.ibm.com/support/knowledgecenter/SSWSR9\\_11.4.0/com.ibm.swg.im.mdmhs.release.install.doc/Topics/uninstalling\\_mdm.html](http://www.ibm.com/support/knowledgecenter/SSWSR9_11.4.0/com.ibm.swg.im.mdmhs.release.install.doc/Topics/uninstalling_mdm.html)).
  - a. Go to the `/opt/IBM/InstallationManager/eclipse` directory, and run IBMIM.
  - b. Click **Uninstall**, and follow the steps to uninstall the product.
3. To uninstall WebSphere Application Server, see the WebSphere documentation ([www.ibm.com/support/knowledgecenter/SSEQTP\\_8.5.5](http://www.ibm.com/support/knowledgecenter/SSEQTP_8.5.5)).
  - a. Go to the `/opt/IBM/InstallationManager/eclipse` directory, and run IBMIM.
  - b. Click **Uninstall**, and follow the steps to uninstall the product.

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

4. To uninstall IBM Installation Manager, see the IBM Installation Manager information center ([pic.dhe.ibm.com/infocenter/install/v1r6](http://pic.dhe.ibm.com/infocenter/install/v1r6)).
  - a. Go to the `/var/ibm/InstallationManager/uninstall` directory, and run `uninstall`.
  - b. Follow the steps to uninstall IBM Installation Manager.
5. Remove the `licence` and `iso-swid` directories. For example, if you used the default path, `/opt/IBM/PMQ`, remove the `/opt/IBM/PMQ/licence` 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\\_10.5.0/com.ibm.db2.luw.qb.server.doc/doc/c0059726.html?lang=en](http://www.ibm.com/support/knowledgecenter/SSEPGG_10.5.0/com.ibm.db2.luw.qb.server.doc/doc/c0059726.html?lang=en)).
2. Remove the `licence` and `iso-swid` directories. For example, if you used the default path, `/opt/IBM/PMQ`, remove the `/opt/IBM/PMQ/licence` 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](http://www.ibm.com/able)).

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

### Report output

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



---

## Appendix B. Troubleshooting

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

---

### Launchpad does not start

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.

---

### Browser support for the Launchpad

You must also 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.

---

### Installer fails and shows Java Result:1 message in console

From the **Install and Configure Server Computers** page on the Launchpad, you receive a [java] Java Result:1 message in the terminal window.

This error occurs if you are missing the 32 bit version of the X11 runtime libraries.

To resolve this error, you must install the libraries on the computer on which you are running the IBM Predictive Maintenance and Quality installation.

If you have yum repositories configured for your computer, use the following command to install the library:

```
yum -y install xulrunner.i686
```

You can verify that the library is installed by using the following command:

```
rpm -ql xulrunner.i686 | grep so
```

If the path indicates `/usr/lib/xulrunner`, then the 32 bit libraries are installed. The path for the 64 bit libraries would contain `/usr/lib64`.

After you install the library, do the following to restart the installation:

1. Close the installer.
2. Clean the `/tmp` directory on all server node computers.
3. Clean the `/opt/IBM/SolutionFile` directory on the computer on which you are running the installation.
4. Try the installation again.

The following 32 bit X11 libraries must also be installed. Use the `rpm -ql library_name | grep so` command to verify that the 32 bit versions are installed.

- `libdmx`
- `libXaw`
- `libXft`
- `libXpm`
- `libXv`
- `libfontenc`
- `libXcursor`
- `libXi`
- `libXrandr`
- `libXxf86dga`
- `libFS`
- `libXdmcp`
- `libXinerama`
- `libXrender`
- `libXxf86misc`
- `libICE`
- `libXext`
- `libxkbfile`
- `libXres`
- `libXxf86vm`
- `libSM`
- `libXfixes`
- `libXmu`
- `libXt`
- `libXcomposite`
- `libX11`
- `libXfontt`
- `libXmuu`
- `libXTrap`
- `libXdamage`
- `libXau`
- `libXfontcache`
- `libXp`
- `libXtst`

- libXevie
- libXss
- libXvMC

---

## 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
###.###.### analytics_node_name.domain.com analytics_node_name
###.###.### bi_node_name.domain.com bi_node_name
###.###.### data_node_name.domain.com data_node_name
###.###.### integrationbus_node_name.domain.com integrationbus_node_name
###.###.### mdm_node_name.domain.com mdm_node_name
```

- 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.

---

## WebSphere Application Server fails to deploy on BI node computer

If the WebSphere Application Server installation fails on the IBM Predictive Maintenance and Quality Business Intelligence (BI) node computer and the installer appears inactive for a long time, such as an hour, then you might have to restart the installation.

### Procedure

1. Verify that the BI node computer is running.
2. Cancel the installation.
3. Follow the procedures in Chapter 10, "Uninstallation of the server components," on page 95 to remove any installed components.
4. Restart the installation.

---

## 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**.

---

## JAVA\_HOME not set when starting IBM Cognos Configuration

After you install IBM Predictive Maintenance and Quality as a **sudo** user, you receive a message that the `JAVA_HOME` environment variable is not set.

You can resolve this by setting the `JAVA_HOME` environment variable. You must use the JRE that is provided with the WebSphere Application Server installation.

### Procedure

1. On the Business Intelligence (BI) node computer, in terminal window, enter the following command:  

```
export JAVA_HOME=/WebSphere_Install_location/AppServer/java
```

For example, enter  

```
export JAVA_HOME=/opt/IBM/WebSphere/AppServer/java
```
2. Go to the `/opt/ibm/cognos/c10_64/bin64` directory.
3. Type the following command:  

```
./cogconfig.sh
```

IBM Cognos Configuration starts.
4. If you want to save this setting for future session, add the command to the user's `.bash_profile` file.

---

## 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/9.0.0.2/bin` directory. For example, if you installed to the default location, go to the `/opt/ibm/mqsi/9.0.0.2/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:  

```
mqsisstart broker_name
```

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

```
mqsisstart 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/9.0.0.2/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
[exec]     (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.

---

## Improving performance for IBM Cognos reports

To improve the performance of IBM Cognos Business Intelligence reports, you can run a cron job that is created by the installation.

The cron job is run every hour by default. However, you can modify that interval.

The cron job is automatically created on the data node computer, in the `/home/db2inst1` directory and is named `mycron`.

If you want to change the interval for running the job, you must update the cron job by using the following command:

```
Vi crontab -e
```

---

## IBM Integration Bus related nodes are missing after migration

After you migrate IBM Predictive Maintenance and Quality, you open MQ Explorer and IBM Integration Bus related nodes are missing.

You can resolve this issue by forcing the program to reinitialize the MBExplorer plugin.

## Procedure

1. On the Integration Bus node computer, go to the *MQExplorer\_Installation/eclipse/links* directory. For example, go to the */opt/mqm/mqexplorer/eclipse/links* directory.
2. Make a copy of *com.ibm.wmadmin.broker.explorer.link* as a backup. You will copy this file back to this directory later.
3. Delete *com.ibm.wmadmin.broker.explorer.link*.
4. Go to the */opt/mqm/bin* directory.
5. Enter the following command to start MQ Explorer:  
`./strmqcfg -c`
6. After MQ Explorer is fully loaded, close the program.
7. Go back to the */opt/mqm/mqexplorer/eclipse/links* directory.
8. Replace *com.ibm.wmadmin.broker.explorer.link* from your backup.
9. Go back to the */opt/mqm/bin* directory.
10. Restart MQ Explorer using the following command:  
`./strmqcfg -c`

---

## Master Data Management web portal available only in Internet Explorer 9 browsers

You must use Microsoft Internet Explorer version 9 to access the IBM InfoSphere Master Data Management web portal.

The URL is `http://mdm_node_name:7507/utills/enterLogin.jsp`

---

## Error configuring NFS mount settings

You are configuring network file system (NFS) mounts on the Integration Bus node and the Predictive Analytics node computers to allow file transfers between these nodes. When you restart the Linux services, an error occurs.

You enter the service portmap restart command and receive the following error:  
portmap: unrecognized service

To resolve the problem, restart the operating system and then reissue the command.

---

## Initialization error when configuring IBM SPSS Collaboration and Deployment Services

In IBM Predictive Maintenance and Quality, if the task for configuring the IBM SPSS Collaboration and Deployment Services displays a database initialization error, 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.



---

## 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.

**Tip:** You can verify that the data was loaded by using commands to check the Predictive Maintenance and Quality queues. You can check the queues by running the following commands:

```
runmqsc pmqmanager
Display q(PMQ.*) WHERE(CURDEPTH NE 0)
```

#### Procedure

1. Log in to the Integration Bus node computer as the **mqm** user.

**Important:** The user must be the **mqm** user or a member of the **mqm** group. If you copy the files as another user, they might not be processed by the Integration Bus node components.

2. Load the master data.

- a. Go to the `/var/PMQ/MQSIFileInput/PMQSampleData/Set1-MasterData/<language>/Set1/` 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 copied one at a time.

- c. Go to the `/var/PMQ/MQSIFileInput/PMQSampleData/Set1-MasterData/<language>/Set2/` 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/Set1-MasterData/<language>/Set3/` directory.

- f. Copy the contents of that directory to the `/var/PMQ/MQSIFileInput/masterdatain` directory one file at a time.

- g. Go to the `/var/PMQ/MQSIFileInput/PMQSampleData/Set1-MasterData/<language>/Set4/` directory.

- h. 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/Set2-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/Set3-EventData` directory.
  - d. Copy the contents of that directory to the `/var/PMQ/MQSIFileInput/eventdatain` directory one file at a time.
4. Set the appropriate time triggers in the `PMQ_orchestration_definition_batch.xml` file.
    - a. Go to the `/var/PMQ/MQSIFileInput/properties` directory.
    - b. Open `PMQ_orchestration_definition_batch.xml` in a text editor.
    - c. Locate each of the following sections, and set the `<scheduled_time>` value to an appropriate time.

Table 29. Predictive Maintenance and Quality feature and identifier value

| Feature                          | <Identifier> value |
|----------------------------------|--------------------|
| TopNFailure                      | TopN               |
| Maintenance                      | Maintenance        |
| Sensor Analytics Training        | HSTrigger          |
| Feature Based Analytics Training | FHSTrigger         |
| Integrated Analytics Training    | IHSTrigger         |

- d. Use the following command to stop `AutoTrigger.msgflow` in the `PMQBatchIntegration` application:
 

```
mqsisstopmsgflow pmqbroker -e pmqgroup1 -k PMQBatchIntegration -m AutoTrigger
```
  - e. Use the following command to restart `AutoTrigger.msgflow` in the `PMQBatchIntegration` application:
 

```
mqsisstartmsgflow pmqbroker -e pmqgroup1 -k PMQBatchIntegration -m AutoTrigger
```
5. Load the event data for scoring.
    - a. Go to the `/var/PMQ/MQSIFileInput/PMQSampleData/Set4-EventData` directory.
    - b. Copy the contents of that directory to the `/var/PMQ/MQSIFileInput/eventdatain` directory one file at a time.
  6. Load the batch data for Inspection, Warranty, and Parametric.
    - a. Go to the `/var/PMQ/MQSIFileInput/PMQSampleData/Set5-BatchData` directory.
    - b. Copy the contents of that directory to the `/var/PMQ/MQSIFileInput/batchdatain` directory one file at a time.

---

## Loading the ENU sample data

ENU Sample data is installed as part of the IBM Predictive Maintenance and Quality server artifact installation. The data covers examples for substations, distribution transformers, and poles and cables.

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.

**Tip:** You can verify that the data was loaded by using commands to check the Predictive Maintenance and Quality queues. You can check the queues by running the following commands:

```
runmqsc pmqmanager
Display q(PMQ.*) WHERE(CURDEPTH NE 0)
```

## Procedure

1. Log in to the Integration Bus node computer as the **mqm** user.

**Important:** The user must be the **mqm** user or a member of the **mqm** group. If you copy the files as another user, they might not be processed by the Integration Bus node components.

2. Load the data.
  - a. Go to the `/var/PMQ/MQSIFileInput/PMQSampleData/Set6-EventData_ENU` directory.
  - b. Copy the following files, in sequence, to the `/var/PMQ/MQSIFileInput/eventdatain` directory one file at a time.
    - 1) `event_observation_parameter*.csv`—Loads parameter data.
    - 2) `event_observation*_training.csv`—Loads training data.
    - 3) `event_observation_pole_inspection.csv`—Loads pole data.
3. Set the appropriate time triggers in the `PMQ_orchestration_definition_batch.xml` file.
  - a. Go to the `/var/PMQ/MQSIFileInput/properties` directory.
  - b. Open `PMQ_orchestration_definition_batch.xml` in a text editor.
  - c. Locate each of the following sections, and set the `<scheduled_time>` value to an appropriate time.

Table 30. Predictive Maintenance and Quality feature and identifier value

| Feature                                   | <Identifier> value |
|-------------------------------------------|--------------------|
| Distribution transformer Current ageing   | DTCA               |
| Distribution transformer Projected ageing | DTPA               |
| Feature Based Analytics Training          | FHSTrigger         |
| Integrated Analytics Training             | IHSTrigger         |
| Feature Based Analytics for Poles         | POLEFBA            |

- d. Use the following command to stop `AutoTrigger.msgflow` in the `PMQBatchIntegration` application:
 

```
mqsisstopmsgflow pmqbroker -e pmqgroup1 -k PMQBatchIntegration -m AutoTrigger
```
  - e. Use the following command to restart `AutoTrigger.msgflow` in the `PMQBatchIntegration` application:
 

```
mqsisstartmsgflow pmqbroker -e pmqgroup1 -k PMQBatchIntegration -m AutoTrigger
```
4. Load the event data for scoring.
    - a. Go to the `/var/PMQ/MQSIFileInput/PMQSampleData/Set6-EventData_ENU` directory.
    - b. Copy the contents of that directory to the `/var/PMQ/MQSIFileInput/eventdatain` directory one file at a time. For example, copy `event_observation_feature*_scoring.csv`.
  5. Reset the time triggers in the `PMQ_orchestration_definition_batch.xml` file.

- a. Go to the /var/PMQ/MQSIFileInput directory.
- b. Open PMQ\_orchestration\_definition\_batch.xml in a text editor.
- c. Locate each of the following sections, and set the <sequence\_time> value to an appropriate time.

Table 31. Predictive Maintenance and Quality feature and identifier value

| Feature                                  | <Identifier> value |
|------------------------------------------|--------------------|
| Distribution transformer Current aging   | DTCA               |
| Distribution transformer Projected aging | DTPA               |

**Note:** If you are resetting the scheduler of any batch feature that is set to run for a duration\_in\_days that is greater than 1 day, then you must restart AutoTrigger.msgflow in the PMQBatchIntegration application to see the changes immediately.

- d. Use the following command to stop AutoTrigger.msgflow in the PMQBatchIntegration application:
 

```
mqsistopmsgflow pmqbroker -e pmqgroup1 -k PMQBatchIntegration -m AutoTrigger
```
- e. Use the following command to restart AutoTrigger.msgflow in the PMQBatchIntegration application:
 

```
mqsistartmsgflow pmqbroker -e pmqgroup1 -k PMQBatchIntegration -m AutoTrigger
```

---

## 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 32. 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 was loaded correctly

You can verify that the IBM Predictive Maintenance and Quality sample data was 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 of the ESB node:
  - TopNFailureLog.txt
  - MaintenanceLog.txt
  - Training\_HS\_in.csv
  - Training\_FBA\_in.csv
  - Training\_IHS\_in.csv

**Note:** If the sample data was loaded correctly, then the previously listed files are not created.

3. The following reports are populated with the sample data:

*Table 33. Sample data and reports*

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

4. If you are using the ENU sample data, check the status of the SPSS jobs by reviewing the following log files:
  - dt\_currentageing\_in.csv
  - dt\_projectedageing\_in.csv

---

## Removing sample data from the database

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

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. Do one of the following steps to connect to the **IBMPMQ** database:
  - a. If the **IBMPMQ** database is in IBM DB2, type the following command:  
db2 connect to IBMPMQ user *user\_name* using *password*
  - b. If the **IBMPMQ** database is in Oracle Database, then connect to it using the appropriate Oracle command.
2. To remove the sample data from an IBM DB2 database, do the following steps:
  - a. Enter the following SQL statements to remove the sample data:

```
DELETE FROM PMQSCH.PARAMETRIC_KPI;
DELETE FROM PMQSCH.PARAMETRIC_PROFILE;
DELETE PMQSCH.LIFETIME_KPI;
DELETE PMQSCH.LIFETIME_PROFILE;
DELETE PMQSCH.PRODUCT_PROFILE;
DELETE PMQSCH.PRODUCT_KPI;
DELETE PMQSCH.RESOURCE_PROFILE;
DELETE PMQSCH.RESOURCE_KPI;
DELETE PMQSCH.MATERIAL_PROFILE;
DELETE PMQSCH.PROCESS_KPI;
DELETE PMQSCH.PROCESS_PROFILE;
DELETE PMQSCH.PROFILE_PARAMETER;
DELETE FROM PMQSCH.EVENT_PROFILE;
DELETE PMQSCH.EVENT_OBSERVATION;
DELETE PMQSCH.EVENT;
DELETE PMQSCH.MASTER_RESOURCE_CONNECTION;
DELETE PMQSCH.MASTER_PROFILE_MAPPING;
DELETE PMQSCH.MASTER_RESOURCE_PRODUCTION_BATCH;
DELETE PMQSCH.MASTER_PRODUCTION_BATCH;
DELETE PMQSCH.SERVICE;
DELETE PMQSCH.MASTER_PRODUCT_HIERARCHY;
DELETE PMQSCH.MASTER_PRODUCT;
DELETE PMQSCH.MASTER_RESOURCE_HIERARCHY;
DELETE PMQSCH.MASTER_RESOURCE;
DELETE PMQSCH.MASTER_PROFILE_VARIABLE;
DELETE PMQSCH.MASTER_MATERIAL;
DELETE PMQSCH.MASTER_MATERIAL_TYPE;
DELETE PMQSCH.MASTER_PROFILE_CALCULATION;
DELETE PMQSCH.MASTER_RESOURCE_TYPE;
DELETE PMQSCH.MASTER_MEASUREMENT_TYPE;
DELETE PMQSCH.MASTER_VALUE_TYPE;
DELETE PMQSCH.MASTER_SUPPLIER;
DELETE PMQSCH.MASTER_SOURCE_SYSTEM;
DELETE PMQSCH.MASTER_PROCESS_HIERARCHY;
DELETE PMQSCH.MASTER_PROCESS;
DELETE PMQSCH.MASTER_LOCATION;
DELETE PMQSCH.MASTER_GROUP_DIM;
```

```

DELETE PMQSCH.MASTER_EVENT_TYPE;
DELETE PMQSCH.MASTER_EVENT_CODE;
DELETE PMQSCH.MASTER_OBSERVATION_LOOKUP;
DELETE PMQSCH.MAINTENANCE_TRENDS;
DELETE PMQSCH.MAINTENANCE_DAILY;
DELETE PMQSCH.MAINTENANCE_ADM_RECOMMENDATIONS;
DELETE PMQSCH.TOPN_PREDICTORS;
DELETE PMQSCH.KEY_LOOKUP;
DELETE PMQSCH.LANGUAGE;
DELETE PMQSCH.TENANT;
DELETE PMQSCH.PMQ_USER;
DELETE PMQSCH.PMQ_CHART_CONFIG;

```

- b. Enter the following SQL statements to alter tables:

```

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

```

3. To remove the sample data from Oracle Database, do the following steps:

- a. Enter the following SQL statements to remove the sample data:

```

DELETE FROM PMQSCH.PARAMETRIC_KPI;
DELETE FROM PMQSCH.PARAMETRIC_PROFILE;
DELETE PMQSCH.LIFETIME_KPI;
DELETE PMQSCH.LIFETIME_PROFILE;
DELETE PMQSCH.PRODUCT_PROFILE;
DELETE PMQSCH.PRODUCT_KPI;
DELETE PMQSCH.RESOURCE_PROFILE;
DELETE PMQSCH.RESOURCE_KPI;
DELETE PMQSCH.MATERIAL_PROFILE;
DELETE PMQSCH.PROCESS_KPI;
DELETE PMQSCH.PROCESS_PROFILE;
DELETE PMQSCH.PROFILE_PARAMETER;
DELETE FROM PMQSCH.EVENT_PROFILE;
DELETE PMQSCH.EVENT_OBSERVATION;
DELETE PMQSCH.EVENT;
DELETE PMQSCH.MASTER_RESOURCE_CONNECTION;
DELETE PMQSCH.MASTER_PROFILE_MAPPING;
DELETE PMQSCH.MASTER_RESOURCE_PRODBATCH;
DELETE PMQSCH.MASTER_PRODUCTION_BATCH;
DELETE PMQSCH.SERVICE;
DELETE PMQSCH.MASTER_PRODUCT_HIERARCHY;
DELETE PMQSCH.MASTER_PRODUCT;
DELETE PMQSCH.MASTER_RESOURCE_HIERARCHY;
DELETE PMQSCH.MASTER_RESOURCE;
DELETE PMQSCH.MASTER_PROFILE_VARIABLE;
DELETE PMQSCH.MASTER_MATERIAL;
DELETE PMQSCH.MASTER_MATERIAL_TYPE;
DELETE PMQSCH.MASTER_PROFILE_CALCULATION;
DELETE PMQSCH.MASTER_RESOURCE_TYPE;
DELETE PMQSCH.MASTER_MEASUREMENT_TYPE;
DELETE PMQSCH.MASTER_VALUE_TYPE;
DELETE PMQSCH.MASTER_SUPPLIER;
DELETE PMQSCH.MASTER_SOURCE_SYSTEM;
DELETE PMQSCH.MASTER_PROCESS_HIERARCHY;
DELETE PMQSCH.MASTER_PROCESS;
DELETE PMQSCH.MASTER_LOCATION;
DELETE PMQSCH.MASTER_GROUP_DIM;
DELETE PMQSCH.MASTER_EVENT_TYPE;
DELETE PMQSCH.MASTER_EVENT_CODE;
DELETE PMQSCH.MASTER_OBSERVATION_LOOKUP;
DELETE PMQSCH.MAINTENANCE_TRENDS;
DELETE PMQSCH.MAINTENANCE_DAILY;
DELETE PMQSCH.MAINT_ADM_RECOMMENDATIONS;
DELETE PMQSCH.TOPN_PREDICTORS;

```

```
DELETE PMQSCH.KEY_LOOKUP;
DELETE PMQSCH.LANGUAGE;
DELETE PMQSCH.TENANT;
DELETE PMQSCH.PMQ_USER;
DELETE PMQSCH.PMQ_CHART_CONFIG;
```

b. Enter the following SQL statements to alter tables:

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

4. Do one of the following steps to disconnect from the **IBMPMQ** database:

a. If the **IBMPMQ** database is in IBM DB2, type the following command:

```
db2 connect reset
```

b. If the **IBMPMQ** database is in Oracle Database, then disconnect from it using the appropriate command.

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/taskFiles` 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, on all five nodes that have IBM DB2 Server, edit `Express_withMDM&DB2_task.xml`.
    - For an express installation that uses default values for each component, without IBM Master Data Management and with IBM DB2 Server, edit `Express_withoutMDM&DB2_task.xml`.
    - For a single node express installation, edit `SingleNode_withMDM&DB2_task.xml`.
    - For a custom installation where you choose values for all of the components, on all five nodes that have IBM DB2 Server, edit `Custom_withMDM&DB2_task.xml`.
    - For a custom installation where you choose values for all of the components, without IBM Master Data Management and with IBM DB2 Server, edit `Custom_withoutMDM&DB2_task.xml`.
    - For a custom installation with IBM Master Data Management and Oracle Server, where you choose values for all of the components, edit `Custom_WithMDMNode_task.xml`.
    - For a custom installation without IBM Master Data Management and Oracle Server, where you choose values for all of the components, edit `Custom_withoutMDM&Oracle_task.xml`.
    - For a migration installation of only the Predictive Analytics node, edit `Migration_AnalyticsNode_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.
- 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 or 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=92`, it 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=92*, it 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. Supporting programs licensed with IBM Predictive Maintenance and Quality

The following supporting programs are licensed with Predictive Maintenance and Quality.

### Supporting programs

- IBM Cognos Business Intelligence Analytics Administrator
- IBM SPSS Analytical Decision Management
- IBM SPSS Analytical Decision Management Application
- IBM SPSS Collaboration and Deployment Services
- IBM SPSS Collaboration and Deployment Services Deployment Portal
- IBM SPSS Modeler Gold Server
- IBM SPSS Modeler Solution Publisher
- IBM SPSS Modeler Server Premium
- IBM SPSS Statistics Server Standard
- IBM SPSS Statistics - Essentials for Python
- IBM SPSS Collaboration and Deployment Services Adapters for Statistics
- IBM SPSS Data Access Pack
- IBM DB2 Enterprise Server Edition Version
- IBM WebSphere Application Server Network Deployment
- IBM Installation Manager and Packaging Utility for the Rational® Software Development Platform
- IBM InfoSphere Master Data Management Collaboration Server - Collaborative Edition for Non-Financial Services
- IBM SPSS Analytic Server
- IBM ILOG® CPLEX® Enterprise Server IBM Integration Bus Manufacturing Pack for Enterprise

### Supporting programs - Client installation

- IBM Cognos Business Intelligence Software Development Kit
- IBM Cognos Business Intelligence Samples
- IBM Cognos Cube Designer
- IBM Cognos Supplementary Languages Documentation
- IBM SPSS Collaboration and Deployment Services Deployment Manager
- IBM Cognos Framework Manager
- IBM Cognos Lifecycle Manager
- IBM Cognos for Microsoft Office
- IBM Cognos Dynamic Query Analyzer
- IBM SPSS Modeler Gold Keyless
- IBM SPSS Concurrent Licensing Tools
- IBM SPSS Statistics Standard
- IBM SPSS Statistics Client / Developer Documentation
- IBM WebSphere MQ

- IBM Integration Bus
- IBM ILOG CPLEX Optimization Studio

---

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

The following programs are not authorized with the 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 Analytic Administrator)

IBM Cognos Analysis Studio (of IBM Cognos Business Intelligence Analytic Administrator)

IBM Cognos Business Intelligence Transformer (of IBM Cognos Business Intelligence Analytic Administrator)

IBM Cognos Connection Installer for IBM Cognos Insight (of IBM Cognos Business Intelligence Analytic Administrator)

IBM Cognos Data Manager Connector (of IBM Cognos Business Intelligence Analytic Administrator)

IBM Cognos Insight (of IBM Cognos Business Intelligence Analytic Administrator)

IBM Cognos Metric Designer (of IBM Cognos Business Intelligence Analytic Administrator)

IBM Cognos Metric Studio (of IBM Cognos Business Intelligence Analytic Administrator)

IBM Cognos Metrics Manager (of IBM Cognos Business Intelligence Analytic Administrator)

IBM Cognos Query Studio (of IBM Cognos Business Intelligence Analytic Administrator)

IBM Cognos TM1 Package Connector (of IBM Cognos Business Intelligence Analytic Administrator)

IBM Connections (of IBM Cognos Business Intelligence Analytic Administrator)

IBM DB2 Workgroup Server Edition (of IBM Cognos Business Intelligence Analytic Administrator and IBM SPSS Analytic Server)

IBM Tivoli Directory Integrator Identity Edition (of IBM Cognos Business Intelligence Analytic Administrator)

IBM Business Intelligence Pattern (of IBM Cognos Business Intelligence Analytic Administrator)

IBM Business Intelligence Pattern with Blu Acceleration (of IBM Cognos Business Intelligence Analytic Administrator)

IBM Cognos Real-time Monitoring (of IBM Cognos Business Intelligence Analytic Administrator)

Embedded version of IBM WebSphere Application Server ("embedded WebSphere Application Server").( of IBM Tivoli System Automation for Multiplatforms ( of IBM DB2 Enterprise Server Edition) )

embedded WebSphere Application Server ( of IBM Tivoli Directory Server - Client Only (component) ( of IBM DB2 Enterprise Server Edition ) )

IBM Cloudscape (of IBM Tivoli System Automation for Multiplatforms (of IBM DB2 Enterprise Server Edition)

IBM Data Studio (of IBM DB2 Enterprise Server Edition)

IBM DB2 Enterprise Server Edition (of IBM Tivoli Directory Server - Client Only (component) (of IBM DB2 Enterprise Server Edition) )

pureScale Feature (of IBM DB2 Enterprise Server Edition)

IBM General Parallel File System (GPFS) for AIX ( of IBM DB2 Enterprise Server Edition Version)

IBM General Parallel File System (GPFS) for Linux Multiplatform (of IBM DB2 Enterprise Server Edition)

IBM Mobile Database (of IBM DB2 Enterprise Server Edition (of IBM DB2 Enterprise Server Edition Version) )

IBM Mobile Database Sync (of IBM DB2 Enterprise Server Edition)

IBM Tivoli Storage Flashcopy Manager (of IBM DB2 Enterprise Server Edition)

WebSphere Application Server (of IBM Tivoli Directory Server- Client Only (component) (of IBM DB2 Enterprise Server Edition) )

IBM InfoSphere Change Data Capture (of IBM DB2 Enterprise Server Edition) IBM DB2 Connect 10.5 (component) ( of IBM DB2 Enterprise Server Edition)

IBM Cognos Business Intelligence (of IBM InfoSphere Master Data Management Collaboration Server - Collaborative Edition for Non-Financial Services)

IBM Content Integrator (of IBM InfoSphere Master Data Management Collaboration Server - Collaborative Edition for Non-Financial Services)

IBM Process Server Standard for Non-production Environment (of IBM InfoSphere Master Data Management Collaboration Server - Collaborative Edition for Non-Financial Services)

IBM InfoSphere Data Explorer (of IBM InfoSphere Master Data Management Collaboration Server - Collaborative Edition for Non-Financial Services)

IBM InfoSphere BigInsights Standard Edition (of IBM InfoSphere Master Data Management Collaboration Server - Collaborative Edition for Non-Financial Services)

IBM Integration Bus Healthcare Pack (of IBM InfoSphere Master Data Management Collaboration Server - Collaborative Edition for Non-Financial Services)

IBM InfoSphere Blueprint Director (of IBM InfoSphere Master Data Management Collaboration Server - Collaborative Edition for Non-Financial Services)

IBM InfoSphere Information Server for Data Quality (of IBM InfoSphere Master Data Management Collaboration Server - Collaborative Edition for Non-Financial Services)

IBM Process Center Standard (of IBM InfoSphere Master Data Management Collaboration Server - Collaborative Edition for Non-Financial Services)

IBM Process Designer (of IBM InfoSphere Master Data Management Collaboration Server - Collaborative Edition for Non-Financial Services)

IBM Process Server Standard (of IBM InfoSphere Master Data Management Collaboration Server - Collaborative Edition for Non-Financial Services)

IBM Security Directory Server (of IBM InfoSphere Master Data Management Collaboration Server - Collaborative Edition for Non-Financial Services)

IBM WebSphere Application Server Base (of IBM InfoSphere Master Data Management Collaboration Server - Collaborative Edition for Non-Financial Services)

Workflow engine including Collaboration Areas(of IBM InfoSphere Master Data Management Collaboration Server - Collaborative Edition for Non-Financial Services)

Rational Application Developer for WebSphere Software (of IBM InfoSphere Master Data Management Collaboration Server - Collaborative Edition for Non-Financial Services)

Global Data Synchronization Component (of IBM InfoSphere Master Data Management Collaboration Server - Collaborative Edition for Non-Financial Services)

IBM WebSphere Portal Server (of IBM InfoSphere Master Data Management Collaboration Server - Collaborative Edition for Non-Financial Services)

J2SE Rule Execution Server (of IBM Integration Bus)

IBM Integration Bus Manufacturing Pack for Factory

IBM DB2 Workgroup Server Edition Version( of IBM Tivoli Directory Server - Client Only (component) ( of IBM DB2 Enterprise Server Edition Version))

IBM WebSphere Application Server Developer Tools for Eclipse (of IBM WebSphere Application Server Network Deployment)

IBM WebSphere eXtreme Scale (of IBM WebSphere Application Server Network Deployment)

IBM WebSphere Application Server (of IBM SPSS Analytic Server)



## 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 34. Administration tool and product portal reference for a multiple-server installation

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

Table 34. Administration tool and product portal reference for a multiple-server installation (continued)

| Administration tool or portal and description                     | URL or location                                                                                                                                                                                                                                                                                                                                                                                                               |
|-------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>IBM InfoSphere Master Data Management Collaboration Server</b> | <p><a href="http://mdm_node_name:7507">http://mdm_node_name:7507</a></p> <p>Where <i>mdm_node_name</i> is the name or IP address of Master Data Management (MDM) node computer.</p> <p>The default user name is <b>Admin</b>. This value is case sensitive.</p> <p>The default password is <b>trinitron</b>. This value is case sensitive.</p> <p>You must also enter a company name. The default company name is IBMPMQ.</p> |
| Predictive Maintenance and Quality dashboard application          | <p><a href="http://bi_node_name:port_number/PMQDashboard/pmqui">http://bi_node_name:port_number/PMQDashboard/pmqui</a></p> <p>Where <i>bi_node_name</i> is the name or IP address for the BI node computer.</p> <p>For more information about the Predictive Maintenance and Quality dashboard application, see “Starting the Predictive Maintenance and Quality dashboard application” on page 68.</p>                       |

Table 35. Administration tool and product portal reference for a single-server installation

| Administration tool or portal and description                                                                                                                                                                                                                                                                                          | URL or location                                                                                                                                                                                                                                                   |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>WebSphere Integrated Solutions Console</b></p> <p>The <b>WebSphere Integrated Solutions Console</b> is the administration tool for WebSphere.</p> <p>The <b>WebSphere Integrated Solutions Console</b> is running on each node computer where WebSphere is installed.</p> <p>Use the console to start and stop applications.</p> | <p><a href="http://server_node_name:9060/ibm/console">http://server_node_name:9060/ibm/console</a></p> <p>Where <i>server_node_name</i> is the name or IP address of a node computer where WebSphere is installed.</p> <p>Leave the <b>User ID</b> box blank.</p> |
| <p><b>IBM Cognos Configuration</b></p> <p>Use <b>IBM Cognos Configuration</b> to configure settings for IBM Cognos Business Intelligence.</p>                                                                                                                                                                                          | <p><a href="/opt/ibm/cognos/c10_64/bin64/cogconfig.sh">/opt/ibm/cognos/c10_64/bin64/cogconfig.sh</a></p> <p><b>IBM Cognos Configuration</b> is installed on the Business Intelligence (BI) node computer.</p>                                                     |



Table 35. Administration tool and product portal reference for a single-server installation (continued)

| Administration tool or portal and description                                                                                                                                                                                                                        | URL or location                                                                                                                                                                                                                                                                                                                                                                                                                      |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>IBM Cognos Connection</b></p> <p>Use <b>IBM Cognos Connection</b> to access reports.</p> <p><b>IBM Cognos Administration</b></p> <p>Use <b>IBM Cognos Administration</b> to configure IBM Cognos BI, such as add data source connections and set security.</p> | <p><a href="http://bi_node_name/ibmcognos/">http://bi_node_name/ibmcognos/</a></p> <p>Where <i>bi_node_name</i> is the name or IP address of BI node computer.</p>                                                                                                                                                                                                                                                                   |
| <p><b>IBM SPSS Collaboration and Deployment Services Deployment Manager</b></p> <p>Use <b>IBM SPSS Collaboration and Deployment Services Deployment Manager</b> to configure IBM SPSS server settings.</p>                                                           | <p><a href="http://analytics_node_name:9082/config">http://analytics_node_name:9082/config</a></p> <p>Where <i>analytics_node_name</i> is the name or IP address of Predictive Analytics node computer.</p> <p>The default user name is <b>admin</b>.</p> <p>The default password is <b>admin</b>.</p>                                                                                                                               |
| <p><b>IBM InfoSphere Master Data Management Collaboration Server</b></p>                                                                                                                                                                                             | <p><a href="http://mdm_node_name:7507">http://mdm_node_name:7507</a></p> <p>Where <i>mdm_node_name</i> is the name or IP address of Master Data Management (MDM) node computer.</p> <p>The default user name is <b>Admin</b>. This value is case sensitive.</p> <p>The default password is <b>trinitron</b>. This value is case sensitive.</p> <p>You must also enter a company name. The default company name is <b>IBMPMQ</b>.</p> |
| <p>Predictive Maintenance and Quality dashboard application</p>                                                                                                                                                                                                      | <p><a href="http://bi_node_name:port_number/PMQDashboard/pmqui">http://bi_node_name:port_number/PMQDashboard/pmqui</a></p> <p>Where <i>bi_node_name</i> is the name or IP address for the BI node computer.</p> <p>For more information about the Predictive Maintenance and Quality dashboard application, see “Starting the Predictive Maintenance and Quality dashboard application” on page 68.</p>                              |

## 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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