

# IBM Integration Bus 9 Administration Course

Installation - HowTo

Practical - Technical - Unique

## Student Manual

print-on-demand | no annual renewal fees

: Installation – How To

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## Introduction

The IBM Integration Bus, formerly known as the IBM WebSphere Message Broker Family, provides a variety of options for implementing a universal integration foundation based on an enterprise service bus (ESB)

In this module we discuss the installation of **IBM Integration Bus (IIB) 9.0** components for starting **IIB 9.0 Administration**. The various components are

- 1) WebSphere MQ
- 2) IBM Integration Bus Component
- 3) IBM Integration Bus Toolkit
- 4) IBM Integration Bus Explorer

These components can be installed separately on different operating systems and in various modes i.e. Graphical, Console and Silent modes. **Graphical** or GUI mode presents a series of screens i.e. a wizard that guides you through the installation process. It is suitable for developers who are used to GUI based applications. Note for Linux/Unix that the GUI mode requires an appropriate X Windows systems installed on the machine.

**Console** mode is suitable when you are installing the product from a remote machine over telnet or SSH, or when security policies of an environment do not allow for a GUI approach. It presents a character based interface (CUI) and is interactive in nature. **Silent** mode is a non-interactive and non-GUI based way to install.

In this course, we follow the simplest technique, where we install all the required IIB 9.0 components in one go, using silent mode.

The installation process, at a high level involves

- 1) Downloading the required software from IBM web site
- 2) Preparing the machine for installation
- 3) Extracting the downloaded archives and creating install images
- 4) Installation using **installAllSilent.sh** script

## Preparing a Virtual Machine

In this course, I have decided to use a Virtual Box VM, because it is free to download and use. I then prepared a CentOS 7 virtual machine with 4GB Ram and 100GB disk space. I used a bridged networking setting to ensure that the VM could be accessed from another client machine on the same network. By installing X2GoServer on the CentOS 7 VM using yum, I was then able to install the X2Go Client on my Windows 8 client machine. This allowed me to remotely access the VM for the purposes of installing and configuring the Linux VM from my Windows Desktop. In a commercial production environment it may not be possible to install or use a GUI, so we will cover GUI actions only to make life easier for training and learning purposes. It is important to note that any server-side configuration or administration would typically be done via an SSH session. I use PuTTY to access the server via the SSH protocol

## Deciding on the location of downloads

Depending on how well your Linux VM is built i.e. it has a GUI desktop, you may wish to download the required files onto a client i.e. your own workstation. Once downloaded you can SCP (using Wins SCP or equivalent via SSH) these files easily to the Linux Server.

IBM doesn't easily publish the download locations of files so that you can use a server-side command i.e. what traditional Linux admins would do. So be aware that you may have to try more than one methods to get the required files onto your actual server VM.

## Downloading the required software from IBM web site

### Different flavours of the IBM Integration Bus product

IBM Integration Bus is available in different flavours. Based on our requirement we need to procure the product.

At the time of writing the home URL is:

<http://www-03.ibm.com/software/products/en/ibm-integration-bus>

**IBM Integration Bus Advanced:** Is a full-featured ESB product for any size deployment. It enables the integration of data sources from a wide range of platforms throughout service-oriented architecture (SOA) and non-SOA environments.

**IBM Integration Bus Express:** Is designed to meet the needs of small and midsize businesses. This entry-level ESB for simple integration projects has restricted features and is limited to one process. It can grow with your business as your integration needs evolve.

**IBM Integration Bus Healthcare Pack:** Provides prebuilt patterns and connections enabling rapid clinical application and device integration for more connected healthcare systems.

**IBM Integration Bus Hypervisor Edition:** Optimizes Integration Bus for virtualized environments. This software provides rapid provisioning of Integration Bus to private cloud environments for Red Hat Enterprise Linux and IBM AIX.

**IBM Integration Bus Manufacturing Pack:** The IBM Integration Bus Manufacturing Pack helps to seamlessly integrate heterogeneous IT and operational manufacturing systems – making information flow more quickly and reliably.

**IBM Integration Bus Retail Pack:** Accelerates the development and deployment of integration between retail applications and systems, and enables transformation and enrichment of data.

**IBM Integration Bus Standard:** IBM Integration Bus Standard a flexible, scalable enterprise service bus for small to medium size projects.

**IBM Integration Bus for z/OS:** Is tightly integrated with the IBM z/OS platform. This ESB provides the same look, feel and operational characteristics as a z/OS subsystem.

### Demo/Trial Editions:

At the time of writing of this chapter, IBM is providing a Demo version of IBM Integration Bus **called IBM Integration Bus for Developers** which is a free product download.

IBM Integration Bus for Developers is a fully licensed product available for download at no charge. The

product is designed to help in the following ways:

- Grasp basic concepts quickly through guided product examples.
- Utilize the built-in test client to auto-generate test data or import your own to view overall and individual test results.
- Explore all of the functionality for free, and when you are ready to upgrade, migrate your existing installations quickly with no reinstall required.

## Download IBM Integration Bus 9.0 for Developers

Downloading a single file (option 1)

First let us download the core product. You need a stable broadband internet connection to download the product.

- Download the **IIB 9.0** installable from the following location

[https://www14.software.ibm.com/webapp/iwm/web/pick.do?source=swg-wmbfd&S\\_TACT=109KA7GW&S\\_CMP=web\\_opp\\_integrationbus](https://www14.software.ibm.com/webapp/iwm/web/pick.do?source=swg-wmbfd&S_TACT=109KA7GW&S_CMP=web_opp_integrationbus)

- Go to downloads section and click on **Download**



- Select the download type. In our example we selected **Linux for System x86-64** as a single file. You can choose to download a package of multiple files if you wish.

### Downloads

To properly configure your download, please review the information below. Select the appropriate offering. When you are done, press the "Continue" button at the bottom.

Offering	Platform
<input checked="" type="radio"/> <b>IBM Integration Bus for Developers (Single package download)</b> Version V9001  Languages: All Lang per ESD/PA Media	Linux for System x86-64 Windows (64bit)

- Click **continue**.
- Fill out the questionnaire form from IBM if one is presented.

- Read and accept the license agreement

**Note:** IBM's website is constantly changing, so if it prompts for a required IBM ID, provide your IBM ID. If you do not have an IBM ID, register yourself and obtain an IBM ID.

At this point you can either choose to download the file using **Download Director** or **HTTP**. It is recommended to use Download Director for downloading the file. Using the download director allows for a download to be resumed if a connection to the internet is lost during the download. It saves you having to download the entire download again. It all depends on how good your internet connection is.

**Note:** If you have never installed a JRE on your desktop, the download director will not work and you may be prompted to install a Java Runtime Environment. If for some reason you cannot get the JRE to work on your client, then resort to using the HTTP option.

- Select **IBM Integration Bus for Linux on x86-64 9.0.0-IIB-LINUX64-DEVELOPER.tar.gz (3.1GB)** and then click the **Download now** button

## IBM Integration Bus for Developers

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### Downloads

IBM Integration Bus for Developers for Linux for System x86-64, Windows (64bit)  
All Lang per ESD/PA Media  
2013-07-25

To download using Download Director, select the files you want below and click on 'Download now'. [Learn more](#).

You can also download the files [using http](#).

Download using Download Director

Download using http

---

Select all files

**IBM Integration Bus for Linux on x86-64  
9.0.0-IIB-LINUX64-DEVELOPER.tar.gz (3.1GB)**

Downloading multiple files (Scenario 2).

Alternatively if you find IBM's site crashing or downloads not completing when using the single download scenario, as I often experience myself, you can choose the multiple download option. However understand that this download option is HTTP and can take longer and your registration session can time out.

## IBM Integration Bus for Developers

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### Downloads

IBM Integration Bus for Developers for Linux for System x86-64, Windows (64bit)  
All Lang per ESD/PA Media  
2013-07-25

To download using http, click on 'Download now'.

---

IBM Integration Bus (Runtime) for Linux on x86-64 9.0.0-IIB-LINUX64-DEVELOPER-RUNTIME.tar.gz (1.14GB)	<a href="#">Download now</a>
IBM Integration Bus (Toolkit) for Linux on x86-64 9.0.0-IIB-LINUX64-DEVELOPER-TOOLKIT.tar.gz (1.95GB)	<a href="#">Download now</a>
IBM Integration Bus (Runtime) for Windows 64 Bit 9.0.0-IIB-WINX64-DEVELOPER-RUNTIME.zip (1.24GB)	<a href="#">Download now</a>
IBM Integration Bus (Toolkit) for Windows 64 Bit 9.0.0-IIB-WINX64-DEVELOPER-TOOLKIT.zip (1.96GB)	<a href="#">Download now</a>
Readme Developer_Edition_V9.htm (4.5KB)	<a href="#">Download now</a>

When using the multiple download option, you can download the following components individually.

Linux 64 Bit:

**IBM Integration Bus (Runtime) for Linux on x86-64**  
9.0.0-IIB-LINUX64-DEVELOPER-RUNTIME.tar.gz (1.14GB)

**IBM Integration Bus (Toolkit) for Linux on x86-64**  
9.0.0-IIB-LINUX64-DEVELOPER-TOOLKIT.tar.gz (1.95GB)

Windows 64 Bit

**IBM Integration Bus (Runtime) for Windows 64 Bit**  
9.0.0-IIB-WINX64-DEVELOPER-RUNTIME.zip (1.24GB)

**IBM Integration Bus (Toolkit) for Windows 64 Bit**  
9.0.0-IIB-WINX64-DEVELOPER-TOOLKIT.zip (1.96GB)

**Note:** In this course we are using Linux, however you can see that there are also windows downloads.

## Installing IIB 9.0 for Developers (Free version)

Once you have completed downloading the installation files, Copy the installation files to an appropriate location on your Linux server. In the context of this training course, I have installed the installation media on the file system in the following location:

```
/var/apps
```

**Note:** I used WinSCP a free Windows based SCP tool that allows me to easily transfer files to the Linux Server (Linux VM sunning in Virtual Box). You could employ any other SCP (Secure Copy Protocol) tools which you are familiar with, I just so happen to use WinSCP when I am using a Windows desktop.

One such example is Cygwin which is a large collection of GNU and Open Source tools which provide functionality similar to a Linux distribution on Window and then use the scp Linux shell command. Cygwin can be downloaded from the following site:

```
https://www.cygwin.com/
```

Or you may choose to download and use File-Zilla which is an Open-source (GNU GPL) FTP client for Windows, Mac OS X and GNU/Linux

```
https://filezilla-project.org/
```

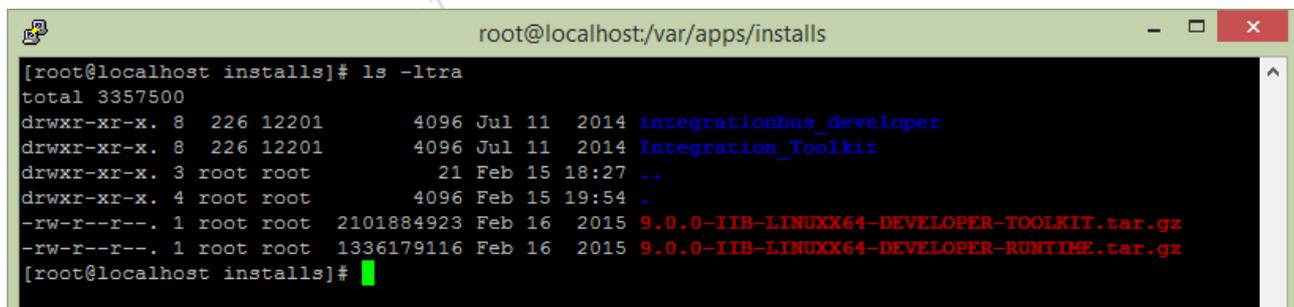
■ Use the following command to expand the files:

```
tar -zxvf 9.0.0-IIB-LINUX64-DEVELOPER-RUNTIME.tar.gz
tar -zxvf 9.0.0-IIB-LINUX64-DEVELOPER-TOOLKIT.tar.gz
```

■ Or

```
gunzip ./9.0.0-IIB-LINUX64-DEVELOPER-RUNTIME.tar.gz
tar -xvf
```

We can see below a directory listing of the decompressed installed files on my Linux Server.



## Install Using GUI

We have two choices to install IIB. We can use a GUI-based wizard, or we can install silently. In this section will look at installing the product components using the GUI. Then later we will remove this installation, then install using a silent non-GUI, automated approach

To install using the GUI, we must have a Linux XWindows Session available i.e. a valid Linux GUI desktop. In my examples, I am using X2Go client to remotely access a MATE XWindows session. The server is running a standard default installation of X2GoServer. I personally find that at the time of writing of this

chapter, the MATE desktop seems best for CentOS 7 remote sessions (as Gnome is not working for X2Go clients at this time) but it is up to you to choose. It is after a user-preference.

- Change to the installation directory and run the following command:

```
./setuplinuxx64
```

**Note:** I have decided to use the root user as this is a local desktop VM, and not a production server. So I am not interested in Linux security settings, as these just get in the way of learning IIB. If you are installing on a commercial/production environment, I would consult the local administrators as to the correct policy for installing software i.e. sudo groups etc.

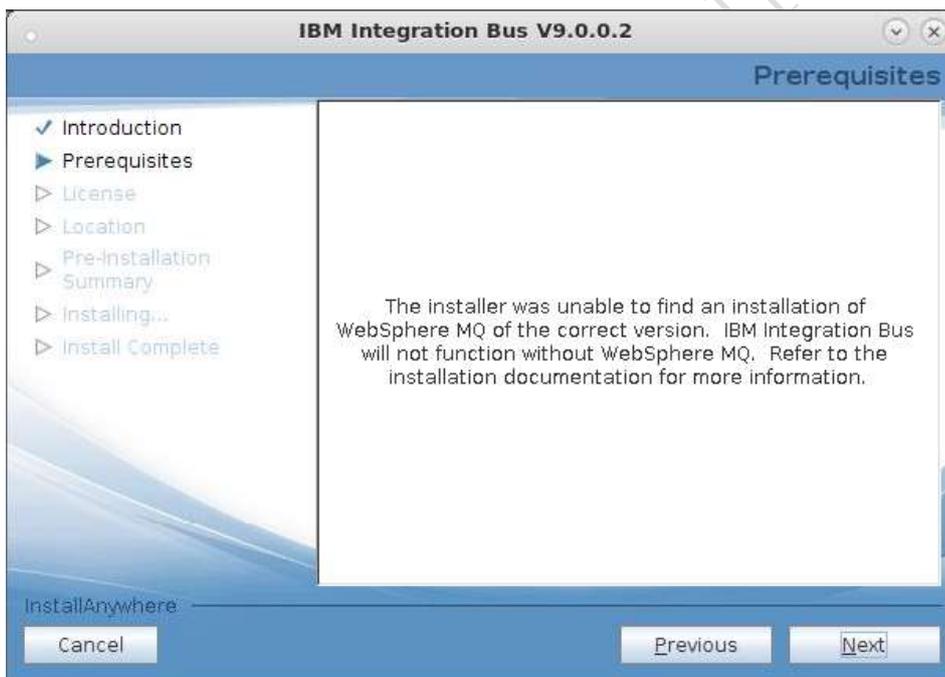
The JRE, will load and the IBM Integration Bus installer will launch as seen below.



- Click **OK** to continue



■ Click **Next** to continue the installation



Next, we will be presented with a warning that we have not yet installed WMQ. IIB requires WebSphere MQ as its underlying message transport. We now have to install WMQ. Looking into the expanded installation files we can see that there is a folder that contains the required WMQ installation files. What we will do now is exit the installation and install WMQ, then re-run the GUI installation.

**Note:** Since in this document, we are not really concerned with describing all installation methods to the nth-degree, we will not come back and complete the GUI installation, once WMQ is installed. By following the instruction for a complete total silent install of IBM 9.0 for developers, you will be able to deduce enough information to help you with a GUI based install.

If you need further help, then you can consult the chapter called IIB9Admin\_Chapter1\_FullVersion\_Installation\_howto which covers the correct installation methods for both GUI and command line as allowed by the full licensed version of the IIB 9.0 product. It is important to note that WMQ cannot be installed using a GUI method as such. You can also consult my WMQ courses available on line from our site: <http://www.themiddlewareshop.com/products>

## Installing WMQ

Included in the installation pack is WebSphere MQ 7.5 and IBM has provided an install all. Now a point to note is that when installing on a production system, you would likely not want to install IB Explorer (formerly WMQ Explorer) and the IB Toolkit (Formerly WMB Toolkit), which are both GUI that allows you to manage IIB and Develop IIB applications. However since we are dealing with a development version of the product, we will most likely use a Linux desktop. Now in my writing I often refer to a Linux Server that is just my enterprise experience thinking as if I was doing an administration role. Please understand that this guide is to allow you to install a demo version, and the installation is not exactly the same process you would use for the full IIB product. In an enterprise i.e. commercial sense, we would most likely install WMQ and IIB with no GUI's of any type. We would instead administer from the command line on a server via SSH or use a remote desktop which has the GUI's installed.

**Note:** It is possible to install WMQ separately using an automated response file i.e. a silent installation, which is covered in the Full Version chapter which covers the variance of process as required if you have the fully licensed products. See the chapter called **IIB9Admin\_Chapter1\_FullVersion\_Installation\_howto**.

There is no WMQ GUI option in the development version of IIB, so we have to resort to a silent installation. Which just so happens to be all prepared ready by IBM.

## Installing IIB 9.0 silently

- To begin the installation silently, all we have to do is run the following script called **installAllSilent.sh** which is located in the sample-scripts folder of the integrationbus\_developer installation set (please use root for local learning, it is much easier, but you can use any account that has the correct elevated privileges).
- **Note:** Before we run the script, we need to edit the response.properties file to ensure that the License is set to **TRUE**

```
#####  
#  
#  
# IBM Integration Bus sample response file  
#  
# This file contains sample values for installing IBM Integration Bus.  
#  
#####  
#  
# Has the license been accepted?  
#-----  
LICENSE_ACCEPTED=TRUE  
#  
# Run the installer in silent mode  
#-----  
INSTALLER_UI=silent
```

```
# Installation location
#-----
USER_INSTALL_DIR=/opt/ibm/mqsi/9.0.0.2

# License location
#-----
External_License_Path=
```

- Locate the sample-scripts directory

```
[root@localhost integrationbus_developer]# cd sample-scripts/
[root@localhost sample-scripts]# ls -ltra
total 16
-rw-r--r--. 1 226 12201 616 Jul 11 2014 response.properties
-rwxr-xr-x. 1 226 12201 3515 Jul 11 2014 installAllSilent.sh
-rw-r--r--. 1 226 12201 504 Jul 11 2014 ibx-response.properties
```

- When we run ./installAllSilent.sh, we see the following

```
[root@localhost sample-scripts]# ./installAllSilent.sh

You must accept the product licenses when running this script using the -
ACCEPT_ALL_LICENSES option

A script to install IBM Integration Bus and pre-req components
options:
-ACCEPT_ALL_LICENSES
-WMQ_INSTALL_IMAGE <Directory of WMQ install image>
-IB_INSTALL_IMAGE <Directory of IBM Integration Bus install image>
-IX_INSTALL_IMAGE <Directory of IBM Integration Explorer install image>
-ITK_INSTALL_IMAGE <Directory of IBM Integration Toolkit install image>
```

Unfortunately, this means the entire set will be installed i.e. IB, IB Explorer, WMQ, IB Toolkit and we can presume default directories.

```
./installAllSilent.sh -ACCEPT_ALL_LICENSES -WMQ_INSTALL_IMAGE
/var/apps/installs/integrationbus_developer/webSphere_MQ -IB_INSTALL_IMAGE
/var/apps/installs/integrationbus_developer -IX_INSTALL_IMAGE
/var/apps/installs/integrationbus_developer/IBExplorer -ITK_INSTALL_IMAGE
/var/apps/installs/Integration_Toolkit
```

The installer will start with installing WMQ silently, then IBM Integration Bus, then IBM Integration Explorer, then it will install IBM Integration Toolkit

**Result:**

```
Installing WMQ

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5724-H72

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US Government Users Restricted Rights - Use, duplication or disclosure
```

restricted by GSA ADP Schedule Contract with IBM Corp.

License has already been accepted: Proceed with install.

Preparing... ##### [100%]

package MQSeriesRuntime-7.5.0-3.x86\_64 is already installed  
package MQSeriesJRE-7.5.0-3.x86\_64 is already installed  
package MQSeriesJava-7.5.0-3.x86\_64 is already installed  
package MQSeriesFTBase-7.5.0-3.x86\_64 is already installed  
package MQSeriesServer-7.5.0-3.x86\_64 is already installed  
package MQSeriesFTAgent-7.5.0-3.x86\_64 is already installed  
package MQSeriesFTService-7.5.0-3.x86\_64 is already installed  
package MQSeriesAMS-7.5.0-3.x86\_64 is already installed  
package MQSeriesFTLogger-7.5.0-3.x86\_64 is already installed  
package MQSeriesXRService-7.5.0-3.x86\_64 is already installed  
package MQSeriesFTTools-7.5.0-3.x86\_64 is already installed  
package MQSeriesExplorer-7.5.0-3.x86\_64 is already installed  
package MQSeriesGSKit-7.5.0-3.x86\_64 is already installed  
package MQSeriesClient-7.5.0-3.x86\_64 is already installed  
package MQSeriesMan-7.5.0-3.x86\_64 is already installed  
package MQSeriesMsg\_cs-7.5.0-3.x86\_64 is already installed  
package MQSeriesMsg\_de-7.5.0-3.x86\_64 is already installed  
package MQSeriesMsg\_es-7.5.0-3.x86\_64 is already installed  
package MQSeriesMsg\_fr-7.5.0-3.x86\_64 is already installed  
package MQSeriesMsg\_hu-7.5.0-3.x86\_64 is already installed  
package MQSeriesMsg\_it-7.5.0-3.x86\_64 is already installed  
package MQSeriesMsg\_ja-7.5.0-3.x86\_64 is already installed  
package MQSeriesMsg\_ko-7.5.0-3.x86\_64 is already installed  
package MQSeriesMsg\_pl-7.5.0-3.x86\_64 is already installed  
package MQSeriesMsg\_pt-7.5.0-3.x86\_64 is already installed  
package MQSeriesMsg\_ru-7.5.0-3.x86\_64 is already installed  
package MQSeriesMsg\_Zh\_CN-7.5.0-3.x86\_64 is already installed  
package MQSeriesMsg\_Zh\_TW-7.5.0-3.x86\_64 is already installed  
package MQSeriesSamples-7.5.0-3.x86\_64 is already installed  
package MQSeriesSDK-7.5.0-3.x86\_64 is already installed  
package MQSeriesXRClient-7.5.0-3.x86\_64 is already installed

Refreshing settings for Primary Installation 'Installation1' (/opt/mqm).  
118 of 118 tasks have been completed successfully.

'Installation1' (/opt/mqm) set as the Primary Installation.

/var/apps/installs/integrationbus\_developer/webSphere\_MQ

Installing IBM Integration Bus

/var/apps/installs/integrationbus\_developer/webSphere\_MQ

Installing IBM Integration Explorer

/var/apps/installs/integrationbus\_developer/webSphere\_MQ

Installing IBM Integration Toolkit

Installed com.ibm.cic.agent\_1.6.2000.20130301\_2248 to the

/opt/IBM/InstallationManager/eclipse directory.

Installed com.ibm.integration.toolkit.dev.v90\_9.0.0.20140515-1210 to the

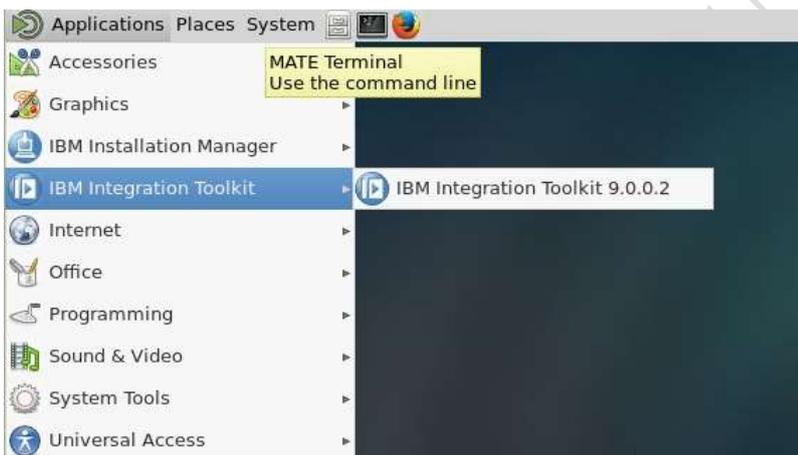
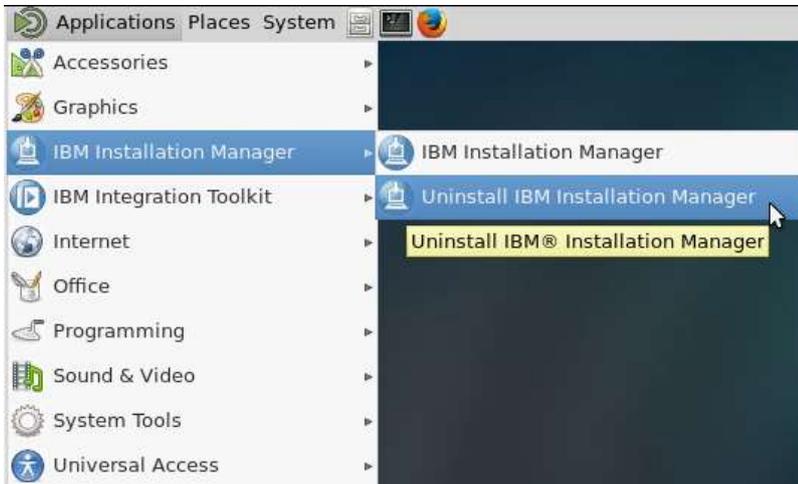
/opt/IBM/IntegrationToolkit90 directory.

You will see that when WMQ installed it is given an instance: 'Installation1' (/opt/mqm) set as the Primary Installation. This is important to note as you can in fact have more than one installation of WMQ now on the same machine.

## Verifying Installation

We have now completed the installation. Since this is an installation which presumes you are using IIB 9.0 on a Linux desktop for learning, I am going to log into a remote session using X2Go client and test the GUI's.

I am using a MATE XSession, and we can now see that we have the following:



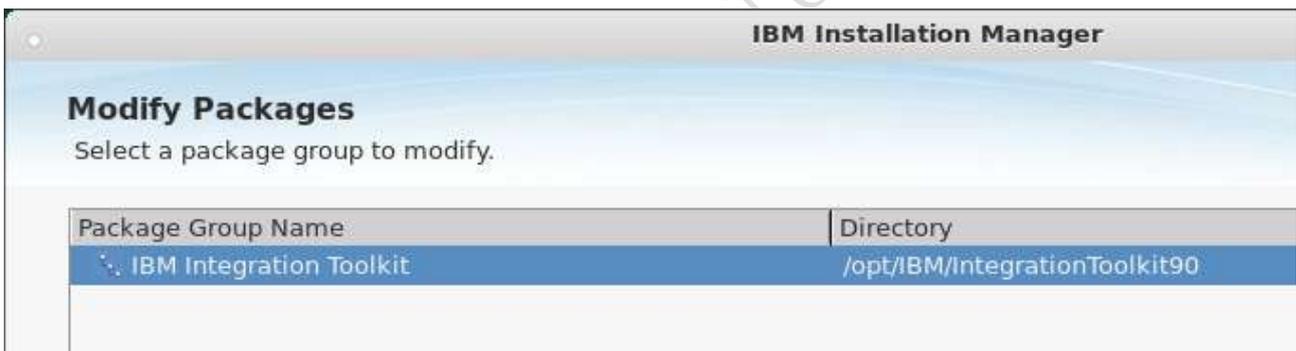
IBM Installation Manager has been installed, this is the IBM interface to manage GUI installs. IBM Integration Toolkit can also be seen in the menu.

Launching the IBM Installation Manager (IM), we see the following:

License



If we click on modify, we can see what has been installed and managed by IM.



## Running IB Explorer

After installing IBM Integration Explorer you must complete the following step:

To initialize the new installation of IBM Integration Explorer, run the following command from a command line in which the mqspfile command has not run:

**Note:** You must be in a terminal within an XSession or have a display set i.e. to a local XServer like Xming.

- Initialise IB Explorer

```
/usr/bin/strmqctg-1
```

To run this command, you must be the administrator or root user.

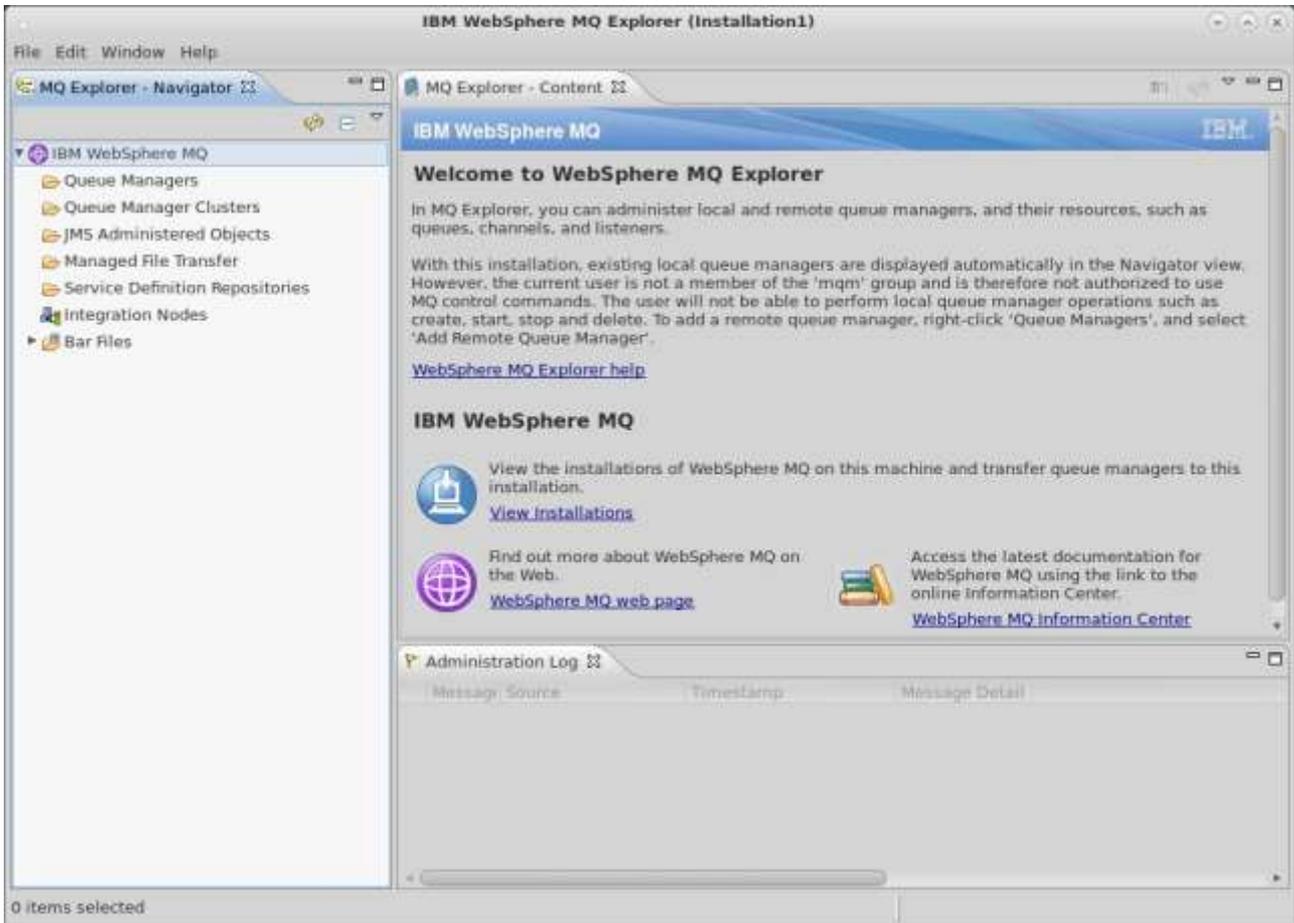
Once the command is run, you can now run the following command to start IB Explorer

## IBM Integration Bus 9: Installation – How To

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- Start IB Explorer

```
/usr/bin/strmqctg
```



Once you have verified that IB Explorer is working, we just need to verify that WMQ is installed and working.

## Verifying WMQ

The majority of these commands are run as the mqm (or equivalent) user. By default these commands are in /opt/mqm/bin

It is recommended that you add this path to the mqm users PATH. Now since we are using root still at this time, we will find that there is not path set. You can set the path for the root profile or you can start using the mqm user. I would recommend using the mqm user now that we have WMQ installed.

- Switch to the mqm user

```
su - mqm
```

- Add the /opt/mqm/bin directory to the mqm user's environment PATH

```
[mqm@localhost ~]$ vi .bash_profile
# .bash_profile

# Get the aliases and functions
if [ -f ~/.bashrc ]; then
    . ~/.bashrc
fi

# User specific environment and startup programs

PATH=$PATH:$HOME/.local/bin:$HOME/bin
PATH=$PATH:/opt/mqm/bin

export PATH
```

- Run **dspmqr** command to confirm the WMQ installed version

```
[mqm@localhost ~]$ dspmqr
Name:          WebSphere MQ
Version:       7.5.0.3
Level:         p750-003-140123
BuildType:    IKAP - (Production)
Platform:     WebSphere MQ for Linux (x86-64 platform)
Mode:         64-bit
O/S:          Linux 3.10.0-123.13.2.el7.x86_64
InstName:     Installation1
InstDesc:
Primary:      Yes
InstPath:     /opt/mqm
DataPath:     /var/mqm
MaxCmdLevel: 750
LicenseType:  Production
```

We will then create a Queue Manager and then delete it, just to test that the WMQ software is working correctly

- Create a Queue Called QMVerify1

```
[mqm@localhost ~]$ crtmqm QMVerify1
WebSphere MQ queue manager created.
Directory '/var/mqm/qmgrs/QMVerify1' created.
The queue manager is associated with installation 'Installation1'.
Creating or replacing default objects for queue manager 'QMVerify1'.
Default objects statistics : 74 created. 0 replaced. 0 failed.
Completing setup.
Setup completed.
```

- Display the current Queue Managers (QM) to see if **QMVerify1** exists?

```
[mqm@localhost ~]$ dspmq
QMNAME(QMVerify1)
immediately) STATUS (Ended)
```

- Let's now start the QM to verify that it will run?

```
[mqm@localhost ~]$ strmqm QMVerify1
WebSphere MQ queue manager 'QMVerify1' starting.
The queue manager is associated with installation 'Installation1'.
5 log records accessed on queue manager 'QMVerify1' during the log replay
phase.
Log replay for queue manager 'QMVerify1' complete.
Transaction manager state recovered for queue manager 'QMVerify1'.
WebSphere MQ queue manager 'QMVerify1' started using V7.5.0.3.
```

Now that we have verified that WMQ is working we can stop and remove the QM.

- Stop the running QM

```
[mqm@localhost ~]$ endmqm QMVerify1
Quiesce request accepted. The queue manager will stop when all outstanding
work
is complete.
```

- Verify the status

```
[mqm@localhost ~]$ dspmq
QMNAME(QMVerify1)
normally) STATUS (Ended)
```

- Remove the QM

```
[mqm@localhost ~]$ dltmqm QMVerify1
WebSphere MQ queue manager 'QMVerify1' deleted.
```

## Verifying IB9

To verify that the IB9 administration command work, we will create a broker, run it and then delete it

Setting up the environment.

To make the IB command available, we will use a pre-defined script that we will add the path to the IB command scripts into the **.bash\_profile** file, so that when we log in as mqm the path will automatically be set.

- Edit the bash profile

```
[mqm@localhost ~]$ vi .bash_profile
```

```
# .bash_profile

# Get the aliases and functions
if [ -f ~/.bashrc ]; then
    . ~/.bashrc
fi

# User specific environment and startup programs

PATH=$PATH:$HOME/.local/bin:$HOME/bin
PATH=$PATH:/opt/mqm/bin
PATH=$PATH:/opt/ibm/mqsi/9.0.0.2/bin

export PATH
```

Once you have changed the .bash\_profile file, source it to ensure the path is set

```
source ~/.bash_profile
```

Using the echo command verify the path is set, or just re-login as mqm to execute the bash\_profile

■ Confirm PATH

```
[mqm@localhost ~]$ echo $PATH
/usr/lib64/qt-
3.3/bin:/usr/local/bin:/bin:/usr/bin:/usr/local/sbin:/usr/sbin:/var/mqm/.local
/bin:/var/mqm/bin:/opt/mqm/bin:/opt/ibm/mqsi/9.0.0.2/bin
```

To set up an IB environment we can run the **mqsiprofile** command

■ Setting an IB environment profile

```
[mqm@localhost ~]$ source /opt/ibm/mqsi/9.0.0.2/bin/mqsiprofile

MQSI 9.0.0.2
/opt/ibm/mqsi/9.0.0.2
```

■ Create a Broker Node

```
mqsicreatebroker Brk01Verify -q QMVerify02
WebSphere MQ queue manager created.
Directory '/var/mqm/qmgrs/QMVerify02' created.
The queue manager is associated with installation 'Installation1'.
Creating or replacing default objects for queue manager 'QMVerify02'.
Default objects statistics : 74 created. 0 replaced. 0 failed.
Completing setup.
Setup completed.
WebSphere MQ queue manager 'QMVerify02' starting.
The queue manager is associated with installation 'Installation1'.
5 log records accessed on queue manager 'QMVerify02' during the log replay
phase.
Log replay for queue manager 'QMVerify02' complete.
```

```
Transaction manager state recovered for queue manager 'QMVerify02'.  
WebSphere MQ queue manager 'QMVerify02' started using v7.5.0.3.  
BIP8081 An exception was caught while processing the response message for the  
command, 'Unable to format an ImbException message for output, ImbException  
message number is BIP8000'.
```

In the example above, since this is a new installation we have an error. The error code us BIP8081:

Message **BIP8081** is issued when creating a broker

Scenario: Message BIP8081E is displayed when you are creating a broker, the inserted message does not format correctly, and the broker is not created.

**Explanation:** This problem occurs because you are not a member of the correct group.

Solution: Read the explanation of message BIP8081, and ask your WebSphere® Message Broker administrator to give your user ID access to the mqbrkrs group.

We now need to go switch back to root and add the appropriate group and add mqm to that group

```
[root@localhost ~]# groupadd mqbrkrs  
groupadd: group 'mqbrkrs' already exists
```

**Note:** Above, I show you the command, but we already have it as the installation created the group for us.

- Add the mqm user to mqbrkrs group

```
[root@localhost ~]# usermod -G mqbrkrs mqm  
[root@localhost ~]# groups mqm
```

- Switch back to mqm user

Verify state of Broker Node

```
[mqm@localhost ~]$ mqsi11st  
BIP1285I: Broker 'Brk01Verify' on queue manager 'QMVerify02' is stopped.  
BIP8071I: Successful command completion.
```

- Start Broker Node

```
mqsis1start Brk01Verify  
BIP8096I: Successful command initiation, check the system log to ensure that  
the component started without problem and that it continues to run without  
problem.
```

- Verify Broker State

```
[mqm@localhost ~]$ mqsi11st
```

```
BIP1284I: Broker 'Brk01Verify' on queue manager 'QMVerify02' is running.  
BIP8071I: Successful command completion.
```

#### ■ Stop Broker

```
[mqm@localhost ~]$ mqsisstop Brk01Verify  
BIP8071I: Successful command completion.
```

#### ■ Remove Broker

If you remove a broker by just using the command `mqsideletebroker` it will only remove the broker, not the queue manager associated. To remove the broker, the QM and trace files use the following command

```
[mqm@localhost ~]$ mqsideletebroker Brk01Verify -q -w  
Waiting for queue manager 'QMVerify02' to end.  
WebSphere MQ queue manager 'QMVerify02' ended.  
WebSphere MQ queue manager 'QMVerify02' deleted.  
BIP8071I: Successful command completion.
```

#### ■ Re-verify Broker Status

```
[mqm@localhost ~]$ mqsislist  
\BIP1281I: No brokers have been defined on this machine.  
BIP8071I: Successful command completion.
```

#### ■ Verify that the QM was also deleted

```
[mqm@localhost ~]$ dspmq  
[mqm@localhost ~]$
```

If there is no result then we have verified that the QM has been removed as well

Congratulations, you have now completed the module.

## Summary

In this chapter, we have learned how to install IIB9.0 on a Linux CentOS 7 server. The product we used as the free demo known as IBM Integration Bus for Developers.

We covered how to solve installation issues with Integration Bus, Integration Toolkit and Integration Explorer and we also learned how to verify the components to ensure they were all working as intended.

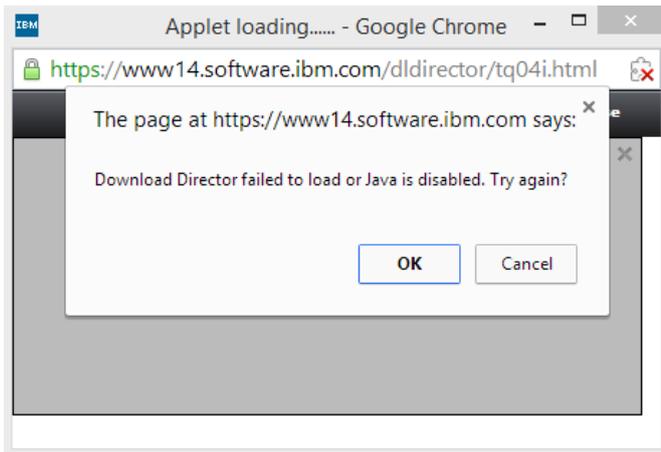
This module is a sample chapter which is included in the IIB 9.0 course which will be released Q1 2015. To learn more about the courses available from The Middleware Shop, please go to <http://www.themiddlewareshop.com/products> to see a full list of the current courses available.

## APPENDIX A: Troubleshooting

This section discusses some of the common issues that occur during installation of Message Broker Components.

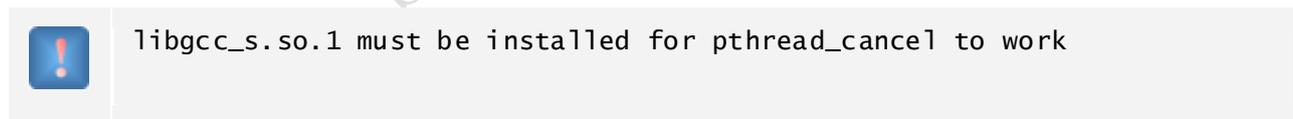
### Download Director

Download Director does not work in Chrome.



If you find that after installing a JRE that the IBM Download Director still does not work, then click on the Red X in the right-hand-top corner of the Chrome window. This will allow you to tell Chrome to allow this IBM plugin to be installed.

### libgcc\_s.so.1 Error



#### Solution:

- Install libgcc.i686 as follows

```
# yum install libgcc_s.so.1
```

#### Result:

```
[root@localhost sample-scripts]# yum install libgcc_s.so.1
Loaded plugins: fastestmirror, langpacks
Loading mirror speeds from cached hostfile
* base: mirror.ox.ac.uk
* epel: mirror.bytemark.co.uk
* extras: mirror.bytemark.co.uk
* updates: mirror.ox.ac.uk
Resolving Dependencies
```

```
--> Running transaction check
---> Package libgcc.i686 0:4.8.2-16.2.e17_0 will be installed
--> Finished Dependency Resolution

Dependencies Resolved

=====
Package Arch Version Repository
Size
=====
Installing:
libgcc i686 4.8.2-16.2.e17_0 updates
94 k

Transaction Summary
=====
Install 1 Package

Total download size: 94 k
Installed size: 190 k
Is this ok [y/d/N]: y
Downloading packages:
libgcc-4.8.2-16.2.e17_0.i686.rpm | 94 kB
00:00:00
Running transaction check
Running transaction test
Transaction test succeeded
Running transaction
Installing : libgcc-4.8.2-16.2.e17_0.i686
1/1
Verifying : libgcc-4.8.2-16.2.e17_0.i686
1/1

Installed:
libgcc.i686 0:4.8.2-16.2.e17_0

Complete!
```

## ld-linux.so.2 Error

During silent installation you get the following error

```
126
/var/apps/installs/integrationbus_developer/webSphere_MQ
Installing IBM Integration Explorer
./install.bin: /tmp/install.dir.8848/Linux/resource/jre/jre/bin/java:
/lib/ld-linux.so.2: bad ELF interpreter: No such file or directory
./install.bin: line 3319:
/tmp/install.dir.8848/Linux/resource/jre/jre/bin/java: success
/var/apps/installs/integrationbus_developer/webSphere_MQ
Installing IBM Integration Toolkit
./installToolkit-silent.sh: ./IM_Linux/installc: /lib/ld-linux.so.2:
```

```
bad ELF interpreter: No such file or directory
/var/apps/installs/integrationbus_developer/WebSphere_MQ
```

**Solution:**

- Install libgcc.i686 as follows

```
# yum install ld-linux.so.2
```

**Result:**

```
[root@localhost sample-scripts]# yum install ld-linux.so.2
Loaded plugins: fastestmirror, langpacks
Loading mirror speeds from cached hostfile
 * base: mirror.ox.ac.uk
 * epel: mirror.bytemark.co.uk
 * extras: mirror.ukhost4u.com
 * updates: mirror.ox.ac.uk
Resolving Dependencies
--> Running transaction check
----> Package glibc.i686 0:2.17-55.e17_0.5 will be installed
--> Processing Dependency: glibc-common = 2.17-55.e17_0.5 for package: glibc-2.17-55.e17_0.5.i686
--> Processing Dependency: libfreebl3.so(NSSRAWHASH_3.12.3) for package: glibc-2.17-55.e17_0.5.i686
--> Processing Dependency: libfreebl3.so for package: glibc-2.17-55.e17_0.5.i686
--> Running transaction check
----> Package glibc-common.x86_64 0:2.17-55.e17_0.3 will be updated
--> Processing Dependency: glibc-common = 2.17-55.e17_0.3 for package: glibc-2.17-55.e17_0.3.x86_64
----> Package glibc-common.x86_64 0:2.17-55.e17_0.5 will be an update
----> Package nss-softokn-freebl.i686 0:3.16.2.3-1.e17_0 will be installed
--> Running transaction check
----> Package glibc.x86_64 0:2.17-55.e17_0.3 will be updated
----> Package glibc.x86_64 0:2.17-55.e17_0.5 will be an update
--> Finished Dependency Resolution

Dependencies Resolved

=====
=====
Package Arch Version Repository
Size
=====
=====
Installing:
glibc i686 2.17-55.e17_0.5 updates
4.2 M
Installing for dependencies:
```

```
nss-softokn-freebl      1686      3.16.2.3-1.e17_0      updates
175 k
Updating for dependencies:
  glibc                  x86_64      2.17-55.e17_0.5      updates
3.6 M
  glibc-common           x86_64      2.17-55.e17_0.5      updates
11 M

Transaction Summary
=====
=====
Install 1 Package (+1 Dependent package)
Upgrade ( 2 Dependent packages)

Total download size: 19 M
```

## IBM Integration Toolkit Will not load Error

What we can do is look for message in /var/log/messages

```
cat messages
```

We see a line something like the one highlighted below

```
Feb 17 03:03:20 localhost /etc/gdm/Xsession: 00:00.70 ERROR [main]
org.eclipse.equinox.log.internal.ExtendedLogReaderServiceFactory safeLogged
Feb 17 03:03:20 localhost /etc/gdm/Xsession: Could not load SWT library.
Reasons:
Feb 17 03:03:20 localhost /etc/gdm/Xsession:
/home/steve/.eclipse/870893307/configuration/org.eclipse.osgi/bundles/268/1/
cp/libswt-pi-gtk-4234.so (libgtk-x11-2.0.so.0: cannot open shared object file:
No such file or directory)
Feb 17 03:03:20 localhost /etc/gdm/Xsession: swt-pi-gtk (Not found in
java.library.path)
Feb 17 03:03:20 localhost /etc/gdm/Xsession:
/home/steve/.swt/lib/linux/x86/libswt-pi-gtk-4234.so (libgtk-x11-2.0.so.0:
cannot open shared object file: No such file or directory)
Feb 17 03:03:20 localhost /etc/gdm/Xsession:
/home/steve/.swt/lib/linux/x86/libswt-pi-gtk.so
(/home/steve/.swt/lib/linux/x86/liblibswt-pi-gtk.so.so: cannot open shared
object file: No such file or directory)
Feb 17 03:03:20 localhost /etc/gdm/Xsession: java.lang.UnsatisfiedLinkError:
Could not load SWT library. Reasons:
Feb 17 03:03:20 localhost /etc/gdm/Xsession:
/home/steve/.eclipse/870893307/configuration/org.eclipse.osgi/bundles/268/1/
cp/libswt-pi-gtk-4234.so (libgtk-x11-2.0.so.0: cannot open shared object file:
No such file or directory)
Feb 17 03:03:20 localhost /etc/gdm/Xsession: swt-pi-gtk (Not found in
java.library.path)
Feb 17 03:03:20 localhost /etc/gdm/Xsession:
/home/steve/.swt/lib/linux/x86/libswt-pi-gtk-4234.so (libgtk-x11-2.0.so.0:
cannot open shared object file: No such file or directory)
Feb 17 03:03:20 localhost /etc/gdm/Xsession:
/home/steve/.swt/lib/linux/x86/libswt-pi-gtk.so
```

```
(/home/steve/.swt/lib/linux/x86/liblibswt-pi-gtk.so.so: cannot open shared
object file: No such file or directory)
Feb 17 03:03:20 localhost /etc/gdm/Xsession: java.lang.UnsatisfiedLinkError:
Could not load SWT library. Reasons:
Feb 17 03:03:20 localhost /etc/gdm/Xsession:
/home/steve/.eclipse/870893307/configuration/org.eclipse.osgi/bundles/268/1/.
cp/libswt-pi-gtk-4234.so (libgtk-x11-2.0.so.0: cannot open shared object file:
No such file or directory)
Feb 17 03:03:20 localhost /etc/gdm/Xsession: swt-pi-gtk (Not found in
java.library.path)
Feb 17 03:03:20 localhost /etc/gdm/Xsession:
/home/steve/.swt/lib/linux/x86/libswt-pi-gtk-4234.so (libgtk-x11-2.0.so.0:
cannot open shared object file: No such file or directory)
Feb 17 03:03:20 localhost /etc/gdm/Xsession:
/home/steve/.swt/lib/linux/x86/libswt-pi-gtk.so
(/home/steve/.swt/lib/linux/x86/liblibswt-pi-gtk.so.so: cannot open shared
object file: No such file or directory)
Feb 17 03:03:20 localhost /etc/gdm/Xsession: at
org.eclipse.swt.internal.Library.loadLibrary(Library.java:331)
Feb 17 03:03:20 localhost /etc/gdm/Xsession: at
org.eclipse.swt.internal.Library.loadLibrary(Library.java:240)
Feb 17 03:03:20 localhost /etc/gdm/Xsession: at
org.eclipse.swt.internal.gtk.OS.<clinit>(OS.java:22)
Feb 17 03:03:20 localhost /etc/gdm/Xsession: at
java.lang.J9VMInternals.initializeImpl(Native Method)
Feb 17 03:03:20 localhost /etc/gdm/Xsession: ...
Feb 17 03:03:20 localhost /etc/gdm/Xsession: The displayed failed to
initialize. See the log /home/steve/.eclipse/870893307/configuration/1424142197941.log
for details.
```

Opening this file we get the following message

```
java.lang.UnsatisfiedLinkError: Could not load SWT library. Reasons:
/opt/IBM/IntegrationToolkit90/configuration/org.eclipse.osgi/bundles/591
8/1/.cp/libswt-pi-gtk-3659.so (libgtk-x11-2.0.so.0: cannot open shared object
file: No such file or directory)
swt-pi-gtk (Not found in java.library.path)
/tmp/swtlib-32/libswt-pi-gtk-3659.so (libgtk-x11-2.0.so.0: cannot open
shared object file: No such file or directory)
/tmp/swtlib-32/libswt-pi-gtk.so (/tmp/swtlib-32/liblibswt-pi-gtk.so.so:
cannot open shared object file: No such file or directory)

at org.eclipse.swt.internal.Library.loadLibrary(Unknown Source)
at org.eclipse.swt.internal.Library.loadLibrary(Unknown Source)
at org.eclipse.swt.internal.gtk.OS.<clinit>(Unknown Source)
at java.lang.J9VMInternals.initializeImpl(Native Method)
at java.lang.J9VMInternals.initialize(Unknown Source)
at org.eclipse.swt.internal.Converter.wcstOMbcs(Unknown Source)
at org.eclipse.swt.internal.Converter.wcstOMbcs(Unknown Source)
at org.eclipse.swt.widgets.Display.<clinit>(Unknown Source)
at java.lang.J9VMInternals.initializeImpl(Native Method)
at java.lang.J9VMInternals.initialize(Unknown Source)
at org.eclipse.ui.internal.workbench.createdisplay(Unknown Source)
at org.eclipse.ui.PlatformUI.createdisplay(Unknown Source)
at org.eclipse.ui.internal.ide.application.I
```

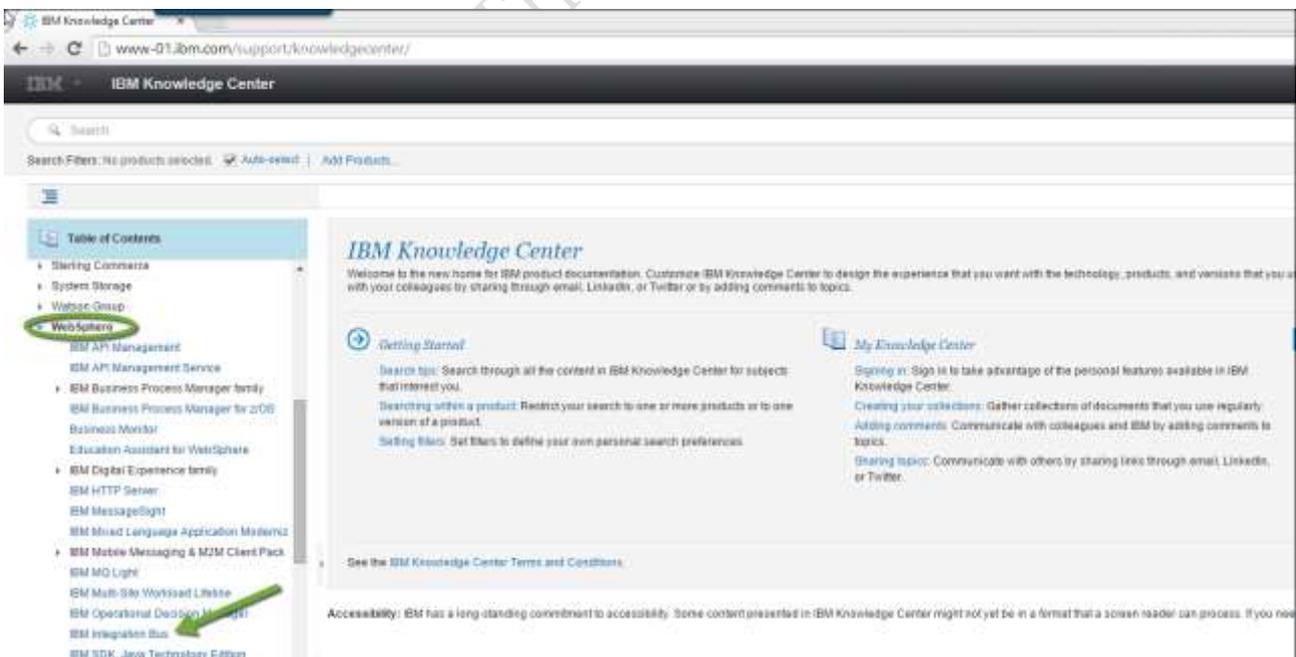
```
DEApplication.createDisplay(Unknown Source)
    at org.eclipse.ui.internal.ide.application.IDEApplication.start(Unknown
Source)
    at org.eclipse.equinox.internal.app.EclipseAppHandle.run(Unknown Source)
    at
org.eclipse.core.runtime.internal.adaptor.EclipseAppLauncher.runApplication(Un
known Source)
    at
org.eclipse.core.runtime.internal.adaptor.EclipseAppLauncher.start(Unknown
Source)
    at org.eclipse.core.runtime.adaptor.EclipseStarter.run(Unknown Source)
    at org.eclipse.core.runtime.adaptor.EclipseStarter.run(Unknown Source)
    at sun.reflect.NativeMethodAccessorImpl.invoke0(Native Method)
    at sun.reflect.NativeMethodAccessorImpl.invoke(Unknown Source)
    at sun.reflect.DelegatingMethodAccessorImpl.invoke(Unknown Source)
    at java.lang.reflect.Method.invoke(Unknown Source)
    at org.eclipse.equinox.launcher.Main.invokeFramework(Unknown Source)
    at org.eclipse.equinox.launcher.Main.basicRun(Unknown Source)
    at org.eclipse.equinox.launcher.Main.run(Unknown Source)
    at org.eclipse.equinox.launcher.Main.main(Unknown Source)
```

**Solution**

We did not look at the dependencies required for IIB 9.0 to run on a supported platform. Below is a quick fix, however it is recommended that when you use a non-certified platform that you look up on the IIB site to find the nearest operating system that matches for example If Using CentOS 7.x then look for Redhat Enterprise Linux Enterprise (RHEL) 7. If 7 is not available then go to the next lowest OS version i.e. RHEL 6.x

**Note:** Here is a link to the IBM Knowledge Centre for example: <http://www-01.ibm.com/support/knowledgecenter/>

You can drill down the link index to find to the Integration Broker 9.0 landing page as seen in the screen capture below.



It can be hard to find a list of dependencies as IBM are certifying platforms and you have chosen to install on a non-supported platform. Though this is true, there are often many blogs on solutions and also the IBM

forums can help. But let's not deceive ourselves, it can take some time to find a solution and you have to be prepared to try and try again. Unless you have [paid for support, then blood sweat and of course hands-on experience is required.

**Note:** Most of the GUI issues such as when the IBM Installation Manager fails to load is because Installation Manager is a 32-bit application and requires 32-bit versions of OS system libraries. These libraries are not installed on RHEL 6.0/6.1 x86\_64 (64-bit) by default. You must install these 32-bit libraries on your system before you run Installation Manager.

- Install dependencies

```
yum install gtk2.i686 gtk2-engines.i686 PackageKit-gtk-module.i686 PackageKit-gtk-module.x86_64 libcanberra-gtk2.x86_64 libcanberra-gtk2.i686
```

## Graphic Installer Error:

During Graphical mode of installation you may face the following problem



Graphical installers are not supported by the VM. The console mode will be used instead...

### Solution :

This problem occurs in Linux 32-bit OS when the 32-bit libraries are missing. The installer is a 32-bit application and needs 32-bit libraries.

- Install the 32-bit libraries as shown below

```
# yum install gtk2.i686
# yum install libXtst.i686
# yum install compat-libstdc++-33.i686
```

## Eclipse Link File Error:

If MB Explorer installation log file has the following traces



```
Modify Text File - Single File: New File
/opt/mqm/eclipseSDK33/eclipse/links/com.ibm.etools.wadmin.Broker.Explorer.link
Status: ERROR
Additional Notes: ERROR - java.io.FileNotFoundException: parent did not exist when attempting touch on path:
/opt/mqm/eclipseSDK33/eclipse/links/com.ibm.etools.wadmin.Broker.Explorer.link
```

### Solution:

- Create "links" directory under /opt/mqm/eclipseSDK33/eclipse to avoid the issue given above

## libImbCmdLib.so Error



```
[mqm@localhost ~]$ mqsicreatebroker Brk01Verify -q QMVerify02  
mqsicreatebroker: error while loading shared libraries: libImbCmdLib.so:  
cannot open shared object file: No such file or directory
```

If you get this error, it is because you have not set an appropriate IB environment see, [mqsiprofile](#) command mentioned earlier in this document.