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# Appendix A. Preparing the lab environment

## Estimated time

00:45

## Overview

This guide shows you how IBM MQ was installed in your lab environment.

## Requirements

Before you begin your installation, you must obtain the following components:

- A Red Hat Enterprise Linux server. This course uses RHEL version 9.3
- IBM MQ installation media. This course uses part number M0H54ML: IBM MQ 9.4 Long Term Support Release for Linux on x86 64-bit Multilingual.
- IBM MQ Web Server installation media. This course uses version 9.4.0.0 (9.4.0.0-IBM-MQ-Web-Server-LinuxX64.tar.gz). You can download the IBM MQ Web Server from IBM Fix Central:

<https://ibm.biz/mq94webserver>

- IBM MQ Explorer installation media. This course uses version 9.4.0.0 (9.4.0.0-IBM-MQ-Explorer-LinuxX64.tar.gz). Download MQ explorer here:

<https://ibm.biz/mqexplorer>

## Section 1. Preparing the operating system

These steps show you how to prepare your Red Hat Enterprise Linux server for an installation of IBM MQ.

- \_\_ 1. Log in to the server as the root user and open a terminal. This guide uses `password` as the password of the root user.
- \_\_ 2. Disable Security-Enhanced Linux (SELinux).
  - \_\_ a. Open the `/etc/selinux/config` file in a text editor. This example uses `vi`.

```
vi /etc/selinux/config
```

- \_\_ b. Find the SELINUX option and change the value to disabled, as shown in the following example.

```
SELINUX=disabled
```

- \_\_ c. Save and close the file when you are finished.
- \_\_ 3. Disable firewalld. Run the following command:

```
systemctl disable firewalld && systemctl stop firewalld
```

- \_\_ 4. Configure kernel parameters.
  - \_\_ a. Open the `/etc/sysctl.conf` file in a text editor.

```
vi /etc/sysctl.conf
```

- \_\_ b. Add the following lines to the end of the file. Save and close the file when you are finished.

```
kernel.shmni = 4096
kernel.shmall = 2097152
kernel.shmmax = 268435456
kernel.sem = 32 4096 32 128
fs.file-max = 524288
kernel.threads-max = 32768
kernel.pid_max = 32768
```

Run the following command to load your changes.

```
sysctl -p
```

**Example output:**

```
kernel.shmni = 4096
kernel.shmall = 2097152
kernel.shmmax = 268435456
kernel.sem = 32 4096 32 128
fs.file-max = 524288
kernel.threads-max = 32768
kernel.pid_max = 32768
```

- \_\_ 5. Configure system resource limits.
  - \_\_ a. Open the `limits.conf` file in a text editor.

```
vi /etc/security/limits.conf
```

- \_\_ b. Add the following lines to the end of the file. Save and close the file when you are finished.

```
*          soft  nofile      10240
*          hard  nofile      10240
```

- \_\_ 6. Set the maximum number of files that a process can have open for local users.

- \_\_ a. Open the user.conf file in a text editor.

```
vi /etc/systemd/user.conf
```

- \_\_ b. Uncomment the `DefaultLimitNOFILE` line and set the value to `10240`.

```
DefaultLimitNOFILE=10240
```

- \_\_ c. Save and close the file.

- \_\_ 7. You use archive files to install IBM MQ software in your lab environment. Run the following three commands to create directories for the archive files.

```
mkdir -p /software/MQ
mkdir /software/Explorer
mkdir /software/WebServerMQ
```

- \_\_ 8. Copy the MQ installation archive file into the `/software/MQ` directory.

- \_\_ 9. Copy the MQ Explorer archive file into the `/software/Explorer` directory.

- \_\_ 10. Copy the MQ Web Server archive file into the `/software/WebServerMQ` directory.

- \_\_ 11. Change the file permissions of the `/software` directory and all of its contents so any user can access it.

```
chmod -R 777 /software/
```

- \_\_ 12. Verify that your changes are permanent by rebooting the server and checking them again.

- \_\_ a. Restart the lab server.

```
init 6
```

- \_\_ b. After your server is finished rebooting, log in to the server as the root user and open a terminal.

- \_\_ c. Run the following command to verify SELinux is still disabled.

```
getenforce
```

**Example output:**

```
Disabled
```

- \_\_ d. Run the following command to verify firewalld is still inactive and disabled.

```
systemctl status firewalld
```

**Example output:**

```
○ firewalld.service - firewalld - dynamic firewall daemon
  Loaded: loaded (/usr/lib/systemd/system/firewalld.service; disabled; preset:
  enabled)
  Active: inactive (dead)
  Docs: man:firewalld(1)
```

Press **q** to exit the command output.

- \_\_ e. Enter the following command to verify the kernel parameter setting are still present.

```
sysctl -a | egrep "shmmni|shmall|shmmax|.sem |file-max|threads-max|pid_max"
```

**Example output:**

```
fs.file-max = 524288
kernel.pid_max = 32768
kernel.sem = 32 4096 32 128
kernel.shmall = 2097152
kernel.shmmax = 268435456
kernel.shmmni = 4096
kernel.threads-max = 32768
```

- \_\_ f. Run the following command to verify your changes to system resource limits are present.

```
ulimit -n
```

**Example output:**

```
10240
```

## Section 2. Installing IBM MQ

- \_\_ 1. Change to the directory where you copied the MQ installation media archive file.

```
cd /software/MQ/
```

- \_\_ 2. The installation media is compressed twice. Use the gunzip and tar tools to expand the archive. Run the following commands to expand the archive file.

- \_\_ a. Expand the file with gunzip.

```
gunzip 9.4.0.0-IBM-MQ-LinuxX64.tar.gz
```

- \_\_ b. Expand the file with tar.

```
tar -xvf 9.4.0.0-IBM-MQ-LinuxX64.tar
```

- \_\_ 3. Change to the MQServer/ subdirectory. This subdirectory was created when you expanded the archive file.

```
cd MQServer/
```

\_\_ 4. Run the following command to install all IBM MQ components in the archive file.

```
rpm -ivh MQ*.rpm
```

**Example output:**

```
warning: MQSeriesAMQP-9.4.0-0.x86_64.rpm: Header V4 RSA/SHA256 Signature, key ID
07b22880: NOKEY
Verifying... ##### [100%]
Preparing... ##### [100%]
Creating group mqm
Creating user mqm
Updating / installing...
 1:MQSeriesRuntime-9.4.0-0 ##### [ 3%]
warning : package "MQSeriesRuntime" is signed but key is not installed on this system.
        rpm verify shows "Header V4 RSA/SHA256 Signature, key ID 07b22880: NOKEY"
        rpm warning message may have been issued at install time.
        See topic "IBM MQ code signatures" in the IBM MQ documentation for more
information.
AMQ7172I: The license agreement must be accepted before using IBM MQ.
 2:MQSeriesJava-9.4.0-0 ##### [ 6%]
...output omitted...
27:MQSeriesMsg_ru-9.4.0-0 ##### [ 87%]
28:MQSeriesMsg_Zh_CN-9.4.0-0 ##### [ 90%]
29:MQSeriesMsg_Zh_TW-9.4.0-0 ##### [ 94%]
30:MQSeriesSamples-9.4.0-0 ##### [ 97%]
31:MQSeriesSDK-9.4.0-0 ##### [100%]
```

\_\_ 5. Accept the IBM MQ license.

\_\_ a. Change to the target directory.

```
cd /opt/mqm/bin/
```

\_\_ b. Run the following command. This command opens a window with the IBM MQ license agreement.

```
./mqlicense
```

\_\_ c. Click **Accept** to accept the license. This action closes the IBM MQ license agreement window and returns you to the terminal.

**Example output:**

```
5724-H72 (C) Copyright IBM Corp. 1994, 2024.
The license agreement has been accepted.
```

\_\_ 6. Set the instance you just installed (Installation1) as the primary MQ installation.

```
/opt/mqm/bin/setmqinst -i -p /opt/mqm/
```

**Example output:**

```
147 of 147 tasks have been completed successfully.
'Installation1' (/opt/mqm) set as the primary installation.
```

## Section 3. Configuring users

In this section, you set a password for the mqm user. You also create a second MQ administrator named localuser, who is a member of the mqm group.

In the steps that follow, you switch between the users: root, mqm, and localuser. Be careful as you complete the remaining tasks: make sure you are the correct user before you run any commands.

- \_\_ 1. As root, change the password of the mqm user to `passw0rd`. This user was created by the MQ installer.

You can ignore the warnings about a bad password.

```
passwd mqm
```

**Example output:**

```
Changing password for user mqm.  
New password: passw0rd  
BAD PASSWORD: The password fails the dictionary check - it is based on a dictionary word  
Retype new password: passw0rd  
passwd: all authentication tokens updated successfully.
```

- \_\_ 2. Create a user account for MQ administration named `localuser`.

To be an administrator, this user must be in the group named `mqm`.

- \_\_ a. Create localuser:

```
useradd -g mqm localuser
```

- \_\_ b. Change the password of localuser to `passw0rd`. Enter `passw0rd` two times. You can ignore the warnings about a bad password.

```
passwd localuser
```

- \_\_ 3. Configure the profile of localuser to load the IBM MQ environment variables.

- \_\_ a. Open the `.bashrc` file of localuser in a text editor.

```
vi /home/localuser/.bashrc
```

Add the following seven lines to the end of the file. Save and close the file when you are finished.

```
# Load MQ Environment:  
. /opt/mqm/bin/setmqenv -s  
export PATH=$PATH:/opt/mqm/samp/bin  
export LD_LIBRARY_PATH=/opt/mqm/java/lib64:/opt/mqm/lib64:$LD_LIBRARY_PATH  
  
# Mask command not found message:  
unset -f command_not_found_handle
```

- \_\_ 4. Verify that localuser can run MQ commands.

- \_\_ a. Switch to localuser.

```
su - localuser
```

- \_\_\_ b. confirm that localuser is a member of the mqm group.

```
groups
```

**Example output:**

```
mqm
```

- \_\_\_ c. Run the following command. Confirm that you see MQ version information.

```
dspmqrver
```

**Example output:**

```
Name:          IBM MQ
Version:       9.4.0.0
Level:        p940-L240605.1
BuildType:    IKAP - (Production)
Platform:     IBM MQ for Linux (x86-64 platform)
Mode:         64-bit
O/S:          Linux 5.14.0-362.24.1.el9_3.x86_64
O/S Details:  Red Hat Enterprise Linux 9.3 (Plow)
InstName:     Installation1
InstDesc:
Primary:      Yes
InstPath:     /opt/mqm
DataPath:     /var/mqm
MaxCmdLevel:  940
LicenseType:  Production
ReleaseType:  Long Term Support (LTS) and Continuous Delivery (CD)
```

- \_\_\_ d. Type `exit` to end the session as localuser and return to root.

## Section 4. Configuring the MQ Console

- \_\_\_ 1. Configure the MQ console to use a basic, file-based user registry.

- \_\_\_ a. Switch to the mqm user.

```
su - mqm
```

- \_\_\_ b. Change to the target configuration directory.

```
cd /var/mqm/web/installations/Installation1/servers/mqweb/
```

- \_\_\_ c. Create a backup copy of the mqwebuser.xml file.

```
cp mqwebuser.xml mqwebuser.xml.BAK
```

- \_\_\_ d. Run the following command to copy a sample user registry file into your current directory. The command also renames the sample file mqwebuser.xml.

```
cp /opt/mqm/web/mq/samp/configuration/basic_registry.xml mqwebuser.xml
```

- \_\_\_ 2. Change all user passwords for MQ Console to `password`.

- \_\_\_ a. Open the mqwebuser.xml file in a text editor.

```
vi mqwebuser.xml
```

- \_\_ b. Find the `Sample Basic Registry` section. Change all of the passwords to `passw0rd`, as shown in the following example.

```
Sample Basic Registry
-->
<basicRegistry id="basic" realm="defaultRealm">
  <!--
  This sample defines two users with unencoded passwords
  and a group, these are used by the role mappings above.
  -->
  <user name="mqadmin" password="passw0rd"/>
  <user name="mqreader" password="passw0rd"/>
  <user name="mftadmin" password="passw0rd"/>
  <user name="mftreader" password="passw0rd"/>
  <group name="MQWebAdminGroup">
    <member name="mqadmin"/>
  </group>
</basicRegistry>
```

- \_\_ c. Save and close the file when you are finished.
- \_\_ d. Type `exit` to end the session as the mqm user and return to the root user.

## Section 5. Testing the MQ Console

- \_\_ 1. Switch to the user named localuser.

```
su - localuser
```

- \_\_ 2. Run the following command to allow remote access to MQ Console and the REST API.

```
setmqweb properties -k httpHost -v rhserver
```

### Example output:

```
MQWB1100I: The 'setmqweb' command completed successfully.
```

- \_\_ 3. Use the following command to start the MQ Console server.

```
strmqweb
```

### Example output:

```
Starting server mqweb.
Server mqweb started with process ID 43440.
```

- \_\_ 4. Find the MQ Console URL.

- \_\_ a. Run the following command to display the details of the MQ Console server.

```
dspmqweb
```

### Example output:

```
MQWB1124I: Server 'mqweb' is running.
URLS:
https://rhserver:9443/ibmmq/console/
https://rhserver:9443/ibmmq/rest/
```

- \_\_ b. Find the URL in the output of the preceding step that contains the string `console`. In this example, the URL is:

```
https://rhserver:9443/ibmmq/console/
```



- \_\_ 5. Verify that you can log in to the MQ Console.
  - \_\_ a. Open a browser on the server where you installed IBM MQ.
  - \_\_ b. Go to the URL you found in the preceding step. In this example, the URL is:  
`https://rhserver:9443/ibmmq/console/`
  - \_\_ c. If you are prompted, add a security exception for the site and confirm any warnings about unsecure certificates. Click **Advanced**, then scroll down and click **Accept the Risk and Continue**. You might need to do this twice.
  - \_\_ d. Log in to the MQ Console with the user name `mqadmin` and the password `passw0rd`.  
Verify that the home page of the console loads.
  - \_\_ e. Log out of the MQ Console and close the browser window.
- \_\_ 6. In the terminal, run the following command to stop the MQ Console.

```
endmqweb
```

**Example output:**

```
Stopping server mqweb.  
Server mqweb stopped.
```

- \_\_ 7. Type `exit` to end the session as localuser and return to root.

## Section 6. Configuring the IBM MQ Console to start automatically

Use these steps to configure the IBM MQ console to start when the server starts.

- \_\_ 1. Confirm you are the root user.
- \_\_ 2. Run the following command to create a new file named `mq-web.service` and open it in a text editor.

```
vi /etc/systemd/system/mq-web.service
```

- \_\_ 3. Add the following lines to the empty file.

```
[Unit]
Description=IBM MQ Web Console and REST API
After=network.target

[Service]
ExecStart=/bin/bash -c "source opt/mqm/bin/setmqenv -n Installation1"
ExecStart=/bin/bash -c "/opt/mqm/bin/strmqweb"
ExecStop=/bin/bash -c "/opt/mqm/bin/endmqweb"
Type=oneshot
RemainAfterExit=yes
User=localuser
Group=mqm

[Install]
WantedBy=multi-user.target
```

- \_\_ 4. Save and close the file when you are finished.

\_\_ 5. Run the following command to load your changes.

```
systemctl daemon-reload
```

\_\_ 6. Start the MQ Console by starting the service.

```
systemctl start mq-web.service
```

The command takes 10-30 seconds to complete.

\_\_ 7. Check the status of the service with the following command. Look for the string `"active (exited)"` in the output of the command.

```
systemctl status mq-web.service
```

**Example output:**

```
● mq-web.service - IBM MQ Web Console and REST API
   Loaded: loaded (/etc/systemd/system/mq-web.service; disabled; preset: disabled)
   Active: active (exited) since Tue 2024-07-09 10:40:37 EDT; 4s ago
     Process: 14042 ExecStart=/bin/bash -c source opt/mqm/bin/setmqenv -n Installation1
 (code=exited, sta
     Process: 14126 ExecStart=/bin/bash -c /opt/mqm/bin/strmqweb (code=exited,
 status=0/SUCCESS)
    Main PID: 14126 (code=exited, status=0/SUCCESS)
       Tasks: 59 (limit: 26213)
...output omitted...
```

Press `q` to exit the command output.

\_\_ 8. Run the following command to set IBM MQ console to start when the server starts.

```
systemctl enable mq-web.service
```

\_\_ 9. Verify that the MQ Console starts automatically when the server starts.

\_\_ a. Use the following command to reboot the server.

```
init 6
```

\_\_ b. After your server is finished rebooting, log in to the server as localuser with the password `passw0rd`.

Click **No thanks** to decline the invitation to take a tour of Red Hat Enterprise Linux 9.

\_\_ c. Open a terminal.

\_\_ d. Run the following command to display the status of the MQ Console server.

```
dspmqrweb
```

**Example output:**

```
MQWB1124I: Server 'mqweb' is running.
URLS:
  https://rhserver:9443/ibmmq/console/
  https://rhserver:9443/ibmmq/rest/
```

\_\_ e. Open a Firefox browser.

- \_\_ f. Go to the URL you found in a preceding step. In this example, the URL is:  
`https://rhserver:9443/ibmmq/console/`
- \_\_ g. If you are prompted, add a security exception for the site and confirm any warnings about unsecure certificates. Click **Advanced**, then scroll down and click **Accept the Risk and Continue**. You might need to do this twice.
- \_\_ h. Log in to the MQ Console with the user name `mqadmin` and the password `passw0rd`. Verify that the home page of the console loads.

This confirms that the MQ Console started automatically.

- \_\_ 10. Log out of the MQ Console and close the browser.

## Section 7. Installing MQ Explorer

- \_\_ 1. Switch to the root user.

Enter the password of the root user when prompted. This guide uses `passw0rd` as the password of the root user.

```
su - root
```

- \_\_ 2. Change to the directory where you copied the MQ Explorer archive file.

```
cd /software/Explorer/
```

- \_\_ 3. The installation archive is compressed twice. Run the following two commands to expand the archive file.

- \_\_ a. Expand the file with gunzip.

```
gunzip 9.4.0.0-IBM-MQ-Explorer-LinuxX64.tar.gz  
...output omitted...
```

- \_\_ b. Expand the file with tar.

```
tar -xvf 9.4.0.0-IBM-MQ-Explorer-LinuxX64.tar  
...output omitted...
```

- \_\_ 4. Change to the installation directory.

This directory was created when you expanded the tar file.

```
cd MQExplorer/
```

## \_\_ 5. Install MQ Explorer

- \_\_ a. Run the following command to Install MQ Explorer. This action starts an interactive installation program.

```
./Setup.bin -i console
```

**Example output:**

```
Preparing to install
Extracting the JRE from the installer archive...
Unpacking the JRE...
...output omitted...
```

- \_\_ b. Enter **2** for English, then press the Enter key.

```
...output omitted...
```

```
Choose Locale...
```

```
-----
1- Deutsch
->2- English
3- Español
4- Français
5- Italiano
6- Português (Brasil)
CHOOSE LOCALE BY NUMBER: 2
...output omitted...
```

- \_\_ c. Press the Enter key to continue.

```
...output omitted...
```

```
Respond to each prompt to proceed to the next step in the installation. If you want to
change something on a previous step, type 'back'.
You may cancel this installation at any time by typing 'quit'.
PRESS <ENTER> TO CONTINUE:
```

```
=====
...output omitted...
```

- \_\_ d. Enter **1** to accept the license, then press the Enter key.

```
...output omitted...
```

```
Press Enter to continue viewing the license agreement, or enter "1" to accept the
agreement, "2" to decline it, "3" to print it, or "99" to go back to the previous
screen.: 1
```

```
...output omitted...
```

- \_\_ e. Press the Enter key to accept the default location.

```
...output omitted...
```

```
Choose Install Folder
```

```
-----
Where would you like to install?
Default Install Folder: /opt/ibm/MQ_Explorer
ENTER AN ABSOLUTE PATH, OR PRESS <ENTER> TO ACCEPT THE DEFAULT
...output omitted...
```

- \_\_ f. Press the Enter key to accept the disk space summary. This action starts the installation.

```
...output omitted...
```

```
Disk Space Information (for Installation Target):
```

```
Required: 477,771,583 Bytes
```

```
Available: 15,162,494,976 Bytes
```

```
PRESS <ENTER> TO CONTINUE:
```

```
...output omitted...
```

\_\_ g. Press the Enter key to exit the installer.

```
...output omitted...
Installation Complete
-----
```

Congratulations. IBM MQ Explorer V9.4 has been successfully installed to:

/opt/ibm/MQ\_Explorer

PRESS <ENTER> TO EXIT THE INSTALLER:

\_\_ 6. Type `exit` to end the session as root and return to localuser.

\_\_ 7. Test MQ Explorer.

\_\_ a. Run the following command to start MQ Explorer.

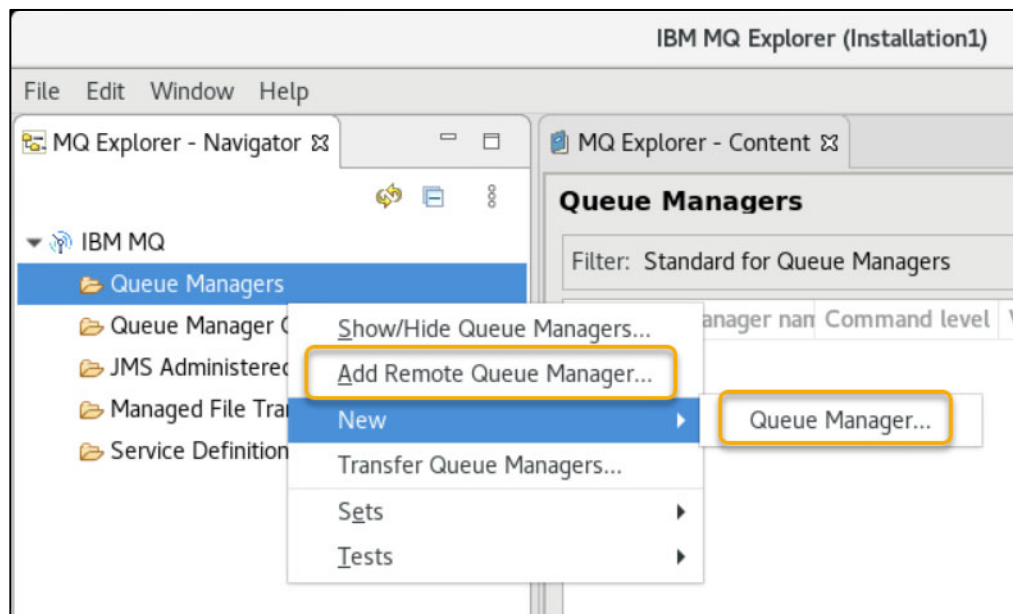
```
/opt/ibm/MQ_Explorer/MQExplorer &
```

\_\_ b. Right-click the **Queue Managers** folder in the menu on the left.

Verify that the following options are available in the right-click menu.

- Add Remote Queue Manager
- New > Queue Manager

Figure 1. The right-click menu of the Queue Managers folder



There is no need to create any MQ objects, simply verify that these options are available.

\_\_ c. Click **File > Exit** to close MQ Explorer.

## Section 8. Setting up the desktop of localuser

In the lab exercises for this course, almost all tasks are run as localuser. In this section, you prepare the desktop of localuser. These steps are not related to the operation or function of IBM MQ; instead, these steps are included to make the desktop easier to use in a remote lab environment. You start by copying classroom lab files to their expected location. You then customize the desktop so that the tools you need to work with MQ are easy to access.

\_\_ 1. Confirm you are logged into the desktop of your lab system as localuser.

\_\_ 2. Copy the classroom lab files to their expected location.

\_\_ a. Return to the terminal where you are localuser

\_\_ b. Switch to the root user.

Enter the password of the root user when prompted. This guide uses `passw0rd` as the password of the root user.

```
su - root
```

\_\_ c. Copy the file named WM161\_erc1.0\_labfiles.tar to the `/` directory. This file is included in the instructor kit for this course.

\_\_ d. Run the following commands to decompress the classroom archive file.

```
cd /  
tar -xvf WM161_erc1.0_labfiles.tar
```

**Example output:**

```
labfiles/  
labfiles/Lab02/  
labfiles/Lab04/  
labfiles/Lab04/mqclient.ini  
labfiles/DRKblueBCKGRND.jpg  
labfiles/Lab05/  
labfiles/Lab05/data.txt  
labfiles/Lab05/AutoCluster.ini  
labfiles/Lab05/CCDT3.JSON  
labfiles/Lab05/CCDT4.JSON  
labfiles/Lab05/UniCluster.mqsc  
labfiles/Lab05/CCDT.JSON  
labfiles/Lab05/rClient.sh  
labfiles/Lab07/  
labfiles/Lab07/QM17.mqsc  
labfiles/Lab07/OM1.mqsc
```

\_\_ 3. Configure the system to automatically log in as localuser.

\_\_ a. Open the `/etc/gdm/custom.conf` file in a text editor.

```
vi /etc/gdm/custom.conf
```

\_\_ b. Add the following two lines after the `[daemon]` entry.

```
AutomaticLoginEnable=true  
AutomaticLogin=localuser
```

\_\_ c. Verify that your file looks like the following example, then save and close the file.

```
# GDM configuration storage

[daemon]
# Uncomment the line below to force the login screen to use Xorg
#waylandEnable=false
AutomaticLoginEnable=true
AutomaticLogin=localuser

[security]

[xdmcp]

[chooser]

[debug]
# Uncomment the line below to turn on debugging
#Enable=true
```

\_\_ d. Type `exit` to end the session as root and return to localuser.

\_\_ 4. Change the font size and the colors of the terminal.

\_\_ a. At the top-right of the terminal window, click the icon for more options, then click **Preferences**.

\_\_ b. Click the **Unnamed** profile in the menu at the left.

\_\_ c. Select **Custom font**. This action changes the font size to 12 point.

\_\_ d. Click the **Colors** tab.

\_\_ e. Deselect the option the **Use colors from system theme**. This action changes the color scheme to the built-in scheme, which is named GNOME light.

\_\_ f. Close the preferences pop-up window to save your changes and return to the terminal.

\_\_ 5. Customize the desktop with Gnome Tweaks.

\_\_ a. In the terminal where you are localuser, run the following command to start Gnome Tweaks.

```
gnome-tweaks
```

If you see a message about some features that have moved to the Extensions application, click **Continue** to close the pop-up window.

\_\_ b. In the **General** tab, disable **Animations** and **Suspend when laptop lid is closed**.

\_\_ c. In the **Window Titlebars** tab, enable the **Maximize** and **Minimize** Titlebar buttons.

\_\_ d. In the **Workspaces** tab, select **Static Workspaces** and set the number of workspaces to **1**.

\_\_ e. Close the window to exit Gnome Tweaks and save your settings.

\_\_ 6. Customize the desktop with the Gnome Extensions application.

\_\_ a. Start the Extensions application with the following command.

```
gnome-shell-extension-prefs
```

You can ignore any messages about the tool being deprecated.

\_\_ b. Enable the **Applications Menu**.

\_\_ c. Enable **Desktop icons**.

\_\_ d. Enable the **Window List**.

\_\_ e. Close the window to exit the Extensions application and save your settings.

\_\_ 7. Change the desktop background.

\_\_ a. Click **Applications** at the top left of the desktop, then select **Other > Settings**.

\_\_ b. Click **Background** in the menu on the left.

\_\_ c. Click **Add picture** at the top of the window. This action opens a file browser.

\_\_ d. Browse to the /labfiles/ directory and select **DRKblueBCKGRND.jpg**.

\_\_ e. Click the plain blue image to select it as the background.

Leave the Settings window open.

\_\_ 8. Disable screen lock.

\_\_ a. Click **Privacy** in the menu on the left.

\_\_ b. Click **Screen Lock** in the menu on the left.

\_\_ c. Change the **Blank Screen Delay** to **Never**.

\_\_ d. Disable **Automatic screen lock**.

\_\_ e. Click the back button at the top-left of the window to return to the previous menu.

\_\_ 9. Verify that automatic suspend is disabled.

\_\_ a. Click **Power** in the menu on the left.

\_\_ b. Verify that **Screen Blank** is set to **Never**.

\_\_ c. Verify that **Automatic Suspend** is set to **Off**.

\_\_ d. Close the settings window to save your changes.

\_\_ 10. Create a desktop shortcut for MQ Explorer.

\_\_ a. In the terminal where you are localuser, run the following commands to copy the MQ Explorer icon file to the home directory of localuser and relax permissions on the file.

```
cp /opt/ibm/MQ_Explorer/icon.xpm ~/
chmod 777 ~/icon.xpm
```



- \_\_\_ b. Create a text file named MQExplorer.desktop and open it in a text editor.

```
vi ~/.local/share/applications/MQExplorer.desktop
```

- \_\_\_ c. Add these lines to the empty file:

```
[Desktop Entry]
Type=Application
Name=MQ Explorer
Exec=/opt/ibm/MQ_Explorer/MQExplorer
Icon=/home/localuser/icon.xpm
```

- \_\_\_ d. Save and close the file when you are finished.

- \_\_\_ e. Copy the MQExplorer.desktop file to the desktop of localuser.

```
cp ~/.local/share/applications/MQExplorer.desktop /home/localuser/Desktop
```

- \_\_\_ f. Right-click the generic MQ Explorer icon on the desktop and select **Allow Launching**.

The generic shortcut icon should change to an IBM MQ branded icon.

- \_\_\_ 11. Create desktop shortcuts for the terminal application, Firefox, and a text editor (gedit).

You use these tools often throughout the lab exercises for this course.

- \_\_\_ a. In the terminal where you are localuser, run the following three commands:

```
cp /usr/share/applications/org.gnome.Terminal.desktop ~/Desktop/Terminal.desktop
cp /usr/share/applications/firefox.desktop ~/Desktop/Firefox.desktop
cp /usr/share/applications/org.gnome.gedit.desktop ~/Desktop/TextEdit.desktop
```

After you run the commands, you should see three new generic icons on the desktop.

- \_\_\_ b. One at a time, right-click each of the new generic icons on the desktop and select **Allow Launching**.

After you allow launching, the generic icon of each shortcut should change to match the application that it launches.

- \_\_\_ 12. Create a bookmark for the MQ console in Firefox.

- \_\_\_ a. Open a Firefox browser.

- \_\_\_ b. Right-click the bookmark toolbar and click **Manage Bookmarks**. This action opens a pop-up window labeled Library.

- \_\_\_ c. Select **Bookmarks Toolbar** on the left, then delete all of the existing bookmarks in the pane on the right.

- \_\_\_ d. Right-click the empty pane on the right and select **Add Bookmark**. This action opens a second pop-up window.

- \_\_\_ e. Enter the following values.
  - **Name:** `IBM MQ Console`
  - **URL:** `https://rhserver:9443/ibmmq/console/`
- \_\_\_ f. Click **Save**.
- \_\_\_ g. Close the Library pop-up window.
- \_\_\_ 13. Change Firefox settings.
  - \_\_\_ a. At the top-right of the Firefox window, click the icon for more options and select **Settings**.
  - \_\_\_ b. Scroll down in the General settings and select **Always ask you where to save files**.  
This check box is in the Files and Applications section of the General settings.
  - \_\_\_ c. Click **Home** in the menu on the right.
  - \_\_\_ d. Select **Blank Page** for **Homepage and new windows**.
  - \_\_\_ e. Select **Blank Page** for **New tabs**.
  - \_\_\_ f. Deselect these options under **Firefox Home Content**:
    - **Web Search**
    - **Shortcuts**
    - **Recommended by Pocket**
  - \_\_\_ g. Close the Settings tab in Firefox.
  - \_\_\_ h. Close Firefox.
- \_\_\_ 14. Restart your lab server one final time to verify that you are automatically logged in as localuser.
  - \_\_\_ a. At the top-right of the desktop, click the power icon, then select **Power off / Log out > Restart**.
  - \_\_\_ b. Click **Restart** to confirm.
  - \_\_\_ c. After the server restarts, confirm you go directly to the desktop of localuser, without the need to log in.

You might need to click the workspace (large blue rectangle) to show the desktop.

You are now finished setting up the lab environment. Your lab system is ready for the start of class.

## End of Appendix A