IBM WebSphere Portal

A Step-By-Step Guide to Configuring a WebSphere Portal v8.5 Cluster

Emily Johnson
WebSphere Portal Level 2 Support Software Engineer

© Copyright International Business Machines Corporation 2015. All rights reserved.

Adapted from “A Step-By-Step Guide to Configuring a WebSphere Portal v8.0 Cluster”
by Hunter Tweed

With Content from “Step-by-Step guide to setup an IBM WebSphere Portal and IBM Web Content Manager V8.5 Cluster From Zero to Hero”
by Andrea Fontana

This guide describes a comprehensive procedure for installing, configuring, and building an IBM® WebSphere Portal v8.5 cluster using:

- IBM WebSphere Application Server (WAS) 8.5.5.2 – 64 bit
- Red Hat Enterprise Linux 6.5
- DB2 10.5 – Database Server
- IBM Directory Server – LDAP Server
- IBM HTTP Server 8.5 – Web Server
# Table of Contents

Introduction .................................................................................................................................... 3
Cluster Concepts ............................................................................................................................ 4
Using this Guide/Before You Begin .............................................................................................. 5

Main Guide

1 - Installing IBM WebSphere Portal v8.5 on the Primary Node ............................................... 8
2 - Configuring the Primary Node for a Remote Database .......................................................... 26
3 - Installing and Configuring the Deployment Manager ........................................................... 41
4 - Federating and Clustering the Primary Node ........................................................................... 49
5 - Configuring the Portal Cluster for Federated LDAP Security ................................................. 56
6 - Installing WebSphere Portal on an Additional Node ............................................................ 64
7 - Federating and Clustering the Additional Node ..................................................................... 76
8 - Configuring the Cluster with an External Web Server ........................................................... 85

Appendices

A1 - How to Silently Install IBM Installation Manager ............................................................... 97
A2 - How to Silently Install WebSphere Portal and WebSphere Application Server on the Primary Server .................................................................................................................. 98
A3 - How to Silently Install WebSphere Portal and WebSphere Application Server on a Secondary Server .................................................................................................................. 101
B - How to Setup DB2 Groups and Users for Portal ................................................................... 105
C - Additional LDAP Configuration Steps .................................................................................. 107

Encountering Issues and Receiving Help .................................................................................... 108
Questions About This Guide ....................................................................................................... 109
Acknowledgments ....................................................................................................................... 109
Introduction

Higher Versions of Portal and WebSphere Application Server
This guide is specifically written for 64-bit Portal v8.5 and WebSphere Application Server (WAS) v8.5.5.2. However, the same approach will apply to any Portal v8.5.x version or higher and any WAS v8.5.5.x version higher than 8.5.5.2, 64-bit.

Windows/Unix Differences
This guide was written using Linux as the base operating system, however the steps/concepts listed in this guide are independent of operating system. The only significant difference is that for Windows, you must use the batch file commands instead of the UNIX shell commands listed in this guide. For example:

UNIX: ./startServer.sh WebSphere_Portal

Windows: startServer.bat WebSphere_Portal

or

UNIX: ./ConfigEngine.sh cluster-node-config-cluster-setup

Windows: ConfigEngine.bat cluster-node-config-cluster-setup
**Cluster Concepts**

**Server** – A Java Virtual Machine (JVM) that manages user applications (such as WebSphere Portal and Web Content Management).

**Node** – A logical grouping of one or more application servers. A node does not necessarily mean a single physical server.

**Cell** – A logical grouping of one more nodes.

**Cluster** – A logical grouping of one or more servers across one or more nodes. The servers are managed together and participate in workload management. Servers in a cluster share resources, such as applications. Multiple clusters can exist in a single cell, but a single cluster cannot exist across multiple cells.

A WebSphere Portal cluster with two horizontal nodes, each with two cluster members. NOTE: There is a remote Search Server in this illustration. This is a separate WebSphere Application server from the Portal Server. Remote Search Server setup and configuration will not be covered in this guide.
Using this Guide

While there are numerous different ways to build a WebSphere Portal cluster, this guide describes the method widely considered the easiest: building a cluster with horizontal nodes and a remote Deployment Manager.

This can be achieved by following the steps in these chapters:

1. Installing IBM WebSphere Portal v8.5 on the Primary Node
2. Configuring the Primary Node for a Remote Database
3. Installing and Configuring the Deployment Manager
4. Federating and Clustering the Primary Node
5. Configure the Portal Cluster for Federated LDAP Security
6. Installing WebSphere Portal on an Additional Node
7. Federating and Clustering the Additional Node
8. Configuring the Cluster with an External Web Server

Before You Begin

This guide does NOT cover the following:

- Installing DB2
- Creating multiple clusters in a single cell
- Advanced Security configuration
- Installing and Configuring IBM Directory Server

For more information on these and other topics, visit the IBM WebSphere Portal v8.5 Product Documentation:

http://www-01.ibm.com/support/knowledgecenter/SSHRKX_8.5.0/welcome/wp_welcome.html

To perform the tasks described in this document, you need basic WebSphere Portal and WebSphere Application Server knowledge and administration skills. Some steps might require the assistance of another system administrator, such as the database administrator or LDAP administrator.
Hostnames Used in This Guide
To avoid confusion, each instance of the hostnames has been replaced with a sample value that corresponds to the server it belongs to so it is easier to understand to which server the guide is referring.

Sample Values:

Primary Portal Node - myprimaryportal.ibm.com
Secondary Portal Node – mysecondaryportal.ibm.com
Deployment Manager – mydmgr.ibm.com
Database Server – mydbserver.ibm.com
LDAP Server – myldapserver.ibm.com
IBM HTTP Server – mywebserver.ibm.com

The following references to WebSphere Portal and WebSphere Application Server file paths will be used throughout the guide:

AppServerRoot - The root path of the AppServer directory, for example:

/opt/IBM/WebSphere/AppServer

PortalServer root - The root path of the PortalServer directory, for example:

/opt/IBM/WebSphere/PortalServer

wp_profile - The root path of the wp_profile directory, for example:

/opt/IBM/WebSphere/wp_profile

dmgr_profile - The root path of the dmgr profile directory, for example:

/opt/IBM/WebSphere/AppServer/profiles/dmgr01

httpRoot – The root path of the IBM HTTP Server, for example:

/opt/IBM/HTTPServer

pluginRoot - The root path of the WebSphere Plugin directory, for example:

/opt/IBM/WebSphere/Plugins
The following references to relevant usernames and passwords will be used throughout the guide:

*PortalAdminID* - The WebSphere Portal administrator user ID, set during Portal installation.


*dmgrAdminID* – The Deployment Manager administrator ID, set during the Deployment Manager installation.

*dmgrAdminPswd* – The Deployment Manager administrator password, set during Deployment Manager installation.

*WASAdminInLDAP* – The WAS administrator ID stored in the LDAP. This is set during the configuration of the Portal Cluster for federated LDAP security.

*WASPswdInLDAP* – The WAS administrator password stored in the LDAP. This is set during the configuration of the Portal Cluster for federated LDAP security.

**NOTE**: If you plan to configure an LDAP to your cluster, ensure the user names you choose for these values do NOT match any names in the LDAP.

**Configuration Wizard Server Information:**

server1 – This is the name of the Configuration Wizard server. It should not be federated or added to the cluster. If the Configuration Wizard is stopped (after initial Portal installation), it can be re-started by navigating to:

```
AppServerRoot/profiles/cw_profile/bin
```

and running:

```
./startServer.sh server1
```
Chapter 1 – Installing IBM WebSphere Portal v8.5 on the Primary Node

In this section, you will install the IBM Installation Manager (IIM) and WebSphere Portal on the server you intend to use as your primary portal server.

Before installing WebSphere Portal, ensure you review the planning documentation:

http://www01.ibm.com/support/knowledgecenter/SSHRKX_8.5.0/mp/plan/plan_installation.dita

**NOTE:** This installation is performed by a root user.

**SILENT OPTION:** To install your WebSphere Portal offering via silent installation, see Appendix A2.

This chapter will demonstrate a graphical user interface (GUI) Portal installation.

In this guide, the installation was completed as the root user using installation images on a network drive.

1. Open a terminal window and run:

```
ping myprimaryportal.ibm.com
```

where `myprimaryportal.ibm.com` is your fully qualified hostname.

2. In the same terminal window, run:

```
ping localhost
```

to verify that the localhost settings are properly configured on your server.

3. **Linux/UNIX environments only:** Ensure ulimit is set to 10240 or higher by running:

```
ulimit -n 10240
```

in the command line.
4. Unzip all .zip files provided with your Portal media into a single folder.

NOTE: If you already have a current version of IBM Installation Manager (IIM) installed, skip steps 5-11 (open IIM and continue from step 12).

SILENT OPTION: If you want to install IIM via silent (command line only) installation, see Appendix A1. After installing, open IIM and start from step 12 of this chapter.

5. From the WebSphere Portal v8.5 SETUP directory, navigate to:

   SETUP/IIM/yourEnvironment

   and run

   ./install

   where yourEnvironment is the folder that best describes the operating system of the environment in which you are installing WebSphere Portal. For this guide the following is used:

   installationMediaRoot/SETUP/IIM/linux_x86_64
The following window will appear:

6. Click Next.

7. Accept the license agreement and click Next.

8. Choose a directory in which to install IIM. This guide uses:

   /opt/IBM/InstallationManager/eclipse

   which is the default location for Linux.

**NOTE:** In Windows environments, the default location will likely be C:\Program Files\IBM\InstallationManager or a similar Program Files location (Program Files x86, etc.). Spaces in the file path can cause problems later in the installation/configuration of Portal. It is good practice to create a folder called “IBM” at C:\IBM or a similar location into which IIM and WebSphere Portal can be installed.
9. Click **Next**.

10. On the Summary screen, click **Install** to begin the installation.

11. When the installation is complete, click **Restart Installation Manager**.

12. The following screen will appear:

   ![IBM Installation Manager screen](image)

   Click **File>Preferences**.

13. Click **Add Repository**, navigate to:

   
   ```
   installationMediaRoot/Setup/eimage/repository.config
   ```

   and click **OK**.
14. Repeat step 13 for the following repositories:

installationMediaRoot/WP85_Enable/repository.config
installationMediaRoot/WP85_Server/repository.config
installationMediaRoot/WAS8552/repository.config
installationMediaRoot/IBMJAVA7/repository.config

15. Ensure that all the repositories you just added are selected (i.e. there is a check mark in the box next to them) and click **Apply** then **OK**.

16. Back on the IIM Home Screen, click **Install**.
17. Check the boxes to install WebSphere Application Server (WAS), WebSphere Portal Server, and WebSphere Portal Enable (or the offering you are installing, e.g. Extend, Express, etc.). Click Next.

Although **IBM WebSphere SDK Java Technology Edition** is noted as optional here, it is, in fact, required. You must install IBM WebSphere SDK Java Technology Edition version 7.0 or higher.
18. Check the box to install the required WebSphere Application Server fixes. Click **Next**.
19. Accept the license agreement and click **Next**.
20. Select a location for the IIM Shared Resources Directory. This guide uses:

/opt/IBM/IIM/IMShared

for Windows we recommend:

C:\IBM\IIM\IMShared

21. Click Next.
22. Click **IBM WebSphere Application Server** to set the WAS installation location. This guide uses:

```
/opt/IBM/WebSphere/AppServer
```

**Windows:**

```
C:\IBM\WebSphere\AppServer
```
23. Click **IBM WebSphere Portal Server V8.5** to set the Portal Server installation directory:

   /opt/IBM/WebSphere/PortalServer

   **Windows:**

   C:\IBM\WebSphere\PortalServer

   Click Next.
23. Select any additional language translations your environment requires. Only English was selected for this guide. Click **Next**.
24. Review the features to install for both WebSphere Application Server and WebSphere Portal. For this guide, the defaults were used.

**NOTE:** Do not de-select any WebSphere Application Server features.

**NOTE:** Ensure you install a WebSphere Portal profile (selected by default).

25. Click Next.
26. Set the Configuration Wizard (Config Wizard) username and password. You can set these to whatever values you want to use for the Config Wizard credentials. “ConfigWizardID” is used for this guide

27. Click Next.
28. Select Standard configuration mode. Set the hostname to match the fully qualified hostname of your system. Set the node and cell names.
29. Set the WebSphere Administrator username and password. Click **Next**.

**NOTE:** These credentials will be stored in an internal repository and MUST be unique when you add your LDAP configuration. They must be unique from any existing user names in your LDAP and any other Portal or WAS installation on your system or cluster.
30. Review your installation selections and click **Install**. The installation will take 30-60 minutes; don't be concerned if the Installation Manager seems to be stuck on one task for several minutes.
31. When the installation is finished, select the None option for “Which program do you want to start?” and click Finish.

32. Verify that you can access your Portal in an internet browser by navigating to:


At this point, you have successfully installed WebSphere Portal v8.5 with WebSphere Application Server v8.5.5.2.
Chapter 2 – Configuring the Primary Node for a Remote Database

In this section, you will configure Portal to use an external database. For this guide, DB2 is used as the external database with Type 4 drivers. This might vary in your environment. For more information about other databases that can be used with Portal, visit the WebSphere Portal v8.5 Product Documentation for configuring external databases at this link and follow the instructions there as appropriate:

http://www-01.ibm.com/support/knowledgecenter/SSHRKX_8.5.0/mp/config/config_dbms.dita

Ensure that your database client has already been installed on your environment. This guide uses a remote database server: DB2 is installed and being run on a different server than WebSphere Portal.

BEFORE YOU BEGIN: Set up the database users and groups necessary for WebSphere Portal.

For DB2 Databases -
Instructions on how to set up a DB2 Server for use with WebSphere Portal are in Appendix B.

For All Other Databases -
Information on setting up another type of database for use with Portal are in following page in the IBM Knowledge Center:
http://www-01.ibm.com/support/knowledgecenter/SSHRKX_8.5.0/mp/config/prereq_db_software.dita

1. Copy the Type 4 drivers: navigate to DB2InstallationRoot/YourDB2Version/java, for example:

   opt /ibm/db2/V9.7/java

   and copy these two files:

   db2jcc4.jar

   db2jcc_license_cu.jar

2. Create a directory called “dbdrivers” at the following location:

   WebSphereInstallationRoot/wp_profile/PortalServer/dbdrivers

   for this guide:

   /opt/IBM/WebSphere/wp_profile/PortalServer/dbdrivers

3. Move the copies to your Primary Portal server and save them in the dbdrivers folder.

At this point you will begin the process of creating, validating, and transferring the necessary Portal databases.
NOTE: The next several steps will use the Configuration Wizard (Config Wizard), a new web-based tool on WebSphere Portal v8.5. The Config Wizard helps you create custom scripts with instructions, called workflows. Workflows are used to configure different aspects of WebSphere Portal. For more information see the following page in the IBM Knowledge Center:

http://www-01.ibm.com/support/knowledgecenter/SSYJ99_8.0.0/config/cw_overview.dita

4. Open a web browser and navigate to the Configuration Wizard:


and log in with the credentials you created during Portal installation.

CONFIG WIZARD NOTE: When selecting values and responses for Config Wizard tasks, you can mouse over the circular question mark icon next to the response field to learn what the correct value is for your environment.

CONFIG WIZARD CUMULATIVE FIX NOTE: If your system is on a cumulative fix CF01 or higher, your Config Wizard options and screens could differ from the examples shown.

5. From the Configuration Wizard home screen, select Set Up a Cluster>Database Transfer.
6. Choose your target operating system, name of your Portal profile, and Portal profile's location.

Note: The profile name and profile location fields are pre-populated with the defaults.

Click the right arrow.
7. Provide answers for the following database setup items (examples shown; you can customize these values according to your environment or preferences):

   Database management software: DB2
   Do you want to transfer one database or multiple databases: Multiple Databases
   Is the database hosted on the same server as the portal: No
   Do you want the wizard to create users and assign them permission: No, generate scripts
   Do you need advanced database collation support: Yes
   Do you want to enable workload balancing for DB2 pureScale: No

Click the right arrow.
8. Answer the database users questions (examples provided):

Do portal database domains use the same user ID and passwords: Yes

Do you need runtime database user ID for day-to-day operations: Yes

Click the right arrow.


Click the right arrow.
10. Fill in your Configuration, Database administrator, and Runtime user ID's and corresponding passwords. The Runtime User is used to connect the Portal to the database during normal, day-to-day operations. It has fewer permissions than the Configuration user and must comply with your database management software requirements. All are db2inst1 for this guide.

11. On the same page, fill in the following values for each database:
   - **Database Name**: this guide uses the pre-populated defaults
   - **Data Source**: this guide uses the pre-populated defaults
   - **Database URL**: use the example provided below the text box and add your database server hostname in place of “Your_Database_Server”

   **NOTE**: DO NOT put “@” symbols around the database urls (this syntax might be shown in some examples on the Config Wizard page, but it is not correct). Be sure to end each url with a semicolon. Example:

   ``
   jdbc:db2://mydbserver.ibm.com:50000/<databaseName>:returnAlias=0;
   ```
*Feedback database name: WPFDDBK
Example: WPFDDBK

*Feedback data source: wptldbDS

*Feedback database URL: jdbc:db2://mydbserver.ibm.com:50000/ WPFDDBK returnAlias=0;
Example: jdbc:db2://YourDatabaseServer:50000 WPFDDBK returnAlias=0;

*likeminds database name: WPLM
Example: WPLM

*likeminds data source: wplmsbDS

*likeminds database URL: jdbc:db2://mydbserver.ibm.com:50000/WPLM returnAlias=0;
Example: jdbc:db2://YourDatabaseServer:50000/WPLM returnAlias=0;

*Release database name: WPREL
Example: WPREL

*Release data source: wpreldbDS

Example: jdbc:db2://YourDatabaseServer:50000/ WPREL returnAlias=0;

*Community database name: WPCOMM
Example: WPCOMM

*Community data source: wpcommdbDS

*Community database URL: jdbc:db2://mydbserver.ibm.com:50000/ WPCOMM returnAlias=0;
Example: jdbc:db2://YourDatabaseServer:50000/ WPCOMM returnAlias=0;

*Customization database name: WPCUST
Example: WPCUST

*Customization data source: wpcustbDS

*Customization database URL: jdbc:db2://mydbserver.ibm.com:50000/ WPCUST returnAlias=0;
Example: jdbc:db2://YourDatabaseServer:50000/ WPCUST returnAlias=0;

*JCR database name: WPJCR
Example: WPJCR

*JCR data source: wpjcrbDS

*JCR database URL: jdbc:db2://mydbserver.ibm.com:50000/ WPJCR returnAlias=0;
Example: jdbc:db2://YourDatabaseServer:50000/ WPJCR returnAlias=0;
12. On the same page, fill in the last two values:

- **IBM DB2 Library:** the full paths to both type 4 DB2 drivers that you copied onto the primary Portal server, separated by a colon. Example:

  `/opt/IBM/WebSphere/wp_profile/PortalServer/dbdrivers/db2jcc.jar:/opt/IBM/WebSphere/wp_profile/PortalServer/dbdrivers/db2jcc_license_cu.jar`

  Ensure that both paths are completely correct and formatted like the example.

  **NOTE:** For Windows environments, use a semi-colon between the two paths rather than a colon, which is used for Linux environments.

- **Temporary directory to be used for collation:** choose a name and location for your temporary directory. This guide uses:

  `/tmp/tmpdb`

13. Click the right arrow.

14. Click **Download Configuration Scripts** and save the downloaded file.

Do not close this window. Minimize it during the next step as you will need it again.
15. Move the downloaded .zip file from Downloads to a convenient location. This guide uses /home/user/Desktop/CWScripts. Unzip the file by changing directories to the location of the scripts and running:

```
unzip WorkflowInstanceScriptsAll.zip
```

The CWScripts directory now contains the scripts you will run to create and setup your databases.

16. Go up one directory:

```
cd ..
```

and run the following from /home/user/Desktop, or your equivalent location, to change the permissions on the scripts.

```
chmod -R 777 CWScripts
```

17. Return to the Config Wizard window. Click **Mark Setp Complete** for Setp 1 - Create the database users and groups – as this step was completed before you started the Config Wizard.

18. For Step 2 – Back up the properties files that the wizard uses during this configuration - click **Run Step** and wait a moment for it to complete.
NOTE: Some of the following steps will be specific to DB2; see the instructions from the Config Wizard for steps specific to your database.

19. Minimize the Config Wizard window and go back to the folder containing your downloaded scripts.

   ![Folder icons](image)

   properties  scripts  TransferDatabase.html  TransferDatabase.wfi

   wifi-instance.xsl  WorkflowInstanceScriptsAll.zip

20. From the folder called `scripts`, copy these two files:

   - CreateDB2Database
   - SetupDB2Database.sql

21. Move these two files to your database server and save them in a folder for which db2inst1 has permissions. This guide uses `/home/db2inst1/Scripts`.

22. Change permissions on the folder you created to hold the scripts:

   `chmod -R 777 Scripts`
23. Change the name of “CreateDB2Database” to “CreateDB2Database.sh”.

24. Open a command line and change directories to the Scripts folder:

   cd /home/db2inst1/Scripts

As db2inst1, run CreateDB2Database.sh (ensure that DB2 is started before running this script):

   su db2inst1

   ./CreateDB2Database.sh

25. After that command completes successfully, run the following:

   db2 -tvf SetupDB2Database.sql

26. Go back to the Config Wizard window. Click **Mark Step Complete** for Step 3 and Step 4.

27. Click **Instructions for Step 5** and determine if this step is required for your environment. If it is necessary, follow the instructions from steps 28-45 in this guide. If not, skip to step 46.

28. Copy these files from the WebSphere Portal server to /tmp/tmpdb (the temporary folder you specified on the previous Config Wizard page) on the DB2 server:

   /opt/IBM/WebSphere/PortalServer/jcr/wp.content.repository.install/lib/wp.content.repository.install.jar

   /opt/IBM/WebSphere/wp_profile/PortalServer/jcr/config/registerCollationUDFTemplate.sql
29. Set up collation on the database where the JCR domain is located. Change to this directory:

```
db2_instance_owner_home/sqlib/function
```

30. Enter this command:
```
db2home/sqlib/java/jdk/bin/jar -xvf /opt/IBM/tempey/wp.content.repository.install.jar icm/CollationUDF.class
```
Your path to /bin/jar might be different depending upon your DB2 installation.

31. Change to the temporary directory where you copied the files in a previous step. For example, you can use this temporary directory on the DB2 server:

```
/tmp/tmpdb
```

32. Open the file “registerCollationUDFTemplate.sql” and change all SCHEMA references to the JCR schema; for example, JCR.

33. Connect to the JCR database:
```
connect to WPJCR user DBuser using DBPassword
```

34. Enter this command to run the script:
```
db2 -tvf /tmp/tmpdb/registerCollationUDFTemplate.sql
```

35. Disconnect from the JCR database:
```
db2 disconnect all
```

36. Restart the DB2 instance.

37. Verify that the UDF is registered properly:
```
Log in as DBUser
```

38. Open a DB2 terminal window and connect to the database that contains JCR domain:
```
db2 connect to WPJCR user DBuser using DBPassword
```

39. When you have connected to the JCR database, you need to register the UDF. To register the UDF, you run this command:
```
values schema.sortkeyj('abc','en')
```

40. Disconnect from DB2 terminal window:
```
db2 disconnect all
db2 terminate
```
41. Start the WebSphere Portal server.

42. To update the collation configuration options, first log in to WebSphere Integrated Solutions Console.

43. Go to **Resources > Resource Environment > Resource Environment Providers > JCR ConfigService PortalContent > Custom properties**.

44. Add or update the following properties as necessary:
   
   Enable/Disable collation support for all DB2 platforms (LUW, Z, I), this is disabled (false) by default:
   
   - **Name**: jcr.query.collation.db2.enabled
     **Value**: true
     **Type**: java.lang.String
   
   - **Name**: jcr.query.collation.en
     **Value**: en
     **Type**: java.lang.String
   
   - **Name**: jcr.query.collation.sv
     **Value**: sv
     **Type**: java.lang.String
   
   - **Name**: jcr.query.collation.zh
     **Value**: zh
     **Type**: java.lang.String
   
   - **Name**: jcr.query.collation.de
     **Value**: de
     **Type**: java.lang.String
   
   - **Name**: jcr.query.collation.da
     **Value**: da
     **Type**: java.lang.String
   
   - **Name**: jcr.query.collation.hu
     **Value**: hu
     **Type**: java.lang.String
   
   - **Name**: jcr.query.collation.jp
     **Value**: jp
     **Type**: java.lang.String

45. Stop WebSphere Portal server to apply your settings. Then, restart the WebSphere Portal server.
46. Click **Mark Step Complete** for Step 5 (if you decided not to complete Step 5, click **Skip Step**).

47. Restart the DB2 server (Step 6) by running the following commands on the DB2 server:

```
db2stop

db2start
```

This restart is necessary to apply heap size changes that were made during previous automated Config Wizard tasks. For more information see the following:


49. Run Step 7 – Validate the database connection and environment by clicking **Run Step**.

   If this step fails, click “View Result” and look for the first ERROR message in the log. Issues with this step are often caused by small typing mistakes in the DB URL and DB2 Library (driver paths) fields. You can go back to the page where those values are defined and ensure that all information and formatting is correct, then click right again, mark steps 1-6 as Complete or Skipped, then run the validation again.

50. When the validation is complete, click **Run Step** for Step 8 – Stop the Portal Server.

51. Click **Run Step** for Step 9 – Transfer the Database.

52. Click **Run Step** for Step 10 – Configure the JCR domain to support large files.

53. Click **Run Step** for Step 11 – Start the portal server.
54. Click **Finished**.

<table>
<thead>
<tr>
<th>Step</th>
<th>Task</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Manual Step: Create the database users and groups.</td>
<td><img src="Complete.png" alt="Complete" /></td>
</tr>
<tr>
<td></td>
<td>Mark Step Complete</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Back up the properties files that the wizard uses during the configuration.</td>
<td><img src="Complete.png" alt="Complete" /></td>
</tr>
<tr>
<td></td>
<td>View Step Command</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Manual Step: Download the script and run it on the database server to create your database.</td>
<td><img src="Complete.png" alt="Complete" /></td>
</tr>
<tr>
<td></td>
<td>Download Script Instructions for Step 3</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Manual Step: Download the script and run it on the database server to set up your database.</td>
<td><img src="Complete.png" alt="Complete" /></td>
</tr>
<tr>
<td></td>
<td>Download Script Instructions for Step 4</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Manual Step: Set up JCR collation for correct language locale order.</td>
<td><img src="Complete.png" alt="Complete" /></td>
</tr>
<tr>
<td></td>
<td>Instructions for Step 5</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Manual Step: Restart the DB2 server.</td>
<td><img src="Complete.png" alt="Complete" /></td>
</tr>
<tr>
<td></td>
<td>Mark Step Complete</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Validate the database connection and environment.</td>
<td><img src="Complete.png" alt="Complete" /></td>
</tr>
<tr>
<td></td>
<td>View Step Command</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Stop the portal server.</td>
<td><img src="Complete.png" alt="Complete" /></td>
</tr>
<tr>
<td></td>
<td>View Step Command</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Transfer the database.</td>
<td><img src="Complete.png" alt="Complete" /></td>
</tr>
<tr>
<td></td>
<td>View Step Command</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Configure the JCR domain to support large files.</td>
<td><img src="Complete.png" alt="Complete" /></td>
</tr>
<tr>
<td></td>
<td>View Step Command</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Start the portal server.</td>
<td><img src="Complete.png" alt="Complete" /></td>
</tr>
<tr>
<td></td>
<td>View Step Command</td>
<td></td>
</tr>
</tbody>
</table>

55. Verify that you can access your Portal on the web after the database transfer by navigating to:


in a browser.

At this point, you have successfully installed WebSphere Portal and configured it to use an external database.
Chapter 3 – Installing and Configuring the Deployment Manager

In this section, you will install the Deployment Manager (dmgr) on a separate server. Unless otherwise noted, the following steps should be completed on the server you intend to use as your deployment manager.

1. Copy the WAS8552 and SETUP folders from your installation media location on the Primary Portal server onto the Deployment Manager server or locate the equivalent installation discs.

2. Install IBM Installation Manager on the Deployment Manager server. For guidance on how to install IIM, refer to steps 5-11 from Chapter 1 of this guide or, for silent installation, see Appendix A1.

3. On the IIM Home screen, click File>Preferences>Repositories

4. Add the following repository:

   \text{installationMediaRoot/WAS8552/repository.config}

   where \text{installationMediaRoot} is the location in which you just placed the WAS8552 folder.
5. Click **Apply**>**OK**. Then, back on the home screen click **Install**.

6. Select the check box for **IBM WebSphere Application Server Network Deployment** and click **Next**.

7. Click the box to install the required WebSphere Application Server (WAS) fixes and click **Next**.

8. Accept the license agreement and click **Next**.

9. Select the location of the Shared Resources directory and click **Next**. This guide uses:
   
   /opt/IBM/IMShared

10. Select the Installation Location for your Deployment Manager and click **Next**. This guide uses:
   
   /opt/IBM/WebSphere/AppServer

11. Select any additional languages you want to install and click **Next**. For this guide, no additional languages were selected.

12. Select any additional features you want to install and click **Next**. This guide uses the defaults.

13. On the summary screen, click **Install**.

14. When the installation completes, select the radio button **None** for **Which program do you want to start?** and click **Finish**.

15. Open the Configuration Wizard (Config Wizard) by navigating to:


   in a web browser. Log in with your Config Wizard credentials.

16. On the Config Wizard Home Screen, click **Set Up a Cluster**>**Create a Deployment Manager**.
17. Choose your target operating system, name of your Portal profile, and the Portal profile location. The profile name and profile location pre-populated values are the defaults. **NOTE**: wp_profile is the correct value for the **Target portal profile name** field. This may differ from your expectations if you have previous dmgr experience, but in this case wp_profile is correct.

18. Select **On a remote server** for the deployment manager location.

19. Fill in the hostname of your primary Portal server.

Click the right arrow.
20. Fill in the following values (examples given):

- Deployment manager host name: mydmgr.ibm.com, Replace with your dmgr hostname.
- New deployment manager profile name: dmgr01
- Deployment manager profile path: leave as default or change to match your profile name, if you changed it from the default.
- Deployment manager cell name: this guide uses the default, dmgrCell01, but you can change it to anything EXCEPT the name of the previously created Portal cell.
- Deployment manager node name: this guide uses the default, dmgrNode01, but you can change it to anything EXCEPT the name of the previously created Portal node.
- WebSphere Application Server installation directory: leave as default.
- WebSphere Application Server administrator ID: dmgrAdminID
- WebSphere Application Server administrator password: dmgrAdminPswd
- Re-enter the password: your dmgr password again

Click the right arrow.
21. Click **Download Configuration Scripts**, save WorkflowInstanceScriptsAll.zip in an easily accessible location, then unzip it.

22. Copy the following files and save them in a temporary location on the dmgr server:

   - AugmentRemoteDeploymentManagerProfile
   - CreateRemoteDeploymentManagerProfile

   For this guide, they were placed in the following location:

   `/tmp/Scripts`

23. Change the permissions on this folder to grant its contents all permissions:

   ```
   cd /home/user/Desktop/Scripts
   chmod -R 777 Scripts
   ```

24. Change the name of “CreateRemoteDeploymentManagerProfile” to “CreateRemoteDeploymentManagerProfile.sh” (by right clicking the file icon and selecting **Rename**).

25. Run `CreateRemoteDeploymentManagerProfile.sh`:

   ```
   ./CreateRemoteDeploymentManagerProfile.sh
   ```

26. Click **Mark Step Complete** for Step 1 – Download the script and view instructions to create the Deployment Manager.
27. Ensure that the newly created dmgr is stopped:

   cd /opt/IBM/WebSphere/AppServer/profiles/dmgr01/bin
   ./stopManager.sh -user dmgrAdminID -password dmgrAdminPswd

28. Back on the Primary Portal Server, navigate to WebSphereInstallationRoot/PortalServer:

   opt>IBM>WebSphere>PortalServer

29. Copy the folder named “filesforDmgr” and save it in the /tmp directory on the Deployment Manager Server.

30. Open filesforDmgr on the dmgr Server. Move the filesforDmgr.zip file into the AppServer directory and unzip it there. Example:

   cd /opt/IBM/WebSphere/AppServer
   unzip filesforDmgr.zip

31. Back on the Config Wizard, click **Mark Step Complete** for Step 2 – Add the required WebSphere Portal files to the remote deployment manager.
32. On the dmgr Server, change the name of the file

    AugmentRemoteDeploymentManagerProfile

    to

    AugmentRemoteDeploymentManagerProfile.sh

33. Run AugmentRemoteDeploymentManagerProfile.sh:

    cd /home/user/Desktop/Scripts

    ./AugmentRemoteDeploymentManagerProfile.sh

34. When this is complete you should see the line “Profile augmentation succeeded” about one third of the way down in the command line output.

35. Click **Mark Step Complete** for Step 3 – Download the script and view instructions to augment the deployment manager with WebSphere Portal files.
36. Click **Finished**.

37. Verify that you can access your newly created Deployment Manager's console by opening a web browser and navigating to:

https://mydmgr.ibm.com:9043/ibm/console

At this point, you have installed the Deployment Manager and created a dmgr profile.
Chapter 4 – Federating and Clustering the Primary Node

In this section you will create a cluster using the Configuration Wizard, add the Primary Portal Node to this cluster, and federate the Primary Node.

1. Open the Configuration Wizard in a web browser:


   and sign in with your Config Wizard credentials.

2. On the Config Wizard Home screen, Click Set Up a Cluster> Create a Cluster.

3. Select your target operating system, Portal profile name, and Portal profile home directory.

   Answer questions about your environment so that the wizard can determine which fields you must complete. Then, you can run the configuration, save your settings, or download the instruction and script files to run later. If you saved your settings from a previous session, you can upload the settings now. Learn More

   System Information

<table>
<thead>
<tr>
<th>System Information</th>
<th>Basic Cluster Settings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Target operating system:</td>
<td>Linux</td>
</tr>
<tr>
<td>Target portal profile name:</td>
<td>wp_profile</td>
</tr>
<tr>
<td>Target portal profile home directory:</td>
<td>/opt/IBM/WebSphere/wlp_profile</td>
</tr>
</tbody>
</table>

   Click the right arrow.

4. Select the deployment manager's location (remote for this guide) and the type of cluster you are creating (static for this guide). For more information on static and dynamic clustering, see the following documentation:


   Click the right arrow.
5. Fill in your Portal Administrator ID, Portal Administrator password, release database user (db2inst1 for this guide), and release database password.

<table>
<thead>
<tr>
<th>Portal Information</th>
<th>Deployment Manager</th>
<th>Cluster Settings</th>
</tr>
</thead>
<tbody>
<tr>
<td>WebSphere Portal administrator ID:</td>
<td>YourPortalAdminID</td>
<td></td>
</tr>
<tr>
<td>WebSphere Portal administrator password:</td>
<td>password</td>
<td></td>
</tr>
<tr>
<td>Re-enter the password</td>
<td>password</td>
<td></td>
</tr>
<tr>
<td>Release configuration user:</td>
<td>db2inst1</td>
<td></td>
</tr>
<tr>
<td>Release configuration password:</td>
<td>password</td>
<td></td>
</tr>
<tr>
<td>Re-enter the password</td>
<td>password</td>
<td></td>
</tr>
</tbody>
</table>

Click the right arrow.

6. Fill in your dmgr Administrator ID, dmgr Administrator Password, dmgr Admin password again, dmgr Cell name (dmgrCell01), dmgr Node name (dmgrNode01), dmgr profile path (/opt/IBM/WebSphere/AppServer/profiles/dmgr01), dmgr host name, and dmgr Soap port (the default is 8879).

<table>
<thead>
<tr>
<th>Portal Information</th>
<th>Deployment Manager</th>
<th>Cluster Settings</th>
</tr>
</thead>
<tbody>
<tr>
<td>WebSphere Application Server administrator ID:</td>
<td>dmgrAdminID</td>
<td></td>
</tr>
<tr>
<td>WebSphere Application Server administrator password:</td>
<td>password</td>
<td></td>
</tr>
<tr>
<td>Re-enter the password</td>
<td>password</td>
<td></td>
</tr>
<tr>
<td>Deployment manager cell name:</td>
<td>dmgrCell01</td>
<td>Example: dmgrCell01</td>
</tr>
<tr>
<td>Deployment manager node name:</td>
<td>dmgrNode01</td>
<td>Example: dmgrNode01</td>
</tr>
<tr>
<td>Deployment manager profile path:</td>
<td>/opt/IBM/WebSphere/AppServer/profiles/dmgr01</td>
<td>Example: /opt/IBM/WebSphere/AppServer/profiles/dmgr01</td>
</tr>
<tr>
<td>Deployment manager host name:</td>
<td>mydmgr.ibm.com</td>
<td></td>
</tr>
<tr>
<td>SOAP port:</td>
<td>8879</td>
<td></td>
</tr>
</tbody>
</table>

Click the right arrow.
7. Choose a cluster name. For this guide, the default, “PortalCluster”, is used.

8. Check the system clocks on the Primary Portal Server and the Deployment Manager Server and ensure that their times are within five minutes of each other. Mark Step 1 on the Config Wizard Create a Cluster page complete.

9. For Step 2 – Federate the node, click Run Step.

10. For Step 3 – Prepare the node for clustering, click Run Step. This will run the post-federation configuration engine task.

11. For Step 4 – Complete the cluster setup, click Run Step. This will run the cluster-setup configuration engine task.

12. After all four steps have been successfully completed, click Finish.

13. Verify that you can access your Portal in a web browser:


14. Open the dmgr Console in a web browser:

   https://mydmgr.ibm.com:9043/ibm/console
15. Sign in. On the left side, click **Servers**\textgreater **Clusters**\textgreater **WebSphere application server clusters** and ensure that your newly created cluster is on the list of Application servers (this will be the only item on the list).
In Steps 16-22, you will enable Memory-to-Memory replication for the primary cluster member.

**Special note on Memory-to-Memory (M2M) replication:** M2M replication takes session data from one Portal server and copies it to another Portal server. This is useful in situations where one Portal server catastrophically fails. Failover to an additional Portal server in the cluster can occur with no disruption for the end user. The user's session data will be retained. M2M's disadvantage is the additional overhead needed to store and replicate the session data across all cluster members. Suppose you have a two server cluster without M2M enabled. Each server utilizes 1GB of memory to store session data. With M2M enabled, each server would now consume 2GB of session data. In a ten server cluster, assuming similar scaling, it would be 10GB of session data. Similar scaling with CPU would be needed to ensure replication of data could occur, which is necessary for successful failover.

We have found that most Portal environments can safely enable M2M replication. For larger scale Portal deployments M2M does not scale as well and alternatives are recommended. Replication domains, session databases and WebSphere Extreme Scale caching are three examples of many alternatives that may perform better for scaling purposes. Please open a Problem Management Record (PMR) with IBM WebSphere Application Server L2 support to discuss details of options available if you have a larger-scale Portal environment.

13. While logged in to the dmgr, navigate to **Servers → Server Types → WebSphere application servers → WebSphere_Portal → Session Management → Distributed Environment Settings.**

![Application servers > WebSphere_Portal](image)

Use this page to configure an application server. An application server is a server that provides services required to run enterprise applications.

<table>
<thead>
<tr>
<th>Runtime</th>
<th>Configuration</th>
<th>Reports</th>
<th>Operations</th>
</tr>
</thead>
</table>

**General Properties**

- **Name:** WebSphere_Portal
- **Node name:** Node01
- **Run in development mode:**
- **Parallel start:**
- **Start components as needed:**
- **Access to internal server classes:**

**Container Settings**

- **Session management**
  - SAP Container Settings
  - Web Container Settings
  - Portlet Container Settings
  - EJB Container Settings
  - Container Services
  - Business Process Services

**Applications**

- **Installed applications**

53
14. Click the blue link for **Memory-to-memory replication**.

15. In the Replication Domain drop-down menu, select your cluster (e.g. PortalCluster).

16. In the Replication Mode drop-down menu, select **Both client and server**.

17. Click **OK** and Save all changes.

18. Back on the **Session management** page (which you should see after saving the changes), click **Custom Properties**.
19. Create a new custom property by clicking **New**.

20. For the **Name**, type in “UseInvalidatedId” and for the **Value**, type in “false”.

21. Click **OK** and save the changes.

22. Restart the DMGR, NodeAgent, and WebSphere_Portal server.

23. Verify Portal is functional by accessing it in your web browser:


At this point you have successfully completed building a one-node cluster using the out of the box security configuration. In the remaining sections, we will configure the Portal cluster with a federated LDAP and add an additional horizontal node to the cluster.
Chapter 5 – Configuring the Portal Cluster for Federated LDAP Security

This section covers adding a federated LDAP Server to the cluster's security configuration. For more details about LDAP/Security configuration, refer to the product documentation:

http://www-01.ibm.com/support/knowledgecenter/SSHRKX_8.5.0/mp/config/cw_ldap.dita

NOTE: If you have any Cumulative Fixes installed on your Portal server at this time, there will likely be different Configuration Wizard (Config Wizard) screens/values for LDAP configuration. See the Config Wizard instructions and the product documentation (link above) for guidance.

NOTE: If you have user ID's stored in your LDAP that are the same as your Portal or WAS administrator ID's, or if you have a preexisting LDAP group called “wpsadmins,” open a PMR with IBM support to resolve this issue.

In this guide, we will configure security in our cluster to a non-SSL federated LDAP server using IBM Directory Server.

BEFORE PROCEEDING WITH THESE STEPS, review the following Portal and LDAP Integration guide, especially if this is your first time configuring Portal with an LDAP server.

http://www-10.lotus.com/ldd/portalwiki.nsf/dx/Guide_to_Integrating_WebSphere_Portal_v8.5_with_LDAP

This will help you identify the configuration values needed for this section.
1. Open the Configuration Wizard (Config Wizard) in a web browser:


2. Click Set Up a Cluster > Enable Federated Security.

3. Specify your target operating system, primary Portal profile name, and path to the primary Portal profile. Examples shown.

   - **Target operating system:** Linux
   - **Target portal profile name:** myprofilename
   - **Target portal profile home directory:** /myIBMWs/WebSphere/myprofile

   Click the right arrow.
4. Specify the following values:

- User registry software: Your LDAP software type; IBM Directory Server for this guide.

- Do you need SSL between the portal server and the user registry: No for this guide.

- Can portal update entries in your LDAP registry: Yes if Portal is used for user registration or similar information creation/updates. No if Portal will use your LDAP data as read only. Yes for this guide.

- Use Administrator ID's stored in your LDAP user registry: Yes if you want your Portal administrator credentials to be stored in your LDAP system. If this is a production system, you MUST select Yes. No if you want to continue to use the Portal administrator credentials stored in the Portal file system AND this is a non-production system. Yes for this guide.

Click the right arrow.

5. Specify your WAS administrator ID and password and your Portal administrator ID and password. These will be the same at this point and are the current credentials that were created during the Portal installation, NOT the LDAP ID you want to use.

Click the right arrow.
6. Select a repository ID (a name you create to identify this LDAP in your Portal configuration), specify your LDAP host name, LDAP port (default is 389), Base Distinguished Name (DN), Bind DN, Bind password, Administrator group DN, LDAP Administrator password, default parent for new groups created by Portal, and the default parent for entry type PersonAccount. Examples shown.

*LDAP Repository ID:
   MYPORTALLDAP
   Example: myldapid

*LDAP host name:
   myldapserver.ibm.com
   Example: yourhost.yourco.com

*LDAP port:
   389

Base DN:
   dc=ibm,dc=com
   Example: dc=yourco,dc=com

*Bind DN:
   cn=root
   Example: uid=wpbind, cn=users, dc=yourco, dc=com

*Bind password:
   *************

*Re-enter the password
   *************

*Administrator group DN from LDAP:
   cn=portaladmins, dn=groups, dc=ibm, dc=com
   Example: cn=myNewAdminGroup, cn=groups, dc=yourco, dc=com

*Administrator DN from LDAP:
   uid=portaladmin, cn=users, dc=ibm, dc=com
   Example: uid=myNewAdmin, cn=users, dc=yourco, dc=com

*Administrator password from LDAP:
   *************

*Re-enter the password
   *************

Default parent for group:
   cn=groups, dc=ibm, dc=com
   Example: cn=groups, dc=yourco, dc=com

Default parent for PersonAccount:
   cn=users, dc=ibm, dc=com
   Example: cn=users, dc=yourco, dc=com

Click the right arrow.
7. Click **Run Step** for Steps 1, 2, 3, 4, 5, 6, 7, 8, and 9.

<table>
<thead>
<tr>
<th>Step</th>
<th>Description</th>
<th>Complete Status</th>
<th>View Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Validate your LDAP server settings. View Step Command</td>
<td>Complete</td>
<td>View Result</td>
</tr>
<tr>
<td>2</td>
<td>Add an LDAP user registry to the default federated repository. View Step Command</td>
<td>Complete</td>
<td>View Result</td>
</tr>
<tr>
<td>3</td>
<td>Update the user registry where new users and groups are stored. View Step Command</td>
<td>Complete</td>
<td>View Result</td>
</tr>
<tr>
<td>4</td>
<td>Register the WebSphere Application Server scheduler tasks. View Step Command</td>
<td>Complete</td>
<td>View Result</td>
</tr>
<tr>
<td>5</td>
<td>Replace the file-based WebSphere Portal and WebSphere Application Server users and groups with users and groups from your LDAP server. View Step Command</td>
<td>Complete</td>
<td>View Result</td>
</tr>
<tr>
<td>6</td>
<td>Recycle the servers after a security change. View Step Command</td>
<td>Complete</td>
<td>View Result</td>
</tr>
<tr>
<td>7</td>
<td>Update the search administration user. View Step Command</td>
<td>Complete</td>
<td>View Result</td>
</tr>
<tr>
<td>8</td>
<td>After you change the security model, the servers need to be restarted. Restart the portal server. View Step Command</td>
<td>Complete</td>
<td>View Result</td>
</tr>
<tr>
<td>9</td>
<td>Verify that all defined attributes are available in the configured LDAP user registry. View Step Command</td>
<td>Complete</td>
<td>View Result</td>
</tr>
</tbody>
</table>

8. For Step 10, locate the file called “MemberFixerModule.properties” located in the following directory on your Primary Portal Server:

   /opt/IBM/WebSphere/wp_profile/PortalServer/wcm/shared/app/config/wcmservices
9. Open MemberFixerModule.properties with a text editor. Add the following lines, using your full Distinguished Name for the user IDs:

```
uid=wpsadmin,o=defaultWIMFileBasedRealm -> uid=portaladmin.cn=users,dc=ibm,dc=com
```

and save the changes to the file. For more information on this step, click Instructions for Step 10 in the Config Wizard.

10. Click Mark Step Complete for step 10 in the Config Wizard.

11. Click Run Step for Steps 11 and 12.

12. For Step 13, locate the “wkplc.properties” file in the following directory on the Primary Portal server:

```
/opt/IBM/WebSphere/wp_profile/ConfigEngine/properties
```
13. Open wkplc.properties with a text editor and fill in the following values:

   federated.ldap.attributes.nonSupported=certificate, members
   federated.ldap.attributes.mapping.ldapName=mail, title
   federated.ldap.attributes.mapping.portalName=ibm-primaryEmail, ibm-jobTitle
   federated.ldap.attributes.mapping.entityTypes=PersonAccount

14. Save wkplc.properties and close the text editor.

15. On the Primary Portal node, open a terminal and change directories to the following:

   cd /opt/IBM/WebSphere/wp_profile/ConfigEngine

16. Run the following command:

   ./ConfigEngine.sh wp-update-federated-ldap-attribute-config -DWasPassword=dmgrAdminPswd

17. Stop the Portal server: on the primary Portal server, navigate to the following directory:

   /opt/IBM/WebSphere/wp_profile/bin

   and run the following command:

   ./stopServer.sh WebSphere_Portal -user PortalAdminID -password PortalAdminPswd

   **Note:** The administrative ID and password entered here and in the next step are the original credentials you set during the Portal installation, NOT the new values that will be stored in the LDAP.

18. Stop the nodeagent: from the /opt/IBM/WebSphere/wp_profile/bin directory on the primary Portal server, run the following command:

   ./stopNode.sh -user PortalAdminID -password PortalAdminPswd

19. Stop the dmgr: from the /opt/IBM/WebSphere/AppServer/profiles/dmgr01/bin directory on the primary Portal server, run the following command:

   ./stopManager.sh -user dmgrAdminID -password dmgrAdminPswd
20. Start the dmgr: from the /opt/IBM/WebSphere/AppServer/profiles/dmgr01/bin directory on the primary Portal server, run the following:

    ./startManager.sh

21. Start the nodeagent: from the /opt/IBM/WebSphere/wp_profile/bin directory on the primary Portal server, run the following:

    ./startNode.sh

22. Start the Portal server: from the /opt/IBM/WebSphere/wp_profile/bin directory on the primary Portal server, run the following:

    ./startServer WebSphere_Portal

23. Verify that you can log in to your dmgr with the WAS administrator ID stored in the LDAP.

24. Verify that you can log in to the primary Portal in a web browser with the Portal administrator ID stored in the LDAP.

25. Verify that you can log in to the primary Portal with a regular user ID stored in the LDAP.

NOTE: The final steps in the Instruction for Step 13 were skipped for this guide and are not required. If you want to complete the steps to flag an attribute as either unsupported or required for the entire WebSphere Portal environment instead of just for the specified LDAP, see appendix C.


At this point, you have successfully built a single node cluster using a remote database and a federated LDAP server.
Chapter 6 – Installing WebSphere Portal on an Additional Horizontal Node

In this section, you will install the IBM Installation Manager and WebSphere Portal on the server you intend to use as your second portal server for the cluster.

Before installing WebSphere Portal, ensure you review the Planning documentation:

http://www-01.ibm.com/support/knowledgecenter/SSHRKX_8.5.0/welcome/wp_welcome.html

SILENT OPTION: To install your WebSphere Portal offering via silent installation, see Appendix A3.

In this guide, the installation was completed as the 'root' user using installation images on a network drive and a graphical user interface.

1. Open a terminal window on your Secondary Portal server and run:

   ping mysecondaryportal.ibm.com

   where mysecondaryportal.ibm.com is your fully qualified hostname.

2. In the same terminal window, run:

   ping localhost

   to verify that the localhost settings are properly configured on your server.

Linux/UNIX environments only: Ensure ulimit is set to 10240 or higher by typing

   ulimit -n 10240

   in the command line.
3. Unzip all .zip files provided into a single folder.

NOTE: If you already have a current version of IBM Installation Manager (IIM) Installed, skip steps 5-11

SILENT OPTION: If you want to install IIM via silent (command line only) installation, see Appendix A1. After installing, open IIM and start from step 12 of this chapter.

4. From the WebSphere Portal v8.5 Setup DVD or SETUP directory, navigate to:

   SETUP/IIM/yourEnvironment

and run:

   ./install

where yourEnvironment is the folder that best describes the operating system of the environment in which you are installing WebSphere Portal. For this guide the following is used:

   installationMediaRoot/SETUP/IIM/linux_x86_64

   ./install
5. Click **Next**.

6. Accept the license agreement and click **Next**.

7. Choose a directory in which to install IIM. This guide uses:

   ```
   /opt/IBM/InstallationManager/eclipse
   ```

   which is the default location for Linux.

   **NOTE:** On Windows, the default location will likely be `C:\Program Files\IBM\InstallationManager` or a similar Program Files location (`Program Files x86`, etc.). Spaces in the file path can cause problems later in the installation/configuration of Portal. It is good practice to create a folder called “IBM” at `C:\IBM` into which IIM and WebSphere Portal can be installed.

8. Click **Next**.
9. On the Summary screen, click **Install** to begin the installation.

10. When the installation is complete, click **Restart Installation Manager**.

11. The following screen will appear:

   ![IBM Installation Manager](image)

   Click **File>Preferences**.

12. Click **Add Repository**, navigate to:

   ```
   installationMediaRoot/Setup/eimage/repository.config
   ```

   and click **OK**.
13. Repeat step 12 for the following repositories:

installationMediaRoot/WP85_Enable/repository.config
installationMediaRoot/WP85_Server/repository.config
installationMediaRoot/WAS8552/repository.config
installationMediaRoot/IBMJAVA7/repository.config

14. Ensure that all of the repositories you just added are selected (i.e. there is a check mark in the box next to them) and click **Apply** then **OK**.

15. On the IIM Home Screen, click **Install**.
16. Check the boxes to install WebSphere Application Server, WebSphere Portal Server, and WebSphere Portal Enable (or the offering you are installing, e.g. Extend, Express, etc.).

Click Next.
17. Check the box to install the required WebSphere Application Server (WAS) fixes. Click **Next**.

18. Accept the License Agreement and click **Next**.

19. Select a location for the IIM Shared Resources Directory. This guide uses:

   /opt/IBM/IIM/IMShared

   for Windows we recommend:

   C:\IBM\IIM\IMShared
20. Click **IBM WebSphere Application Server** to set the WAS installation location. This guide uses:

/opt/IBM/WebSphere/AppServer

Windows:

C:\IBM\WebSphere\AppServer

21. Click **IBM WebSphere Portal Application Server** to set the WPS installation directory:

/opt/IBM/WebSphere/PortalServer

Windows:

C:\IBM\WebSphere\PortalServer

22. Click **Next**.
23. Select any additional Language Translations your environment requires. Only English was selected for this guide. Click Next.

24. Review the features to install for both WebSphere Application Server and WebSphere Portal. UNCHECK the box for WebSphere Portal profile.

**NOTE:** Ensure you DO NOT install a WebSphere Portal profile. You will copy over profile information from the primary Portal server and create a profile for this server in a later step.

25. Click Next.
26. Set the Configuration Wizard username and password. These are the credentials that you will use to access the Config Wizard for the secondary server. You should not use the credentials that were just stored to the LDAP for this. Click Next.
27. Review your installation selections and click **Install**. The installation will take 30-60 minutes; don't be concerned if the Installation Manager seems to be stuck on one task for several minutes.
28. When the installation is finished, select None for Which program do you want to start? and click Finish.

**NOTE:** There is not yet a profile on this system. Therefore, you cannot access this Portal in a web browser at this time.

**IMPORTANT:** If you have applied a Cumulative Fix (CF) to the primary Portal, you need to apply the same CF to the secondary Portal before adding it to the cluster. All Portal binaries and profiles must be on the same CF level before being added to a cluster. If you are upgrading the primary Portal, upgrade to at least CF04, as this and all later CFs automatically upgrade the profileTemplates.zip file, which is needed to create new cluster members.

At this point, you have successfully installed WebSphere Portal v8.5 with WebSphere Application Server 8.5.5.2 on an additional node.
Chapter 7 – Federating and Clustering the Additional Node

This section covers adding the additional node to the Deployment Manager cell and adding a new WebSphere Portal server as a horizontal cluster member to the previously created cluster. Once this section is completed, you will have a functional two-node horizontal cluster using federated LDAP security.

IMPORTANT: If you have applied a Cumulative Fix (CF) to the primary Portal, you need to apply the same CF to the secondary Portal before adding it to the cluster. All Portal binaries and profiles must be on the same CF level before being added to a cluster. If you are upgrading the primary Portal, upgrade to at least CF04, as this and all later CFs automatically upgrade the profileTemplates.zip file, which is needed to create new cluster members.

1. **On the Secondary Portal server**, open the secondary Portal Config Wizard in a web browser:


   Sign in with your Config Wizard credentials.

2. On the Config Wizard home screen, click **Set Up a Cluster>Create an Additional Cluster Node**.

3. Select your target operating system, Portal profile name, and Portal profile home directory.
4. Select the location of the Deployment Manager for your environment and the type of cluster you created.

Click the right arrow.

5. Specify the following:
   - Cell name: a new cell name for the new profile
   - Node name: a new node name for the new profile
   - WAS installation directory: /opt/IBM/WebSphere/AppServer, automatically set to default
   - Portal host name: mysecondaryportal.ibm.com
   - Portal installation directory: /opt/IBM/WebSphere/PortalServer, automatically set to default
   - First port number: This value will be pre-populated but can be set to any available port number on the secondary server. Take note of the port number as this is how you will access the secondary Portal on the web.

Click the right arrow.
6. Specify your WAS administrator ID from your LDAP, WAS administrator password from your LDAP, dmgr cell name, dmgr node name, dmgr profile path, dmgr host name, and Portal installation directory.

7. Click the right arrow.

8. Click Mark Step Complete for Step 1, since you have already installed the Portal binaries on this server.
9. From the file system location /opt/IBM/WebSphere/PortalServer/profileTemplates, or the equivalent for your environment, on the Primary Portal server, copy the following file:

    profileTemplates.zip

10. Save the .zip file in the /opt/IBM/WebSphere/PortalServer/profileTemplates folder on the Secondary Portal server. If the profileTemplates folder does not exist on the Secondary server, create it.

11. Run the following to unzip the file:

    cd /opt/IBM/WebSphere/PortalServer/profileTemplates
    unzip profileTemplates.zip

12. Run the following to install profile template copied from the primary server:

    ./installPortalTemplates.sh /opt/IBM/WebSphere/AppServer

    Adjust the path to the AppServer directory to match your environment if necessary.

13. Click **Mark Step Complete** for Step 2.

14. Click **Mark Step Complete** for Step 3.

15. Ensure that the system clocks on the Primary Portal server, Secondary Portal server, and the dmgr server are all within five minutes of one another.

16. Click **Mark Step Complete** for Step 4.
17. Click **Run Step** for Step 5 – Create the profile for the second portal node.

18. Click **Run Step** for Step 6 – Federate the node.

19. Edit wkple.properties on the secondary node in the `<wp_profile root>/ConfigEngine/properties` directory and set the following property:

   `ServerName=WebSphere_Portal_2`

   **NOTE:** For additional nodes, `ServerName` can be any value you want; it is recommended that you choose a name other than 'WebSphere_Portal'.

20. Click **Run Step** for Step 7 – Add a secondary node to the cluster.

21. Click **Run Step** for Step 8 – Start the portal server.
22. After each step is successfully completed, the Config Wizard page will match the following:

<table>
<thead>
<tr>
<th>Step</th>
<th>Task</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Manual Step: Install portal binary files on the server where you plan to add a node to your cluster. Instructions for Step 1</td>
<td>Complete</td>
</tr>
<tr>
<td>2</td>
<td>Manual Step: Install profile templates. Instructions for Step 2</td>
<td>Complete</td>
</tr>
<tr>
<td>3</td>
<td>Manual Step: Copy the database drivers from the primary node to the additional node. Instructions for Step 3</td>
<td>Complete</td>
</tr>
<tr>
<td>4</td>
<td>Manual Step: Verify that the portal node and deployment manager system clocks are within 5 minutes of each other. Instructions for Step 4</td>
<td>Complete</td>
</tr>
<tr>
<td>5</td>
<td>Create the profile for the secondary portal node. View Step Command</td>
<td>Complete</td>
</tr>
<tr>
<td>6</td>
<td>Federate the node. This node then becomes a managed node in the deployment manager cell. View Step Command</td>
<td>Complete</td>
</tr>
<tr>
<td>7</td>
<td>Add a secondary node to the cluster. View Step Command</td>
<td>Complete</td>
</tr>
<tr>
<td>8</td>
<td>Start the portal server. View Step Command</td>
<td>Complete</td>
</tr>
</tbody>
</table>

Click **Finished**.

23. Verify that you can access both your Primary Portal:


   and your Secondary Portal:

   http://mysecondaryportal.ibm.com:10039/wps/portal
In Steps 24-27, you will enable M2M replication for the secondary cluster member.

24. While logged in to the dmgr, navigate to **Servers → Server Types → WebSphere application servers → WebSphere_Portal_2** (in the image as “WebSphere_Portal for this node, Node02) → **Session Management → Distributed Environment Settings.**
25. Click the blue link for **Memory-to-memory replication**.

26. In the Replication Domain drop-down menu, select your cluster (e.g. PortalCluster).

27. In the Replication Mode drop-down menu, select **Both client and server**.

28. Click **OK** and Save all changes.

29. Back on the **Session management** page (which you should see after saving the changes), click **Custom Properties**.

30. Create a new custom property by clicking **New**.
31. For the **Name**, type in “UseInvalidatedId” and for the **Value**, type in “false”

![Configuration settings](image)

32. Click **OK** and save the changes.

33. Restart the DMGR, NodeAgent, and WebSphere_Portal server.

34. Verify Portal is functional by accessing it in your web browser:

   ![Portal URL](image)

   http://mysecondaryportal.ibm.com:10039/wps/portal

At this point, you have successfully built a two-node WebSphere Portal cluster using a remote database and federated LDAP security.
Chapter 8 – Configuring the Cluster with an External Web Server

This chapter describes how to configure the Portal cluster with an external web server. For more details about web server configuration, visit the WebSphere Portal Server Product Documentation at this link:

http://www-01.ibm.com/support/knowledgecenter/SSHRKX_8.5.0/mp/config/config_webservers.dita?lang=en

In this guide, we will configure the Portal cluster with IBM HTTP Server v8.5.5.0.

To enable communication between the web server and WebSphere Application Server, a web server plug-in is required. The web server plug-in determines whether a request is handled by the web server or by the application server. The plug-in can be installed into a web server that is located either on the same server as WebSphere Application Server (WAS) or on a separate server. The web server plug-in uses an XML configuration file (plugin-cfg.xml) that contains settings that describe how to handle and pass on requests to the WebSphere Application Server. You will install both the IBM HTTP Server and Plugin in the following steps.

1. On the server onto which you are installing the web server, unzip the following folders (from your WebSphere installation media) into a single folder:

   WAS_V8.5.5_SUPPL_1_OF_3.zip
   WAS_V8.5.5_SUPPL_2_OF_3.zip
   WAS_V8.5.5_SUPPL_3_OF_3.zip

2. Install IBM Installation Manager (IIM) if it is not already installed on this server. To install IIM, follow steps 5-11 in Chapter 1 of this guide.

3. Open IIM. Click File>Preferences>Add Repository.

4. Navigate to the WAS>AddOn/repository.config file from your installation media:

   /installationMediaRoot/WAS>AddOn/repository.config

   and click OK>Apply>OK.

5. On the IIM Home Screen, click Install.
6. Select **IBM HTTP Server for WebSphere Application Server** and **Web Server Plug-ins for IBM WebSphere Application Server** by clicking on the boxes beside these items. Click Next.

7. Accept the license agreement and click Next.

8. Specify the installation directory for IBM HTTP Server. Example:

   /opt/IBM/HTTPServer

9. Click on **WebSphere Plug-ins for IBM WebSphere Application Server** and specify its installation directory. Example:

   /opt/IBM/Plugins

10. Click Next.
11. Review the summary and click Next.
12. Select the port number for IBM HTTP Server to use. The default is 80. If 80 is already being used on your server, you can change it to another port number. Click **Next**.

![IBM Installation Manager interface showing port configuration](image)

13. Click **Install**.

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

15. Create a directory within your HTTP Server installation directory in which to store a virtual host configuration file. Example:

   `/opt/IBM/HTTPServer/conf/vh`

16. Using a text editor, create a new file named “portal.conf” and save it in the virtual host configuration folder you just created:

   `/opt/IBM/HTTPServer/conf/vh`
17. In the body of the portal.conf file, write or copy the following lines, changing the values for your environment as needed. Here you are setting custom values for various aspects of the HTTP server, including log locations, a rewrite rule to redirect http://mywebserver.ibm.com to http://mywebserver.ibm.com/wps/portal, and more:

```xml
<VirtualHost *:80>
  ServerAdmin yourAdminID@yourCompany.com
  DocumentRoot www/portal
  ServerName myprimaryportal.ibm.com
  ErrorLog logs/www/portal/error.log
  CustomLog logs/www/portal/access.log common

  #----------------------------------------
  #managing hidden redirection of /
  #----------------------------------------
  RewriteEngine On
  RewriteLog logs/www/portal/rewrite.log
  RewriteLogLevel 0
  RewriteCond %{REQUEST_URI} ^/$
  RewriteRule ^/$ http://%{SERVER_NAME}/wps/portal [R]

  #----------------------------------------
</VirtualHost>
```

18. Open the file httpd.conf found at:

```
/opt/IBM/HTTPServer/conf
```

19. Add the following lines/values, as necessary:

- NameVirtualHost *:80 [un-comment this line and add the HTTP port value]
- AllowEncodedSlashes On
- include conf/vh
- LoadModule was_ap22_module /opt/IBM/Plugins/bin/64bits/mod_was_ap22_http.so
- WebSpherePluginConfig /opt/IBM/Plugins/config/WebServer1/plugin-online-cfg.xml

Un-comment these lines:

- LoadModule proxy_module modules/mod_proxy.so
- LoadModule proxy_connect_module modules/mod_proxy_connect.so
- LoadModule proxy_ftp_module modules/mod_proxy_ftp.so
- LoadModule proxy_http_module modules/mod_proxy_http.so
- LoadModule rewrite_module modules/mod_rewrite.so
- LoadModule was_ap22_module /opt/IBM/Plugins/bin/64bits/mod_was_ap22_http.so
- WebSpherePluginConfig /opt/IBM/Plugins/config/WebServer1/plugin-online-cfg.xml
20. In a web browser, navigate to your Deployment Manager (dmgr):

https://mydmgr.ibm.com:9043/ibm/console

21. Sign in and, on the left side of the screen, click **Servers**>**Server Types**>**Web servers**.

22. Click **New...**
23. Select the node that corresponds with your web server (Node01, the primary node in this guide, is selected in the example), set your web server name, and select the server type. Click **Next**.

24. Click **Next**.
25. Specify your port number, Web server and Plug-in installations locations, and application mapping preference.

Click **Next**.

26. Review the summary and click **Finish**.
27. Click **WebSphere application server clusters**>**PortalCluster**

28. Click **Web server plug-in cluster properties**.

29. Check the box for **Fetch partition table**.

30. Click **OK** and save the changes.
31. Back on the Web servers list, check the box next to the name of the server you just created and click **Generate Plug-in**.

32. A message like the following will appear when the Plug-in is successfully generated:

```
PLGC00051: Plug-in configuration file = .../servers/WebServer1/plugin-cfg.xml

PLGC00521: Plug-in configuration file generation is complete for the Web server.
```

33. Click **Propagate Plug-in**.
34. A message like the following will appear when the Plug-in is successfully propagated:

```
Messages
  PLGC0074I: The node is already synchronized and the plug-in configuration file is already propagated.
```

35. Copy the newly created file called “plugin-cfg.xml” from its current location:

```
dmgr_profile/config/cells/cellname/nodes/nodename/servers/WebServer1/plugin-cfg.xml
```

36. Save plugin-cfg.xml on the remote web server in the following directory:

```
plugin_root/config/webserver1
```

37. Stop then re-start the webserver.

38. Verify that you can access the Portal cluster from the web server address:

```
http://mywebserver.ibm.com
```
Conclusion

In this guide, you built a fully functional WebSphere Portal v 8.5 cluster using an external database and federated LDAP security.

At this point, it is recommended that you upgrade to the latest Cumulative Fix (CF) available for WebSphere Portal. At this link you will find the CF download and instructions to apply it to your environment:

Appendix A1 – How to Silently Install IBM Installation Manager

1. Navigate to:

\textit{installationMediaRoot/SETUP/IIM/yourEnvironment}

where \textit{yourEnvironment} is the folder that best describes the operating system of the environment in which you are installing WebSphere Portal. For this guide the following is used:

\textit{installationMediaRoot/SETUP/IIM/linux_x86_64}

2. As root, run the command:

\texttt{./installc -acceptLicense}

This will install IIM in the default location, which on Linux is:

\texttt{/opt/IBM/InstallationManager/eclipse}

You have successfully installed IIM using only the command line.
A2 – How to Silently Install WebSphere Portal and WebSphere Application Server on the Primary Server

1. After successfully installing IBM Installation Manager, navigate to the following directory:

   \<installationMediaRoot>\SETUP\sample-responsefiles\unix

   If you are installing Portal in a non-Linux environment, select the appropriate folder for your environment's operating system instead of the unix folder.

2. Select the appropriate file for the offering you are installing, make a copy of it, and open the copy to edit it. For this guide, the wp85-server-and-enable-install.xml file is used.
3. Replace the following lines in the file:

```xml
<repository location="/path/for/WAS8.5-media/repository.config"/>
<repository location="/path/for/Java7-media/repository.config"/>
<repository location="/path/for/Portal85-media/repository.config"/>
<repository location="/path/for/wp85-ENABLE-media/repository.config"/>
```

with the full paths to these repositories in your installation media. For example, this guide uses the following:

```xml
<repository location="/home/ibmadmin/Desktop/Portal/SETUP/repository.config"/>
<repository location="/home/ibmadmin/Desktop/Portal/WAS8552/repository.config"/>
<repository location="/home/ibmadmin/Desktop/Portal/IBMJAVA7/repository.config"/>
<repository location="/home/ibmadmin/Desktop/Portal/WP85_Server/repository.config"/>
<repository location="/home/ibmadmin/Desktop/Portal/Wp85_Enable/repository.config"/>
```

In this example, the Portal installation media has been unzipped into a folder called “Portal” on the Desktop of a user named “ibmadmin.”

```xml
<!-- repository location="/repository/path/for/WAS" -->
<!-- repository location="/repository/path/for/Java7" -->
<!-- repository location="/repository/path/for/PortalServer" -->
<!-- repository location="/repository/path/for/ENABLE" -->
<repository location="/home/ibmadmin/Desktop/Portal/SETUP/repository.config"/>
<repository location="/home/ibmadmin/Desktop/Portal/WAS8552/repository.config"/>
<repository location="/home/ibmadmin/Desktop/Portal/IBMJAVA7/repository.config"/>
<repository location="/home/ibmadmin/Desktop/Portal/WP85_Server/repository.config"/>
<repository location="/home/ibmadmin/Desktop/Portal/Wp85_Enable/repository.config"/>
```

4. You can keep the default settings for WAS fixes, Portal Profiles, and installation paths (for Portal, WAS, Config Engine, and the IM Shared Directory) or alter them as appropriate for your environment and needs.
5. **You must replace the following value:**

```xml
<!-- Use the command 'imutilsc encryptString mypassword' to return an encrypted string for mypassword -->
<data key='user.cw.password.com.ibm.websphere.PORTAL.SERVER.v85' value='4taxKp1Gj5q5aCi+LjSKH0==' />
```

with an encrypted version of your new Configuration Wizard administrator password (which you are setting at this time). The current value is the encrypted version of 'wpsadmin.' To encrypt your password:

a. Open a terminal and navigate to the tools directory under the Installation Manager install location: `<IMInstallRoot>/eclipse/tools`
b. Execute the following command where `stringToEncrypt` is your desired password:

```
imutilsc encryptString stringToEncrypt
```
c. The output will be the encrypted version of your password. Copy the output to replace the value in the response file.

6. **Edit the hostname, cell name, node name, and administrator ID to the correct (for hostname) or desired (for admin ID, cell, and node names) values.**

```xml
<!-- Installations that include the portal profile feature must set these keys. -->
<!--
<data key='user.wp.hostname,com.ibm.websphere.PORTAL.SERVER.v85' value='myhost.mydomain.com'/>
<data key='user.wp.cellname,com.ibm.websphere.PORTAL.SERVER.v85' value='myCell'/>
<data key='user.wp.nodename,com.ibm.websphere.PORTAL.SERVER.v85' value='myNode'/>
<!-- Set desired administrator ID for the Portal profile -->
<data key='user.wp.userid,com.ibm.websphere.PORTAL.SERVER.v85' value='wpsadmin'/>
```

7. **Replace the next encrypted password value with the encrypted value you want to use as your WebSphere Application Server Administrator password. Encrypt it using the method described in step 5.**

```xml
<!-- Set desired administrator password for the Portal profile -->
<!-- This value should be in encrypted format. -->
<data key='user.wp.password,com.ibm.websphere.PORTAL.SERVER.v85' value='4taxKp1Gj5q5aCi+LjSKH0==' />
```

8. **You may leave all other default values in place if you wish. Save the file and note its location.** This guide saves the file at `/opt/IBM` and names it `responsefile.xml`.

9. **In the command line, navigate to `<IMInstallRoot>/eclipse/tools/` and execute the following command as root:**

```bash
./imcl -acceptLicense input /opt/IBM/responsefile.xml -log /opt/IBM/installLog
```

using your own values for the input path/file. You may also use whatever file name and path are most convenient for the installation log text file. Refer to the log if the installation fails in order to determine and remedy the issue.

You have now silently installed WebSphere Portal and WebSphere Application Server.
A3 - How to Silently Install WebSphere Portal and WebSphere Application Server on a Secondary Server

1. After successfully installing IBM Installation Manager, navigate to the following directory:

   `<installationMediaRoot>/SETUP/sample-responsefiles/unix`

   If you are installing Portal in a non-Linux environment, select the appropriate folder for your environment's operating system instead of the unix folder.

2. Select the appropriate file for the offering you are installing, make a copy of it, and open the copy to edit it. For this guide, the wp85-server-and-enable-install.xml file is used.
3. Replace these lines in the file:

```xml
<repository location='/path/for/WAS8.5-media/repository.config'/>
<repository location='/path/for/Java7-media/repository.config'/>
<repository location='/path/for/Portal85-media/repository.config'/>
<repository location='/path/for/wp85-ENABLE-media/repository.config'/>
```

with the full paths to these repositories in your installation media. For example, this guide uses the following:

```xml
<repository location='/home/ibmadmin/Desktop/Portal/SETUP/repository.config'/>
<repository location='/home/ibmadmin/Desktop/Portal/WAS8552/repository.config'/>
<repository location='/home/ibmadmin/Desktop/Portal/IBMJAVA7/repository.config'/>
<repository location='/home/ibmadmin/Desktop/Portal/WP85_Server/repository.config'/>
<repository location='/home/ibmadmin/Desktop/Portal/Wp85_Enable/repository.config'/>
```

In this example, the Portal installation media has been unzipped into a folder called “Portal” on the Desktop of a user called “ibmadmin”

```xml
<!-- repository location='/repository/path/for/WAS' -->
<!-- repository location='/repository/path/for/Java7' -->
<!-- repository location='/repository/path/for/PortalServer' -->
<!-- repository location='/repository/path/for/ENABLE' -->
<repository location='/home/ibmadmin/Desktop/Portal/SETUP/repository.config'/>
<repository location='/home/ibmadmin/Desktop/Portal/WAS8552/repository.config'/>
<repository location='/home/ibmadmin/Desktop/Portal/IBMJAVA7/repository.config'/>
<repository location='/home/ibmadmin/Desktop/Portal/WP85_Server/repository.config'/>
<repository location='/home/ibmadmin/Desktop/Portal/WP85_Enable/repository.config'/>
```

4. You can keep the default settings for WAS fixes and installation paths (for Portal, WAS, Config Engine, and the IM Shared Directory) or alter them as appropriate for your environment and needs.
5. You must replace the following value:

```xml
<!-- Use the command `imutilsc encryptString mypassword' to return an encrypted string for mypassword -->
<data key='user.cw.password.com.ibm.websphere.PORTAL.SERVER.v85' value='4taxKp1Gj5q5aC1LJSHQ=='/>
```

with an encrypted version of your new Configuration Wizard administrator password (which you are setting at this time). The current value is the encrypted version of `wpsadmin.' To encrypt your password:

a. Open a terminal and navigate to the tools directory under the Installation Manager install location: `<IMInstallRoot>/eclipse/tools`
b. Execute the following command where `stringToEncrypt` is your desired password:

   ```
   imutilsc encryptString stringToEncrypt
   ```
c. The output will be the encrypted version of your password. Copy the output to replace the value in the response file.

6. IMPORTANT: This step is crucial for installing Portal on a secondary node.

   Find the following lines:

   ```
   <!-- PORTAL.SERVER and PORTAL.ENABLE profiles must match! -->
   <!-- To install Portal in binary-only mode, remove "portal.profile" from the list of features in the line below -->
   ```

   and delete “portal.profile” from the “features=” list, as show below.

   ```
   <!-- PORTAL.SERVER and PORTAL.ENABLE profiles must match! -->
   <!-- To install Portal in binary-only mode, remove "portal.profile" from the list of features in the line below -->
   <offering id='com.ibm.websphere.PORTAL.SERVER.v85' profile='IBM WebSphere Portal Server V8.5' features='ce.install,portal.binary' installFixes='none'/>
   <offering id='com.ibm.websphere.PORTAL.ENABLE.v85' profile='IBM WebSphere Portal Server V8.5' features='enable.upsell' installFixes='none'/>
   </install>
   ```

7. Delete the lines between:
8. You may leave all other default values in place if you wish. Save the file and note its location. This guide saves the file at /opt/IBM and names it responsefile.xml.

9. In the command line, navigate to <IMInstallRoot>/eclipse/tools/ and execute the following command as root:

   ./imcl -acceptLicense input /opt/IBM/responsefile.xml -log /opt/IBM/installLog

using your own values for the input path/file. You may also use your own file name and path for the installation log text file. Refer to the log if the installation fails in order to determine and remedy the issue.

You have now silently installed WebSphere Portal and WebSphere Application Server.
B – How to Setup DB2 Groups and Users for Portal

Begin by Creating the Database Users and Groups on Your Remote DB2 instance:

<table>
<thead>
<tr>
<th>User</th>
<th>Example user name</th>
<th>Example group name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Instance owner</td>
<td>db2inst1</td>
<td>db2iadm1</td>
</tr>
<tr>
<td>Fenced user</td>
<td>db2fenc1</td>
<td>db2fsdm1</td>
</tr>
<tr>
<td>DB2 administration server user</td>
<td>dasusr1</td>
<td>dasadm1</td>
</tr>
</tbody>
</table>

These are the values used for this guide; you can substitute your own so long as they adhere to DB2 and system naming conventions.

1. On your DB2 Server, run the following commands to create the groups:

   groupadd -g 999 db2iadm1
   groupadd -g 998 db2fsdm1
   groupadd -g 997 dasadm1

2. Then run these commands to create the users:

   useradd -u 1004 -g db2iadm1 -m -d /opt/data/db2inst1 db2inst1
   useradd -u 1003 -g db2fsdm1 -m -d /home/db2fenc1 db2fenc1
   useradd -u 1002 -g dasadm1 -m -d /home/dasusr1 dasusr1

3. And run the following to set passwords for the users:

   passwd db2inst1
   passwd db2fenc1
   passwd dasusr1

4. In the command line, navigate to `DB2InstallationRoot/YourDB2Version/instance`. Example:

   cd /opt.ibm/db2V9.7/instance

5. Run the following command:

   ./db2icrt -a server -p 50000 -u db2fenc1 db2inst1

6. Verify that your database instance is connected to a TCP port (this must be done as db2inst1):

   su db2inst1
   db2 get dbm cfg | grep SVCENAME
7. If the value of SVCENAME is not “db2c_db2inst1” (or the equivalent for your database user), update this value with the following:

   db2 update dbm cfg using SVCENAME db2c_db2inst1

8. If the output indicates that TCP/IP is not being used, run the following:

   db2set DB2COMM=TCPIP

9. Restart DB2 by running:

   db2stop

   db2start
C – Additional LDAP Configuration Steps

If you want to flag an attribute as either unsupported or required for the entire WebSphere Portal environment instead of just for the specified LDAP, complete the following steps:

18. Open wkplc.properties with a text editor and enter the appropriate values for the following parameters:

   user.attributes.required=
   user.attributess.nonsupported=

   See each parameter's description within wkplc.properties to determine the appropriate values for your cluster.

19. Save the wkplc.properties file and close the text editor.

20. Open a terminal and change directories to the Configuration Engine:

   cd /opt/IBM/WebSphere/wp_profile/ConfigEngine

21. Run the following command:

   ./ConfigEngine.sh wp-update-attribute-config -DWasPassword=yourWASPassword

22. Restart the Portal server, node agent, and Deployment Manager.
Encountering Issues and Receiving Help

If you encounter any failures following the steps in this guide, you may open a Problem Management Record (PMR) with WebSphere Portal Level 2 support.

In order to best assist you with any issues you encounter, the L2 Support engineer may request that you run the wpcollector tool.

wpcollector is a command line tool that automates the collection of portal logs and configuration files and optionally assists the customer with sending those files to IBM Support, saving valuable time. Using automated log collection early in the PMR life cycle can greatly reduce the number of doc requests that are made by Support.

For more information on wpcollector and how to use it, see the following documentation:


For questions, error message explanations, and more, try searching or posting a question on dwAnswers. This is an IBM run forum to ask and answer technical questions:

Questions About This Guide

If you have any questions specifically regarding the contents of this guide, the author, Emily Johnson, can be reached at:
	emilymj@us.ibm.com

Acknowledgments

David Batres, WebSphere Portal Security L2 Support Engineer, for content input, technical guidance, and editing assistance.

Travis Cornwell, WebSphere Portal Security L2 Support Engineer, for content input, technical guidance, editing, notes, recommendations, feedback and resource gathering.

Megan Crouch, IBM Systems, Middleware Information Developer, for technical writing guidance, editing assistance, and resource gathering.

Ben Parker, WebSphere Portal L2 Security and Runtime Support Engineer, for technical guidance and major content contributions re: silent Portal installation.

WebSphere Portal Level 2 Support Teams, especially Install and Security, for technical guidance and editing assistance.