

How to Set Up Esri® Geoportal Server on Linux



Copyright © 2012 Esri
All rights reserved.
Printed in the United States of America.

The information contained in this document is the exclusive property of Esri. This work is protected under United States copyright law and other international copyright treaties and conventions. No part of this work may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying and recording, or by any information storage or retrieval system, except as expressly permitted in writing by Esri. All requests should be sent to Attention: Contracts and Legal Services Manager, Esri, 380 New York Street, Redlands, CA 92373-8100 USA.

The information contained in this document is subject to change without notice.

Esri, the Esri globe logo, ArcGIS, esri.com, and @esri.com are trademarks, service marks, or registered marks of Esri in the United States, the European Community, or certain other jurisdictions. Other companies and products or services mentioned herein may be trademarks, service marks, or registered marks of their respective mark owners.

How to Set Up Esri Geoportal Server on Linux

An Esri White Paper

Contents	Page
About This Tutorial.....	1
What You Will Need	2
What You Will Do	2
Software You Will Use.....	2
Step 1. Perform Preinstallation Computer Setup	2
Update Your System's Software Packages	3
Install Support Software for the Installation.....	3
Create New Directories.....	3
Create the geoportal User.....	3
Arch Linux and Related	3
Debian and Related	4
Fedora and Related	4
Switch to the geoportal User.....	4
Step 2. Set Up Systemwide Environment Variables.....	4
List Contents of /usr/lib/jvm Directory	4
Identify the Java 6 JDK Result	5
Set the Environment Variables	5
Step 3. Install PostgreSQL 9.1.2.....	5
Download PostgreSQL	5
Install PostgreSQL	6
Create the postgres User	6
Create the Directory for PostgreSQL Data	6
Initialize and Start the PostgreSQL Server	7

Contents	Page
Set Up Autostart on Boot for PostgreSQL.....	7
Arch Linux and Related	7
Debian and Related	8
Fedora and Related	8
Verify Autostart on Boot	9
Step 4. Install Apache Tomcat 6	9
Configure Apache Tomcat 6 to Autostart on Boot	9
Step 5. Install Esri Geoportal Server.....	10
Step 6. Configure geoportal User and Schema in the PostgreSQL Database	10
Prepare Database Script for Use	10
Set Up geoportal User and Geoportal Schema in PostgreSQL.....	10
Populate Geoportal Schema in PostgreSQL	11
Verify Geoportal Schema Was Generated Correctly.....	11
Step 7. Deploy the Geoportal Web Application	12
Step 8. Configure the gpt.xml File.....	12
Step 9. Install the JDBC .jar File	12
Download JDBC File.....	12
Configure geoportal.xml File.....	12
Step 10. Log In to the Geoportal.....	13
Step 11. Register ArcGIS for Server with the Geoportal.....	13
Conclusion	14
 Appendixes	
Appendix A: Installation Software	15
Appendix B: An Introduction to vi.....	16
Appendix C: Modifications to the gpt.xml File	17
Appendix D: Modifications to the geoportal.xml File.....	22

How to Set Up Esri Geoportal Server on Linux

Esri® Geoportal Server is a suite of software modules that provides seamless communication with data services that use a wide range of communication protocols and supports searching, publishing, and managing standards-based resources. One of these components is a geoportal, which is a gateway that provides access to geospatial resources such as metadata records and catalogs, web services, Wikipedia® articles, YouTube® videos, SharePoint® documents, RSS feeds, KML documents, and REST URLs.

Geoportal Server is an open source product that is free and does not require ArcGIS® for Desktop or ArcGIS for Server licensing. The State of Montana, National Oceanic and Atmospheric Administration (NOAA), Norwegian Mapping Agency, and other organizations use Esri's geoportal technology to manage and publish the metadata for their geospatial resources so users can discover and connect to those resources.

About This Tutorial

This tutorial steps through installing Esri Geoportal Server on an internal Linux® server; it shows how Geoportal Server can be fully implemented with only free and open source software. This geoportal will be accessible only from your local machine or your organization's intranet. This implementation uses the PostgreSQL database and the Apache® Tomcat® servlet. To use a different database or servlet, read the Geoportal Server wiki and installation guides online at esriurl.com/geoportalserver.

This tutorial assumes little to no knowledge of Linux and therefore may also provide a good introduction to Linux. However, it does assume some comfort using computers in general, specifically command line interfaces, because this tutorial exclusively uses the Linux Bash console (also called the shell, terminal, or command line) to complete the installation process. This makes the tutorial applicable to as many distributions (distros) of Linux as possible.

Note: This tutorial was created and tested on fresh installations of various Linux distributions using virtual machines that were created and managed using Oracle VM VirtualBox. It has been tested on the following distributions:

- Arch Linux
- Community Enterprise Operating System (CentOS)/Red Hat Enterprise Linux
- Debian®
- Fedora®
- Ubuntu

Every effort was made to make this tutorial universally applicable to most distributions, and some distro-specific information is included. However, you may need to perform some independent research if you use a distro not listed above.

Disclaimer: Esri Technical Support only covers Red Hat Enterprise Linux AS/ES for Esri Geoportal Server. Issues specific to other Linux implementations may not be resolvable through Esri Technical Support.

What You Will Need

- Computer or virtual machine with the base installation of Linux
- Linux user with superuser (sudo) privileges or access to root user
- An Internet connection to download required software

What You Will Do

- Perform preinstallation computer setup.
- Set up systemwide environment variables.
- Install PostgreSQL 9.1.2.
- Install Apache Tomcat 6.
- Install Esri Geoportal Server.
- Configure the geoportal user and schema in the PostgreSQL database.
- Deploy the geoportal web application.
- Configure the gpt.xml file.
- Install the Java Database Connectivity (JDBC) .jar file.
- Log in to the geoportal.
- Register ArcGIS for Server with the geoportal for harvesting (optional).

Software You Will Use

At minimum, Esri Geoportal Server requires the Java 6 Development Kit (JDK) and Runtime Environment, a relational database management system (RDBMS), and web servlet container. Although Esri Geoportal Server supports several different options for the RDBMS and web servlet, this tutorial uses the PostgreSQL RDBMS and the Apache Tomcat servlet.

**Table 1
Primary Software Used in This Tutorial**

Component	Function	Version
Esri Geoportal Server	Geoportal software	1.2
PostgreSQL	RDBMS	9.1.2
Apache Tomcat	Web servlet	6.0.35
Java Development Kit with Runtime Environment	Java controller	Java 6 JDK
JDBC Configuration File	Connects Tomcat to PostgreSQL	Postgresql-9.1-901.jdbc4.jar

Step 1. Perform Preinstallation Computer Setup

Prior to installing Esri Geoportal Server and its components, you need to update your system's software packages; install some support programs; create some new directories; and create the geoportal user, which will perform the installation process.

As stated earlier, this tutorial relies exclusively on the Linux Bash console. Opening the Bash console varies greatly from distribution to distribution. Some, such as Arch Linux, don't include a graphical user interface (GUI) and log in directly to the console by default. However, most distributions do include a default GUI, such as KDE or Gnome. Access to the console is usually provided in a System, Utilities, or Accessories menu or folder. Refer to the web help for your specific distribution to learn how to open the Bash console.

Update Your System's Software Packages

Updating your system's existing software packages from the command line depends on your specific distribution of Linux. Here are the most common:

- Arch Linux and related: `pacman -Syu`
- Debian, Ubuntu, and related: `sudo apt-get upgrade`
- Fedora, CentOS/Red Hat Enterprise Linux, and related: `sudo yum upgrade`

Note: `sudo` is required only if you're entering these commands as a superuser; the `root` user does not need to use `sudo`.

Install Support Software for the Installation

Depending on your distribution of Linux, some additional software may be required. Follow the table in appendix A to install additional software.

Create New Directories

Create the `geoportal`, `lucene`, and `assertion` directories by entering the following:

```
$ sudo mkdir /usr/local/etc/geoportal
$ sudo mkdir /usr/local/etc/lucene
$ sudo mkdir /usr/local/etc/lucene/assertion
```

Create the geoportal User

Arch Linux and Related

For Arch Linux and related, you need to create the user, add it to the `wheel` group, and make the `wheel` group a superuser group.

```
$ sudo adduser geoportal
```

Accept all defaults, except when asked if you want the new user included in any additional groups, enter `wheel`.

Modify the `sudo` file by entering:

```
$ sudo visudo
```

Uncomment the line that says, `%wheel ALL (all) ALL` by deleting the `#` at the beginning of the line.

Note: For basic information about `vi` and how to use it, read appendix B.

Debian and Related

For Debian and related, you need to create the `geoportal` user and add it to the `sudo` group.

```
$ sudo adduser geoportal
$ sudo addgroup geoportal sudo
```

Fedora and Related

For Fedora and related, you need to create the user and its password.

```
$ sudo adduser -g wheel geoportal
$ sudo passwd geoportal
```

Verify that the wheel group has super user permissions in the `sudo` file by entering the following:

```
$ sudo visudo
```

If it is not already, uncomment the line that says, `%wheel ALL (all) ALL` by deleting the `#` at the beginning of the line.

Note: For basic information about `vi` and how to use it, read appendix B.

***Switch to the
geoportal User***

You will perform the rest of the installation, except where noted, as the `geoportal` user. Switch to the `geoportal` user by entering the following:

```
$ su geoportal
```

**Step 2. Set Up
Systemwide
Environment
Variables**

Environment variables tell the computer where to find commands either entered by you in the console or requested by an application. The variables that you're about to set will be used by Java, Apache Tomcat, and PostgreSQL to talk to each other and by you to set up and manage the PostgreSQL database.

First, because different versions of Linux install Java differently, you need to identify how your system identifies the Java 6 JDK.

***List Contents of
/usr/lib/jvm Directory***

Change to the `jvm` directory by entering the following:

```
$ cd /usr/lib/jvm
```

List the contents of the directory by entering the following:

```
$ ls -l
```

If the `ls -l` command returns more items than can be listed on the console screen, enter the following to be able to scroll through the results with the arrow keys.

```
$ ls -l | less
```

You can exit this mode by pressing the `Q` key.

J10078

Identify the Java 6 JDK Result

The Java 6 JDK will be listed as `jre-openjdk`, `java-6-openjdk`, or something similar.

Write down the result for future reference.

Set the Environment Variables

Now you will edit the `/etc/bashrc` or the `/etc/bash.bashrc` file. They are basically the same files; the naming convention just changes based on the distribution of Linux that you're using.

Change to the `/etc` directory and list its contents. Identify which of the two files you're going to edit. There should only be one of these files. If you have both, edit the `/etc/bash` file; if you have neither one, edit the `/etc/profile` file.

Open the file for editing in `vi`.

```
$ sudo vi /etc/<file name>
```

Note: Be very careful when editing this file! Do not delete or tamper with any of the information contained within.

Add the below lines to the end of the file:

```
export JAVA_HOME=/usr/lib/jvm/<result identified in 2b>
export JRE_HOME=/usr/lib/jvm<result identified in 2b>
export LD_LIBRARY_PATH=/usr/local/pgsql/lib
export PGDATA=/usr/local/pgsql/data
export PATH=$PATH:/usr/local/pgsql/bin
export CATALINA_HOME=/usr/local/tomcat6
export CATALINA_BASE=/usr/local/tomcat6
```

Save changes and exit `vi`.

Step 3. Install PostgreSQL 9.1.2

The PostgreSQL database will store the users, resource metadata, and harvesting schedule information for the geoportal. You will install PostgreSQL from its source code instead of installing it from your distribution's online repositories. This requires a little more effort in the installation but greatly simplifies the management of PostgreSQL as well as this tutorial.

Download PostgreSQL

Change to the `/usr/local/etc` directory. Download the PostgreSQL source code to this directory by entering the following:

```
$ sudo wget ftp://ftp.postgresql.org/pub/source/v9.1.2
/postgresql-9.1.2.tar.gz
```

The `.tar.gz` file format is how most files are packaged and compressed in Linux. It is basically the Linux version of the `.zip` format. Extract the `.tar.gz` file by entering the following:

```
$ sudo tar zxvf postgresql-9.1.2.tar.gz
```

The contents of the `tar.gz` file will automatically be extracted to a new `postgresql-9.1.2` directory within the `/usr/local/etc` directory.

Install PostgreSQL

You will now install PostgreSQL from the source code. It is a three-step process. First you'll prepare your computer and the source code. Next, you'll compile the source code into the full program. Finally, you'll install the compiled program. Don't worry; it's a lot easier than it sounds.

Note: This may seem unnecessarily complicated. Why not use just one command? This process allows advanced users of Linux to highly customize the installation of software to their system. It epitomizes the spirit of open source software, giving users control over the software they install on their computers instead of the other way around. This process is why you had to install some of the programs in step 1.

Change to the new `postgresql-9.1.2` directory.

```
$ cd /usr/local/etc/postgresql-9.1.2
```

The PostgreSQL source code includes a script that automatically prepares your computer and the source code for compiling.

```
$ ./configure
```

Next, compile the source code for installation.

```
$ make
```

Finally, you can install PostgreSQL.

```
$ sudo make install
```

Note: The `sudo` command is required for the last step because this step is where you're making actual changes to the operation of the computer. The `./configure` script and `make` command, while required for installing software from the source onto Linux, do not actually cause any changes to the operation of the computer.

Create the postgres User

For database security and integrity, you will create the `postgres` user for the PostgreSQL application. It will act like the Linux `root` user but only for the PostgreSQL database. Create the user like you created the `geoportal` user, but do not make it a member of the `wheel` or `sudo` group.

Create the Directory for PostgreSQL Data

In this step, you will create the directory where all the data stored in the PostgreSQL database will be stored. You will then make the `postgres` user the owner of this directory.

Change to the newly created `/usr/local/pgsql` directory. This is where PostgreSQL was installed.

```
$ cd /usr/local/pgsql
```

Create the data directory.

```
$ sudo mkdir /usr/local/pgsql/data
```

Change ownership of this directory to the `postgres` user.

```
$ sudo chown postgres:postgres /usr/local/pgsql/data
```

Now reboot your computer so all the changes that you have made so far take effect.

```
$ sudo reboot
```

Initialize and Start the PostgreSQL Server

Log back in to your computer, reopen the terminal, and switch to the `postgres` user.

```
$ su postgres
```

Note: Do not log in to your computer as the `postgres` user but instead as the `geoportal` or your primary user. The `postgres` user is a specialized user and should not be used for anything but interacting with the PostgreSQL database.

Now initialize the PostgreSQL database by entering the following:

```
$ pg_ctl initdb
```

Note: If you run into any errors, you either are having problems with your environment variables, did not change ownership of the `/usr/local/pgsql/data` directory correctly, or did not switch to the `postgres` user. Verify that you completed all the above steps successfully.

Now start up the PostgreSQL database server by entering the following:

```
$ pg_ctl start
```

You may have to press Enter to return to the command line.

Set Up Autostart on Boot for PostgreSQL

This step will prevent you from having to start up the PostgreSQL database server manually every time you reboot the machine.

First, switch back to the `geoportal` user.

Configuring autostart on boot depends heavily on which distribution of Linux you are using. Fortunately, PostgreSQL makes it easy by providing a startup script that works with most distributions of Linux.

Arch Linux and Related

First, copy the PostgreSQL startup script to the `/etc/rc.d` directory.

```
$ sudo cp /usr/local/etc/postgresql-9.1.2/contrib  
/start-scripts/linux /etc/rc.d/postgresql
```

Change ownership of the script to the root user.

```
$ sudo chown root:root /etc/rc.d/postgresql
```

Make the script executable.

```
$ sudo chmod +x /etc/rc.d/postgresql
```

Open rc.conf in vi for editing.

```
$ sudo vi /etc/rc.conf
```

At the bottom of the file, add postgresql to the daemons list.

```
DAEMONS=(syslog-ng network crond postgresql)
```

Reboot the system for the changes to take effect.

Debian and Related

First, copy the postgresql startup script to the /etc/init.d directory.

```
$ sudo cp /usr/local/etc/postgresql-9.1.2/contrib  
/start-scripts/linux /etc/init.d/postgresql
```

Change ownership of the script to the root user.

```
$ sudo chown root:root /etc/init.d/postgresql
```

Make the script executable.

```
$ sudo chmod +x /etc/init.d/postgresql
```

Add the postgresql script to the startup sequence.

```
$ sudo update-rc.d postgresql defaults
```

Reboot the system for the changes to take effect.

Fedora and Related

First, copy the postgresql startup script to the /etc/init.d directory.

```
$ sudo cp /usr/local/etc/postgresql-9.1.2/contrib  
/start-scripts/linux /etc/init.d/postgresql
```

Change ownership of the script to the root user.

```
$ sudo chown root:root /etc/init.d/postgresql
```

Make the script executable.

```
$ sudo chmod +x /etc/init.d/postgresql
```

Use `chkconfig` to add the script to the startup sequence.

```
$ sudo chkconfig --add postgresql
```

Reboot the system for the changes to take effect.

Verify Autostart on Boot

After rebooting the system, reopen the console and switch to the `postgres` user. Change to the `/etc/local` directory and enter the following:

```
$ pg_ctl status
```

It will tell you that the PostgreSQL database server is running or not. If not, verify that the start script was initialized correctly.

Step 4. Install Apache Tomcat 6

Apache Tomcat is web servlet software that manages web applications. A web servlet is required to deploy and access Esri Geoportal Server. Fortunately, it has a fairly straightforward installation.

Switch back to the `geoportal` user, change to the `/usr/local/etc` directory, and download Apache Tomcat 6 by entering the following:

```
$ sudo wget http://apache.org/dist/tomcat/tomcat-6/v6.0.35/bin/apache-tomcat-6.0.35.tar.gz
```

Extract and move the application to a new directory by entering the following:

```
$ sudo tar zxvf apache-tomcat-6.0.35.tar.gz
$ sudo mv /usr/local/etc/apache-tomcat-6.0.35 /usr/local/tomcat6
```

Change to the new directory and verify installation.

```
$ cd /usr/local/tomcat6
$ ls -l
```

Configure Apache Tomcat 6 to Autostart on Boot

Unlike PostgreSQL, Apache Tomcat 6 does not include a startup script for automatically starting Apache Tomcat 6 on boot. Below is a simple script that you'll set to run on boot that will start the Apache Tomcat service.

To create the script, change to the `/usr/local/etc` directory and open `vi` for creating a new file by entering the following:

```
$ sudo vi tomcat
```

In the empty file that opens, enter the following 6 lines:

```
#!/bin/sh

# chkconfig: 2345 98 02
# description: Apache Tomcat

/usr/local/tomcat6/bin/startup.sh
```

Save, and exit vi.

Set the `tomcat` script to automatically run in the startup sequence by following the same steps that you followed above for the `postgresql` script.

Step 5. Install Esri Geoportal Server

Change to the `geoportal` directory that you created in step 1.

```
$ cd /usr/local/etc/geoportal
```

Download the Esri Geoportal Server from SourceForge.

```
$ sudo wget -O geoportal-1.2.zip http://sourceforge.net/projects/geoportal/files/latest/download
```

Extract and verify the download.

```
$ sudo unzip geoportal-1.2.zip
$ ls -l
```

Step 6. Configure `geoportal` User and Schema in the PostgreSQL Database

In this step, you will prepare the PostgreSQL database to work with Geoportal Server. First you will create the `geoportal` user and schema within the database and then populate the schema with necessary tables.

Prepare Database Script for Use

Change to the `Database Scripts` directory in the `geoportal` directory.

```
$ cd /usr/local/etc/geoportal/Database\ Scripts
```

Change ownership and executability of scripts within the `PostgreSQL` directory.

```
$ sudo chown -R postgres:postgres
/usr/local/etc/geoportal/Database\ Scripts/PostgreSQL
$ sudo chmod -R +x /usr/local/etc/geoportal
/Database\ Scripts/PostgreSQL
```

Change to the `PostgreSQL` directory and verify changes.

```
$ cd /usr/local/etc/geoportal/Database\ Scripts
/PostgreSQL
$ ls -l
```

Set Up `geoportal` User and `Geoportal` Schema in `PostgreSQL`

Switch to the `postgres` user.

Type `./grants_linuxpg.sh` to see the usage instructions for this script; follow these instructions to execute this script.

Type the following parameters and press Enter; you will be prompted to create a password for the `geoportal` user.

```
$ ./grants_linuxpg.sh localhost 5432 postgres geoportal
postgres geoportal
```

Note: This is not the same user as your `geoportal` login for Linux. This `geoportal` user is within the PostgreSQL database.

Populate Geoportal Schema in PostgreSQL

This next script takes the `geoportal` schema that you just created and populates it with the tables that Geoportal Server needs to operate.

Type `./create_schema_linuxpg.sh` to see the usage instructions for this script.

Execute the script by entering the following:

```
$ ./create_schema_linuxpg.sh localhost 5432 postgres
geoportal
```

For the `geoportal` user, enter the password you just created when running the `./grants_linuxpg.sh` script; this `geoportal` user is the PostgreSQL user, not your Linux login user.

Verify Geoportal Schema Was Generated Correctly

The following section uses the PostgreSQL command line to interact with and query the PostgreSQL database. Remain as the `postgres` user for this section.

Enter the PostgreSQL command line.

```
$ psql
```

Query the database for all schemas. You should see `public` and `geoportal` schemas.

```
postgres=# \dn
```

Query for a list of the items within the `geoportal` schema.

```
postgres=# \dtvs geoportal.*
```

You should see the following table:

List of Relations			
Schema	Name	Type	Owner
geoportal	gpt_collection	table	geoportal
geoportal	gpt_collection_member	table	geoportal
geoportal	gpt_harvesting_history	table	geoportal
geoportal	gpt_harvesting_jobs_completed	table	geoportal
geoportal	gpt_harvesting_jobs_pending	table	geoportal
geoportal	gpt_resource	table	geoportal
geoportal	gpt_resource_data	table	geoportal

List of Relations			
Schema	Name	Type	Owner
geoportal	gpt_resource_seq	sequence	geoportal
geoportal	gpt_search	table	geoportal
geoportal	gpt_user	table	geoportal
geoportal	gpt_user_seq	sequence	geoportal
(11 rows)			

Exit the PostgreSQL command line.

```
postgres=# \q
```

Switch back to the geoportal user.

```
$ su geoportal
```

Step 7. Deploy the Geoportal Web Application

Copy the `geoportal.war` file from `/usr/local/etc/geoportal/Web/Applications/Geoportal` to `/usr/local/tomcat6/webapps`.

Apache Tomcat should automatically create a new `geoportal` directory in the `webapps` directory. This is the location of the geoportal web interface. If the directory is not created, verify that the Apache Tomcat service is running and try restarting the service. You may need to reboot your computer.

Open a web browser and go to <http://localhost:8080/geoportal>. The default geoportal home page should appear.

Step 8. Configure the `gpt.xml` File

The table in appendix C contains the required changes to the `gpt.xml` file.

Note: Be sure to pay attention to indentation when commenting out sections.

Change to the `/usr/local/tomcat6/webapps/geoportal/WEB-INF/classes/gpt/config` directory to find the `gpt.xml` file.

Open the `gpt.xml` file in `vi` and make the edits shown in appendix C.

Step 9. Install the JDBC `.jar` File

The JDBC file allows the geoportal application to connect to and communicate with the PostgreSQL database.

Download JDBC File

Change to the `/usr/local/tomcat6/lib` directory and download the JDBC file.

```
$ cd /usr/local/tomcat6/lib
$ sudo wget http://jdbc.postgresql.org/download/postgresql-9.1-901.jdbc4.jar
```

Configure `geoportal.xml` File

The `geoportal.xml` file tells Tomcat how to use the JDBC to connect the geoportal application with the PostgreSQL database.

Copy the `geoportal.xml` file to Apache Tomcat.

```
$ sudo cp /usr/local/etc/geoportal/Other/JNDI\
Configuration/geoportal.xml /usr/local/tomcat6/conf
/Catalina/localhost
```

Change to the `tomcat6/conf/Catalina/localhost` directory and make the `geoportal.xml` file editable and executable.

```
$ cd /usr/local/tomcat6/conf/Catalina/localhost
$ sudo chmod +wx geoportal.xml
```

Open the `geoportal.xml` file in `vi` for editing. Edit the file as shown in appendix D.

Reboot your computer for all changes to take effect.

Step 10. Log In to the Geoportal

Your geoportal is now up and running. Open a web browser and go to <http://localhost:8080/geoportal> to access the geoportal's user interface. You can log in to your geoportal with the `gptuser` user name and `gptuser` password that you created in step 8. You have logged in successfully when a green banner stating "Welcome gptuser" and the Administration tab appear. Go to www.esriurl.com/geoportal for details on how to register resources with your geoportal.

Step 11. Register ArcGIS for Server with the Geoportal

Optionally, you can register ArcGIS for Server and its associated services with your geoportal. This enables users to discover the services hosted on that server through the geoportal search interface. The server can be your own or one that is publicly available.

Note: ArcGIS for Server is not required to set up or manage Geoportal Server. Esri Geoportal Server supports a wide range of geospatial services, including Open Geospatial Consortium, Inc. (OGC), services (WMS, WCS, WFS, etc.); GeoRSS; ArcGIS services; Open Archive Initiative (OAI) services; THREDDS Data Servers; and even web-accessible folders.

Log in to your geoportal. Click the Administration tab and click Add. Make sure Register resource on the network is selected and click Proceed.

Select Protocol Type: ArcGIS.

For the REST URL, type

<http://services.arcgisonline.com/ArcGIS/rest/services>.

For the SOAP URL, type

<http://services.arcgisonline.com/ArcGIS/services>.

For the title, type Services from ArcGIS Online. Click Test to verify the connection. A green banner with Connection successfully verified should appear.

Scroll down, keeping all other defaults, and click Save. A green banner with Resource data saved successfully should appear.

Click **Manage** at the top of the **Administration** tab. **Services** from ArcGIS Online should be listed. Notice that the fifth icon, **Synchronize Content**, has been dimmed.

Check the box to the left of the record. Above the records list, in the **For selected records**, choose **Set as Approved** and click **Execute Action**. The page should reload and a green banner should display the message **1 record(s) was updated**.

The fifth icon, **Synchronize Content**, should now be in color. Click it. A dialog box entitled **The page at localhost:8080 says...** opens. Click **OK**. A green banner that indicates one resource has been qualified for synchronization should appear. Wait a few moments while the geoportal synchronizes services from the registered server.

Click the last icon, **Show documents acquired from this repository**. The returned documents are metadata records created for services hosted on the registered server and are now discoverable through your geoportal.

Conclusion

This tutorial walked you through the process of setting up Esri Geoportal Server using open source software (PostgreSQL and Apache Tomcat) on an open source operating system (Linux). For demonstration purposes, simple authentication was used instead of LDAP authentication. The full functionality of user-based roles in Esri Geoportal Server requires an LDAP-enabled directory server. There are several open source directory services that can work with Geoportal Server. To learn more about configuring a directory server and other aspects of installing and using Esri Geoportal Server, see the documentation that is included with the Esri Geoportal Server download.

For more information about Esri Geoportal Server and Esri, visit esri.com/geoportal.

Appendix A: Installation Software

Distribution	Arch Linux	CentOS/RHEL	Fedora
Installation Command	<code>pacman -S <program name></code>	<code>sudo yum install <program name></code>	
Program Names	sudo gcc make unzip openjdk6	gcc readline-devel zlib-devel make java-1.6.0-openjdk	gcc readline-devel lib-devel make chkconfig java-1.6.0-openjdk wget

Distribution	Debian	Ubuntu
Installation Command	<code>sudo apt-get install <program name></code>	
Program Names	libreadline6-dev zlib1g-dev openjdk-6-jre	libreadline6-dev zlib1g-dev openjdk-6-jre

Appendix B: An Introduction to vi

The program vi is used to make text edits to files in this tutorial; it is the Linux version of Microsoft Notepad. While not the only option, it is probably the most popular, and it is natively available in every distro of Linux tested.

The two modes vi operates in are edit mode and command mode. Edit mode lets you make changes to the text in the file. Command mode lets you enter commands, such as save, quit, and delete or go to lines. By default, vi opens in command mode. Below is a table of commands that will make operating vi a lot easier.

Action	Command
Open file to edit in vi	sudo vi <file name>
Open file in vi as read-only	vi <file name>
Save changes and quit	:wq
Quit without saving changes	:q!
Delete text under cursor	del key
Delete entire row	dd
Insert text before character under cursor	i
Insert text after character under cursor	A
Insert text on a new line after current line	o
Insert text on a new line before current line	O
Go to specific line	:<line number>
Exit edit mode	Esc key

Appendix C: Modifications to the gpt.xml File

Lines	Modifications (changes highlighted)
75–79 (original)	<pre><.lucene indexLocation="" writeLockTimeout="60000" useNativeFSLockFactory="true" analyzerClassName="org.apache.lucene.analysis.standard.StandardAnalyzer"></pre>
75–79 (new)	<pre><.lucene indexLocation="/usr/local/etc/lucene" writeLockTimeout="60000" useNativeFSLockFactory="true" analyzerClassName="org.apache.lucene.analysis.standard.StandardAnalyzer"></pre>
122–127 (original)	<pre><parameter key="assertion.index.enabled" value="true"/> <parameter key="assertion.index.location" value=""/> <parameter key="assertion.index.allowNonLocalResourceIds" value="false"/> <parameter key="assertion.rating.enabled" value="true"/> <parameter key="assertion.comment.enabled" value="true"/> <parameter key="assertion.comment.maxLength" value="2048"/></pre>
122–127 (new)	<pre><parameter key="assertion.index.enabled" value="true"/> <parameter key="assertion.index.location" value="/usr/local/etc/lucene/assertion"/> <parameter key="assertion.index.allowNonLocalResourceIds" value="false"/> <parameter key="assertion.rating.enabled" value="true"/> <parameter key="assertion.comment.enabled" value="true"/> <parameter key="assertion.comment.maxLength" value="2048"/></pre>
404–509 (original)	<pre><!-- User Management configuration. simpleAdapter OR ldapAdapter. - simpleAdpater: configures geoportal with one administrative user - ldapAdapter: configures geoportal to connect to LDAP user directory store. --> <identity encKey="PtkESRI" realm="Geoportal"> <!-- <simpleAdapter> <account username="gptaccount" password="gpt.account" encrypted="false"/> <roles> <role key="gptRegisteredUser"/> <role key="gptPublisher"/> <role key="gptAdministrator"/> </roles> </simpleAdapter> --></pre>

Lines	Modifications (changes highlighted)
-------	-------------------------------------

```

<ldapAdapter>
  <ldapConnectionProperties
    providerURL="ldap://ldap_host_name:ldap_port"
    initialContextFactoryName="com.sun.jndi.ldap.LdapCtxFactory"
    securityAuthentication="simple"
    securityProtocol="">
    <ldapServiceAccount
      securityPrincipal="ldap_admin_user"
      securityCredentials="ldap_admin_password"
      encrypted="false"/>
    </ldapConnectionProperties>

  <singleSignOn
    active="false"
    credentialLocation="userPrincipal"
    anonymousValue=""
    logoutOutcome=""/>

  <selfCareSupport
    supportsLogin="true"
    supportsLogout="true"
    supportsUserRegistration="true"
    supportsUserProfileManagement="true"
    supportsPasswordChange="true"
    supportsPasswordRecovery="true"/>

  <roles authenticatedUserRequiresRole="true">
    <role
      key="gptRegisteredUser"
      groupDN="group_distinguished_name_for_registered_user"/>
    <role
      key="gptPublisher"
      inherits="gptRegisteredUser"
      groupDN="group_distinguished_name_for_publisher"/>
    <role
      key="gptAdministrator"
      inherits="gptPublisher"
      groupDN="group_distinguished_name_for_administrator"/>
  </roles>

  <users
    displayNameAttribute="uid"
    passwordEncryptionAlgorithm="SHA"
    newUserDNPattern="cn={0},Users_Node_DN"
    usernameSearchPattern="( & (objectclass=person) (uid={0})) "
    searchDIT="Users_Node_DN">
    <requiredObjectClasses>
      <objectClass name="top"/>
      <objectClass name="person"/>
      <objectClass name="organizationalPerson"/>
      <objectClass name="inetOrgPerson"/>
    </requiredObjectClasses>
    <userAttributeMap>
      <attribute key="username" ldapName="uid"/>
      <attribute key="password" ldapName="userPassword"/>
      <attribute key="email" ldapName="mail"/>
      <attribute key="firstName" ldapName="givenName"/>
  </users>

```

J10078

Lines	Modifications (changes highlighted)
	<pre> <attribute key="lastName" ldapName="sn"/> <attribute key="displayName" ldapName="displayName"/> <attribute key="organization" ldapName="o"/> <attribute key="affiliation" ldapName="businessCategory"/> <attribute key="street" ldapName="street"/> <attribute key="city" ldapName="l"/> <attribute key="stateOrProv" ldapName="st"/> <attribute key="postalCode" ldapName="postalCode"/> <attribute key="country" ldapName=""/> <attribute key="phone" ldapName="telephoneNumber"/> </userAttributeMap> </users> <groups displayNameAttribute="cn" dynamicMemberOfGroupsAttribute="" dynamicMembersAttribute="" memberAttribute="uniquemember" memberSearchPattern="(& (objectclass=groupOfUniqueNames) (uniquemember={0}))" searchDIT="Groups_Node_DN"> <!-- <metadataManagementGroup name="Region 1" groupDN="group_distinguished_name"/> <metadataManagementGroup name="Region 2" groupDN="group_distinguished_name"/> --> </groups> </ldapAdapter> </identity> </pre>
404–509 (new)	<pre> <!-- User Management configuration. simpleAdapter OR ldapAdapter. - simpleAdpater: configures geoportal with one administrative user - ldapAdapter: configures geoportal to connect to LDAP user directory store. --> <identity encKey="PtkESRI" realm="Geoportal"> <simpleAdapter> <account username="gptuser" password="gptuser" encrypted="false"/> <roles> <role key="gptRegisteredUser"/> <role key="gptPublisher"/> <role key="gptAdministrator"/> </roles> </simpleAdapter> <!-- <ldapAdapter> <ldapConnectionProperties </pre>

Lines	Modifications (changes highlighted)
	<pre> providerURL="ldap://ldap_host_name:ldap_port" initialContextFactoryName="com.sun.jndi.ldap.LdapCtxFactory" securityAuthentication="simple" securityProtocol=""> <ldapServiceAccount securityPrincipal="ldap_admin_user" securityCredentials="ldap_admin_password" encrypted="false"/> </ldapConnectionProperties> <singleSignOn active="false" credentialLocation="userPrincipal" anonymousValue="" logoutOutcome=""/> <selfCareSupport supportsLogin="true" supportsLogout="true" supportsUserRegistration="true" supportsUserProfileManagement="true" supportsPasswordChange="true" supportsPasswordRecovery="true"/> <roles authenticatedUserRequiresRole="true"> <role key="gptRegisteredUser" groupDN="group_distinguished_name_for_registered_user"/> <role key="gptPublisher" inherits="gptRegisteredUser" groupDN="group_distinguished_name_for_publisher"/> <role key="gptAdministrator" inherits="gptPublisher" groupDN="group_distinguished_name_for_administrator"/> </roles> <users displayNameAttribute="uid" passwordEncryptionAlgorithm="SHA" newUserDNPattern="cn={0},Users_Node_DN" usernameSearchPattern="(& (objectclass=person) (uid={0}))" searchDIT="Users_Node_DN"> <requiredObjectClasses> <objectClass name="top"/> <objectClass name="person"/> <objectClass name="organizationalPerson"/> <objectClass name="inetOrgPerson"/> </requiredObjectClasses> <userAttributeMap> <attribute key="username" ldapName="uid"/> <attribute key="password" ldapName="userPassword"/> <attribute key="email" ldapName="mail"/> <attribute key="firstName" ldapName="givenName"/> <attribute key="lastName" ldapName="sn"/> <attribute key="displayName" ldapName="displayName"/> </pre>

J10078

Lines	Modifications (changes highlighted)
	<pre> <attribute key="organization" ldapName="o"/> <attribute key="affiliation" ldapName="businessCategory"/> <attribute key="street" ldapName="street"/> <attribute key="city" ldapName="l"/> <attribute key="stateOrProv" ldapName="st"/> <attribute key="postalCode" ldapName="postalCode"/> <attribute key="country" ldapName=""/> <attribute key="phone" ldapName="telephoneNumber"/> </userAttributeMap> </users> <groups displayNameAttribute="cn" dynamicMemberOfGroupsAttribute="" dynamicMembersAttribute="" memberAttribute="uniquemember" memberSearchPattern="(& (objectclass=groupOfUniqueNames) (uniquemember={0}))" searchDIT="Groups_Node_DN"> <metadataManagementGroup name="Region 1" groupDN="group_distinguished_name"/> <metadataManagementGroup name="Region 2" groupDN="group_distinguished_name"/> </groups> </ldapAdapter> --> </identity> </pre>

Appendix D: Modifications to the geoportal.xml File

Lines	Modifications (changes highlighted)
Original	<pre> <!-- Context configuration file for the Geoportal Web App --> <Context docBase="<Geoportal 10 web app name>" path="/<Geoportal 10 web app name>" debug="0" reloadable="true" crossContext="true"> <Resource name="jdbc/gpt" auth="Container" type="javax.sql.DataSource" driverClassName="<jdbc driver name>" url="<jdbc connection string>" username="<Geoportal database user>" password="<Geoportal database user password>" maxActive="20" maxIdle="10" maxWait="-1" /> </Context> </pre>
New	<pre> <!-- Context configuration file for the Geoportal Web App --> <Context docBase="geoportal" path="/geoportal" debug="0" reloadable="true" crossContext="true"> <Resource name="jdbc/gpt" auth="Container" type="javax.sql.DataSource" driverClassName="org.postgresql.Driver" url="jdbc:postgresql://localhost:5432/postgres" username="geoportal" password="geoportal" maxActive="20" maxIdle="10" maxWait="-1" /> </Context> </pre>



Esri inspires and enables people to positively impact their future through a deeper, geographic understanding of the changing world around them.

Governments, industry leaders, academics, and nongovernmental organizations trust us to connect them with the analytic knowledge they need to make the critical decisions that shape the planet. For more than 40 years, Esri has cultivated collaborative relationships with partners who share our commitment to solving earth's most pressing challenges with geographic expertise and rational resolve. Today, we believe that geography is at the heart of a more resilient and sustainable future. Creating responsible products and solutions drives our passion for improving quality of life everywhere.



Contact Esri

380 New York Street
Redlands, California 92373-8100 USA

1 800 447 9778
T 909 793 2853
F 909 793 5953
info@esri.com
esri.com

Offices worldwide
esri.com/locations