

How to Set Up an Esri Geoportal Server

Aggregate geospatial resources using open source products

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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, Flickr content, YouTube videos, SharePoint documents, RSS feeds, KML documents, and REST URLs.

The Esri Geoportal Server is an open source product that is free and does not require ArcGIS Desktop or ArcGIS Server licensing. The State of Montana, National Oceanic and Atmospheric Administration (NOAA) National Climatic Data Center, 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 implementing a geoportal on an intranet and uses base software that is also open source. This geoportal will be accessible only on 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, please read the Geoportal wiki and installation guides online at www.esriurl.com/geoportalserver.

This tutorial assumes you can

- Navigate the computer's file system with Windows Explorer.
- Create and name new folders.
- Copy and move files between folders.
- Extract a ZIP file.
- Open a web browser and enter a URL.

What You Will Need

- Windows XP/Vista/7
- Administrator privileges
- An Internet connection to download the required software
- PDFs, downloaded from esri.com/arcuser, containing links to software locations and configuration information

What You Will Do

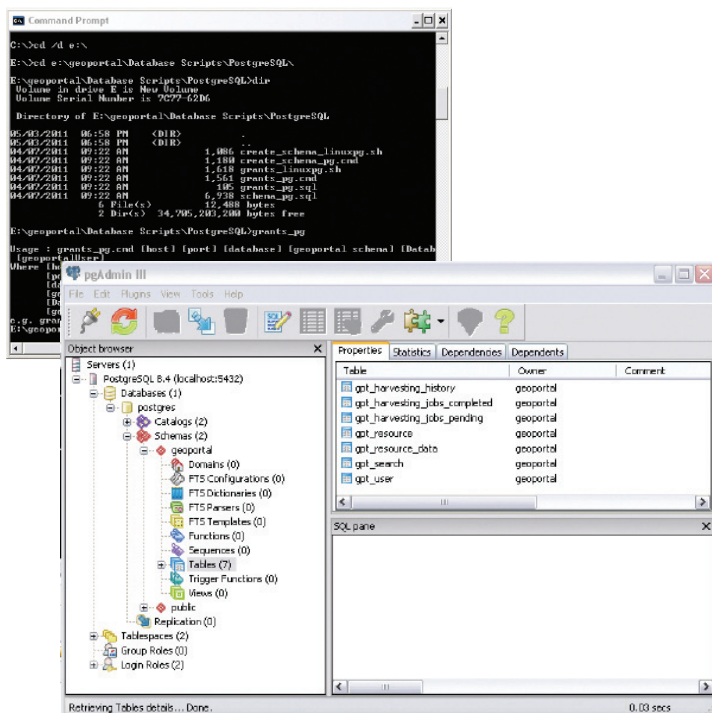
1. Download programs and files.
2. Perform preinstallation computer preparation.
3. Install PostgreSQL database.
4. Install Java Developer Kit and Runtime Environment.
5. Install Apache Tomcat.
6. Install Esri Geoportal Server.
7. Set up the user and schema for the geoportal in PostgreSQL.
8. Deploy the geoportal app.
9. Modify the gpt.xml file.
10. Modify Java Database Connectivity (JDBC) .jar file.
11. Log in to the geoportal.
12. Register ArcGIS Server with the geoportal.

1. Download Programs and Files

At minimum, the Esri Geoportal Server requires the Java Development Kit and Runtime Environment, a relational database management system (RDBMS), and a servlet container. Although the Esri Geoportal Server supports several different options for the RDBMS and web servlet, this tutorial uses the PostgreSQL RDBMS and the Apache Tomcat servlet. Download the programs and files listed in Table 1 either by searching online for the specific versions listed or by using the links provided with the documents downloaded from the *ArcUser* website.

Component	Function	Version
Esri Geoportal Server	Geoportal software	1.1
PostgreSQL	RDBMS	8.4.7
Apache Tomcat	Web servlet	6.0.32
Java Development Kit with Runtime Environment	Java controller	SE 6 Update 24 JDK
JDBC Configuration File	Connects Tomcat to Postgres	Postgresql-8.4.701-jdbc4.jar

↑ Table 1: Software required in this tutorial



↑ Run create_schema_pg from the command line to generate tables for the geoportal in the PostgreSQL database.

2. Perform Preinstallation Computer Setup

Prior to installing the Esri Geoportal Server and its components, you need to create some folders and find out some basic information about your computer. Note: The C:\ drive is used in this tutorial for simplicity; any drive on the host computer can be used to install the software for the geoportal server—just make sure to adjust any path statements appropriately. Please create the following new folders on your computer:

C:\geoportal

C:\lucene

C:\lucene\assertion

Although the geoportal will not be available on the Internet, you need to know the IP address of your computer. The simplest way to find this information is by typing ipconfig in the command prompt.

1. Open the Command Prompt window (Start > Programs > Accessories > Command Prompt).
2. Type ipconfig.
3. Write down the IP address. _____

3. Install PostgreSQL 8.4.7

The PostgreSQL RDBMS will store the geoportal user, resource metadata, and harvesting scheduling information for the geoportal.

1. Run the Windows installer for PostgreSQL version 8.4.7. Accept all defaults.
2. When asked to create a password for the postgres user, enter postgres. (Note: If your network has a password policy that enforces strong passwords, choose a stronger password.)
3. Verify that the PostgreSQL port number is 5432.

Configure PostgreSQL Database

You need to streamline your computer's access to the PostgreSQL database to simplify the geoportal's installation and operation.

1. Navigate to C:\Program Files\PostgreSQL\8.4\data.
2. Open pg_hba.conf in Notepad (right-click and choose Edit). Go to (Ctrl+G) line 70. This line is below the one that starts with # IPv4. Change md5 to trust.
3. At the end of the file, add the following two lines, substituting your IP address (which you wrote down earlier) for <IP Address>:

```
# My computer's connection:
```

```
host      all      all      <IP Address>/32      trust
```

4. Save and close the file.

These changes open up the Postgres database to connections from your computer only. It does not open up the database to external computers. The change to line 70 simplifies connections through localhost, and the new lines allow your computer to connect to the database via a TCP/IP connection.

For the database commands that will configure the Postgres database for the geoportal to run correctly, you need to update your computer's Environmental Variables.

1. Right-click My Computer and select Properties.
2. On the Advanced tab, click Environmental Variables.
3. In the System variables section of the new window, select the PATH entry and click Edit.
4. Go to the end of the text in the Variable Value box.
5. Do not delete or overwrite any existing text! Add

```
;C:\Program Files\PostgreSQL\8.4\bin
```

to the end of the text.

Ensure that there isn't a space between the semicolon (;) that starts this line and C:\.

6. Click OK three times to save the changes.
7. Restart your computer for the changes to take effect.

4. Install the Java Developer Kit and Runtime Environment

Run the installer and accept all the defaults.

5. Install Apache Tomcat 6

Apache Tomcat 6 is web servlet software that manages web applications. You will need web servlet software to deploy the geoportal web application. Run the installer and accept all defaults. Verify that the Tomcat port number is 8080. Don't enter an administrator user name or password.

Configure Apache Tomcat 6 Service

1. Right-click My Computer and select Manage.
2. Expand Services and Applications and select Services.
3. Find Apache Tomcat 6 in the Services list and ensure that the Service Status is Started. (If not, right-click it and choose Start.)
4. Right-click the services and select Properties.
5. Change Startup type to Automatic.
6. Click OK to save the change and close.
7. Verify the installation by opening a web browser and going to http://localhost:8080. A default Tomcat page should appear. ➔

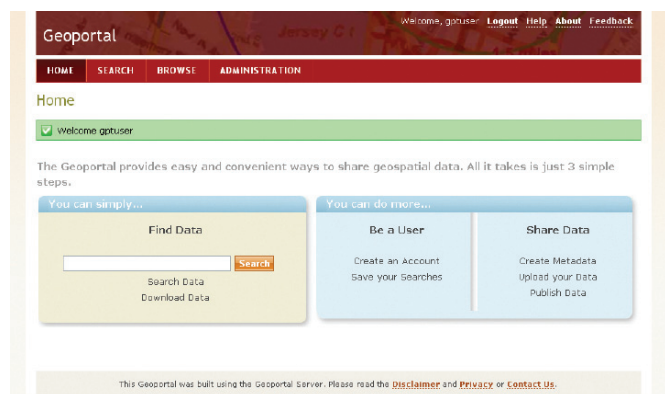
6. Install the Esri Geoportal Server

Extract the contents of geoportal-1.0.zip, the geoportal ZIP file, into the C:\geoportal folder.

7. Set up Geoportal User and Schema in PostgreSQL

Geoportal User Setup

1. Reopen the Windows Command Prompt.
2. Type `cd C:\geoportal\Database Scripts\PostgreSQL` to change to this directory. (Hint: If the geoportal folder is not on C:\, type `cd /d <another drive letter>\` to change from the default C:\ prompt.) Type `dir` to see the contents of this directory.
3. Type `grants_pg` to see usage instructions for this script. You will enter parameters according to these usage instructions in the next step.
4. Type the following parameters and press Enter. You will be prompted to create a password for Geoportal User. Use the password geoportal, unless your system requires a stronger password.
`grants_pg localhost 5432 postgres geoportal postgres geoportal`
5. Enter the password for the new role (geoportal). Enter the password again (geoportal).
Upon the completion of the script, it will generate a text file, `grants_pg.txt`, and invoke a text editor to display this file, showing the results of the script.



↑ Add an ArcGIS Server to the geoportal.

Populating Geoportal Schema in PostgreSQL

The previous section created the geoportal schema in the PostgreSQL database. This section will populate that schema with the tables the geoportal needs to function.

1. At the command prompt, type `create_schema_pg` to see usage instructions for this script. You will enter parameters according to these usage instructions in the next step.
2. Type the following parameters:

```
create_schema_pg localhost 5432 postgres
geoportal
```

For geoportal10 user, enter the same password you designated for the geoportal user when you ran the `grants_pg` script—in most cases, this will be geoportal. Upon the completion of the script, it will generate a text file, `geoportal_schema.txt`, and invoke a text editor to display the results of the script.

Verify Geoportal Tables Were Generated Correctly

1. Open Postgres System Administrator.
2. Click Start > All Programs > PostgreSQL 8.4 > pgAdmin III.
3. Double-click PostgreSQL 8.4 (localhost:5432).
4. Enter `postgres`, the password for postgres user.
5. In the table tree, navigate to Databases > postgres > Schemas > geoportal > Tables.
6. Verify that Tables contains the following seven tables:

```
gpt_harvesting_history
gpt_harvesting_jobs_completed
gpt_harvesting_jobs_pending
gpt_resource
gpt_resource_data
gpt_search
gpt_user
```

8. Deploy the Geoportal Web Application

Copy `geoportal.war` from

```
c:\geoportal\Web Applications\Geoportal
```

to

```
c:\Program Files\Apache Software Foundation\Tomcat
6.0\webapps
```

Apache Tomcat should automatically create a new folder in the `webapps` folder called `geoportal`. This is the geoportal website. If the folder is not created, open the Services window (My Computer > Manage) and restart the Apache Tomcat 6 service. Open a web browser and go to `http://localhost:8080/geoportal`. The default geoportal home page should appear.

9. Configure the gpt.xml File

The PDF files downloaded from the *ArcUser* website at the beginning of this exercise contain Tables 2 and 3. Look at the highlighted lines in Table 2 for the required changes to the `gpt.xml` file. (Be sure to pay attention to indentation when commenting out sections.)

1. In Windows Explorer, navigate to `C:\Program Files\Apache Software Foundation\Tomcat 6.0\webapps\geoportal\WEB-INF\classes\gpt\config`.
2. Open `gpt.xml` in Notepad.
3. Make the changes shown in Table 2 in the PDF file to the `gpt.xml` file.
4. Save and close `gpt.xml`.

10. Modify the Java Database Connectivity (JDBC) .jar File

1. Copy `postgresql-8.4-701.jdbc4.jar` to `C:\Program Files\Apache Software Foundation\Tomcat 6.0\lib`.

- Copy `geoportal.xml` from `C:\Geoportal\Other\JNDI Configuration` to `C:\Program Files\Apache Software Foundation\Tomcat 6.0\conf\Catalina\localhost`.
- Open `geoportal.xml` with Notepad and make the changes shown in Table 3 in the PDF file. Note that for the password parameter, this is the password for your `geoportal` user. If you used a strong password when setting up the `geoportal`, use that password.
- Save and close `geoportal.xml`.
- Restart the Apache Tomcat 6 service.

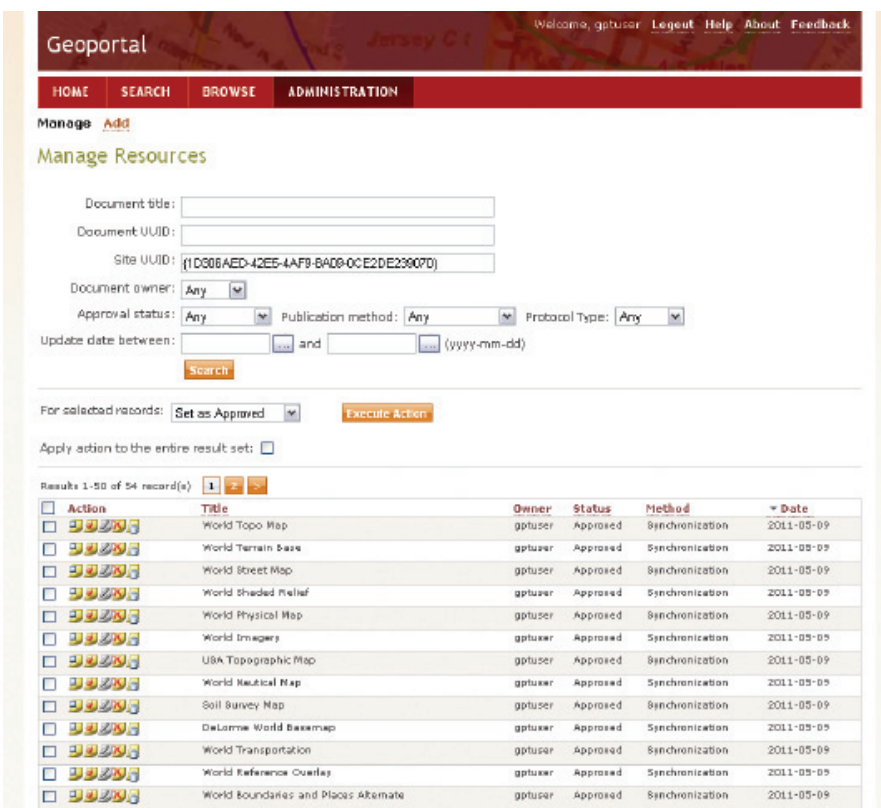
11. Log In to the Geoportal

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. You have logged in successfully when a green banner saying "Welcome `gptuser`" and the Administration tab appear. Go to `geoportal.sourceforge.net` for information on how to register resources with your `geoportal`.

12. Register an ArcGIS Server with the Geoportal

To register an ArcGIS Server and its associated services with your `geoportal`, use the following procedure. The ArcGIS Server can be your own or one that is publicly available. (Note: ArcGIS Server is not required to set up or manage a `geoportal` server. Esri Geoportal Server supports a wide range of geospatial services, including OGC services [WMS, WCS, WFS, etc.], GeoRSS, ArcGIS services, Open Archive Initiative [OAI] services, and even web-accessible folders.)

- Log in to your `geoportal`. Click Administration. Click Add. Make sure Register resource on the network is selected and click Proceed.
- Select Protocol Type ArcGIS.
- In REST URL, type `http://services.arcgisonline.com/ArcGIS/rest/services/`.
- In SOAP URL, type `http://services.arcgisonline.com/ArcGIS/services/`.
- In 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 grayed out.
- Check the box to the left of the record. Above the records list, in For selected records, choose Set as Approved and click Execute



↑ After adding an ArcGIS Server, synchronize it.

Action. The page should reload, and a green banner should display the message "1 record(s) were updated".

- The fifth icon (Synchronize content) should now be in color; click that icon. A dialog box entitled The page at localhost 8080 says... opens up. 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 ArcGIS Server.
- After a few moments, click the last icon (Show documents acquired from this repository). The returned documents are metadata records created for the services hosted on the registered ArcGIS Server and now discoverable through your `geoportal`.

Conclusion

This tutorial walks through the process of setting up an Esri Geoportal Server using an open source web servlet and database. For testing purposes, simple authentication was used, rather than LDAP authentication. The full functionality of user-based roles in the Esri Geoportal Server requires an LDAP-enabled Directory Server. If an existing Directory Server is not available, several open source directory servers can be used. To learn more about configuring a Directory Server and other aspects of installing and using the Esri Geoportal Server, see the *Geoportal Server 1.1 Installation Guide* part of the documentation that is included with the Esri Geoportal Server download. Also see the Esri Geoportal Server site at `www.esriurl.com/geoportalserver`.