
AcuGIS GeoHelm

Release 0.4.3

acugis

Apr 12, 2020

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1.1 Overview

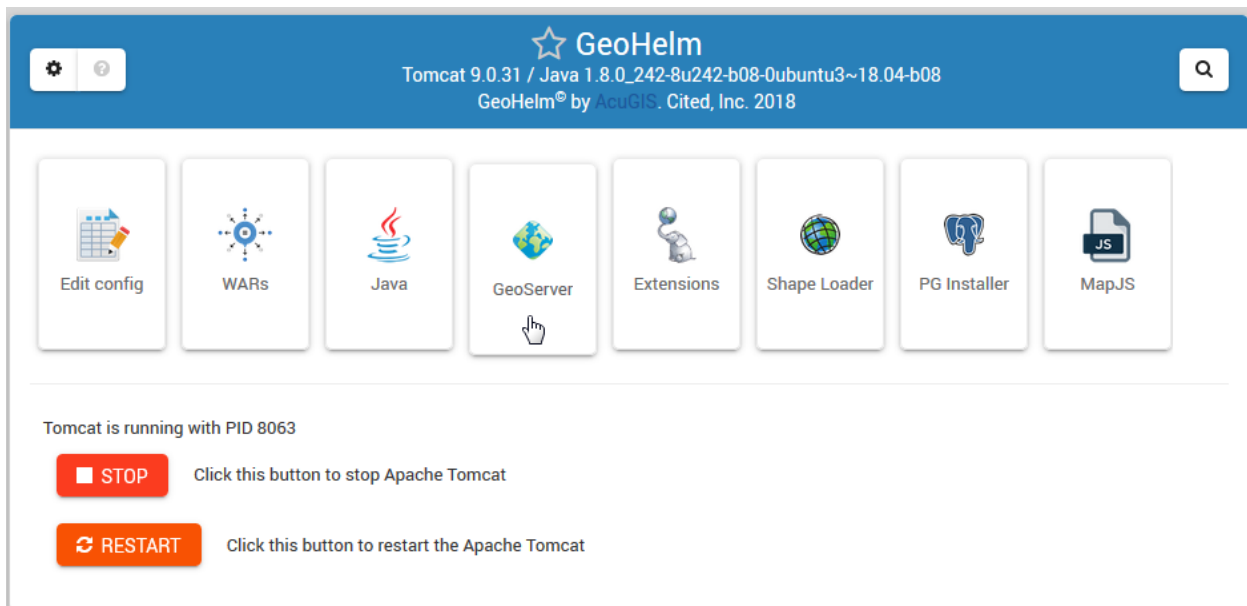
GeoHelm is a Webmin Module that allows you to build a full Open Source GIS stack quickly and easily.

GeoHelm installs and configures PostgreSQL, PostGIS, GeoServer (optionally), Tomcat, and JDK.

It includes a panel for managing all aspects of the service.

GeoHelm can be installed on CentOS 7 or Ubuntu 18.

All installed components are non-forked and un-modified and installed via the projects archive.



1.2 System Requirements

- CentOS 7 or
- Ubuntu 18
- Webmin
- 1 GB Ram
- 10 GB SSD

1.3 Authors

- David Ghedini
- Kaloyan Petrov

1.4 Components

PostgreSQL

PostGIS

Apache Tomcat

OpenJDK

GeoServer

1.5 Open Source

GeoHelm is Free, Open Source Software.

GNU GENERAL PUBLIC LICENSE v3

Installation can be done using the pre-installer.sh script or via GIT.

2.1 Using the Pre-Installer

On a fresh CentOS 7 or Ubuntu 18 installation, the fastest method is to use the pre-installer script:

```
1 wget https://raw.githubusercontent.com/AcuGIS/GeoHelm/master/scripts/pre-install.sh
2 chmod +x pre-install.sh
3 ./pre-install.sh
```

The above will install Webmin, Apache HTTPD Server, GeoHelm module, as well as our (optional) Certbot Module for SSL.

When the script completes, you will see the message below:

```
1 ~
2 /opt ~
3 Installed CertBot in /usr/share/webmin/certbot (336 kb)
4 ~
5 GeoHelm is now installed. Go to Servers > GeoHelm to complete installation
```

Note: Following above, you will need to log in to Webmin to complete installation using the install *Wizard*.

2.2 Via Git or Download

You can use Git to build module for an existing Webmin installation:

```
1 git clone https://github.com/AcuGIS/GeoHelm
2 mv GeoHelm-Master geohelm
3 tar -cvzf geohelm.wbm.gz geohelm/
```

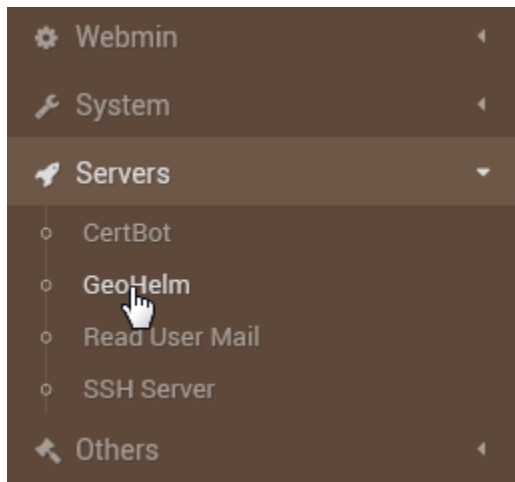
Note: Following above, you will need to log in to Webmin to complete installation using the install *Wizard*.

CHAPTER 3

Wizard

Once the module is installed, the Wizard is used to configure the components.

Go to Servers > Geohelm:



The main Wizard screen will a link for completing each step.

While most steps are self-explanatory, we will cover Tomcat and JDK selection below:

Install Java/JDK:

Warning: Java is not found. Install it manually or from the [Java tab](#)

[Click here](#) to install Tomcat from Apache site.

Warning: havedged package is not installed. Install it manually or [click here](#) to have it downloaded and installed.

Warning: Bootstrap web app is not installed in /var/www/html. [Click here](#) install it

The OpenLayers directory /var/www/html/OpenLayers does not exist. [Click here](#) install it

The LeafletJS directory /var/www/html/leafletjs does not exist. [Click here](#) install it

The GeoServer Apache config /etc/apache2/conf-enabled/geoserver_proxy.conf does not exist. [Click here](#) to create it.

Warning: PostgreSQL repository is not found. Install it from [PG Installer](#)

Warning: Webmin PostgreSQL module is not installed! Set it up from [here](#)

If you don't see any warnings above, you can complete setup by clicking [here](#)

[Return to GeoHelm](#)

Select the JDK you wish to use. We have tested with JDK 8

Install Java Development Kit(JDK) from distribution repository or from Oracle .tar.gz archive

Install Options

JDK source

OpenJDK Oracle JDK Local file Uploaded file FTP or HTTP URL

8 Headless package

8u241-b07

Set as system default Java (using alternatives)

[Install](#)

Geohelm has been tested with OpenJDK 8 and Oracle JDK 8.

Apache Tomcat:

Apache Tomcat is not found. [Click here](#) to install Tomcat from Apache site.

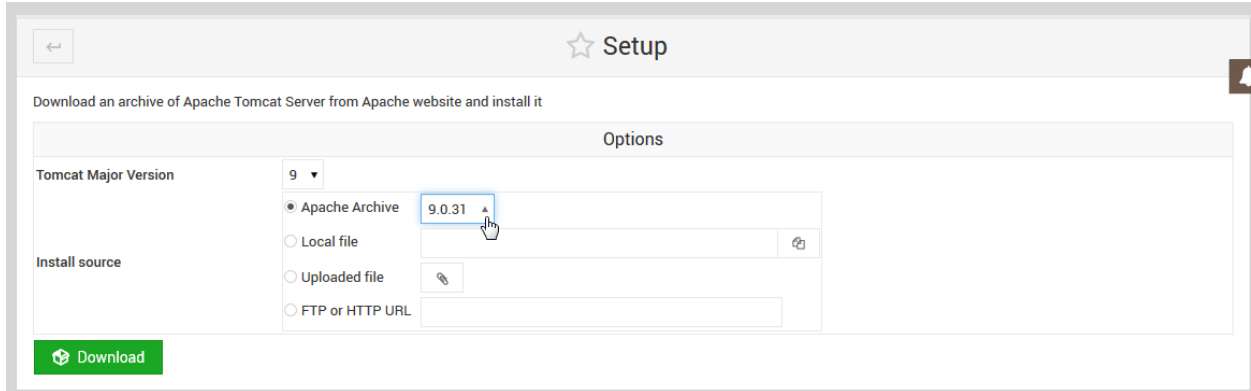
Warning: Missing package dependencies - mutt - are not installed. Install them manually or [click here](#) to have them installed.

Apache default proxy is not configured. [click here](#)

JRI report script is not installed. To install it [click here](#)

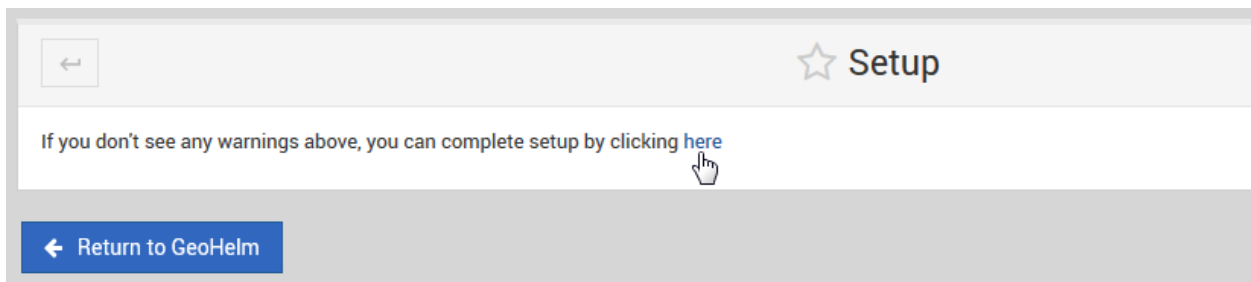
If you don't see any warning above, you can complete setup from [here](#)

Geohelm has been tested with Apache Tomcat 8.x and 9.x:

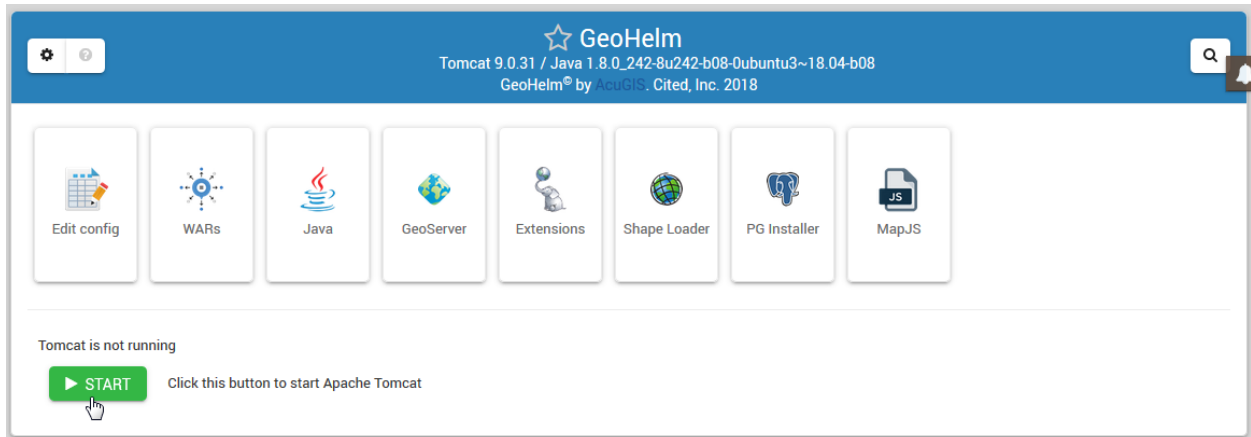


Complete Installation:

Once each step of the Wizard is completed, the Wizard can be removed:



With the Wizard completed, your module should appear as below:



Note: The Wizard may state that GeoServer is not deployed. This is due to Tomcat not starting automatically. Simply complete installation and start Tomcat to deploy the GeoServer war.

3.1 About Haveged

Haveged is an entropy generator that will provide markedly faster JVM startup times. The caveat is that it will use much higher CPU load (although for shorter duration due to decreased JVM start up time). Bear this in mind if deploying on VM with limited CPU or other critical applications.

CHAPTER 4

Webmin

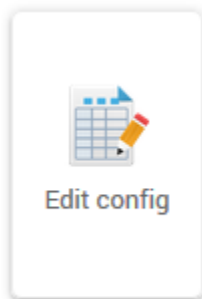
Webmin can be accessed via:

```
https://yourdomain.com:10000
```


Table of Contents

- *General*
 - *Edit Config*
 - *Apps*
 - *Java*
 - *MapJS*

5.1 Edit Config



The Config tab is used to edit the following files:

```
server.xml  
web.xml  
context.xml
```

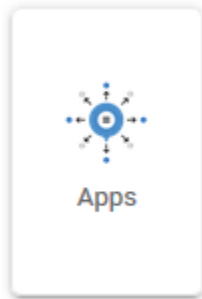
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```
tomcat-users.xml  
setenv.sh
```

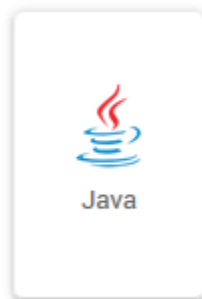
These files can, of course, be edited via the file system or VI as well.

5.2 Apps



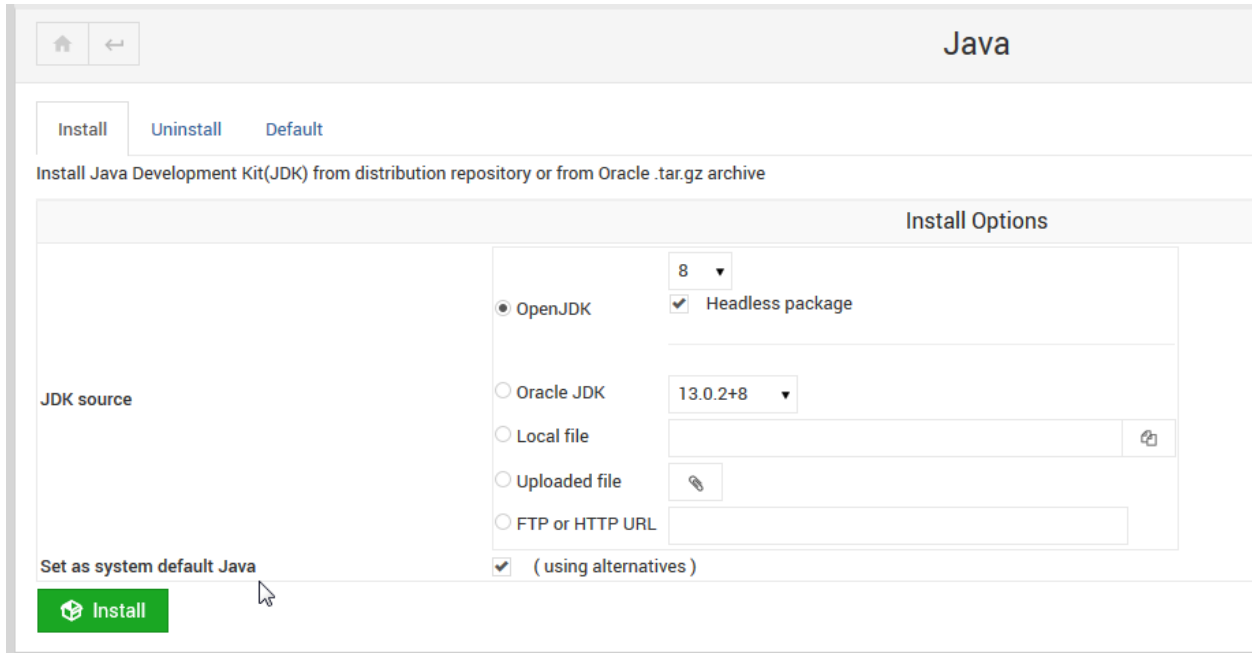
The Apps manager allows you to deploy, undeploy, and redeploy WAR files in Apache Tomcat

5.3 Java



The Java tab is used during installation as well as for updating of JDK.

It can also be used to un-install the selected JDK and replace it with a new version.



Note: When installing or removing, there is an option to set as System default.

5.4 MapJS

The MapJS tab is simply a file browser for viewing and editing both OpenLayers and LeafletJS files.

Table of Contents

- *Apache Tomcat*
 - *Layout*
 - *Starting and Stopping*
 - *Init Script*
 - *Version*

6.1 Layout

For installations done using the Wizard, the Apache Tomcat (CATALINA) home directory is:

```
/home/tomcat/apache-tomcat-v/
```

Where `apache-tomcat-v` is the version you chose to install.

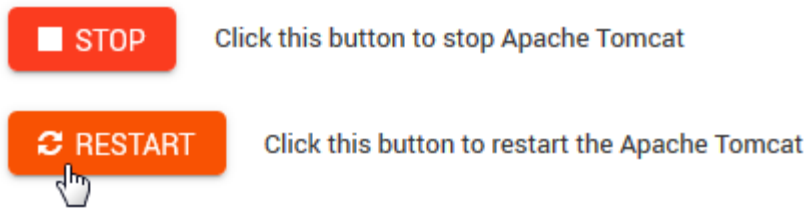
The `CATALINA_HOME` variable is set both in the Tomcat init script as well as `setenv.sh` files.

6.2 Starting and Stopping

There are two ways to start/stop/restart Tomcat.

1. Via Module, using the Stop/Start/Restart buttons as shown below:

Tomcat is running with PID 8063



2. Via SSH, using the following commands

```
1 /etc/init.d/tomcat { start | stop | restart | status }
```

6.3 Init Script

The Tomcat init script is located in /etc/init.d and has the following content.

```

1  #!/bin/bash
2  ### BEGIN INIT INFO
3  # Provides:          tomcat
4  # Required-Start:    $network
5  # Required-Stop:     $network
6  # Default-Start:     2 3 4 5
7  # Default-Stop:      0 1 6
8  # Short-Description: Start/Stop Tomcat server
9  ### END INIT INFO
10
11 # Source function library.
12 . /etc/environment;    #Catalina variables
13 . $CATALINA_HOME/bin/setenv.sh
14
15 RETVAL=$?
16
17 function start(){
18 echo "Starting Tomcat"
19 /bin/su - tomcat $CATALINA_HOME/bin/startup.sh
20 RETVAL=$?
21 }
22
23 function stop(){
24 echo "Stopping Tomcat"
25 /bin/su - tomcat -c "$CATALINA_HOME/bin/shutdown.sh 60 -force"
26 RETVAL=$?
27 }
28
29 case "$1" in
30 start)
31     start;
32 ;;
33 stop)
34     stop;
35 ;;

```

(continues on next page)

(continued from previous page)

```
36 restart)
37     echo "Restarting Tomcat"
38 stop;
39     start;
40 ;;
41 status)
42
43     if [ -f "${CATALINA_PID}" ]; then
44         TOMCAT_PID=$(cat "${CATALINA_PID}")
45         echo "Tomcat is running with PID ${TOMCAT_PID}";
46         RETVAL=1
47     else
48         echo "Tomcat is not running";
49         RETVAL=0
50     fi
51     ;;
52 *)
53     echo $"Usage: $0 {start|stop|restart|status}"
54     exit 1
55 ;;
56 esac
57 exit $RETVAL
```

6.4 Version

GeoHelm has been tested with Tomcat 8.x and 9.x

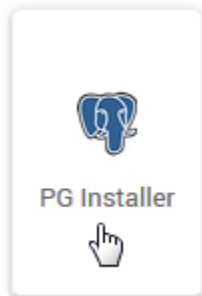
Table of Contents

- *PostgreSQL*
 - *Repository Manager*
 - *File Locations*
 - *The pg_hba.conf File*
 - *The postgresql.conf File*
 - *Version*
 - *Webmin PostgreSQL Module*

7.1 Repository Manager

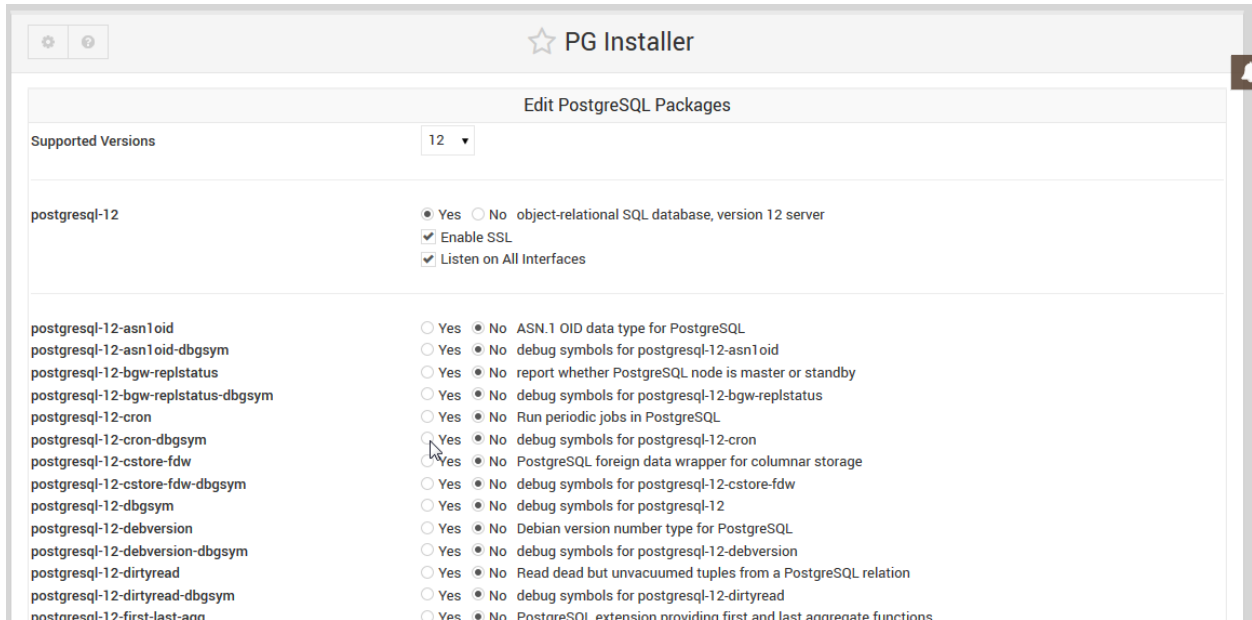
The Repository installer and manager allows you to install your selected version of the PostgreSQL Repository.

It can be access via the Pg Installer tab as shown below:



You can also use the manager to install and update packages as well.

As certain packages require EPEL for CentOS, the EPEL repository is installed as well when installing on CentOS.



7.2 File Locations

On CentOS, the PostgreSQL config directory is located at:

```
/var/lib/pgsql/12/data
```

On Ubuntu, the PostgreSQL directory is located at:

```
/etc/postgresql/12/main
```

7.3 The pg_hba.conf File

On installation via the Wizard, PostgreSQL is configured for use with SSL and uses md5 authentication for all users and databases.

```

1  local   all all                                     trust
2  host    all all 127.0.0.1          255.255.255.255 md5
3  host    all all 0.0.0.0/0                      md5
4  host    all all ::1/128                md5
5  hostssl all all 127.0.0.1          255.255.255.255 md5
6  hostssl all all 0.0.0.0/0                      md5
7  hostssl all all ::1/128                md5
```

7.4 The postgresql.conf File

On installation via the Wizard, PostgreSQL is configured to accept connections on all interfaces as well as SSL connections.

```
1  #-----  
2  # CONNECTIONS AND AUTHENTICATION  
3  #-----  
4  
5  # - Connection Settings -  
6  
7  listen_addresses = '*'  
8  )  
9  
10  
11 # - SSL -  
12  
13 ssl = on
```

Above are excerpts.



7.5 Version

GeoHelm has been tested with PostgreSQL 10, 11 and 12.

7.6 Webmin PostgreSQL Module

On installation, the native PostgreSQL Database Server module is also activated.

It is located under Servers > PostgreSQL Database Server

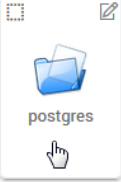
 

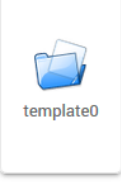
☆ PostgreSQL Database Server

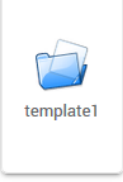
PostgreSQL version 12.2 (With schemas)

PostgreSQL Databases

SELECT ALL INVERT SELECTION CREATE A NEW DATABASE

 postgres


 template0


 template1

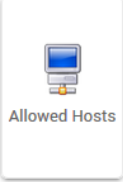
SELECT ALL INVERT SELECTION CREATE A NEW DATABASE

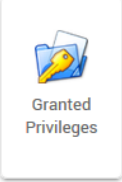
DROP SELECTED DATABASES

User, Groups and Permissions

 PostgreSQL Users

 PostgreSQL Groups

 Allowed Hosts

 Granted Privileges

STOP POSTGRESQL SERVER Click this button to stop the PostgreSQL database server on your system. This will prevent any users or programs from database, including this Webmin module.

Table of Contents

- *PostGIS*
 - *Installing PostGIS*
 - *Command Line*
 - *Extensions Tool*

8.1 Installing PostGIS

PostGIS can be enabled on your PostgreSQL database via the Extension tab or via Command Line.

8.2 Command Line

To install via command line:

1. Connect to PostgreSQL

```
1 root@geohelm:~# su - postgres
2 postgres@geohelm:~$ psql
3 psql (12.2 (Ubuntu 12.2-2.pgdg18.04+1))
4 Type "help" for help.
5
6 postgres=#
```

2. If you have not created a database, create one now.

```
1 postgres=# create database geohelm;
2 CREATE DATABASE
3 postgres=#
```

3. Connect to your database.

```
1 postgres=# \c geohelm
2 You are now connected to database "geohelm" as user "postgres".
3 geohelm=#
```

4. Install the PostGIS extension.

```
1 geohelm=# create extension postgis;
2 CREATE EXTENSION
3 geohelm=#
```

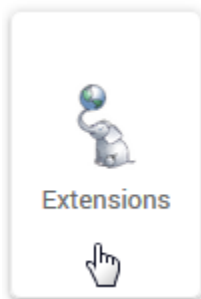
Note: GeoHelm also includes `fuzzy_match_string`, `tiger`, `postgis_topology`.

5. Verify the installation via command line or the PostgreSQL Management Page

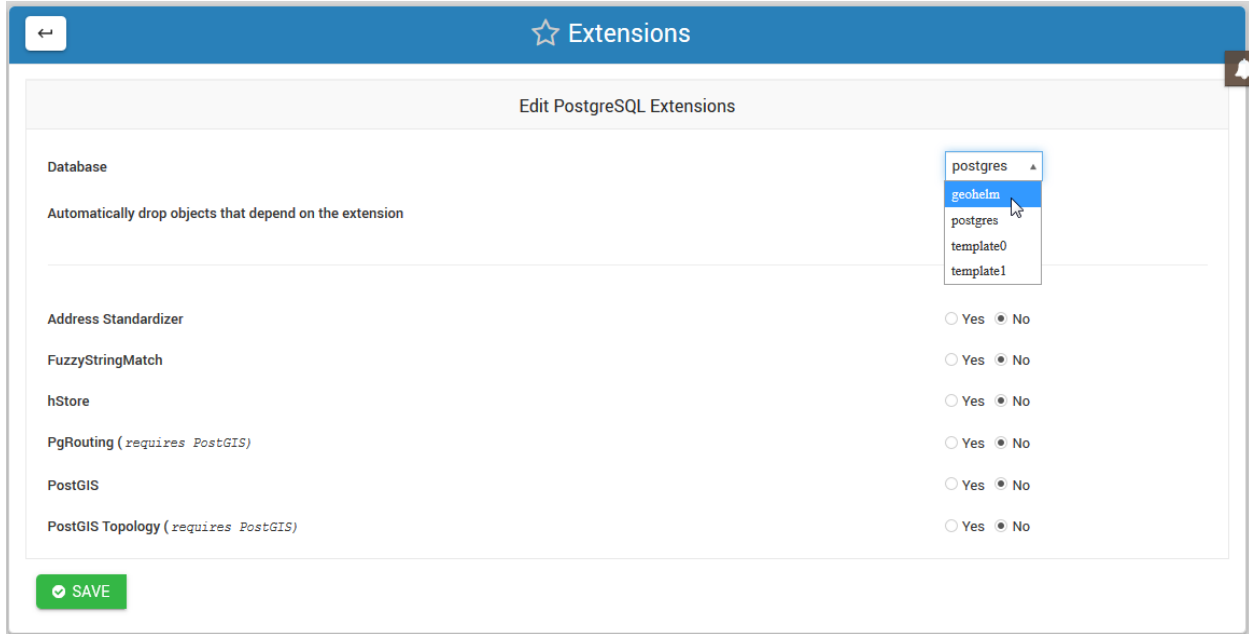
```
1 geohelm=# \d
2          List of relations
3 Schema |          Name          | Type  | Owner
4 -----+-----+-----+-----
5 public | geography_columns     | view  | postgres
6 public | geometry_columns      | view  | postgres
7 public | raster_columns        | view  | postgres
8 public | raster_overviews      | view  | postgres
9 public | spatial_ref_sys       | table | postgres
10 (5 rows)
```

8.3 Extensions Tool

To install using the PostGIS/PgRouting Extension installer, click on the Extensions tab as shown below.

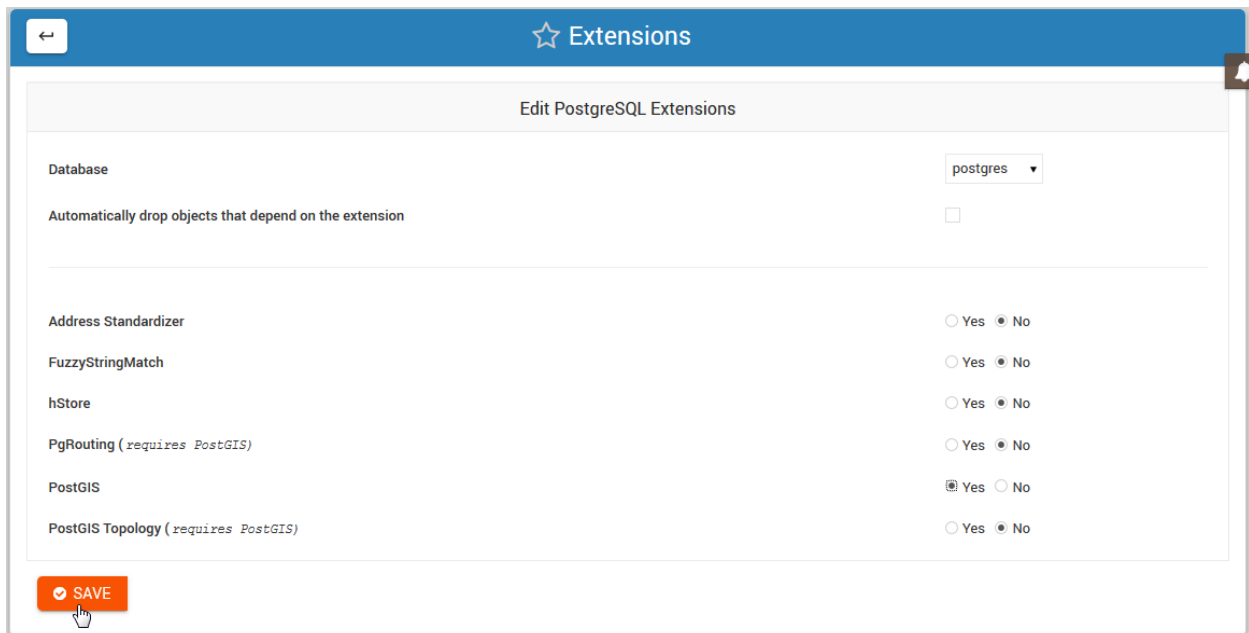


1. Select the target database from the drop-down as shown below.



Note: You must FIRST install PostGIS prior to installing any other of the listed extensions.

2. Tick the PostGIS select button and then click the Save button as show below:



3. Once PostGIS has been installed on a target database, you can then return to install additional extensions:

← Extensions

Edit PostgreSQL Extensions

Database postgres ▾

Automatically drop objects that depend on the extension

Address Standardizer Yes No

FuzzyStringMatch Yes No

hStore Yes No

PgRouting (requires PostGIS) Yes No

PostGIS Yes No

PostGIS Topology (requires PostGIS) Yes No

SAVE

Note: You can also un-install Extensions using above.

Table of Contents

- *PgRouting*
 - *Installing PgRouting*
 - *Command Line*
 - *Extensions Tool*

9.1 Installing PgRouting

PgRouting can be enabled on your PostgreSQL database via the Extension tab or via Command Line.

Note: PostGIS must be enabled prior to installing PgRouting

9.2 Command Line

To install via command line:

1. Connect to PostgreSQL

```
1 root@geohelm:~# su - postgres
2 postgres@geohelm:~$ psql
3 psql (12.2 (Ubuntu 12.2-2.pgdg18.04+1))
4 Type "help" for help.
5
6 postgres=#
```

2. If you have not created a database, create one now.

```
1 postgres=# create database geohelm;
2 CREATE DATABASE
3 postgres=#
```

3. Connect to your database.

```
1 postgres=# \c geohelm
2 You are now connected to database "geohelm" as user "postgres".
3 geohelm=#
```

4. Install the PostGIS extension.

```
1 geohelm=# create extension postgis;
2 CREATE EXTENSION
3 geohelm=#
```

5. Install the PgRouting extension.

```
1 geohelm=# create extension pgrouting;
2 CREATE EXTENSION
3 geohelm=#
```

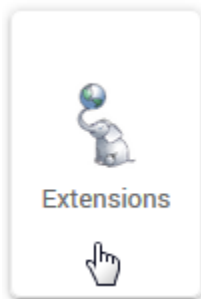
Note: GeoHelm also includes fuzzy_match_string, tiger, postgis_topology.

5. Verify the installation via command line or the PostgreSQL Management Page

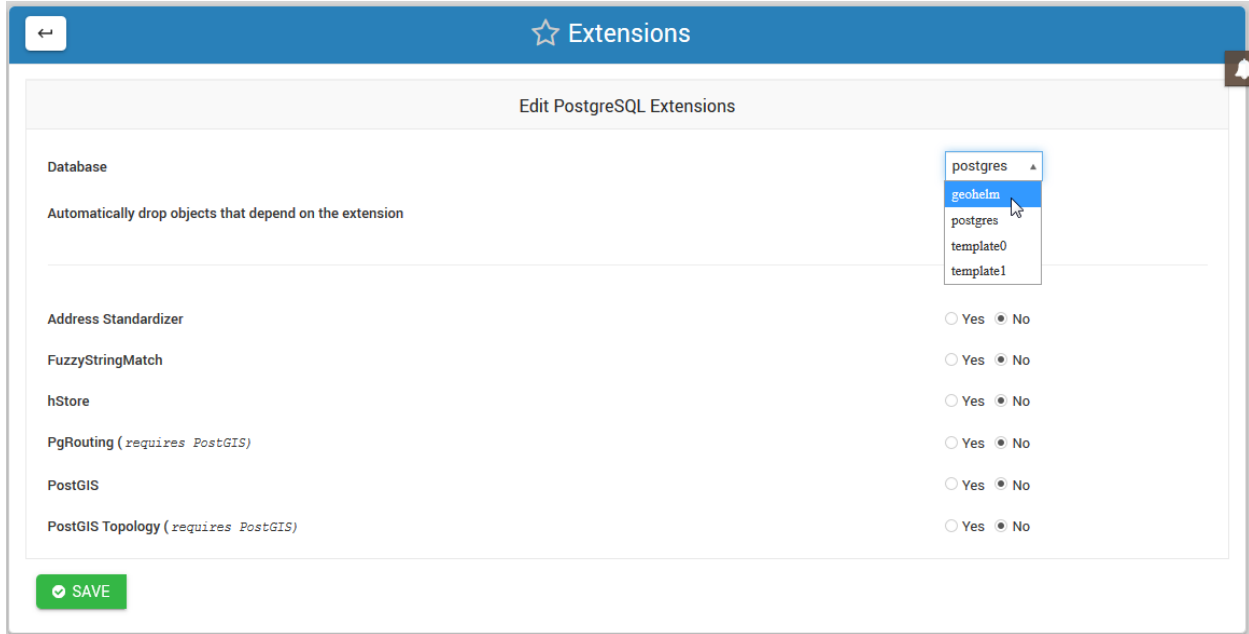
```
1 geohelm=# \d
2          List of relations
3 Schema |          Name          | Type | Owner
4 -----+-----+-----+-----
5 public | geography_columns     | view | postgres
6 public | geometry_columns      | view | postgres
7 public | raster_columns        | view | postgres
8 public | raster_overviews      | view | postgres
9 public | spatial_ref_sys       | table | postgres
10 (5 rows)
```

9.3 Extensions Tool

To install using the Extension installer, click on the Extensions tab as shown below.

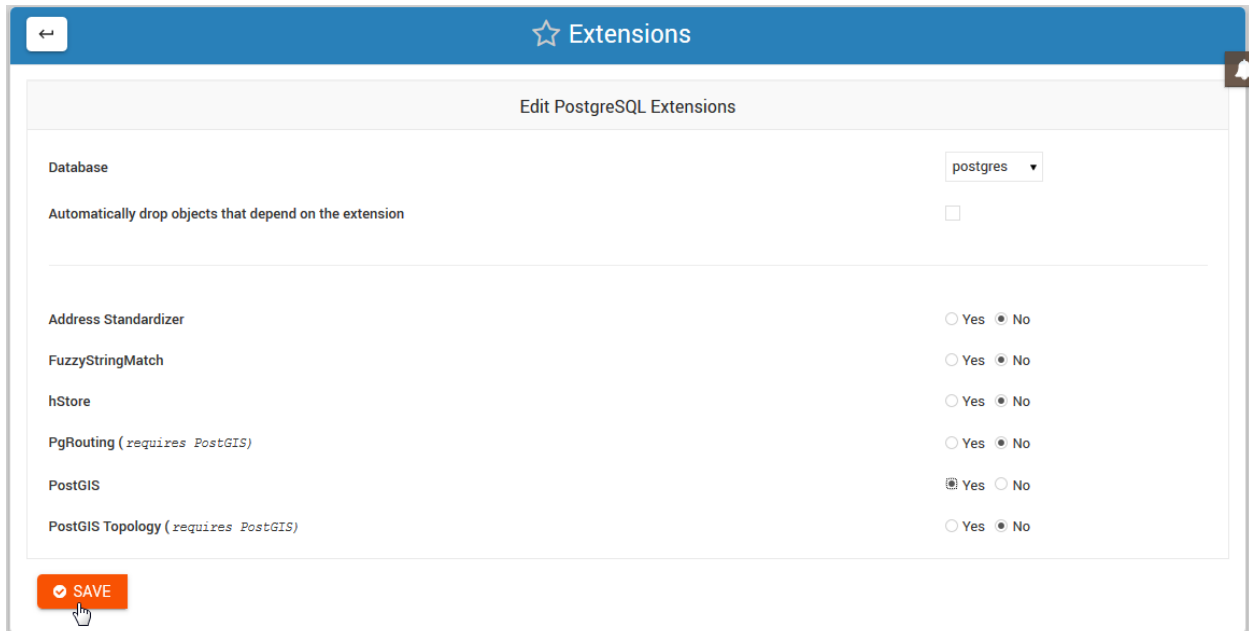


1. Select the target database from the drop-down as shown below.



Note: You must FIRST install PostGIS prior to installing PgRouting.

2. Tick the PostGIS select button and then click the Save button as show below:



3. Once PostGIS has been installed on a target database, you can then return to install PgRouting:

← Extensions

Edit PostgreSQL Extensions

Database postgres ▾

Automatically drop objects that depend on the extension

Address Standardizer Yes No

FuzzyStringMatch Yes No

hStore Yes No

PgRouting (requires PostGIS) Yes No

PostGIS Yes No

PostGIS Topology (requires PostGIS) Yes No

SAVE

Note: You can also un-install Extensions using above.

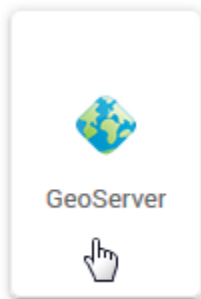
Table of Contents

- *GeoServer*
 - *Overview*
 - *Location*
 - *Geoserver Extensions*
 - *Data Directory*

10.1 Overview

GeoHelm installs the latest, stable version of GeoServer.

The GeoServer tab checks that GeoServer is installed.



If not, it can be installed using the “Install Now” button.

This will install the latest, stable version of GeoServer.

Important: GeoServer is an optional component on the GeoHelm Java Version.

If you do not wish to install it, simply do not do so.

10.2 Location

By default, GeoServer is installed at `/home/tomcat/apache-tomcat-<version>/webapps/geoserver`

To make upgrading easier, you should always change the GeoServer Data Directory location.

To install GeoServer extensions, see our guide

As we can see above, the creation of our NewReports Directory has been added to the directory structure. This is true for all directories and sub directories added.

10.3 Geoserver Extensions

GeoServer Extensions can be installed as below.

Below, we are installing the MapFish Print Module via SSH.

1. Switch to user tomcat

```
1 su - tomcat
```

2. Change to the GeoServer `/lib` directory (adjust for your own file path)

```
1 cd /home/tomcat/apache-tomcat-8.5.15/webapps/geoserver/WEB-INF/lib
```

3. Download the desired extension, making sure to match the version to your GeoServer version

```
1 wget http://sourceforge.net/projects/geoserver/files/GeoServer/2.16.2/extensions/  
↪geoserver-2.16.2-printing-plugin.zip
```

4. Unzip the downloaded file

```
1 unzip -q geoserver-2.16.2-printing-plugin.zip
```

5. Remove the zip file

```
1 rm -f geoserver-2.16.2-printing-plugin.zip
```

6. Restart Tomcat for the extension to take effect.

Note: Some components, such as GDAL, require additional configuration.

10.4 Data Directory

To make GeoServer more portable and easier to upgrade, you should change the GeoServer data directory.

Follow the instructions below, substituting your own paths and file names.

1. Stop Tomcat

2. Connect via SSH and move the data directory as below: (Important: the target directory - 'geo_data' below - should not exist.)

```
1 mv /home/tomcat/apache-tomcat-8.5.15/webapps/geoserver/data/ /var/lib/geo_data/
```

3. Add the following to your GeoServer web.xml file:

```
1 <context-param>
2   <param-name>GEOSERVER_DATA_DIR</param-name>
3   <param-value>/var/lib/geo_data</param-value>
4 </context-param>
5
6 <context-param>
7   <param-name>GEOSERVER_REQUIRE_FILE</param-name>
8   <param-value>/var/lib/geo_data/global.xml</param-value>
9 </context-param>
```

4. Start Tomcat

You should log into GeoServer and verify that your workspaces, etc.. are accesible.

Table of Contents

- *Shape Loader*
 - *Shape Loader Tool*
 - *Load via Shape File Loader*
 - *Load via Comamnd Line*
 - *Troubleshooting*
 - *Documentation*

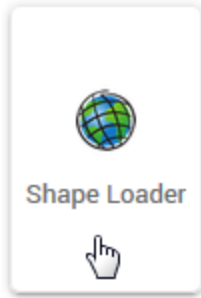
11.1 Shape Loader Tool

GeoHelm includes a shp2pgsql tool that can used to load shape files into PostGIS via Webmin.

1. Load using the Shape File Loader.
2. Load using command line.

11.2 Load via Shape File Loader

Click the Shape File Loader tab as shown below



The load options are displayed below.

←
☆ Shape Loader

Add shape to an existing database, with PostGIS extension

| | |
|--------------------------|--|
| Database | <input type="text" value="geohelm"/> |
| Load Type | <input type="text" value="-c Creates a new table and populates it"/> |
| Set SRID (defaults to 0) | <input type="text" value="0"/> |
| Database Username | <input type="text" value="postgres"/> |
| Schema | <input type="text" value="public"/> or <input type="text" value="New schema name"/> |
| Table | <input type="text" value=""/> or <input type="text" value="New table name"/> |
| Shape source (.zip) | <input checked="" type="radio"/> Local file <input type="button" value="📎"/> <input type="radio"/> Uploaded file <input type="button" value="📎"/> <input type="radio"/> FTP or HTTP URL <input type="text"/> |

Load options:

- Load Using Copy rather than Insert
- Use Geography Type
- Preserve Case of Column Names
- Create a spatial index on the geocolumn
- Create Simple Geometries
- Only import DBF file

Also select if load will be into a new Schema and, in the case of New Table creation, the table name to be created.

Load Options

Database: select the database you wish to load the shape file to.

Load Type: Create, Drop, Append, or Prepare

Set SRID: Defaults to 0 if not set

Database Username: Select the user who will own the data

Schema: Select an existing schema or create a new schema.

Table: Select an existing table or create new one

Shape File Source: Local, Upload, or FTP/HTTP

11.3 Load via Comamnd Line

Usage

shp2pgsql usage can be found using the 'shp2pgsql' command:

11.4 Troubleshooting

If the above commands produce 'shp2pgsql command not found', do the following:

On Ubuntu:

```
root@geohelm:~# apt install postgis
```

On CentOS

```
root@geohelm:~# yum install postgis3_utils
```

11.5 Documentation

Below are resources to get started with ogr2ogr and gdal_translate:

- [Refractions Documentation](#)
- [Boston GIS Cheatsheet](#)

Table of Contents

- *Home Page*
 - *Web App*
 - *Troubleshooting*

12.1 Web App

A simple Bootstrap web application is installed to `/var/www/html` during the set up Wizard.

The web application contains links to the Login page, GeoServer, OpenLayers Demo, LeafletJS Demo, and Docs.

AcuGIS GeoHelm [Home](#) [Docs](#) [LOGIN](#)

Get Started
Your GeoHelm instance is now ready for use.
You can remove this application at any time.

GeoServer
Your GeoServer instance can now be accessed.

OpenLayers Demo
We have created an OpenLayers demo for you.
This example uses your GeoServer instance.

Leaflet Demo
We have created a Leaflet demo for you.
This example uses your GeoServer instance.

Suite Login
You can access your AcuGIS Suite control panel here or via the Login button at top.

Docs >
GeoHelm documentation and tutorials.

12.2 Troubleshooting

If links on the home page do not function properly, check the index.html page to verify that links are pointing to your IP or hostname.

Table of Contents

- *OpenLayers*
 - *Demo App*
 - *Structure and Code*
 - *Version*
 - *Troubleshooting*

13.1 Demo App

A simple OpenLayers demo app using OpenLayers and GeoServer is available via the Home Page.

Click the OpenLayers link on the home page or navigate to:

<https://yourdomain.com/OpenLayersDemo.html>

13.2 Structure and Code

```
1 <html>
2 <head>
3 <title>OpenLayer Demo</title>
4
5 <link rel="stylesheet" href="OpenLayers/ol.css" type="text/css">
6
7 <script src="OpenLayers/ol.js"></script>
```

(continues on next page)

```
8     </head>
9     <body>
10    <div id="map" class="map"></div>
11    <script>
12    var layers = [
13    new ol.layer.Tile({
14      source: new ol.source.OSM()
15    }),
16    new ol.layer.Image({
17      extent: [-13884991, 2870341, -7455066, 6338219],
18      source: new ol.source.ImageWMS({
19
20        //Replace 'localhost' below with your server IP or hostname
21
22        url: 'http://localhost/geoserver/wms',
23        params: {'LAYERS': 'topp:states'},
24        ratio: 1,
25        serverType: 'geoserver'
26      })
27    })
28    ];
29    var map = new ol.Map({
30      layers: layers,
31      target: 'map',
32      view: new ol.View({
33        center: [-10997148, 4569099],
34        zoom: 4
35      })
36    });
37    </script>
38    </body>
39    </html>
```

13.3 Version

By default, the latest version of OpenLayers is installed by the Wizard

13.4 Troubleshooting

If the included OpenLayers demo does not render, or renders only the base map, check the following:

1. Be sure you have the correct IP or hostname in the `/var/www/html/OpenLayersDemo.html` page
2. Be sure you have started GeoServer
3. If both of above are eliminated, restart Apache HTTP Server

Table of Contents

- *LeafletJS*
 - *Demo App*
 - *Structure and Code*
 - *Version*
 - *Troubleshooting*

14.1 Demo App

A simple LeafletJS demo app using OpenLayers and GeoServer is available via the Home Page.

Click the LeafletJS link on the home page or navigate to:

<https://yourdomain.com/LeafletDemo.html>

14.2 Structure and Code

```
1 <html lang="en">
2 <head>
3 <meta charset="utf-8">
4 <meta http-equiv="X-UA-Compatible" content="IE=edge">
5 <meta name="viewport" content="initial-scale=1,user-scalable=no,maximum-scale=1,
↳width=device-width">
6 <title>Example Leaflet</title>
```

(continues on next page)

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```

7     <link rel="stylesheet" href="https://unpkg.com/leaflet@1.1.0/dist/leaflet.css"
8     integrity="sha512-
↳wcw6ts8Anuw10Mzh9Ytw4pylW8+NAD4ch3lqm9lzasTxg0GFfeJgoAtxuCLeZSC5lUXdVyo/
↳7yfsqFjQ4S+aKw=="
9     crossorigin=""/>
10
11    <script src="https://unpkg.com/leaflet@1.1.0/dist/leaflet.js"
12    integrity="sha512-
↳mNqn2Wg7tSToJhvHcqfzLMU6J4mkOImSPTxVZAdo+lCPlk+GhZmYgACEe0x35K7YzW1zJ7XyJV/
↳TT1MrdXvMcA=="
13    crossorigin=""></script>
14    </head>
15    <style>
16    body {
17    padding: 0;
18    margin: 0;
19    }
20    html, body, #map {
21    height: 100%;
22    }
23    </style>
24    <body>
25    <div id="map"></div>
26    <script>
27    var map = L.map('map').setView([0, 0], 2);
28    var osmUrl='http://{s}.tile.openstreetmap.org/{z}/{x}/{y}.png';
29    var osmAttrib='Data © <a href="http://openstreetmap.org">OpenStreetMap</a>
↳contributors';
30    var osm = new L.TileLayer(osmUrl, {minZoom: 2, maxZoom: 8, attribution:
↳osmAttrib});
31    map.addLayer(osm);
32    //change localhost below to your IP or hostname
33    var wmsLayer= L.tileLayer.wms("http://localhost/geoserver/wms", {
34    layers: 'topp:states',
35    format: 'image/png',
36    transparent: true
37    });
38    map.addLayer(wmsLayer);
39    </script>
40    </html>

```

14.3 Version

By default, the latest version of LeafletJS is installed by the Wizard

14.4 Troubleshooting

If the included LeafletJS demo does not render, or renders only the base map, check the following:

1. Be sure you have the correct IP or hostname in the `/var/www/html/Leaflet.html` page
2. Be sure you have started GeoServer
3. If both of above are eliminated, restart Apache HTTP Server

CHAPTER 15

Enable CORS

To enable CORS for your Tomcat instance, you can use our included file.

This file is located under /scripts/cors.txt

The contents should be added to the line just before </web-app> in your /home/tomcat/apache-tomcat-{version}/conf/web.xml

Warning: Be sure to create a backup of your web.xml file before making any changes.

The file Contents are below

```
1      <filter>
2      <filter-name>CorsFilter</filter-name>
3      <filter-class>org.apache.catalina.filters.CorsFilter</filter-class>
4      <init-param>
5          <param-name>cors.allowed.origins</param-name>
6          <param-value>*</param-value>
7      </init-param>
8      <init-param>
9          <param-name>cors.allowed.methods</param-name>
10         <param-value>GET,POST,HEAD,OPTIONS,PUT</param-value>
11     </init-param>
12 </filter>
13 <filter-mapping>
14 <filter-name>CorsFilter</filter-name>
15 <url-pattern>/*</url-pattern>
16 </filter-mapping>
```

You must restart Tomcat for the changes to register.

Note: The above script is very permissive. You should refine your CORS filter to reflect usage.

CHAPTER 16

CSRF Whitelist

To whitelist your domain in GeoServer, you can use our included file.

This file is located under `/scripts/csrf-whitelist.txt`

The contents should be added to your `/home/tomcat/apache-tomcat-{version}/webapps/geoserver/WEB-INF/web.xml` file.

Warning: Be sure to create a backup of your web.xml file before making any changes.

The file contents are below

```
1 <context-param>
2 <param-name>GEOSERVER_CSRF_WHITELIST</param-name>
3 <param-value>yourdomain.com</param-value>
4 </context-param>
```

You must restart Tomcat for the changes to register.

Note: Be sure to replace `yourdomain.com` with your own domain above.

CHAPTER 17

Securing Debian

To enable basic security for Debian distributions, you can use our included file.

This file is located under `/scripts/secure-debian.sh`

Warning: The script will disable root login, create a minimally privileged user, and IP table rules. Proceed with caution.

Once file is run, the user and updated root password will be displayed as well as saved to `/root/auth.txt`

The script can be executed, as root, using below

```
1 cp /usr/share/webmin/geohelm/scripts/secure-debian.txt /root/secure-debian.sh
2 cp /root
3 chmod +x secure-debian.sh
4 ./secure-debian.sh
```

Be sure to note new passwords.

CHAPTER 18

Securing RHEL

To enable basic security for RHEL distributions, you can use our included file.

This file is located under `/scripts/secure-rhel.sh`

Warning: The script will disable root login, create a minimally privileged user, and IP table rules. Proceed with caution.

Once file is run, the user and updated root password will be displayed as well as saved to `/root/auth.txt`

The script can be executed, as root, using below

```
1 cp /usr/libexec/webmin/geomhelm/scripts/secure-rhel.txt /root/secure-rhel.sh
2 cp /root
3 chmod +x secure-rhel.sh
4 ./secure-rhel.sh
```

Be sure to note new passwords.

The screenshots in the documentation use a Material Design CSS Extension we created.

This can be added directly to Webmin > Configuration > Webmin Themes

In addition to making the screens a bit more vivid, it also increases the size of objects on the page as well as padding, making it easier to work with

```
1  .row.icons-row .icons-container {
2  border-radius: 25px!important;
3  -webkit-filter: none!important;
4  filter: none!important;
5  }
6
7  html[data-theme="brown"] #sidebar {
8  background:
9  darkslategray!important;}
10
11 .panel-default>.panel-heading {
12 color: #fff;
13 background-color: rgb(0, 188, 212)!important;text-align:left !important;
14
15 }
16
17 .panel-default>.panel-heading, .panel-default {
18 border-top-left-radius: 5px !important;
19 border-top-right-radius: 5px !important;
20 }
21 .panel-default , .panel{
22 border-bottom-left-radius: 5px !important;border-top:0 !important;border-top-
↪width: 0px;
23 border-bottom-right-radius: 5px !important;
24 box-shadow: 0 2px 2px 0 rgba(0,0,0,.14), 0 3px 1px -2px rgba(0,0,0,.12), 0 1px_
↪5px 0 rgba(0,0,0,.2);
25 }
26
```

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```

27     .row.icons-row .icons-container:not(.highlighted) {
28     border-radius: 5px !important;
29     background: rgb(255, 255, 255) !important;
30     box-shadow: 0 2px 2px 0 rgba(0,0,0,.14), 0 3px 1px -2px rgba(0,0,0,.12), 0 1px_
↪5px 0 rgba(0,0,0,.2);
31     }
32
33     h2.form-signin-heading {
34     display: none !important;
35     }
36
37     i.wbm-webmin {
38     display: none !important;
39     }
40
41     .card {
42     font-size: .875rem;
43     font-weight: 400
44     }
45
46     .btn:not(.btn-round), button.btn:not(.btn-round), .csf-container input[type=
↪'submit']:not(.btn-round), .csf-container button.input:not(.btn-round), input[type=
↪'submit']:not(.btn-round) {
47     text-align: center;
48     vertical-align: middle;
49     font-size: 1rem;
50     line-height: 1.5;
51     border-radius: 0.325em !important;
52     transition: color .15s ease-in-out,background-color .15s ease-in-out,border-
↪color .15s ease-in-out,box-shadow .15s ease-in-out;
53     text-transform: uppercase;
54     cursor: pointer;
55     border: 0;
56     outline: 0;
57     transition: box-shadow .2s cubic-bezier(.4,0,1,1),background-color .2s cubic-
↪bezier(.4,0,.2,1),color .2s cubic-bezier(.4,0,.2,1) !important;
58     will-change: box-shadow,transform;
59     color: rgba(0,0,0,.87);
60     background-color: rgb(255, 255, 255);
61     border-color: rgb(204, 204, 204) !important;
62     box-shadow: 0 2px 2px 0 rgba(0,0,0,.14), 0 3px 1px -2px rgba(0,0,0,.2), 0 1px_
↪5px 0 rgba(0,0,0,.12) !important;
63     margin-left: 0 !important;
64     margin-right: 0 !important
65     }
66
67     html[data-script-name*='settings-editor_read.cgi'] #content .CodeMirror+.ui_form_
↪end_buttons .btn {
68     margin-left: 0 !important;
69     margin-right: 0 !important
70     }
71
72     html[data-script-name*='settings-editor_read.cgi'] #content .CodeMirror+.ui_form_
↪end_buttons td:last-child .btn {
73     margin-left: 0 !important;
74     margin-right: 5px !important
75     }

```

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```

76
77   .btn-group .btn, .btn {
78     box-shadow: 0 2px 2px 0 rgba(0,0,0,.14), 0 3px 1px -2px rgba(0,0,0,.2), 0 1px_
↪5px 0 rgba(0,0,0,.12);
79   }
80
81   .btn-group>.btn:first-child:not(:last-child):not(.dropdown-toggle) {
82     border-top-right-radius: 0 !important;
83     border-bottom-right-radius: 0 !important;
84   }
85
86   .btn-group>.btn:last-child:not(:first-child):not(.dropdown-toggle) {
87     border-top-left-radius: 0 !important;
88     border-bottom-left-radius: 0 !important;
89   }
90
91   body .btn.btn-primary {
92     color: rgb(255, 255, 255) !important;
93     background-color: rgb(63, 81, 181) !important;
94     border-color: rgb(63, 81, 181) !important;
95   }
96   body .btn.btn-default {
97     color: rgba(0, 0, 0, 0.87);
98     background-color: rgba(153, 153, 153, 0.2);
99     border-color: rgba(153, 153, 153, 0.2);
100  }
101  body .btn.btn-success {
102    color: rgb(255, 255, 255) !important;
103    background-color: rgb(76, 175, 80) !important;
104    border-color: rgb(76, 175, 80) !important;
105  }
106
107  .btn.btn-secondary {
108    color: rgb(255, 255, 255) !important;
109    background-color: rgb(108, 117, 125) !important;
110    border-color: rgb(108, 117, 125) !important;
111  }
112
113  .btn.btn-info, .btn.btn-inverse, .btn.ui_link.btn-inverse, .btn-tiny, .ui_link.
↪btn.btn-inverse.btn-tiny.ui_link_replaced, .btn-inverse {
114    color: rgb(255, 255, 255) !important;
115    background-color: rgb(3, 169, 244) !important;
116    border-color: rgb(3, 169, 244) !important;
117  }
118
119  .btn.btn-info:hover, .btn.btn-inverse:hover, .btn.ui_link.btn-inverse:hover, .btn-
↪tiny:hover, .ui_link.btn.btn-inverse.btn-tiny.ui_link_replaced:hover, .btn-
↪inverse:hover,
120
121  .btn.btn-inverse:hover, .btn.ui_link.btn-inverse:hover, .btn-tiny:hover, .ui_
↪link.btn.btn-inverse.btn-tiny.ui_link_replaced:hover, .btn-inverse:hover{
122    border-color: rgb(255, 255, 255) !important;background-color: rgb(3, 169, 244) !
↪important;
123  }
124
125  .btn:hover {
126    cursor: pointer !important;

```

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```

127     }
128     .btn.btn-warning {
129     color: rgb(255, 255, 255) !important;
130     background-color: rgb(255, 87, 34) !important;
131     border-color: rgb(255, 87, 34) !important;
132     }
133
134     .btn.btn-danger {
135     color: rgb(255, 255, 255) !important;
136     background-color: rgb(244, 67, 54) !important;
137     border-color: rgb(244, 67, 54) !important;
138     }
139
140     .alert-success {
141     color: rgb(40, 91, 42);
142     background-color: rgb(219, 239, 220);
143     border-color: rgb(205, 233, 206);
144     }.alert-danger {
145     color: rgb(127, 35, 28);
146     background-color: rgb(253, 217, 215);
147     border-color: rgb(252, 202, 199);
148     }.alert-primary {
149     color: rgb(33, 42, 94);
150     background-color: rgb(217, 220, 240);
151     border-color: rgb(201, 206, 234);
152     }.alert-secondary {
153     color: rgb(56, 61, 65);
154     background-color: rgb(226, 227, 229);
155     border-color: rgb(214, 216, 219);
156     }.alert-warning {
157     color: rgb(133, 45, 18);
158     background-color: rgb(255, 221, 211);
159     border-color: rgb(255, 208, 193);
160     }.alert-info {
161     color: rgb(2, 88, 127);
162     background-color: rgb(205, 238, 253);
163     border-color: rgb(184, 231, 252);
164     }.alert-light {
165     color: rgb(127, 127, 127);
166     background-color: rgb(253, 253, 253);
167     border-color: rgb(252, 252, 252);
168     }.alert-dark {
169     color: rgb(34, 34, 34);
170     background-color: rgb(217, 217, 217);
171     border-color: rgb(202, 202, 202);
172     }
173     #right-side-tabs .btn-tiny.ui_submit.ui_form_end_submit, #content #system-status_
↪.btn-tiny.ui_submit.ui_form_end_submit {
174     line-height: 21px;
175     padding: 5px 12px !important;    height: 32px !important;
176     }
177     .table-subtable tbody tr td, .panel-body .table-subtable tr th, .panel-body .
↪table-subtable tr td, .table-subtable tbody tr td, .panel-body tr th, .panel-body_
↪tr td {
178     padding: .75rem !important;
179     }
180

```

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```

181     body.csf .dataTables_filter input[type='search'], body .dataTables_filter_
↪input[type='search'], .csf-container input[type='text'], .csf-container input[type=
↪'search'], .csf-container input, .csf-container select, input[id^='CSF'],_
↪input[type='button'], input[type='reset'], input[name]:not([type='image
↪']):not([type='checkbox']):not([type='radio']):not(.btn):not(.session_login),_
↪input[name]:not([type='image']):not(.sidebar-search):not([type='button']):not([type=
↪'checkbox']):not([type='radio']):not(.btn), .csf-container input[type='text'], .csf-
↪container input[type='search'], .chooser_button, .form-control {
182         font-size: 1rem;
183         box-sizing: content-box;
184         width: 100%;
185         height: 3rem;
186         margin: 0;
187         padding: 0;
188         -webkit-transition: box-shadow .3s,border .3s;
189         transition: box-shadow .3s,border .3s;
190         border: none;
191         border-bottom: 1px solid rgb(158, 158, 158);
192         border-radius: 0;
193         outline: 0;
194         background-color: rgba(0, 0, 0, 0);
195         box-shadow: none;font-size:16px;padding-left:5px;padding-right:5px;
196     }
197
198     input[name]:not([type='image']):not([type='checkbox']):not([type='radio']):not(.
↪btn):not(.session_login):focus, input[name]:not([type='image']):not(.sidebar-
↪search):not([type='button']):not([type='checkbox']):not([type='radio']):not(.
↪btn):focus, .csf-container input[type='text']:focus, .csf-container input[type=
↪'search']:focus, .chooser_button:focus, .form-control:focus{
199         border-bottom-width:2px;border-bottom-color : rgb(63, 81, 181)
200     }
201
202     li.user-link, li.user-link span, li.user-link, li.user-link i {
203         background: rgb(85, 189, 212);
204         color: rgb(255, 255, 255) !important;
205         border-radius: 5px !important;
206         border: 0 !important;
207         line-height: 18px;
208     }
209     html[data-theme="brown"] #sidebar .form-group .form-control.sidebar-
↪search::placeholder{
210         color:#bbb !important
211     }
212     html[data-theme="brown"] #sidebar .form-group .form-control.sidebar-search{
213         color: #fff!important;
214     }

```

Above can be pasted into Theme Extensions

CHAPTER 20

Security

Below are common items for securing your instance.

Disable root login Change SSH port to non-standard (22) port Change Webmin port to non-standard (10000) port
Install IP Tables Restrict access to Webmin to your IP Disable all services not in use

Note: All Tomcat services are owned and run by user tomcat with minimal privileges.

21.1 Contributing

We welcome all contributors.

While any code contributions are welcome, areas that could use improvement are:

- Providing feedback
- Email Formatting
- iReport Library Updates

21.2 Issues

If you've found a bug, let us know.

21.3 Pull Requests

Create a fork of our repo.

To submit a pull request for a **new feature**:

1. Run the tests. Every pull request for a new feature should have an accompanying unit test and docs changes.
2. Create a new branch off of the *master* branch for your feature.
3. Add a test (or multiple tests) for your feature.
4. Add your new feature.
5. Push to your fork and submit the pull request.

To submit a **bug fix**:

1. Create a new branch off of the *master* branch.
2. Add a test that demonstrates the bug.
3. Make the test pass.
4. Push to your fork and submit the pull request!

To submit a **documentation fix**:

1. Create a new branch off of the *master* branch.
2. Add your documentation fixes (no tests required).
3. Push to your fork and submit the pull request!

CHAPTER 22

Commercial Support

Commercial Support with enhanced features and support is available via [AcuGIS](#)

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```
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```

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