Ministry of Forests and Soil Conservation
REDD Implementation Centre

Develop National Database of Basic Attributes of all Forest Management Regimes and Develop National REDD+ Information System or Registry

Contract No: (FCPF/REDD/S/QCBS-24)

Technical Working Document n. 10 to Final Report

User System Installation Manual

Online GIS Platform

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REDD Implementation Centre

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Summary

The National Forest Database and National Forest information System (NFD/NFIS) will integrate and incorporate existing spatial data collection mechanism at the management regime level. This will provide necessary infrastructure, interface, tools and links to the NFD database as well as other external databases to provide user requested information necessary for exploration, analysis, reporting and visualization on maps and spatial database.

Online mapping portal enables access and updating of spatial data and information. A functional spatial information system (online GIS) is important for monitoring, updating and managing. The database structure is flexible to incorporate additional thematic maps and data in future. An open source database spatial platform was established centralized system. Customized GUIs were developed for data entry at the district level.

A Technical Manual(user guide) for installing and managing system is necessary to interact, update and test the new and existing data at local level. This manual will help new users to set up and online mapping system in their own environment and able to interact centralized mapping portal.

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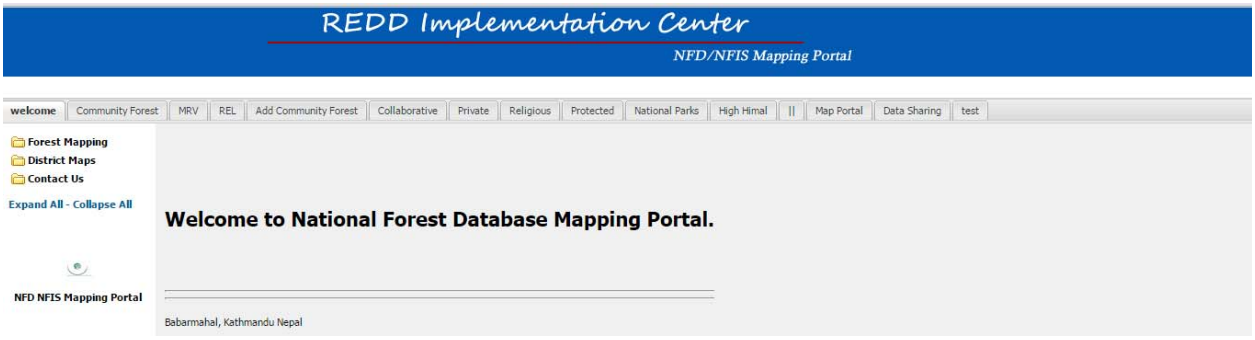
List of Figures

Acronyms and Abbreviations

CBFM:	Community Based Forest Management
CF:	Community Forest
CFI	Continuous Forest Inventory
CFOP:	Community Forest Operational Plan
CFUGs:	Community Forest User Groups
CoFM:	Collaborative Forest Management
COPs	Conference of Parties
DBH	Diameter at Breast Height
DBMS	Database Management System
DDC:	District Development Committee
DFO:	District Forest Office/Officer
DFRS	Department of Forests Research and Survey
DOF	Department of Forests
ESMF	Environmental and Social Management Framework
ESS	Environmental and Social and Safeguards System (ESS)
FAO	Food and Agricultural Organization of the United Nations
FAO FP	FAO Forestry Paper
FCPF	Forest Carbon Partnership Facility
DSCO:	District Soil Conservation Officer
FECOFUN:	Federation of Community Forest Users Nepal
FGD:	Focus Group Discussion
FMU:	Forest Management Unit
FRA	Forest Resources Assessment of Nepal Project
GHG	Greenhouse Gas Emissions
GIS	Geographic Information System
GLCN	FAO/UNEP Global Land Cover Network
GPG	International Panel on Climate Change: Good Practice Guidance
GPS:	Geographic Positioning System
ICIMOD:	International Center for Integrated Mountain Development
IPs:	Indigenous Peoples
IPCC	Intergovernmental Panel on Climate Change
LCCS	Land Cover Classification System
LhFUGs:	Leasehold Forest User Groups
M and MRV:	Measurement and Monitoring, Reporting and Verification
MIS	Management Information System
MRV	Measuring, Reporting and Verifying
NAFIMS	National Forestry Information Management System
NFCAG	National Forest Carbon Action Group
NEFIN:	Nepal Federation of Indigenous Nationalities
NGO:	Non-Government Organization
NORAD:	Norwegian Agency for Development Cooperation
PSP	Permanent Sample Plots
REDD	Reducing emissions from deforestation and forest degradation
REDD+	The REDD"+" is more than just avoided deforestation. It is tied to measurable and verifiable reduction of emissions from deforestation and forest degradation as well as sustainable management of forests, conservation of forest carbon stocks and enhancement of carbon stock
RL/REL	Reference Emission Level
R-PP:	Readiness Preparation Proposal

SLMS	Satellite Land Monitoring System
UNFCC	United Nations Framework Convention on Climate Change
WISDOM	Wood fuel Integrated Supply and Demand Overview Mapping



1 GeoServer

is a map server which allows sharing, processing and editing GIS data. It has great power for interoperability in database and can publish different spatial database using Open Standards. It has capability of connecting and publishing in Google maps, Google Earth, Microsoft Bing and Yahoo maps as background maps. It has incorporated OGC(Open Geospatial Consortium) WMS, MFS, WCS and WPS services specification.

1.1 Installation[1]

1.1.1 Windows

It is one of the easiest installation processes as it requires no configuration files to be edited or command line settings.

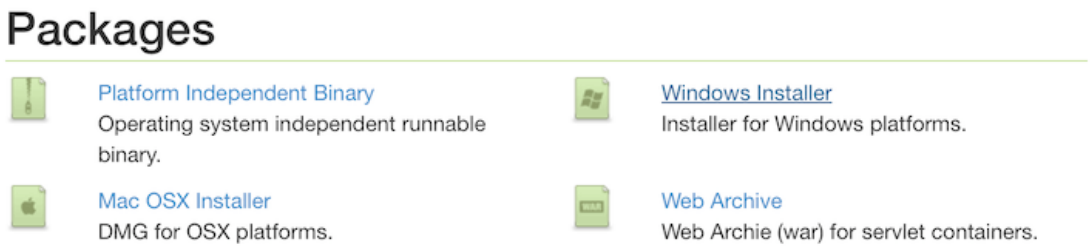
[1]This report is prepared with the help official open document from Geoserver, Postgres, PostGISand NFDNFIS GIS platform.

Requirement and Steps

Java Runtime Environment (JRE) for Java environment .Can be downloaded from

http://www.oracle.com/technetwork/java/javase/downloads/

1. Geoserver can be downloaded from http://geoserver.org/download.
2. Click Windows installer.



3. Click the downloaded file to launch.
4. click Next after welcome screen and configure username and password.

Figure 1 Welcome Screen

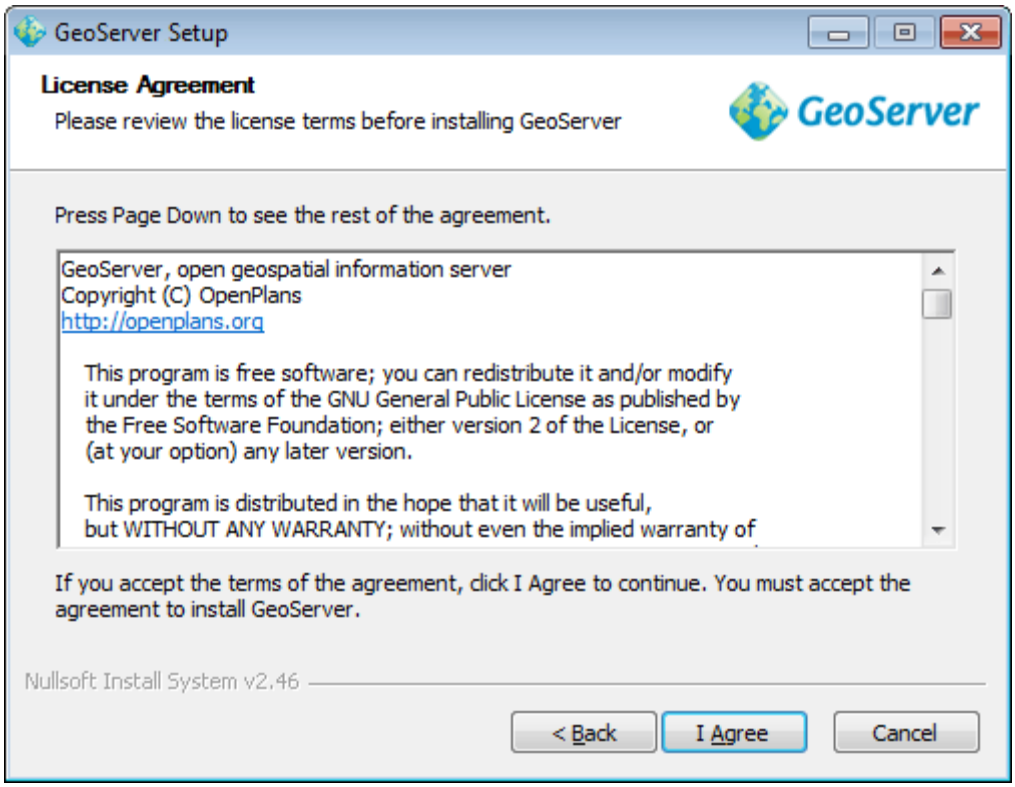


Figure 2 GeoServer license agreement

5. Select the installation directory.

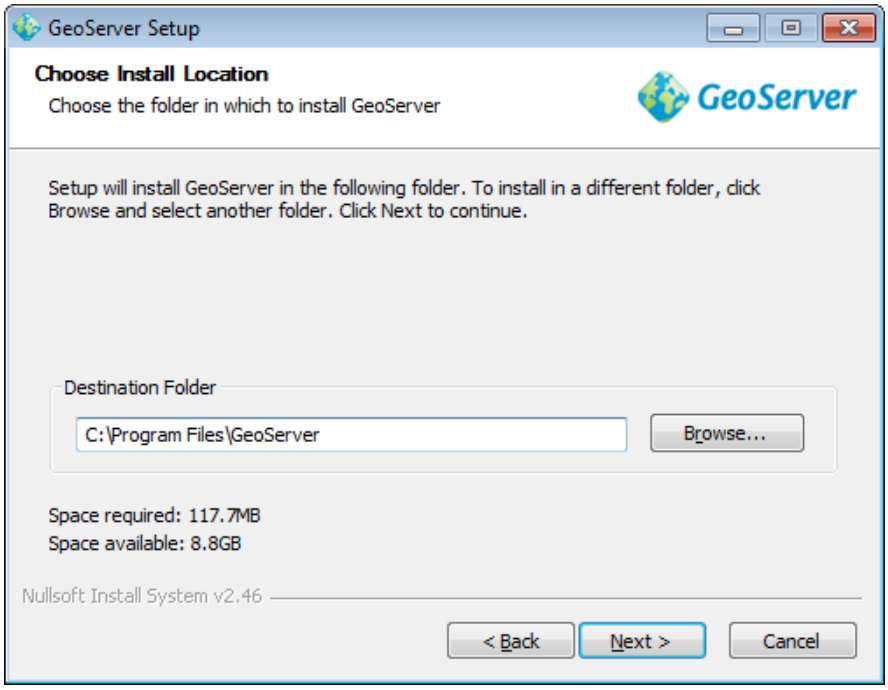


Figure 3 GeoServer install directory

6. Select the Start Menu directory name and location, then click Next.

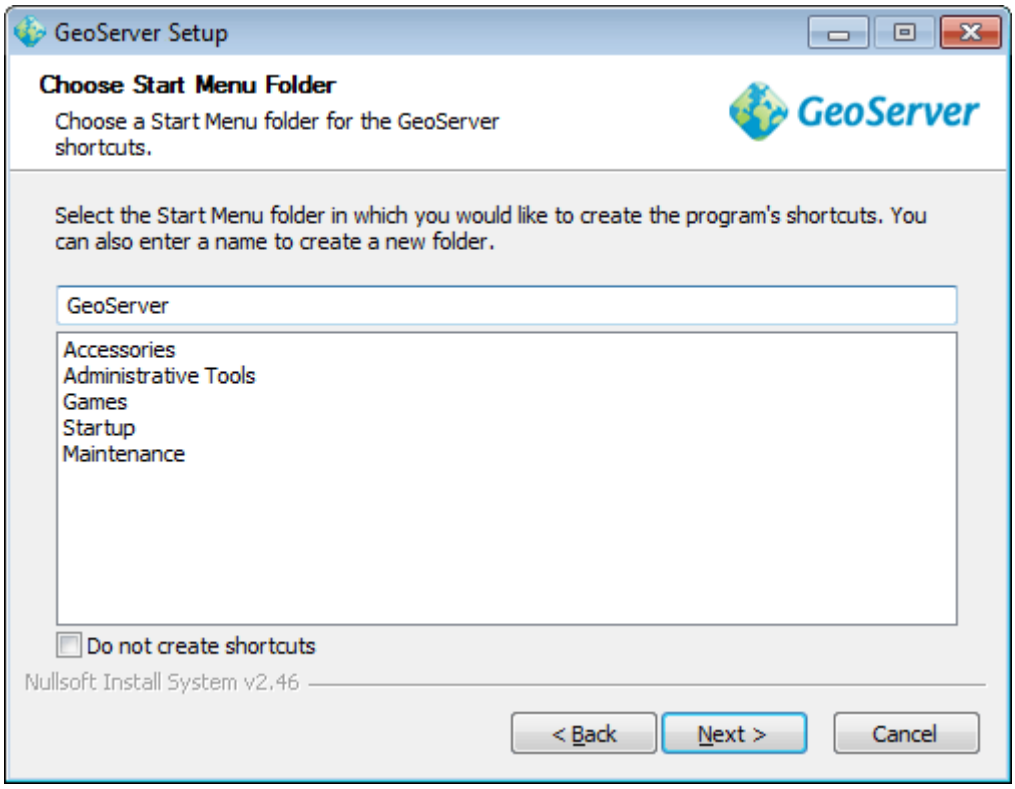


Figure 4 Start menu location

7. Enter the path of **Java Runtime Environment (JRE)**.

Figure 5 Selecting a valid JRE

8. Provide the GeoServer data directory or select default directory.

Figure 6 GeoServer data directory

9. Provide username and password of administrator.

Figure 7 Setting the username and password for GeoServer administration

10. Provide default port of Geoserver for web administration and web interface.

.

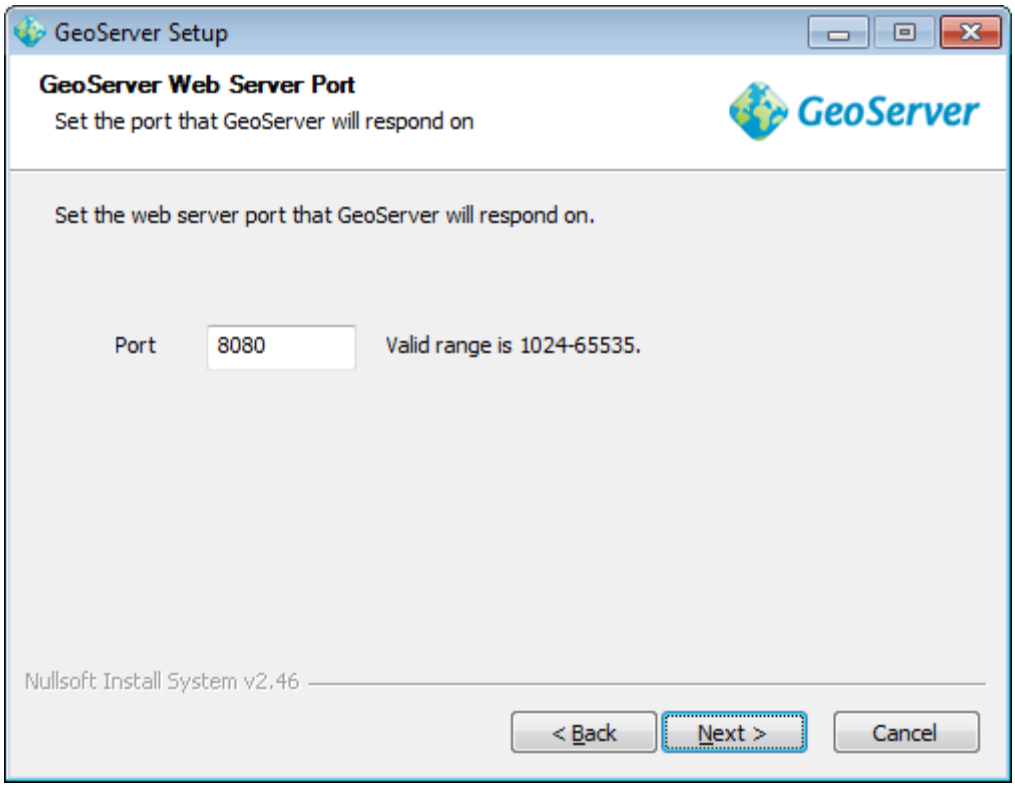


Figure 8 Setting the GeoServer port

11. Select whether GeoServer should be run manually or installed as a service. When run manually, GeoServer is run like a standard application under the current user. When installed as a service, GeoServer is integrated into Windows Services, and thus is easier to administer. If running on a server, or to manage GeoServer as a service, select Install as a service. Otherwise, select Run manually. When finished, click Next.

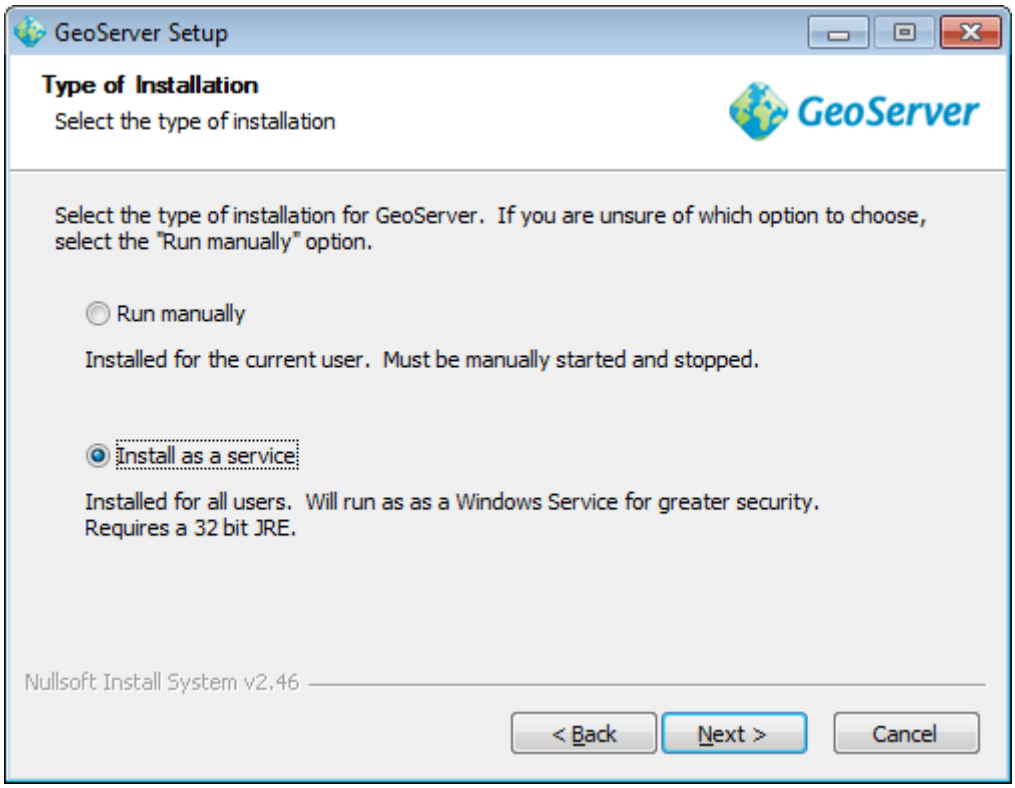


Figure 9 Installing GeoServer as a service

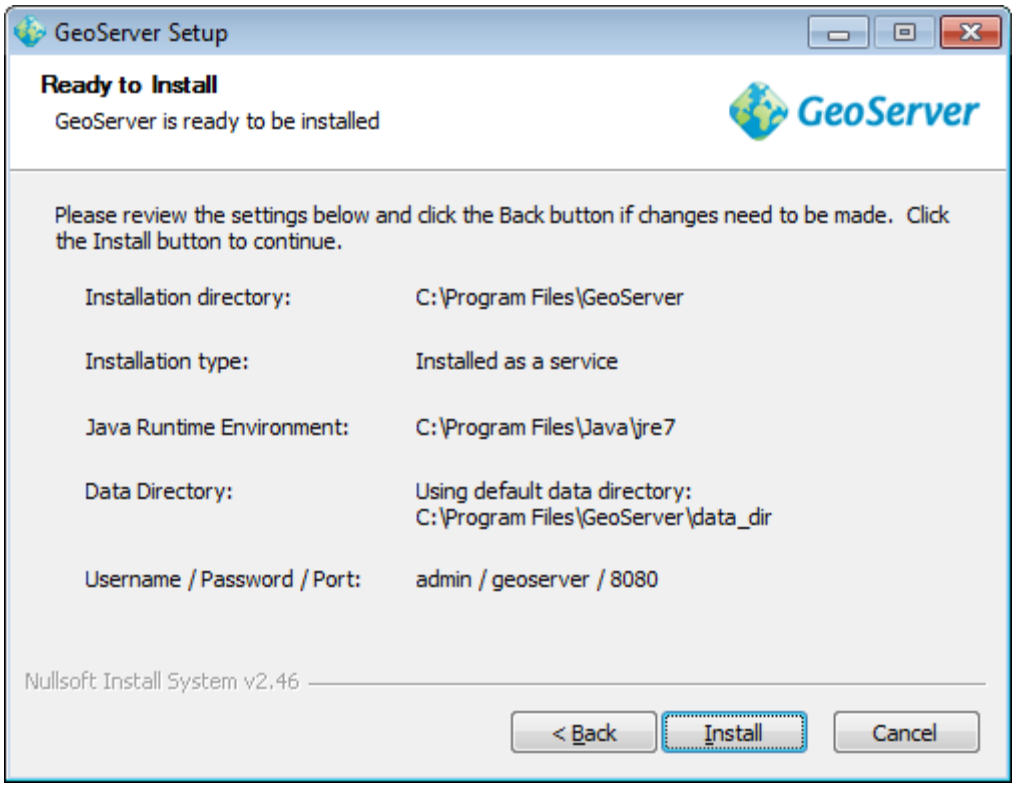


Figure 10 Verifying settings

12. GeoServer will install on in the system. When finished, click Finish to close the installer.
13. If you installed GeoServer as a service, it is already running. Otherwise, you can start GeoServer by going to the Start Menu, and clicking Start GeoServer in the GeoServer folder.
14. Navigate to http://localhost:8080/geoserver (or wherever you installed GeoServer) to access the GeoServer Web Administration Interface.

If you see the GeoServer logo, then GeoServer is successfully installed.

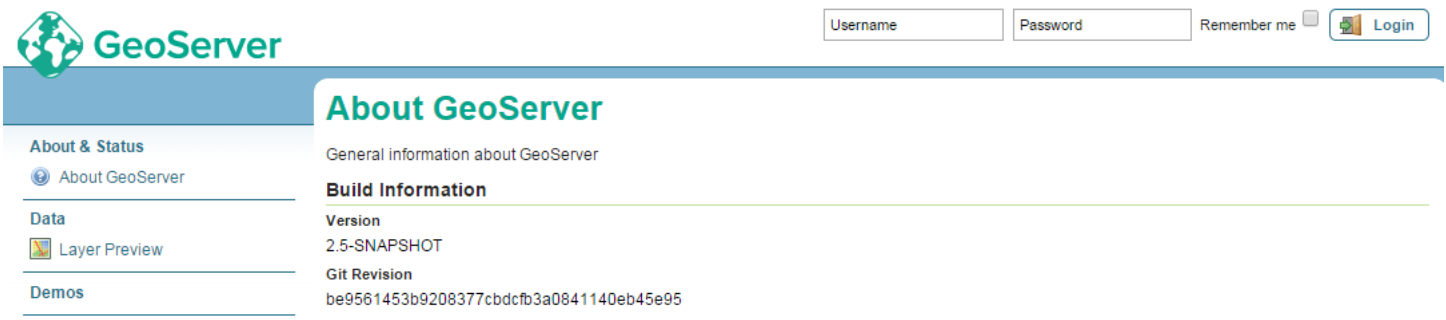


Figure 11GeoServer installed and running successfully

1. Navigate to http://localhost:8080/geoserver (or wherever you installed GeoServer) to access the interface.

Stopping

To shut down GeoServer, either close the persistent command-line window, or run the shutdown.bat file inside the bin directory.

1.1.2 Uninstallation

1. Stop GeoServer (if it is running).
2. Delete the directory where GeoServer is installed.

1.2 Web archiveInstallation

GeoServer is packaged as a standalone servlet for use with existing application servers such as Apache Tomcat and Jetty.

1. Make sure you have a Java Runtime Environment (JRE) installed on your system. GeoServer requires a **Java 7** environment. The Oracle JRE is preferred, but OpenJDK has been known to work adequately.
2. Navigate to the GeoServer Download page.
3. Select Web Archive on the download page.
4. Download and unpack the archive.
5. Deploy the web archive as you would normally. Often, all that is necessary is to copy thegeoserver.war file to the application server's webapps directory, and the application will be deployed.

Use your container application's method of starting and stopping webapps to run GeoServer.

To access the Web Administration Interface, open a browser and navigate to http://SERVER/geoserver . For example, with Tomcat running on port 8080 on localhost, the URL would behttp://localhost:8080/geoserver.

1.2.1 Uninstallation

1. Stop the container application.
2. Remove the GeoServer webapp from the container application's webapps directory. This will usually include the geoserver.war file as well as a geoserver directory.

2 Web Administration

The Web Administration Tool is a web-based application used to configure all aspects of GeoServer, from adding and publishing data to changing service settings.

The web admin tool is accessed via a web browser at http://<host>:<port>/geoserver (for a default installation on the local host the link is http://localhost:8080/geoserver/web). When the app starts it displays the public Welcome page.

2.1 Logging In

In order to change any server settings or configure data a user must first be authenticated. Navigate to the upper right hand corner to log into GeoServer. The default username and password is admin andgeoserver. These can be changed by editing the security/users.properties file in the GeoServer Data Directory.

Figure 12 Login

Once logged in, the Welcome screen changes to show the available admin functions. These are available from links under the sections on the left-hand menu.

2.2 Services

The Services section is for advanced users needing to configure the request protocols used by GeoServer. The Web Coverage Service (WCS) page manages metadata information, common to WCS, WFS and WMS requests. The Web Feature Service (WFS) page permits configuration of features, service levels, and GML output. The Web Map Service (WMS) page sets raster and SVG options.

2.3 Data

The Data links directly to a data type page with edit, add, and delete functionality. All data types subsections follow a similar workflow. As seen in the Styles example below, the first page of each data type displays a view page with an indexed table of data.

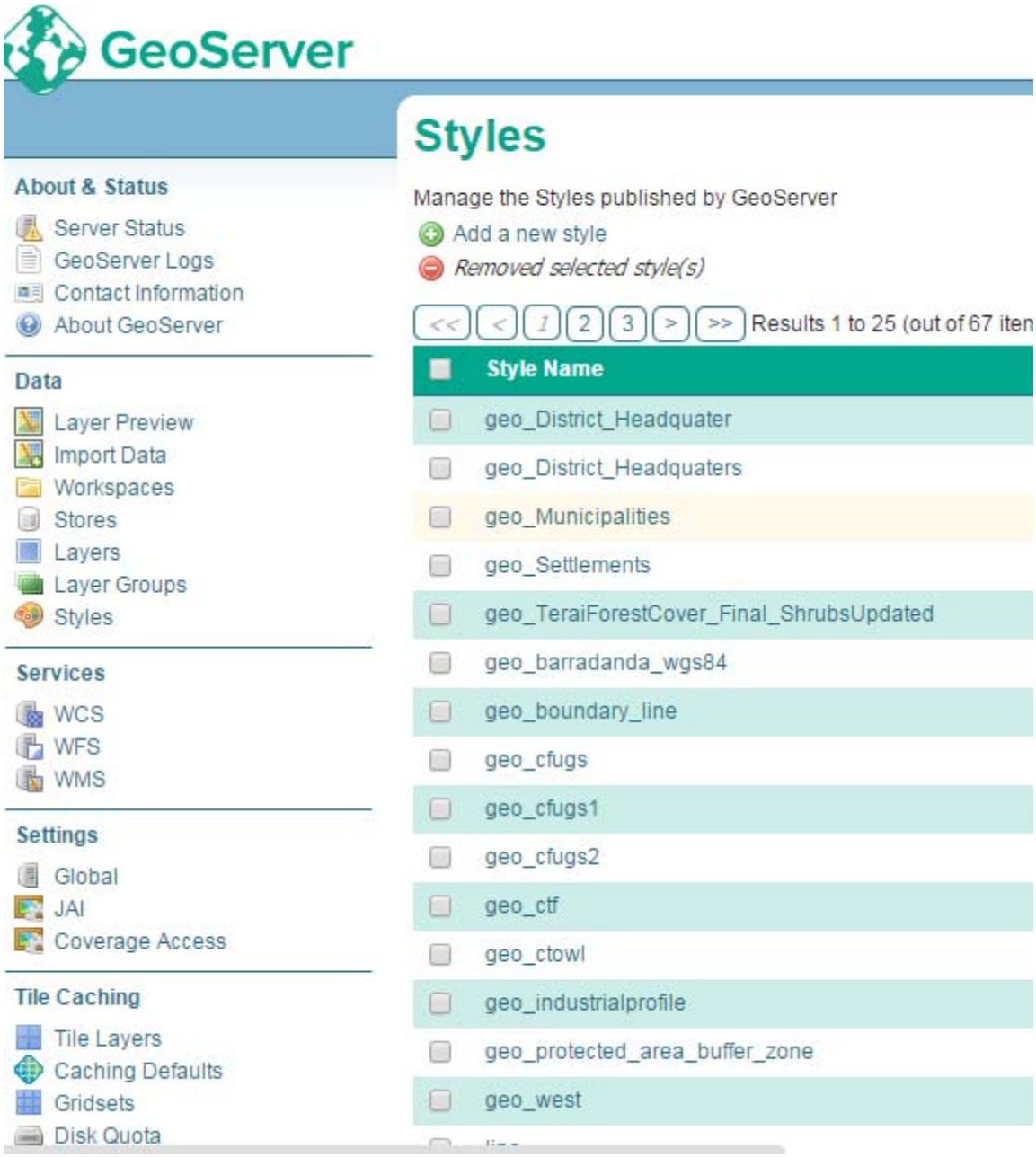
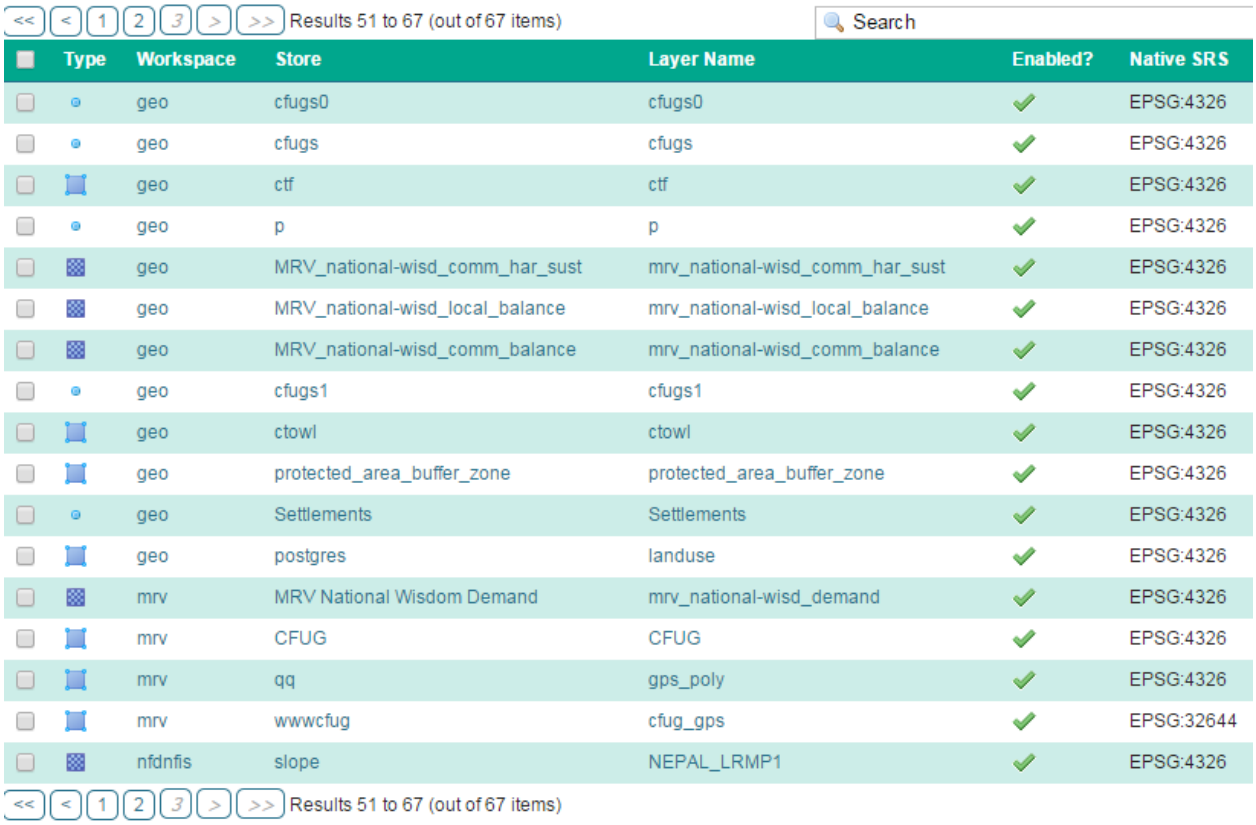


Figure 13Styles View page

Each data type name links to a corresponding configuration page. For example, all items listed below Workspace, Store and Layer Name on the Layers view page, link to its respective configuration page.



<< < 1 2 3 > >> Results 51 to 67 (out of 67 items) Search

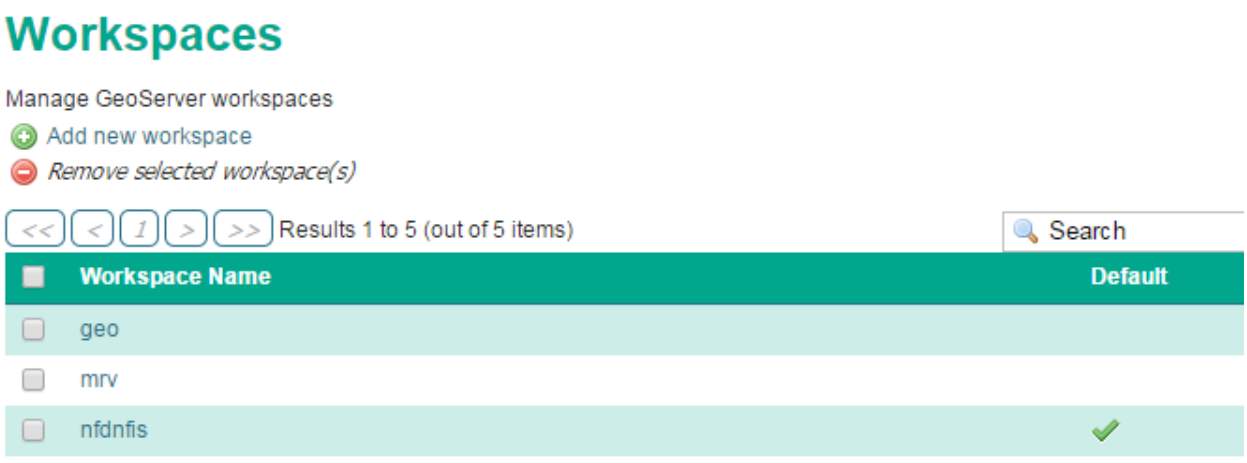
Type	Workspace	Store	Layer Name	Enabled?	Native SRS
	geo	cfugs0	cfugs0	✓	EPSG:4326
	geo	cfugs	cfugs	✓	EPSG:4326
	geo	ctf	ctf	✓	EPSG:4326
	geo	p	p	✓	EPSG:4326
	geo	MRV_national-wisd_comm_har_sust	mrv_national-wisd_comm_har_sust	✓	EPSG:4326
	geo	MRV_national-wisd_local_balance	mrv_national-wisd_local_balance	✓	EPSG:4326
	geo	MRV_national-wisd_comm_balance	mrv_national-wisd_comm_balance	✓	EPSG:4326
	geo	cfugs1	cfugs1	✓	EPSG:4326
	geo	ctowl	ctowl	✓	EPSG:4326
	geo	protected_area_buffer_zone	protected_area_buffer_zone	✓	EPSG:4326
	geo	Settlements	Settlements	✓	EPSG:4326
	geo	postgres	landuse	✓	EPSG:4326
	mrv	MRV National Wisdom Demand	mrv_national-wisd_demand	✓	EPSG:4326
	mrv	CFUG	CFUG	✓	EPSG:4326
	mrv	qq	gps_poly	✓	EPSG:4326
	mrv	wwwcfug	cfug_gps	✓	EPSG:32644
	nfdnfis	slope	NEPAL_LRMP1	✓	EPSG:4326

<< < 1 2 3 > >> Results 51 to 67 (out of 67 items)

Figure 14Layers View

In the data type view panel, there are three different ways to locate a data type–sorting, searching, and scrolling .

For simple searching, enter the search criteria in the search box and hit Enter.



Workspaces

Manage GeoServer workspaces

Add new workspace

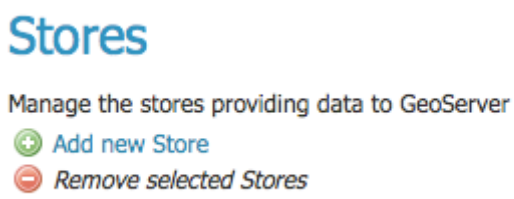
Remove selected workspace(s)

<< < 1 > >> Results 1 to 5 (out of 5 items) Search

Workspace Name	Default
geo	
mrv	
nfdnfis	✓

Search results for the query “nfdnfis”.

To scroll through data type pages, use the arrow button located on the bottom and top of the view table.



Buttons to add and remove Stores

To add a new data, select the Add button, and follow the data type specific prompts. To delete a data type In order to remove a data type, click on the data type's corresponding check box and select theRemove button. (Multiple data types, of the same kind, can be checked for batch removal.)

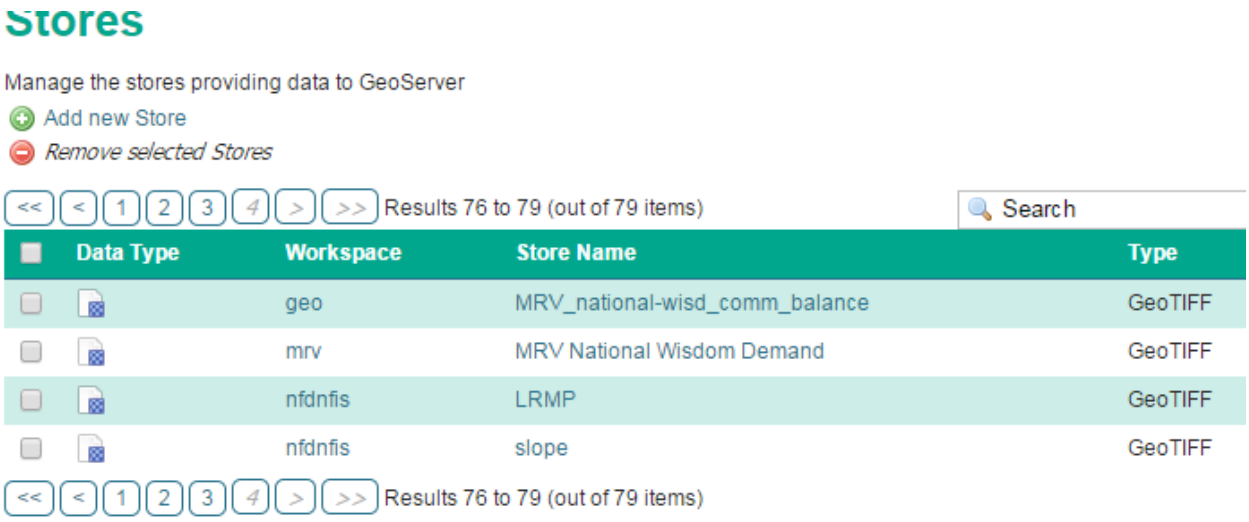


Figure 15 Layers View

2.4 Demos

The Demos page contains links to example WMS, WCS and WFS requests for GeoServer as well as a link listing all SRS info known to GeoServer. You do not need to be logged into GeoServer to access this page.

2.5 Layer Preview

The Layer Preview page provides layer previews in various output formats, including the common OpenLayers and KML formats. This page helps to visually verify and explore the configuration of a particular layer.

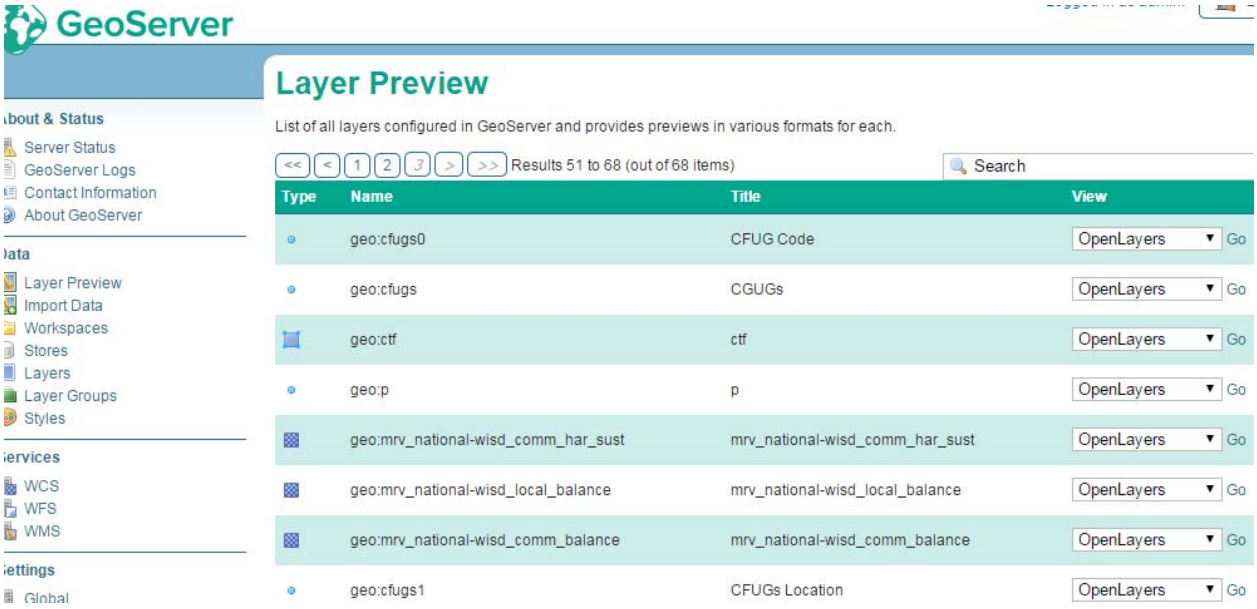


Figure 16 Layer Preview page

Each layer row consists of a Type, Name, Title, and available formats for viewing. The Type column shows an icon indicating the layer datatype. Name displays the Workspace and Layer Name of a layer, while Titledisplays the brief description configured in the Edit Layer: Data panel. Common Formats include OpenLayers, KML, and GML where applicable, while the All Formats include additional output formats for further use or data sharing.

2.6 Publishing a Shapefile

- This tutorial walks through the steps of publishing a Shapefile with GeoServer.

1. Download the file **cfug.zip**. This archive contains a Shapefile of cfug that will be used during in this tutorial.
2. Unzip the cfug.zip. The extracted folder cfugcontains the following four files:

   cfug.shp

   cfug.shx

   cfug.dbf

   cfug.prj

#. Move the cfugfolder into <GEOSERVER_DATA_DIR>/data, where <GEOSERVER_DATA_DIR> is the root of the GeoServer data directory. If no changes have been made to the GeoServer file structure, the path isgeoserver/data_dir/data/cfug.

2.7 Create a New Workspace

The first step is to create a workspace for the Shapefile. A workspace is a container used to group similar layers together.

1. In a web browser navigate to http://localhost:8080/geoserver/web.
2. Log into GeoServer as described in Logging In.
3. Navigate to DataWorkspaces.

Figure 17 Workspaces page

4. To create a new workspace click the Add new workspace button. You will be prompted to enter a workspace Name and Namespace URI.

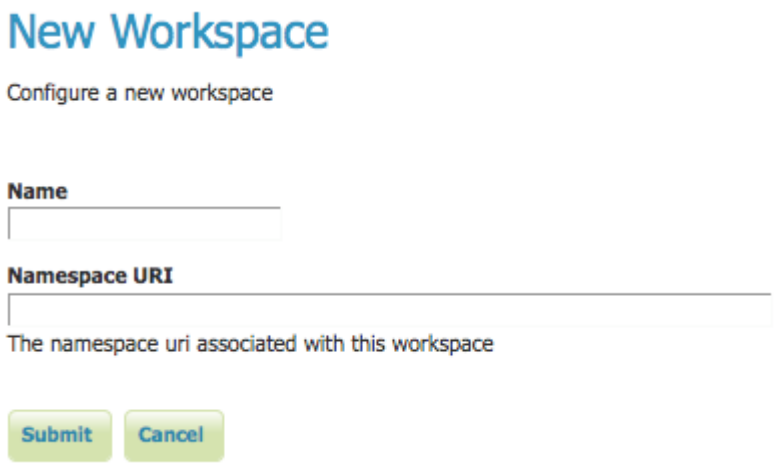


Figure 18 Configure a New Worksapce

5. Enter the Name as cfugand the Namespace URI as http://opengeo.org/cfug. A workspace name is a identifier describing your project. It must not exceed ten characters or contain spaces. A Namespace URI (Uniform Resource Identifier) is typically a URL associated with your project, perhaps with an added trailing identifier indicating the workspace.

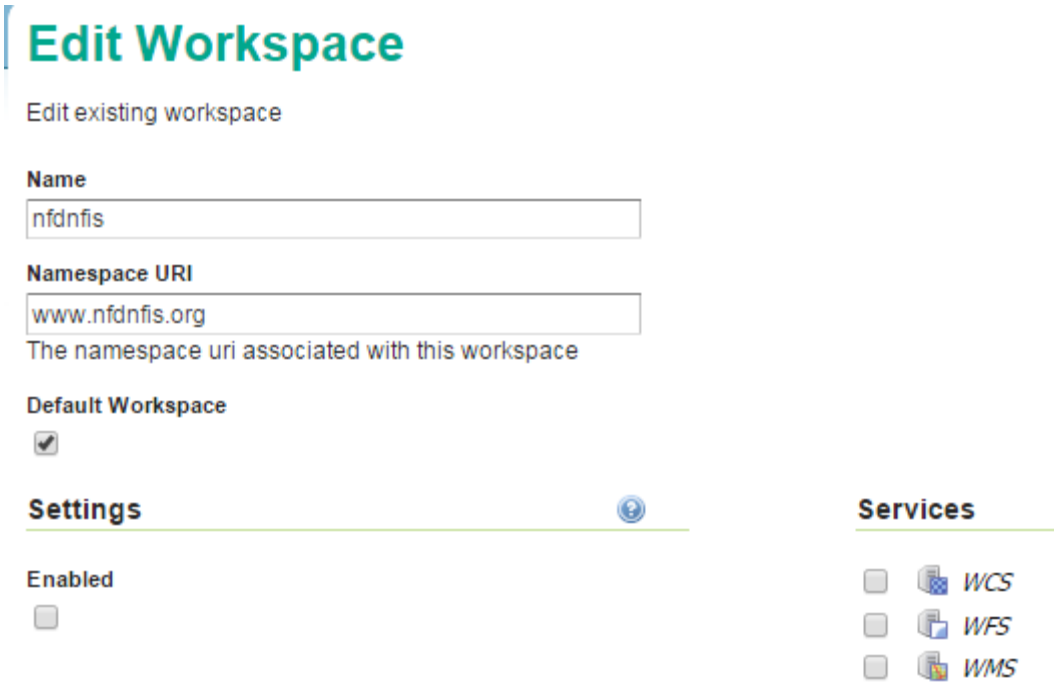


Figure 19 CFUG Workspace

6. Click the Submit button. The cfug workspace will be added to the Workspaces list.

3 Create a Data Store

1. Navigate to Data‣Stores.
2. In order to add the CFUGShapefile, you need to create a new Store. Click on the Add new store button. You will be redirected to a list of the data sources supported by GeoServer.

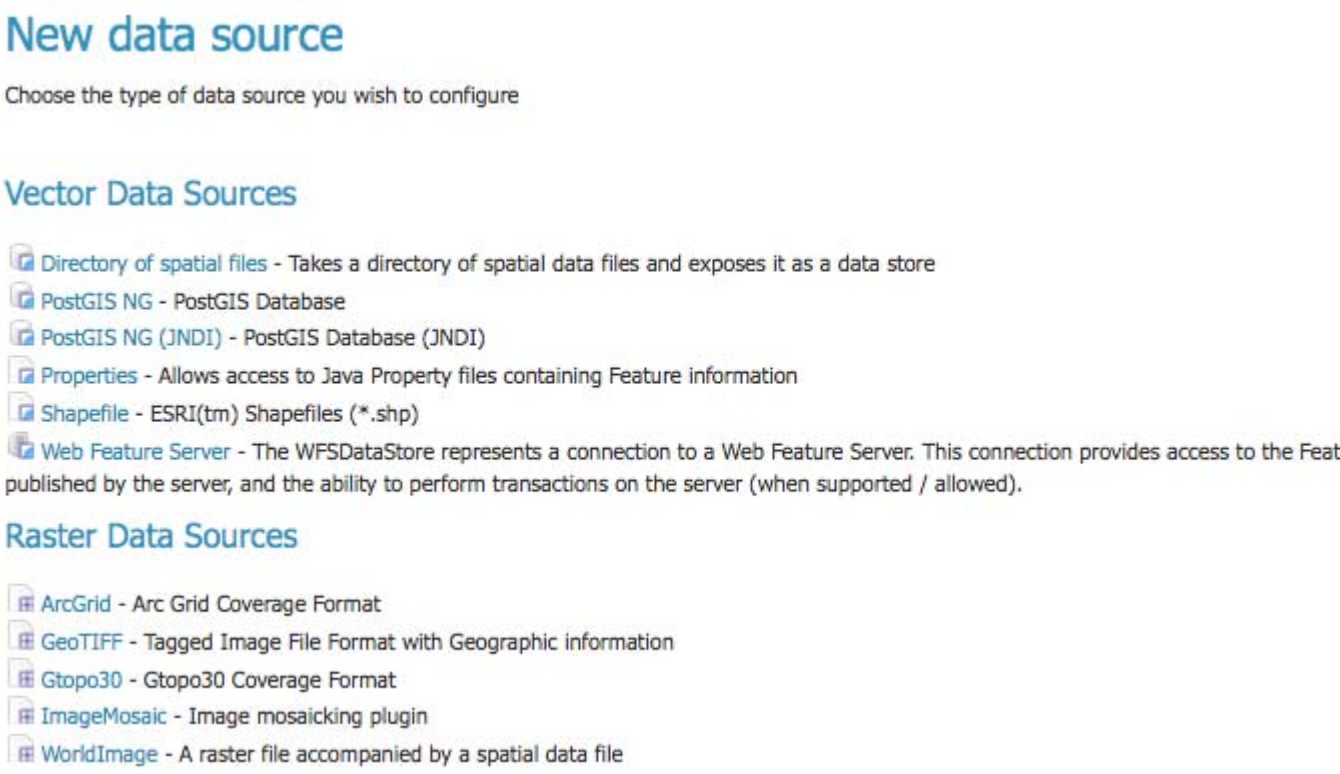


Figure 20 Data Sources

3. Select Shapefile - ESRI(tm) Shapefiles (.shp). The New Vector Data Source page will display.
4. Begin by configuring the Basic Store Info. Select the workspace cfugfrom the drop down menu. Enter the Data Source Name as CFUG. and enter a brief Description (such as “Community forestry”).
5. Under Connection Parameters specify the location URL of the Shapefileasfile:data/cfug/cfug.shp.

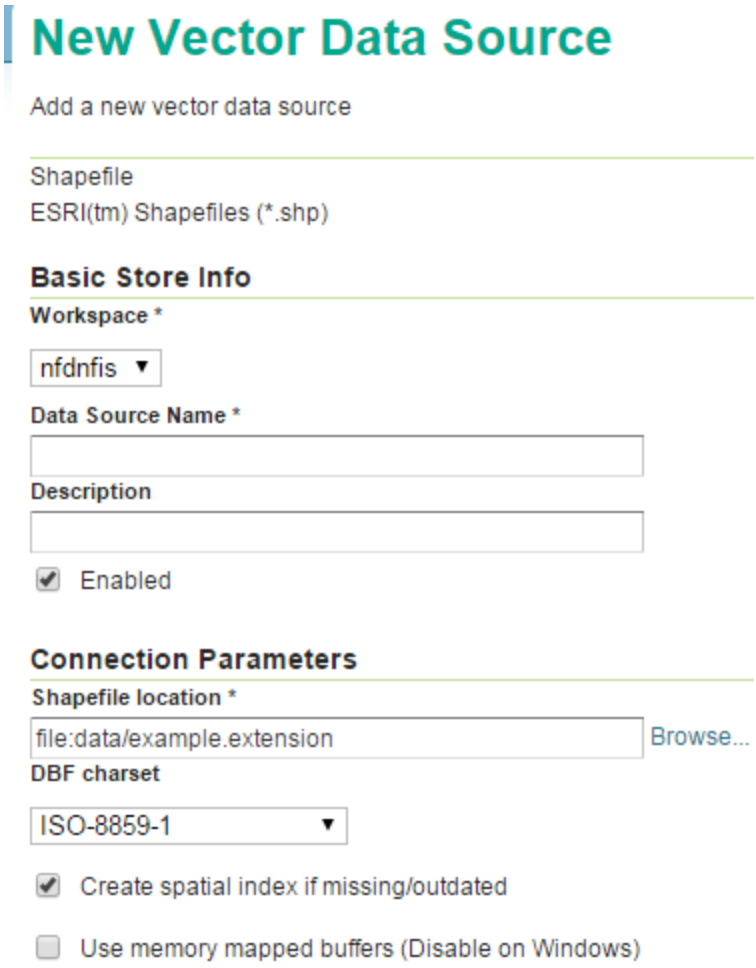


Figure 21 Basic Store Info and Connection Parameters

6. Click Save. You will be redirected to the New Layer chooser page in order to configure thecfuglayer.

3. Create a Layer

1. On the New Layer chooser page, select the layer cfug.

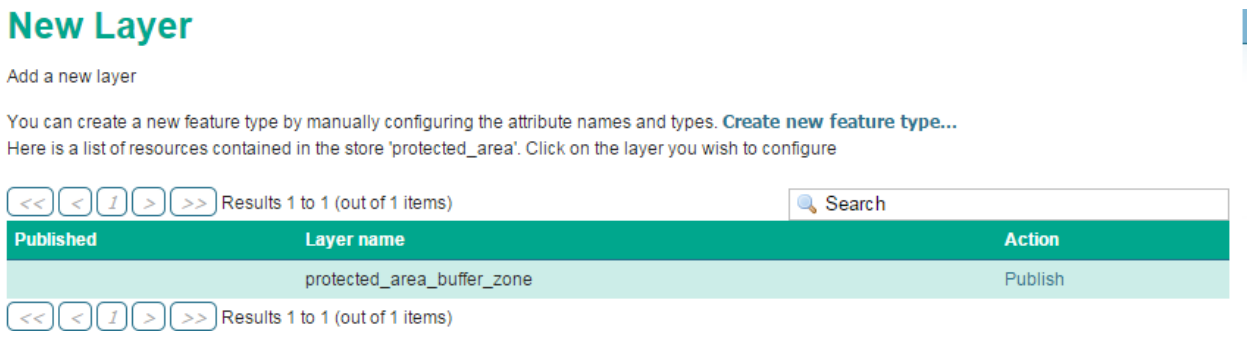


Figure 22 New Layer chooser

2. The Edit Layer page defines the Data and Publishing parameters for a layer. Enter a shortTitle and an Abstract for the cfuglayer.

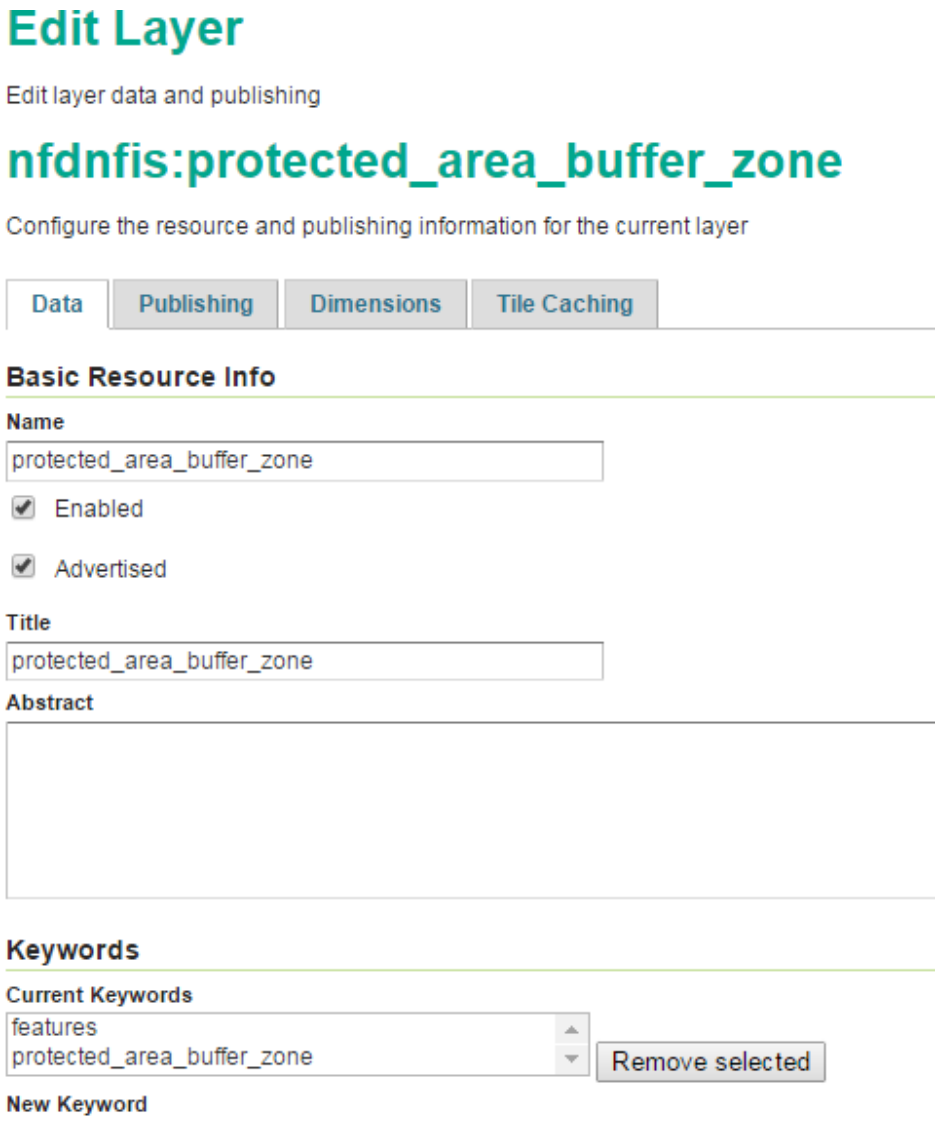


Figure 23 Basic Resource Information

3. Generate the layer's bounding boxes by clicking the Compute from data and then Compute from Native bounds.

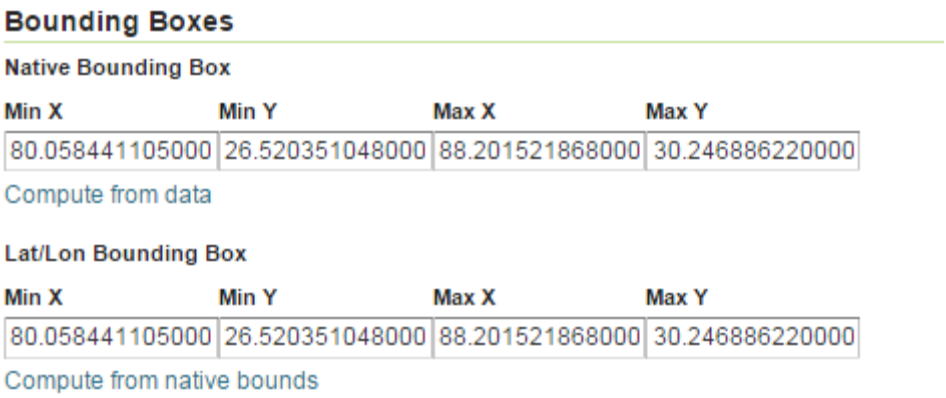


Figure 24 Generate Bounding Boxes

4. Set the layer's style by switching to the Publishing tab.
5. Select the line style from the Default Style drop down list.

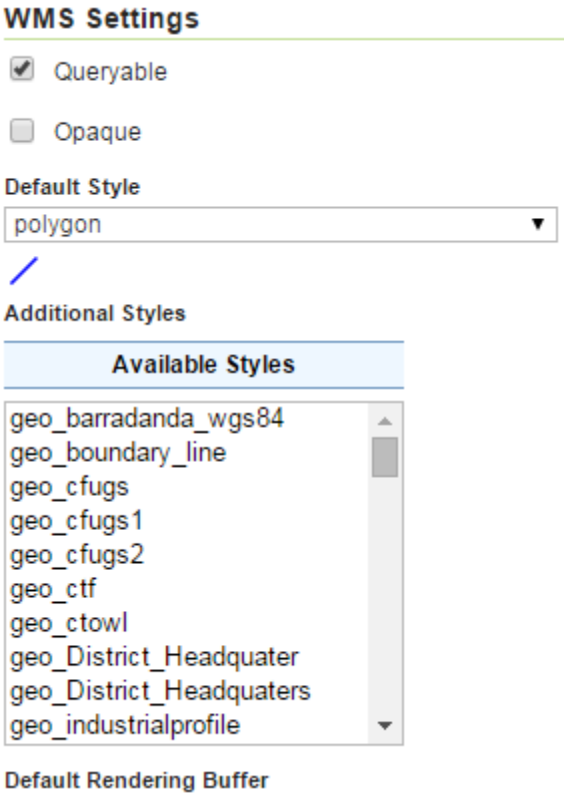


Figure 25 Select Default Style

6. Finalize the layer configuration by scrolling to the bottom of the page and clicking Save.

3.1 Preview the Layer

1. In order to verify that the protected area buffer zonelayer is published correctly you can preview he layer. Navigate to the Layer Preview screen and find cfuglayer.

geo:ctowl	ctowl	OpenLayers ▾	Go
geo:protected_area_buffer_zone	Protected_area_BZ	OpenLayers ▾	Go
geo:Settlements	settlement	OpenLayers ▾	Go
geo:landuse	landuse	OpenLayers ▾	Go

Figure 26 Layer Preview

2. Click on the OpenLayers link in the Common Formats column.
3. Success! An OpenLayers map loads in a new page and displays the Shapefile data with the default line style. You can use the Preview Map to zoom and pan around the dataset, as well as display the attributes of features.

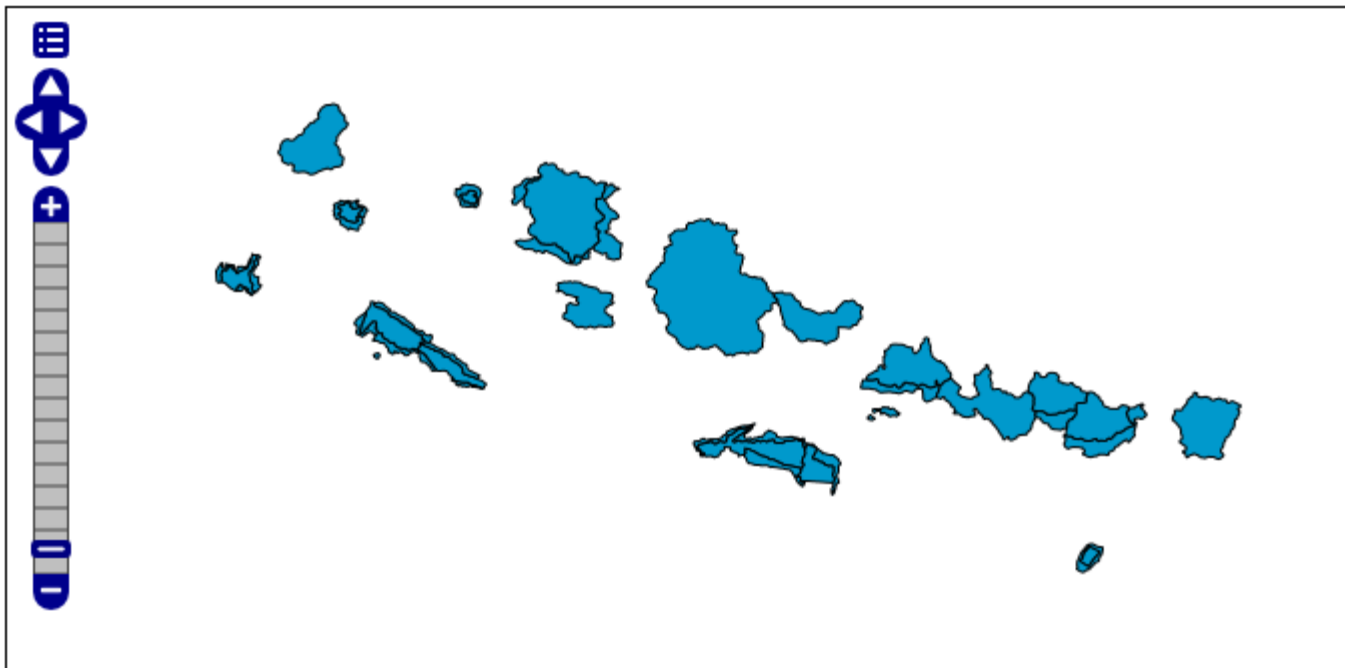


Figure 27 Preview map of national Park and protected area

3.2 Publishing a PostGIS Table

This tutorial walks through the steps of publishing a PostGIS table with GeoServer.

3.3 Getting Started

1. Download the zip file **cfug.zip**. It contains a PostGIS dump of a dataset that will be used during in this tutorial.

2. Create a PostGIS database called “cfug”. This can be done with the following command line:

   createdb -T template_postgiscfug

   If the PostGIS install is not set up with the “postgis_template” then the following sequence of commands will perform the equivalent:

3. Unzip cfug.zip to some location on the file system. This will result in the filecfug.sql.
4. Import cfug.sql into the cfug database:

   psql -f cfug.sql

3.4 Create a Data Store

The first step is to create a data store for the PostGIS database “cfug”. The data store tells GeoServer how to connect to the database.

1. In a web browser navigate to http://localhost:8080/geoserver.
2. Navigate to Data‣Stores.

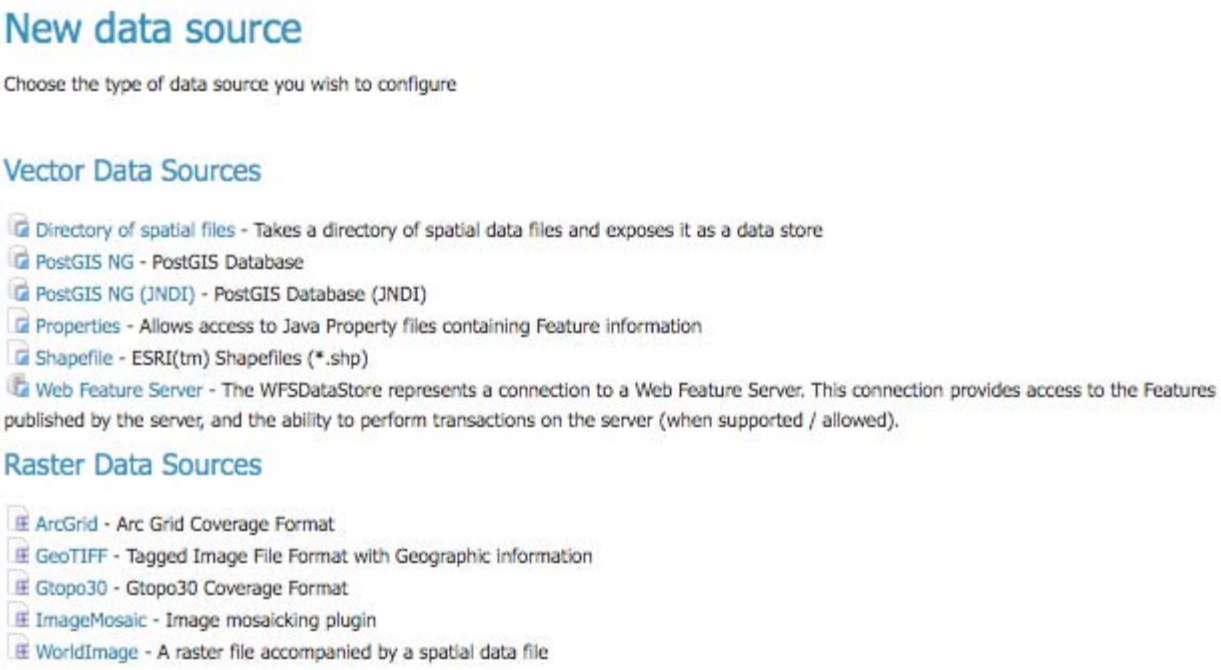


Figure 28 Adding a New Data Source

3. Create a new data store by clicking the PostGIS link.
4. Enter the Basic Store Info. Keep the default Workspace, and enter the Data Source Name ascfugand a brief Description.
5. The **username** and **password** parameters are specific to the user who created the postgis database. Depending on how PostgreSQL is configured the password parameter may be unnecessary.

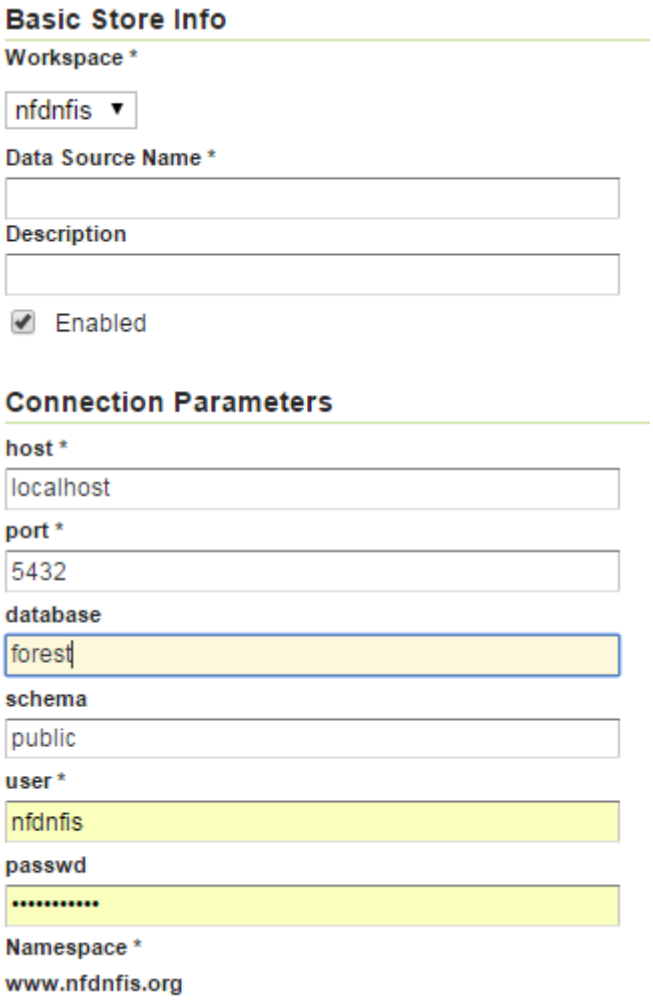


Figure 29 Adding a New Data Source

6. Click Save.

3.5 Create a Layer

1. Navigate to DataLayers.
2. Click Add a new resource.
3. From the New Layer chooser drop-down menu, select nfdnfis:cfug.
4. Finalize the layer configuration by scrolling to the bottom of the page and clicking Save.

5. Repeat the steps which has described earlier.

3.6 GeoServerData Directory

The GeoServer data directory is the location in the file system where GeoServer stores its configuration information. The configuration defines things such as what data is served by GeoServer, where it is stored, and how services such as WFS and WMS interact with and serve the data. The data directory also contains a number of support files used by GeoServer for various purposes.

3.7 Creating a New Data Directory

- The easiest way to create a new data directory is to copy one that comes with a standard GeoServer installation.
- If GeoServer is running in Standalone mode the data directory is located at <installationroot>/data_dir.

Platform	Example Location
Windows	C:\Program Files (x86)\GeoServer 2.7.x\data_dir
Windows XP	C:Program Files\GeoServer 2.7.x\data_dir

- If GeoServer is running as Web Archive mode inside of a servlet container, the data directory is located at <web application root>/data.

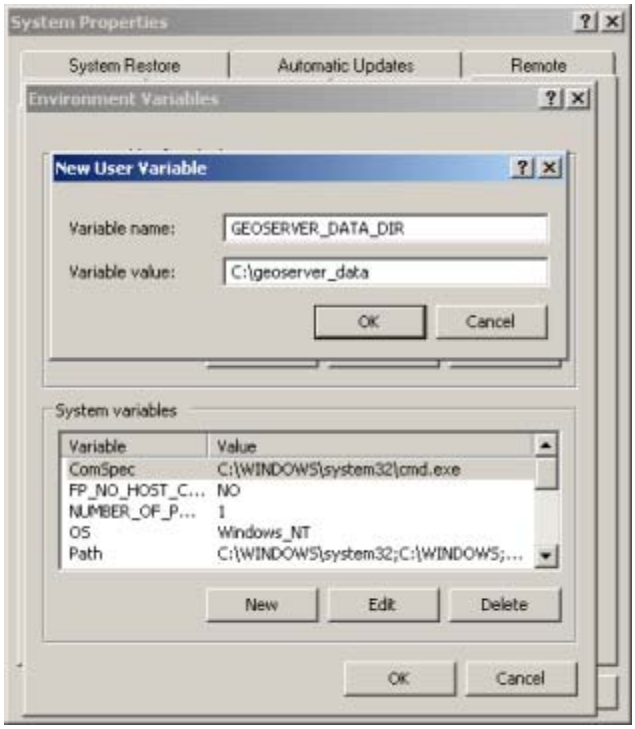
Platform	Example Location
Linux	/var/lib/tomcat7/webapps/geoserver/data

Once the data directory has been found copy it to a new external location. Setting the location of the GeoServer data directory is dependent on the type of GeoServer installation. Follow the instructions below specific to the target platform.

3.8 Windows

On Windows platforms the location of the GeoServer data directory is controlled by theGEOSERVER_DATA_DIR environment variable.

1. Click the New button and create a environment variable called GEOSERVER_DATA_DIR and set it to the desired location.



3.9 Linux

On Linux platforms the location of the GeoServer data directory is controlled by the GEOSERVER_DATA_DIRenvironment variable. Setting the variable can be achieved with the following command.

% export GEOSERVER_DATA_DIR=/var/lib/geoserver_data

4 .PostgreSQL

In windows stable release of package can be downloaded from website from www.postgres.org.

Linux centos yum command can download and install postgres database.

Browse http://yum.postgresql.org and find your correct RPM. For example, to install PostgreSQL 9.4 on CentOS 6 64-bit:

yumlocalinstallhttp://yum.postgresql.org/9.4/redhat/rhel-6-x86_64/pgdg-centos94-9.4-1.noarch.rpm

4.1 Install PostgreSQL

To list available packages:

yum list postgres*

For example, to install a basic PostgreSQL 9.4 server:

yum install postgresql94-server

Other packages can be installed according to your needs.

4.2.1 Post-installation commands

After installing the packages, a database needs to be initialized and configured.

In the commands below, the value of <name> will vary depending on the version of PostgreSQL used.

For PostgreSQL version 9.0 and above, the <name> includes the major.minor version of PostgreSQL, e.g., postgresql-9.4

For versions 8.x, the <name> is always postgresql (without the version signifier).

4.2.2 Data Directory

The PostgreSQL data directory contains all of the data files for the database. The variable PGDATA is used to reference this directory.

For PostgreSQL version 9.0 and above, the default data directory is:

/var/lib/pgsql/<name>/data

For example:

/var/lib/pgsql/9.4/data

For versions 7.x and 8.x, default data directory is:

/var/lib/pgsql/data/

4.2.3 Initialize

The first command is to initialize the database .

service<name>initdb

E.g. for version 9.4:

service postgresql-9.4 initdb

If the previous command did not work, try directly calling the setup binary, located in a similar naming scheme:

/usr/pgsql-y.x/bin/postgresqlyx-setup initdb

E.g. for version 9.4:

/usr/pgsql-9.4/bin/postgresql94-setup initdb

RHEL 7.1+ and CentOS 7.1+ are a bit different. Use:

postgresql-setupinitdb

4.2.4 Startup

If you want PostgreSQL to start automatically when the OS starts:

chkconfig<name> on

E.g. for version 9.4:

chkconfig postgresql-9.4 on

In RHEL 7+, try:

systemctl enable postgresql

4.2.5 Control service

To control the database service, use:

```
service<name><command>
```

where <command> can be:

- start : start the database
- stop : stop the database
- restart : stop/start the database; used to read changes to core configuration files
- reload : reload pg_hba.conf file while keeping database running

E.g. to start version 9.4:

```
service postgresql-9.4 start
```

4.2.6 Removing

To remove everything:

```
yum erase postgresql94*
```

5 PostGIS

PostGIS open source software program that adds support for geographic objects to the PostgreSQL object-relational database. PostGIS follows the Simple Features for SQL specification from the Open Geospatial Consortium (OGC). Refractions Research released the first version of PostGIS in 2001 under the GNU General Public License. After 6 release candidates, a stable "1.0" version followed on April 19, 2005[2] (https://en.wikipedia.org/wiki/PostGIS)

5.1 Installation

5.1.1 Steps required to installPostGIS

All the .sql files once installed will be installed in share/contrib/postgis-2.0 folder of PostgreSQLinstall.

The postgis_comments.sql, raster_comments.sql, topology_comments.sqlgenerate quick help tips for

each function that can be accessed via pgAdmin III or psql.

5.1.2 Requirements

PostGIS has the following requirements for building and usage:

Required system and environments

• PostgreSQLServer- A complete installation of PostgreSQL is required. PostgreSQLcan be downloaded from http://www.postgresql.org .

• GNU C compiler (gcc).

• GNU Make (gmakeor make).

• Proj4 reprojection library, version 4.6.0 or greater.PostGIS. Proj4 is available for download from http://trac.osgeo.org/proj.

• GEOS geometry library, version 3.2.2 or greater

• LibXML2, version 2.5.x or higher.Available for download from http://xmlsoft.org/downloads.html.

• JSON-C, JSON-C is available for download from http://oss.metaparadigm.com/json-c/.

[2]https://en.wikipedia.org/wiki/PostGIS

• GDAL, required for raster support and to be able to install with CREATE EXTENSION postgis.
• GTK (requires GTK+2.0 (2.8+)) to compile the shp2pgsql-gui shape file loader. http://www.gtk.org/ .
• CUnit (CUnit). This is needed for regression testing. http://cunit.sourceforge.net/
• Apache Ant (ant) is required for building any of the drivers under the java directory. Ant is available from http://ant.apache.org
•DocBook (xsltproc) is required for building the documentation. Docbook is available from http://www.docbook.org/ .
• DBLatex (dblatex) is required for building the documentation in PDF format. DBLatex is available from http://dblatex.sourceforge.net/-
•ImageMagick (convert) is required to generate the images used in the documentation. ImageMagick is available fromhttp://www.imagemagick.org/ .

Many Operating systems now include pre-built packages for PostgreSQL/PostGIS. In many cases compilation is only necessaryPre-Built Packages for various Operating systems.
For a windows user, you can get stable builds via Stackbuilder or PostGIS Windows download site PostgreSQL installation guides if you haven't already installed PostgreSQL. http://www.postgresql.org .

5.1.2 Configuration

As with most linux installations, the first step is to generate the Makefile that will be used to build the source code. This is doneby running the shell script

./configure

With no additional parameters, this command will attempt to automatically locate the required components and libraries neededto build the PostGIS source code on your system. Although this is the most common usage of ./configure, the script acceptsseveral parameters for those who have the required libraries and programs in non-standard locations.

5.1.3 Building

Once the Makefile has been generated, building PostGIS is as simple as running

Make

Building PostGIS Extensions and deploying them

The PostGIS extensions are built and installed automatically if you are using PostgreSQL 9.1+.

If you are building against PostgreSQL 9.1, the extensions should automatically build as part of the make install process. Youcan if needed build from the extensions folders or copy files if you need them on a different server.

```
cd extensions
cdpostgis
make clean
make
make install
cd ..
cdpostgis_topology
make clean
make
make install
```

If you want to install the extensions manually on a separate server different from your development, You need to copy thefollowing files from the extensions folder into the PostgreSQL / share / extension folder of your PostgreSQLinstallas well as the needed binaries for regular PostGIS if you don't have them already on the server.

• These are the control files that denote information such as the version of the extension to install if not specified. postgis.
control, postgis_topology.control.

• All the files in the /sql folder of each extension. Note that these need to be copied to the root of the PostgreSQL share/extension
folder extensions/postgis/sql/*.sql, extensions/postgis_topology/sql/*.sql

Once you do that, you should see postgis, postgis_topology as available extensions in PgAdmin -> extensions.

If you are using psql, you can verify that the extensions are installed by running this query:

```
SELECT name, default_version,installed_version
FROM pg_available_extensions WHERE name LIKE 'postgis%' ;
name | default_version | installed_version
```

----------+----------+----------

postgis | 2.0.7SVN | 2.0.7SVN

postgis_topology | 2.0.7SVN |

If you have the extension installed in the database you are querying, you'll see mention in the installed_version column.

If you get no records back, it means you don't have postgis extensions installed on the server at all. PgAdmin III 1.14+ will alsoprovide this information in the extensions section of the database browser tree and will even allow upgrade or uninstall byright-clicking.

If you have the extensions available, you can install postgis extension in your database of choice by either using pgAdminextension interface or running these sql commands:

CREATE EXTENSION postgis;

CREATE EXTENSION postgis_topology;

5.1.4 Installation

To install PostGIS, type

make install

This will copy the PostGIS installation files into their appropriate subdirectory specified by the --prefix configuration parameter.

In particular:

• The loader and dumper binaries are installed in [prefix]/bin.

• The SQL files, such as postgis.sql, are installed in [prefix]/share/contrib.

• The PostGIS libraries are installed in [prefix]/lib.

If you previously ran the make comments command to generate the postgis_comments.sql, raster_comments.sqlfile, install the sql file by running

make comments-install

5.1.2 Creating a spatial database using EXTENSIONS

If you are using PostgreSQL 9.1+ and have compiled and installed the extensions/ postgis modules, you can create a spatialdatabase.

createdb [database]

The core postgis extension installs PostGIS geometry, geography, raster, spatial_ref_sys and all the functions and comments witha simple command.

CREATE EXTENSION postgis;

5.1.3.Create a spatially-enabled database from a template

Some packaged distributions of PostGIS load the PostGISfunctionsinto a template database called template_postgis. If the template_postgis database exists in your PostgreSQLinstallation then it is possible for users and/or applications to create spatially-enabled databases using a single command. Notethat in both cases, the database user must have been granted the privilege to create new databases.

From the shell:

createdb -T template_postgismy_spatial_db

From SQL:

postgres=# CREATE DATABASE my_spatial_db TEMPLATE=template_postgis

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5.2 JDBC

The JDBC extensions provide Java objects corresponding to the internal PostGIS types. These objects can be used to write Java

clients which query the PostGIS database and draw or do calculations on the GIS data in PostGIS.

1. Enter the java/jdbc sub-directory of the PostGIS distribution.
2. Run the ant command. Copy the postgis.jar file to wherever you keep your java libraries.

The JDBC extensions require a PostgreSQL JDBC driver to be present in the current CLASSPATH during the build process. IfthePostgreSQL JDBC driver is located elsewhere, you may pass the location of the JDBC driver JAR separately using the –Dparameter like this:

ant -Dclasspath=/path/to/postgresql-jdbc.jar

PostgreSQL JDBC drivers can be downloaded from http://jdbc.postgresql.org .

5.3 Loader/Dumper

The data loader and dumper are built and installed automatically as part of the PostGIS build. To build and install them manually:

cd postgis-2.0.7SVN/loader

make

make install

The loader is called shp2pgsql and converts ESRI Shape files into SQL suitable for loading in PostGIS/PostgreSQL. Thedumper is called pgsql2shp and converts PostGIS tables (or queries) into ESRI Shape files.

References

1. Geoserver manual http://docs.geoserver.org/
2. http://www.postgresql.org/docs
3. http://postgis.net/docs/manual-2.0/