

The logo for LIDAR Server features the word "LIDAR" in a large, black, serif font. Below it, the word "Server" is written in a smaller, black, serif font. Three blue curved lines are positioned around the text: one above the "A", one to the right of the "A", and one below the "A".

# LIDAR Server

## QUICK START GUIDE





## Introduction

### About LIDAR Server

LIDAR Server brings the performance of QCoherent's flagship LP360 product to the internet. The same core LIDAR software technology now provides LIDAR data from a high-performance, OGC-compliant web server. LIDAR server is a product of QCoherent Software. Learn more about LIDAR Server online at <http://lidarserver.com/>.

### About QCoherent Software

QCoherent Software is an innovative provider of high-capacity LIDAR software tools (Limitless LIDAR™). We are a company whose founders have a wide array of experience with LIDAR and the mapping sciences. Our first product, LP360, was released in August 2006 and was exceptionally well received. Subsequently we have provided additional flexibility to our clients offering co-licensed stand-alone products (LP360 Standalone & LP360 EQC) as well as a free standalone viewer.

At QCoherent we use our extensive experience with LIDAR to focus on specific functionality that enables users to maximize LAS LIDAR point clouds. We believe that LIDAR has significant and often untapped value. We focus on integrating LIDAR into workflows that already provide substantial value but lack sufficient architecture and/or specialized functionality for maximizing LIDAR investments. Our customers include all aspects of LIDAR users including commercial LIDAR data collection and processing providers, federal agencies, state government, local government, environmental and civil engineering firms, consulting firms, research facilities... in short, groups like yours who desire an easy and effective way to use LIDAR.

*Learn more about QCoherent Software online at <http://www.QCoherent.com/>*

*Please contact QCoherent Software as follows:*

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## Installing LIDAR Server

To install LIDAR Server from a Product CD:

1. To install LIDAR Server, login as administrator or otherwise obtain rights to install new software.
2. Insert the CD-ROM into the CD drive. If Autorun is disabled, use Windows Explorer to browse to the root of the CD-ROM file system and double-click on Setup.exe to begin installation.
3. Follow the instructions as presented by the LIDAR Server Setup Wizard. You will be asked to accept the license agreement and you will also be prompted where to install LIDAR Server on the file system.

To install LIDAR Server from a downloaded .msi file:

1. To install LIDAR Server, login as administrator or otherwise obtain rights to install new software.
2. Download the .msi file from the provided weblink. Save the file to your computer.
3. Once downloaded, navigate to the .msi file and double-click to begin the installation.
4. Follow the instructions as presented by the LIDAR Server Setup Wizard. You will be asked to accept the license agreement and you will also be prompted where to install the LIDAR Server on the file system.

After installation, whether from CD or from a downloaded install file, a new "LIDAR Server" program group will be found under the "Start" button menu. Also, a new service, called "LIDAR Server Web Service", will be in the list of system services.

## Licensing

The next step after installing LIDAR Server is to license the product

### About Licensing LIDAR Server

LIDAR Server is licensed as a machine or node license, i.e. it is licensed to run on a specific computer. As such, activating a machine license involves completing a registration form. The form is saved to a text file, and then is emailed to [registration@QCoherent.com](mailto:registration@QCoherent.com). An authorization file is then generated and sent to the email address listed on the registration form.

Similar to the installation, an administrator must be logged on to complete the registration or when initiating an authorization file.

### How to License a Product

1. While logged on with administrator permissions in windows, open the License Administrator. If the license administrator is not already open, you may open the application from the "Start Menu->Programs->QCoherent-> LIDAR Server->License Administrator"
2. From the Register tab, left click on the option "I would like to register a product".
3. If you would like to evaluate a product left click the "I would like to evaluate a product" option, otherwise left click the "I have a CD Key" option to license a product using a CD Key.
4. If "I would like to evaluate product" option is selected, then select which product you would like to evaluate. To evaluate LIDAR Server, select "LIDAR Server"
5. If using a CD Key, input the CD key that is provided with the software. An "Invalid CD Key" label will appear if the CD key typed is invalid.  
**NOTE:** the CD Key contains zeros ("0") not the letter "O".
6. Complete the registration form. "\*" indicates a required field.
7. Left click the "Save to Text File..." button and navigate to a location to save the registration form, and left click Save.
8. Email the saved text file as an attachment to [registration@QCoherent.com](mailto:registration@QCoherent.com). An authorization file will be emailed back to the listed email address within 24 hours.
9. Once you have received the authorization file, open the License Administrator.
10. From the "Register" tab, left click the "I have received an authorization file..." option.
11. Left click the "Browse..." button and navigate to the location of the authorization file.
12. Left click the "Complete Registration" button to complete the licensing of the product.

## Checking Product Availability

### About Product Availability

The current availability of a product can be checked within the License Administrator. The License Administrator lists all licensed products and whether they are authenticated, an expiration date, and the user level.

## How to Check Product Availability

1. Open the License Administrator. You may open the application from the "Start Menu -> Programs -> QCoherent -> LIDAR Server-> License Administrator."
2. Left-click the "Availability" tab. If LIDAR Server is properly licensed, LIDAR Server will appear as available.

## Basic Web Server Setup

After installing LIDAR Server, the next step is to setup basic server operation, including the basic ability to serve web pages. LIDAR Server, at it's most fundamental, is a windows service listening to HTTP requests on a configurable network port.

Follow the steps below to setup basic server operation:

1. **Stop the service if running.** In the Control Panel, open the "Services" application (sometimes found in Control Panel->Administrative Tools), and then find the "LIDAR Server Web Service" entry. Right click on this service and select "Stop" to stop the service (if running). Keep this window open for the last step in these instructions.
2. **Find the service.xml service configuration file.** The service .xml configuration file will be in Program Files\Common Files\LIDAR Server\Config on the installation drive. Navigate to this folder, where you should find a number of XML configuration files. If the service.xml is not present, or you would like to reset server settings to the installed defaults, copy the serviceSAMPLE.xml file to service.xml.
3. **Edit the service.xml service configuration file.** You may use notepad or any text editor to open and edit the text-based XML configuration file. XML syntax must be maintained when saving changes to this file, or an error will occur on service startup.
4. **Check or change the port number.** The default port is port 80, which is typical for web servers. However, you may already have a web server running on that port. If you would like to change the port on which the server communicates, change the "80" to the preferred port number by finding the <Port> element on line 4 of the service.xml file and changing the number 80 to the preferred port number.
5. **Save changes.**
6. **Restart the service.** In the "Services" application, right click "LIDAR Server Web Service" and select "Start" or "Restart".
7. **Validate service is operational.** In the "Services" application, the "LIDAR Server Web Service" should now be shown as "Started" under Status. With any web browser, enter a URL of http://localhost:<port>, where <port> is the port number from step 4. Verify the LIDAR Server home page appears. If the service does not start, check the "Event Viewer" in the Control Panel, Administrative Tools for error messages from the service.

If you can see a web page as served from LIDAR Server, basic server setup is complete.



## Sample Project Viewing

To verify proper server setup, you should be able to view the GetCapabilities document of served projects and view the sample project. Links to GetCapabilities documents are listed in the table presented in the web page

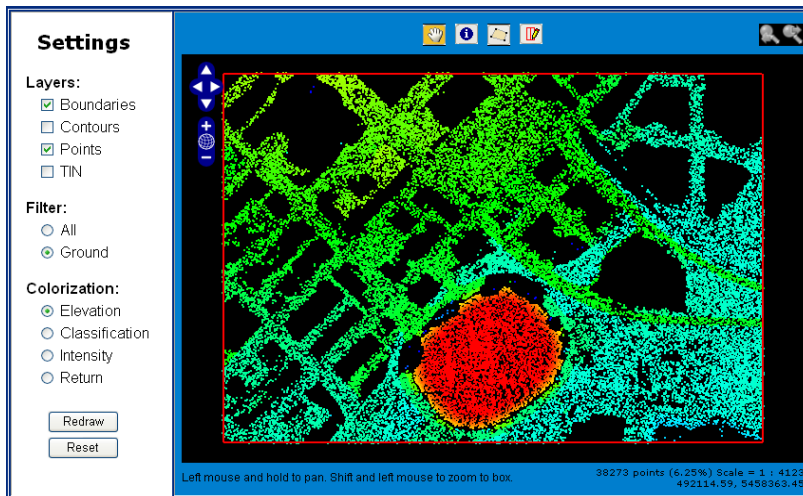
*<http://<servername>/projects.html>*

Projects on this server:

Project URI	WMS GetCapabilities
<a href="http://localhost:8080/rancho?">http://localhost:8080/rancho?</a>	<a href="#">./rancho?</a>
<a href="http://localhost:8080/sample?">http://localhost:8080/sample?</a>	<a href="#">./sample?</a>

- Verify a project is available by viewing the capabilities document (this is the GetCapabilities response per the WMS specification). In a browser, view the capabilities at: <http://<servername>/sample?SERVICE=WMS&REQUEST=GetCapabilities> or by following the "sample" GetCapabilities link on the <http://<servername>/projects.html> webpage. If you can successfully view capabilities, then this means the project is available on this server.
- The XML file will be shown in the browser. Where the XML file shows a BoundingBox element, the min and max x and y for the sample project should be about 49xxxx for the x values and 5458xxx for the y values.
- Where the XML file shows a EX\_GeographicBoundingBox, the geographic coordinates should be about 49 degrees latitude and -123 degrees longitude.
- You should also be able to view the project at <http://<servername>/sample/sample.html>.





## How to Setup a New LIDAR Project

- **Step 1**
  - Identify the LAS file(s) you want to include in your project. You will need to know the file path for the LAS files and the EPSG code for the region your files cover.
- **Step 2**
  - The LAS files need to be pyramided (i.e. accompanied with a .qvr file). The easiest way to pyramid an LAS file is to just open it once in LP360 and then allow LP360 to pyramid all LAS files.
  - Alternatively, the batch program LDPyramid.exe can be used to pyramid LAS files. [Found in the bin subdirectory of the directory where LIDAR Server is installed. (i.e. C:\Program Files\LIDAR Server\bin)]
- **Step 3**
  - Navigate to *C:\Program Files\Common Files\LIDAR Server\Config*, where *C:\Program Files* refers to the root folder where LIDAR Server was installed.
  - Open the *projectSAMPLE.xml* file with TextPad or another text editing program.
  - Before making any changes save (rename) the file as *<newprojectname>.xml*, as *projectSAMPLE.xml* should always remain in its original form.
- **Step 4**
  - Modify the *<newprojectname>.xml* file with your project information.
  - Change the title.
  - Change the EPSG code.
  - Delete the *projectSAMPLE.xml* LAS file paths and add your own. Each LAS file should be entered as:  
`<LASFile>[enter correct file path]</LASFile>`
  - There must be an LASFile XML element for each LAS file participating in the project.

### Example

<LASFiles>

```
<LASFile>C:\Documents and Settings\Lidar Server\My Documents\A31461.las</LASFile>
<LASFile>C:\Documents and Settings\Lidar Server\My Documents\A31463.las</LASFile>
<LASFile>C:\Documents and Settings\Lidar Server\My Documents\A31661.las</LASFile>
<LASFile>C:\Documents and Settings\Lidar Server\My Documents\A31663.las</LASFile>
```

</LASFiles>

- **Step 5**
  - Save the file in the Config folder.
- **Step 6**
  - Open the service.xml file (also in the Config folder)
  - Add a new OGCServer entry.
  - Add the URI Extension for your new project as  
<URIExtension>/ProjectName</URIExtension>
  - Also add the location of your config file as  
<ConfigFile>*file path*</ConfigFile>

## Example

```
<OGCServer>
```

```
<URIExtension>/Rancho</URIExtension>
```

```
<ConfigFile>C:\Program Files\Common Files\LIDAR Server\Config\RanchoBernardo.xml</ConfigFile>
```

```
</OGCServer>
```

- **Step 7**
  - Restart the LIDAR Server Service (Control Panel --> Services) by right-clicking and selecting Start.
  - **You can now view the URI Extension Link for the new project at:**  
**<http://www.lidarserver.com/projects.html>**

Also see [How to View a Project in OpenLayers](#)

Also see [How to View a Project in ArcGIS](#)

Also see [How to View a Project in Google Earth](#)

## Project Viewing with OpenLayers

- **Step 1**
  - Browse to *C:\Program Files\Common Files\LIDAR Server\Home\demo*, where *C:\Program Files* refers to the root folder where LIDAR Server was installed.
  - Open the *sample.html* file.
- **Step 2**
  - Before making changes **save the file as** *<projectname>.html*.
- **Step 3**
  - Within the *LIDARLayer = section*, change *sample* to the new project name.
  - *.../sample?* should be changed to match the URL for the project, i.e. *.../rancho?*
  - Change the EPSG code to the project EPSG code. You can lookup the appropriate EPSG code at [www.epsg.org](http://www.epsg.org) or <http://spatialreference.org/>
  - Change the OpenLayers bounds for the project.
  - Change the title to "*<projectname> LIDAR WMS*"

### Example

```
lidarLayer = new OpenLayers.Layer.WMS
("Rancho LIDAR WMS",
"../rancho?",
{
  format: 'image/png',
  exceptions: 'INIMAGE',
  bgcolor: '0x000000',
  layers: layerStr,
  styles: styleStr
},
{
  maxExtent: new OpenLayers.Bounds(6313872,1960912,6317967,1965007),
  projection: "EPSG:2230",
})
```

### Example


```
<html>
<head>
<title>Rancho LIDAR WMS</title>
<link rel="shortcut icon" href="../qcsicon.ico" />
<link rel="stylesheet" href="../style.css" type="text/css" />
```

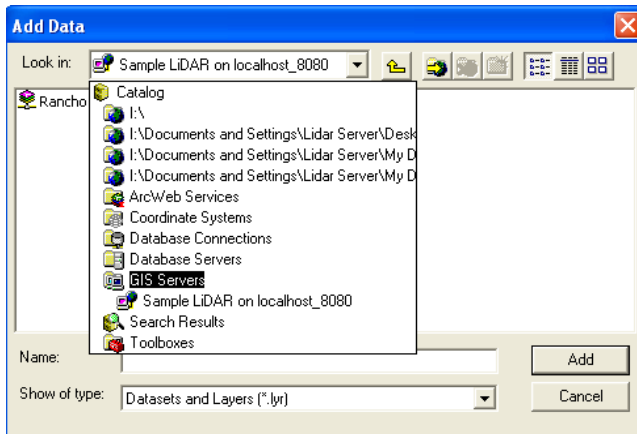
- **Step 4**
  - Save the file once the changes have been made.
  - The project should now be viewable by opening a browser and navigating to ***http://<servername>/demo/<projectname>.html***

Also see [How to View a Project in ArcGIS](#)

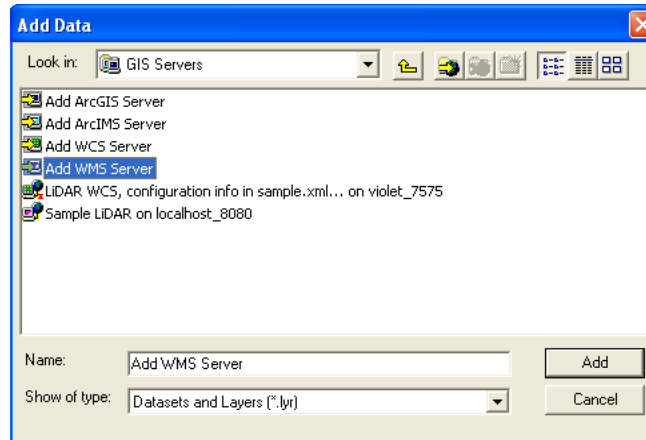
Also see [How to View a Project in Google Earth](#)

## Project Viewing in ArcGIS

- **Step 1**
  - Open a new project in ArcMap.
- **Step 2**
  - Left-click the ArcMap "Add Data" command button. 
- **Step 3**
  - Select **GIS Servers** from the Add Data Dialog drop-down list.



- **Step 4**
  - Select **Add WMS Server** and click 'Add.'



- **Step 5**
  - Enter your LIDAR Server URL and click "OK."

**Add WMS Server**

URL:

Examples: <http://www.myserver.com/arcgis/services/mymap/MapServer/WMServer?>  
<http://www.example.com/scrvtct/com.csri.wms.Esrimap?ServiceName=Name&>

Version:

Server Layers

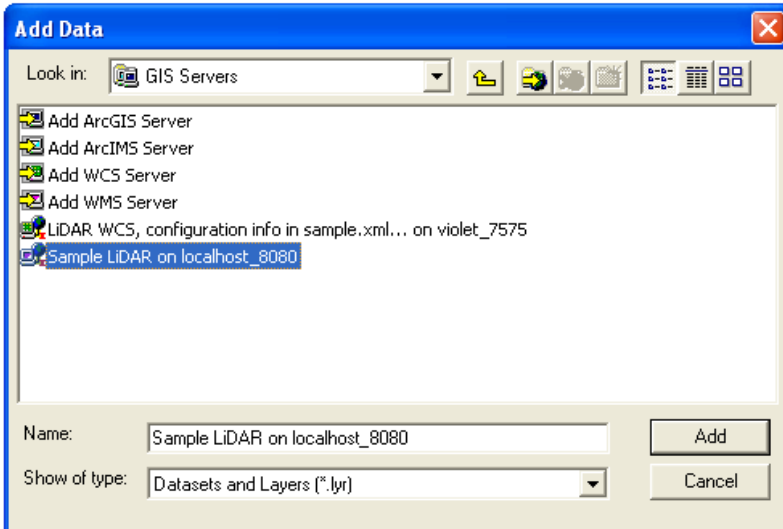
Account (Optional)

User:

Password:   Save Password

- **Step 6**

- Click on the ArcMap "Add Data" command button.
- Select the LIDAR Server and add it to your project




- You should now be viewing your LIDAR Server project in ArcMap.
- By right-clicking on the LIDAR Server layer you can change the coordinate system. You can also go to Properties and change which LIDAR layers are shown, the background color, layer transparency, etc.

Also see [How to View a Project in OpenLayers](#)

Also see [How to View a Project in Google Earth](#)



## Project Viewing in Google Earth

- **Step 1**
  - Within Google Earth, position the 3D viewer in the location where you want to place the overlay image file.
  - Tip: Try to position the viewer so that it corresponds in viewing altitude to the overlay. If the overlay is of a detailed view, zoom into the subject area so that you don't have to make large adjustments later. By contrast, if the overlay covers a large area, make sure the entire area is encompassed in the 3D viewer with some margins for adjusting the imagery.
- **Step 2**
  - Click **Add > Image Overlay** or click .
  - The '**New Image Overlay**' dialog box appears.
- **Step 3**
  - In the New dialog box, click the '**Refresh**' tab.
- **Step 4**
  - Click **WMS Parameters**.
  - The Web Mapping Service Parameters dialog box appears.
- **Step 5**
  - Beside WMS Service, choose a LIDAR Server or click **Add** to enter a WMS URL (i.e. `http://<servername>/<projectname>`). Google Earth will populate the Opaque and/or Transparent Layers fields with available layers from the server you chose.
- **Step 6**
  - Choose the appropriate layer(s) and click **Add -->** to add the layer(s) to the 'Selected Layers' field. This places this information in the WMS image overlay you will see in Google Earth.
  - To remove a layer from the Selected Layers field, select it and click **<-- Remove**.
- **Step 7**
  - To set the order of selected layers as they appear in the 3D viewer, select the appropriate layers in the '*Selected Layers*' field and click Move Up or Move Down.
  - When you are finished, click **OK**.
- **Step 8**
  - Verify within the URL that Transparent=TRUE and the image type is set as png.
  - Provide a descriptive name in the name field.
  - Specify the descriptive information for the overlay.

- **Step 9**
  - Click the **Refresh** tab and set the correct refresh properties for your LIDAR overlay. The refresh settings for overlays are identical to those described for network links. Typically, LIDAR WMS that is updated automatically and located on a server will need refresh properties set.
- **Step 10**
  - Set the default transparency for the LIDAR WMS image using the slider. The transparency setting for LIDAR overlay can be adjusted at any time when viewing. To make it easy to position the LIDAR overlay, first adjust the transparency to achieve a good balance between seeing the LIDAR WMS image and the earth beneath it.
- **Step 11**
  - When you select the **View** tab, you can modify the view settings for the LIDAR overlay just as you would any place data.
- **Step 12**
  - Position the image in the viewer to your preferences and click **OK** to complete the creation. If you later want to correct the overlay or reposition it, simply edit the overlay as you would any other places data.

Also see [How to View a Project in OpenLayers](#)

Also see [How to View a Project in ArcGIS](#)

## Summary

After completing the different steps in this Quick Start Guide, you should now have a fully-functional LIDAR Server viewable in multiple web mapping environments. Each topic incrementally configured or tested a different aspect of the LIDAR Server. If any objective did not succeed, make sure you have success in the previous items. If all has gone well, congratulations, you have a working server and you may now begin sharing your LIDAR data!

## Further Assistance

For further information on LIDAR Server, view the available online help served from your server and at <http://www.lidarserver.com/WebHelp/Default.htm>

Support is also available by email and phone at:

[support@QCoherent.com](mailto:support@QCoherent.com) or (719) 386-6900x2



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