GeoCat Bridge Explained & Tutorial

Workshop: Thriving in hybrid ESRI & Opensource environments

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GEOCAT
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Author(s)
GeoCat B.V.

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Introduction

GeoCat Bridge is an extension for ArcGIS Desktop and runs within ArcMap. GeoCat Bridge enables you to publish the **layers** from an ArcMap map project (MXD) to GeoServer or MapServer as OGC Web Services (WMS/WFS/WCS) and publish the **metadata** of layers to GeoNetwork opensource catalog.

So what does this mean? Let's say you have a map project in ArcMap and you want to publish the layers of this project as online OGC services in Geoserver. To do this manually, you will have to:

- Convert the ArcMap symbology to OGC:SLD (Styled Layer Descriptor) and configure these styles on layers created in Geoserver
- Export and upload the datasets to the server
- Upload the metadata of the datasets into GeoNetwork
- Configure the linkage between Geoserver layers and metadata

By using GeoCat Bridge the above steps are managed by Bridge by the click of a button.

Besides publishing the maps to GeoServer or MapServer, Bridge will also publish metadata of your datasets to a geospatial catalogue. When publishing metadata to a catalogue Bridge will convert the ArcGIS metadata to ISO19139 format and upload it to the catalogue. Bridge supports a number of different metadata profiles.

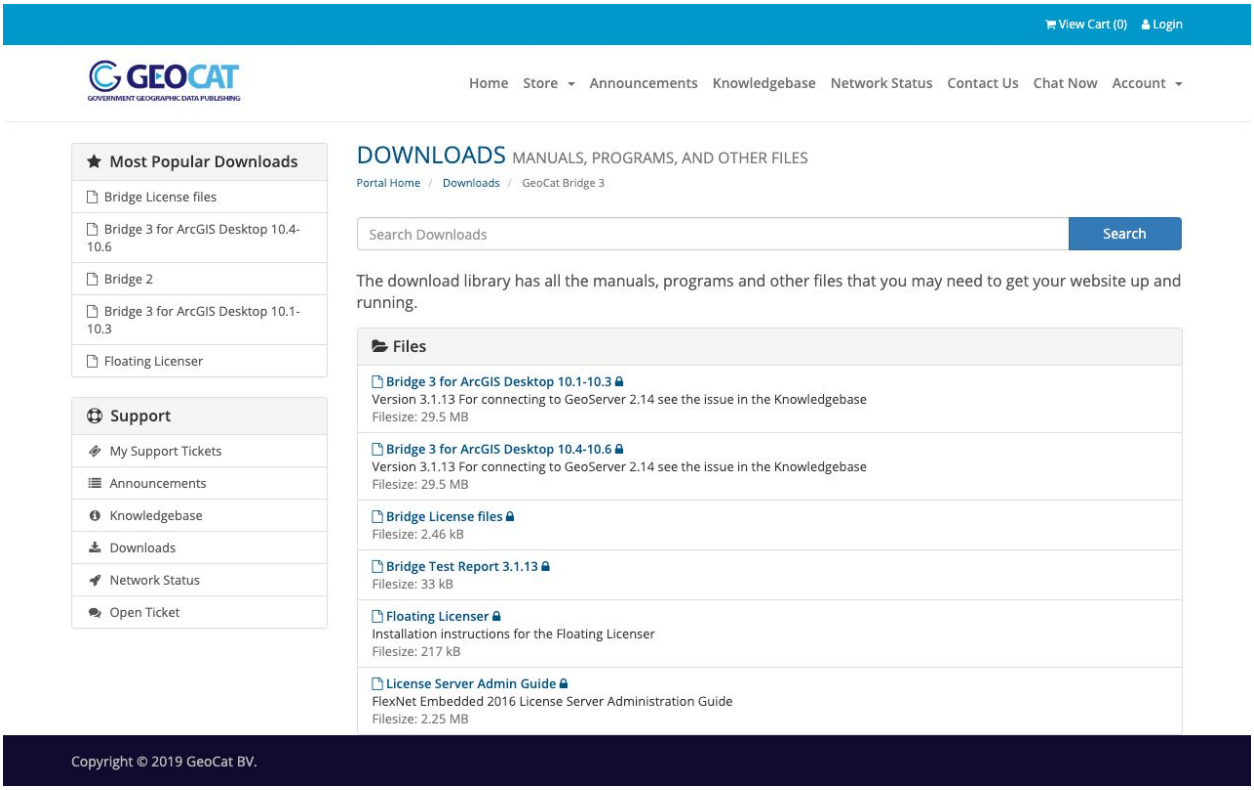
When publishing both metadata to a catalogue and layers to a map server, Bridge will update the metadata to include in the metadata the URL of the map service the layer is published in. So when searching for the dataset in your catalogue you can also find the map service. At the same time Bridge also adds the url of the metadata to the layer in the map server. So the capabilities document will contain the url of the metadata for that layer.

Before we start

Download and Configuration

First we have to download and install GeoCat Bridge. The latest version can be found at the GeoCat website: https://my.geocat.net/downloads.php?action=displaycat&catid=3

More information about **installing**: https://bridge-manual.geocat.net/3/content/3_installation.html and **configuration**: https://bridge-manual.geocat.net/3/content/4_configuration.html



Activation key

The key for your Bridge: 1f11-f100-77b0-4f6c-a235-c82f-f282-f0a3

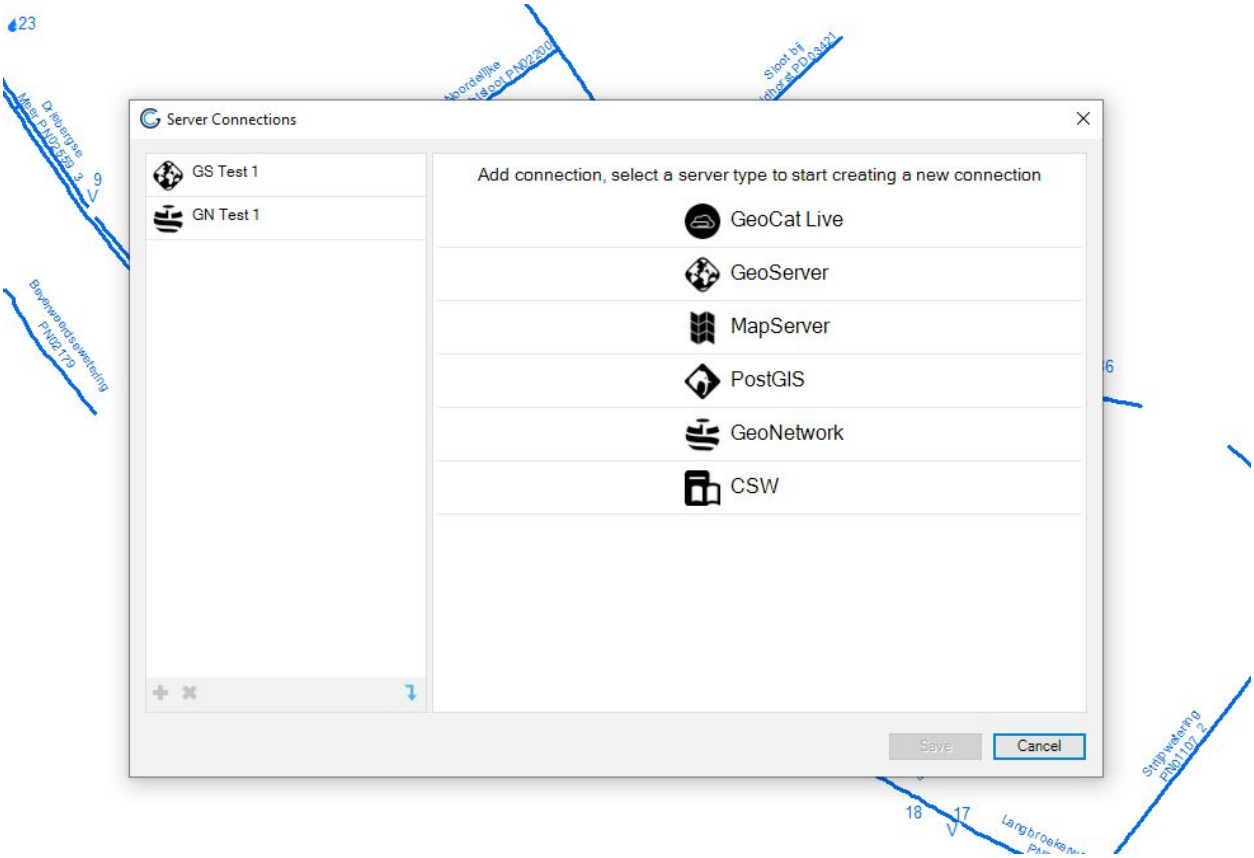
Configure Servers

In order to publish your data you have to configure the target servers. The configuration window can be opened via de Bridge menu: [**Tools**] > [**Publish Servers**]

For this workshop we've prepared 20 Live instances for all of you, numbering to 20 (`foss4g01.geocat.live` to `foss4g20.geocat.live`). The details are:

	GeoNetwork	GeoServer
URL	https://foss4g01.geocat.live/geonetwork	https://foss4g01.geocat.live/geoserver
Username	admin	admin
Password	HzUCs3JT	d5G6ytw

More information: https://bridge-manual.geocat.net/3/content/7_server_configuration.html



Online publishing scenarios

The introduction explained that Bridge exports the datasets of the layers in the MXD and uploads the exported datasets to the map server (either MapServer of GeoServer). But it did not make clear how Bridge does this specifically, because Bridge supports a number of different data publishing scenario's.

1. Upload dataset

There are two options to store uploaded datasets on the server:

1. File based (**covered in this Workshop**)
2. PostGIS (only GeoServer)

The default publishing scenario is to upload the datasets over HTTP as files to the server and store the datasets as file on the server. The file format used to upload the files is GeoPackage when this is supported by the GeoServer instance (see the notes in the manual about this), or when this has been enabled for the MapServer connection.

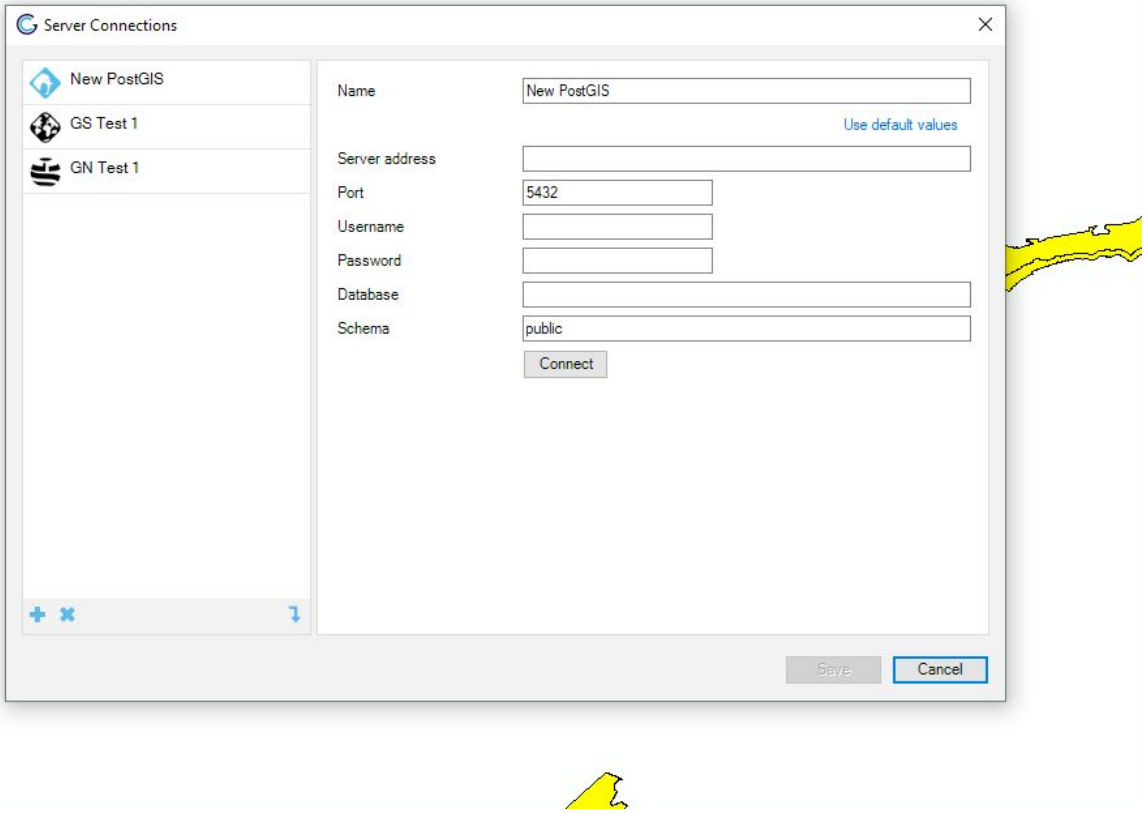
When using GeoServer, another option is to upload the datasets as files to server and then store the datasets in PostGIS. This can be done by configuring your GeoServer connection in Bridge to use a PostGIS datastore.

When your GeoServer supports GeoPackage, Bridge will use the GeoPackage format to upload the dataset to the server. GeoServer then will take care of storing the dataset in PostGIS. Only vector layers will be saved in PostGIS, raster layers will be published as GeoTIFF layers.

2. Direct PostGIS

Uploading files over HTTP can be slow and with big datasets you can run into problems. A solution in this case can be to use a direct PostGIS connection. Requirement for this is that Bridge can make a direct connection to the Postgres/PostGIS database.

In order to do this you will need to **create a PostGIS connection** in Bridge. Then from your GeoServer or MapServer connection you can choose "Direct PostGIS" and then select the desired PostGIS connection.



When you publish with direct PostGIS connection, Bridge will export the data and store it directly in the PostGIS database. Raster layers will be published as GeoTIFF in the map server.

3. Reference data

In case Geoserver is able to connect to the same Oracle database as ArcGIS you can decide to not export the data but to reference the same data from Geoserver directly. The advantage of this approach is that all data stays in the same place, so there are no duplication/synchronization problems. Also publishing the map layers is a lot quicker since no data needs to be processed.

In order to do this you will need to configure a OracleSpatial datastore in GeoServer and select this datastore in your GeoServer connection in Bridge. When publishing your MXD Bridge will check if the layers in your MXD are available in the Oracle datastore (they need to be present in the datastore for publication). If so, Bridge will create a new layer based on this layer from the Oracle datastore. Raster layers will published as GeoTIFF in the map server.

Steps for uploading a shapefile

In this workshop we will use the file based upload. First you have to add a shapefile to your ArcMap project and do some styling. Shapefile is currently the default format in Bridge, because not all Geoserver versions support GeoPackage. However via the bridge config file you can set the default upload format to GeoPackage.

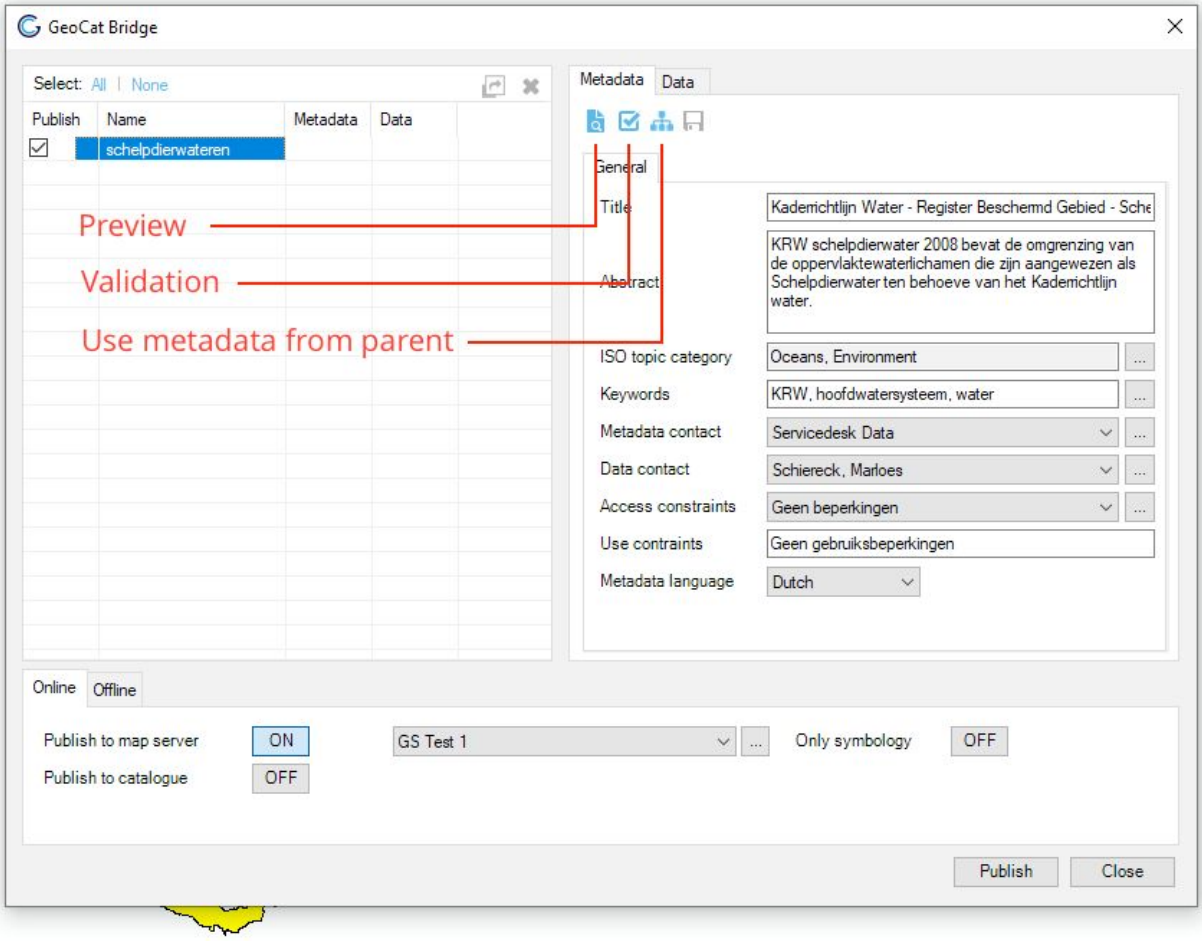
You can use your own data, but Bridge comes with a set of demo data. You can find this in the Windows Start Menu under **GeoCat Bridge 3**

More info about supported styles:
https://bridge-manual.geocat.net/3/content/11_supported_symbols_examples.html

You can now publish your data by opening the Publish window:

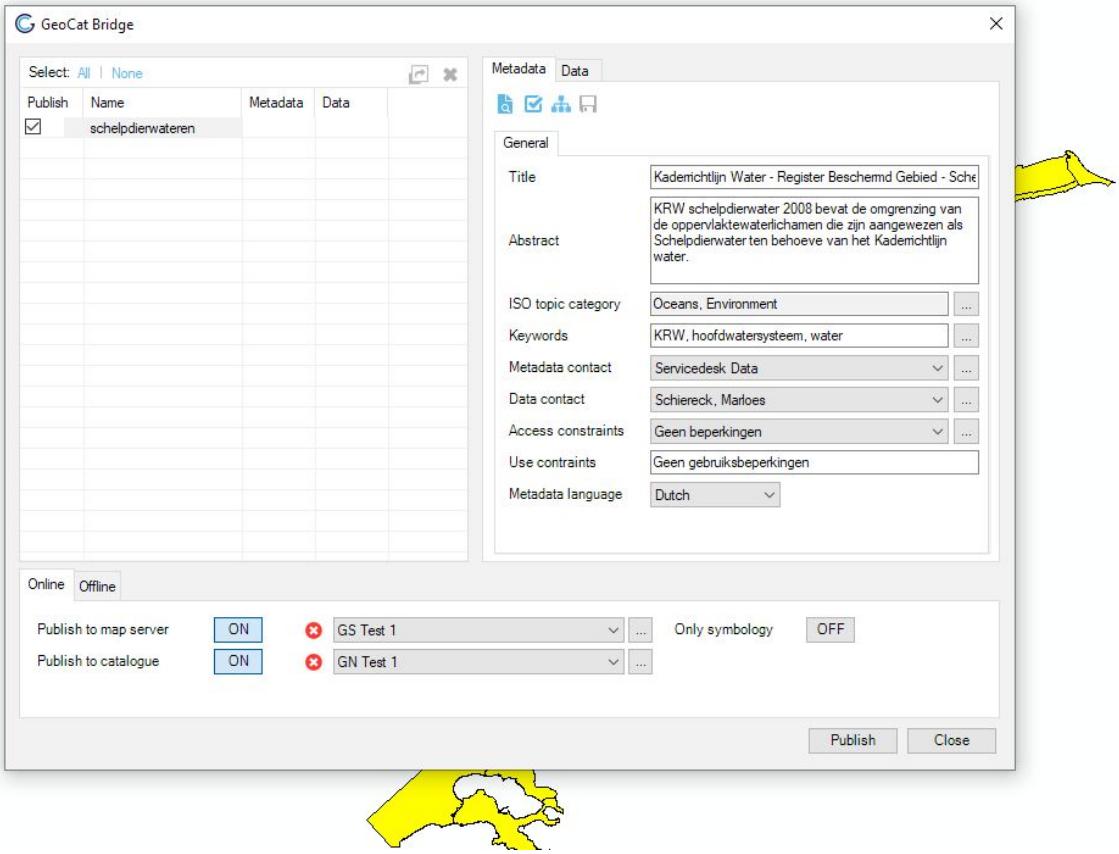
Set Metadata

After styling the data it's time to add some or update existing metadata.



The Bridge Metadata editor shows a minimal set of metadata properties required to create a valid metadata record. The metadata is retrieved and stored in ArcGIS. If you need more advanced and detailed editing of metadata you can use the ArcGIS metadata editor. Note that changes on metadata are also stored locally with the data (in SDE, FGDB or XML).

For more detailed information about validation and using profiles:
https://bridge-manual.geocat.net/3/content/8_metadata_editing.html#md-editing



After adding the metadata you can select a map server and/or catalogue from the dropdown list (see the configure servers section) and hit the [**publish**] button.

The Publish result screen will show the result of the publication. Double click any error or warning to display more details.

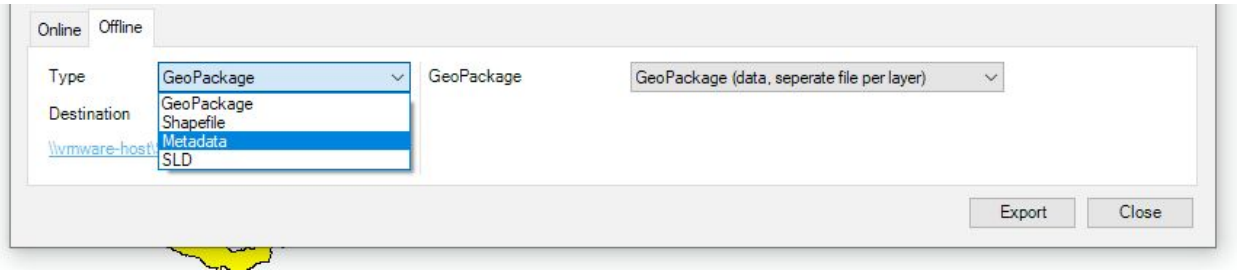
In the publish window you can now right click on a layer and from the context menu view the published metadata record or a preview of the map service.

Workspace mode

Bridge has 2 modes for Geoserver. Basic and Workspace. In case of basic you have to select a workspace where new layers are published in. In workspace mode, a new workspace is created for each mxd that you publish. Publishing to mapserver is only supported in workspace mode. In workspace mode it is possible to arrange layers in a hierarchy. The hierarchy will be duplicated in the server using layergroups. Workspace mode is activated in the server settings screen.

Offline publication

Bridge has an option to publish data to a local GeoPackage, Shape, Metadata and/or SLD file. A GeoPackage will contain data, metadata, SLD and Context (layer hierarchy). Style and context are not part of the GeoPackage standard, but introduced as part of the [OWS-Context GeoPackage extension].



The extended GeoPackage can be opened in for example QGIS to reproduce the full project including style and metadata. This requires the QGPKG extension in QGIS.

GEOCAT BV
Veenderweg 13
6721 WD Bennekom
The Netherlands

+31 (0) 318 416 664
info@geocat.net
www.geocat.net

VAT: NL820259561.B01
KvK: 08162601