

SkylineGlobe Server[®]

Version 7.0.1

Getting Started

SKYLINEGLOBE SERVER V7.0.1 – GETTING STARTED

SkylineGlobe Server is a private cloud solution that provides a comprehensive set of web services for publishing, storing, managing and streaming 3D spatial data. SkylineGlobe Server provides streaming services for all your spatial data types including terrain (MPT/TBP), map (raster-WMS/WMTS), feature (WFS/WFS-T), 3D Mesh (3DML, 3D Cesium tiles), and point cloud (CPT, 3D Cesium tiles). All data on your server is cataloged and referenced so clients can easily find the specific published layer required. Your data is kept safe by multiple security layers, including restriction of each user group to predefined data folders and a robust user authentication mechanism.

SkylineGlobe Server can be configured as a single server or as part of a new or existing server cluster. A server cluster is a collection of servers that communicate with each other in order to serve data to clients with higher availability. In order to communicate, all servers in the cluster must share a common configuration database that is located on a shared drive and have required permissions to all folders that are used by SGS to share data or store cache files.

Individual geospatial layers and complete projects can be directly uploaded and published to the cloud server from TerraExplorer or other Skyline client applications, thus streamlining your workflow and eliminating the need for any server side login after initial installation. Through a single publishing operation, data is made ready for consumption by all TerraExplorer clients: Desktop, Mobile, and TE for Web, as well as standard geospatial applications. Server-side geospatial layers that are stored in existing data stores on the server can also be published by scanning their data stores and publishing selected layers.

The server's built-in complete user access control system allows easy management of users, groups, and administrative roles controlling the server-side storage and client-side read/write permissions.

Based on Microsoft IIS Server, SkylineGlobe Server repackages the retired TerraGate and SFS products into a unified server technology and management interface from which to control and manage the complete 3D geospatial data lifecycle.

What's New in SkylineGlobe Server v7.0

SkylineGlobe Server v7.0 introduces the first release of the overhauled server side component of Skyline. It features the all-new packaging of the TerraGate and SFS components into a unified server technology and management interface. In addition to streaming, managing, and storing data, SkylineGlobe Server also supports direct publishing to the server from Skyline applications. As a result, clients require only web access to their cloud server after initial installation and configuration is complete.

The new server supports the main services provided by the retired/previous TerraGate components including terrain (MPT/TBP), map (raster-WMS/WMTS), feature (WFS/WFS-T), and 3D Mesh (3DML). In addition, a new point cloud service has been introduced for managing and serving multi-resolution and stream-optimized point cloud data. The new point cloud service and improved 3D mesh service also expose 3D Cesium tiles for TerraExplorer for Web and Cesium based clients.

The licensing process has been streamlined by a new client-side implementation that unlocks advanced API capabilities while connected to a terrain database from SkylineGlobe Server, replacing the former TerraGate Internet License Service. Also note that TerraGate's Collaboration Service has been phased out of SkylineGlobe Server, but is still available when required for backward compatibility. For information, contact support@skylinesoft.com.

New Features in SkylineGlobe Server 7.0.1

New Support for Transactions

SGS 7.0.1 supports transactions on GeoPackage file, and Oracle and Postgre databases, allowing editing of server-side feature layers.

Auto-Scanning of Server-Side Folders

Data sources can be periodically scanned for changes and SGS automatically updated accordingly: new layers are added, deleted layers are removed, and modified layers are updated in SGS.

Customized Authentication Layer

Ability to develop customized authentication DLL overriding the SGS internal user/pass authentication mode. This customized DLL can be used for PKI/Active-Directories based authentications

Efficient Management of Unused Resource Files

Easily identify and delete all files stored in SG Upload data sources that are no longer referenced by SGS layers.

Improved Management of Deleted Layers

With one click, you can display a list of all deleted layers on the server and relevant information, and select which layers to restore and which to permanently delete.

Management of TE4W Settings

The new release supports full management (creation, editing, loading and saving) of multiple configuration files.

Cache Management Improvements

New option to prevent creation of a cache file for any layer – SGS serves all client requests according to the most recent layer information.

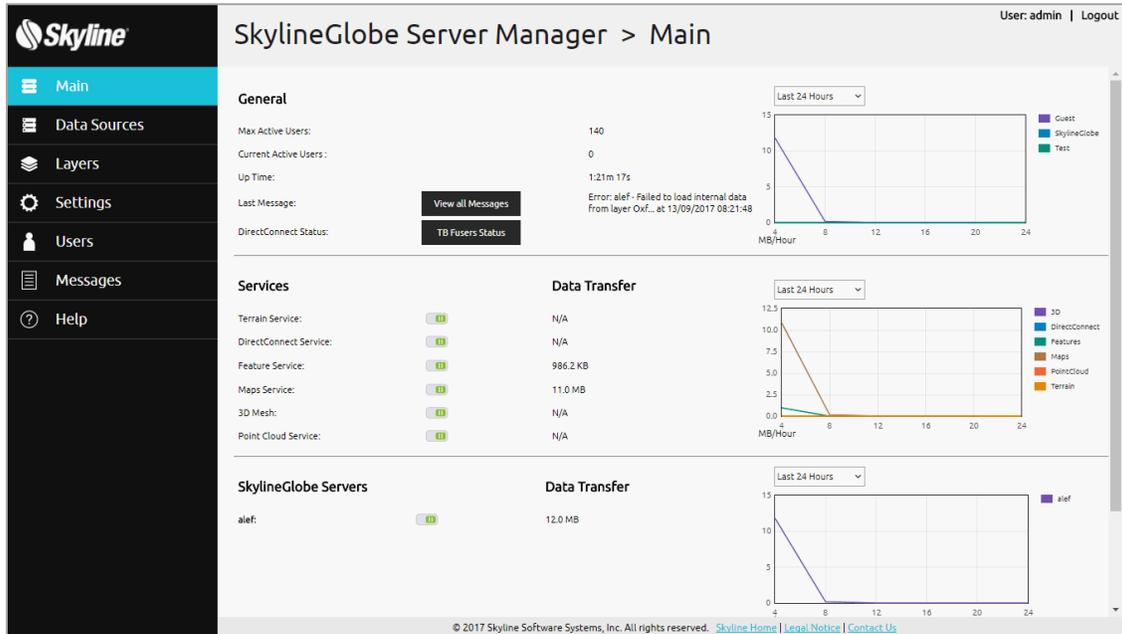
Bug Fixes and Stability

This release improves overall stability and performance.

Product Capabilities

- Streaming Services
 - Terrain – MPT and TBP (Using DirectConnect)
 - Maps (Raster) – WMS, WMTS
 - Feature – WFS, WFS-T
 - 3D Mesh – 3DML and 3D Cesium tiles
 - Point Cloud – CPT and 3D Cesium tiles
 - Projects – TerraExplorer Desktop, Mobile and Web project files
- Upload and Catalog Services
 - Data upload and storage – Upload and publish geospatial layers and complete projects from TerraExplorer or other Skyline client applications.
 - Advanced cataloging – Automatic and manual extraction of metadata and geospatial information.
 - Search queries – Advanced client-side search options for data layers and projects.
- Web Manager – Management of all services, catalog database and user permissions from a Web interface.
- Direct Uploading to SkylineGlobe Server – From the following clients:
 - TerraExplorer Pro
 - Upload all feature layers (including KML), raster layers, 3DML and CPT layers.
 - Upload all resources (data folder).
 - Upload and automatically convert project file for TE for Web and TE for mobile clients.
 - PhotoMesh (* Requires PM v7.2)
 - 3D model (3DML)
 - Point cloud model (LAS)
 - Raster layers (Orthophoto, DTM, DSM)
 - CityBuilder (* Requires CB v7.2)
 - 3D model (3DML)
 - Publish TerraBuilder output / projects (* requires TB v7)
- Authentication Mechanism
 - Only registered users can upload data.
 - User uploads data to predefined data folder.
 - Each data layer has a view/edit access level (None, Only Me, My Group, or Everyone).
 - Divide users according to groups.
- Server Clusters

- Multiple SGS servers managed behind a load balancer.
- All transactions are stateless (can switch from one server to the other).
- Centralized management of all your servers.



SkylineGlobe Manager Main Page

Software and Hardware Requirements

| | |
|----------------------------|--|
| Operating System | Windows® Server 2008 R2 / 2012 R2 - 64 bit. |
| System Memory | 4GB of RAM (8 GB or more recommended). |
| Processor | Dual-Core (4 or 8 cores recommended). |
| Browser | Microsoft Internet Explorer 9 or higher. |
| User Privileges | Administrator privileges required for installation and configuration. |
| Additional Software | Microsoft Internet Information Services IIS7.5, IIS8.5, IIS10 with .Net 4.0. |

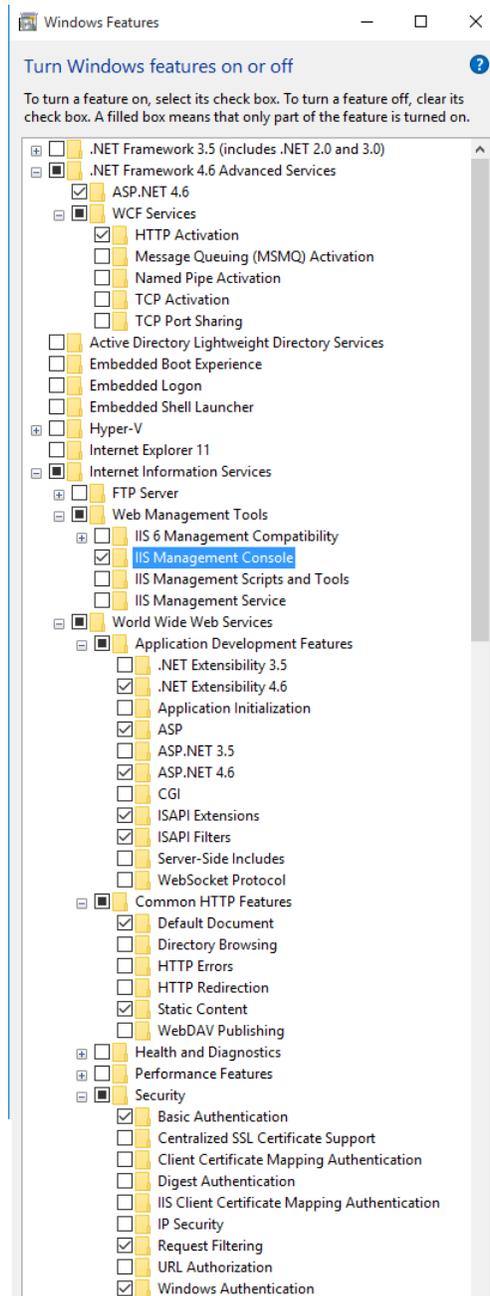
SkylineGlobe Server Installation

To install SkylineGlobe Server:

Note: On some operating systems, administrative privileges may be required.

Note: If you want to secure SGS, it is recommended to enable SSL on the SkylineGlobe Server site before installation. After installation, modifications to SGS security are performed by manual editing of the Web.config file in the installation folder. **See:** "[Managing SGS Security](#)" in this chapter for more information.

Note: SGS requires Microsoft Internet Information Services IIS7.5, IIS8.5, or IIS10 with .Net 4.0, and the following components.



8. Place the SkylineGlobe license files (SLSkylineGlobeServer.lic) next to the SkylineGlobeServer.exe file in the installation folder.
9. Double-click the **SkylineGlobe.exe** file. If you are installing SGS and do not have Internet Information Services, a dialog box is displayed informing you that you must first install IIS.

Install IIS and restart the installation process. The SkylineGlobe Setup dialog box is displayed.



SkylineGlobe Setup

10. Click **Next**. The End-User License Agreement is displayed.



End-User License Agreement

11. Read the License Agreement and then select the **I accept...** check box.
12. The Server Configuration Database Folder dialog box is displayed.



Server Configuration Database Folder Dialog Box

13. Select one of the SkylineGlobe Server configuration database options. The option selected depends on the reason for this installation:
 - If you are installing a new server with a new database – Select **Create a new database**. This option applies whether you are installing a new single, standalone server or installing a server that will be part of a new server cluster. When creating a new server cluster, the configuration database must be located on a shared drive to which all servers in the cluster have read-write access.

Note: If you are creating a new server cluster, you will require a known database security token that can be shared with all computers in the cluster to enable them to use the database. This token can be generated after installation in SGS Manager.
 - If you are creating a new server that will be part of an existing server cluster (and therefore use the cluster's existing database) – Select **Choose an existing database**, and then enter the security token that was generated for this database.
 - If you are creating a new server using a backup database – Select **Choose an existing database**, and then enter the security token that was generated for this database.
 - If you are upgrading an existing server installation for the same IIS user – Select **Upgrade your existing database**.
14. Browse to the location of the new or existing database.

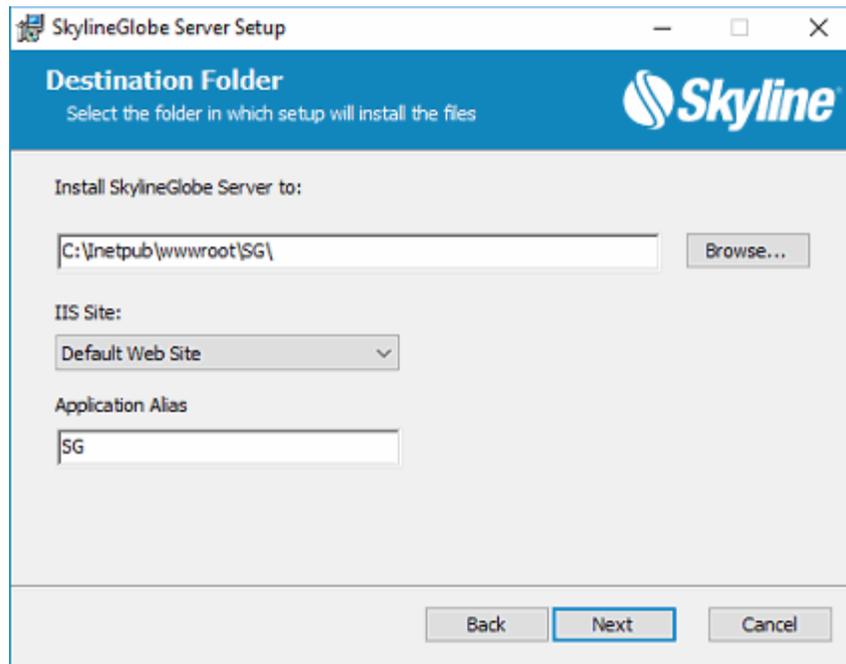
Note: When working with a server cluster, the database must be located on a shared drive that has Modify permission and is accessible from all servers.

15. Click **Next**. The IIS Application Pool Identity dialog box is displayed.



IIS Application Pool Identity Dialog Box

16. Select a Windows user account for the IIS application pool.
Note: If you are upgrading an existing server installation, make sure to use the same IIS application pool identity as used in the previous installation
17. If using a custom account, enter the **User Name** and **Password**.
18. Click **Next**. The Destination Folder dialog box is displayed.



Destination Folder

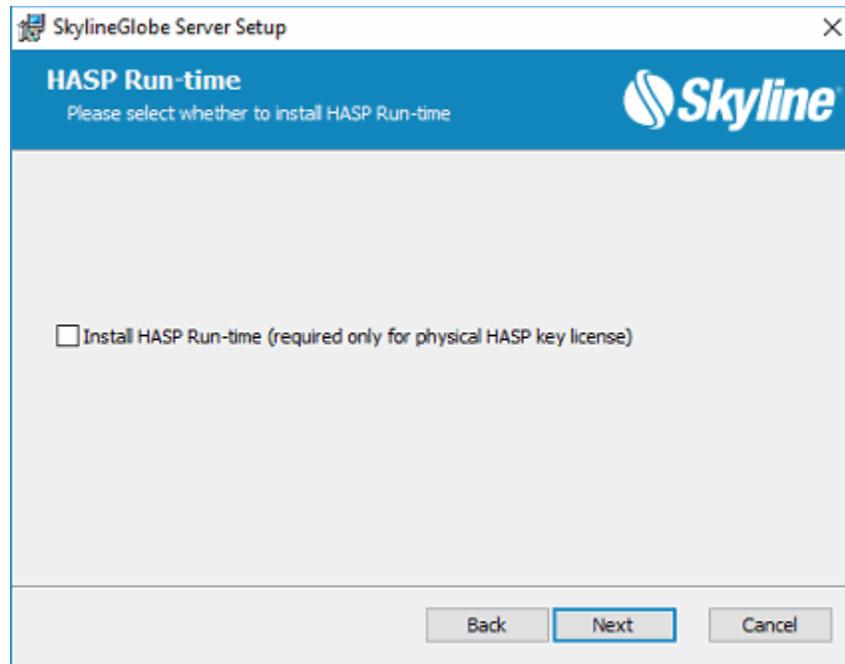
19. If you want to select a different folder than the default for the SkylineGlobe Server installation, enter the required folder path or click **Browse**, and browse to the required folder.

Note: The installation folder should be located on the local drive.

20. Select an **IIS Site**.

21. Type an **Application Alias**.

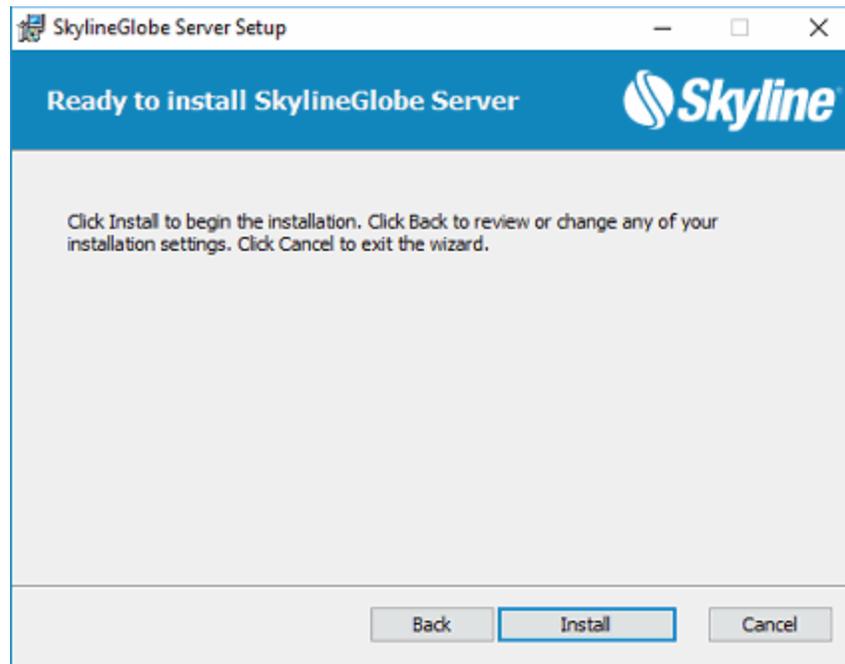
22. Click **Next**. The HASP Run-time dialog box is displayed.



HASP Run-time

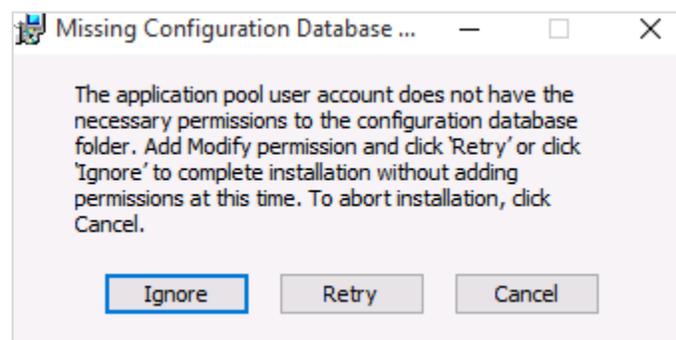
23. If you want to install HASP Run-time, select the check box.

24. Click **Next**. The Ready to install SkylineGlobe dialog box is displayed.



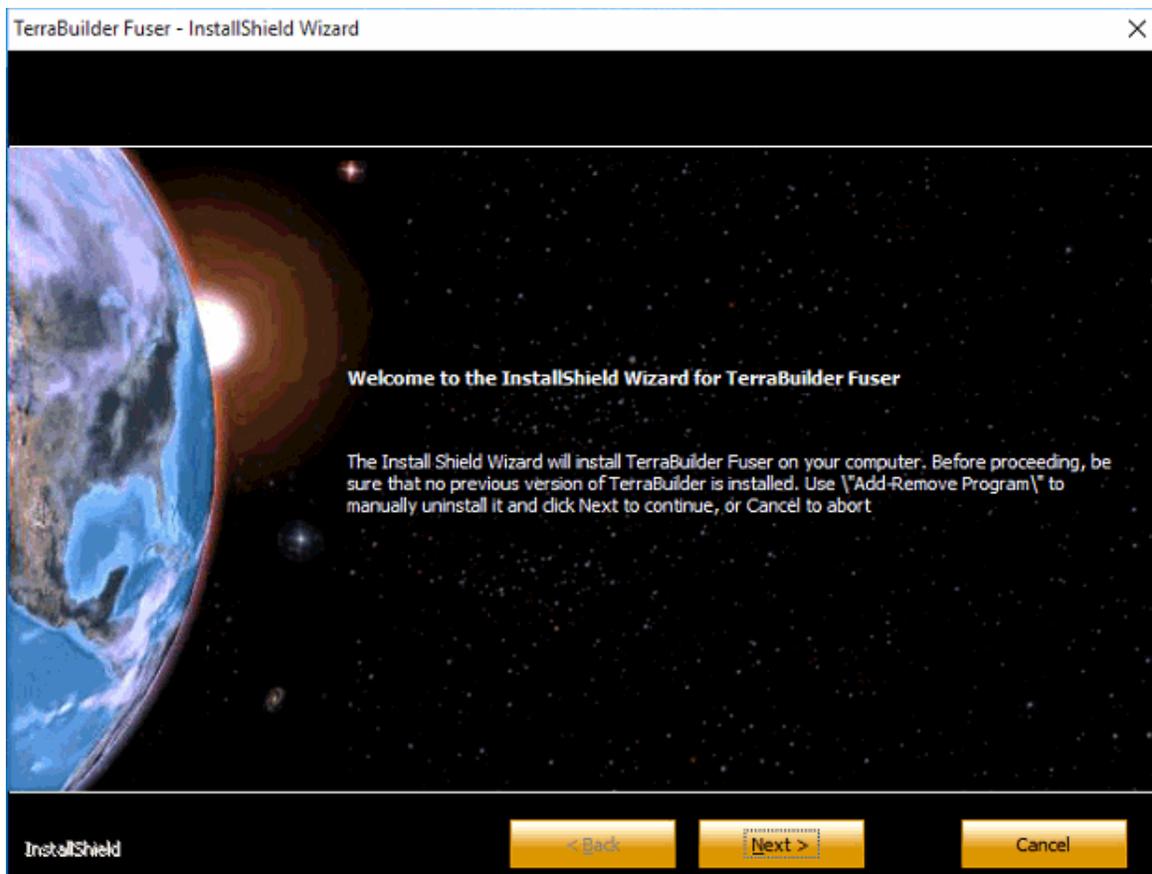
Ready to install SkylineGlobe

25. Click **Install**. If the application pool user account does not have the necessary permissions to the configuration database folder, a dialog box is displayed asking if you want to add the permissions. Add the necessary Modify permission to the folder for the application pool user account, and click **Retry**. If you want to add permissions after installation, click **Ignore** to complete installation.



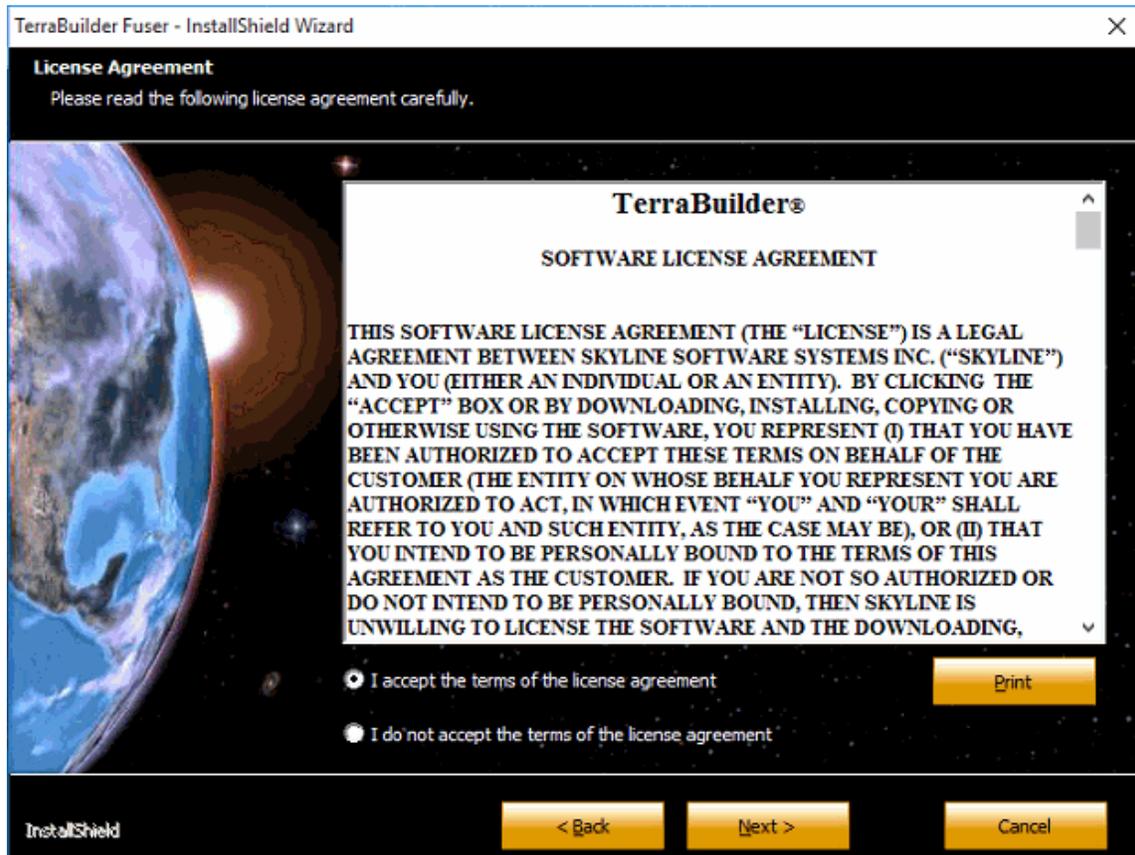
IIS User Access Permissions Dialog Box

26. The TerraBuilder Fuser InstallShield Wizard is displayed.



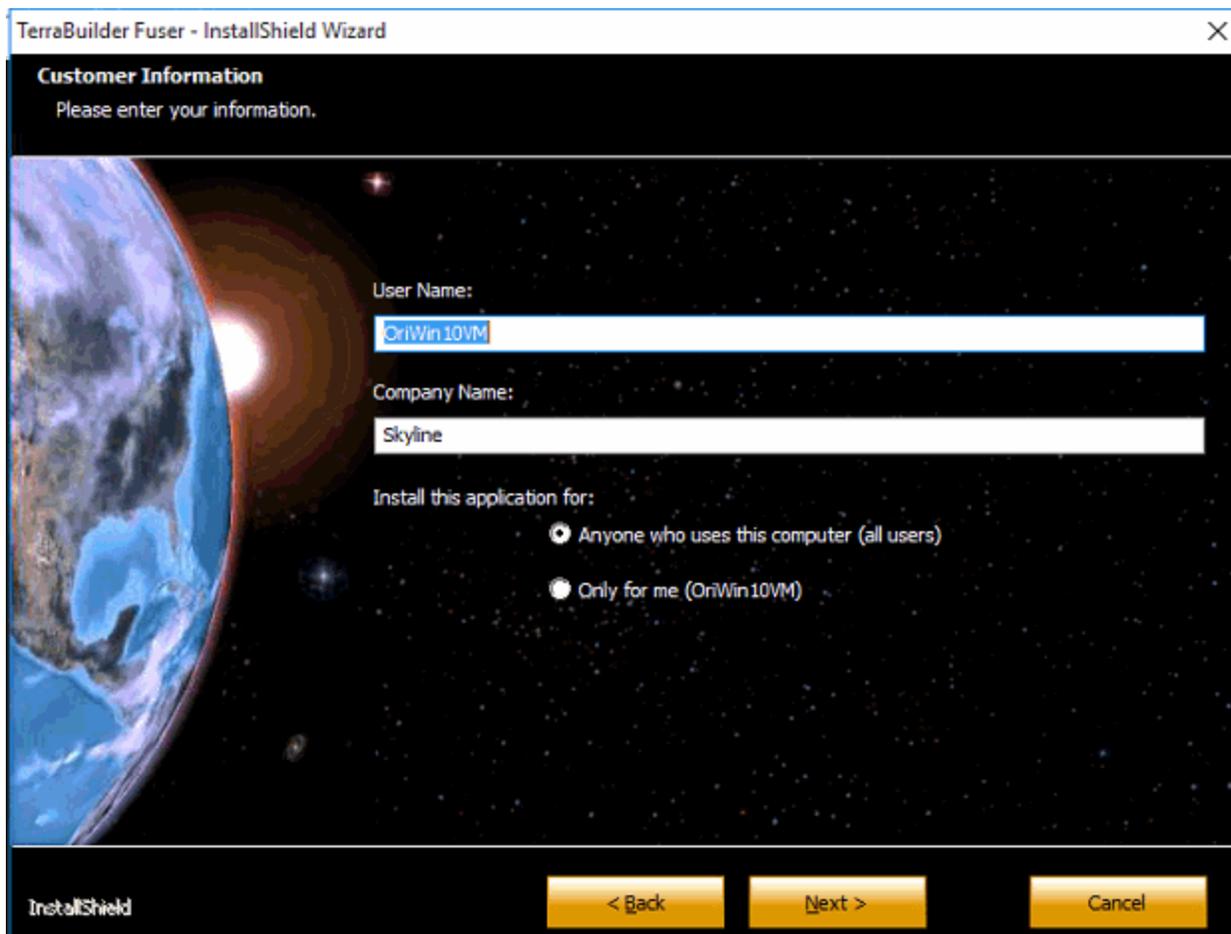
TerraBuilder Fuser InstallShield Wizard

27. Click **Next**. The License Agreement is displayed.



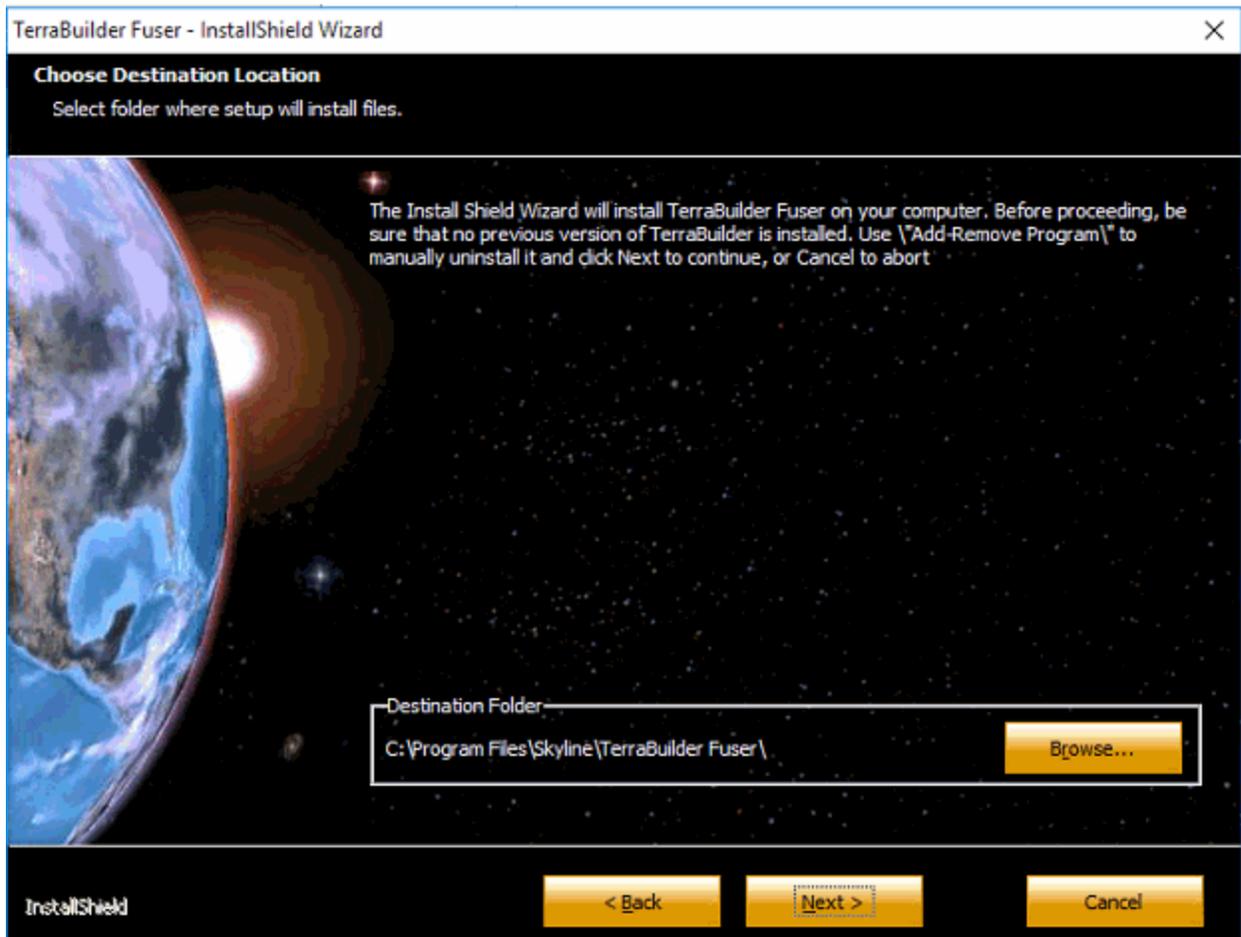
TerraBuilder Fuser License Agreement

28. Select the **I accept...** option and click **Next**. The Customer Information dialog box is displayed.



Customer Information

29. Type your **User Name** and **Company Name**.
30. Select who to install this application for, and click **Next**. The Choose Destination Location dialog box is displayed.



Choose Destination Location

31. Browse to the **Destination Folder**, and click **Next**.
32. In the dialog box that is displayed when the installation process is complete, click **Finish** to exit the wizard.

Post-Installation Procedures

The following are post-installation procedures:

- [Adding Access Permission for the SGS Installation Folder](#)
- [Managing SGS Security](#)
- [Running TerraBuilder Fuser](#)
- [Setting a Public URL](#)
- [Importing Configuration Files from TerraGate and SFS](#)

Adding Access Permission for the SGS Installation Folder

If the SkylineGlobe Server installation was unable to automatically add access permission for the SGS installation folder and other folders that may be used by SGS to share data or store cache files, you must manually add the necessary Modify permission to the folder for the application pool user account for these folders.

Note: The Windows user account used by SGS appears in the Settings page in the General Settings section. By default, the installation folder of the SGS is C:\inetpub\wwwroot\SG.

Managing SGS Security

If your site security is changed after installation, modifications to SGS security are performed by manual editing of the Web.config file in the installation folder.

To modify SGS security:

1. Open the Web.config file located in the application's installation folder.
2. Search for all instances of "http mode" and "https mode":
 - a. Remove the comment code from the protocol version that you want to enable
 - b. Comment out the protocol version that you want to disable.
3. On the **Settings** page, in the **General Settings** section, modify the Public URL in accordance with your security mode (i.e., http:// or https://).

For example, if enabling HTTPS, the required code changes in the Web.config file will include the following:

From:

```
<!--http mode--><endpoint address="mexwebhttp" binding="mexHttpBinding" contract="IMetadataExchange" />
<!--https mode--><!--<endpoint address="mexwebhttp" binding="mexHttpsBinding" contract="IMetadataExchange"
/>-->
```

To:

```
<!--http mode--><!--<endpoint address="mexwebhttp" binding="mexHttpBinding" contract="IMetadataExchange"
/>-->
<!--https mode--><endpoint address="mexwebhttp" binding="mexHttpsBinding" contract="IMetadataExchange" />
```

Running TerraBuilder Fuser

One TerraBuilder fuser is installed on each server computer as part of the installation process.

See: ["SkylineGlobe Server Installation"](#) for information. The fuser is an application that allows SkylineGlobe Server DirectConnect to utilize the resources of the computer, on which it is running, for the on-demand generation of a virtual 3D terrain database defined by the TerraBuilder project file (TBP). While fusers are only required for serving TBP, it is always recommended to run the fuser on each server computer.

Setting a Public URL

After installing SkylineGlobe Server, a public URL should be set, i.e., the URL that should be used from client computers to connect to the server. By default, the public URL is set to http://<SG Server>/SG where <SG Server> is the IP or name of the machine on which

SkylineGlobe Server is installed. In some cases, this URL may not be correct, and therefore should always be verified post-installation.

Note: If the site is secured use https instead of http.

To set your server's public URL:

1. From the **SkylineGlobe Server** menu, select **Settings**. The Settings page is displayed.
2. In the **General Settings** section, enter the required **Public URL**.
3. Click **Save**.

Migrating TerraGate and SFS to SkylineGlobe Server

Migration from TerraGate and SFS to SkylineGlobe Server is performed by importing configuration files from TerraGate and SFS to SkylineGlobe Server Manager. All data sources defined in these files are automatically scanned, and their layers added to SkylineGlobe Server.

In addition to migration, there are also techniques to enable SGS to handle requests that were previously handled by TerraGate and SFS. This rerouting of requests entails the following additional steps:

- Binding of the IIS site where SkylineGlobe is installed to the same IP's and ports that TerraGate was previously bound to and unbinding of TerraGate from them.
- Configuration of the URL Rewrite to reroute requests.

See: "Migrating TerraGate/SGS to SkylineGlobe Server" in the SkylineGlobe Server User Manual for more information.

Step 1: Starting SkylineGlobe Server Manager

To start SkylineGlobe Server Manager:

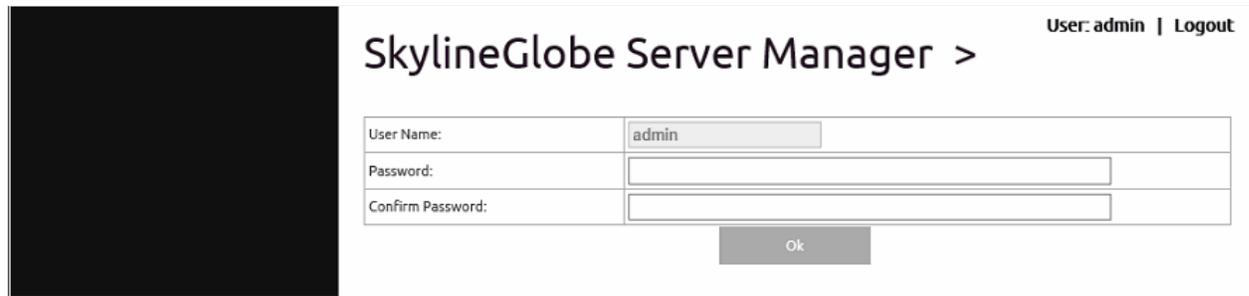
1. Do any of the following:
 - Open a web browser and browse to <http://<SG Server>/SG> where <SG Server> is the IP or name of the machine on which SkylineGlobe Server is installed.
Note: If the site is secured use https instead of http.
 - If working directly on the server computer, open a web browser and browse to <http://localhost/SG>.
 - Click the **SkylineGlobe Server Manager** desktop shortcut.

The SkylineGlobe Server Manager Login page is displayed.



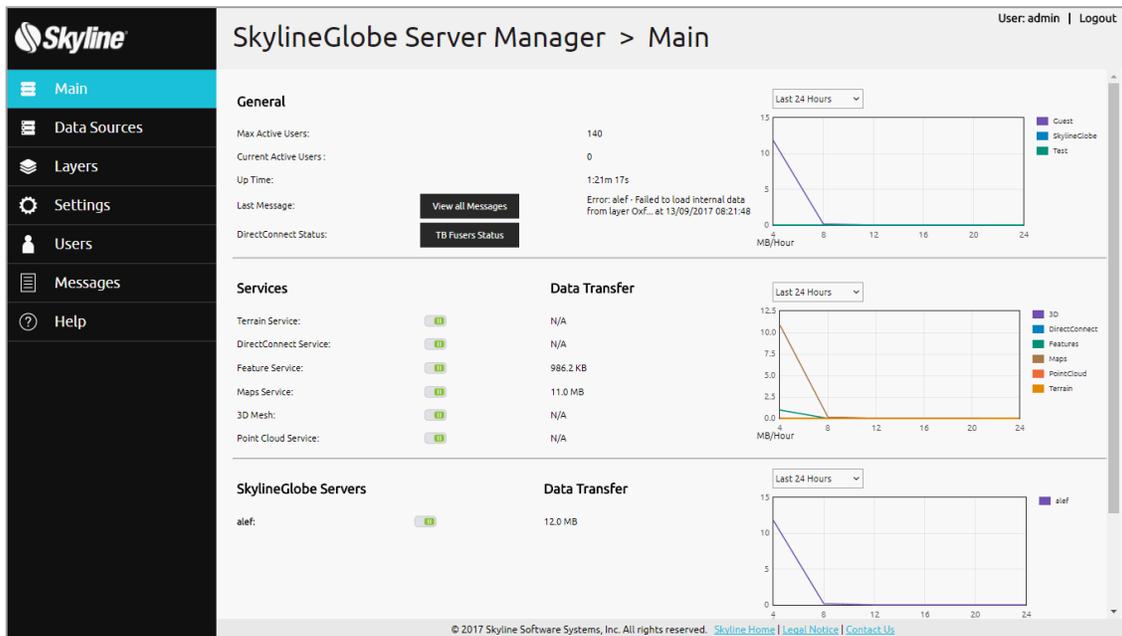
Login Page

2. Enter your user name and password in the respective fields.
The default **User Name** and **Password** after installation are **admin** and **admin** (lower-case).
The Change default administrator password page is displayed.



Login Page

3. Enter a new **password** for the admin user. The Main page is displayed.
Note: Additional users can be added from the Users page. A user with an Editor role is required to allow publishing from TerraExplorer Pro.



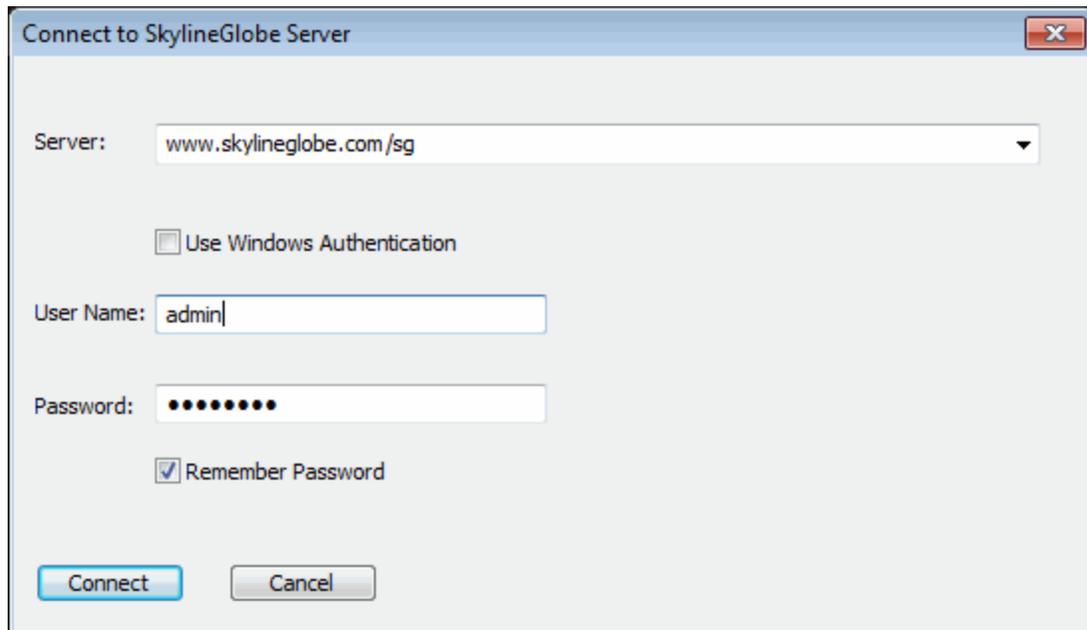
Main Page

Step 2: Connecting TerraExplorer Pro to SkylineGlobe Server

To connect TerraExplorer Pro to SkylineGlobe Server:

Note: Working with SkylineGlobe Server requires TerraExplorer Pro v7.0 and above.

1. Start **TerraExplorer Pro** and open a **Project (FLY)**.
2. On the **Layers** tab, in the **SkylineGlobe** group, click **Disconnected**. The SkylineGlobe Server dialog box is displayed.



Connect to SkylineGlobe Server

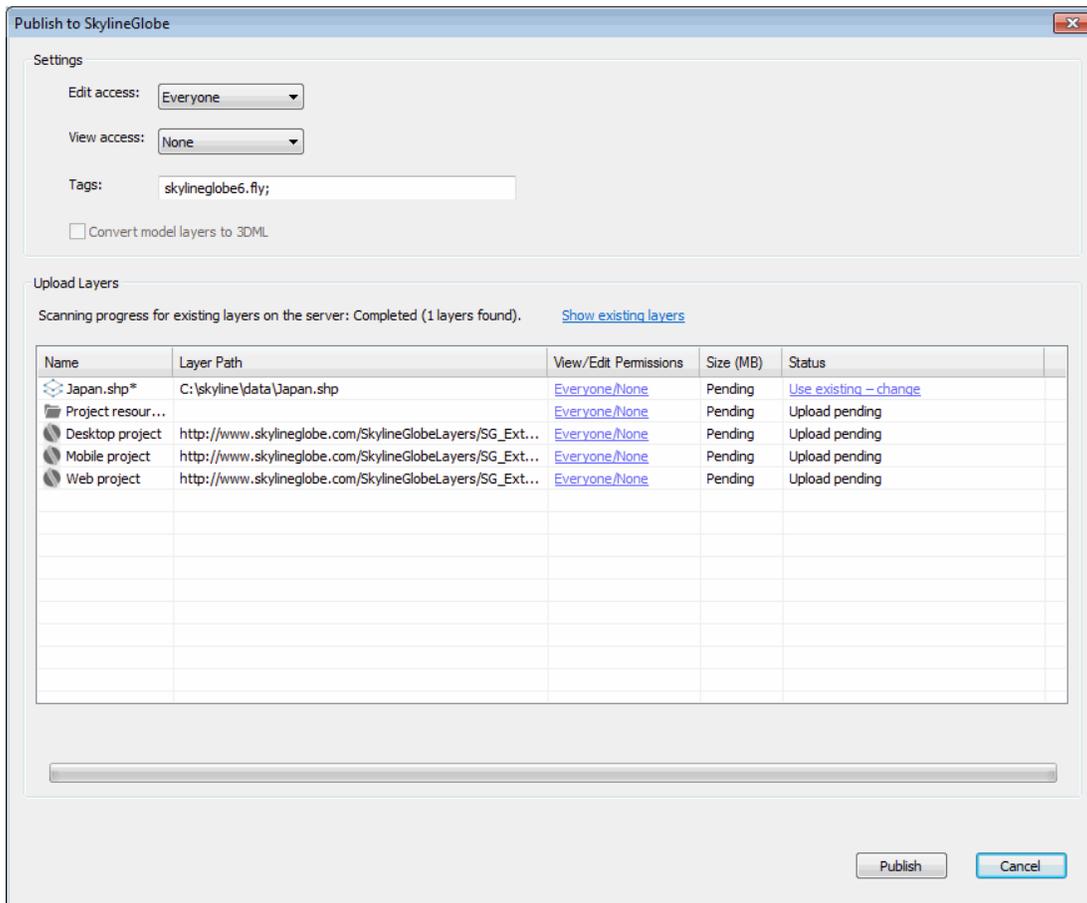
3. Enter the connection information defined above and click **Connect**.
Use the following format: `http://<IP>/SG`
where <IP> is the IP or name of the machine on which SkylineGlobe Server is installed.

Step 3: Publishing Data from TerraExplorer Pro

To publish data from TerraExplorer Pro to SkylineGlobe Server:

1. Add to your TerraExplorer project the **content** you want to publish.
2. On the **Home** tab, in the **Project** group, click **Publish to SG**. The Publish to SkylineGlobe dialog box is displayed.

Note: You must first save the project to a regular .FLY file before publishing to the server.



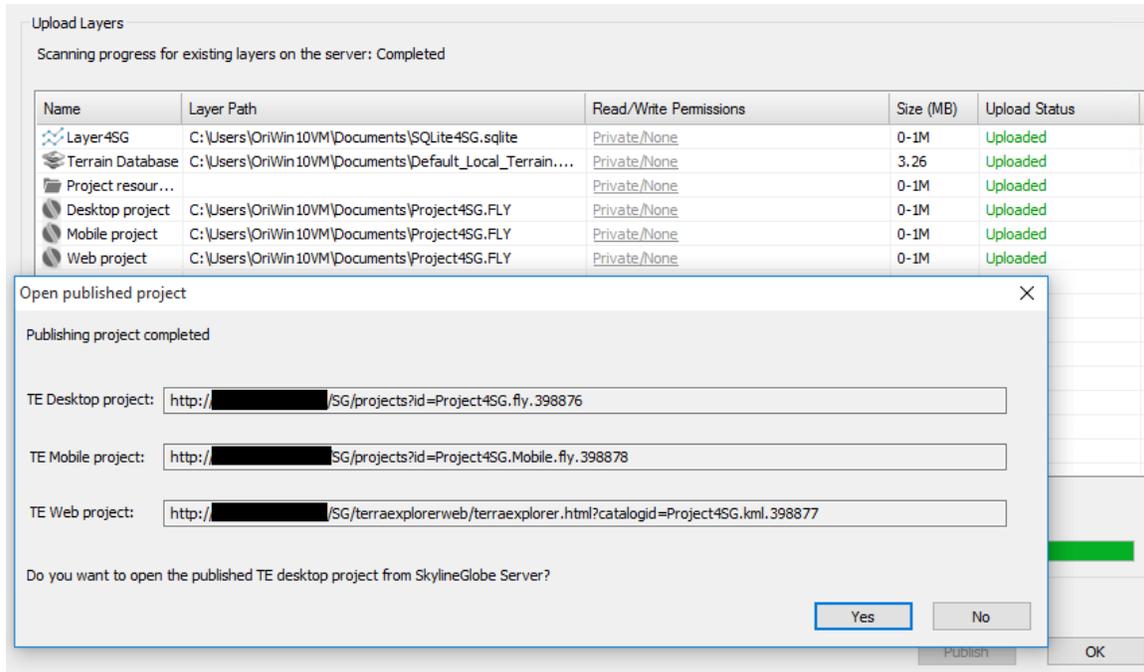
Publish to SkylineGlobe

3. Set the **View access** for the project.
4. Set the **Edit access** for the project

Note: All uploaded feature layers are converted to Geopackage (.gpkg) files, allowing layer transactions from TerraExplorer Pro any WFS-T client.
5. Click **Publish**. For more information about publishing options, see the “Working with SkylineGlobe Server” chapter in the TerraExplorer User Guide.

Note: The published data is saved in the upload data source defined for the currently logged in user’s group (default value: “DefaultUploadDataSource”).
6. When the publishing is complete, click **OK**. The Open published project dialog box is displayed, showing the URL’s for the desktop, mobile, and web projects. These URL’s enable you to open the TE Web or TE Desktop projects from your browser.

Note: The TE Desktop project can also be opened from the TerraExplorer File menu.



Open Published Project

- If you want to currently open the published TE Desktop project from SkylineGlobe Server, click **Yes**.

Step 4: Publishing Existing Files on the Server

To publish existing files on the server:

- Create a folder on the server machine or locate an existing one.
- Add to the folder all the files you want to publish. Any of the following file types can be published: feature layers, imagery and elevation raster layers, 3DML, and CPT.

Note: Verify that the Windows user account used by SGS has access permissions to this folder. The Windows user account used by SGS appears in the SkylineGlobe Server Manager Settings page in the General Settings section.
- If the user account does not have access permissions, do the following:
 - In **Windows Explorer**, right-click the folder and select **Properties**.
 - On the **Security** tab, click **Edit**.
 - In the dialog box that opens click **Add**, and type the Windows user.
 - Click **Check Names**, and then click **OK**.
 - In the **Permissions for <folder name>** dialog box, in the **Permissions for System** section, select **Full Control**.
 - Click **OK**.

4. Open **SkylineGlobe Manager**, and from the menu, select **Data Sources**.
5. Click **Add**, and enter the following parameter values:
 - a. **Name:** *ScanSourcesFolder*
 - b. **Data Source Type:** *SG Scanner*
 - c. **Path:** *<the path from step 5.1>*
 - d. **View Access:** *Everyone*
 - e. Click **Connection Status** and verify that it changes to **OK**.
Note: If connection status verification fails, check that you performed step 3 correctly.
 - f. Click **OK**. SGS scans the data source and displays a list of all files found.
6. Select the check box of each of the sources you want to add to SkylineGlobe Server, i.e., the files you added to the folder, and click **OK**.
7. Start **TerraExplorer Pro**, and then on the **Layers** tab, in the **SkylineGlobe** group, click **Load Layers**. In the SkylineGlobe Layers dialog box that is displayed, select the required layers, and click **Load**.
Note: You can use CTRL-click or SHIFT-click to multi-select layers.

Step 5: Configuring TerraExplorer for Web (TE4W) and Loading SGS Data

TerraExplorer for Web can have custom configurations that define various elements of your TE4W application including which layers TE4W can connect to, your website subdomains, screen overlay logo, copyright text, and search provider. These TE4W elements are configured in the TerraExplorer for Web Settings section of the SkylineGlobe Server Manager Settings page. Multiple customized configurations can be set.

To customize your TerraExplorer for Web application and open your published project:

1. From the **SkylineGlobe Server** menu, select **Settings**. The Settings page is displayed.
2. In the **TerraExplorer for Web Settings** section, select the required configuration and click **Edit**. The TerraExplorer for Web Settings dialog box is displayed.
3. Modify the settings as required:
4. Click **Save**.
5. To open TE4W, in your browser, browse to [http://\[www.yourdomain.com\]/sg/TerraExplorerWeb/TerraExplorer.html](http://[www.yourdomain.com]/sg/TerraExplorerWeb/TerraExplorer.html).
6. To open another project in TE4W, from the **Options**  menu, select **Open Another Project**, and then select your project from the **SkylineGlobe Layers** list and click **Load**.
7. If you want to add layers to your project, do the following:
 - a. On the **Contents** pane, click **Layers** , and then click **Load Layers**. The SkylineGlobe Layers dialog box is displayed.
 - b. Search for the required layers. Click **Search**. Your search results are displayed in the search results list at the bottom of the page.
 - c. Select the layer you want to load, and click **Load Layer**.

Step 6: Publishing a DirectConnect Project

In order to publish a DirectConnect project to the server, a TerraBuilder DirectConnect project must be created and then added to SkylineGlobe Server by defining a data source that defines connection information to its folder.

To configure a data source for DirectConnect projects on the server:

1. Install **TerraBuilder v6.6.1** on the server machine.
2. In **TerraBuilder**, create a new project in which you insert imagery and elevation layers.
3. On the **Home** tab, in the **Create** group, click **Publish** and select **Prepare for Publishing**. The Creating Resolution Pyramids dialog box is displayed.
4. When conversion is complete, click **OK**.
5. Save the TerraBuilder project.
6. Open **SkylineGlobe Manager**, and from the menu, select **Data Sources**.
7. Click **Add**, and enter the following parameter values:
 - a. **Name:** *ScanDC*
 - b. **Data Source Type:** *SG Scanner*
 - c. **Path:** *<the path to the TerraBuilder project created in step 6.2>*
 - d. **View Access:** *Everyone*
 - e. Click **Connection Status** and verify that it changes to **OK**.*
 - f. If connection status verification fails, do the following:
 - i. In **Windows Explorer**, right-click the folder and select **Properties**.
 - ii. On the **Security** tab, click **Edit**.
 - iii. In the dialog box that opens click **Add**, and type the Windows user.
 - iv. Click **Check Names**, and then click **OK**.
 - v. In the **Permissions for <folder name>** dialog box, in the **Permissions for System section**, select **Full Control**.
 - vi. Click **OK**. A dialog is displayed showing all importable layers (in this case, the TerraBuilder project).
8. Select the check box of each of the sources you want to add to SkylineGlobe Server, i.e., the TBP, and click **OK**.
9. Start TerraBuilder Fuser (installed with TerraBuilder).
10. Start **TerraExplorer Pro**, and then from the **File** menu point to **Open** and select **Open Project from SkylineGlobe**.
11. Select the TBP and click **Load**.