



## **TerraGate Version 3.0**

# **Working with TerraBuilder DirectConnect**

**Skyline Software Systems Inc.**

## Working With TerraBuilder DirectConnect

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Technical support	<a href="mailto:support@skylinesoft.com">support@skylinesoft.com</a>
General information	<a href="mailto:info@skylinesoft.com">info@skylinesoft.com</a>
Contact Skyline on the Internet	<a href="http://www.skylinesoft.com">http://www.skylinesoft.com</a>

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## **SECTION 1: WELCOME TO TERRABUILDER DIRECTCONNECT**

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TerraGate is a powerful network data server technology designed to stream and manage 3D geographic data in real-time.

Together, the TerraBuilder with the DirectConnect component and TerraGate provide the ability to stream imagery and elevation data, in their native format (e.g. ECW, Mr. SID), directly to TerraExplorer clients. TerraBuilder DirectConnect can save you time and resources by allowing you to skip the 3D terrain database creation process altogether.

The TerraBuilder DirectConnect together with TerraGate allows users to fly directly over a TerraBuilder Project (TBP), eliminating the need to create an MPT 3D database. You can add your source files to a TerraBuilder project, perform all the wanted manipulations, and make it immediately accessible through TerraGate to TerraExplorer and TerraExplorer Pro clients.

The TerraBuilder DirectConnect is designed for users with a need for on-demand database creation. It incorporates all the existing features of TerraBuilder, like manipulating and combining multiple source files, of various formats and projections as well as unlimited size and resolution. It also uses the multi-processor and multi-computer capability of the TerraBuilder Enterprise Edition to share the workload among several computers in your organization. Massive archives of data can now be accessible for 3D visualization in a matter of minutes.

## **SECTION 2: ADVANTAGES OF USING TERRABUILDER DIRECTCONNECT**

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TerraBuilder DirectConnect allows you to do away with the need to create a 3D terrain database. All you need to do is add the source files in their native format to a TerraBuilder Project, and make it available via TerraGate. This frees you from the time consuming task of generating a 3D terrain database.

A 3D terrain database can now be generated on demand, utilizing massive amounts of different source files. Different source files can be added to a common project and delivered to the TerraExplorer client. Later, other source files can be updated or added to show a different time-of-year, increased resolution, or any other variation of the information.

With the DirectConnect near-real time updates are now possible. Once an updated imagery or elevation source is available, it can be loaded in the TerraBuilder project and immediately be available for clients to work with over the network in 3D form.

The TerraBuilder DirectConnect uses the TerraBuilder Agents to utilize the combined computing power of any available server side computers. This provides scalability for the resources needed to handle the performance demanding workload of on-the-fly 3D terrain database creation.

## SECTION 3: INSTALLATION

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The installation procedure consists of the following:

- 1 Installation of the TerraGate Manager with the TerraBuilder DirectConnect component.
- 2 Installation of TerraBuilder Enterprise Edition.
- 3 Optional - Installation of TerraBuilder Agents on additional Client computers.

### The HASP Key

Your TerraGate package includes a HASP Key. The HASP Key must be inserted into your computer's USB or Parallel port at all times.

Each TerraGate / HASP key combination defines whether your TerraGate supports a connection with TerraBuilder DirectConnect, and can only be changed by contacting Skyline Software Systems.

Note: Client computers, acting as Agents, do not require the HASP Key.

### Installing The Necessary Components

#### To Install TerraGate Manager with TerraBuilder DirectConnect component

Installing TerraGate with TerraBuilder DirectConnect component is similar to the regular TerraGate installation. Follow the installation instructions in the TerraGate User manual.

#### To Install TerraBuilder Enterprise Edition

In order to create and edit TerraBuilder Project files (\*.tbp), you need to install TerraBuilder Enterprise Edition on your computer.

To install TerraBuilder follow the instructions in the TerraBuilder reference manual.

#### To Install TerraBuilder Agent

TerraBuilder Agent can be installed on any computer in your local network.

- 1 Insert the TerraBuilder Agent CD-ROM into your CD-ROM drive.
- 2 Select setup.exe, and follow the on-screen installation instructions.

Note: You do not have to install the TerraBuilder Agent on computers that already have TerraBuilder installed.

## SECTION 4: USING TERRABUILDER DIRECTCONNECT

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TerraBuilder DirectConnect allows TerraGate to directly access and serve 3D terrain databases using the imagery and terrain source files in their native format, without having to generate the 3D database in an offline process.

A TerraGate Manager with the TerraBuilder DirectConnect component can now read TerraBuilder Project (TBP) files, in addition to previously supported MPT files. You can create a TerraBuilder Project from multiple source files in different formats, perform all the data manipulations available in TerraBuilder, and use this project file directly as a source for TerraGate.

TerraGate connects to TerraBuilder Agents running on one or more computers across a network and utilizes their computing power for an on demand creation of a virtual 3D terrain database.

### What is a TerraBuilder Agent?

A TerraBuilder Agent (referred to as Agent) is an application that allows TerraBuilder DirectConnect to utilize the resources of the computer it's running on for the on demand generation of a virtual 3D terrain database. The Agent remains idle until activated by the TerraGate Manager computer (Also referred to as "Master computer") on your network.

A TerraBuilder Agent can also serve the TerraBuilder Enterprise Edition for workload sharing in an offline MPT file generation.

### Creating a TerraBuilder Project File for DirectConnect

All Agent computers must be connected to the TerraGate computer using the same LAN configured with the same Microsoft Windows Network. The Master computer must be able to access each of the clients (i.e., they must be accessible as "*\\ComputerName*" from Windows Explorer). Furthermore, the Master and Agent computers should be able to access the project source files and the project file (\*.tbp) using the same network mapped drives. Note that it is possible to run an Agent on the same computer that is running the TerraGate.

#### To Map a Shared Network Drive

Assign mapped network drives to every folder where the project file (\*.tbp) or the source files are located.

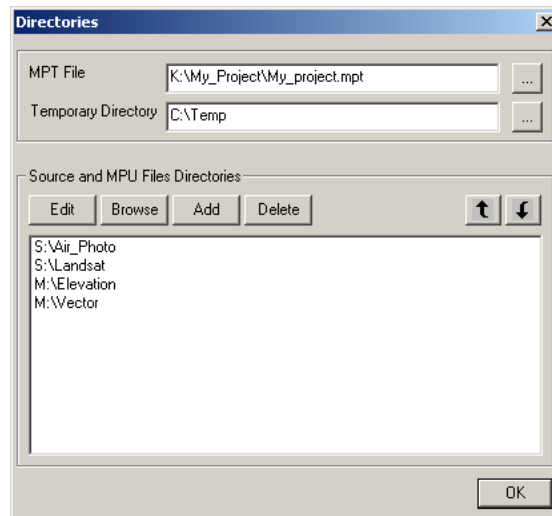
1. Open Windows Explorer.
2. On the Tools menu, click Map Network Drive.
3. In Drive, select the drive letter to map to the shared resource.
4. In Folder, type the server and share name of the resource, in the form *\\servername\sharename*, or click Browse to locate the resource.

Note: Map each folder to the same drive letter on all computers.

#### To Set the TerraBuilder Project File

1. From the Settings menu, select Directories to open the Directories dialog box.
2. In the Source and MPU Files Directories list, select the first source and click Edit.
3. Set the source path for the appropriate Mapped network drive.  
For example: if your source is located in "C:\Projects" that is mapped to the drive letter "M", change it to "M:\Mysources\". This allows the Agents running on other computers to access this file, using the same mapping.
4. Repeat steps 1 to 3 for all the directories in the project.
5. Save the project.



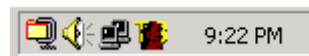


The TerraBuilder Project file is now ready to be used by TerraGate.

## Setting up The Agent Computers

### Agent Computers

Installing TerraBuilder Agent on any computer on the network enables it to take part in the on demand 3D database creation process. When the Agent is installed on a computer, a TerraBuilder Agent icon appears in the Windows Status Area. The Agent owner has full control over the computer and can allow it to be used as an Agent, or not.



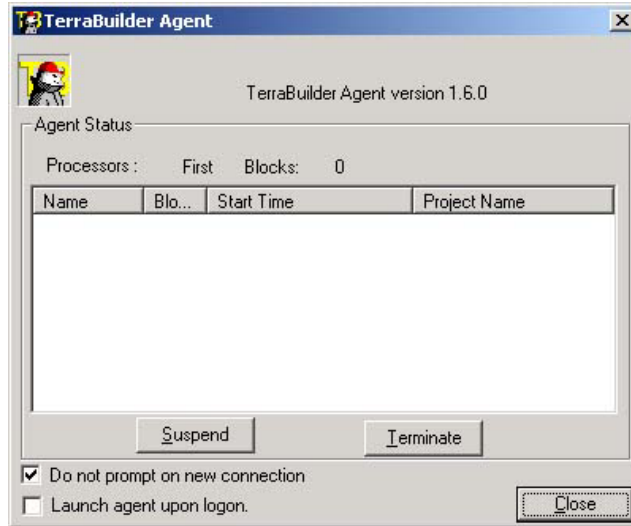
### To Manage an Agent (Agent Computers)

To start the TerraBuilder Agent, select:

Start – Programs – Skyline - TerraBuilder Agent– TerraBuilderAgent.

The Agent is now ready to serve the TerraGate.

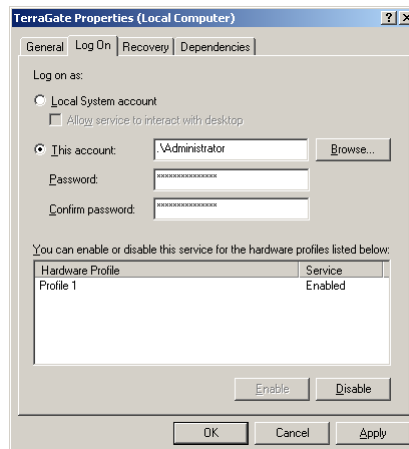
1. Click on the TerraBuilder Agent icon in the Windows Status Area to open the TerraBuilder Agent dialog box. The dialog box shows the state of the Agent, and details of the current file.
2. When an initiating computer designates your computer as an Agent you are asked if you accept. To disable this prompt in consequent requests, select Do Not Prompt on New Connection.
3. Select Suspend to temporarily stop the Agent.  
Select Resume to reactivate the Agent.  
The Master computer attempts to reactivate the Agent every five minutes. The Agent is reactivated only if you have selected Resume.  
Note: When you suspend an Agent, the Master computer continues to run the process using other available Agents. If no other Agents are available TerraGate waits for new or resumed Agents. The amount of available Agents will affect the streaming performance for the TerraExplorer users.
4. Select Terminate to permanently remove the Agent from the initiating computer's Agent list.
5. To automatically launch the Agent on logon:  
Select the Launch Agent on logon check box in the Agent dialog box  
- or -  
Right click the icon in the Windows Status area to open the TerraBuilder Agent pop-up menu, and select Launch Agent upon logon.



### Setting up TerraGate Log On Properties

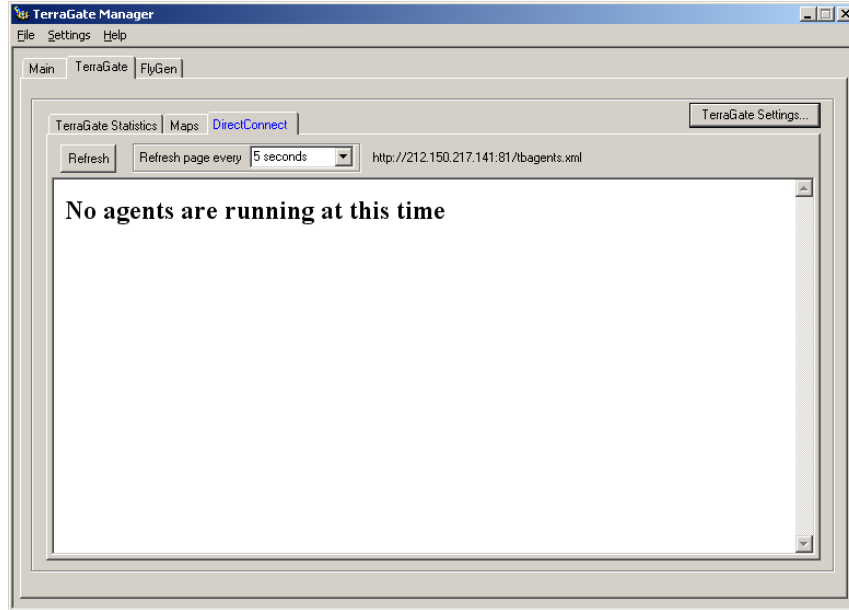
To allow the TerraGate Service to be able to access TerraBuilder Agents on other computers, you need to set the service's Log On information. You must use a user account with access permission to the Agent computers.

1. Open Start – Settings - Control Panel – Administrative Tools - Services
2. Select the TerraGate Service, and stop it.
3. Right-Click and select Properties, select the Log On Tab.
4. Check “This Account” and specify the Account name and password for an account hat can access the Agent computers.
5. Click Apply, and restart the TerraGate Service.



### Setting up TerraGate Manager

When running a TerraGate Manager with TerraBuilder DirectConnect component the Direct Connect page is available under TerraGate.



No Agents are running prior to performing the necessary configurations.

### **To Add TerraBuilder Project Files to The Maps Directories**

TerraGate Manager will automatically add any TerraBuilder Project (TBP) files that are stored in the directories specified in the Maps Directories.

This is the same as adding Directories storing MPT files.

#### ***To add a new entry***

Use the “Add” button or type the location (entire path) on a new line (cell), inside the Maps Directories listing window.

This can prevent entering an incorrect directory in the Maps Directories list.

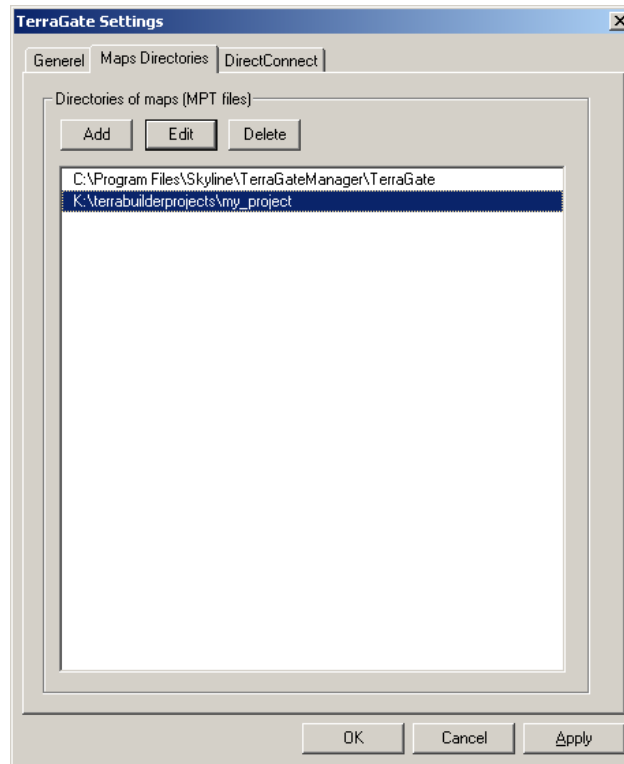
#### ***To edit an entry***

Select one of the entries in the table and then press the “Edit” button. You can then modify the previously specified location of the directory.

#### ***To delete an entry***

Select the entry and then click the “Delete” button.

If you have Agents running on client computers (other than on the computer running TerraGate), you must use a path recognized by all participating computers. It is best to map a shared network drive.



### DirectConnect Settings

Use the DirectConnect page in the TerraGate Settings to set the DirectConnect parameters.

#### *TerraBuilder Agents*

##### *To search for Agents*

Use the “*Agent Search*” button to look for all available TerraBuilder Agents on the network. This may take some time.

##### *To add an Agent*

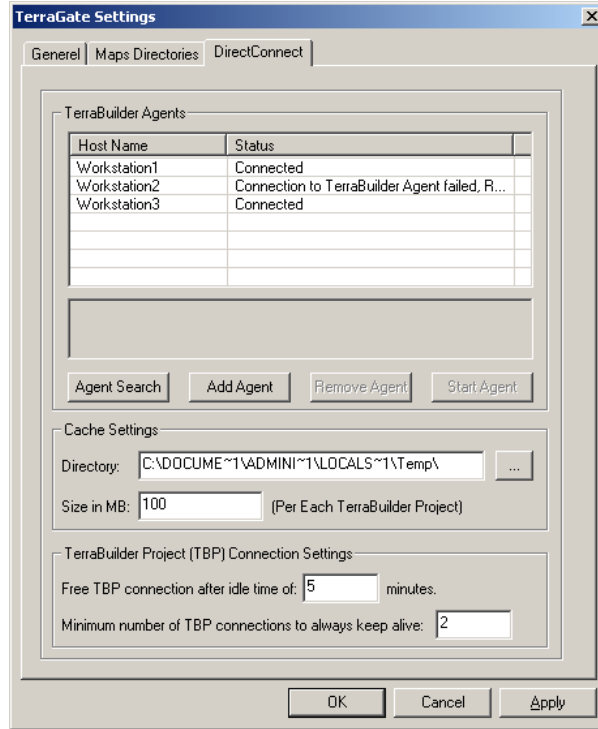
Use the “*Add Agent*” button to add a TerraBuilder Agent. Type the name of the computer where the Agent is running to add it to the list of Agents.

##### *To remove an Agent*

Use the “*Remove Agent*” button to remove a TerraBuilder Agent from the list of Agents.

##### *To start an Agent*

Select an Agent that is not running from the list, and use the “*Start Agent*” button to return the Agent to Working State.



### **Cache Settings**

#### **Directory**

Sets the location for DirectConnect cache files. It is advised to change the location to a known folder where you can monitor its size.

#### **Size in MB**

Sets the maximum cache size for each TerraBuilder Project that appears in the Maps Directories.

### **TerraBuilder Project (TBP) Connection Settings**

These settings will determine the DirectConnect behavior when a TerraBuilder Project is not being accessed. Keeping a connection alive will allow fast reconnection to this project. However, it is important to know that each live connection has memory requirements on each of the participating computers that are running Agents.

#### **Free TBP connection after idle time of:**

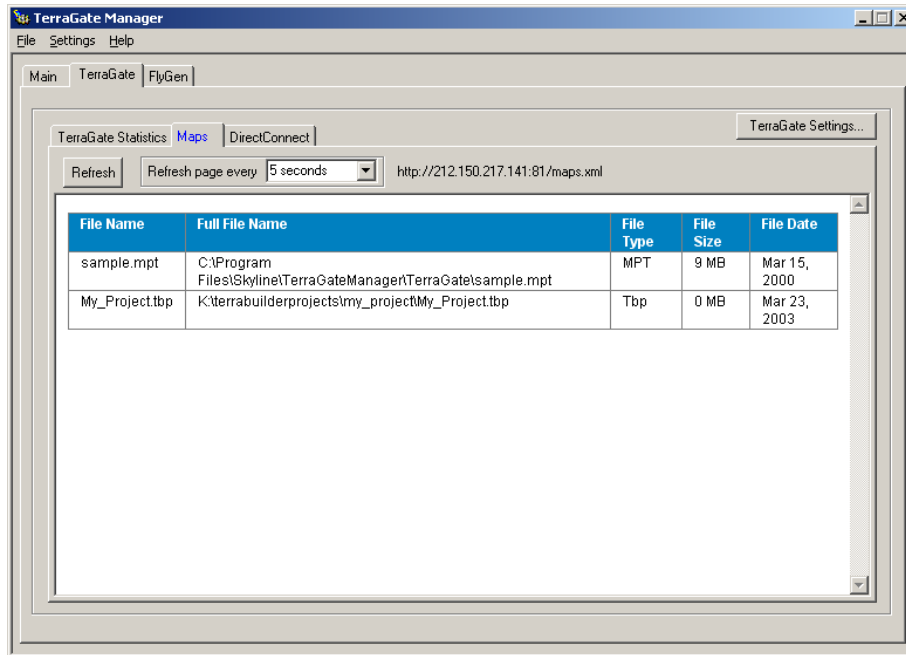
Determines the time that the TerraBuilder Agents will remain connected to a project after the last access to it.

#### **Minimum number of TBP connections to always keep alive:**

When a TerraBuilder Project is no longer being accessed, by default, TerraGate automatically shuts down the connection after a predetermined amount of time. By setting this parameter, it is possible to have TerraGate always keep a minimum number of connections open. This can minimize the startup time for subsequent accesses to the same projects.

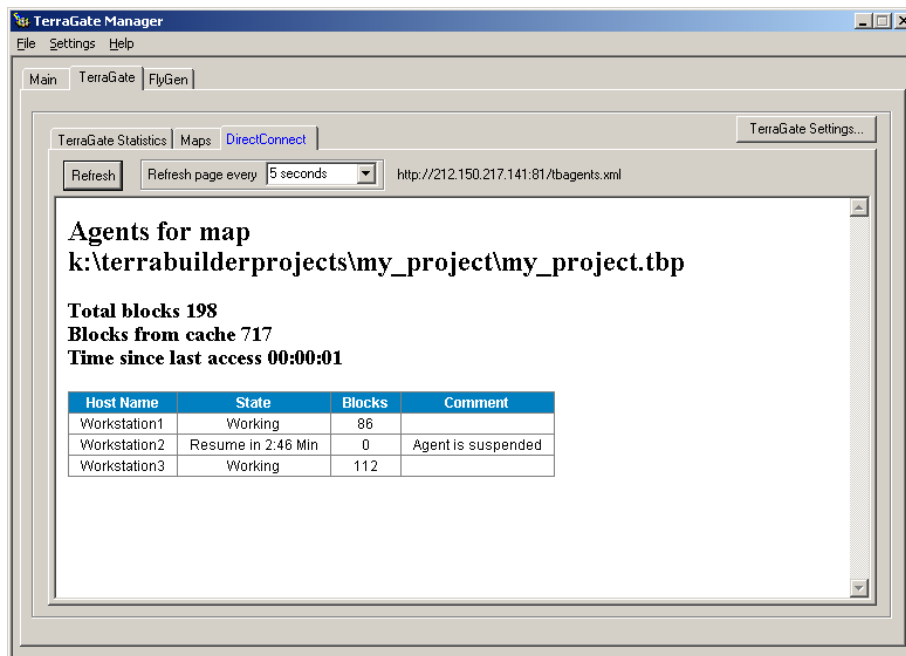
### **To View TerraBuilder Project Files Added to The Maps Directories**

You can see the TerraBuilder Project files that you added in the TerraGate Maps page. The page lists all the maps (MPT files) and projects (TBP Files) that exist under the Maps Directories and can be accessed by TerraGate.



### To View DirectConnect statistics

The DirectConnect Page shows statistics information for currently used TerraBuilder Projects and the TerraBuilder Agents associated with them.



### Flying Over The Terrain

Use TerraExplorer Pro to fly over a TerraBuilder Project file added to TerraGate.

Make sure the TerraGate service is running, and that at least one TerraBuilder Agent is available.

Open the TerraExplorer Pro.

## Working With TerraBuilder DirectConnect

On the File Menu choose Open.

Type: *<TBP name>@<TerraGate server>:< port>*

Where:

*<TBP name>* is a TerraBuilder Project file located in the Maps Directories.

*<TerraGate server>* is the IP or name of the machine running TerraGate.

You need to specify the port only if you are using a port other than 80 (default).

For example: My\_Project.tbp@tgate2.skylinesoft.com.

Press OK.

The 3D terrain should now load in the main window of the TerraExplorer Pro.

## Updating The Terrain

To Update the terrain

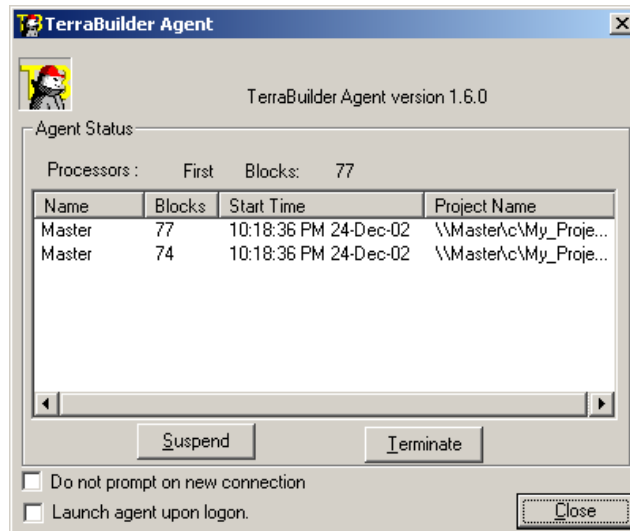
1. Edit & Save Your TerraBuilder Project.
2. Reopen the TerraBuilder Project from TerraExplorer Pro.

## SECTION 5: PERFORMANCE

The TerraBuilder DirectConnect allows you to instantly fly over 3D databases generated in real time. This section discusses the implications, settings and configurations that result in improved performance.

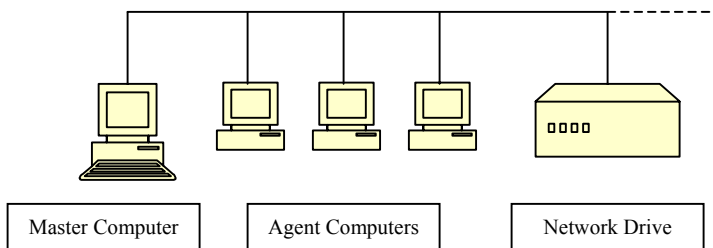
### Multi-CPU Computers

Using the DirectConnect and the TerraBuilder Agents allows users with multi-CPU computers (Dual, Quad etc.) to utilize the computer's resources more efficiently. For a computer with more than one CPU, the TerraBuilder Agent opens a separate thread per each CPU to maximize performance.



### I/O Issues

If multiple processes access the same source files on a shared local or network hard drive that is not fast enough, a bottleneck can occur. We recommend using a fast hard drive that is connected to each participant computer through the fastest possible network connection (see Figure 1). A Storage Area Network (SAN) may provide even better performance. The steps below may help increase performance, however, as computers and networks vary in processing power, speed, etc., we advise you to evaluate these suggestions before you implement them. If you are in doubt, consult your system administrator.



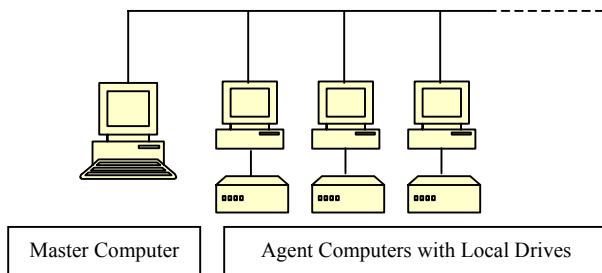


**Figure 1 – Master Computer with Agents and Network Drive**

**Make Multiple Copies of your Source Files**

One way to optimize I/O performance is to create multiple copies of the source files and place them on the local drives of each of the participating computers. This allows each computer sole access to the sources, reducing access time, and lowering the traffic on the network.

For example, if your source files are located on the mapped drive “M:\MySources”, map the “M” drive letter on each of the Agent computers to a local drive. Leave the Directories settings as is, thus each Agent reads the source files from its local drive.



**Figure 2 – Local Drives with Copy of Sources for each Agent**

**Skyline Software Systems, Inc.  
500 West Cummings Park, Suite 5950  
Woburn, MA 01801**

**Main Tel: 781.759.0520  
Main Fax: 781.759.0521  
Email: [info@skylinesoft.com](mailto:info@skylinesoft.com)  
Web: [www.skylinesoft.com](http://www.skylinesoft.com)**