

# Windows 2000 Server Terminal Services/Citrix Installation Tips

An ESRI® Technical Paper • July 2003

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## Windows 2000 Server Terminal Services/Citrix Installation Tips

The following technical paper contains installation tips that are applicable to the Microsoft® Windows® 2000 Server, Windows 2000 Advanced Server, Windows 2000 Datacenter Server, MetaFrame® 1.8, and Citrix® MetaFrame XP™.

- Ensure that the account used to install software on the Windows 2000 Terminal Services (WTS) is a member of the Administrator's group.
- When installing applications on a Terminal Server, always put the server in "install" mode. Doing so disables Windows "ini" mapping and enables the application for multiuser mode. Installing the application via the Add/Remove Programs Install button does this. Although the "change user /install" command is supposed to put the server in install mode, problems have been encountered following ArcGIS installations that were initiated after entry of a "change user/install" command. Therefore, it is recommended that Add/Remove Programs be used when installing geographic information system (GIS) applications.
- During the initial installation of ArcGIS®, temporary files are placed in the user's TEMP directory for use following the reboot of the system after the system files are updated. Installing through a session creates a temporary TEMP directory that is removed following logoff or reboot, which destroys the files. Therefore, the installation of ArcGIS should only be performed at the server console and not through a WTS or Citrix session. In fact, it is recommended that all software installations and system updates be performed outside of a session. This can still be accomplished remotely with the use of nonsession-based thin-clients, such as VNC.
- When Terminal Services are installed for Application Server mode, you can choose to set system permissions to be compatible for Windows 2000 users or Terminal Server 4.0 (TS4) users. Testing has shown that excessive registry access errors occur if the system permissions are set to Windows 2000 users and that a message appears at ArcGIS startup that indicates: "Failed to update System Registry. Please use REGEDIT". Therefore, it is recommended that the server be configured for Terminal Server 4.0 compatible system permissions. If security policies require the use of Windows 2000 permissions, a few registry modifications will be required to remove the error message for nonadministrative users. If running Windows 2000 permissions, add full control permissions for nonadministrative users to the following registry keys following an ArcGIS installation:

HKEY\_CLASSES\_ROOT\esriCore.MxDocument HKEY\_CLASSES\_ROOT\CLSID

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In addition, nonadministrative users cannot use the Add from File operation to add custom Dynamic Link Libraries (DLLs) to ArcGIS with the system set to Windows 2000 permissions. They can, however, drag and drop custom objects that have already been added to the ArcGIS tool list. If nonadministrative users require the capability to register custom DLLs with ArcGIS, full control permissions must be added to the entire HKEY\_CLASSES\_ROOT registry hive.

Note: The system permission setting can be changed following Terminal Service installation by clicking Start, pointing to Programs, pointing to Administrative Tools, clicking Terminal Services Configuration, and modifying "Permission Compatibility" under the Server Settings folder.

- When Terminal Services are enabled on a Windows 2000 Server, the %HOMEPATH% user variable is set to the path "Document and Settings\%USERNAME%". Since ArcInfo™ Workstation does not like spaces in directory names, several error messages appear upon starting ArcInfo Workstation. This can be remedied by modifying the user's Terminal Services Home Directory under the Terminal Server Profile tab via the Computer Management tool. Set the Terminal Services Home Directory using the DOS naming convention as follows: C:\Docume~1\%USERNAME%
- ArcGIS contains a desktop administrator application that is used to define the license manager server and the type of ArcGIS product the server will run. Access to this utility should be limited to system administrators because it affects all users. The utility is accessed from the desktop, which is not typically recommended for publishing Citrix/WTS applications to end users. Access to the utility is also dependent on which type of system permissions compatibility is in use. When using Windows 2000 permissions, all users can view the current settings, but only system administrators can modify the settings. With TS4 permissions, the settings can be modified by anyone that has access to the application. Currently, TS4 permissions are recommended to avoid several other permissions-related issues. Therefore, if the system administrator chooses to publish the desktop, and the system permissions compatibility are set to TS4, the permissions on DesktopAdmin.exe (located in the ArcGIS bin directory) should be modified to allow only system administrators the ability to execute the application.
- Many applications require an "Application Compatibility Script" to allow them to properly run on a WTS. The scripts make system adjustments to properly integrate the application with a multiuser environment. At this time, there are no requirements for application compatibility scripts for Windows 2000.
- Citrix MetaFrame allows the system administrator to remap the server system drive (C:) to a different drive letter during MetaFrame installation. The purpose is to help distinguish the server c: drive from the client c: drive when client drives are remapped within a thin-client session. If the server system drive is remapped, the ESRI License Manager will not run on the server. This is because the Flexlm® software expects to see a c: drive as part of its security measures. If you intend to run the License Manager on the Terminal Server, do not remap the C: drive.
- If Seagate® Crystal Decisions<sup>™</sup> is to be used with ArcView® 3.x, be sure to install Crystal Reports<sup>™</sup> during the ArcView 3.x installation process as opposed to a standalone postinstallation process. Performing a standalone, post-ArcView 3.x

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- installation of Crystal Reports will result in the number of available Crystal Report licenses to be limited to one.
- By default under MetaFrame 1.8, Citrix will share a server session connection when two or more seamless applications are launched. This causes the environment setting to be different for subsequent "seamlessly launched" applications, including changing the TMP and TEMP directories to C:\WINNT\Temp. This causes abnormal behavior with applications, such as ArcGIS, including the inability to write to the TMP and TEMP directories. To avoid this potential problem, Citrix session sharing should be disabled when running ArcGIS. The fix is to add a "SeamlessFlags" DWORD with a value of "1" to the following registry key.

## Registry Key:

 $HKeyLocalMachine \ SYSTEM \ Current Control Set \ Control \ Citrix \ Wfshell \ TWINewDWORD\ value: Seamless Flags$ 

Value: 1

- Certain Crystal Reports functionality may not function properly on terminal servers upon initial installation. For example, a user cannot connect to native data sources—that is, databases—to create a new query using the Data Explorer of the Report Designer or the SQL Designer. The Report Writer may not function as well. This results in an error, such as "The library "pdbxbse.dll" cannot be found. Continue to open for viewing only." The recommended fix is to copy all files from the Crystal Reports installation directory (%windir%\Crystal) to the terminal server system32 directory (%windir%\System32).
- Traditionally, only one type of ArcGIS application could be executed on a single Citrix/WTS server at any one time. A new environment variable is now available to allow individual users to launch ArcGIS with the license type of their choice.

## ESRI\_SOFTWARE\_CLASS=Viewer | Editor | Professional

The use of this variable overrides the currently configured license type configured in the Desktop Administrator. It is recommended that the Desktop Administrator be configured to support the highest license type used by your organization to ensure that the ArcToolbox™ menus are configured correctly. This is necessary because using the variable is not the same as configuring the Desktop Administrator. When the license type is configured via the Desktop Administrator, ArcToolbox DLLs are reregistered to reflect associated functionality, which is not the case when using the variable. This variable can be set either in the user's profile or in a batch file that first sets the variable, then launches ArcMap™. The batch file can then be published as an application. Note that when using the ESRI\_SOFTWARE\_CLASS variable to change the ArcGIS application type, the ArcMap title bar does not reflect the ArcGIS application type currently configured. Instead, the title bar stays the same as the installed product.

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