

# How to install and run a Cerity Client on Windows 2000 Terminal Services and on Citrix Metaframe XP

## Overview

Terminal Server Emulation (TSE) mode is supported by Cerity NDS for Pharmaceutical QA/QC with the introduction of the software revision A.01.03.

Cerity Review Clients, installed on terminal server hosts, can host remote terminals that have no Cerity software installed. These terminal server clients function through private session access to the Cerity review client.

This document describes the installation process and configuration of the Cerity Review Client on a Windows 2000 Server with Terminal Services and Citrix Metaframe XP.

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## 1. Installation Prerequisites

### 1.1 Hardware requirements

	<b>&lt; 10 concurrent clients</b>	<b>&lt; 25 concurrent clients</b>
<b>CPU</b>	2 x Pentium IV, 1.4 GHz	2 x Xeon, 1.4 GHz
<b>Computer Type</b>	Desktop Computer or Server	Server
<b>Memory</b>	768 MB	2 GB
<b>Disk</b>	18.2 GB Ultra3 SCSI; 10,000 rpm	18.2 GB Ultra3 SCSI; 10,000 rpm (second disk might be added for redundancy)

One or more Windows 2000 Servers with Terminal Services and Citrix Metaframe XP, can be configured to run the Cerity Review Client.

### 1.2 Software requirements

A complete Cerity cluster is already installed. A Cerity Database Server and Acquisition Controller(s) are already running without problems.

A Windows 2000 Server installed as member server of the same Domain as the Cerity Database Server and Acquisition Controller(s). For the installation a user with administrative rights on that Windows 2000 Server is needed.

The required Terminal Server Client Access licenses and a License Server (see [Chapter 3 - Terminal Services Client Licenses](#))

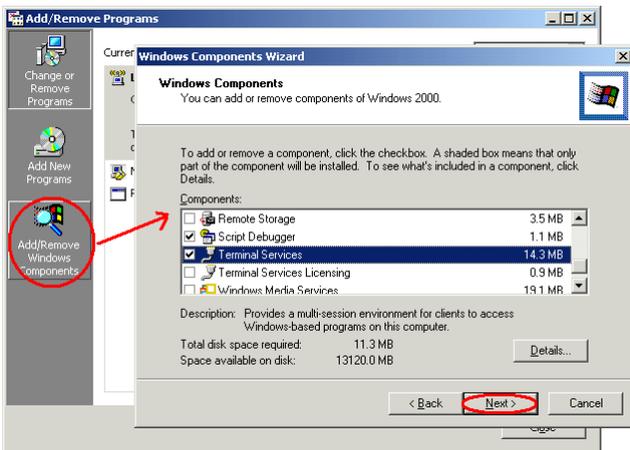
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### 2. Configuration of the Windows Terminal Services

This chapter describes the steps needed to install the Windows Terminal Services on a Windows 2000 Server or Advanced Server system and on the client computers.

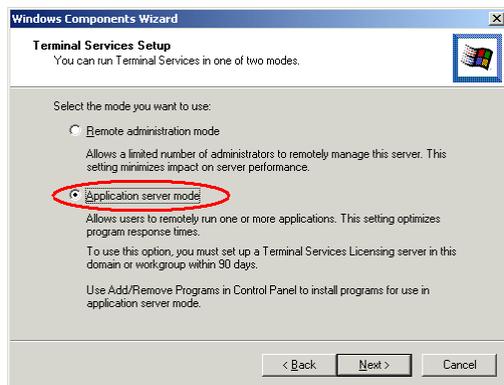
#### 2.1 Installing Terminal Services in application server mode



Open Add/Remove Programs in Control Panel.

Click **Add/Remove Windows Components** to open the Windows Components wizard.

In **Windows Components**, select the **Terminal Services** check box, and then click **Next**.

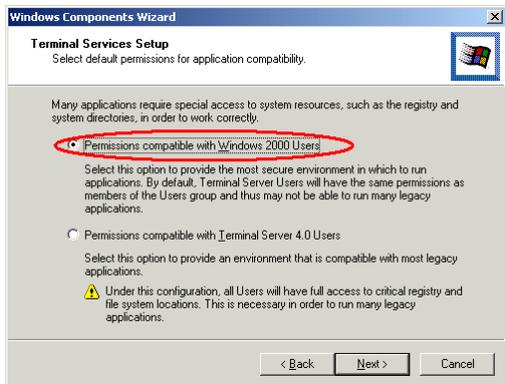


In **Terminal Services Setup**, click **Application server mode**.

In **Terminal Services Setup**, you may see programs listed that will not work properly when Terminal Services is enabled. You need to reinstall these programs for multi-user access using **Add/Remove Programs** after Terminal Services are enabled.

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In the next screen, specify whether you want permissions to be compatible with Windows 2000 Users or with Terminal Server 4.0 Users. Select **Permissions compatible with Windows 2000 Users** for the most secure environment in which to run applications



Click **Next**, and then click **Finish** and **Yes**.

After rebooting the system, a Terminal Server has been established.

To access the Terminal Server it is now necessary to install the Terminal Service Client on the desired client machines.

### 2.2 Installing Terminal Server Client

The Terminal Server Client installation can be found on the Terminal Server in the “%SystemRoot%\system32\clients” directory

**TIP** If you share the “%SystemRoot%\system32\clients” directory, you can directly access it from the client computers and you do not need to create installation floppy disks.

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### 3. Terminal Services Client Licenses

Each client requires one of these license tokens to gain access to the terminal server unless the server is configured to use the Terminal Services Internet Connector.

A **License Server** is required. A license server is a Windows 2000 Server or Advanced Server machine that has been configured with the Terminal Services Licensing service.

The **License Server** stores all Terminal Services license tokens that have been installed for a group of terminal servers and tracks the license tokens that have been issued.

**CAUTION** Without a License Server, connections to the Terminal Server will be denied after 90 days.

For more information on Terminal Server Licensing, please refer to Microsoft Windows 2000 Terminal Services Licensing Technology White Paper at the following URL:

<http://www.microsoft.com/windows2000/techinfo/howitworks/terminal/TSLicensing.asp>

### 4. Application Software installation

#### 4.1 Introduction

The system detects installation processes to make sure, that all installed applications on the terminal server are installed multi-user and multi-session enabled.

Installing a software without being in the right terminal server mode can lead to the following dialog box on the terminal server screen:



Use either of the following methods to install programs for multi-session application server access:

Use **Add/Remove Programs** in Control Panel.

Use the **change user** command at the command prompt before and after installing the program.

Before the program is installed, **change user /install** places the system in install mode. After the program is installed, **change user /execute** returns the system to execute mode.

**NOTE** Do not copy program files from one directory to another or manually edit the registry during installation. Install programs on the Terminal server local drive rather than on a file server. This improves program performance.

Install programs on NTFS file system formatted drives rather than on FAT formatted drives. You can only set file permissions on NTFS drives.

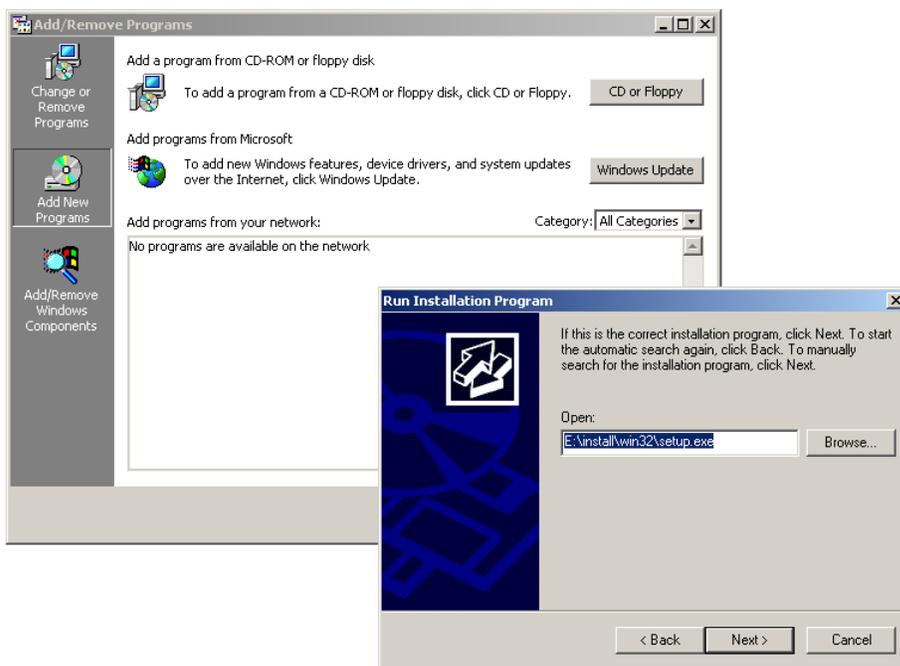
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### 4.2 Oracle Client Setup

Before the Cerity Review Client can be installed, the necessary Oracle software needs to be installed. Make sure to run the setup(s) from within the control panel as described above. The Oracle installation needs to be patched to Oracle 8i Version 8.1.7.2.1.

For more details on the Oracle Client installation, please see the Cerity Installation Guide. (*Chapter 4: Install Cerity Review Client, Acquisition Controller and Reprocessing Server*)



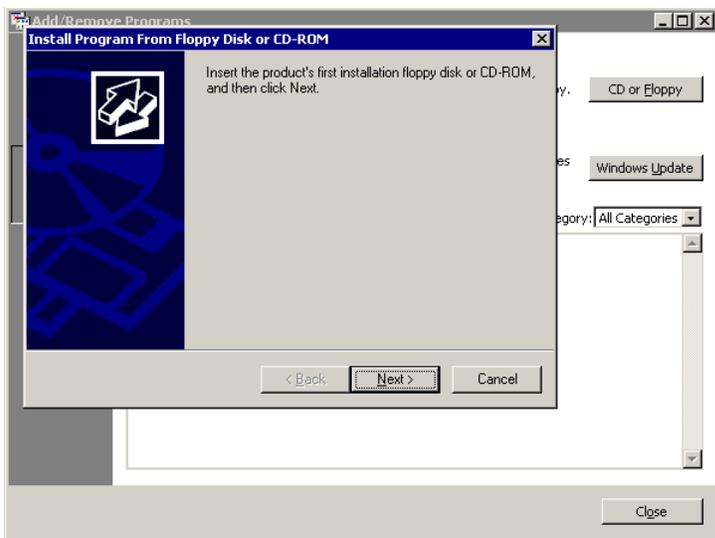
The installation path for the oracle product may differ depending on the drive letter of your CD-ROM drive.

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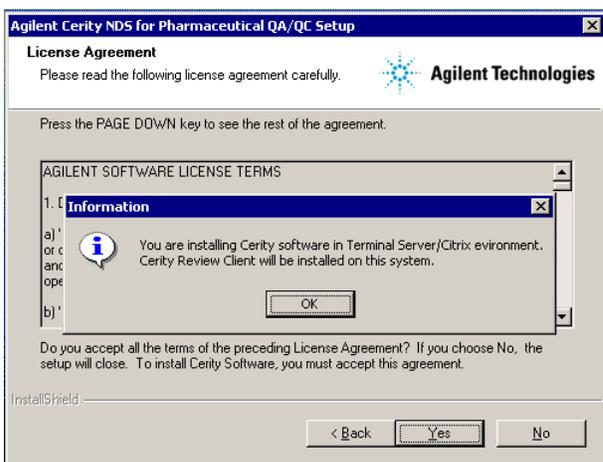
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**4.3 Cerity Client Setup**

To start the Cerity Setup, use **Add/Remove Programs** in Control Panel, select **CD of Floppy**, insert the Cerity Software CD-Rom and press **Next**. Follow the instructions as described in the Cerity Installation Guide (*Chapter 4: Install Cerity Review Client, Acquisition Controller and Reprocessing Server*).



**NOTE** The Cerity installation will determine by itself that it is run on a Terminal Server and switch into the correct installation modes, even if the installation reboots during the setup process.



The installation will pop up a message box telling the installer that only the Cerity Review Client can be installed on a Terminal Server. After that message box the installation runs exactly as it would do on a thick client machine.

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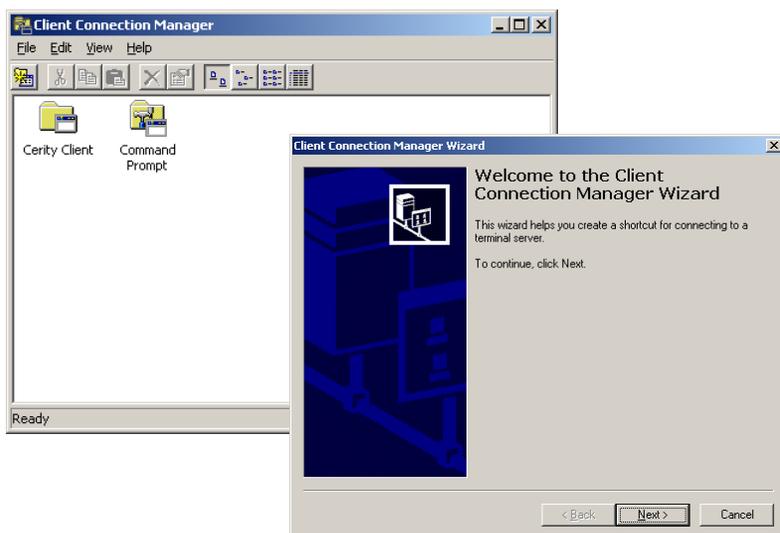
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**5. Deploying Cerity Review Client**

Generally there are two ways to deploy a software application that has been installed upon a Terminal Server:

Use the Terminal Server Client to allow the users to access virtual desktops on that Server and run the application via "normal" mechanisms (using the Start-Menu). This is trivial. Simply install the Terminal Server Client Software on the client machines and show the user how to start a terminal server session using the "Terminal Services Client".

Deploy a Terminal Server'ed application by using the Terminal Server Client Connection Manager. In this case you also have to install the Terminal Server Client Software on the client machines. In addition to that a configuration file can be created once and then be deployed on all client machines that allows access only to one application of the Terminal Server. To accomplish this, start the **Client Connection Manager** and follow the wizard to create a new custom connection.



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**Client Connection Manager Wizard**

**Create a Connection**  
The name you provide for your client connection identifies the shortcut you are creating.

Type a short, descriptive name for the connection.  
Connection name:

Enter the name or IP address of the terminal server.  
Server name or IP address:

Choose a meaningful name for the Terminal Server Connection and add the name of your Terminal Server.



**Client Connection Manager Wizard**

**Automatic Logon**  
You can have your user name and password supplied automatically.

To automatically log on when using this connection, select the following check box, and then type your user name and domain in the appropriate boxes.

You do not have to provide your password here; however, if you do not, you will be prompted for your password each time you log on.

Log on automatically with this information:

User name:

Password:

Domain:

**CAUTION** If you enter a user name and password, they will be the default credentials for any user who will use the deployed connection afterwards.



**Client Connection Manager Wizard**

**Screen Options**  
You can choose the screen area and type of window to be used for the client.

Select a screen area setting for the client window:

640 x 480     800 x 600     1024 x 768  
 1280 x 1024     1600 x 1200

By default, the connection is displayed in a window. If you want the connection to be displayed on a full screen, select the following check box:

Full screen

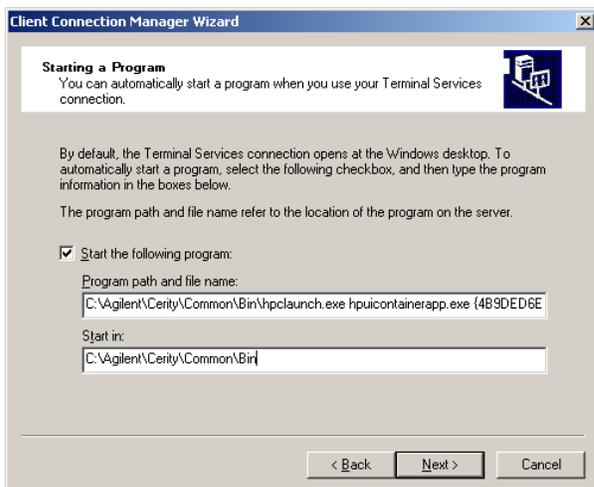
Minimum requirement is 1024x768 pixels (more is better) or Full screen.

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To improve performances, select **Enable data compression** and **Cache bitmaps**



To automatically start the Cerity Review Client application when a Terminal Server Session is opened, specify the location of the Cerity client on the Terminal Server.

**TIP** You can easily find the right entries on the Terminal Server by going to **Start→Programs→Agilent Cerity** and then right-click on **Cerity for Pharmaceutical QA/QC**



You can change the icon and choose a program group where the new Terminal Server Connection will be located.

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**Finish** the Wizard.

You will find a new icon in the specified location and additionally inside the Terminal Server Connection Manager. It is now possible to export this new connection into a file using the Connection Manager and to deploy that connection to all machines that run the Terminal Services Client by importing them into the connection manager of the destination machines.

**TIP** To deploy other parts of the Cerity Review Client that way, make sure, that the program in the “Starting a program” page is an executable. If that is not the case, than you have to specify the executable that runs that program. For example, if you want to deploy the Cerity MMC Snap-In, the complete program path and file name is “`mmc <install-drive>:\<install-dir>\Common\Configuration\configuration.msc`” where install-drive is your installation drive (e.g. C) and <install-dir> is your Cerity installation directory.

**CAUTION** When running Cerity Review Client on the Terminal Server under the RDP protocol the number of colors is restricted to 256. This limitation does not comply with the minimum requirements of Cerity as described in the installation manual. The Review Client will run normally with the windows default color settings. Changing any color within Cerity can lead to unreadable user dialogs. So color changes should be done very carefully. To avoid color problems, Citrix Metaframe’s protocol ICA could be used upon a Windows Terminal Server.

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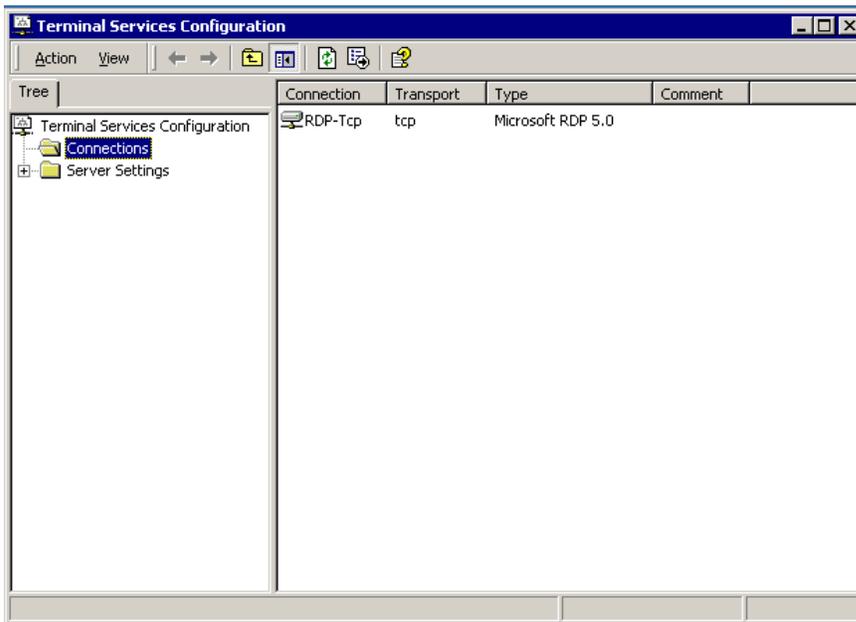
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**6. Terminal Server Tuning Tips**

There are several settings that can lead to a more stable system behavior because they restrict the access and set rules for the default session behavior.

**6.1 RDP-Protocol tuning**

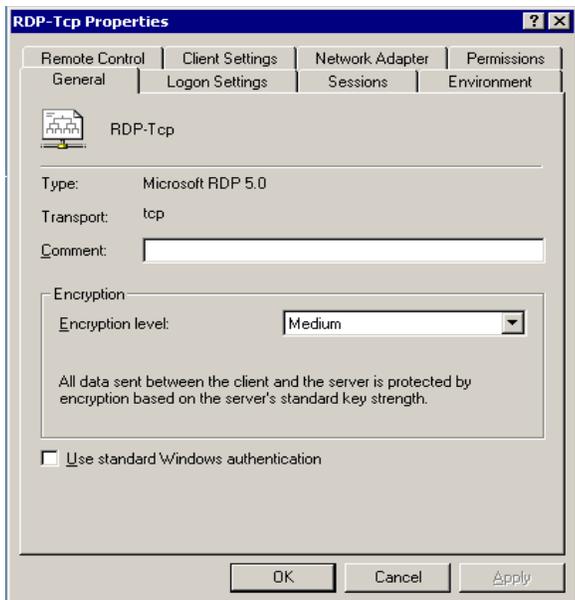
These rules are related to Terminal Server’s RDP protocol and can be found in the **Start→Programs→Administrative Tools→ Terminal Services Configuration**



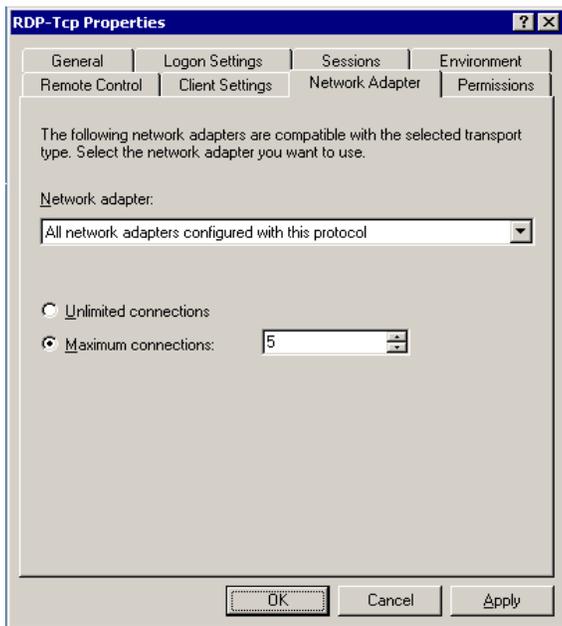
Right click the RDP-Tcp entry on the right side and choose **Properties**.

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From the Properties Dialog, the Tabs for **Sessions** and **Network Adapters** are of special interest.

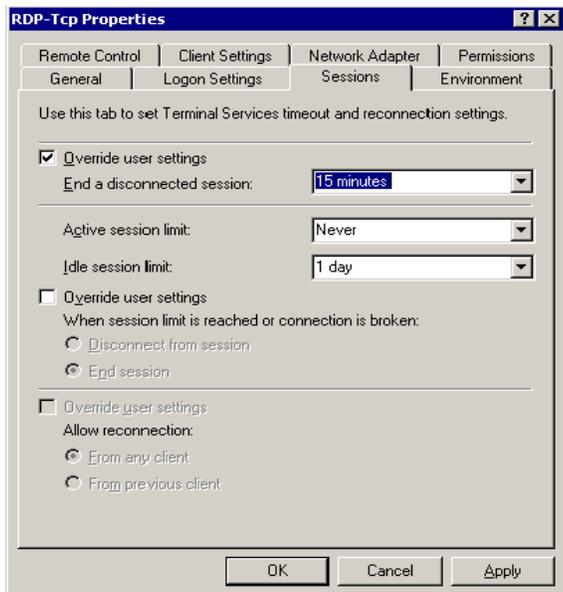


The number of connections can significantly impact the performances of the server. You can limit the number of concurrent connections in the **Network Adapter** Tab.

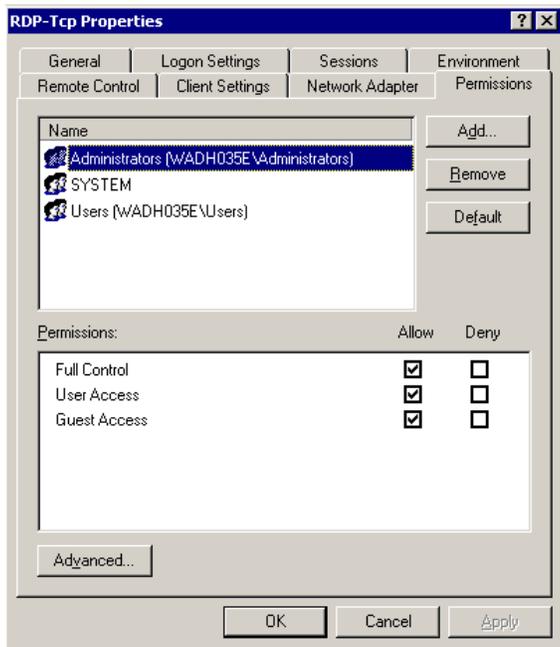
The number of concurrent users depends on the amount of installed memory on the Terminal Server.

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The **Sessions** Tab is very important to ensure, that hanging sessions are periodically removed and do not block the Terminal Server for too long. Reasonable values must be chosen. If the “**End a disconnected session**” value is set too high, that hanging sessions will block other users, if it is set too low, a reasonable user roaming is not possible any longer.



**Permissions** can be set up using the corresponding Tab in “RDP-Tcp Properties”.

On a Terminal Server that is not a Domain Controller users that are part of the local “Users” group are allowed to log on to the Terminal Server.

Normally the “Domain-Users” group of the Domain to which the Terminal Server belongs is part of the local “Users” group. This means, that there are lots of potential Terminal Server users.

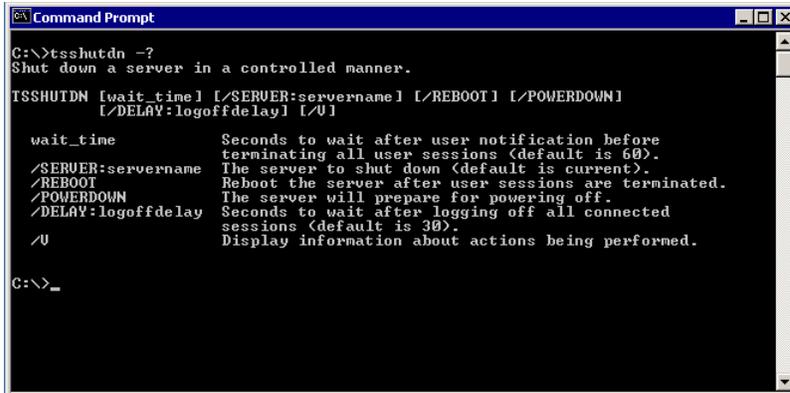
To avoid confusion, remove the local “Users” group from the allowed list and add an own local group (e.g. Cerity-Users). This local group should then only hold users that are allowed to access the Terminal Server.

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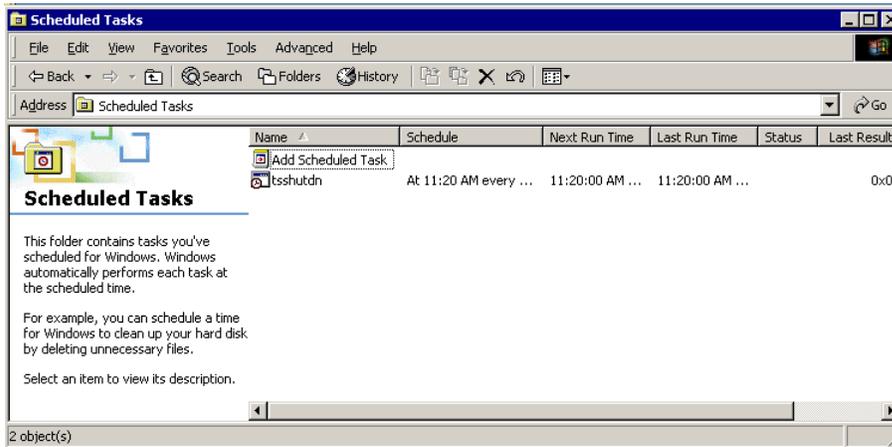
### 6.2 How often needs the Terminal Server to be rebooted?

To ensure stability of the Terminal Services server, it is recommended to periodically reboot the server. A reasonable time period must be defined. To add as much stability to the system the time period should be as small as possible. The Terminal Server brings his own command line tool named **TSSHUTDN.EXE**.



All connected sessions are notified that they are going to be shut down. Sessions that have applications with open files prompt the user to save the files. After initiating the logoff command, **tsshutdn** waits a specified interval (the default is 30 seconds, which is set by **/delay**), before ending all processes. **Tsshutdn** does not reboot the terminal server unless the **/reboot** option is specified. users are notified that their sessions will end and the server is shut down in a controlled manner

To schedule a task like the TSSHUTDN the Windows 2000 Task Scheduler can be used. This can be found under **Start→Settings→Control Panel** and then **“Scheduled Tasks”**. The following picture shows a daily shutdown of the Terminal Server



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## 7. Citrix Metaframe

### 7.1 Installation of Citrix Metaframe XP

Citrix Metaframe XP can be installed at any point in time after the Terminal Services were activated on the Windows 2000 Server. Unlike the Terminal Server installation, the Citrix Metaframe software does not change the install behavior of the Server.

Citrix Metaframe brings its own protocol named ICA. Any client that wants to access Applications published by a Citrix Metaframe system needs to run the appropriate Citrix ICA client.

The installation of Citrix Metaframe XP, Citrix Metaframe Licenses and Citrix ICA clients are not discussed in this not. Please refer to the Citrix Metaframe XP documentation.

### 7.2 Application Installation

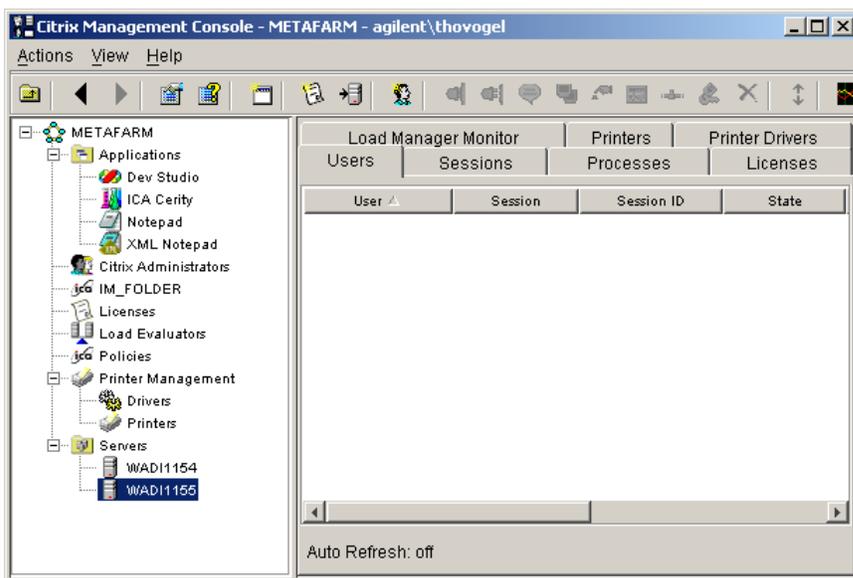
An application can be installed on a Citrix Metaframe XP Server in different ways. The easiest way is to install an application, as you would do in a pure Terminal Server environment. Another way is to use the install packager, this is useful if you want to deploy the complete software on multiple Citrix Metaframe XP Servers that reside in a Metaframe Farm.

### 7.3 Publishing Cerity Review Client

Application publishing on Citrix Metaframe extends the features of the Terminal Services.

With Citrix it is possible to fulfill the software requirements of Cerity Review Client in terms of color depth

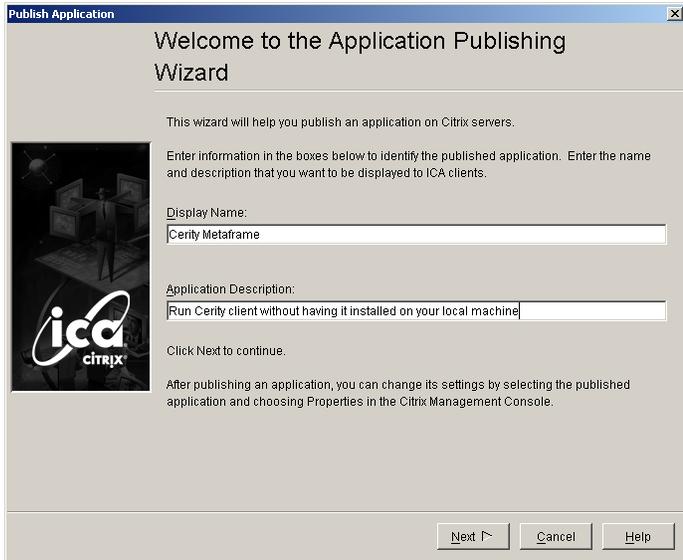
Applications are published on Citrix Metaframe using the **Citrix Management Console**.



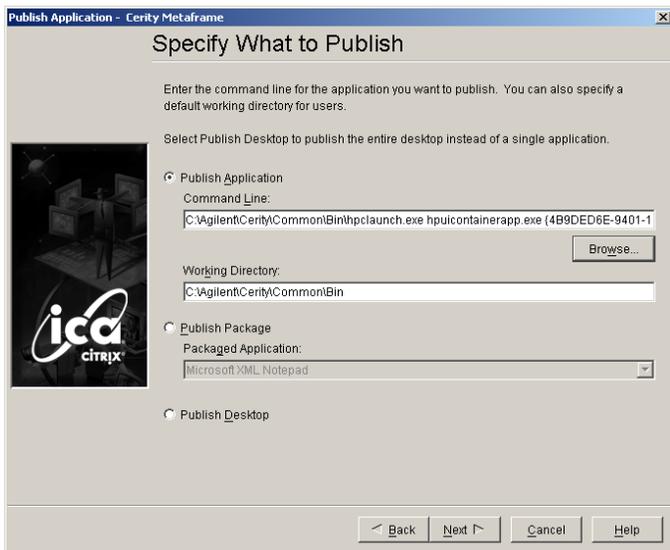
Right click on the **Applications** icon and select **Publish Application**.

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In the first page of the wizard, you can enter the Display Name and text to describe the application.



For more information about how to find the correct settings for publishing the Cerity Client see Terminal Server documentation above.

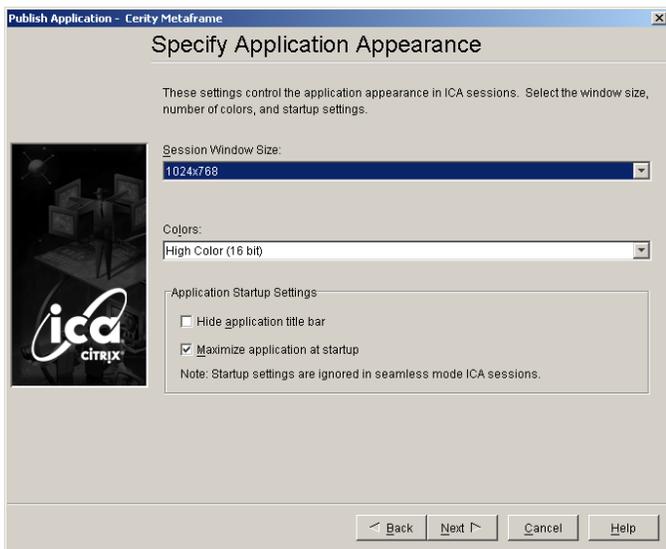
You can publish the complete desktop, Cerity will be started via Start→Programs.

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**Citrix Neighborhood** can show the published application in different ways. It supports adding the published Application to the Start Menu of the Client. (not published desktop) and to add a shortcut on the clients desktop.



If you hide the application title bar, you can run the published application "seamless" which means, that a user will have the same look and feel as if the application is run locally.

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The Audio can be switched Off.

Encryption level must be set according to the IT requirements.



If you have more than one Citrix Server you can specify the servers publishing the application.

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Enter the users that will get the application published. Other users will not see the published application.

**8. Metaframe XP tuning tips**

The Citrix Metaframe Client offers per default a number of “features” that make the system behave very different from a Terminal Server client. For instance, the ability to map the local drives of the client machine into the Metaframe Client’s directory tree and to the same with locally installed printers. This has for effect that running a Metaframe Client on different machines with different locally installed printers offers another set of printers to the published applications it hosts. Installing printers has therefore to be done very carefully. And this is also true for drive mappings

**9. Terminal Server Client Qualification**

Agilent Technologies recommends that an interactive connection test be performed to verify the terminal/server relationship. Further qualification is at the customer’s discretion. The Qualification Protocol can be found in the Cerity Compliance CD ROM or in the Cerity Software CD under <CD Drive>\Support\Compliance\TerminalServerClientQualification.pdf

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### 10. Additional information

#### 10.1 Refreshing the Program Neighborhood

After an application has been published, the ICA client will not immediately work with this application. Instead, the user has to use the “Refresh”-button of the **Citrix Program Neighborhood** to gain access to the newly published application.

#### 10.2 Selecting a feature release level

A feature release level can be set inside Citrix Metaframe XP/e at any time. Feature releases enable new functionalities in the software. If you encounter problems with the highest feature release level, then try to switch to a lower feature release level.

When testing Cerity on Citrix Metaframe, some instability was encountered using “feature release 2”. After switching to “feature release 1” the problems disappeared.

#### 10.3 Using Trace

Setting up a trace key activates tracing for all Cerity components on the Terminal Server. This can lead to a very bad system performance! If you have to trace then make sure you are the only user on that Terminal Server. You can find out if you are by using the “**Terminal Server Manager**” that is part of the “**Administrative Tools**” on that Server.

#### 10.4 Being a Local Administrator on the Terminal Server

A user with local Administrator privileges can Add or Remove a Database in the Cerity Software Administration tool (MMC).

In a Terminal Server environment, running the MMC from the Terminal Server and removing the Database will prevent any Terminal Server session to connect to the database.

The connection parameters to the Database server are stored in the Review Client register.

In a Terminal Server (TS) environment, all TS sessions will use the same settings.

Removing the Database from the MMC, will clear the register entries and all new connection will not be able to connect to the database.

To solve the problem, simply add the Database in the MMC and restart the Terminal Server client session.

#### 10.5 Viewing Reports on a “Thin Client”

When you connect to the report share on database-server from a computer where cerity is not installed. Open a Single Injection Sample folder and double click on the file default.htm, Internet Explorer starts and displays the results of that run but the chromatogram is only displayed as an empty frame.

The chromatogram picture is stored as a WMF file. An ActiveX Control is required to show the WMF files in the HTML report and this ActiveX control is present on systems where Cerity is installed (i.e. DB-Server, Acq-Controller, Review Client and Terminal-Server) but not on system where Cerity has not been installed (e.g. TSE-clients).

To display the chromatogram, only use computers where Cerity is installed.

In a Terminal Server environment, make sure you are reviewing reports within the Terminal Server Session. Or create an application which starts IE on Terminal Server and give the user the right to start this application.

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