B L U E L I N K
A S S O C I A T E S   L I M I T E D

Blue Link Solutions Terminal Server Configuration
How to Install Blue Link Solutions in a Terminal Server Environment

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April 9, 2002

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Background

This document describes the quickest method possible for configuring Blue Link Solutions to run in a terminal server environment. In addition, this document provides detailed technical notes, including configuration tips that will allow you take advantages of all the features this environment has to offer.

For the purpose of this document, it is assumed that you have a Windows 2000 Terminal Server; however the many of the concepts can be applied to other environments such as Citrix, or to older versions of Terminal Server.

Application Server mode vs. Remote Administration Mode

As of Windows 2000 Server, Microsoft has included terminal services as a standard feature. By default, if you install terminal services, they will be installed in "Remote Administration" mode. In this mode, a maximum of two (2) terminal server sessions can exist.

To configure the Terminal Server to support more than two (2) users, you must change the "mode" of your server from "Remote Administration" to "Application Server". To do this, or to install terminal services if not already installed follow these configuration steps:

To remove "Remote Administration" terminal services

- ♦ Click Start → Control Panel → Add/Remove Programs
- ♦ Click the "Add/Remove Windows Components" button to display the following screen:
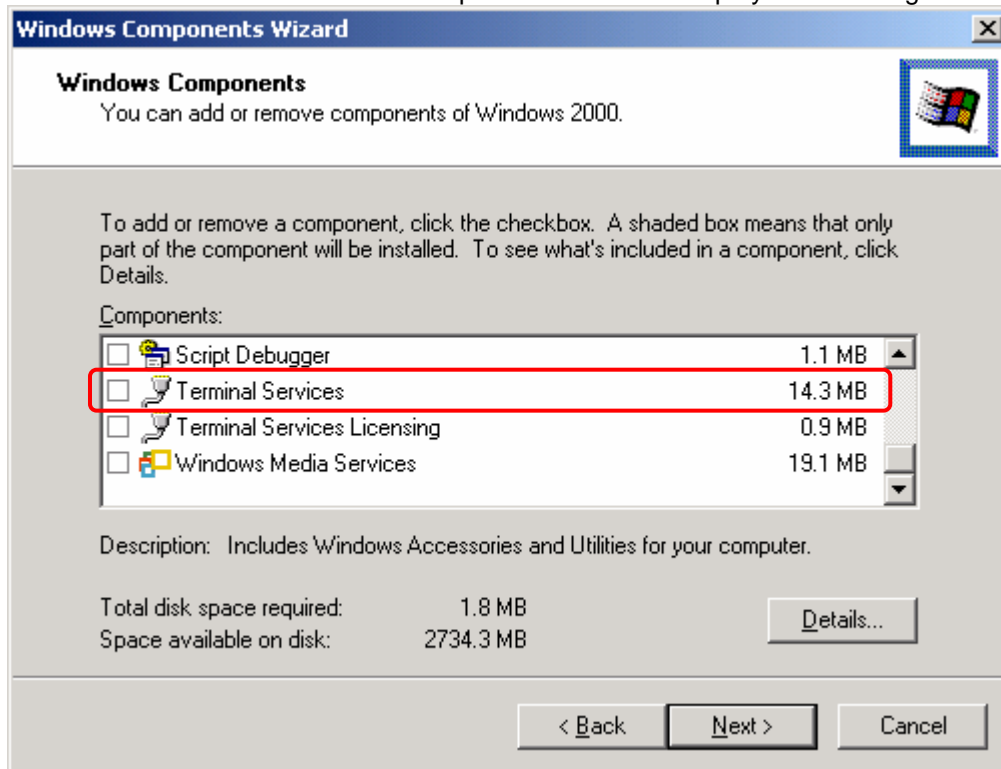
- o Clear the checkbox beside "Terminal Services"
- o If the checkbox beside "Terminal Services" is already clear, then Terminal Services are not already installed, proceed to the "Installing Terminal Services in Application Server Mode" step below

Installing Terminal Services in Application Server Mode

- ♦ Click Start → Control Panel → Add/Remove Programs
- ♦ Click the "Add/Remove Windows Components" button to display the following screen:

- o Check the checkboxes beside "Terminal Services" and "Terminal Services Licensing"
- o Click Next
- o Select "Application Server Mode"

Activating the Terminal Server

Once completed, Terminal Services and the licensing manager will be installed. The next step is to activate your terminal server with Microsoft. The activation process is FREE and simply allows the license server to start allocating client access licenses.
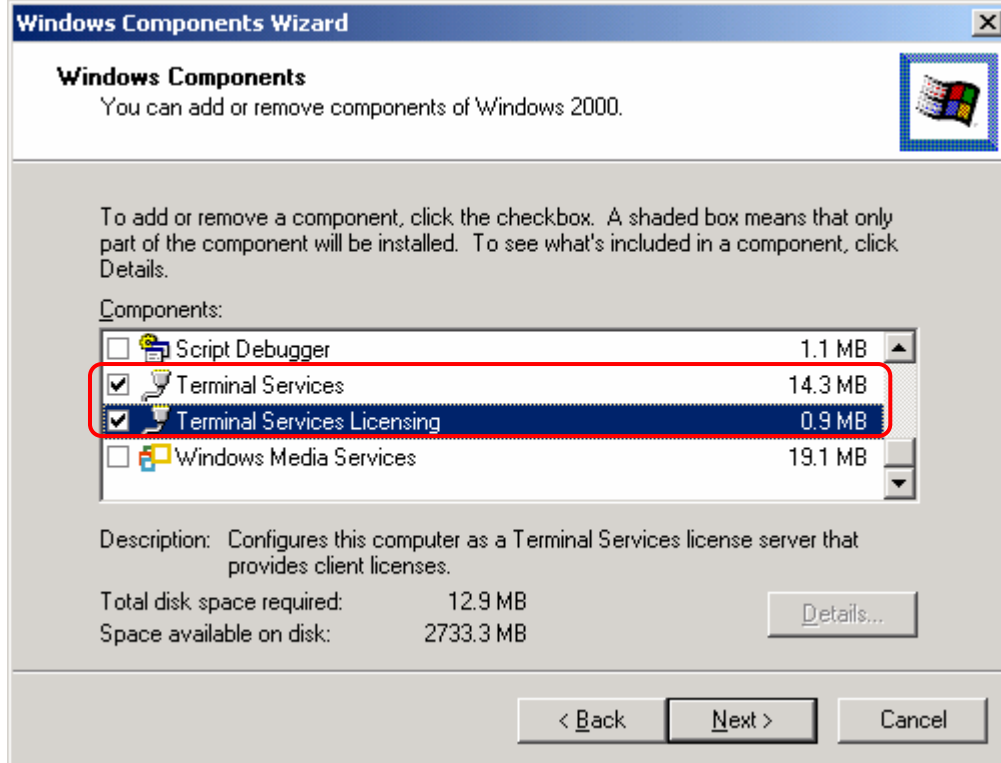
To activate the server, start the Terminal Server Licensing application: Start → Programs → Administrative Tools (or Start→ Settings → Control Panel → Administrative Tools) → Terminal Services Licensing)

If the activation wizard does not appear immediately, select "Activate Server" from the "Action" menu.

Follow the steps in the wizard to activate the server. (Our experience is that the "Internet" activation is the quickest if you have access to the Internet and an e-mail account).

Client Licenses

Once the license server is active, you have to decide whether or not client licenses have to be purchased.

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You do NOT need to purchase a Terminal Server client access license for a particular computer if:
- ♦ The computer that will connect is running one of the following Microsoft Operating Systems:
  - o Windows 2000 Professional or Server
  - o Windows XP Professional
  - o Is a .NET Server

You DO have to purchase a Terminal Server client access license for a particular computer if:
- ♦ The computer that will connect is running one of the following Microsoft Operating Systems:
  - o Windows 95
  - o Windows 98
  - o Windows ME
- ♦ **Warning Win9x Licenses are permanently assigned to the MACHINE:**
  - o If you have purchased Terminal Server Client Access Licenses for your Win9x machines, BE CAREFUL about the order in which you connect your clients to your terminal server.
  - o When Win 9x clients connect to a terminal server (where the server has had SP 2 installed) a license is temporarily assigned to the MACHINE (based on a unique identifier for that particular machine). If that same machine re-connects within a certain timeframe, the machine is **permanently** assigned that license. **The license will be unavailable for any other Win 9x machine attempting to connect.**
    - ▪ You should be careful because you may inadvertently connect non-essential computers to the terminal server (such as employee's home computers before connecting all office PCs).
    - ▪ To avoid this problem, we recommend establishing at least two terminal server sessions with the server from all Win9x clients to secure the permanent licenses for those computers.

Add up the total number of computers for which licenses will have to be purchased then proceed to the next step.

Installing Client Licenses

The last step of the server activation wizard asked if you wanted to install client access licenses now. If this screen is still active, click YES, otherwise, in the Terminal Server Licensing manager, expand the "All Servers" tree, right-click your server name and choose "Install Licenses".

Follow the steps in the wizard to install the new licenses. (Note: licenses can be purchased directly from Microsoft, or through your computer reseller. If you have a Multiple Open License Program (MOLP) contract, you may be able to purchase your terminal server licenses at a discount. For information on obtaining a MOLP contract, contact your local computer software supplier and ask about MOLP.)

Installing the RDP Client to Client workstations

To connect to your terminal server, the guest computers will require the Terminal Services Client, also known as "Remote Desktop Connection".

Client computers running Windows XP Professional already have the client installed in the following location: Start → Programs → Accessories → Communications → Remote Desktop Connection.

Windows XP RDP Client (Available for more than just Windows XP)

The version of the RDP Client that ships with Windows XP is the most recent version at this writing and can be installed to other operating systems as well (such as Windows 9x). To install the most recent client, copy \SUPPORT\TOOLS\MSRDPCLI.EXE from a Windows XP installation CD to the server and run this file on all client workstations that are to connect to the Terminal Server. (Note: on some client workstations it may be necessary to re-boot the computer and re-run the MSRDPCLI.EXE setup program more than once while supporting files are updated.)

If you don't have a Windows XP CD, you can also download the Microsoft RDP Client directly from Microsoft at the following URL: http://www.microsoft.com/windowsxp/pro/downloads/rdclientdl.asp

The remainder of these instructions will assume that you have the newer "Remote Desktop Connection" client.

Old Terminal Server Client

If you don't have access to Windows XP media, you can still connect to the Terminal Server using the older Terminal Services Client. Run the "Terminal Services Client Creator" located in the Administrative Tools group for instructions on building Terminal Services Client installation diskettes.

Configuring Domain Controllers Such as Small Business Server

If your Terminal Server is also a domain controller, special security policy changes must be implemented before your users will be able to connect.

♦ By default, all domain controllers prevent users who are not administrators from connecting.
♦ To allow clients to connect to a Domain Controller, two configuration options must be changed on your server:
♦ **Note:** Blue Link does not recommend using a Small Business Server (SBS) as a Terminal Server.   Due to the demands placed on the server by other applications such as Microsoft Exchange Server our test have shown that even very powerful hardware configurations (dual processor, gigabytes of memory) when running Small Business Server may perform poorly in comparison to the same configuration on a stand-alone server without SBS installed.
   o **There are other technical issues to consider with SBS as described in Microsoft KB article # Q282009. (http://support.microsoft.com/default.aspx?scid=kb;en-us;Q282009)**

A) Domain Controller Security Policy

♦ Start → Settings → Control Panel → Administrative Tools → Domain Controller Security Policy
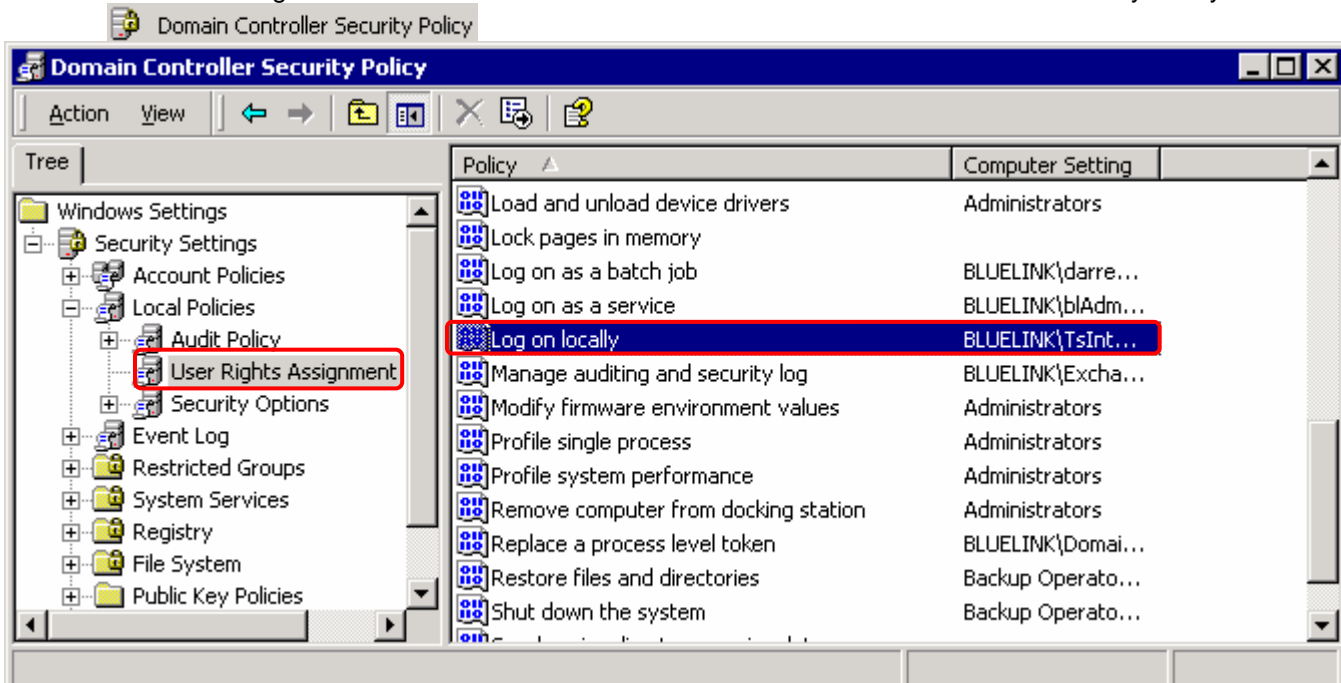
   o Once open, navigate to \Windows Settings\Security Settings\Local Policies\User Rights Assignment
   o Add all users who will log on to this terminal server to the "Log on Locally" User Rights Assignment.
      ▪ **Important Note:** To avoid future administration headaches, we recommend adding a security "Group" instead of adding individual users. For more information on security groups, consult your Windows 2000 documentation. (To allow all valid users to connect, select the "USERS" security group).
   o **Note:** The domain controller security policy overrides any policy settings present in Active Directory.

      o   **Note:** It could take up to 15 minutes for this policy change to take effect.

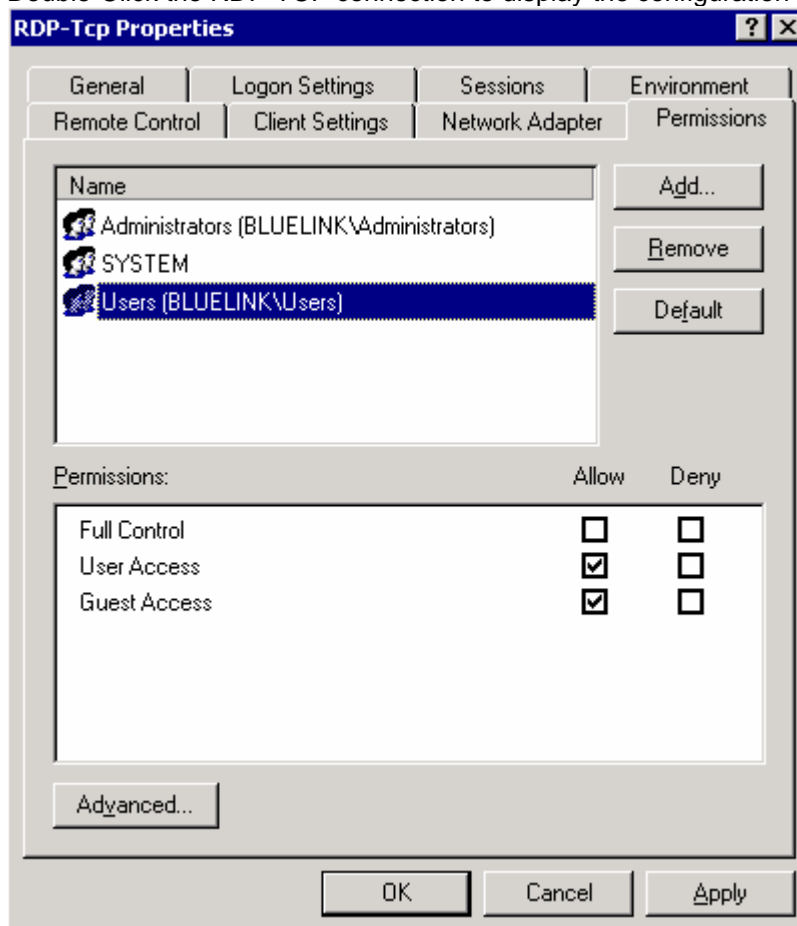## B) Terminal Services Configuration – RDP-TCP Protocol

The second place where users must be granted permission to connect to the terminal server is in the Terminal Services Configuration screen:

- Start → Settings → Control Panel → Administrative Tools → Terminal Services Configuration
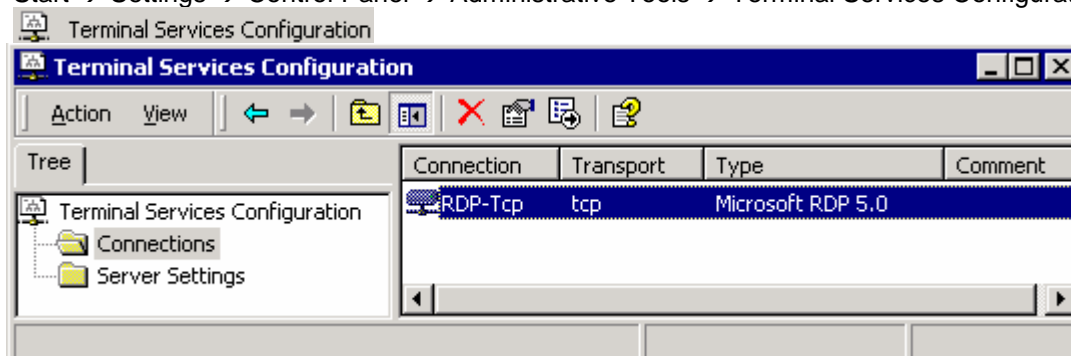
      o   Double-Click the RDP-TCP connection to display the configuration screen:

      ▪   Click the Permissions tab.

- Click Add…and then add the security group containing the users you would like to allow to connect to this terminal server. (To allow all valid users to connect, select the "USERS" security group).
- Click OK or Apply to apply the change.

C) User Remote Access Policies

Individual User Accounts must be configured to allow remote access permissions:

♦ In Active Directory Users and Computers, grant the user the ability to log onto the Terminal Server:
   o Start → Settings → Control Panel → Administrative Tools → Active Directory Users and Computers
   o Double-click the user in question to display the properties for that user:

- Be sure to enable the "Allow logon to terminal server" box for any users that should have permission to connect.

Connecting to the Terminal Server

Internally over your LAN

Open the Remote Desktop Connection client (Start → Programs → Accessories → Communications), and type the server name or IP address in the computer box:
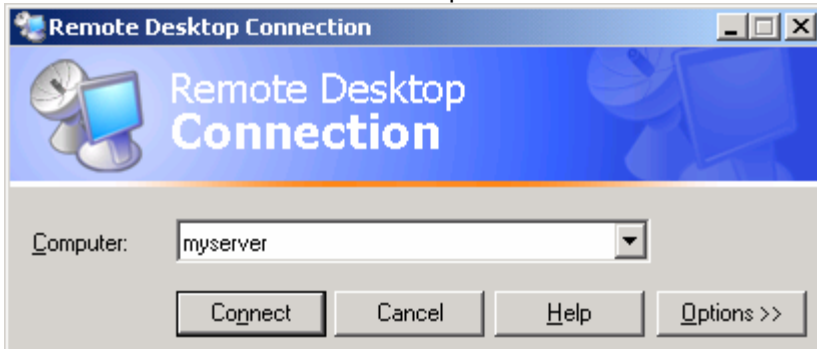
OR
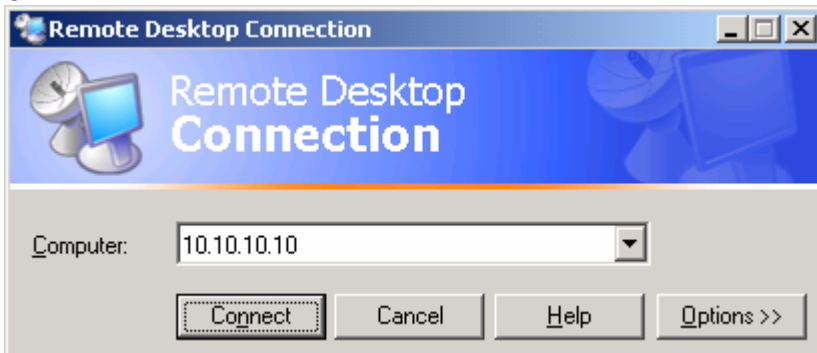
The IP address is the INTERNAL IP address of the server, not the external IP which may be different.

Click Connect to establish the connection.

Externally, over the Internet

To connect to your server over the Internet using terminal services the following must be true:
- ♦ The Terminal Server must either:
  - o Have a live, Internet class IP address assigned to one of the network adapters in the server.
    Or
  - o If the server is behind a firewall, the firewall must be configured to allow in/out traffic on **TCP/IP Port 3389.**
- ♦ The client computer (your computer) must not be behind a firewall that blocks port 3389! (If you are running Microsoft Proxy Server or Internet Acceleration Server, you may have to install the Firewall client to enable access to this port).

♦ To connect, open the Remote Desktop Connection application, and enter the external DNS name of your server, or the IP address as provided by your administrator. For example:
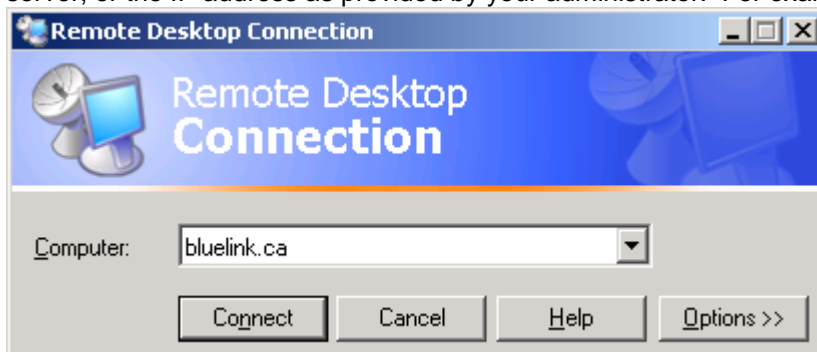
OR
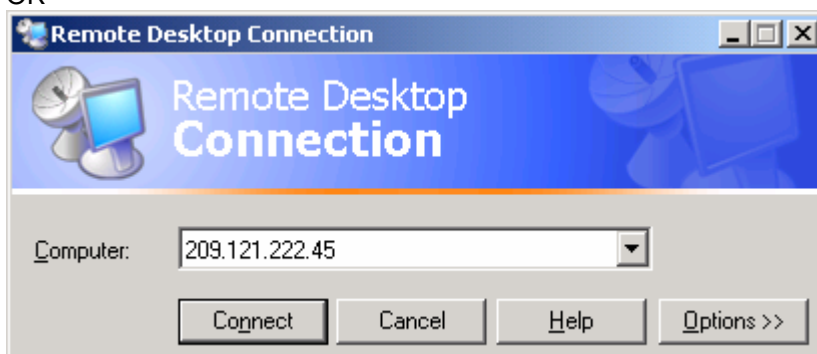
(Your IP address will be different than the one shown above).

Note: for the DNS name to work, DNS must be configured such that at least one "A" record points to the Terminal Server IP address or to the router (or firewall) external IP address if the router/firewall is responsible for mapping the Terminal Server port to the terminal server located behind the firewall.

Installing Blue Link Solutions to the Terminal Server

In a terminal server environment, all applications must be installed using the Add/Remove Programs option in control panel. To install Blue Link Solutions follow these steps:

Step 1: Install Solutions

- ♦ Log in as a server Administrator
- ♦ Click Start → Settings → Control Panel → Add/Remove Programs → Add New Programs → CD or Floppy
  - o Browse to the setup.exe file located on your CD Rom drive, and perform a complete installation.

Step 2: Configure the location of the data files

- ♦ For optimal performance, it is HIGHLY recommended that the application file and Data File be on the terminal server.
- ♦ Create a "Solutions" folder off the root of the data drive on the terminal server, and **move** the Demo Data file from "C:\Program Files\Solutions Accounting\" folder to the \Solutions folder you just created.

Step 3: Configure the location of the "Master" application file

- ♦ Under the \Solutions folder you created earlier, create a "Master" folder (i.e. d:\Solutions\Master).
- ♦ **Move** the Blue Link Solutions application file from the from "C:\Program Files\Solutions Accounting\" folder to the \Solutions folder you just created. (Depending on the version of Solutions you purchased, the application file could be called "elite.mde" or "professional.mde".

Step 4: Create a "Distribute to Termserv.bat" file

Blue Link Solutions requires that every user run with a different application file. In addition, to ensure optimal performance, the application file should be updated on a daily basis with a "fresh" copy of the master. To streamline this process create a "Distribute to Termserv.bat" file as described below:

- ♦ In the \Solutions\Master folder, right-click, and choose New → Text Document.
- ♦ Rename the text document to "Distribute to Termserv.bat" – Answer YES to the warning about the file name change.
  - o **Important note:** if you did not get a warning about the file extension being changed you may have the "Hide File Extensions for Known File Types" option turned on. Turn this option off (under Tools, Folder Options), then re-name the file again to exclude the .txt extension – the extension must be .bat.
- ♦ **Edit the file:**
  - o Right-click the "Distribute to Termserv.bat" file you've just created, select "Edit" and copy the following lines into it:

```
@echo off
echo This file automatically copies the application file to all terminal server users.
Copy D:\Solutions\Master\elite.mde "C:\Program Files\Blue Link\Solutions\Elite-Username1.mde"
Copy D:\Solutions\Master\elite.mde "C:\Program Files\Blue Link\Solutions\Elite-Username2.mde"
Copy D:\Solutions\Master\elite.mde "C:\Program Files\Blue Link\Solutions\Elite-Username3.mde"
Copy D:\Solutions\Master\elite.mde "C:\Program Files\Blue Link\Solutions\Elite-Username4.mde"
```

- ♦ Replace the "UsernameX" part of the copy lines above with the actual **Windows Login User Names** of your users. This step is very important – the usernames you enter must exactly match their usernames on the domain or server. For a list of users on your server open computer management, and then click users. For a list of users on your domain, open Active Directory Users and Computers.
- ♦ Add lines to this file as necessary to accommodate additional users.
- ♦ If you are running a different version of Solutions (i.e. "Professional", substitute that name for "Elite" above).
- ♦ Run the batch file to create the instances of the elite app files.

## Step 5: Schedule Automatic Nightly Distribution of the app file

To eliminate the need for maintenance of the application file, we recommend replacing the application file on a nightly basis with a fresh copy of the "master" .mde file.

- ♦ Start → Settings → Control Panel → Scheduled Tasks → Add Scheduled Task
    - o A wizard will appear, Click Next
    - o Click "Browse", then select the "Distribute to Termserv.bat" file you created in the previous step (i.e. "D:\Solutions\Master\Distribute to Termserv.bat")
    - o Select "Daily", click Next
    - o Change the Start time to 2AM (or some other early morning hour when it is unlikely for users to be logged into the system), click Next.
    - o Enter the username and password under which this task should run. Be sure to select a username that will have write permission to the C:\Program Files\Blue Link\Solutions folder, and whose password **will not change**. Click Next.
    - o Click Finish
- ♦ You now have a scheduled task that will run every night to update your application files.

Step 6: Configure Desktop and Start Menu Shortcuts

Each user must run a different copy of the application file (i.e. one per user). In step 4, you wrote a batch file to create the application files required, including the user's usernames. In Windows 2000, the windows username can be represented with the system variable "%username%". To simplify administration of shortcuts, we recommend using the system variable in the shortcut as follows:

- ♦ Right-Click the "Solutions Elite" (or "Solutions Professional") icon on the "All Users" desktop, and choose "Properties".

- ♦ Edit the very last part of the shortcut to read "elite-**%username%**.mde" or "professional-**%username%**.mde" as your case may warrant. The important part here is to include the %username% in the location where the username should appear.
    - o Doing this will have the effect of launching the user-specific .mde file when the app is launched using this shortcut.
    - o Repeat this procedure for the shortcut on the all users start menu: Start → Programs → Blue Link Solutions Elite menu
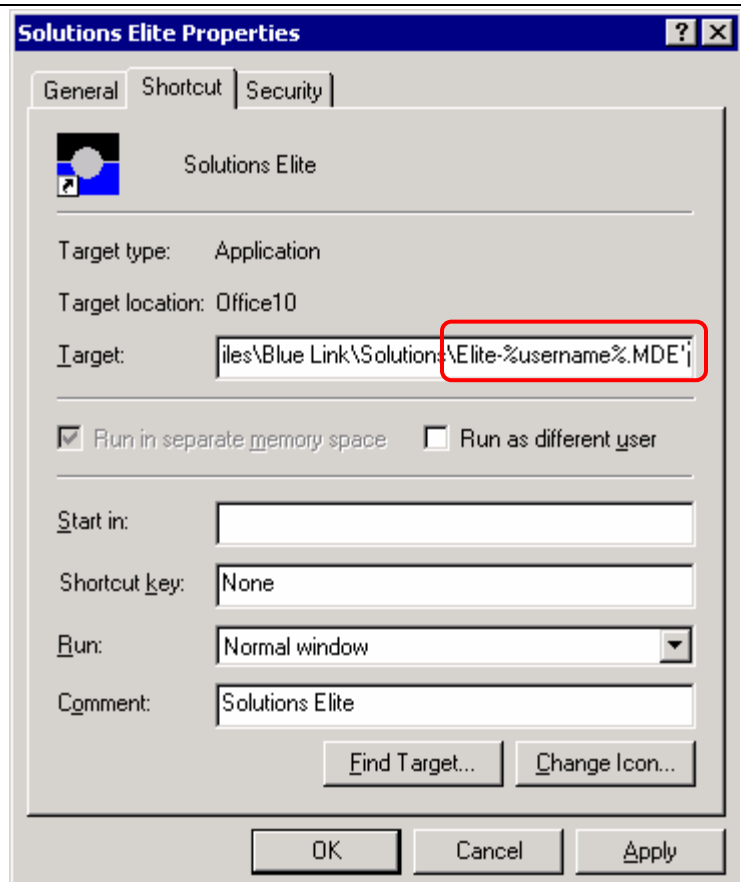
Step 7: Set file system security permissions

In order to run Blue Link Solutions, ALL users of the application MUST have read/write permissions to the following folders:

- ♦ C:\Program Files\Blue Link\Solutions   <substitute your drive / path as appropriate>
- ♦ D:\Solutions   <substitute your drive / path as appropriate>

Registry Permissions:
- ♦ If the "High-Security" security policy has been applied to your Terminal Server, users will encounter problems writing to the registry. Blue Link recommends removing the High Security policy.

Configuration is Complete

At this point, all the recommended configuration steps are complete. The remainder of this document contains recommended policies for maintaining your terminal server environment and the Solutions Data file.

Appendix 1 – Printing to user's Local Printers

Windows 2000 Terminal Servers support a feature called "Printer Mapping" which allows the user's local printer(s) to be available under the Terminal Server session, and to be set as the default printer.

In order for this configuration to work the following must be in place:

♦ The Printer Driver must already be installed on the Windows 2000 Server, OR, the client connecting must be a Windows 2000 or Windows XP client with the printer driver already installed.
♦ Printer mapping must NOT be disabled in either the Terminal Services Configuration, or the individual user's account.

How to Pre-Load the Server with Printer Drivers for all Client Printers

♦ Take an inventory of the printers your users will want to use. Be sure to ask users for the makes & models of any printers they will want to use from home.
♦ Open the printers folder on the terminal server, (Start → Settings → Printers) then from the File Menu, choose "Server Properties":
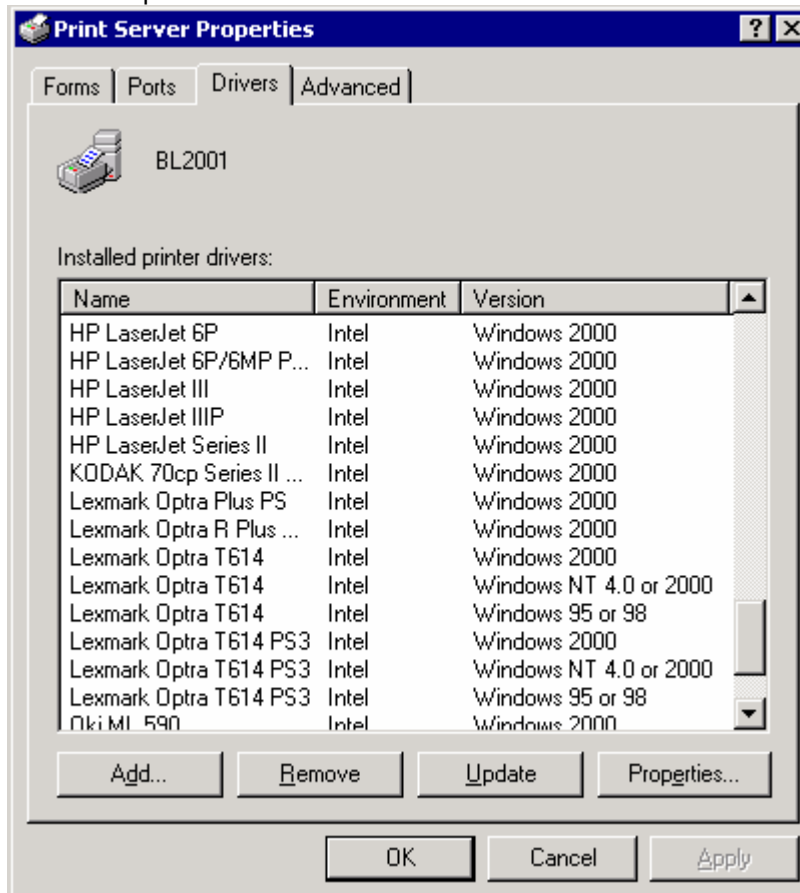

o Click the "Drivers" tab, then click the "Add…" button
o Select the name brand and printer model you want to install. If the printer model you need to install is not in the list, download the Windows 2000 driver from the manufacturer's web site (i.e. www.hp.com, www.lexmark.com, www.canon.com, etc.), then install that driver. What's important is that the make and model number of the printer match the make and model of printer that is installed on the user's workstation.

Inspect the Server and User Configuration

Terminal Services Configuration Console

In the Terminal Services Configuration Console, (Start → Settings → Control Panel → Administrative Tools → Terminal Server Configuration):
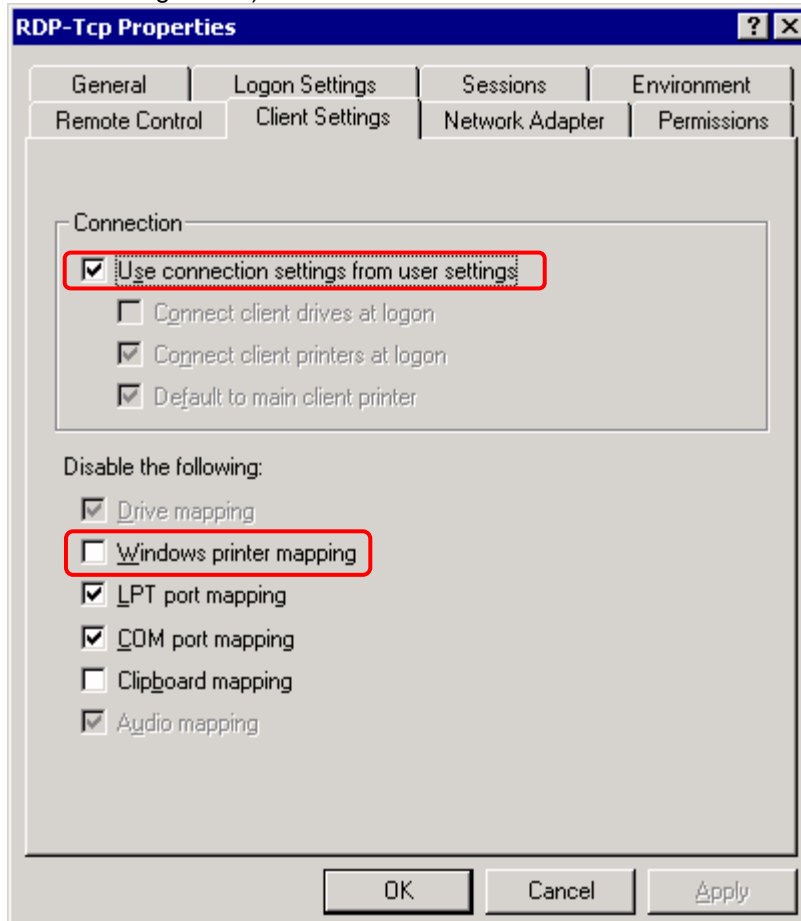
- ◆ Either "Use connection settings from user settings (recommended), or turn off that option, and check the "Connect client printers at logon", and "default to main client printer" options.
  - o The advantage of *using connection settings from user settings* is that if a particular client's printers are causing problems with the server (some printer drivers have been known to hang the entire print subsystem on the server, in which case no users can print at all), you'll have the ability to disable client printer mapping for a particular user (without having to disable it for all users).
  - o **Note:** To default to the user's regular "Terminal Server" connected printer, you may optionally remove the "Default to main client printer" checkbox. This will have the effect of connecting the client's printers so they are available to them, but by default will print to the regular office printer.
- ◆ **Do NOT** check the box beside "Windows Printer Mapping".
- ◆ The LPT port mapping setting is irrelevant since Solutions does not print to LPT ports.

User Settings

In Active Directory Users and Computers, inspect the individual user's settings for printer mapping:

- ♦ Turn on the "Connect client printers at logon" and optionally, the "Default to main client printer" options.

Client printer mapping should now be operational.

Other Technical Notes about Printer Mapping

- ♦ The next time the user connects the default printer they had configured on their desktop machine will now be available to them in the Terminal Server session. As mentioned previously, however, if no Windows 2000 printer driver was installed to the server, the printer will not be available.
- ♦ If you have notebook computer users who frequently connect to third party printers, we recommend that the users install those printers as "local" printers on their machines, choosing to create new "local" ports with the UNC path to the printer instead of connecting directly to the foreign printer.
  - o For example:
    - ▪ Do not connect using the "network printer" option in the add printer wizard.
    - ▪ Do not connect using right-click on the printer name method.
  - o Instead, encourage your notebook users to always create "local" printers, then create new "local ports" where the port name is the UNC path (i.e. \\server\HP4000) printer share.
  - o **Connecting foreign network printers (printers on networks other than your own) as local printers will prevent connection issues with the terminal server, will prevent event log error messages, and may prevent the server from hanging the print service in some cases.**

## Appendix B – Maintenance – Disconnect Idle Sessions, End Disconnected

The Solutions data file has to be maintained on a daily basis to ensure optimal performance. This maintenance cannot occur if the application file is still open with a connection to the data file.

To prevent users from leaving "connected" applications open after they've disconnected their terminal server sessions, we recommend implementing the following Terminal Server configuration:

Disconnect Idle Sessions After 1 or 2 hours

In the Terminal Services Configuration Console, (Start → Settings → Control Panel → Administrative Tools → Terminal Server Configuration):
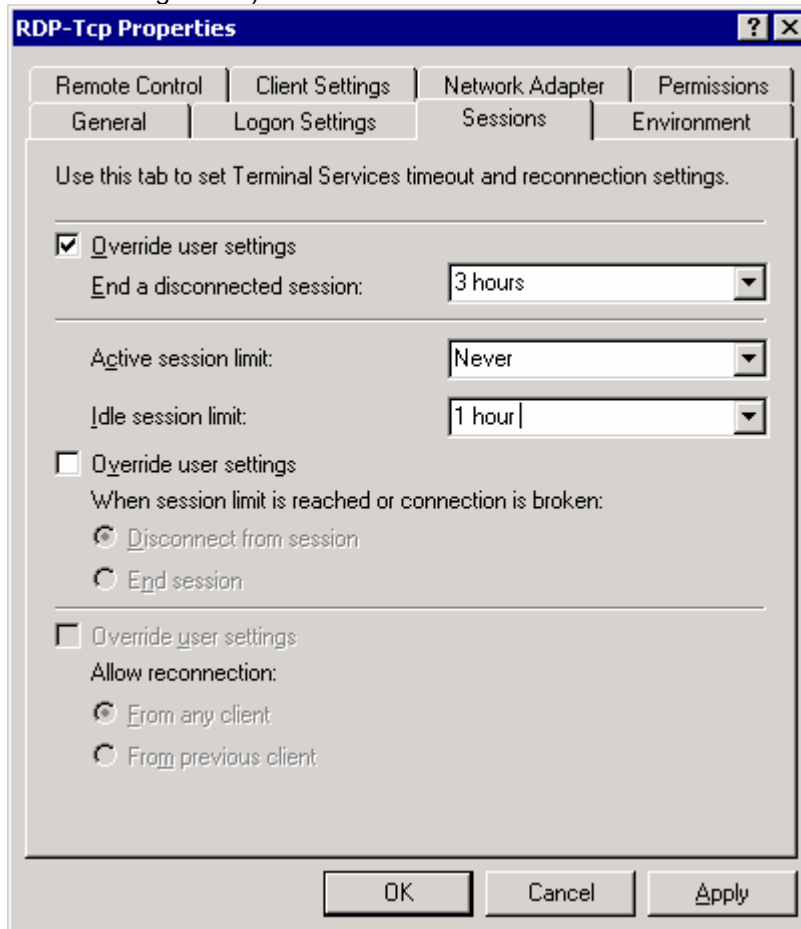
- ♦ Click the "Sessions" tab.
- ♦ Enable the *Override user settings* checkbox.
    - o Set the "End a disconnected session" to **3 hours**.
    - o Set the "Idle session limit" to **1 or 2 hours**.

Turning on these settings will ensure that all users are disconnected and that their sessions are reset (no applications running) by the time the nightly maintenance routines you've configures (not described in this document) run.

Appendix C – Using Remote Control for Remote Support

One of the great features in Terminal Services is the ability to view or interact with sessions from your desktop. When used for remote support, this is a great way for you to help a user get through an issue they may be having, to provide remote training, etc.
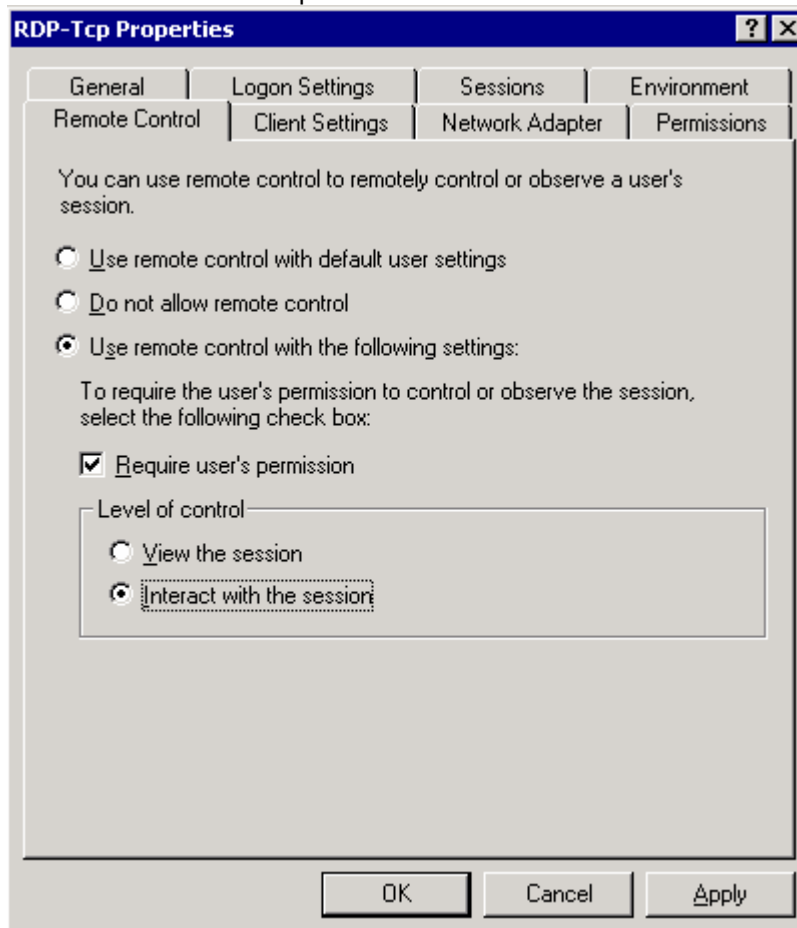
To enable remote control, do the following:

Configure the Terminal Services Configuration Console

In the Terminal Services Configuration Console, (Start → Settings → Control Panel → Administrative Tools → Terminal Server Configuration):

♦ Double-click the RDP-Tcp connection:

o   To enforce the same policy for all users (recommended):
- Select "Use remote control with the following settings:"
- Check the "Require user's permission" box.
- Set the level of control to "Interact with the session".

Use Terminal Services Manager establish remote control of the session

♦ Open the Terminal Services Manager (Start → Settings → Control Panel → Administrative Tools → Terminal Services Manager) 🖳 Terminal Services Manager
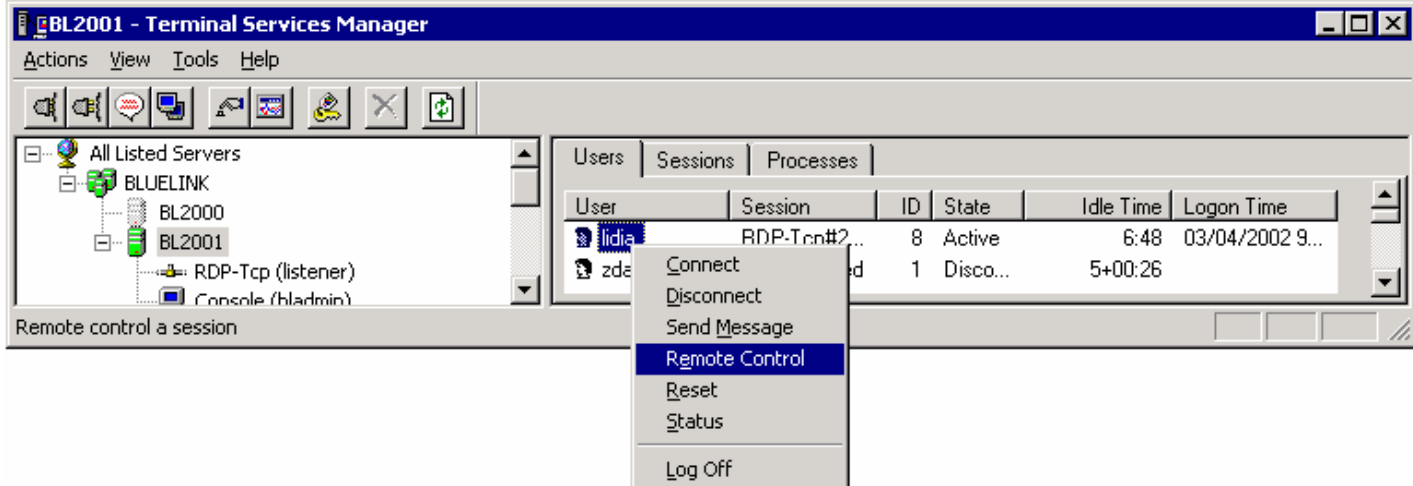
o Right-Click the user whose session you would like to interact with.
o Select "Remote Control".
   ▪ A request will then be sent to the user to allow the interaction. If they answer yes, then you'll be immediately connect to their session as if it were your own session.
   ▪ To end the session, by default press CTRL+* (on the number pad).

Reminders

♦ To use the remote control feature:
   o You must be connected to the terminal server in a terminal server session.
      ▪ Since being connected to a terminal server session is a pre-requisite, it should be noted that remote support is only possible if you can already connect to the Terminal Server.
      ▪ Vendors wishing to support their clients in this manner should ensure that they can establish this connection through the firewall or other network device. Remember TCP/IP Port 3389 must be enabled.
   o You must have permission to open the Terminal Services Manager.

Appendix D – Launching Solutions as the "only" application

Specifying the command line to run on connection either at the server level, or at the client level can make the Terminal Server session appear as if it is the Solutions application itself. The procedures described below are similar to the "publish application" feature found in Citrix.

Option 1 – Server-Side Configuration

If you have a group of users whose sole purpose for using the Terminal Server is to run Blue Link Solutions, you may want to configure their profiles to launch Blue Link Solutions automatically on connecting to the Terminal Server.

To configure this option:
- ♦ Start by copying the command line from an existing Blue Link Solutions shortcut. (For example, your command line may be: "C:\Program Files\Access 2002 Runtime\Office10\MSACCESS.EXE" /runtime /excl "C:\Program Files\Blue Link\Solutions\Elite-%username%.MDE"
- ♦ Open Active Directory Users and Computers (Start → Settings → Control Panel → Administrative Tools → Active Directory Users and Computers)
- ♦ Double-Click the User in Question
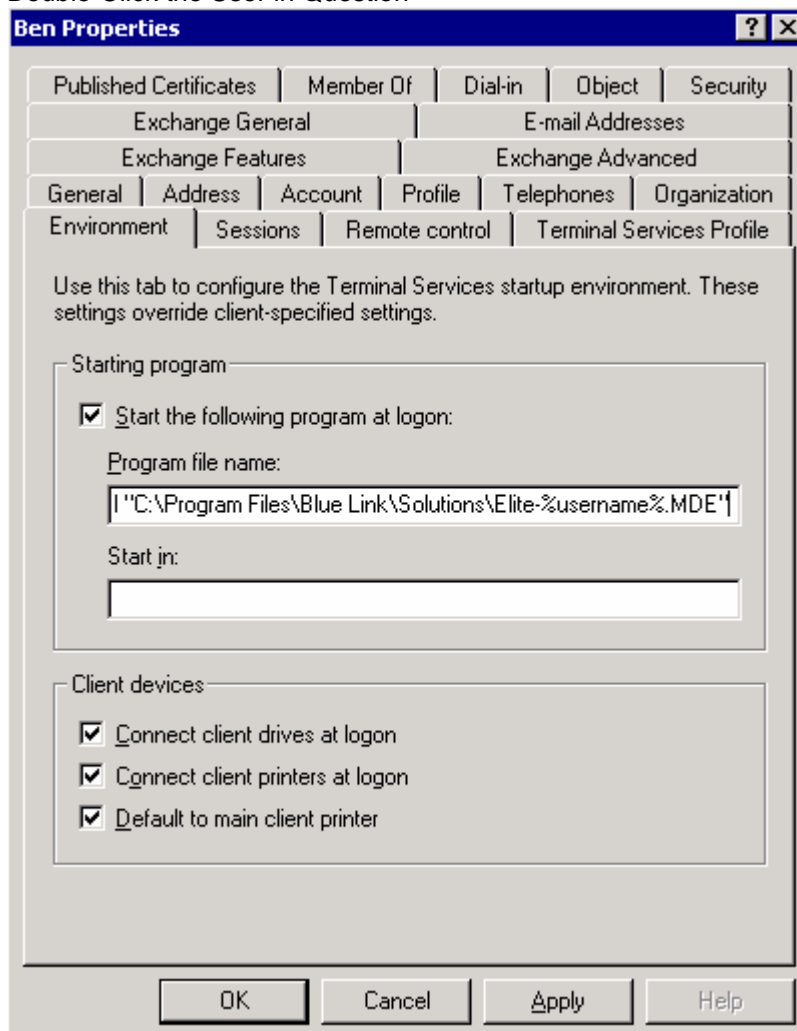
- o Check the "Start the following program at logon" box.

- o Paste the shortcut you had previously copied from the Blue Link Solutions shortcut. For example: "C:\Program Files\Access 2002 Runtime\Office10\MSACCESS.EXE" /runtime /excl "C:\Program Files\Blue Link\Solutions\Elite-%username%.MDE"
  - Note your shortcut may be different depending on the installation options selected during installation.

Option 2 – Client-Side Configuration

If you'd prefer to allow the flexibility of occasionally connecting to the Terminal Server to perform other tasks, you may want to configure the application to be launched at the client side, instead of the server side. Follow these steps to implement this configuration:

- ♦ Open Remote Desktop Connection (Start → Programs → Accessories → Communications → Remote Desktop Connection):
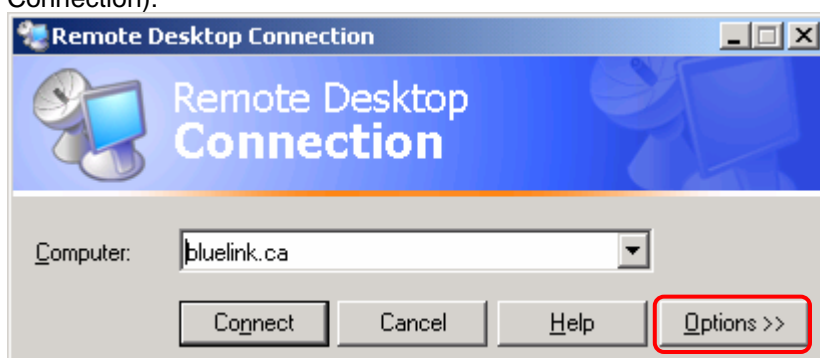
- o Click the "Options" button to expand the options, then click the "Programs" tab:
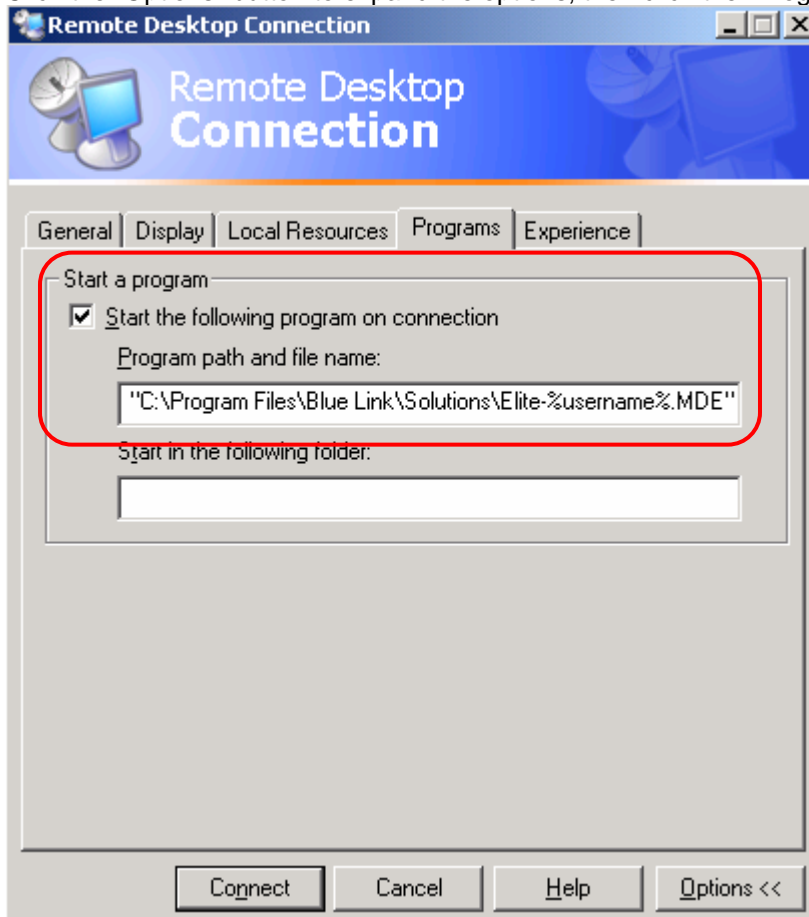
- ▪ Copy the shortcut from the Blue Link Solutions icon **on the terminal server**. (The paths and applications referred to in this shortcut are for applications installed on the server, not on the user's local workstation).
        - ▪ Optionally set the display resolution and other attributes of the session, then return to the "General" tab and click the "Save As…" button.
        - ▪ Save the RDP session configuration on the user's desktop as "Blue Link Solutions.rdp".
        - ▪ Optionally, modify the shortcut's icon to be the Blue Link Solutions icon (which you can copy from c:\program files\blue link\solutions\BLSXP.ico on the server).
- ♦ **Technical Notes:**
    - o Auto-Login Feature may not work:
        - ▪ By default, as of SP2, the ability to save your password has been disabled by default in the terminal server's security policy. To enable this feature, a policy change at the server level is required, however due to the security implications associated with allowing a user to save the password on a potentially unsecured client such as Windows 95, we do NOT recommend enabling this option.
    - o "Start in following folder" option should be left blank or you may encounter errors on launching the session.
    - o To edit an existing session, open the Remote Desktop Connection client, click Options, then click Open, and select the previously saved configuration.
    - o When the user closes Solutions Accounting, the Terminal Server session will also close.