



Integrating CAD with Citrix Presentation Server or Microsoft Terminal Services

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Revision History

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Integrating CAD with Citrix Presentation Server or Microsoft Terminal Services

Introduction

[Table 1](#) lists the versions of CAD and Cisco Unified Contact Center Enterprise (Unified CCE) that support running Cisco Agent Desktop in a Citrix Presentation Server (Citrix) or Microsoft Server 2003 Terminal Services (MTS) environment.

Table 1. Supported versions of CAD and Cisco Unified CCE

CAD Version	Cisco Unified CCE Version
6.0(x)	6.0(1)
7.0(x)	7.0(x)
7.1(x)	7.1(x)
7.2(x)	7.2(x)
7.5(x)	7.5(x)

[Table 2](#) lists the versions of CAD and Cisco Unified Contact Center Express (Unified CCX) that support running Cisco Agent Desktop in a Citrix or MTS environment.

Table 2. Supported versions of CAD and Cisco Unified CCX

CAD Version	Cisco Unified CCX Version
6.1(4)	4.0(4)
6.2(x)	4.5(x)
6.3(x)	4.1(x)
6.4(1)	5.0(1)
6.4(2)	5.0(2)
6.5(x)	6.0(x)

Table 2. Supported versions of CAD and Cisco Unified CCX (cont'd)

CAD Version	Cisco Unified CCX Version
6.6(x)	7.0(x)

For more information, see ["Supported Citrix and MTS Versions" on page 12](#).

Citrix and MTS permit several client applications to be hosted simultaneously. This hosted environment reduces the deployment and software maintenance burden on CAD administrators and corporate information technology teams.

This document is intended to guide an administrator through the installation and configuration of CAD in a Citrix or MTS environment.

Important Note About CAD Deployment

Cisco's CAD solution consists of a number of Cisco products. These products are thoroughly tested and documented to ensure that the solution has extremely high availability and can be supported easily and quickly.

Deploying platforms, configurations, or third party applications that are not explicitly identified in Cisco product documentation as supported will significantly impact the performance and capacity of the CAD solution. Using such non-standard components may contribute to extensive outages that could seriously impact your business and your customers. It will also greatly hinder the ability of the Cisco Technical Assistance Center (TAC) organization to diagnose and resolve issues, to the extent that resolution of issues may not be possible.

TAC will support Cisco products and documented third party applications and configurations that are part of your CAD deployment. However, TAC cannot and will not guarantee the overall stability of platforms that use non-supported components or configurations. TAC will not be able to assist in troubleshooting any problems that exist for the agent desktops on unsupported platforms or configurations. In addition, TAC may be unable to provide assistance of any type if initial analysis suggests that unsupported platforms might be contributing to the issue. In such cases, TAC will provide best effort support and will only be able to troubleshoot the supported applications and components of your CAD solution, and not the overall solution environment.

For these reasons, Cisco strongly recommends that the CAD solution be deployed in accordance with Cisco's published solution design guidelines. If you have questions about these guidelines or about supported CAD solution components, consult the hardware and software system specifications (bill of materials) and Cisco documentation set for your Unified CCE and Hosted or Unified CCX solution.

Limitations

The following limitations apply to integrating CAD with Citrix or MTS.

- Cisco Supervisor Desktop, Cisco Agent Desktop—Browser Edition (CAD-BE), and Cisco Desktop Administrator are not supported in a Citrix or MTS environment.
- Agent Desktop 6.0(x) media termination is not supported in a Citrix environment.
- True Update is disabled in a Citrix/MTS environment. Since only one copy of Agent Desktop is installed on the Citrix/MTS server, there is no need for it.
- The login ID and extension that appear in the login dialog box when Agent Desktop is started are those associated with the last login by *any* user, not necessarily the user who is currently logging in.
- Only one Citrix user name is supported per Agent Desktop login.
- Desktop monitoring and recording are not supported. SPAN port-based monitoring and recording, however, are supported.
- Macros work only if they invoke applications running on the Citrix/MTS server. Macros will not work if they invoke applications running on the client PC.

Supported Platforms

The following server platforms are supported:

- Windows Server 2003 SP1

The following client platforms are supported:

- Windows XP Professional SP1 and SP2
- Windows Vista SP1 and SP2

Supported Citrix and MTS Versions

MTS is always required when Citrix is installed. The last columns in [Table 3](#) and [Table 4](#) represent the versions tested and supported of CAD in an MTS-only environment, without the presence of Citrix.

[Table 3](#) lists the versions of Citrix and MTS that are supported when running CAD in a Unified CCE environment.

Table 3. Supported Citrix and MTS versions (Cisco Unified CCE environment)

CAD	Cisco Unified CCE	Citrix/MTS	MTS Only
6.0(x)	6.0(x)	Citrix 3.0 Windows 2000 Server	—
7.0(x)	7.0(x)	Citrix 4.0 Windows 2000 Server Windows Server 2003	Windows Server 2003
7.1(x)	7.1(x)	Citrix 4.0 Windows 2000 Server Windows Server 2003	Windows Server 2003
7.2(x)	7.2(x)	Citrix 4.0 Windows 2000 Server Windows Server 2003	Windows Server 2003
7.5(x)	7.5(x)	Citrix 4.5 Windows Server 2003	Windows Server 2003

[Table 4](#) lists the versions of Citrix and MTS that are supported when running CAD in a Unified CCX environment.

Table 4. Supported Citrix and MTS versions (Cisco Unified CCX environment)

CAD	Cisco Unified CCX	Citrix/MTS	MTS Only
6.1(4)	4.0(4)	Citrix 4.0 Windows 2000 Server Windows Server 2003	Windows Server 2003
6.2(x)	4.5(x)	Citrix 4.0 Windows 2000 Server Windows Server 2003	Windows Server 2003
6.3(x)	4.1(x)	Citrix 4.0 Windows 2000 Server Windows Server 2003	Windows Server 2003

Table 4. Supported Citrix and MTS versions (Cisco Unified CCX environment) (cont'd)

CAD	Cisco Unified CCX	Citrix/MTS	MTS Only
6.4(1)	5.0(1)	Citrix 4.0 Windows 2000 Server Windows Server 2003	Windows Server 2003
6.4(2)	5.0(2)	Citrix 4.0 Citrix 4.5 Windows 2000 Server Windows Server 2003	Windows Server 2003
6.5(x)	6.0(x)	Citrix 4.0 Windows 2000 Server Windows Server 2003	Windows Server 2003
6.6(x)	7.0(x)	Citrix 4.5 Windows Server 2003	Windows Server 2003

Supported Citrix ICA Clients

CAD clients published in a Citrix Presentation Server can be accessed using the following Citrix Independent Computing Architecture (ICA) clients:

- ICA Win32 Program Neighborhood
- ICA Win32 Program Neighborhood Agent

NOTE: Citrix Web Client is not supported at this time.

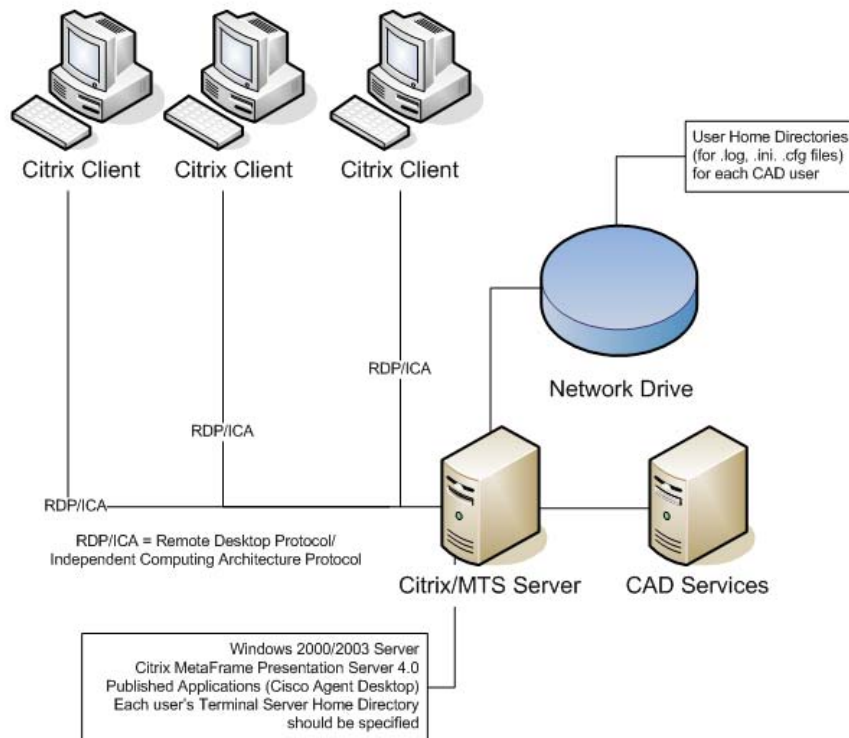
Configuration

The configuration shown in [Figure 1](#) is supported.

NOTE: Designing your MTS implementation should be done in consultation with a Microsoft Certified Engineer. In particular, the guidance of such a professional is essential to determine how many agents can be accommodated on an MTS suite. Citrix users should obtain the services of a Citrix Certified Administrator to provide similar deployment assistance.

CAD can be run in mixed mode—that is, a configuration in which some agents use Agent Desktop on Citrix/MTS and some agents use Agent Desktop on a PC, with both agent setups pointing to the same CAD services.

Figure 1. Configuration of CAD in a Citrix/MTS environment



Installing and Configuring CAD in a Citrix 3.0 Environment

Installing CAD

Install CAD according to the procedures in the *Cisco CAD Installation Guide*.

- Install the CAD services, Desktop Administrator, and Supervisor Desktop on the appropriate servers and desktops.
- Install Agent Desktop on the Citrix server.

Modifying Citrix Server Registry Settings

Make the following registry modification on each Citrix server where Agent Desktop is installed.

1. Access the Windows registry editor on the Citrix server.
2. In the Registry Editor, create a new registry key:
HKEY_LOCAL_MACHINE\SOFTWARE\Spanlink\Chat Server API\Setup
3. Under the Setup key, create a DWORD value named OmniOrbUsePort and set the value data to 0 (zero).

Installing and Configuring CAD in a Citrix 4.0 or Citrix 4.5 Environment

The process of installing and configuring CAD for use with a Citrix environment includes the following steps:

- Creating users
- Installing CAD
- Publishing Agent Desktop in the Citrix server
- Configuring a Citrix ICA connection between Citrix server and client desktops

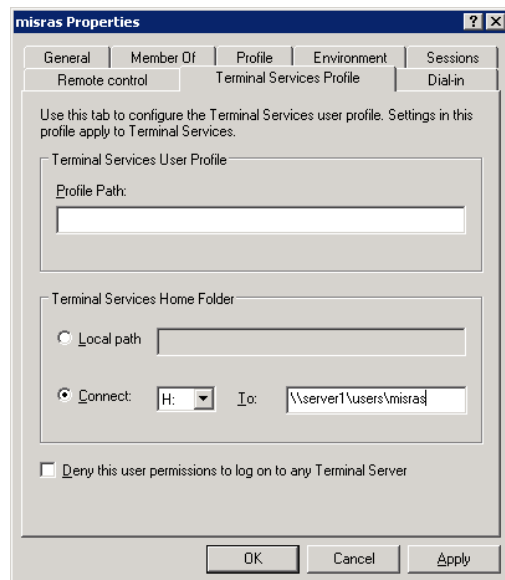
Creating Users

Configure your user properties and group memberships as defined in the Citrix and operating system vendor documentation.

CAD requires user-specific home folder mappings so that logs and configuration files for each user can be created and modified as needed. CAD automatically creates subfolders “log” and “config” in this location. Configure the home folder properties so that the user is connected to the home folder on a network server. This network server must not be the Citrix server.

For example, in a Microsoft computing environment, the Terminal Services Profile tab of the User Properties dialog box (Figure 2) must contain the drive mapping `\\servername\sharename\%username%`.

Figure 2. User Properties dialog box



Installing CAD

Install CAD according to the procedures in the *Cisco CAD Installation Guide*.

- Install Agent Desktop on the Citrix server
- Install the CAD services, Desktop Administrator, and Supervisor Desktop on the appropriate servers and desktops

NOTE: In a Unified CCX environment, the CAD services are installed with Unified CCX, and a separate installation is not necessary.

NOTE: CAD for Unified CCX must be installed on the C drive of the Citrix server. If no C drive exists, you must map a drive to C. This mapping can be removed after the installation is completed.

Enabling CAD to Run in a Citrix/MTS Environment

CAD must be enabled to run in a Citrix or MTS environment. This is done in the CAD Configuration Setup utility, which runs automatically as part of the CAD installation process. To run CAD Configuration Setup after installation, double-click PostInstall.exe located in the ...\\Cisco\\Desktop\\bin folder on the Citrix/MTS server.

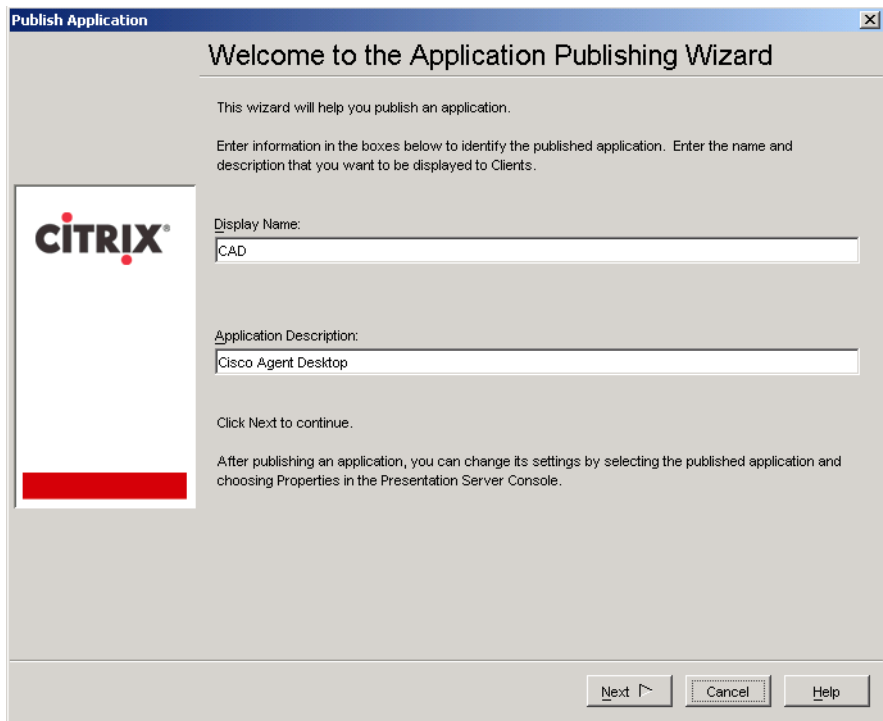
On the Terminal Services window in CAD Configuration Setup, click Yes to enable CAD to run in a Citrix or MTS environment. For more information, see the *Cisco CAD Installation Guide*.

Publishing Agent Desktop in the Citrix Presentation Server

To publish the applications in Citrix, perform the following steps.

1. Launch the Management Console for Presentation Server.
2. From the tree on the left, under the farm on which you want to publish the Agent Desktop clients, select Applications.
3. Choose Actions > New > Published Application. The Application Publishing Wizard appears (Figure 3).

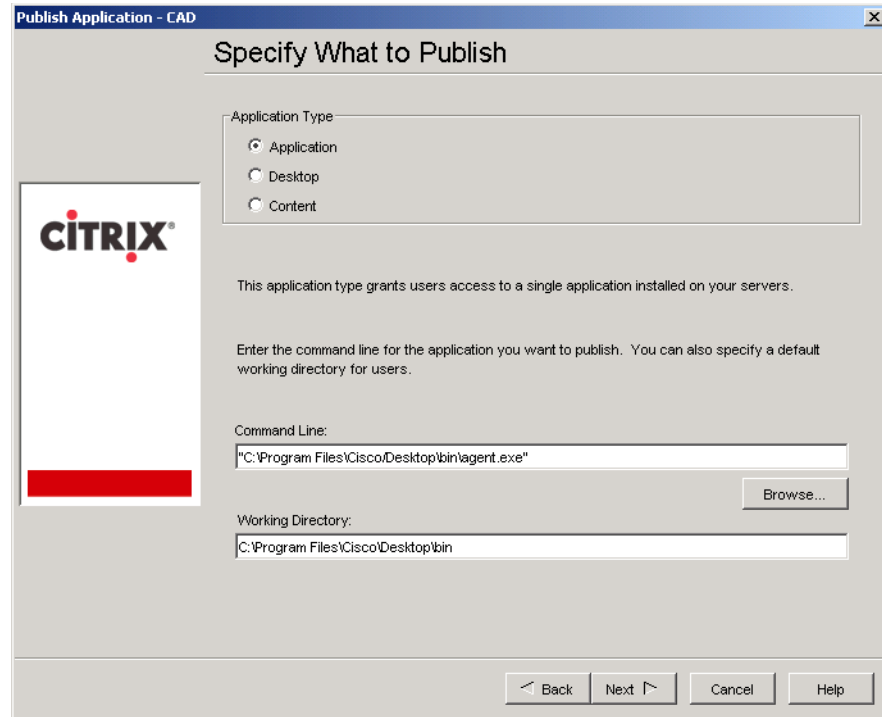
Figure 3. Application Publishing Wizard



4. Type a user-friendly display name and a clear description.

5. Click Next. The Specify What to Publish window appears (Figure 4).

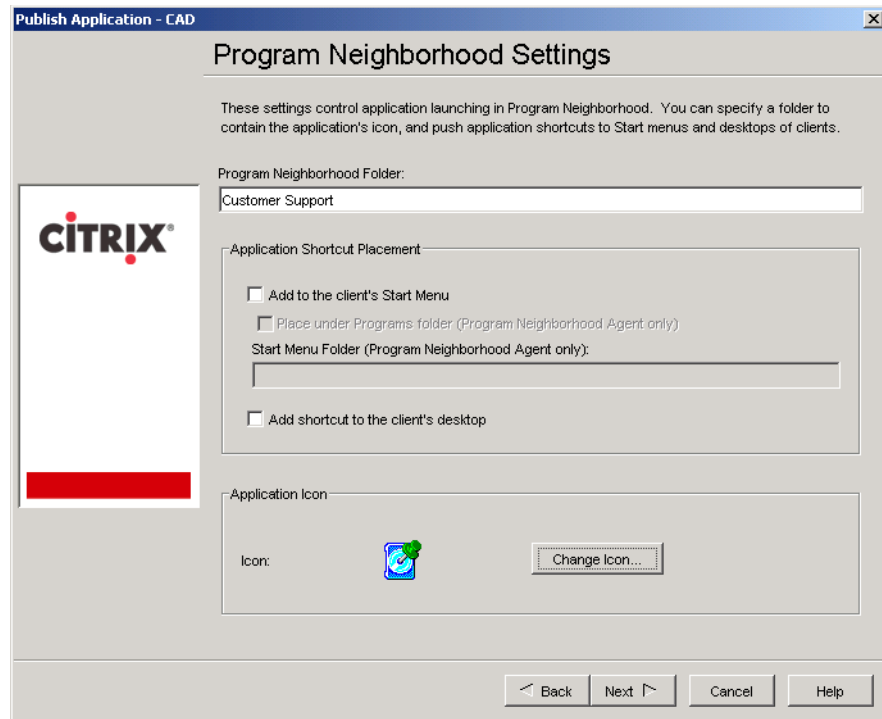
Figure 4. Specify What to Publish window



6. Complete the window as follows.
 - For Application Type, select Application.
 - For Command Line and Working Directory, type the full path and working directory of the Agent Desktop client you are publishing.

7. Click Next. The Program Neighborhood Settings window appears (Figure 5).

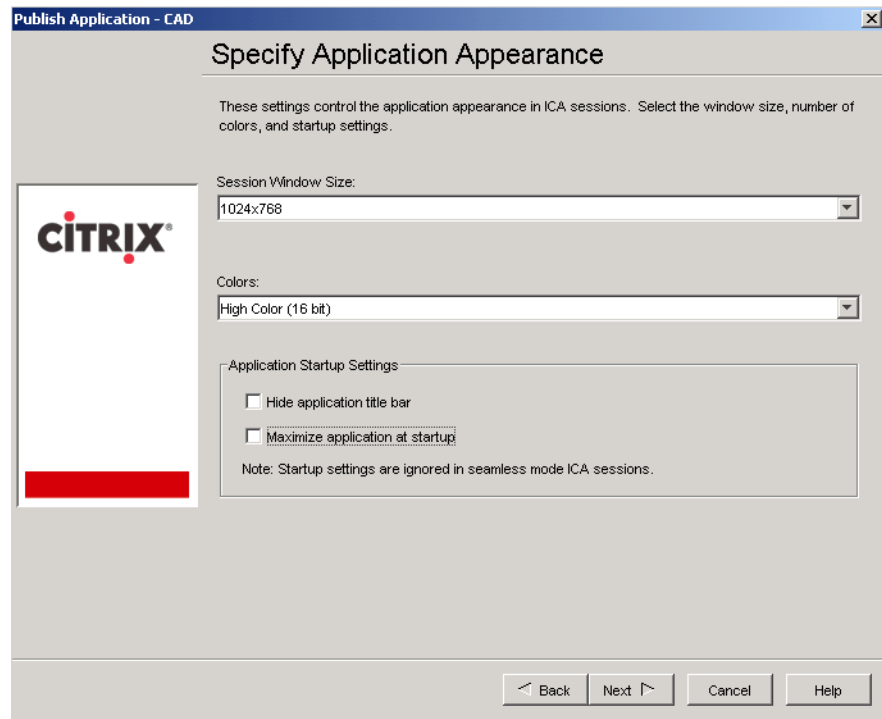
Figure 5. Program Neighborhood Settings window



8. Complete the window as follows.
 - Type the name of a Program Neighborhood folder that will contain the application icon.
 - If desired, select Add to the client's Start Menu check box, then type the name of the Start Menu folder to which you want to add the shortcut.
 - If desired, select Add shortcut to the client's desktop check box.
 - If desired, click Change Icon to select a different application icon.

9. Click Next. The Specify Application Appearance window appears (Figure 6).

Figure 6. Specify Application Appearance window

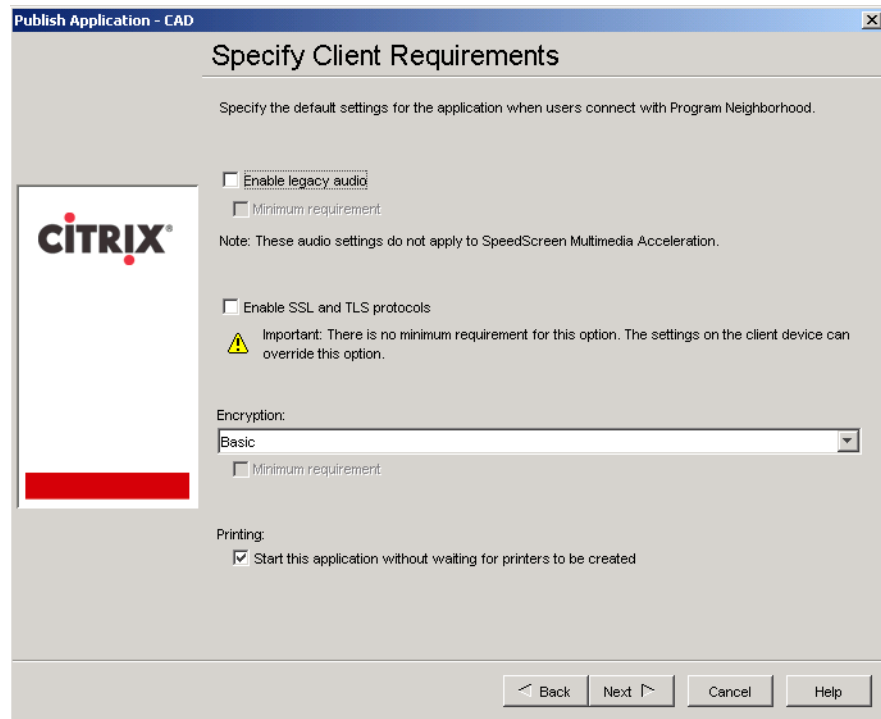


10. Complete the window as follows.
 - Select the 1024×768 session window size.
 - Select the High Color (16 bit) depth.
 - Clear both check boxes in the Application Startup Settings section.

NOTE: If a lower resolution is required for accessibility purposes, resolutions as low as 800 × 600 are supported.

11. Click Next. The Specify Client Requirements window appears (Figure 7).

Figure 7. Specify Client Requirements window

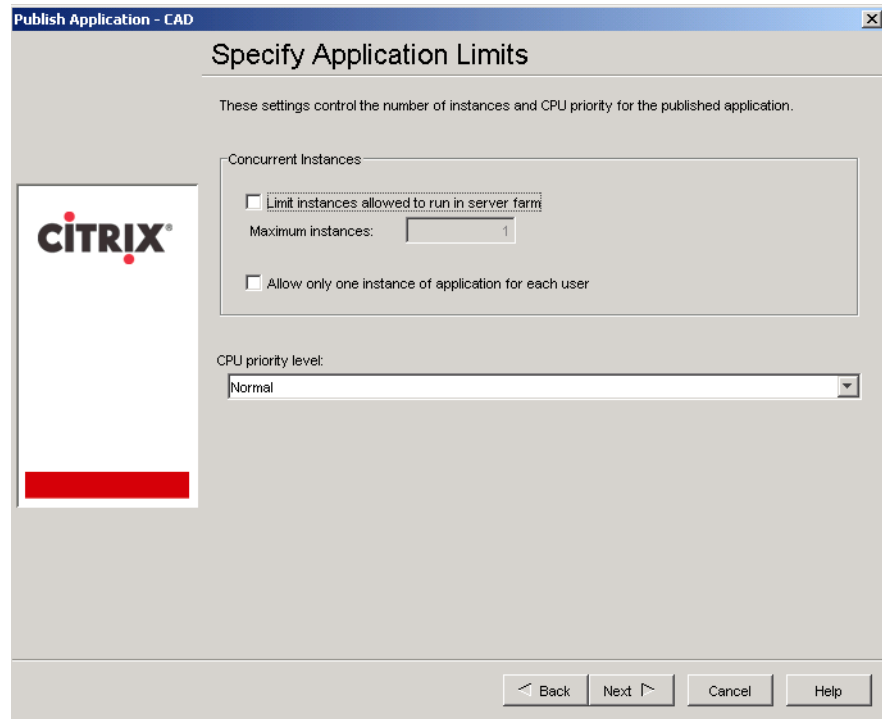


12. Complete the fields on this window as follows.

- Clear the Enable Legacy Audio check box.
- If your site security policies require that your ICA client connection be secure, check the SSL and TLS Protocols check box. For more information, see the *Citrix Presentation Server Administrator's Guide*.
- Select the Printing check box.

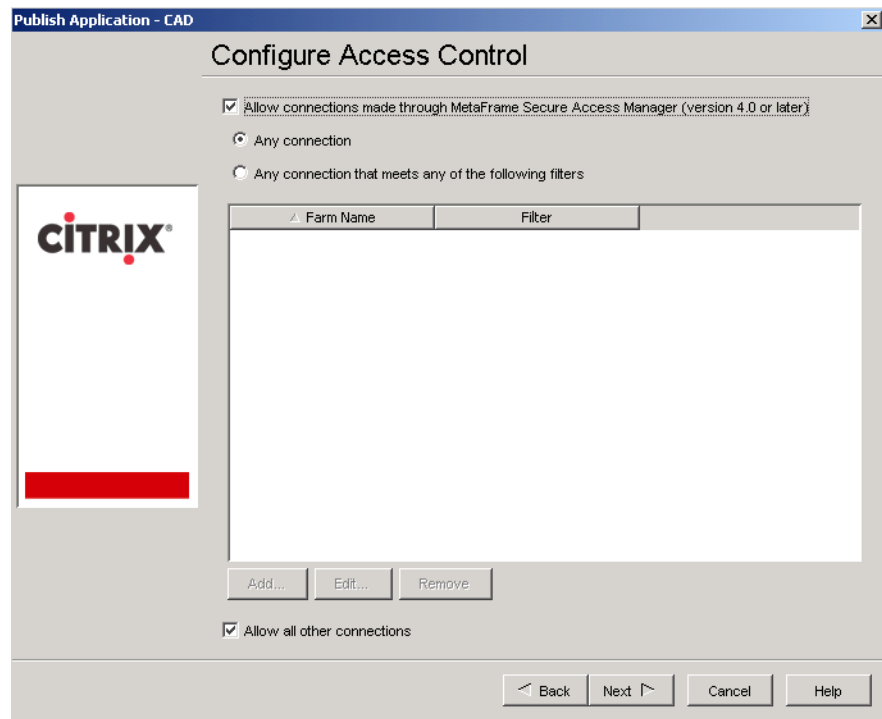
13. Click Next. The Specify Application Limits window appears (Figure 8). Accept all defaults in this window.-

Figure 8. Specify Application Limits window



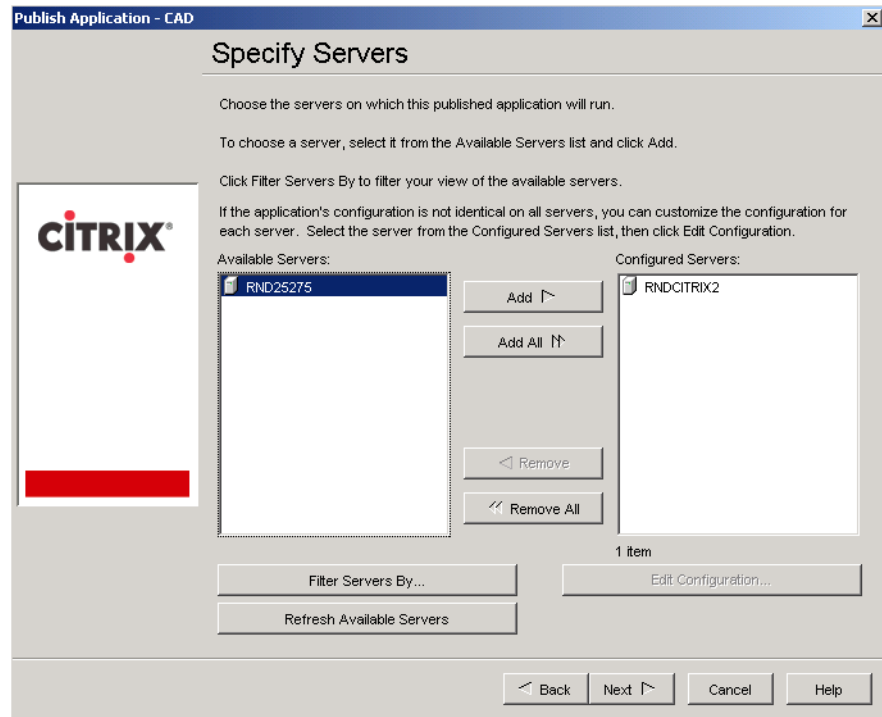
14. Click Next. The Configure Access Control window appears (Figure 9). Accept the defaults unless your site security policies require different settings.

Figure 9. Configure Access Control window



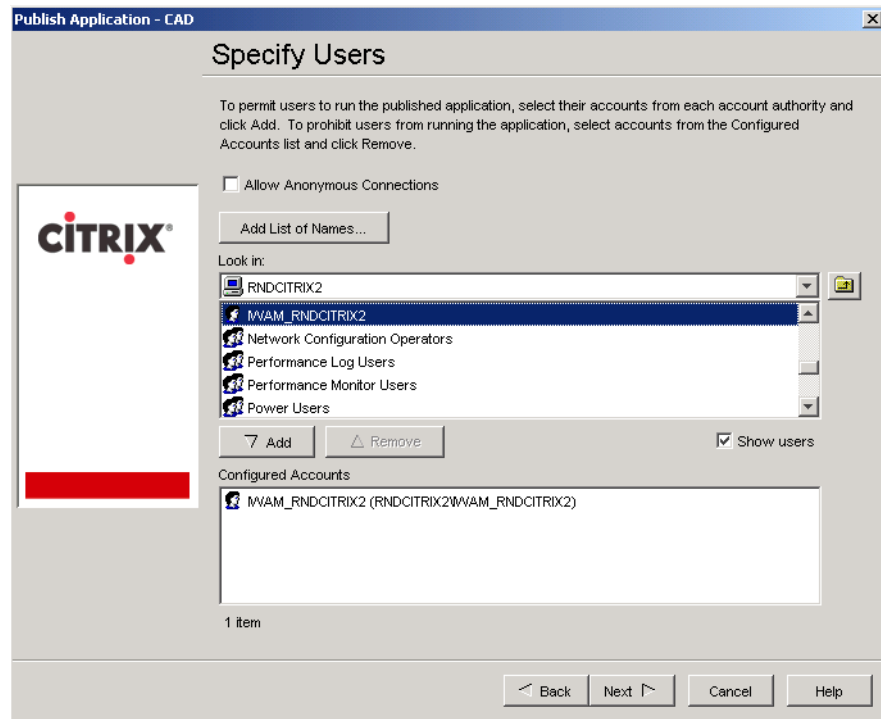
15. Click Next. The Specify Servers window appears (Figure 10). Specify the Citrix server(s) on which the published Agent Desktop applications will run.

Figure 10. Specify Servers window



16. Click Next. The Specify Users window appears (Figure 11).

Figure 11. Specify Users window



17. Complete the window as follows.

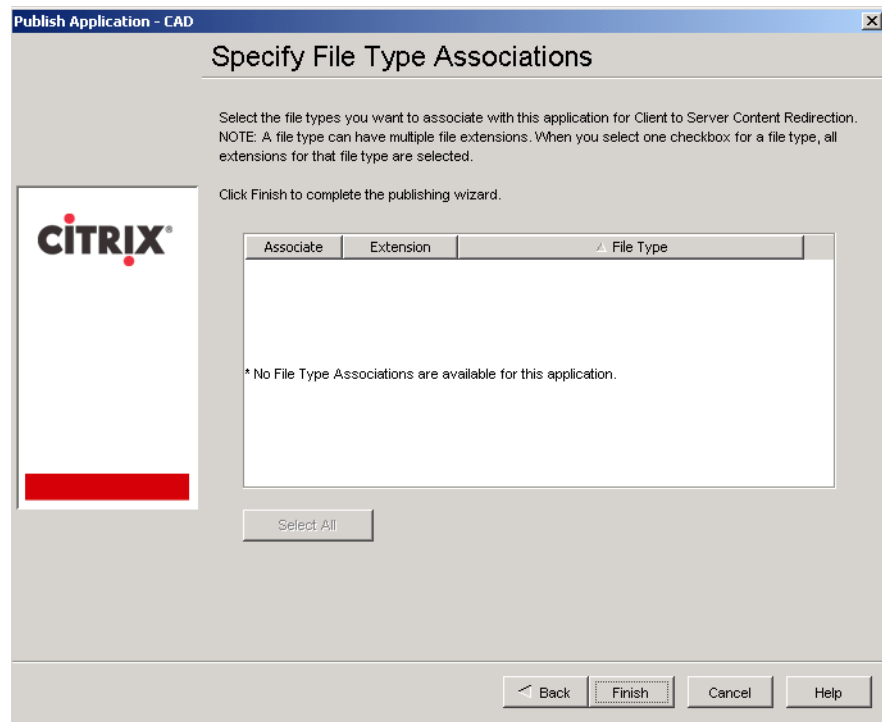
- Select the Show Users check box.
- Select the users who will be allowed to run the Agent Desktop client in the list of available users.
- Click Add to add the selected users to the Configured Accounts list.

NOTE: You may wish to set up a Windows user group specifically for Citrix users, and add all agents who will be using Agent Desktop in a Citrix environment to that user group.

NOTE: Ensure that the Allow Anonymous Connections check box is *not* selected. If it is selected, incorrect environmental variables will be set and Agent Desktop will not run.

18. Click Next. The Specify File Type Associations window appears (Figure 12). There are no file type associations available for the application, so no action is needed.

Figure 12. Specify File Type Associations window



19. Click Finish. The Application Publishing Wizard exits.

Configuring a Citrix ICA Connection

Complete the following steps to create ICA connections for the user to run the applications.

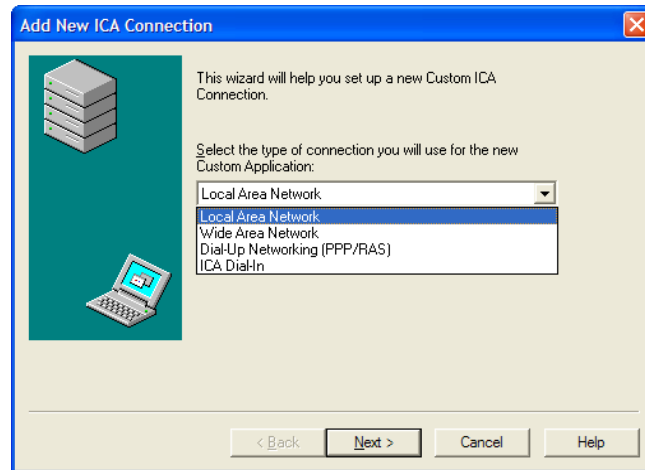
Using the Citrix Program Neighborhood Client

1. On the Citrix server, launch Citrix Program Neighborhood. Double-click the Custom ICA Connections icon. The Custom ICA Connections window appears.

NOTE: Citrix Program Neighborhood may open without the Custom ICA Connections icon visible. You may need to navigate up or down levels to find the icon.

2. Double-click the Add ICA Connection icon. The Add New ICA Connection window for selecting the connection type appears (Figure 13).

Figure 13. Add New ICA Connection window for selecting the connection type

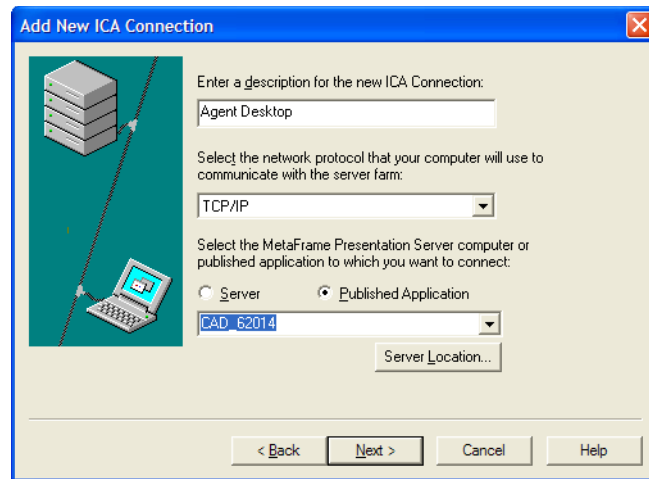


3. Select either Local Area Network or Wide Area Network from the drop-down list.

4. Click Next. The Add New ICA Connection window for configuring the new connection appears (Figure 14).

NOTE: Low-bandwidth connections such as dial-up or ICA dial-in are not capable of supporting Agent Desktop real-time telephony events, and therefore are not supported.

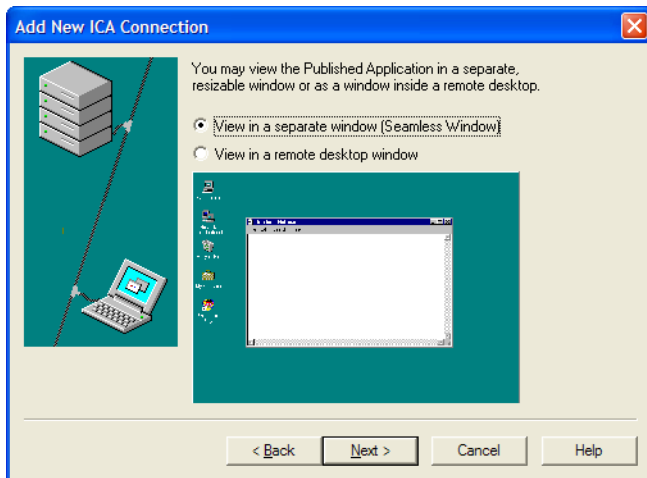
Figure 14. Add New ICA Connection window for configuring the new connection



5. Complete the window as follows.
 - Type a user-friendly description for the new ICA connection.
 - If your site security policies require a secure connection between the Citrix server and your ICA client host computer, select SSL/TLS + HTTPS for the network protocol. Otherwise, select TCP/IP. For more information, see the *Citrix Presentation Server Administrator's Guide*.
 - Select Published Application, then select the name of the application from the drop-down list.

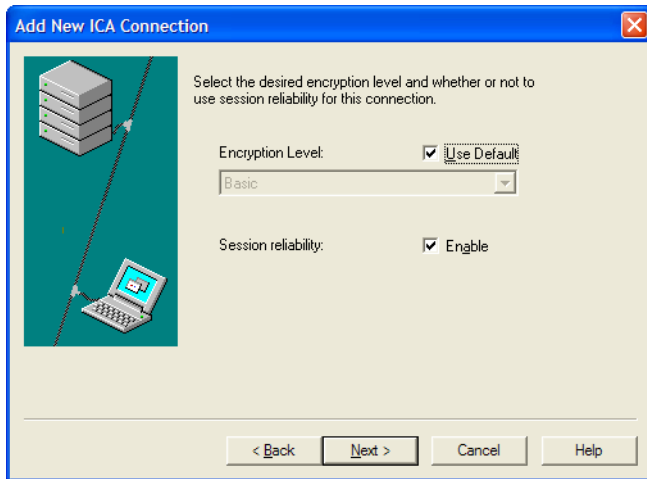
6. Click Next. The Add New ICA Connection window for configuring the behavior of the published application appears (Figure 15).

Figure 15. Add New ICA Connection window for configuring the application behavior



7. Select the type of window used to display the published Agent Desktop.
 - If you choose Seamless Window, Agent Desktop will run using its standard user interface as if the application were running on the agent's desktop.
 - If you choose Remote Window Desktop, the Agent Desktop user interface will be contained within the Citrix Desktop window.
8. Click Next. The Add New ICA Connection window for configuring encryption level and session reliability appears (Figure 16).

Figure 16. Add New ICA Connection window for configuring encryption and reliability



9. Complete the window as follows.

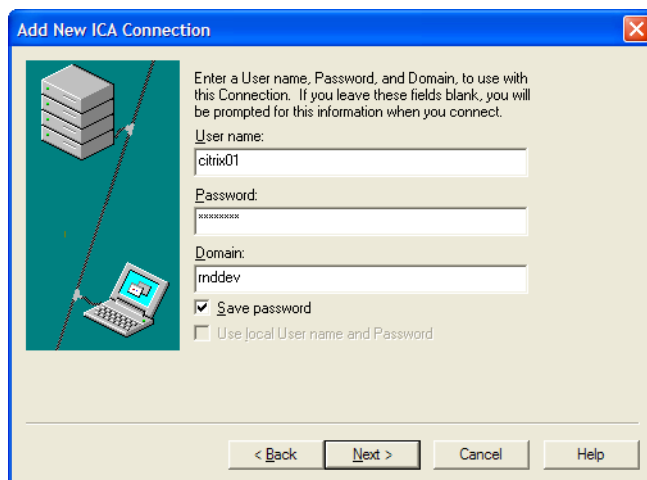
- If you do not require a secure connection, use the default encryption. Otherwise, select the level that applies to your environment.

NOTE: Be careful when selecting the encryption level, as this can affect both the latency and response time of any published application. Work with your Citrix configuration and network administrators to choose the appropriate level that will ensure both optimal performance and security for your application.

- Ensure that the Session Reliability Enable check box is selected. Disabling this feature affects the failover capabilities of the Citrix ICA client and results in loss of connectivity with the Citrix server. In addition, manual reset and logout of the dangling ICA session in the Citrix server may be required.

10. Click Next. The Add New ICA Connection window for configuring user credentials appears (Figure 17).

Figure 17. Add New ICA Connection window for configuring user credentials

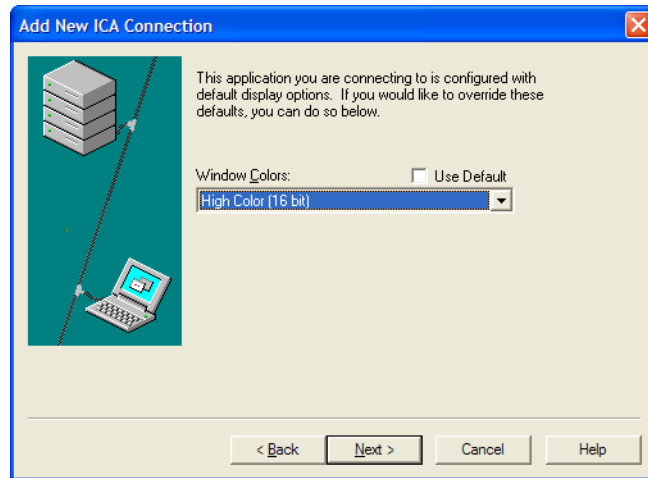


11. Type the user credentials for the connection.

12. Click Next. The Add New ICA Connection window for configuring display options appears (Figure 18).

NOTE: Enter the Windows credentials associated with the call center agent in the Windows domain to which the Citrix server belongs.

Figure 18. Add New ICA Connection window for configuring display options



13. Choose any option from the drop-down list except 16 Colors. Click Next, then Finish. The Citrix Program Neighborhood displays the new connection icon.

Using Citrix Program Neighborhood Agent

1. Using the Program Neighborhood Agent Site in the Access Suite Console, configure the authentication methods according to your site security policies.
2. Configure the following session options:
 - In the Client Session Sizes window, clear the 640 × 480 check box. If you define a custom resolution, it must not be lower than 800 × 600.
 - In the Client Resources window, clear the 16 color depth check box and all audio check boxes.
 - In the Manage Server Settings window, clear the Allow user to customize the server URL check box.
3. Install Citrix Program Neighborhood Agent on each agent desktop. Configure the URL to the server running the Program Neighborhood Agent Site, usually:

http://<Citrix server web interface IP address>/Citrix/PNAgent/config.xml

For more detailed information about how to configure Program Neighborhood Agent, see the *Client for 32-bit Windows Administrator's Guide* at:

<http://support.citrix.com/product/ica/win/#tab-doc>

Installing and Configuring CAD in an MTS Environment

Installing and configuring CAD for use with MTS consists of the following procedures.

- Enabling MTS on the Windows server
- Creating users
- Installing CAD services and desktops

Enabling MTS

The following two services should be enabled on the Windows server: For instructions, see the Microsoft Windows Server 2003 Terminal Services documentation.

- Terminal Services
- Terminal Services Licensing

Creating Users

Configure your user properties and group memberships as defined in the MTS and operating system vendor documentation.

CAD requires user-specific home folder mappings so that logs and configuration files for each user can be created and modified as needed. CAD automatically creates subfolders “log” and “config” in this location. Configure the mappings so the user is connected to the home folder on a network server other than the MTS server.

For example, in a Microsoft computing environment, the Terminal Services Profile tab of the User Properties dialog box ([Figure 1](#)) must contain the drive mapping `\\servername\sharename\%username%`.

Installing CAD Services and Desktops

Follow the instructions in the *Cisco CAD Installation Guide* to install the CAD services, Desktop Administrator, and Supervisor Desktop on the appropriate servers and desktops, and Agent Desktop on the MTS server.

NOTE: When running CAD Configuration Setup, click Yes when asked if CAD will be running in a Citrix or MTS environment.

Installing MTS on the Client PC

Agents will use the MTS client (Remote Desktop Connection) to connect with the instance of Agent Desktop running on the MTS server. If the agent's PC uses Windows XP Professional, the client is already installed.

Troubleshooting Check List

Follow this check list when investigating a CAD/Citrix/MTS problem.

1. Document the steps that reproduce the problem.
2. Document the call flow that led to the problem.
3. Set the appropriate trace mask.
4. Test the problem. Does the problem repeat:
 - While using a hard phone?
 - While using Agent Desktop on a standalone workstation?
 - While using Agent Desktop to log in at the Citrix host console?
5. Ensure that the client configuration is set up in accordance with the documentation.
6. Ensure that the ICA Publishing settings are configured in accordance with the documentation.
7. Collect the ICA client logs (if you are using Neighborhood Programs).
8. Collect all relevant logs: Unified CCX, Unified CCE, CAD or CTI OS, and Cisco Unified Communications Manager (Unified CM).

Problems and Solutions

No Citrix Licenses Available at Agent Desktop Login

Problem When a user attempts to log into Agent Desktop, the user receives the error message that there are no Citrix licenses available.

Solution If a user makes two connections, one through ICA and one through Microsoft Remote Desktop Connection, two concurrent Citrix licenses are consumed. The user must log out of one of the connections to free up a license.

More information on this issue is available in the Citrix 4.0 release notes in the section titled "Microsoft Remote Desktop Connections Consume Licenses," and also in article CTX104605, "RDP Connections Will Consume a Connection License on MetaFrame Presentation Server" in the Citrix Knowledge Center at <http://support.citrix.com>.

Cannot Find Agent Desktop Logs for Individual Users

Problem The Agent Desktop logs for an individual user cannot be found.

Solution You must map a network share home drive for each agent in order to have logs for individual Agent Desktop users. For more information, see "[Creating Users](#)" on page 17.

Cannot Install CAD for Unified CCX on a Citrix Server

Problem When attempting to install CAD for Unified CCX on a Citrix server, errors are received.

Solution By default, CAD for Unified CCX is installed on the C drive. However, when Citrix was installed and configured, no C drive was designated. To correct the problem, map a C drive on the Citrix server, then install CAD.

Agents Disappear from Supervisor Desktop Tree Control

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- Problem** Agents are displayed one at a time in the Supervisor Desktop's tree control. For instance, Agent A appears in the tree control when logging in, and then when Agent B logs in, Agent A disappears. Only one agent can be seen at a time.
- Solution** The CAD Configuration Setup utility (postinstall.exe) has not been run on the Citrix server on which Agent Desktop is installed.
- Run CAD Configuration Setup by double-clicking PostInstall.exe (located at ...\\Cisco\\Desktop\\bin) on the Citrix server.
- In CAD Configuration Setup, select Terminal Services in the navigation tree and make sure that Yes is selected in the right pane.
- See the *Cisco CAD Installation Guide* for more information on using CAD Configuration Setup.

Only One Agent at a Time Can Log Into Agent Desktop

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- Problem** Only one agent can log into Agent Desktop at a time. The only way another agent can log in is to forcibly log the first agent out.
- Solution** Terminal Services has not been enabled in the CAD Configuration Setup utility during CAD installation. This must be done in order to allow multiple logins to Agent Desktop in a Citrix/MTS environment.
- Run CAD Configuration Setup by double-clicking PostInstall.exe (located at ...\\Cisco\\Desktop\\bin) on the Citrix server.
- In CAD Configuration Setup, select Terminal Services in the navigation tree and make sure that Yes is selected in the right pane.
- See the *Cisco CAD Installation Guide* for more information on using CAD Configuration Setup.

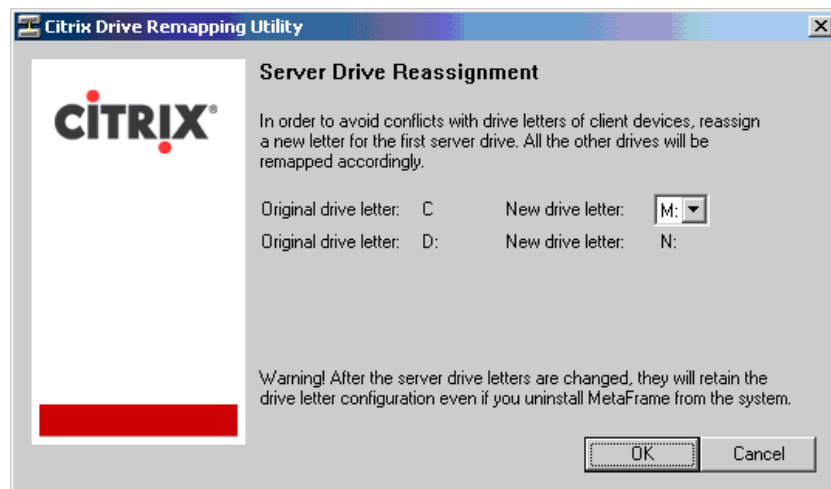
Agent's Login Persists in Terminal Services

-
- Problem** An agent using Agent Desktop with Terminal Services logs out, closes Agent Desktop, and then later attempts to log back in. The agent receives the message, "Cisco Agent Desktop is already running for Terminal Services user '<agent's user name>'. Only one instance per user is allowed."
- Solution** The OS variable SESSIONNAME was not updated when the agent logged out. If this variable is set to RDP-<session number> or ICA-<session number>, the system looks at the HOMESHARE variable for the agent's home directory, where that agent's logs and configuration files are stored. If the SESSIONNAME variable is not cleared, then Terminal Services sees the agent as logged in. This can happen if the agent does not log off of Terminal Services cleanly after logging out of Agent Desktop. To log out cleanly, the agent must select Log Out from the Terminal Services dialog box drop-down list and then click OK.

Uninstall of CAD for Unified CCX Not Complete

- Problem** CAD for Unified CCX could not be completely uninstalled from the Citrix/MTS server using the Windows Add or Remove Programs utility.
- Solution** Citrix recommends that you reassign server drive letters to avoid conflicts with the drive letters on client devices. This reassignment is done using the Citrix Drive Remapping Utility ([Figure 19](#)).

Figure 19. Citrix Drive Remapping Utility window



The uninstall program for versions of CAD for Unified CCX looks for a C drive as the location on which CAD was installed, despite the installation of CAD on another drive. As a result, the uninstall does not completely remove all files. This occurs only in versions of CAD for Unified CCX.

To prevent this from happening, ensure that the Citrix server creates a C drive on installation. Otherwise, CAD can be manually uninstalled. For the procedure for manual installation, see the *Cisco CAD Troubleshooting Guide*.

