Administrator's Guide

Citrix ICA OS/2 Client

Version 6.0

Citrix Systems, Inc.

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Contents

CHAPTER 1

Before You Begin

Who Should Use this Manual

This manual is for system administrators responsible for installing, configuring, deploying, and maintaining the Citrix ICA Client for OS/2 Warp (also called the Citrix ICA OS/2 Client). This manual assumes knowledge of:

- The Citrix server to which your ICA Clients connect
- The operating system on the client computer (IBM OS/2 Warp 3 or Warp 4)
- Installation, operation, and maintenance of network and asynchronous communication hardware, including serial ports, modems, and device adapters

How to Use this Guide

To get the most out of the *Citrix ICA OS/2 Client Administrator's Guide,* review the table of contents to familiarize yourself with the topics discussed.

This guide contains the following sections:

Chapter	Contents
Chapter 1, "Before You Begin"	Gives an overview of the documentation.
Chapter 2, "Introduction to the Citrix ICA OS/2 Client"	Gives a detailed list of features.
Chapter 3, "Deploying the Citrix ICA OS/2 Client"	Describes how to install and update the Citrix ICA OS/2 Client
Chapter 4, "Configuring the Citrix ICA OS/2 Client"	Describes how to configure connection properties and device mappings for the ICA OS/2 Client.

Chapter	Contents
Chapter 5, "ICA File Parameters"	Describes ICA file structure, contents, and settings specific to ICA OS/2 Client.
Chapter 6, "Troubleshooting"	Describes basic troubleshooting procedures and optimization tips.

Conventions

The following conventional terms, text formats, and symbols are used throughout the printed documentation:

Convention	Meaning
Boldface	Commands, names of interface items such as text boxes and option buttons, and user input.
Italics	Placeholders for information or parameters that you provide. For example, *filename* in a procedure means you type the actual name of a file. Italics also are used for new terms and the titles of books.
UPPERCASE	Keyboard keys, such as CTRL for the Control key and F2 for the function key F2.
`Monospace`	Text displayed at a command prompt or in a text file.
%SystemRoot%	The Windows system directory, which can be WTSRV, WINNT, WINDOWS, or other name specified when Windows is installed.
{braces}	A series of items, one of which is required in command statements. For example, **{ yes** | **no }** means you must type yes or no. Do not type the braces themselves.
[brackets]	Optional items in command statements. For example, [/**ping**] means that you can type /**ping** with the command. Do not type the brackets themselves.
| (vertical bar)	A separator between items in braces or brackets in command statements. For example, { **/hold** | **/release** | **/delete** } means you type /**hold** or /**release** or **/delete**.
… (ellipsis)	You can repeat the previous item or items in command statements. For example, /**route:***devicename*[,…] means you can type additional *devicenames* separated by commas.

The Citrix ICA Clients allow users to connect to Citrix servers. When describing a feature or procedure common to all types of MetaFrame and *WINFRAME* servers, this manual uses the term *Citrix server.* When describing a feature unique to a particular MetaFrame or *WINFRAME* server, this manual specifies the appropriate server and version number.

Finding More Information

This manual contains conceptual information and installation and configuration steps for the ICA OS/2 Client. For additional information, see the following:

- The *Citrix ICA Client Administrator's Guides* for the other ICA Clients you plan to deploy
- For instructions about installing, configuring, and maintaining your Citrix servers, see the documentation included in your Citrix server package
- This book and other Citrix documentation is available in Adobe PDF format in the product documentation libray at http://www.citrix.com/services/productdocs.asp.

  Using the Adobe Acrobat Reader, you can view and search the documentation electronically or print it for easy reference. To download the Adobe Acrobat Reader for free, please go to Adobe's Web site at http://www.adobe.com.

Important Always consult the Readme files for your Citrix server and the Citrix ICA Client for any last-minute updates, installation instructions, and corrections to the documentation.

Citrix on the World Wide Web

The Citrix Web site, at http://www.citrix.com, offers a variety of information and services for Citrix customers and users. From the Citrix home page, you can access

- Downloadable Citrix ICA Clients (available at http://www.citrix.com/download/)
- Program information on Citrix Preferred Support Services options
- An FTP server containing the latest service packs, hotfixes, utilities, and product literature for download
- An online Solution Knowledgebase containing an extensive collection of technical articles, troubleshooting tips, and white papers
- Interactive online Solution Forums for discussion of technical issues with other users
- Frequently Asked Questions pages with answers to common technical and troubleshooting questions
- Citrix Documentation Library containing the latest MetaFrame documentation
- Information about programs and courseware for Citrix training and certifications
- Contact information for Citrix headquarters, including worldwide, European, Asia Pacific, and Japan headquarters

Reader Comments

We strive to provide accurate, clear, complete, and usable documentation for Citrix products. If you have any comments, corrections, or suggestions for improving our documentation, we want to hear from you. You can send e-mail to the authors at documentation@citrix.com. Please include the client software version number, and the title of the document in your message.

CHAPTER 2

Introduction to the ICA OS/2 Client

Overview

The ICA OS/2 Client lets you access a Citrix server from a client running OS/2 Warp. When connected to a Citrix server, the ICA OS/2 Client provides additional features that make remote computing just like running applications on a local desktop. The Citrix ICA OS/2 Client has the following features:

- Low bandwidth requirements
- Color depth and resolution
- Transparent clipboard access
- Client device mapping
- Application publishing support
- Basic encryption
- Disk caching and data compression
- SpeedScreen
- Hotkeys
- Web Browser support
- Business recovery
- Multi-session support

Some client features are available only when connecting to Windows NT Server 4.0, Terminal Server Edition, and Windows 2000 Servers.

Important This version of the ICA OS/2 Client does not support the following features commonly supported by other Citrix ICA Clients:

- Transport protocols other than TCP/IP
- Seamless windows
- Audio
- SpeedScreen Latency Reduction

Low Bandwidth Requirements

The highly efficient Citrix ICA protocol typically uses 20K of bandwidth for each session.

Color Depth and Resolution

On the ICA OS/2 Client, you can configure an ICA session to have a color depth setting of 16 or 256 colors. You can also specify the size of an ICA session window up to a maximum resolution of 1280 by 1024 pixels.

Transparent Clipboard Access

You can use the clipboard to cut and paste text between applications running locally on the client computer and applications running remotely in the ICA session. Access to the local clipboard is transparent and requires no special procedures. Using the familiar cut, copy, and paste commands, you can transfer text back and forth between local and remote applications.

Client Device Mapping

The Citrix ICA OS/2 Client supports client device mapping. Client device mapping allows a remote application running on the Citrix server to access printers, disk drives, and COM port devices attached to the local client computer. This feature is not available when connecting to MetaFrame for UNIX Operating Systems 1.0 and 1.1 servers.

Client Printer Mapping

Client printer mapping allows a remote application running on the Citrix server to access printers attached to the client computer. Users who access a Citrix server with the Citrix ICA Client can transparently access their local printers.

Client Drive Mapping

Client drive mapping allows drive letters on the Citrix server to be redirected to drives that exist on the client computer; for example, drive H in a Citrix user session can be mapped to drive C of the local computer running the Citrix ICA Client. These drive mappings can be used by File Manager or Explorer and other applications just like any other network mappings.

Client COM Port Mapping

The ICA Client COM port redirector gives Citrix ICA Client users access to virtually any peripheral that requires a COM port for operations. COM port mapping is similar to printer and drive mapping, and allows users to access a COM port on the client computer as if it were connected to the Citrix server.

Application Publishing Support

The ICA OS/2 Client supports the use of ICA connection files to connect to a Citrix server or to a published application that contains all of the information necessary to launch a user session or an application.

Encryption

This release of the ICA OS/2 Client supports Basic encryption.

Disk Caching and Data Compression

These features increase performance over low speed asynchronous and WAN connections. Disk caching stores commonly used portions of your screen (such as icons and bitmaps) locally, increasing network performance by avoiding retransmission of frequently used bitmaps. Data compression reduces the amount of data sent over the communications link to the client computer.

SpeedScreen

The ICA OS/2 Client supports SpeedScreen technology. SpeedScreen is a combination of technologies, implemented in ICA that decrease bandwidth consumption and total packets transmitted, resulting in consistent performance regardless of the network connection. SpeedScreen is not available when connecting to MetaFrame for UNIX Operating Systems 1.0 and 1.1 servers.

Hotkeys

The Citrix ICA OS/2 Client provides keyboard shortcuts that can be used to control various functions while in an ICA session.

Web Browser Support

The ICA OS/2 Client provides Web browser support for application launching. Application launching executes an application on a Citrix server when a hypertext link is selected on a Web page. Clicking a hypertext link launches a new window that connects to a Citrix server.

Business Recovery

The Citrix ICA OS/2 Client includes the additional intelligence to support multiple server sites (such as primary and backup) with different addresses for the same published application name.

This feature provides consistent connections to published applications in the event of a primary server disruption. Users now have an even higher level of fault tolerance.

Reconnect to Disconnected Sessions

If your ICA connection drops off or is disconnected, you can reconnect to the disconnected session by running the appropriate ICA file and reentering your user credentials. If the user credentials match, your session is restored to the state before disconnect occurred.

Multi-session Support

The ICA OS/2 Client is multi-session capable. This means that users can have multiple ICA sessions running simultaneously on an OS/2 Client device.

CHAPTER 3

Deploying the ICA OS/2 Client

Overview

This chapter explains how to install and update the Citrix ICA OS/2 Client. Topics covered in this chapter include:

- System requirements
- Installation
- Steps to perform before running the ICA OS/2 Client
- Starting the ICA OS/2 Client
- Ending a Citrix server connection
- Uninstalling the ICA OS/2 Client

System Requirements

Computers used with the ICA OS/2 Client must meet the following requirements:

- Standard PC architecture, 80486 processor or greater as required for the operating system
- OS/2 Warp 3.0 (FixPak 32 or greater), or Warp 4.0 (FixPak 5 or greater)

Note We strongly recommend upgrading your client machines to the latest IBM OS/2 Warp Fixpak available.

- 8MB RAM or greater
- Mouse and keyboard
- VGA or higher resolution
- 2MB free hard disk space
- Connection to a Citrix server over TCP/IP transport

Installation

Download the installation package for the Citrix ICA OS/2 Client from the Citrix Download site.

1. Copy the ICA OS/2 Client image (icaos2.exe) to a temporary directory (for instance, c:\temp) on the client machine. The file is a self-extracting archive.
2. Open an OS/2 command window, and change to the directory where the icaos2.exe file was saved.

   c:\>cd temp

3. Extract contents of the archive by running icaos2.exe.

   c:\temp>icaos2

   Contents of the archive are extracted to c:\temp.

4. To install the OS/2 Client, run install.exe:

   c:\temp>install

   The installation program begins installing the ICA OS/2 Client.

5. Follow the prompts until installation is complete.

Steps to Perform Before Running the ICA OS/2 Client

The ICA OS/2 Client software needs an ICA file to run, which is launched when the user clicks on an ICA connection icon. An ICA file contains connection information, and one ICA file per published application (or desktop connection) must be present at a location accessible to the client device. Before your users begin using the ICA OS/2 Client software to connect to the MetaFrame server, you need to do the following:

- Publish applications, if required
- Create ICA files for each published application or desktop connection
- Test ICA connection files from a client machine
- Deploy ICA files through the enterprise

Publish Applications

Prepare your Citrix server(s) for user connections by publishing applications. Application publishing is a method of making specific applications available to users as ICA connections. ICA files for published application invoke only the specified application in the ICA session and do not involve the ICA Client user in the mechanics of the server environment hosting the session.

Note You can also configure published applications to contain the entire Windows NT desktop environment if necessary.

The MetaFrame server software includes a utility called *Published Application Manager* that is the point of administration for application publishing.

The ICA OS/2 Client software lets users access published applications. When an ICA OS/2 Client user launches an ICA file, the ICA OS/2 Client uses the information contained in the ICA file to contact a specified Citrix server and initiate an ICA session containing a specific application. Published application connections are configured for the following connection properties:

- Whether the application can be used by explicit or anonymous users
- The command line and working directory associated with the application
- The groups and/or users allowed to run the application
- If the application title bar should be hidden
- If the application should be maximized at startup
- The server(s) that can be used to run the application

For more information about publishing applications, see the *MetaFrame Administrator's Guide*, the *WinFrame System Guide*, or the online Help for Published Application Manager for introductory and procedural information.

Create ICA Files

After you have published applications, create ICA files for each published application. Published Application Manager includes a wizard that lets you create ICA files for users to run to initiate ICA sessions. After publishing an application, use the Write ICA File wizard to create an ICA file for the application. The following ICA session attributes are stored in ICA files:

- The address of the Citrix server or the name of the published application definition to run
- The user name, password, and domain name to use when connecting to the Citrix server
- The encryption level to use when connecting to the Citrix server
- The size and color depth of the application window, expressed in pixels or as a percentage of the window size

To create an ICA file

To create an ICA file using Published Application Manager on a MetaFrame server:

1. Start Published Application Manager. (On the MetaFrame desktop, click **Start**, point to **Programs**, **MetaFrame Tools**, and then click **Published Application Manager**.)
2. In Published Application Manager's main window, select an entry in the list of published applications.
3. From the **Application** menu, click **Write ICA File**, or right-click the published application and select **Write ICA File**.
4. Follow the directions on screen. When prompted, save the ICA file to some location on the server.

Repeat the above steps for each published application on the server to which you want to provide access.

Test ICA Files

You can test ICA files on any system on which you have installed the ICA OS/2 Client software and that can access the MetaFrame server using TCP/IP.

1. Copy the ICA file to a directory on that computer, or browse to the network sharepoint that contains the ICA file(s).
2. Double-click the ICA file icon. You will see the login screen for the MetaFrame server.
3. Enter your user credentials. On successful authentication, an ICA connection is established to the MetaFrame server or published application that you specified in the ICA file.

Deploy ICA Files to Your Users

When you have verified that the ICA files work, your users can begin using the ICA OS/2 Client. This means giving them access to the ICA files by one or more of the following methods:

Place the ICA files on a network sharepoint

To give your users access to the ICA connection files, copy the ICA files to a network sharepoint and tell your users where to find them.

Copy ICA files to individual client machines

Instruct your users to copy the ICA files to a directory on their respective client devices. On the client device, users can launch ICA connections using one of the following methods:

- Open a file management utility on a OS/2 Client desktop and double-click on an ICA file name.
- Launch an ICA file from the command line as follows:

  c:\citrix>wficaos2 <*ICA file name*>

- Create desktop shortcuts for each ICA file. Launch the ICA connection by double-clicking the appropriate shortcut.

Create a Web page for launching ICA connections

The ICA OS/2 Client supports application launching from a Web browser. You need to have a Web server set up on your Intranet to serve up the HTML pages, and your users need to have the ICA OS/2 Client and a Web browser installed on their client devices.

HTML pages that launch ICA sessions contain a hyperlink to a valid ICA file that is located in some public HTML directory. For example, if you have an ICA file named Word.ica that executes Microsoft Word 7.0 on a MetaFrame server when invoked, your HTML page must contain the following reference:

Microsoft Word 7.0

When clicked, this hyperlink downloads the file, Word.ica, to the client system. The client computer then passes Word.ica to the ICA OS/2 Client, which uses the parameters in the ICA file to launch Microsoft Word 7.0 on the client desktop.

You can create HTML pages using the Write HTML File wizard in the Published Application Manager on the MetaFrame server. For more information, refer to your MetaFrame server documentation.

Important To allow application launching from a Web server, you need to register the ICA MIME type (application/x-ica=*.ica) with the server. Procedures for doing this vary by Web server. Refer to the documentation provided with your Web server on how to add an application MIME type.

Starting the ICA OS/2 Client

To start the ICA OS/2 Client

1. Browse to a local directory or network share-point that contains the ICA connection file(s).
2. Double-click the ICA file that will connect to the published application or server you need. You will see the login screen for the MetaFrame server.
3. Enter your user credentials. On successful authentication, an ICA connection is established to the published application or MetaFrame server that you specified in the ICA file.

Alternatively, you can launch ICA connections from the command prompt. To do this:

1. Open an OS/2 command window, and change to the directory where the client was installed.

   c:\>cd citrix

2. Run the ICA OS/2 Client with an ICA file as a parameter.

   c:\citrix>wficaos2 <*ICA file name*>

   You will see the login screen for the MetaFrame server.

3. Enter your user credentials. On successful authentication, an ICA connection is established to the published application or MetaFrame server that was specified in the ICA file.

Ending a Citrix Server Connection

To end an ICA connection, you can either logoff or disconnect. When you logoff, you are prompted to save the open document, close the application on the server, and close the ICA connection. When you disconnect, the application remains running on the Citrix server but the ICA session is closed. You can resume disconnected sessions by running the appropriate ICA file once again.

To log off from a Citrix server connection during an active ICA session

- On a *WINFRAME* server, click **File** in Program Manager in your active session and then click **Logoff.** Click **OK** to confirm.
- On a MetaFrame server, click **Start** in your active session and then click **Logoff**. Click **OK** to confirm.

▸ **To disconnect from a Citrix server connection during an active ICA session**

- On a *WINFRAME* server, click **File** in Program Manager in your active session and then click **Disconnect**. Click **OK** to confirm.
- On a MetaFrame server, click **Start** in your active session and then click **Disconnect**. Click **OK** to confirm.

—or—

Press ALT+F4 to close the OS/2 window and disconnect any open ICA sessions.

Uninstalling the ICA OS/2 Client

▸ **To uninstall the ICA OS/2 Client from an OS/2 Client system**

1. Copy the installation package to your local machine.
2. Open an OS/2 window, and change to the directory where the icaos2.exe file was saved:

   c:\>cd temp

3. Extract contents of the archive by running icaos2.exe:

   c:\>icaos2

   Contents of the archive are extracted to c:\temp.

4. Run install.exe:

   c:\temp>install

5. In the resulting dialog, you are given the option to either **Update the currently installed product** or **Delete the installed product and reinstall**. Select the latter option, and click **Continue**.
6. In the **Delete** dialog, select the instance of the OS/2 Client software to be deleted and click **Delete**.
7. After deleting the client software, the program prompts you to install a fresh version of the client. Click **Cancel**.

Configuring the ICA OS/2 Client

Overview

This chapter describes how to use and configure the ICA OS/2 Client. Topics in this chapter include:

- Mapping client devices
- Mapping client drives
- Mapping client COM ports
- Mapping client printers
- Using ICA OS/2 Client hotkeys

Mapping Client Devices

The Citrix ICA OS/2 Client supports mapping devices on client computers so they are available to the user from within an ICA session. Users can:

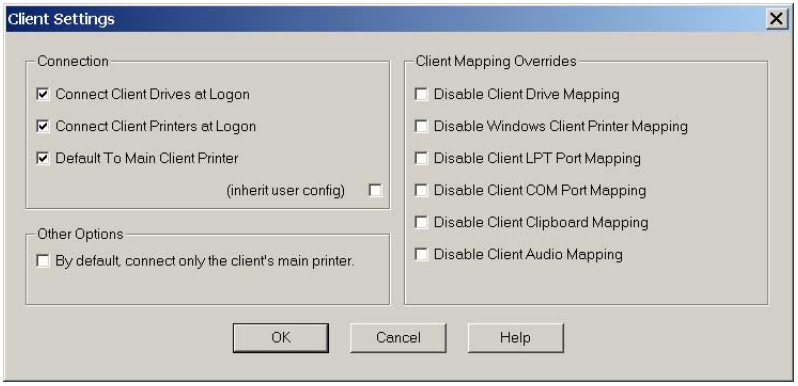
- Transparently access local drives, printers, and COM ports
- Cut and paste between the ICA session and the local OS/2 clipboard

During logon, the ICA Client informs the Citrix server of the available client drives, COM ports, and LPT ports. By default, client drives are mapped to server drive letters and server print queues are created for client printers so they appear to be directly connected to the Citrix server. These mappings are available only for the current user during the current session. They are deleted when the user logs off and recreated the next time the user logs on.

You can use the **net use** and **change client** commands to map client devices not automatically mapped at logon. See your Citrix server documentation for information about the **change client** command.

Turning Off Client Device Mappings

On a MetaFrame server, specify client device mapping options in the **Client Settings** dialog box in Citrix Connection Configuration. On a *WINFRAME* server, specify client device mapping options in Citrix Connection Configuration.



The **Connection** options control whether drives and printers are mapped to client drives and printers. If these options are cleared, the devices are still available but must be mapped to drive letters and port names manually.

Use the **Client Mapping Overrides** to disable client device connections.

Option	Description
Connect Client Drives at Logon	If this option is checked, the client computer's drives are automatically mapped at logon.
Connect Client Printers at Logon	If this option is checked, the client computer's printers are automatically mapped at logon. This option applies only to Windows and OS/2 Clients and maps only printers already configured in Print Manager on the client device.
Default To Main Client Printer	If this option is checked, the user's default client printer is configured as the default printer for the ICA session.
(inherit user config)	If this option is checked, the per-user settings in User Manager override these settings.

Mapping Client Drives

Client drive mapping allows drive letters on the Citrix server to be redirected to drives that exist on the client computer; for example: drive H in a Citrix user session can be mapped to drive C of the local computer running the Citrix ICA Client.

Client drive mapping is transparently built into the standard Citrix device redirection facilities. These mappings can be used by the OS/2 file management utilities and your applications just like any other network mappings.

Important Client drive mapping is not supported when connecting to MetaFrame for UNIX 1.0 and 1.1 servers.

The Citrix server can be configured during installation to automatically map client drives to a given set of drive letters. The default installation mapping maps drive letters assigned to client drives starting with V and works backwards, assigning a drive letter to each fixed disk and CD-ROM. (Floppy drives are assigned their existing drive letters.) This method yields the following drive mappings in a client session:

Client Drive Letter	Is accessed by the Citrix server as:
A	A
B	B
C	V
D	U

The Citrix server can be configured so that the server drive letters do not conflict with the client drive letters; in this case the Citrix server drive letters are changed to higher drive letters. For example, changing Citrix server drives C to M and D to N allows client computers to access their C and D drives directly. This method yields the following drive mappings in a client session:

Client Drive Letter	Is accessed by the Citrix server as:
A	A
B	B
C	C
D	D

The drive letter used to replace the Citrix server drive C is defined during Setup. All other fixed disk and CD-ROM drive letters are replaced with sequential drive letters (for example; C->M, D->N, E->O). These drive letters must not conflict with any existing network drive mappings. If a network drive is mapped to the same drive letter as a Citrix server drive letter, the network drive mapping is not valid.

When an ICA Client device connects to a Citrix server, client mappings are reestablished unless automatic client device mapping is disabled. Automatic client device mapping can be configured for ICA connections and users. In the **Client Settings** dialog box, you can enable or disable automatic client device mapping for an ICA connection. The **User Configuration** dialog box in **User Manager for Domains** allows you to enable or disable automatic client device mapping for a user.

Client COM Port Mapping

Client COM port mapping allows devices attached to the client device's COM ports to be used during ICA sessions on a Citrix server. These mappings can be used just like any other network mappings.

To map a client COM port

1. Start the ICA OS/2 Client and log on to the Citrix server.
2. Start a DOS command prompt:
3. On *WINFRAME*, double-click **Command Prompt** in the **Main** program group.

   On MetaFrame, click **Start**, then click **Programs**, then click **Command Prompt**.

   At the prompt, type **net use com*x*: \\client\com*z*:** where *x* is the number of the COM port on the server (ports 1 through 9 are available for mapping) and *z* is the number of the client COM port you want to map. Press **ENTER**.
4. To confirm the operation, type **net use** at the prompt. The list that appears contains mapped drives, LPT ports, and mapped COM ports.

To use this COM port in a session on a Citrix server, install your device to the mapped name. For example, if you map COM1 on the client to COM5 on the server, install your COM port device on COM5 during the session on the server. Use this mapped COM port as you would a COM port on the client device.

Important Client COM port mapping is not supported when connecting to MetaFrame for UNIX Operating Systems 1.0 and 1.1 servers.

Mapping Client Printers

Autocreated Printers

The Citrix ICA OS/2 Client supports autocreated printers. With autocreated printers, users find their local printers mapped to their sessions and ready for use as soon as they connect.

Published applications and ICA server connections configured to run a specified initial program offer users the same access to their local printers. When connected to published applications, users can print to local printers in the same way they would print to a local printer when using locally run applications.

Manually Mapping Client Printers on Citrix Servers

Client printer mapping lets users access printers attached to the client device during ICA sessions. When a Citrix server is configured to allow client printer mapping, applications running remotely on the Citrix server can print to local printers.

With the ICA OS/2 Client, you can manually map local client printers during your ICA sessions. When you manually map a client printer during an ICA session on a specific Citrix server, the printer is available for use during that and all subsequent ICA sessions on that server.

After connecting to a Citrix server, you can manually map your local client printers using the following procedures.

Important For information about how to configure ICA Client printing for MetaFrame for UNIX connections, see the *MetaFrame for UNIX Operating Systems Administrator's Guide*.

▶ **To map a client printer on a MetaFrame 1.x server**

1. Start the ICA OS/2 Client and log on to the Citrix server.
2. In the remote session window, double-click **My Computer** and then double-click **Printers**.
3. Double-click **Add Printer**. Select **Network printer server** and click **Next**.
4. In the **Shared Printers** field, double-click **Client Network** and then double-click **Client**.
5. In the printer list displayed, double-click the printer name you need.
6. If the server does not have a suitable printer driver installed, you are prompted to install the driver on the client device. Click **OK**.

7. In the **Manufacturer** field, select your printer's manufacturer. In the **Printers** field, select the model of your printer. Click **OK**.
8. If you are prompted for the location of the printer driver, click **OK** and enter the location of the files in the **Copy files from** field. Click **OK**.
9. Click **Finish**.

For the client printer to be available to other users on the client device who log on to the server under different user names, the printer permissions must be set to allow the other users access. Use the P**rinter Permissions** dialog box under the **Security** menu in **Print Manager** to set printer permissions.

▸ **To map a client printer on a *WinFrame* 1.7 server**

1. Start the ICA OS/2 Client and log on to the Citrix server.
2. In the remote session window, double-click **Print Manager** in the **Main** program group.
3. From the **Printer** menu, click **Create Printer**. The **Create Printer** dialog box appears.
4. Enter the name of your printer in the **Printer Name** field. The name must be in the format *clientname#LPTx*, where *clientname* is the name of your ICA client device and *x* is the client device LPT port to which the printer is attached.
5. In the **Driver field**, select the printer driver. In the **Print to** field, select the client device's LPT port (for example CLIENT\LPT1:). Click **OK**.

Depending upon the type of printer, a series of dialog boxes may appear to configure the printer. After you enter the information, the printer appears as an entry in Print Manager.

Viewing Mapped Printers on Citrix Servers

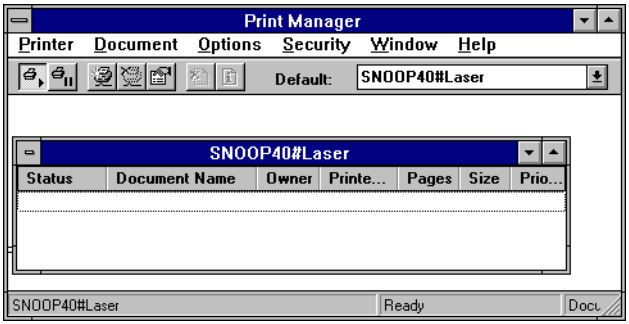
▸ **To view mapped client printers when connected to a MetaFrame server**

While connected to the MetaFrame server, double-click **My Computer** on the remote desktop and then double-click **Printers**. The **Printers** dialog box appears:

The **Printers** screen displays the local printers mapped to the ICA session. The name of the printer takes the form *clientname#printername,* where *clientname* is the unique name given to the client computer during ICA Client Setup and *printername* is the Windows printer name. In this example ICA session, a client device called "Snoop40" has access to its local printer named "Laser." This name cannot be changed and is used to locate the specific printer. Because the Windows printer name is used and not the port name (as with DOS Client printing), multiple printers can share a printer port without conflict.

To view mapped client printers when connected to a *WinFrame* server

While connected to the *WinFrame* server, double-click **Print Manager** in the **Main** program group. The **Print Manager** dialog box appears:



Print Manager displays the local printers mapped to the ICA session. The name of the printer takes the form *clientname#printername,* where *clientname* is the unique name given to the client computer during ICA Client setup and *printername* is the Windows printer name. In this example ICA session, a client machine called "Snoop40" has access to its local printer named "Laser." This name cannot be changed and is used to locate the specific printer. Because the Windows printer name is used and not the port name (as with DOS Client printing), multiple printers can share a printer port without conflict.

Using ICA OS/2 Client Hotkeys

The Citrix ICA OS/2 Client provides hotkeys that can be used to control various OS/2 Client functions. When the ICA session has the focus on the client device's desktop, pressing these hotkeys causes the associated action to occur.

Appsrv.ini Parameter	Default Keyboard Shortcut	Description
Hotkey1	SHIFT+F1	**Task List.** The Task List hotkey displays the OS/2 Task List for your local OS/2 client device.
Hotkey2	SHIFT+F3	**Close Remote Application**. The Close Remote Application hotkey closes programs opened in an ICA session. If no programs are open, this hotkey prompts the user that the ICA session will be shut down and then, if given permission, disconnects the ICA session. Hotkey2 is mapped by default to SHIFT+F3.
Hotkey3	SHIFT+F2	**Toggle Title Bar**. This hotkey causes the Citrix ICA Client window to display or hide its Windows title bar. The default value for the Toggle Title Bar hotkey is SHIFT+F2.
Hotkey4	CTRL+F1	Substitute for the standard Windows hotkey CTRL+ALT+DEL. The CTRL+ALT+DEL hotkey displays the Windows NT Security desktop in the ICA session. Hotkey4 is mapped by default to CTRL+F1.
Hotkey5	CTRL+F2	Substitute for the standard Windows hotkey CTRL+ESC. On *WinFrame* servers, this hotkey causes the remote Task List to appear. On MetaFrame servers, the remote Windows NT Start menu appears. Hotkey5 is mapped by default to CTRL+F2.
Hotkey6	ALT+F2	Substitute for the standard Windows hotkey ALT+ESC. This hotkey is used to bring the focus to maximized and minimized windows of programs that are open in an ICA session. Hotkey6 is mapped by default to ALT+F2.
Hotkey7	ALT+PLUS	Substitute for the standard Windows hotkey ALT+TAB. Use this hotkey to cycle through applications that are open in the ICA session. A popup box appears and displays the programs as you cycle through them. The chosen application receives keyboard and mouse focus. Hotkey7 is mapped by default to ALT+PLUS.
Hotkey8	ALT+MINUS	Substitute for the standard Windows hotkey ALT+ SHIFT+TAB. Use this hotkey to cycle backwards through applications that are open in the ICA session. A popup box appears and displays the programs as you cycle backwards through them. The chosen application receives keyboard and mouse focus. Hotkey8 is mapped by default to ALT+MINUS.

Appsrv.ini Parameter	Default Keyboard Shortcut	Description
Hotkey9	CTRL+F3	The CTRL-SHIFT-ESC hotkey sends the standard Windows hotkey CTRL+SHIFT+ESC to the MetaFrame server running the remote application. (This hotkey is not used by ICA sessions on *WINFRAME* servers.) This hotkey displays the Windows NT Task Manager in the ICA session. The default value for the CTRL-SHIFT-ESC hotkey is CTRL+F3.
Hotkey10		This hotkey is not available on OS/2.

Using Applications Published on MetaFrame for UNIX

For connections to applications published on a MetaFrame for UNIX server, the Window Manager utility provides controls for configuring session display. This section describes how to use this utility.

Using the Window Manager

If you are connecting to an application published on a MetaFrame for UNIX server, use the Citrix Window Manager to minimize, resize, position, and close windows. This section describes how to use the Window Manager.

Minimizing, Resizing, Positioning, and Closing Windows

When you connect to a published application on a MetaFrame server, buttons to minimize, resize, position, and close windows are provided by the **ctxwm** Window Manager.

To minimize, resize, position, and close window

Use the left mouse button to click on the following buttons:

To	Click	Note
Minimize published application windows on your desktop		Application windows are minimized as icons on the desktop.
Open a minimized window		Click its button on the taskbar or its icon on the desktop.
Adjust the size of published application windows		Click and hold down the mouse button, then move the pointer to the edge of the window and drag it in the direction you want to scale it. The window dimensions are displayed in the top left-hand corner. Release the mouse button to apply the resizing. To resize the window proportionately, move the mouse pointer to a corner of the window and drag it.
Re-position published application windows		Click and hold down the mouse button, drag the window to the required position on the desktop, and release the mouse button.
Close and exit a published application		When you close the last application in a session, after 20 seconds the session disconnects automatically.

Using the Citrix Window Manager Menus

In remote desktop windows, you can use the ctxwm menu system to log off, disconnect, and exit from published applications and connection sessions.

To access the ctxwm menu system

1. On a blank area of the remote desktop window, click and hold down the left mouse button. The ctxwm menu is displayed.
2. Drag the mouse pointer over **Shutdown** to display the shutdown options.

To choose an option from the ctxwm menu

Drag the pointer over the required option to highlight it. Release the mouse button to select the option.

To	Choose
Terminate the connection and all running applications	Logoff
Disconnect the session but leave the application running	Disconnect
Disconnect the session and terminate the application	Exit

Note Your Citrix server can be configured to terminate any applications that are running if a session is disconnected.

ICA File Parameters

ICA files are text files containing a series of command tags. They are used by the Citrix ICA OS/2 Client to launch connections to a Citrix server. The command tags define the attributes of the session to be launched on the Citrix server, including:

- The address of the Citrix server, and optionally the name of a published application
- The height and width of the application ICA Client window
- The number of colors (16 or 256) to use when connecting to the Citrix server

ICA file parameters also give you access to various ICA session properties not configurable using standard application publishing methods. For example, you can specify client device mapping parameters to enable or disable client devices such as printers and COM ports.

This chapter contains the following:

- Information about the general structure of ICA files
- ICA file settings for the ICA OS/2 Client
- ICA file template for use with the ICA OS/2 Client

Note A template ICA file, template.ica, is available in the default client installation directory, c:\citrix. Use this file as a template for creating custom ICA files. Ensure that you make a backup copy of the template.ica file prior to using it to create custom ICA files.

ICA File Structure

An *ICA file* is a text file containing information about a published application. ICA files are written in Windows INI file format and organize published application information in a standardized way that ICA Clients can interpret. The following example depicts the basic ICA file layout:

```
[WFClient]
Version=2

[ApplicationServers]
ApplicationName=

[ApplicationName]
Parameter1=Value
Parameter2=Value
Parameter3=Value
```

[WFClient]

The [WFClient] section is the first section in an ICA file and must contain at least the parameter/value pair Version=2. The version number is for Citrix internal use and must not be modified.

[ApplicationServers]

The [ApplicationServers] section contains a single parameter. This parameter specifies the title of an application. Following the title of the application is an equals sign (=).

For example, in an ICA file for an application title such as "Notepad," the [ApplicationServers] section contains the following entry:

```
Notepad=
```

For an application title specified in this section, there is a corresponding [*ApplicationTitle*] section that describes the connection. Per the example above, a section called [Notepad] must be defined in the ICA file.

[*ApplicationTitle*]

The final required section in an ICA file is [*ApplicationTitle*], where *ApplicationTitle* is the application title defined in the [ApplicationServers] section.

The [ApplicationTitle] section contains configuration information for the specified application. This information is in the form of a parameter/value pair list. The following topics describe some parameters you can use to customize your ICA files.

ICA File Settings

The following topics list parameters that configure:

- General ICA session properties
- User credentials
- Client device mapping
- Window size, colors, and position
- Persistent bitmap caching
- ICA Client TCP/IP browsing
- ICA OS/2 Client specific properties

Important The parameters and their behavior described in the following sections are specific to the ICA OS/2 Client, and may not be supported by all ICA Clients or all Citrix server products. Please note that unless specified as "required" all parameters described are optional.

General Parameters

The following parameters configure basic ICA session properties.

Parameter	Data Type; Default Value;	ICA File or INI File section	Description
Address (required)	String; no default value	[WFClient]	Specifies the host name or TCP/IP address of a Citrix server. This entry is required to establish a server connection.
InitialProgram	String; no default value	[WFClient]	The name of the published application to run after login. The value specified is prefixed with a pound sign (#). For example, for a published application named "Notepad," specify: InitialProgram=#Notepad
TransportDriver (required)	String; no default value	[WFClient]	Transport protocol used to connect to the Citrix server. Always set to TCP/IP.
WinStationDriver (required)	String; Default= ICA 3.0	[WFClient]	Version of the ICA protocol to use for the connection. Always set to ICA 3.0.

Parameter	Data Type; Default Value;	ICA File or INI File section	Description
MouseTimer	Integer; Default=100 msec.	[WFClient]	Specifies a time interval in milliseconds during which mouse input is collected before being sent to the Citrix server. The default value of 100 milliseconds is optimized for WANs. In a Dial-In or LAN environment, reducing this value can give better responsiveness. Using too low a value in a LAN environment can generate a large number of small packets, which can affect network performance.
KeyboardTimer	Integer; Default=100 msec.	[WFClient]	Specifies a time interval in milliseconds during which keyboard input is collected before being sent to the Citrix server. The default value of 100 milliseconds is optimized for WANs. In a Dial-In or LAN environment, reducing this value can give better responsiveness. Using too low a value in a LAN environment can generate a large number of small packets, which can affect network performance.
ICAPortNumber	Integer; Default=1494	[WFClient]	By default, Citrix servers and ICA Clients use TCP/IP port 1494 to pass ICA traffic. Add this parameter to force the ICA Client to use some other TCP/IP port. To use this parameter, you must also configure the Citrix server to use a non-default port. If your Citrix server is a MetaFrame for Windows server, see your server documentation for information about using the ICAPORT utility. For MetaFrame for UNIX servers., see your server documentation for information about using the CTXCFG utility. You can also specify the desired port by appending ":port#" to the ICA file's address parameter. For example, to use port 80: Address=[*server address*]:80

User Credential Parameters

User credential parameters identify the user attempting to connect to the published application. Authentication normally occurs through the server login screen; however, it is possible to automate login by specifying the following parameters:

Parameter	Data Type; Default Value	ICA File or INI File section	Description
Username	String; no default value	[Application]	A user name supported by your Citrix server's account authority, for example, a Windows NT user name if your Citrix server is a Windows Terminal Server or Windows 2000 Server Family system.
Domain	String; no default value	[Application]	A Windows NT domain name.
Password	String; no default value	[Application]	A valid password for the specified user account.
ClearPassword	String; no default value	[Application]	Used to specify a password in clear text. **Important**! Please be aware that specifying this parameter can pose a security risk.

Client Device Mapping Parameters

Client device mapping parameters enable and disable client services such as client drive, COM port and printer mappings.

Parameter	Data Type; Default Value	ICA File or INI File section	Description
COMAllowed	Boolean; Default=True	[WFClient]	Enables or disables client COM port (also called serial port) mapping. Specify True to enable, False to disable.
CPMAllowed	Boolean; Default=True	[WFClient]	Enables or disables client printer mapping. Specify True to enable, False to disable.
CDMAllowed	Boolean; Default=True	[WFClient]	Enables or disables client drive mapping. Specify True to enable, False to disable.

Window Size, Color, and Position Parameters

Window size and color parameters control display properties of the ICA session window. Window position parameters control the positioning of the ICA session window on the client desktop.

Parameter	Data Type; Default Value	ICA File or INI File section	Description
DesiredColor	Integer; 1 = 16 colors; 2 = 256 colors	[WFClient]	Number of colors used to display the ICA session window.
DesiredHRES DesiredVRES	Integer; DesiredHRES=640 DesiredVRES=480	[WFClient]	Specifies the height and width of the ICA session window in pixels. **TIP**: To specify full screen mode, specify -1 as the desired height and width.
ScreenPercent	Integer; no default value	[WFClient]	Specifies the horizontal and vertical pixel resolution as a percentage of the client desktop. If the ScreenPercent field is present, DesiredHRES and DesiredVRES fields are ignored.
WindowXPos WindowYPos	Integer; no default value	[Application]	Specifies the position of the ICA session window on the client desktop. The session window is centered on the desktop by default. Window origin is at 0,0 at the top left-hand corner of the desktop.
HideTitleBar	Boolean; Default=False	[Application]	Specifies whether the title bar on the ICA session window is displayed or hidden.

Persistent Caching Parameters

Persistent caching parameters control the storing of commonly-used graphical objects such as bitmaps in a local cache on the client device's hard disk.

Parameter	Data Type; Default Value	ICA File or INI File section	Description
PersistentCacheEnabled	Boolean; Default=False	[WFClient]	Enables and disables persistent bitmap caching. Specify True to enable caching.
PersistentCacheSize	Integer; no default value	[WFClient]	Specifies the amount of disk space in bytes to use for bitmap caching.
PersistentCachePercent	Integer; no default value	[WFClient]	Specifies the percentage of hard disk space to use for persistent cache bitmaps.
PersistentCacheMinBitmap	Integer; no default value	[WFClient]	Specifies the smallest bitmap in bytes that can be cached to disk.
PersistentCachePath	String; Default= c:\citrix\cache	[WFClient]	Specifies the location of the local directory containing the cached image data.

TCP/IP Browsing Parameters

TCP/IP browsing parameters specify the Citrix server location, which provides a method for ICA Clients to resolve published application names into Citrix server IP addresses.

Parameter	Data Type; Default Value	ICA File or INI File section	Description
TcpBrowserAddress	String; no default value	[WFClient]	Specifies the IP address of a Citrix server used for server location and published application name resolution. Specify up to 15 TCP browser addresses by entering: TcpBrowserAddress2=x.x.x.x TcpBrowserAddress3=x.x.x.x
BrowserTimeout	Integer; no default value	[WFClient]	Specifies the number of milliseconds the ICA Client waits for a response after making a request to the master browser. The master browser request is an initial step required by server location and published application name resolution. This setting is useful in environments where the ICA Client's master browser request must pass through various impediments to quick response such as a WAN connection.
BrowserRetry	Integer; no default value	[WFClient]	Specifies the number of times an ICA Client resubmits a master browser request that has timed out. The master browser request is an initial step required by server location and published application name resolution.
UseAlternateAddress	Boolean; Default=False	[WFClient]	Defines whether to use a server's alternate address for ICA connectivity across a firewall or a router. Specify **True** to force the ICA Client to use the Citrix server's alternate address. To use this parameter, you must also configure the Citrix server. If your Citrix server is a MetaFrame for Windows server, see your server documentation for information about using the ALTADDR utility. For MetaFrame for UNIX servers, see your server documentation for information about using the CTXALT utility.

OS/2 Specific Settings

The following entries have been implemented to correct problems found in the OS/2 environment.

Parameter	Data Type; Default Value	ICA File or INI File section	Description
TextInvert	Boolean; no default value	[WFClient]	Some incorrectly implemented video drivers cause text and background in the ICA session window to appear inverted. Set the TextInvert=True flag to get the text and background to display correctly.
LFNSupport	Boolean; no default value	[WFClient]	This parameter enables support for long file names (LFN) on HPFS partitions under OS/2. However, you must use the standard 8.3 format to save to local 16-bit FAT drives. In cases, where the client machine contains both FAT and HPFS disk volumes, enabling this parameter enables support for long file names on the HPFS partitions only. The default value is **Default**. If LFNSupport is not set explicitly to True or False by the ICA file or any other INI files in use, the default behavior of autodetection prevails.
DisableHotkeys	Boolean; no default value	[WFClient]	Certain published applications reserve the use of hotkeys for application specific functions. This can cause a conflict with the hotkey definitions that are set as default on the ICA OS/2 Client. To disable all default hotkey definitions on the ICA OS/2 Client, set DisableHotkeys=True.

ICA File Template

This file is installed with the OS/2 Client software and is located in the client installation directory, usually c:\citrix. Use this file as a template to create custom ICA files for published applications. Enter an appropriate value for "Address" to connect to a MetaFrame server in your organization.

Note We recommend that you make a backup copy of the template.ica file prior to using it to create custom ICA files.

```
; ICA file template for the ICA OS/2 Client
;
; Copyright 2001 Citrix Systems, Inc. All rights reserved.
;
; This file is provided as a template for creating ICA files
; for use with the Citrix ICA OS/2 Client. Always edit a copy of this file.
;
; The "Address=" entry in the "[Template]" section must
; be changed. See the associated comments for more details.

[WFClient]
Version=2

;+++
; Specify the ICA browser address to locate distant servers.
; It is possible to use multiple browser addresses
; (e.g., 2, 3,...) in case some servers are unavailable.
;
;TcpBrowserAddress=server-name-or-network-address
;TcpBrowserAddress2=server-name-or-network-address
;TcpBrowserAddress3=server-name-or-network-address
;---

[ApplicationServers]
Template=

[Template]
WinStationDriver=ICA 3.0
TransportDriver=TCP/IP

;+++
; Specify the host name or TCP/IP address of a Winframe or
; MetaFrame server. This entry is required to establish a
; server connection.
Address=server-name-or-network-address
;---
```

<*continued on page 45*>

<continued from page 44>

```
;+++
; Configure the address of a published application on the specified server or
; server farm. The default application is the entire server desktop.

; The "#" prefix is required. The server must already be configured to
; publish the specified applications.
;
; Uncomment the next line to run an application called Notepad.
;InitialProgram=#notepad
;---

;+++
; Configure the number of colors on the server desktop.
; The default number of colors, unless otherwise specified, is 16 colors on
; Windows-based servers, and 2 colors on Unix-based servers.
;
; Uncomment the next line for 16 colors
;DesiredColor=1
;
; Or, uncomment the next line for 256 colors
;DesiredColor=2
;---

;+++
; Configure the resolution of the server desktop.
; The default resolution is 640 by 480, unless otherwise specified.
;
; Uncomment the next two lines for 800 by 600 resolution
;DesiredHRes=800
;DesiredVRes=600
;
; Or, uncomment the next two lines for 1024 by 768 resolution
;DesiredHRes=1024
;DesiredVRes=768
;---

;+++
; Configure the position of the session window, and the visibility
; of the title bar, on the client desktop.
; The default window position is at the centre of the desktop, and
; the title bar is visible by default.
; The window origin is 0,0 at the top-left corner of the desktop.
;
; Uncomment the next three lines to place the window in the top-left
; corner of the screen and hide the title bar.
;WindowXPos=0
;WindowYPos=0
;HideTitleBar=true
;---
```

<continued on page 46>

<continued from page 45>

```
;+++
; Enable persistent caching to store commonly-used graphical objects
; such as bitmaps in a local cache on the client hard disk. If your
; connection is bandwidth-limited, enabling caching increases
; performance. If your client is on a high-speed LAN, you may prefer
; to disable caching and save disk space.
;
; Cache size specifies the amount of disk space to use for bitmap
; caching. This value is in bytes.
;
; The minimum size bitmap that will be cached. Specifies the smallest
; bitmap that will be cached to disk. This value is in bytes.
;
; Cache path specifies the location of the directory containing the
; cached image data. If the specified directory does not exist,
; it is created.
;
; Uncomment the next four lines to enable disk caching.
;PersistentCacheEnabled=On
;PersistentCacheSize=10000000
;PersistentCacheMinBitmap=8192
;PersistentCachePath=C:\CITRIX\CACHE
;---
```

Troubleshooting

This section describes basic troubleshooting procedures, and known problems that were known to exist at the time of this release.

This chapter contains the following:

- Troubleshooting ICA connections
- Troubleshooting and optimization tips
- Known problems

Troubleshooting ICA Connections

Described below is a typical sequence of troubleshooting checks that you can perform if you are having trouble establishing an ICA connection.

Can you Ping the Server?

Check that the network is functioning correctly. Use a TCP/IP tool such as the **ping** command to verify the connection to the Citrix server.

c:\>ping <*hostname*>

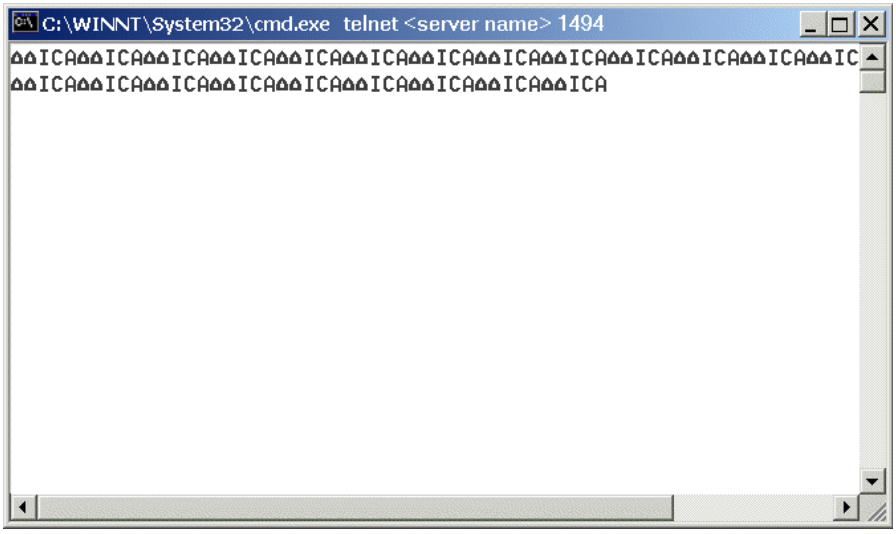
If you cannot ping the server and ICMP (Internet Control Message Protocol) is not being filtered either by a firewall or a router, you do not have a clear path to the server. This is a problem at the network level that needs to be resolved before the ICA OS/2 Client can make a connection.

Can you telnet to Port 1494 and Get an ICA Sounder?

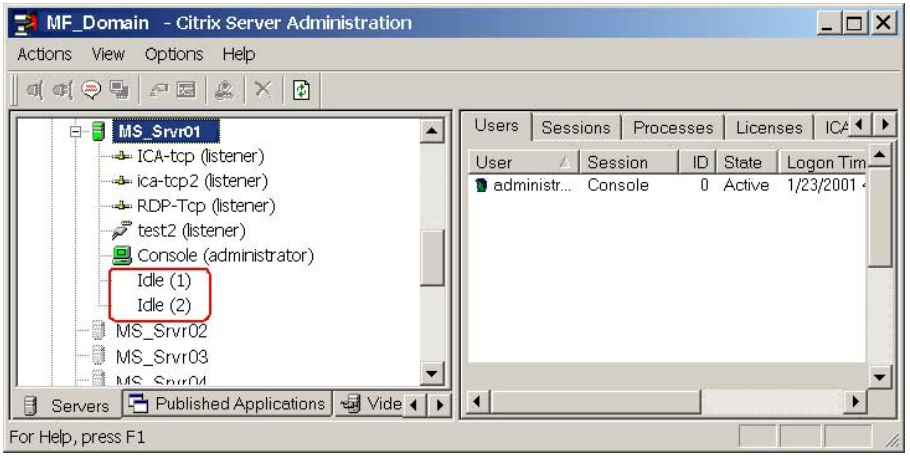
Ensure that the network TCP port 1494 (port used by Citrix servers and clients to pass ICA traffic) is open. To do this, start a telnet client at the command prompt on the client workstation:

c:\>telnet [*server address*] 1494

If you do not see the ICA data stream as shown below, you are experiencing problems establishing a socketed connection with the Citrix server.



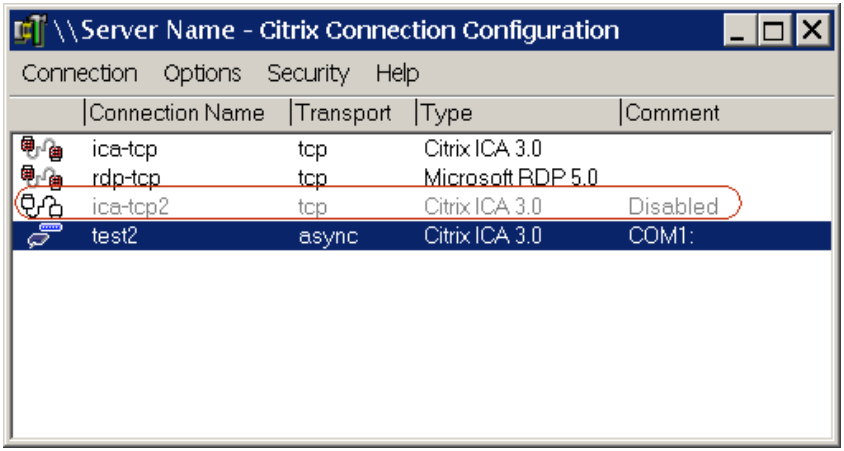
This can happen if the Citrix server does not have any available idle port listeners or is not accepting connections. Check for available port listeners in the Citrix Server Administration utility, or run the command-line utility **QWinsta/debug** to provide this information. If there are no idle port listeners, resolve this issue before trying to connect with any client.



Check the Event Viewer on the Citrix server to determine why the port listeners are unavailable.

Are Your TCP Port Listeners Disabled?

Ensure that that your port listeners are not disabled. Check the state of port listeners in the Citrix Connection Configuration utility.



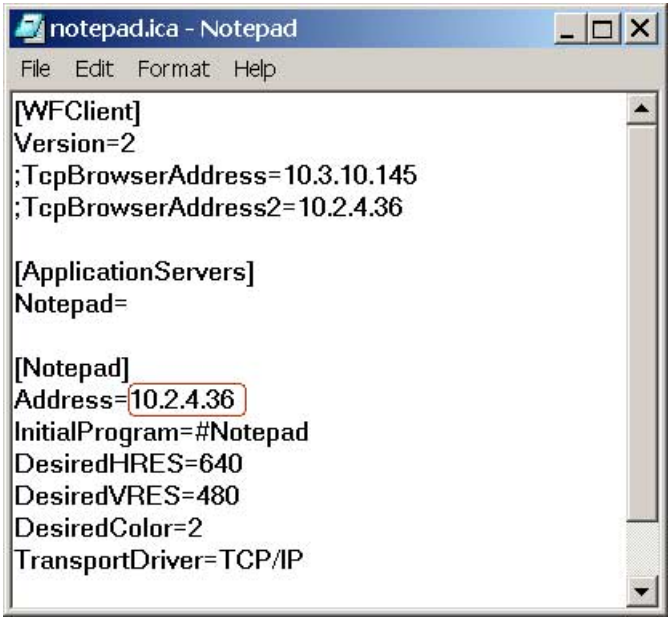
For an ICA Client to establish a client connection, it needs to be able to establish a socket on TCP port 1494 toward the server, and ports 1023 and above toward the client. Ensure a router or a firewall is not blocking socketed connections of this type to these ports. Try the following to establish a port “blocking” issue:

- Can you telnet port 1494 from the server console back to itself in a loopback connection?
- Can a client on the same physical subnet as the server establish a 1494 telnet session?

Note If you are uncertain of the test phase above, proceed to the next phase. However, keep in mind that if the above doesn’t work, the next troubleshooting step will not work either.

Can You Connect Using the IP Address of the Server?

In the ICA file used to connect to the server, specify the IP address in the **Address=** field:



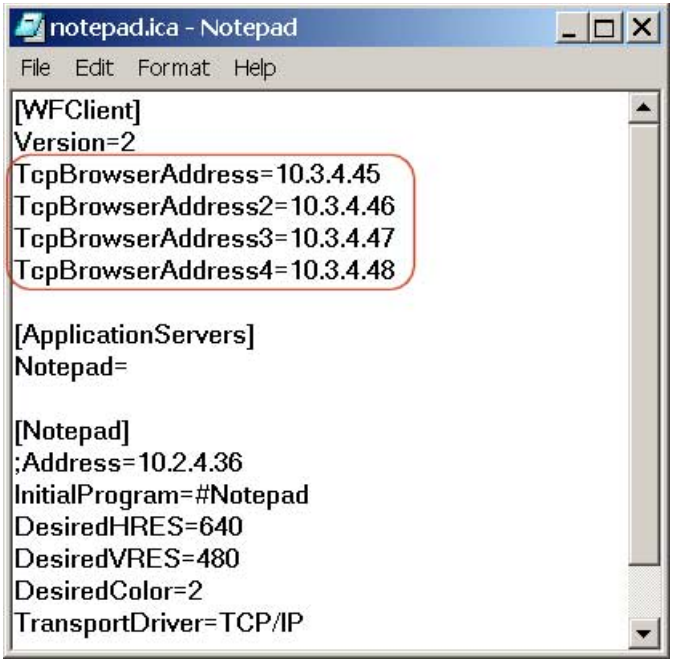
If you fail to connect, the steps above will confirm the action of the "Telnet 1494" test. You can also try to make a connection with the ICA Client doing a loopback on the console. If a local client can connect but a remote client cannot, check your routers and firewalls for the answer.

Note Network Monitor is a good tool to install at the server to establish why a client cannot connect. Most routers and firewalls have the ability to log packet activity and become a reliable source when troubleshooting client connectivity problems.

Establishing a Name Resolution Issue

If all the previously described troubleshooting steps passed, this is probably a name resolution issue. Names are resolved by the master ICA Browser for published applications. When a client attempts to connect to the Citrix server, the following happens:

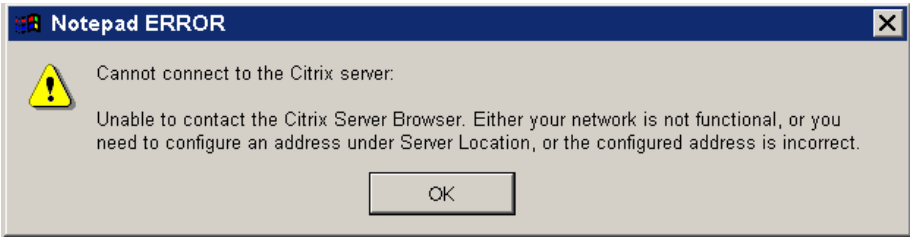
The client first sends a packet requesting the location of the master browser from the TcpBrowserAddress entries in the ICA file. This directed packet is sent on UDP port 1604 toward the server, and the server returns a response on the client's randomly-generated high port 1023+.



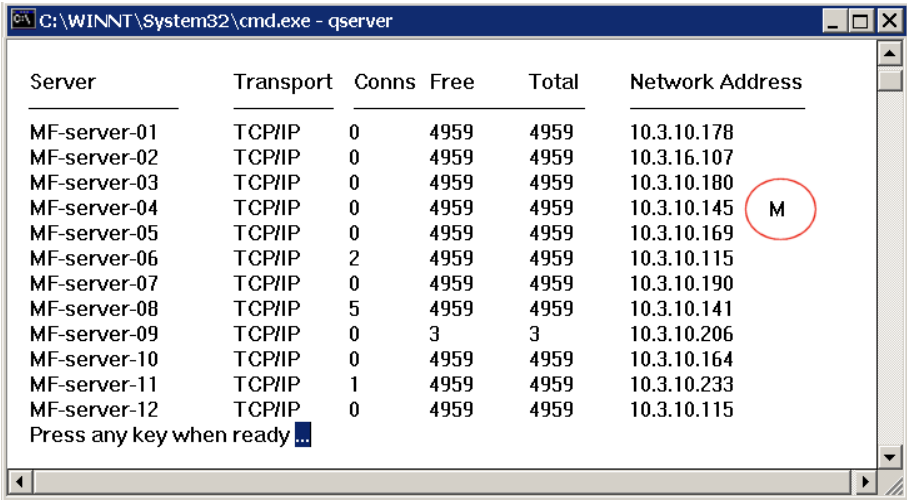
If more than one TCPBrowserAddress is specified in the ICA file, simultaneous packets are sent to each server and the server that responds first is the address used for the next request.

If the ICA file does not contain a TcpBrowserAddress entry, a broadcast is made for the location of the master ICA Browser. If the application is published to a server on another subnet, it could be the reason why you cannot connect. Broadcasts are filtered by routers and firewalls and will not pass onto the next subnet.

The error message shown below is typically the result when a TcpBrowserAddress is not specified and the Citrix server is on a physically remote subnet.



To resolve this problem, identify which server is the master ICA Browser by performing a **Qserver** on one of the Citrix servers on the subnet to which you want to connect.



The Master ICA Browser is flagged with an "M" next to the address.

Ping the master ICA Browser to verify that you can connect to the server on a basic connectivity level.

Note If address translation is being used, the master browser must have an external IP address (that represents the master browser internally) on the firewall.

Troubleshooting and Optimization Tips

Netscape Installation

If one of the access methods for published applications is through a Web browser (Netscape), Citrix recommends that you install Netscape before you install the ICA OS/2 Client. The ICA OS/2 Client automatically registers itself with the browser and a MIME type is created for ICA files as part of the setup process.

If for some reason you prefer to install Netscape after the OS/2 Client, you can register the OS/2 Client by running the following command in an OS/2 window:

c:\> wficaos2 /setup

Persistent Cache Settings

Persistent caching can be enabled in the Appsrv.ini file for all ICA sessions running on the local client device, or enabled in the ICA file for all users of a particular application. The settings for persistent cache are:

PersistentCacheEnabled=Off
PersistentCacheEnabled=On

Enable persistent caching to store commonly-used graphical objects, such as bitmaps, in a local cache on the client's hard disk. If your connection is bandwidth-limited, enabling caching increases performance. If your client is on a high-speed LAN, you can disable caching to save disk space. Disk caching is disabled by default.

Cache size specifies the amount of disk space to use for bitmap caching. This value is in bytes.

PersistentCacheSize=10000000

This is the minimum size bitmap that will be cached. Specifies the smallest bitmap that will be cached to disk. This value is in bytes.

PersistentCacheMinBitmap=8192

Specifies the location of the directory containing the cached image data. If the specified directory does not exist, it is created.

PersistentCachePath=c:\citrix\cache

Editing ICA Files in the OS/2 Environment

All INI and ICA files are defined as being encoded with characters based on the Windows character set.

Therefore any characters with values between 128 and 255 will appear incorrect when viewed or edited under OS/2 unless a Windows compatible code page is used. If a Windows compatible code page is not available under your configuration of OS/2, Citrix recommends that you make the edits under Windows, and copy the changed file back to the OS/2 environment.

Client Window Placement

If you require the ICA Client session to always appear at a fixed position on the user's desktop, you can use the ICA file settings that are defined for this purpose. The following ICA parameters to control window positioning and appearance are available on the ICA OS/2 Client:

WindowXPos type integer
WindowYPos type integer
HideTitleBar type boolean

For window position, the origin is at the top-left corner of the screen and is measured in pixels. These settings are optional and specific to each session.

For example, to place a captionless window at coordinates (10,20), add the following parameters to the ICA file:

```
WindowXPos=10
WindowYPos=20
HideTitleBar=true
```

The default setting for window position (centered on the desktop) prevails if these settings are not specified.

Disabling Hotkeys on the Client

Certain applications reserve the use of hotkeys for application-specific functions. If these applications are published on a Citrix server, the potential exists for conflict with the default hotkey definitions on the ICA OS/2 Client.

To disable the default hotkey settings on the ICA OS/2 Client, set **DisableHotkeys=True** in the ICA file. If this setting is present, all hotkey definitions except those reserved by the operating system are ignored.

Known Problems

Printer Autocreation Failure

When a OS/2 Client connects to a Citrix server session, local printers are autocreated in the MetaFrame server session.

When logon to the server occurs, the server sends a request for printing information. If a printer is installed, the client returns the printer name, the port name, and the driver name. The driver name installed on the client needs to match the driver that is installed on the server for autocreation of the printer to occur. The driver names must match exactly, otherwise a driver name mismatch occurs and printer autocreation fails. Printer drivers are, therefore, one of the key elements of autocreation.

On OS/2 this can pose problems, because driver names (on OS/2 Client devices) can be different from their Windows counterparts.

For example, you have a printer driver on your OS/2 client device that is named: HP LaserJet 4/4MP. When you install the same driver on Terminal Server, the driver name appears as HP Laserjet 4. Absence of the /4MP portion of the driver name means that this printer will not be autocreated.

When this happens, you need to modify the wtsuprn.txt file. This file is located in the %SystemRoot%\System32 folder. When you are done editing this file, save it with an .INF extension. Make all future edits or additions to the wtsuprn.inf file.

The wtsuprn.txt file is essentially a list of printer driver name mappings on the client and the server.

It is important that you know the exact name of the printer driver to be loaded on the client. You can determine this by opening the local OS/2 spooler for a particular printer and viewing the printer driver information within the **Properties** menu. Note that on OS/2 the printer driver name is displayed as *driver.printername.*You need to add only the *printername* to the wtsuprn.txt file.

For example, if the printer driver information for a HP DeskJet 340 printer is displayed as “OMNI.HP Deskjet 340,” you need to specify “HP Deskjet 340” as the printer name on the client in the wtsuprn.txt file.

Below is an excerpt from the wtsuprn.txt file:

```
; Printer Name on the Client                Printer Name on the Server
;
;"HP LaserJet 4/4M"                         = "HP LaserJet 4"
;"HP LaserJet 4P/4MP"                       = "HP LaserJet 4P"
;"HP LaserJet 4 Plus/4M Plus"               = "HP LaserJet 4 Plus"
;"HP LaserJet 4Si/4Si MX"                   = "HP LaserJet 4Si"
;"HP LaserJet 4V/4MV"                       = "HP LaserJet 4V"
;"HP LaserJet 5/5M - Enhanced"              = "HP LaserJet 5"
;"HP LaserJet 5/5M - Standard"              = "HP LaserJet 5"
;"HP LaserJet 5/5M PostScript"              = "HP LaserJet 5"
;"HP LaserJet 5L (PCL)"                     = "HP LaserJet 5L"
;"HP LaserJet 5P/5MP (HP)"                  = "HP LaserJet 5P"
```

Long Filename Support

Long filename support is a feature of the ICA OS/2 Client.

The ICA OS/2 Client treats all disk volumes as long filename support enabled. This is a problem when FAT volumes are encountered. The client automatically treats the FAT volume as long filename enabled, and operations such as save and copy to the FAT volume will fail.

The ICA file setting for long filename support is LFNSupport=True. This setting is enabled by default. You can disable long filename support by setting LFNSupport=False in the ICA file. The safer alternative is to instruct your users to use the standard 8.3 file naming convention.

GRADD Video Driver Support

All GRADD drivers are based on IBM GRADD display driver technology. However, support for GRADD video drivers with a 256-color palette desktop is limited. Color corruption can occur within your connection window and the use of these video drivers is not recommended at this time.

Some combinations of video chipsets working with GRADD drivers can exhibit video display corruption.

Note The SciTech Display Doctor series of drivers are based on GRADD technology.

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