

Seagate Info 7.5

Microsoft Terminal Server & Citrix MetaFrame

Overview

Microsoft's Terminal Server (<http://www.microsoft.com/ntserver/ProductInfo/terminal/default.asp>) and Citrix MetaFrame (<http://www.citrix.com>) are two of the leading thin-client platform models. This document provides information pertaining to how Seagate Info (SI) 7.5 can be deployed and configured to run in conjunction with Terminal Server and MetaFrame. Notes regarding issues and limitations that are known to exist when running SI7.5 with these systems are also included.

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The Thin Client Paradigm

A thin client is a network-dependent terminal capable of displaying remote applications that run entirely on an attached server. A thin-client device can be a PC, network computer (NC), or terminal. The key to thin-client computing is that applications run on the server, not on the client. An NC or PC that runs all or part of an application is not a thin client.

Thin-client computing isn't a new concept but a return to the mainframe model. Fewer wasted CPU cycles, centralized administration, and pooling of resources are all advantages of thin-client computing.

Citrix MetaFrame and Microsoft Terminal Server extend the model of distributed computing by allowing PCs to operate in a server-based computing environment. All client application execution, data processing, and data storage occur on the server. Applications and user desktops are transmitted over the network and displayed via terminal emulation software. Similarly, print streams, keyboard input, and mouse clicks are also transmitted over the network between the server and the terminal emulation software. Each user logs on and sees only their individual session. Every user session is managed transparently by the server operating system and is independent of any other user session.

With Citrix MetaFrame and Microsoft Terminal Server, SI7.5 does not need to be installed on every client machine. It will be possible to schedule reports using the Info Desktop and to employ the Info Administrator to administer the SI7.5 system by simply opening a browser or installing a 1.4 MB MS Terminal Server or Citrix MetaFrame client.

Note: We do not recommend installing the Info APS on a Citrix MetaFrame or MS Terminal Server. As the term "thin-client" implies, only the SI7.5 client components should be used in this model.

Definitions

WinFrame - Software from Citrix Systems (Citrix) that turns a Windows NT server into a time-shared central computer. Windows applications are run on the server and only screen changes are sent to the attached PCs, NCs or Winterm terminals. Terminal input and output are governed by Citrix's Intelligent Console Architecture (ICA) protocol. WinFrame is comprised of Citrix's MultiWin multi-user technology, Windows NT and ICA. MultiWin is used in Microsoft's own multi-user NT system.

Windows Terminal Server - Microsoft's version of the Winframe multi-user architecture. It turns an NT server into a centralized, time-shared computer also. It uses the T.share presentation services protocol to govern input/output to Windows clients. With additional software from Citrix on the server, clients employing the ICA protocol may also connect to the server.

MetaFrame - The server component from Citrix that allows Windows Terminal Server to interact with client stations running the ICA protocol. Windows Terminal Server normally supports Windows-only clients using the T.share protocol. With MetaFrame, ICA terminals and DOS, Mac and UNIX clients can also run Windows applications on the server.

T.share - The remote control part of the T.120 real-time data conferencing protocol. T.share is used in Microsoft's NetMeeting and RDP (Remote Desktop Protocol) is based on it.

RDP - (Remote Desktop Protocol) The presentation services protocol that governs input/output between a Windows terminal client and Windows Terminal Server. It is based on the T.share protocol.

ICA - (independent Computing Architecture) The presentation services protocol from Citrix that governs input/output between the client and the server.

Display Protocol Functions in Terminal Server, MetaFrame, and Win2K Server			
Feature	NT 4.0 Terminal Server (RDP)	MetaFrame (ICA)	Win2K Server (RDP)
Win32 client support	X	X	X
Windows for Workgroups 3.11 support	X	X	X
Win16 client support		X	
Non-Windows client support (e.g., DOS, UNIX, Java)		X	
Browser client support		X	
TCP/IP for transport protocol	X	X	X
IPX/SPX, NetBEUI, direct asynchronous transmission for transport protocol		X	
LAN and WAN connection	X	X	X
System sounds	X	X	X
Other audio files		X	
Local hard disk manual re-mapping to server disk	X	X	X
Local hard disk automatic re-mapping to server disk		X	
Serial ports manual re-mapping to terminal server ports	X	X	X
Client serial ports automatic re-mapping to terminal server serial ports		X	
Shared Clipboard between local and remote sessions		X	X
Load balancing		X	X
Session shadowing		X	X
Web-based application publishing		X	
Application configuration	X	X	X
Local printing from terminal server		X	X
Encryption	X	X	X
Direct dial-up connections without intervening server		X	
Individual application publishing		X	

SI7.5 and Microsoft Terminal Server

I. Installation

- i. Install Terminal Services as a stand-alone server and not as a domain controller.
(Installing Terminal Services as a domain controller can affect the performance of the server because of the additional memory, network traffic, and processor time required to perform the tasks of a domain controller).
- ii. Install Terminal Services on an NTFS file system partition. (NTFS provides greater security for users who access the same data structures in a multi-session environment).
- iii. **IMPORTANT:** Use **Add/Remove Programs** in the Windows Control Panel to install SI7.5 on the Terminal server. Using this method, you can install programs for multi-session use.
- iv. Program installation often requires a system reboot. Always ensure that there are no users logged on to the Terminal Server before starting any program installation.

II. Publishing and Printing

- i. We recommended installing only the client components of SI7.5 (i.e. Info Desktop, Info Administrator).
- ii. Unlike MetaFrame, Terminal Server provides clients with the entire Windows GUI, thus exposing other applications that may be installed on the machine also.
- iii. Install the Terminal Services client on the client machine's desktop. The user will be able to logon to a Terminal Server and use the SI7.5 client components according to the user's operating system and SI7.5 credentials.
- iv. For 32-bit Windows 2000 Terminal Services clients, printer redirection is automatic when the local printer uses a driver that is installed on the Windows 2000 server. When a client logs on to Terminal Services, local printers attached to LPT, COM, and USB ports that are installed on the client computer are automatically detected, and a local queue is created on the server. The client computer printer settings for the default printer and some properties (such as printing on both sides of the page) are used by the server. When a client disconnects or ends the session, the printer queues are deleted and any incomplete or pending print jobs are lost. Information regarding the client's local printers and settings are saved on the client computer. On subsequent logons, the printer queue is created using the information stored on the client computer. If a printer driver is not found on the server, an event is logged and the client printer is not created. To make the printer available, the driver must be manually installed on the server.
- v. If a client has no installed printer, Terminal Server will prompt the user to find a printer on the network. Unless the Terminal Server is set to Remote Administration Mode, logged clients with proper credentials will be able to use the Terminal Server's printers. Administrators can modify the client print settings using Terminal Services **Conf|Connections|RDP-TCP Properties|Client Settings**.

III. Notes and Known Issues

- i. **IMPORTANT:** When shutting down a Terminal Server, use the *shutdown* (NT) and *tsshutdown* (Win2000) commands from a command prompt window instead of the Shut Down option on the Windows Start menu. This will shut down the server in a controlled manner. (The Shut Down option on the Start menu does NOT notify users before ending user sessions and is not recommended. Ending a user's session without warning can result in loss of data on the client side).
- ii. There will be various problems using SI7.5 in a Terminal Server environment:

- A user will not be able to export from the Desktop.
- A user cannot connect to native data sources, i.e. Microsoft SQL Server and other databases, to create a new query using the Data Explorer of the Report Designer or the SQL Designer.
- A report based on a native data source cannot be refreshed in the Info Report Designer.
- Attempting to export a report from the Info Report Designer will result in an error message: i.e. "No Export DLLs found."
- Show SQL Query in the Info Report Designer does not work

To resolve these issues, users will need to copy all the files from the %Windir%\Crystal directory to %Windir%\System32 directory.

- iii. When attempting to save a read-only report onto the Info APS, users will be prompted with a "Save As" dialog. Note that when this occurs, the report will be saved to the Info APS even if users cancel the save operation (i.e. users who choose NOT to save the report when prompted will still have the report saved to the Info APS. It will not be possible to open this report later, as a tlv error will be issued when attempting to do so).
- iv. It is recommended that Seagate Analysis not be used in a Terminal Server environment. Seagate Analysis creates the files SAGlobalSettings.xml and History.xml in the Query Client directory. These files are updated each time a Seagate Analysis instance is invoked and closed; they therefore enable different users to see other users™ previously opened documents and settings.
- v. On Terminal Server (version 4 only), users will need to ensure that the files ODBC32.DLL and ODBCINT.DLL, located in the in %windir%\system32 directory, have file permissions set to EVERYONE.

For more information on changing file permissions, please refer to the Microsoft Knowledge Base article Q216149 regarding how to Install ODBC or MDAC on Terminal Server 4.0. Microsoft Knowledge Base articles can be found on the Microsoft Developers Network at:

<http://msdn.microsoft.com/default.asp>

- vi. On Terminal Server (version 4 only), users planning to *publish* a browser to access a Seagate Info WebAccess Desktop will need to install Netscape Communicator 4.7x or later. Users running Internet Explorer (any version) will encounter various viewing problems when trying to access a CIWEB site.
- vii. Internet Explorer 5.5 does not work with Terminal Server or MetaFrame when running on Windows NT 4.
- viii. Users running a Compaq Proliant 5500x are advised to update the System ROM before installing Terminal Server. The required update files can be downloaded from the following site:
http://www.compaq.com/support/techpubs/customer_advisories/EM990824_CW02_1.html
- ix. Note: Microsoft article Q256854 - The "Terminal Services OEM License Server Activation Failure" update resolves an issue that occurs **only** on servers that are both obtained through Microsoft Original Equipment Manufacturers (OEMs) or System Builders and configured with the Terminal Services Licensing service. For these specific servers, the Windows 2000 Terminal Services license server activation does not verify the activation certificate obtained from the Microsoft Clearinghouse. This results in a failure to activate the server as a Terminal Services license server. As a result, Windows 2000 Terminal Services Client Access licenses cannot be installed.

Users can download the update patch correcting this issue from the following site:

<http://www.microsoft.com/Windows2000/downloads/recommended/q256854/download.asp>

SI7.5 and Citrix MetaFrame

I. Installation

- i. Users must have NT4 Terminal Server or Windows 2000 with Terminal Server installed before installing Citrix MetaFrame. Configure NT4 Terminal Server or Windows 2000 for Application Mode.
- ii. The following note is for users installing Citrix MetaFrame 1.8 for Windows 2000 with other versions of MetaFrame or WinFrame on their network:

The master ICA Browser election criterion has changed in this release. The version number of the ICA Browser has the highest criteria and overrides an ICA Browser specifically configured in the registry as the master ICA Browser. If you have designated a fixed (hard-coded) master ICA Browser in an existing Citrix server farm, install MetaFrame 1.8 for Windows 2000. If you install this software on any other server first, that server will become the master ICA Browser. The Citrix Server Administration option that prevents a MetaFrame 1.8 server from becoming the master ICA Browser also disables certain MetaFrame 1.8 features. More information about this issue can be obtained from Citrix Systems.

- iii. **IMPORTANT:** Use **Add/Remove Programs** in the Windows Control Panel to install SI7.5 on the Terminal server. With this method, you can install programs for multi-session use.
- iv. Most program installations require a system reboot. Always ensure that there are no users logged on to the Terminal Server before starting any program installation.

II. Publishing and Printing

- i. The Citrix utility, *Published Application Manager*, is the main tool for publishing applications. It provides support for server farms and Program Neighborhood.
- ii. We recommend publishing only the Info Desktop and any other Seagate Info client components. Avoid publishing the Seagate Info server components if possible as this configuration is not an efficient use of the Citrix MetaFrame technology. Publish the Info Administrator only if a user needs to administer an Info APS.
- iii. Clients can access published applications on a Citrix MetaFrame server in the following ways:
 1. Via the Citrix ICA Client/Program Neighborhood.
 2. Using a web browser. Citrix offers three ICA Clients for use as Web clients: an ActiveX control, a Netscape Plug-in, and a Java applet.
- iv. The Citrix server does not differentiate between an ICA connection from a web client and a connection from any other ICA Client: security and user configuration guidelines used for published applications apply equally to both connections from a web client and connections from other clients.
- v. The printing operation and configuration guidelines for Citrix MetaFrame are the same as those listed for Terminal Server. Note that to auto-create a printer, the Citrix server must have the printer driver installed. If the driver is not installed, the printer is NOT auto-created. (In this case, the user must manually add the printer during the ICA session).

III. Notes and Known Issues

- i. The notes listed in the Terminal Server section above (see issues on page 4) apply to systems running Citrix MetaFrame.
- ii. When using the Info Report Designer, users who attempt to insert a line or box will find that the mouse icon changes to a pen icon when moving the mouse. The main functionality of line or box insertion will not be affected when this occurs.
- iii. Netscape Communicator and Netscape Navigator browsers are known to be incapable of running embedded published applications. This limitation is not addressed even when applying the plug-in `ilfixln` from the Citrix web site at:
<ftp://ftp.citrix.com/winfrm16/wfplug32.exe>
- iv. Because Citrix MetaFrame is an add-on to Microsoft Windows 2000, most Windows NT-compatible applications can be expected to work.
- v. The Citrix MetaFrame load balancing feature has not yet been tested with SI7.5.
- vi. The latest Citrix MetaFrame hot fixes are available for download at the following site:
<http://www.citrix.com/download/default.asp>
- vii. When using a Citrix client on Windows 2000 to save an OLAP Cube View via the Info Worksheet, some users may encounter an "Info Worksheet: Cannot Write to File: ..." error. This will occur if the user does not have the necessary permissions to edit the cube view's *.wdf file in the share directory. (In Windows 2000, administrators will need to set *both* the share and security permissions accordingly to ensure that users have access).