Terminal Server

Software and Hardware Requirements

Datacolor Match Pigment
Datacolor Tools

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Terminal Server – Software and Hardware Requirements

Introduction

This document will provide preliminary information about the both the software and hardware requirements for running Datacolor Match Pigment and Datacolor Tools in a Terminal Server environment.

The information in this document should be use as a guide and any final design considerations should be addressed with your IT Department and Datacolor.

Windows Server Terminal Services

The Terminal Services server role in Windows Server® 2003 and Windows Server® 2008 provides technologies that enable users to access Windows-based programs that are installed on a terminal server, or to access the full Windows desktop. With Terminal Services, users can access a terminal server from within a corporate network or from the Internet.

Terminal Services lets you efficiently deploy and maintain software in an enterprise environment. You can easily deploy programs from a central location. Because you install the programs on the terminal server and not on the client computer, programs are easier to upgrade and to maintain.

When a user accesses a program on a terminal server, the program execution occurs on the server. Only keyboard, mouse, and display information is transmitted over the network. Each user sees only their individual session. The session is managed transparently by the server operating system and is independent of any other client session.

A standard Windows server allows multiple users to simultaneously connect to resources (files, printers, and services) but only one user can be interactively logged onto the server console at a time. With Terminal Services in Windows Server 2003/2008, multiple users can connect and run interactive sessions on the server, independent of what any other user is doing.

With Terminal Services, users can connect to "virtual" desktops on the server. Datacolor Match Pigment and Datacolor Tools are executed on the server instead of on the client device and the virtual desktop is transmitted across the network to the client device. Each user can execute and run their own instances of the software on the server, independent of what any other user is doing.

Datacolor Software

In order to properly run in a multi-user environment such as on a Terminal Server, application programs must be able to handle global, user, and machine based data and setup information properly. This is handled in Datacolor Spectrum products by implementation of a directory structure that will manage system data and setup information based on whether it is global for all users, pertinent to a single user, or valid only for a local machine.

New shared software components have been written to create folders in specific locations and the Datacolor Spectrum programs have been modified to save and retrieve specific data from these locations.

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Server Software Requirements

Compatible Operating Systems

Windows Server 2003
Standard, Enterprise, Datacenter Editions

Windows Server 2008
Standard, Enterprise, Datacenter Editions

Windows Server 2008 R2*
Standard, Enterprise, Datacenter Editions

Windows Server 2003/2008 with Citrix*

* Not tested on Windows Server 2008 R2 or Windows Server 2008 with Citrix

Datacolor software is designed to work in a terminal services environment. We have not installed or tested on all of the possible editions of Windows Server software and Citrix software. Please contact Datacolor prior to installing software.

64 Bit Operating Systems

Datacolor software is targeted for 32 bit processors. It can run on a 64 bit operating system in 32 bit capability mode.

Microsoft License Requirements for Windows Server 2003

A properly licensed Terminal Server requires the following licenses. Please contact Microsoft for details.

Windows Server 2003 License

The Windows Server licensing model requires a server license for each copy of the server software installed. Terminal Services functionality is included in the Windows Server license.

Windows Server 2003 Client Access License (CAL)

Each client computer, regardless of the operating system running on that computer, must have a Windows Server Client Access License (CAL) if the client accesses the server for file, print, and other network services, regardless of whether they are using Terminal Services.

Windows Server 2003 Terminal Services Client Access License (TSCAL)

In addition to the Windows Server 2003 CAL, you must have a Windows Server 2003 Terminal Services CAL (TSCAL) to run Windows-based desktop and applications from a Windows Server 2003 machine, regardless of the protocol or software used to interact with applications running on the server.

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Licensing Remote Desktop Services in Windows Server 2008 R2

Remote Desktop Services Licensing Requirements

Windows Server License

The Windows Server 2008 R2 licensing model requires a server license for each running instance of the server software. Remote Desktop Services functionality is included in the Windows Server software.

Windows Server Client Access License and TS/RDS Client Access License

In addition to a server license, a Windows Server Client Access License (CAL) is required to access the Windows Server software. If you wish to utilize the RDS functionality of the Windows Server software, an incremental Terminal Services Windows Server 2008 Terminal Services Client Access License (TS CAL), or the new Remote Desktop Services Client Access License (RDS CAL) is required as well. A TS or RDS CAL is required for each user or device. To be specific, a WS 2008 TS CAL or WS 2008 RDS CAL may access a server running Windows Server 2008 R2. An RDS CAL is functionally equivalent to a TS CAL.

Server Hardware Requirements

It's impossible to make general recommendations on hardware without knowing the scope and purpose of a particular application. The information below should only be used as a guide in determining the optimum hardware. The hardware requirements for Windows Server Terminal Services depend mainly on how many clients will be connecting at a time and the type of programs run by the clients.

The quality of the hardware for a terminal server installation is the most important criteria concerning the performance of the overall system. Since the server must run all the applications of the connected clients, it must be quite powerful. The final server configuration is a balance of price, manageability, and application requirements.

The first rule in selecting hardware is to select "real" server hardware. A regular desktop computer that is similar in speed and memory to a true server will not perform as well. Low-end PCs typically do not have the internal bus speed and internal bandwidth to support many users regardless of the processor and memory.

It is recommended that you install Terminal Services on a member server and not on a domain controller. Installing Terminal Services on a domain controller can hamper the performance of the server because of the additional memory, network traffic, and processor time that it requires to perform the tasks of a domain controller in a domain.

Server Processor

Determining a recommended processor without knowing the number of users and the applications that will be run is impossible. Combinatorial matching will put the greatest burden on the CPU. The practical limit will be the number of simultaneous users that will perform combinatorial matching. For the processor, get at least:

Windows Server 2003/2008 – 2 GHz or faster

Windows Server 2008 R2 – 1.4 GHz (x64) or faster

Dual Core or Quad Core Processor will improve performance.

Server RAM

The amount of RAM required will depend on the number of users. However, we would recommend at least 4 GB RAM for any terminal server installation. The chart on the following page gives some idea of the memory requirements of some Datacolor programs. This can be used as a rough guide for determining memory requirements.

Recommended Minimum – 4 GB

Maximum (32-bit systems): 4GB (Standard) or 64GB (Enterprise and Datacenter)

Maximum (64-bit systems): 32GB (Standard) or 2TB (Enterprise and Datacenter Systems)

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Program Memory Requirements

The final memory requirement will be dependent on the number of users and their applications. Every user that runs an application on a Terminal Server will use the memory for that application just as if they were running it in a normal workstation. The following table will show the approximate memory usage of some Datacolor programs.

Application Program Memory Requirements (Per User)

Program	Minimum RAM	Maximum RAM
Data Navigator	40 MB	50 MB
Datacolor Tools	100 MB	150 MB**
Formula Central	50 MB	75 MB*
Data Navigator Datacolor Tools	140 MB	200 MB
Data Navigator Formula Central	90 MB	125 MB
Data Navigator Datacolor Tools Formula Central	190 MB	275 MB
Datacolor Track	50 MB	50 MB
Datacolor Envision	26 MB	190 MB **

* 25 MB Additional Required for Combinatorial Matching

** Depends on the size of images in the environment:
Load a 5MB environment ~35MB memory use per user
Load a15MB environment ~55MB memory use per user
Load a 25MB environment ~65MB memory use per user
Load a105MB environment ~190MB memory use per user

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Preliminary Memory Requirements (in addition to base 256 MB for Windows Server 2003)* Per User

* Based on the data in the table, the amount of RAM for each user is listed below.

RAM Per Tools Only User – 140 MB (40 for DN and 100 for CT)

RAM Per Match Pigment Only User – 90 MB (40 for DN and 50 for DMP)

RAM Per Tools and Match Pigment – 190 MB (40 for DN, 100 for CT, 50 for FC)

Some Examples of Memory Requirements for Hypothetical Installations

Example 1:

5 Match Pigment/Tools Users
5 Tools Users

256 MB (WIN2003) + (5 * 190) + (5 * 140) = 256 MB + 950 MB + 700 MB = 1906 MB

Round Up to 2,000 MB or **2.0 GB RAM**

Example 2:

20 Tools Users

256 MB (WIN2003) + (20 * 140) = 256 MB + 2800 MB = 3056 MB

Round Up to 3100 MB or **3.1 GB RAM**

Example 3:

20 Match Pigment/Tools Users

256 MB (WIN2003) + (20 * 190) = 256 MB + 3800 MB = 4056 MB

Round to 4000 MB or **4.0 GB RAM**

Hard Drive Requirements

Disk speed is critical for the performance of a Terminal Server. Small computer system interface (SCSI) disk drives, especially devices compatible with Fast SCSI and SCSI-2, have significantly better throughput than other types of drives. This is less important on systems that do not store user profiles and data on the Terminal Server, but will still affect initial program load time. For highest disk performance, consider using a SCSI redundant array of independent disks (RAID) controller. RAID controllers automatically place data on multiple disks to increase disk performance and improve data reliability.

Minimum Hard Drive: 100 GB*

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Network Adapter

A high-performance network adapter is recommended, especially if users require access to data that is stored on network servers or run client/server applications. Using multiple adapters can significantly increase network throughput. Consider having two network adapters in the server machine and designate one for RDP traffic only.

Single Embedded 10/100/1000 Gigabit NIC

Client Software and Hardware Requirements

Client computers that connect to a Terminal server are not required to have much processing power. Therefore, it is very easy to integrate Terminal Services into a network that has older computers and equipment.

The basic precondition for using a specific client computer is the integration of monitor, mouse, keyboard, and serial ports as well as the support of the RDP protocol.

In principle, the potential client platforms can be divided into:

- Personal computers under Windows 95, Windows 98, Windows NT, Windows 2000, and Windows XP.
- Windows-based terminals under Windows CE
- Apple Macintosh computers under Mac OS X

Currently only PCs running under the following Windows operating system have been tested and are supported by Datacolor:

Microsoft Windows NT 4.0
Microsoft Windows 2000
Microsoft Windows XP Professional

The following platforms are not currently supported*:

Microsoft Windows 95
Microsoft Windows 98
Microsoft Windows for Workgroups 3.11
Microsoft Windows CE, Handheld PC Edition 3.0
Windows CE, Handheld PC Professional Edition 3.0
Windows-based Terminals
Apple Macintosh Computers

* While Microsoft generally supports these platforms for use in a terminal server environment, these platforms have not been tested by Datacolor and therefore cannot be supported.

Client computers must have a serial port or USB port for instrument connection.