

### DENTRIX Enterprise Real Time (RT) Option: Commercial, University, Community Health

#### Central Location Database Server

#### Hardware

- Pentium IV or Xeon 2.66 Ghz CPU or faster.
- 24x (or higher) CD-ROM drive recommended.
- Windows® 2003 Server; 32 Bit.
- Microsoft SQL Server 2000 Patched to SP4. Note: We currently do NOT support SQL server 2005.
- 2.0 GB RAM per 15 concurrent users and on 1Ghz of processing power per 15 concurrent users.
- Allow a minimum of 20 GB free Hard Drive space for the data file and 20 GB free for transaction logs.
- Windows Certified: Make sure the Server is Windows® 2003 certified.
- The server hardware requirements given here are for database engines running on Windows® 2003. 32 bit edition only.
- When running DENTRIX Enterprise, memory has a major impact on your system performance. Using more than 2.0 GB of RAM in the server computer will noticeably improve performance. Minimum 2 GB.
- Note: DoubleSpace or other disk compression utilities should not be used. Additional performance can be gained by having three physical arrays; one each for the OS, Data, and transaction log.

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#### Central Location Thin Client Application Server

#### Hardware

- Pentium IV or Xeon 2.66 Ghz CPU or faster.
- 24x (or higher) CD-ROM drive recommended.
- Windows® 2003 Server 32 bit edition with Terminal Server licenses activated. Optional: Citrix Presentation Server.
- Server: At least 2.0 GB per 10 concurrent users.
- Allow a minimum of 60 GB free.
- Windows Certified: Make sure the Server is Windows® 2003 certified. Note: For application servers that are being used with Citrix and/or Terminal Server, 1 Ghz of processing power and 2 GB of memory can support about 10-15 thin clients with one network adapter. Additional network adapters on the database server will increase performance. After 30 users an additional server(s) is recommended.
- Citrix Presentation Server is a recommended option for performance. Notes: When running DENTRIX Enterprise, memory has a major impact on your system performance. Using more than 2.0 GB of RAM in the server computer will noticeably improve performance.
- Disk compression: DoubleSpace or other disk compression utilities should not be used.

### Real Time (RT) Option: Commercial, University

#### Workstation for Central Office or Remote Location

#### Hardware

- Pentium IV 2.0 Ghz CPU or faster.
- 24x (or higher) CD-ROM drive recommended.
- Windows® XP Professional Edition, Windows® Vista Business Edition.
- Workstation: 1 GB.
- Workstation: 20 GB (or more), with at least 10 GB free. Windows Certified: Make sure the Server is Windows® 2003 certified.
- Disk compression: DoubleSpace or other disk compression utilities should not be used.

### Real Time (RT) Option: Commercial, University

#### Image 4.5 Hardware Recommendations/ Requirements

#### Hardware

- Pentium IV 1.8 Ghz CPU or faster.
- 24x (or higher) CD-ROM drive recommended.
- Image server: Windows® 2003 Server 32 bit edition.
- Minimum 100GB or larger. See Note.
- Server: 1GB RAM.
- Image Workstation Windows® XP Professional Edition, Windows® Vista Business Edition. See Note.
- Workstation: 1 GB RAM.
- Workstation: 4-6 GB (or more), with at least 1 GB free.
- Windows Certified: Make sure the Server or the PC is Windows® 2003 Server or Windows® XP Professional certified.
- Performance: When running DENTRIX, memory has a major impact on your system performance. Workstations should have a minimum of 512 MB RAM. More memory will equal better performance.
- Note: The necessary storage space varies with the number and type of Images stored. By determining how many of each type of image is taken in a normal month and using the following guidelines you should be able to determine your overall storage needs. A Bite Wing X-ray requires about 600K of storage space. A Panoramic or Ceph X-ray requires about 1200 K of storage. An intra-oral Picture requires about 800 K of storage. DoubleSpace or other disk compression utilities should not be used.
- A USB2 port is required for some sensors/Intra-Oral Cameras.

### For All Real Time (RT) Options

#### Hardware

- 15" or larger monitor (17" monitor recommended).
- Monitor and video adapter should be capable of 1024x768 resolution at 32 Bit color.

Note: Colors and Resolution: On a smaller 14" monitor, 1024x780 resolution may result in images and windows that are too small for comfortable viewing. For comfortable viewing, higher quality monitors have a dot pitch of 0.28mm or less, and a refresh rate of 72 Hz or higher at the resolution you plan to use. Note: LCD monitors are not recommended for computers that will be used to diagnose Digital X-rays.

Note: Microsoft does not ship any Windows drivers for light pens. DENTRIX has excellent light pens available custom-made for DENTRIX.

#### **Recommended Printers:**

- HP LaserJet 4250

For color printing:

- HP DeskJet 2280
- HP DeskJet 6127

For dot matrix printing:

- Epson LQ 2080 (wide carriage)

DENTRIX Image printer:

- HP DeskJet 2280 (for faster and higher-quality prints)
- HP DeskJet 6127 (for high-quality prints)
- Dymo Label Printer 400 Turbo

**IMPORTANT NOTE:** Many laser printers are (or claim to be) HP-compatible. However, DENTRIX encounters far more support-related issues involving non-HP printers. Because DENTRIX recommends only high quality HP printers, we do not test or support non-recommended printers. DENTRIX does not recommend using an inkjet printer as your primary printer.

Note: Vertical load printers are not recommended. The following printers had been tested to work with prior versions of DENTRIX, but have been discontinued and are no longer supported by DENTRIX or their respective manufacturers: HP LaserJet 4050, HP LaserJet 2100 XI HP DeskJet 890, HP LaserJet 5/5M, HP LaserJet 6P, HP LaserJet 2420, and Okidata OL 600.

Different printers: For a typical office, DENTRIX recommends installation of 2 printers on the network: a laser printer for all forms, letters, and reports, and a color printer for tooth and perio charts, as well as low-quality image printouts. You may also want a high-quality image printer.

Choosing a printer: Be sure to consider your practice size. Every printer has a "page-per-minute" speed and a recommended number of pages per month.

- 56K baud US Robotics Courier fax modem, installed on COM2 (when available). Speed: Modem is optional if other network based connection is available. For some practices, modems functioning slower than 28.8 Kbps deliver unacceptable performance for pcAnywhere, electronic claims, and Internet access.

#### **Optional Software:**

- Microsoft Word XP Professional or newer.
- Citrix Client (for Thin Client).
- Crystal Reports.
- Virus Protection Software.

Workstation: Future expandability is the key to successful hardware. Taking advantage of expansion options like light pens, Voice activation, Intra-Oral imaging, digital X-ray, multimedia, blood pressure monitoring, and others, usually requires an available expansion slot in your computer. For each workstation, you should consider what options you might want in the future, and purchase machines with sufficient expansion capability.

Choosing a backup: Choosing a backup: Tape drives are generally least expensive and very reliable. Choose a reliable software package for backups. Note: Separate units for each day of the week are recommended, plus one unit for monthly backup, which is stored off site.

Note: The Windows<sup>®</sup> 2003 environments require a dedicated server. See our Networking Guide for complete information. Microsoft Word: DENTRIX offers extensive letter-merge capabilities with Microsoft Word. Note that only versions 2000 and newer are supported.

Note: A reliable software package that detects and prevents computer viruses is recommended. DENTRIX has tested both Norton AntiVirus and McAfee VirusScan and both products appear to function satisfactorily with the DENTRIX and DENTRIX Enterprise systems. Norton AntiVirus may cause problems in Citrix Environment.

### DENTRIX Enterprise Real Time (RT) Option:

DENTRIX is designed to run seamlessly across a network, allowing users to share the same data throughout the practice, from the front desk to the operator. Everything is available to every user at every workstation. It's important, however, to have a good network installed so that DENTRIX can go to work.

#### DENTRIX - recommended network environments

DENTRIX Enterprise is a robust practice management software program that requires powerful networking software and operating systems to function correctly.

1. Recommended: Windows<sup>®</sup> 2003 Server If you experience speed and print services problems as your practice grows, DENTRIX recommends addressing speed-related issues by upgrading your network to 100 MBs. This is a possible solution for any office however, if your office has more than 10 workstations and/or a database larger than 100 MB, DENTRIX strongly recommends that you move to a 100 MBs network with a dedicated file server. This would involve changing your network cards (to 100 MB cards), your hub, and possibly your cabling. For mid-sized practices, these are options that would be relatively inexpensive, easy-to-maintain alternatives to a Windows<sup>®</sup> 2000/2003 server. For printing, DENTRIX recommends using multiple networked printers. Larger organizations (greater than 100 workstations) or organizations doing extensive image storage and retrieval should consider the speed and administrative advantages of a more sophisticated dedicated server network.
2. Recommended: Windows<sup>®</sup> 2003 Server or Windows<sup>®</sup> XP Professional.  
Note on Novell NetWare: DENTRIX Enterprise runs well on a properly installed and configured NetWare network 4.1 and/or 5.0. You will need all current patches from Novell, as well as the latest Windows<sup>®</sup> NetWare Client 32 (from Novell, not from Microsoft) on all workstations. Because of its complexity, DENTRIX recommends NetWare only for practices which already have it installed and have good support from a local Certified NetWare Engineer (CNE).
3. Network wiring Having your hardware installed properly is as important as choosing the proper network environment. About 90% of the time, network difficulties in a practice can be traced simply to improper cabling or other installation problems. DENTRIX recommends having a hardware technician with MCSE and MSDBA certification install your hardware. Network wiring needs to be installed by a Certified Network Installer. Do not have an electrician or phone wiring professional install your network cables. Many computer stores and such may say they know how to install a network, but proper installation requires specialized training, not just general computer knowledge. Check around in your local area for a qualified installation technician. Instruct the installer to use 8-conductor, twisted pair, Category 5 wire, with RJ45 connectors. The installer should be aware of X-ray equipment and fluorescent lights, as these can affect your network performance. All cable installed should be certified for use with 100 MB network cards (instead of 10 MB cards), have all your wiring certified at that speed. Wiring is a critical component of your network. Take the necessary steps to assure the highest specifications are met for your wiring.
4. Power supply As part of your network installation, ask your installer to check the power input from electrical outlets throughout the office. Some buildings have a less reliable power supply that can cause network problems. For added protection, you may want to consider an uninterruptible power supply (UPS). Please see the System Requirements document for recommendation details.
5. Network cards You'll also need network expansion cards in each of the computers which will be networked. This card provides the jack to plug your network wiring into and the interface with your workstation. You'll be using an Ethernet network, and there are several quality vendors of Ethernet network cards.

Your network is the circulatory system of your practice management system. We can't emphasize enough how important it is that a qualified technician properly installs all of your hardware. Whether you've purchased quality Micron<sup>®</sup> hardware from DENTRIX, or you've decided to buy your hardware locally, your local DENTRIX representative can help you decide what you need to get started and may be able to recommend a reputable service provider to get your network up and running.