



PS PracticeStudioX20[®]
HARDWARE REQUIREMENTS & RECOMMENDATIONS



TABLE OF CONTENTS

INTRODUCTION	3
CLOUD HOSTING VS. IN-HOUSE SERVER	3
IN-HOUSE SERVER QUICK REFERENCE	5
IN-HOUSE FILE SERVER SPECIFICATIONS	6
SQL EDITION SPECIFICATIONS	7
WORKSTATION SPECIFICATIONS	8
OPERATING PRACTICESTUDIO FROM A TABLET	9
NETWORK SPECIFICATIONS	10
OTHER SPECIFICATIONS	11
TOUCH SCREEN MONITORS	11
OFFICE PRINTERS	11
PRESCRIPTION AND LAB ORDER PRINTERS	11
LABEL OR APPOINTMENT CARD PRINTERS	11
CLOUD CONSIDERATIONS AND REQUIREMENTS	12
SCANNERS	13
POINT OF SALE DEVICES	13
DIGITAL CAMERAS	13
ANTI-VIRUS SOFTWARE	13
CONCLUSION & SIGNATURE PAGE	14

INTRODUCTION

This document serves as the primary source for hardware requirements and recommendations for the PracticeStudio suite of products. The *requirements* listed must be followed for PracticeStudio to operate properly. The *recommendations* are not requirements but a set of guidelines that MicroFour has found will greatly improve the customer's experience with the product; the recommendations are the "general cases" rather than the "exceptions" and should be followed unless a valid reason can be found for not doing so.

CLOUD HOSTING VS. IN-HOUSE SERVER

The first, and typically largest, decision when considering your PracticeStudio hardware requirements is in determining your preferred hosting model. With PracticeStudio, you have the option to host the server and data components of the system either at our central server center (referred to as "cloud hosting"), or on your own hardware at your physical location (referred to as an "in-house server").

Choosing which option would be the best fit for your situation is a case-by-case decision. Below are some basic guidelines identifying positive aspects of either option. We'd also love to speak with you via phone (800-235-1856) or email (sales@micro4.com) to discuss your unique situation in further detail. Our desire is to aid and equip you in making the best overall decision for the long-term needs of your practice.

Benefits of Cloud Hosting

The primary benefits of using our centralized cloud hosting options are as follows:

- **No Large Capital Outlay Upfront** – The most expensive hardware expenditures on a typical PracticeStudio installation revolve around the server components. These include not just the server hardware itself, but also the Microsoft licensing requirements for SQL Server and related items which, by themselves, may be more than \$2,000. Cloud hosting avoids these in exchange for a much lower monthly fee.
- **Flexibility of client installations** – One of the primary benefits of cloud hosting is that you are able to load the PracticeStudio Cloud Client on any computer with an Internet connection that meets our minimum workstation requirements (listed on page 8). This makes accessing your data at home, on a laptop, while on vacation, etc. much simpler and more effective than in-house options.
- **Simplified network requirements** – The local server and network requirements for your own network are greatly simplified when using cloud hosting. This allows for more resilience in less-than-perfect network setups as well as lower ongoing IT costs.
- **Remove IT Pressures** – One of the biggest drains on any LAN based network is the IT requirements. These requirements include licenses for SQL Server (averaging \$1500 per license),

hardware (average \$6,000 server), and backup (average \$800/year). Additionally, this will greatly reduce the IT requirements and costs for your local network.

- **Always On New Server and Optimal Environment** - On average, a server has a 4 year lifespan before it needs to have upgrades or to be replaced altogether to keep with the ever growing software demands being placed on it. With the PracticeStudio cloud, you will always be on a new server allowing PracticeStudio to run in an optimal environment while removing the headache and continual IT costs.

CLOUD HOSTING VS. IN-HOUSE SERVER (CONT'D)

Benefits of In-House Hosting

The primary benefits of hosting on your own in-house servers are as follows:

- **Lower monthly costs** – In some situations it may be desirable to make a larger up-front investment to avoid additional monthly fees.
- **Possibility of using existing server equipment** – In-house hosting may make sense if you already have server equipment meeting the in-house server requirements listed on pages 5-7. In that case, your existing equipment may be able to be re-provisioned to host your PracticeStudio server and data.
- **Lack of stable Internet connection** – The one additional requirement needed to use cloud hosting is a reliable Internet connection (with required speeds of 128 kbps per concurrent workstation). If such a connection is not available at your location, or is available but is significantly unreliable, in-house hosting will likely be the better option.

If you are using Cloud Hosting, you may skip pages 5, 6 and 7 below since an in-house server will not be necessary.

IN-HOUSE SERVER SPECIFICATION QUICK REFERENCE

Use the graph below to determine hardware and SQL Server edition requirements. The listed levels are described in detail below the graph and should be used as guidelines when evaluating the needs of a specific system.

Since PracticeStudio centralizes many of its processes on the PracticeStudio server machine, the greatest system-wide benefits can be seen by investing in the hardware and software recommendations related to the PracticeStudio server.

	1-3 Workstations	4-7 Workstations	8-15 Workstations	16-25 Workstations
1-50 Patients per Day	Server Level 1 SQL Level 1* / 2	Server Level 1 SQL Level 2	Server Level 2 SQL Level 2	Server Level 3 SQL Level 2
Over 50 Patients per Day	Server Level 1 SQL Level 1* / 2	Server Level 1 SQL Level 2	Server Level 2 SQL Level 2	Server Level 3 SQL Level 2

SERVER HARDWARE

- **Server Level 1** – Quad-Core Processor, 16 GB RAM, 64-bit Windows Server OS
- **Server Level 2** – Quad-Core Processor or higher, 24 GB Ram, 64-bit Windows Server OS
- **Server Level 3** – Quad-Core Processor or higher, 32 GB Ram, 64-bit Windows Server OS

SQL SERVER EDITIONS

- ***SQL Level 1** – SQL Server 2014 Express or Better
* *SQL Server Express is only supported for small offices that do not utilize the full RxWriter prescription writer.*
- **SQL Level 2** – SQL Server 2012 Standard, SQL Server 2014 Standard

WORKSTATION DEFINITION

A workstation is defined as a desktop, laptop, tablet, or other device that will be running PracticeStudio concurrently when dealing with 10 computers or less. For example, there may be 5 workstations on the network but only 3 ever being used at any given time. In this scenario, the workstation count would be considered 3.

Once the count of computers on the network exceeds 10, each workstation that has PracticeStudio loaded on it should be considered a workstation count even if they will not be run concurrently.

If you are using Cloud Hosting, you may skip this page and move on to Page 8

IN-HOUSE FILE SERVER SPECIFICATIONS

Hardware requirements for the File Server depend upon the number of workstations that will be accessing the file server.

COMMON REQUIREMENTS

- 1 TB HD space
 - RAID 5 or RAID 1 or other redundant RAID configuration **strongly** recommended
- Mouse
- 64-Bit Microsoft Windows Server 2008 or Windows Server 2012 Standard or Higher (R2 versions supported)

*Note: Windows Server 2003 is **not** supported*

- A fully HIPAA compliant backup process such as **PracticeStudio DataVault** running on at least the 5-day per week plan.

Note: If DataVault is not being used, ensure that all related HIPAA requirements are accounted for by your in-house backup solution (daily off-site backups, secured data locations, regular verification and test restores, data encryption during transfers of media, recovery plans in place and maintained, etc.)

- All workstations must have Full Control NTFS permissions and Full Control share permissions to the shared PracticeStudio Data folder
- 100Mbps PCI or onboard Network Interface Card capable of supporting full-duplex operation required, 1000Mbps card recommended
- Uninterruptible Power Supply

RUNNING GUIDELINES

- The PracticeStudio system can run in either a Workgroup or Domain environment. *It is recommended that once the computer count on the network exceeds 7 that a domain environment be implemented*
- The PracticeStudio server should **not** perform tasks incompatible with Microsoft SQL Server (e.g. Exchange Server)
- The PracticeStudio server should **not** be used as a server for 3rd party applications that may impede PracticeStudio Server performance
- The PracticeStudio server should **not** have active virus scanning running (scheduled scans can be used)
- The backup process should utilize full, daily backups utilizing a HIPAA compliant process such as PracticeStudio DataVault
 - Incremental backups are not recommended
 - Off-site backups are recommended, but require full SQL Server backup and restore capabilities (Highly recommend PracticeStudio DataVault as it is tailored specifically for PracticeStudio and has guaranteed results)

HARDWARE REQUIREMENTS (UP TO 20 CONCURRENT USERS)

- Intel Xeon Quad-Core Processor or AMD Equivalent
- 8GB RAM

HARDWARE REQUIREMENTS (21-50 CONCURRENT USERS)

- Intel Xeon Quad-Core Processor or AMD Equivalent
- 16GB RAM

HARDWARE REQUIREMENTS (50+ CONCURRENT USERS)

- Dual Intel Xeon Quad-Core Processors or AMD Equivalent
- 32GB RAM+

If you are using Cloud Hosting, you may skip this page and move on to Page 8

SQL EDITION SPECIFICATIONS

PracticeStudio uses SQL Server and MariaDB(MySQL) as a database backend. In the past there have been many edition changes to the SQL Server lineup. Some of the lower cost editions have been removed and we do not recommend the Express (free) edition for any site that will have more than 3 clients or 10 GB of data. Additionally, the Express version will also perform much slower for larger queries, so even for smaller clients, we always prefer to see a full copy of SQL Server installed.

SUPPORTED SQL SERVER EDITIONS

- SQL Server 2012 Standard or better / equivalent
- SQL Server 2014 Standard or better / equivalent
- SQL Server 2014 Express (No More than 3 workstations, small office, not using RxWriter)
- SQL Server 2016 Standard or better / equivalent
- SQL Server 2016 Express (No More than 3 workstations, small office, not using RxWriter)
- SQL Server 2017 Standard or better / equivalent
- SQL Server 2017 Express (No More than 3 workstations, small office, not using RxWriter)

SUPPORTED MARIADB (MYSQL) EDITIONS

PracticeStudio X20 also requires MariaDB (MySQL) 10.2.17 or higher running on the server. MariaDB is a true Enterprise and scalable database engine that is open source running under the GPLv2 license. As of this writing, all RxWriter (Prescription) and media and document management solutions of PracticeStudio X20 require MariaDB. If there is not an installation of MariaDB on your server presently, our install team will load it for you at no additional cost.

WORKSTATION SPECIFICATIONS

These specifications apply to computers that will run PracticeStudio on a daily basis and are not used as the file server.

Note: Windows XP, Windows Vista, and Windows Server 2003 are **not** supported for use with PracticeStudio workstations.

WORKSTATION REQUIREMENTS

- Supported Operating Systems:
 - Microsoft Windows 7 or later*

*Note: Windows XP is **not** supported. The XP platform is no longer HIPAA compliant as of April 8, 2014.*

** When running in a domain environment is being implemented, Home and core editions will not be supported. Only Business/Pro or better will be supported.*

- Intel Pentium Dual-Core processor or AMD equivalent
- 4 GB RAM
- 20GB available HD space
- Video card capable of supporting 1280x1024 resolution
- Monitor capable of supporting 1280x1024 resolution
 - * - The “size of all items” should be set to 100% or “Smaller” depending on windows version
- 100Mbps PCI or onboard Network Interface Card capable of supporting full-duplex operation required, 1000Mbps card recommended
- Read/write access to local registry, primary hard drive, and PracticeStudio local and shared folders

RECOMMENDATIONS

- 6+ GB RAM
- 64-bit Operating System
- Modern DirectX 10 Capable video card
- 17” or larger monitor capable of supporting 1280x1024 resolution
 - 1280x1024 can be difficult to read on a monitor smaller than 17”
- Touch Screen Monitor if the workstation will be used primarily with PracticeStudio EMR (charts)

OPERATING PRACTICESTUDIO FROM A TABLET

In many installations, the use of Tablets is preferable to having a workstation in each exam room. PracticeStudio operates properly in a wireless tablet environment but has additional requirements.

NATIVE VS. REMOTE DESKTOP

- There are numerous options in regards to running PracticeStudio on tablets but there are two different ways in which PracticeStudio can be run. Native and Remote Desktop (RDP). We recommend running PracticeStudio in a native format. We have some recommended solutions listed below. But in the current market, there are many 2-in-1 tablet solutions that run a full version of Windows (not the “RT” or “S” variants).
 - **Samsung Galaxy Book** – The Galaxy book is our recommended solution for a true tablet solution. It comes in various sizes from 10.6” to 12” as well as various processors. PracticeStudio has been well tested on this device with the minimum processor requirement set at the Intel m3 processor or greater.
 - **Landscape and Portrait** – This solution operates very well in clinical settings where you may have the need to run in both landscape or portrait mode. PracticeStudio X20 is designed to run in both modes well. When working in Medical Records, the portrait mode can be a very comfortable mode in which to capture notes.
 - **Supports Hand Straps** – Another benefit is the ability to support hand straps, which improves the handling of the device during operation.
 - **Mobile Network Integration** - One benefit of the Samsung Galaxy Book over other 2-in-1 solutions at the time of this writing, is that this is one of the few that supports a fully integrated mobile data network through certain mobile carriers such as Verizon. If running PracticeStudio on our cloud solution, this allows the device to connect to your PracticeStudio environment from anywhere as long as mobile service is available.
 - **Microsoft Surface Pro** – The Surface Pro is a good solution but does not function quite as well in a portrait mode as other 2-in-1 solutions.
 - **Requires “Pro”** – Be sure to choose the “Surface Pro”, “Surface Pro 2”, “Surface Pro 3”, etc. options when purchasing a Microsoft tablet. As per the Workstation Requirements, PracticeStudio requires a full version of Windows and cannot be natively run on Windows RT or Windows 10 S based tablets.
 - **Apple iPad** – The Apple iPad is another popular choice for use with PracticeStudio
 - **Requires Remote Desktop** – iOS, Windows RT, and Android tablets must use a Remote Desktop connection to utilize PracticeStudio. This means that one Workstation or Terminal Server license will be “consumed” for each tablet that is in operation while that tablet is using PracticeStudio. Typically, this is workable if the provider has a Windows workstation in his/her office that will not be used while carrying the tablet.

NATIVE REQUIREMENTS

- If choosing a tablet or comparable 2-in-1 device to run PracticeStudio natively, please ensure the following minimum requirements are available:
 - Ability to run full Windows (*not* the “RT” or “S” variants)
 - Core i3 Processor or Equivalent
 - 3GB RAM
 - 1152x864 resolution
 - 10 GB available HD space
 - 802.11n or greater wireless network card
 - Extended runtime battery (if available)
- Wireless Access Point

REMOTE DESKTOP REQUIREMENTS

- If choosing a tablet other than the Apple iPad to run PracticeStudio through Remote Desktop, please ensure the following minimum requirements are available:
 - Capability to Remote Desktop into a Windows computer (typically obtained by a downloadable app)
 - Extended runtime battery (if available)
- Wireless Access Point

NETWORK SPECIFICATIONS

PracticeStudio is truly only as stable as the network on which it runs. Therefore, very strict requirements have been set in the area of networking. The requirements encompass wired network equipment, wireless network equipment, and cabling.

SOFTWARE REQUIREMENTS

- When using a wireless network, the network must be configured to encrypt network traffic using a HIPAA compliant encryption protocol

HARDWARE REQUIREMENTS

- 100Mbps switched network required, 1000Mbps recommended
- Up to 20 workstations
 - 1 x 24-port switch (100Mbps required, 1000Mbps recommended)
or
 - 2 x 16-port switches (100Mbps required, 1000Mbps recommended)
- More than 20 workstations
 - 1 x 48-port switch (100Mbps required, 1000Mbps recommended)
or
 - 2 x 24-port switches (100Mbps required, 1000Mbps recommended)
- Cabling that meets or exceeds Category 5e specifications
- Wireless Networking
 - 802.11n or greater
 - HIPAA compliant encryption (WPA or WPA2 encryption or better recommended)

CABLING RECOMMENDATIONS

- If the number of workstations exceeds 25, response times to the server can be improved using 1Gbps uplinks to the server and between the network switches
- Have cable installed by a certified network professional who can verify and guarantee their work
- If cabling is already installed, have it tested by a certified network professional

CLOUD CONSIDERATIONS AND REQUIREMENTS

There are several things to consider when preparing to move to the PracticeStudio Cloud. Internet is most definitely not the same for everybody and in some parts of the world Internet is better than others. So it is good to calculate the connection speeds to see if your ISP (Internet Service Provider) can accommodate your needs. Additionally, there are some tests that you can run to determine if the Cloud is a good fit.

CLOUD REQUIREMENTS

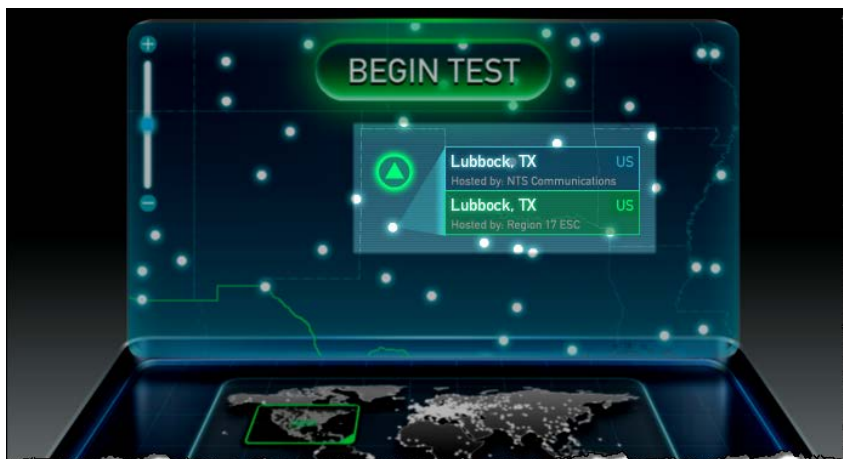
- 128 kbps UP / DOWN per active user (this is for concurrent, not total)
- For clinics that will do a high volume of scanning or image markups, it is recommended to increase this to 256 kbps UP / DOWN
- Workstation requirements are same as in-house solutions (see page 8)

DOMAIN NETWORK CONSIDERATIONS

- While a domain network is *not* required for PracticeStudio to function, depending on the size of your network and your IT professional's preferences, it may still be desirable to operate in a "domain" environment. This would require a small, relatively inexpensive domain server and Professional level operating systems on the workstations. Again, this *is not required* for PracticeStudio to function when using cloud hosting, but it may make normal office processes like sharing printers, transferring files, etc. more reliable and easier to maintain.

TESTING FOR CONNECTIVITY

- Performing a speed test to determine accurate rates when gaining access to our data center.
 - Access a computer on the network that will be running PracticeStudio
 - Open an internet browser
 - Navigate to: www.speedtest.net
 - You will want to choose the server located in Lubbock for Region 17 ESC (see image below)



- This will give an accurate depiction of your true upload and download speed when talking to our data center.

- If the speed test is slow, then it is recommended to run a trace route using the steps below to see if there are any slow hops to our data center.
 - Access a computer on the network that will be running PracticeStudio
 - Open a command window (Windows + R, then type cmd, press Enter)
 - Type: `tracert -d 173.219.191.193`
 - This will run without resolving any of the DNS names which will speed the test up. If you see multiple hops that exceed 200+ ms consistently after running the `tracert` more than once, then you should talk with your ISP for some possible solutions.

OTHER SPECIFICATIONS

TOUCH SCREEN MONITORS

Touch Screen Monitors are recommended for computers that will run PracticeStudio EMR regularly.

REQUIREMENTS

- Support for at least 1280x1024 resolution at a 16-bit color depth

RECOMMENDATIONS

- 17" Touch Screen Monitor

OFFICE PRINTERS

Most documents printed from PracticeStudio use a regular office printer.

REQUIREMENTS

- Minimum 6- to 8-page-per-minute laser printer
- A duty cycle of at least 30,000 pages per month
- Printer drivers that are included with Windows
 - Printers with drivers that are not included with Windows or that have not passed the Windows Hardware Quality Lab (WHQL) will not be supported

RECOMMENDATIONS

- Laser Printers are recommended over InkJet Printers for many reasons, including speed and duty cycle

PRESCRIPTION OR LAB ORDER PRINTERS

Prescriptions and Lab Orders can be printed from PracticeStudio but require a special printer.

REQUIREMENTS

- Printer drivers that are included with Windows
 - Printers with drivers that are not included with Windows or that have not passed the Windows Hardware Quality Lab (WHQL) will not be supported

RECOMMENDATIONS

- "Auto-Cut" feature included with printer
- 10 Rolls of paper minimum
- Recommended models:
 - Star Micronics 800 Series Printer (Thermal Printer)
 - Ithaca POSjet 1000 Printer (Ink Jet)

LABEL OR APPOINTMENT CARD PRINTERS

Address labels and appointment cards may be printed individually using specialized printers.

RECOMMENDED MODELS

- Dymo Labelwriter Twin Turbo
 - Allows both appointment cards and labels to be printed without swapping paper.
- Dymo Labelwriter Turbo
 - Same functionality as Twin Turbo, but requires changing paper to switch between appointment cards and patient labels

SCANNERS

A scanner is needed to scan documents into the system using the Patient Media module.

REQUIREMENTS

- TWAIN compliant drivers
- Transparency adapter if scanning x-rays

RECOMMENDATIONS

- Brother ADS 1000W (USB or WiFi)
- Brother ADS 1500W (USB or WiFi)
- Canon image FORMULA DR-M140
- TWAIN compliant 30+ ppm high-speed scanner

POINT OF SALE DEVICES

There are three hardware components that are supported for point of sale from within PracticeStudio.

CASH DRAWER

- OPOS (OLE for Point Of Sale) Compliant USB Cash Drawer
- Recommended brand – MS-Cash Drawer

CREDIT CARD POS DEVICES

- PracticeStudio only supports OpenEdge for credit card processing. OpenEdge has a number of devices compatible for credit card processing including support for EMV chips, etc. Such devices include:
 - Ingenico iSC Touch 250
 - Ingenico iPP320
 - Ingenico iCMP (Portable Bluetooth Solution)
 - bbpos Chipper Bluetooth (Tablet/Mobile Based Solution)

SIGNATURE PAD

- Topaz Siglite 4x3 LCD, dual serial/HID USB, back light LCD display, RoHS
- Model Number: T-LBK750-BHSB-R

DIGITAL CAMERAS

A Digital Camera allows a picture to easily be added to a patient's file.

REQUIREMENTS

- Non-proprietary image file format
 - The camera must use a standard file format (JPEG, TIFF, BMP, PNG, etc.)

RECOMMENDATIONS

- Cameras that allow Windows to see the storage as a drive
- Cameras that can wirelessly transmit files to a network location

ANTIVIRUS SOFTWARE

Because of virus signature mismatches, special consideration must be taken with antivirus software.

REQUIREMENTS

- Antivirus software that can exclude the PracticeStudio directories (both server and client) and the temp directory
- Antivirus can **NOT** be run in an active mode on the PracticeStudio server or on PracticeStudio workstations
- Scheduled scanning is supported
- Active email scanning is also supported, provided the email server is independent of PracticeStudio (it is not used as a PracticeStudio workstation or server)

- Using bundled Antivirus / Antimalware / Intrusion Detection software that is designed for a business environment **is** recommended rather than obtaining separate products for each purpose
- **Note:** The only personal-level (i.e. non-corporate) antivirus software supported for use with PracticeStudio is Microsoft Security Essentials.

CONCLUSION

This document lists the PracticeStudio® hardware specifications for many different categories as well as recommendations where appropriate. These requirements and recommendations must be followed in order for PracticeStudio® to operate properly.

Acknowledged Receipt of Hardware Requirements and Recommendations

The undersigned hereby acknowledges receipt of the PracticeStudio® Hardware Requirements and Recommendations document, and also acknowledges that unless these requirements and recommendations are followed and implemented at the clinic, the PracticeStudio® software will not function as designed and could potentially result in lost or corrupt data.

Signed By: _____ Date: _____



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