
2023

System Requirements

Filopto Practice Management System



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Basic Requirements

	Workstation	Dedicated Server
Software	<ul style="list-style-type: none"> ▪ Windows 11,10* Pro 64-bit or higher editions only* ▪ Mac OS using Parallel emulator or Remote Desktop ▪ IOS, Android using Remote Desktop ▪ Open Document or Microsoft Word (used by communication & EMR module) ▪ .Net 4.8+ and .Net 7.0 	<ul style="list-style-type: none"> ▪ Windows 2022, 2019 Server (essential, standard, datacenter editions) ** ▪ Open Document or Microsoft Word (used by communication & EMR module) ▪ .Net 4.8+ and .Net 7.0
Processor rating (See Item CPU section in this document)	<p>Higher the rating, better the Performance</p> <p>Minimum 8,000+ Passmark Today's PC have Passmark rating of about 18,000-38,000</p>	<p>Higher the rating, better the Performance</p> <p>CPU rating of 8,600+ (Higher better)</p>
Video Resolution	1980 X 1080	
RAM Memory	8+ Gigabyte (GB) RAM (minimum) 16 GB recommended	16+ Gigabyte (GB) RAM (minimum) 32GB recommended
Hard drive Faster the hard drive, better the performance	<ul style="list-style-type: none"> ▪ Slow - Sata 3 – 5400 RPM – not recommended ▪ Average - Sata 3 -7200 RPM – max. speed 180MBps ▪ Fast SDD Hard drives – Sata 3- max. speed 550MBps, ▪ SAS -15000 RPM - max. speed 1500 MBps – Business class ▪ Fastest M.2 NVMe drives – max. speed 10,000+MBps <p>Server storage requirement: 5 GB for the program and 50+ GB for your patient file database (for best performance an additional 3 time the storage size of your patient file database is required)</p>	
Internet	Internet access Business-grade, high-speed Internet	
Recommended		Uninterruptible Power Supply (UPS)

* Microsoft Server operating system have typically a practical 5-year life from the date they have been release.
Windows 10 end of Life is October 2025. **Accra Med Software Inc. cannot support an operating system that is no**

longer supported by the manufacturer. Starter and Home editions of Windows are not supported due to their built-in limitations.

******Windows 11, 10 can be used as a peer-to-peer server in small installations. However, note that the windows operating systems have built-in limits to the number of connections (users) they can support. If you intend to use Windows desktop as a server software, be aware of the limits Microsoft imposes.

IMPORTANT: These specifications are intended as a minimum guide. The faster the processor and hard drives, the faster the response time you can expect. Your PC will only be as fast as the slowest part making it up. For example, you may have the fastest of everything but if your hard drive is of a slow type, your PC will be slow.

Required by all Offices:

- Off-Site encrypted backup system or remote encrypted backup service (**Accra provides a secure, encrypted backup service that meet or exceeds the legal, government and medical requirements (PHI, HIPPA, PIPEDA) contact us for details**)
- We recommend using the Windows built-in anti-virus/malware solution. Some third party can cause issues or require Filopto folders to be excluded from any scan.
- Uninterrupted Power Supply (UPS) for the server. Protects patient data in case of power outage or fluctuations.
- Internet connection is required for licensing, updates, accessing the Help file and for the remote support service.

Peripheral Requirements

Although Accra Med Software Inc, outlines the following requirements for peripherals, **not every** peripheral is required in your office environment.

Document Printer	Business-grade laser printer	Accra Med Software tests its products with HP LaserJet® printers.
Label Printer	Windows Based Printer Dymo, Epson, Seika, HP	All Printing is done via the Windows Printing system. Printers must be compatible with your version of the Windows operating system.
Window Based Camera	Twain Based	You can use almost any windows compatible Web/PC camera.
Document Scanner	Windows Based or for multiple users local network (LAN) base scanners/printers.	You can use any windows compatible scanner. Some TWAIN-compatible network scanners or scanners that are part of multi-function machines may not work under a Remote Desktop Server

		environment or on a Windows Server.
Bar Code Scanner	Any wired or wireless keyboard-based scanner	Only the keyboard-wedge Windows compatible interface is supported.
Remote Desktop Protocol (RDP)	50 Kbps bandwidth per RDP client connection or better	Use Remote Desktop Connection to access Filopto running on a Remote Desktop / Terminal Server in single and multi-location practices.
Uninterruptible Power Supply (UPS)	UPS for server from companies such as APC	Electric fluctuations can impact your computer's performance. A total loss of power can damage your data. In the event of a power loss, a UPS can keep your computer running long enough to safely shut it down.
Switches	1000 Mbps transfer rates	Network switches to connect your devices
Wireless Routers	Wi-Fi 5, 6 or 6e router Always enable the wireless security of your router.	Wireless networks offer lower performance and reliability than wired networks.

The One Minute Summary:

Any current and properly configured Business Class PC or Windows Server running the latest Windows operating system and updates will work with Filopto. A Server/PC able to run Windows 11 or Windows Server 2022 with 16-32+ GB of memory and with fast storage space drives.

The most important element of a Filopto server is having the fastest hard drive possible.

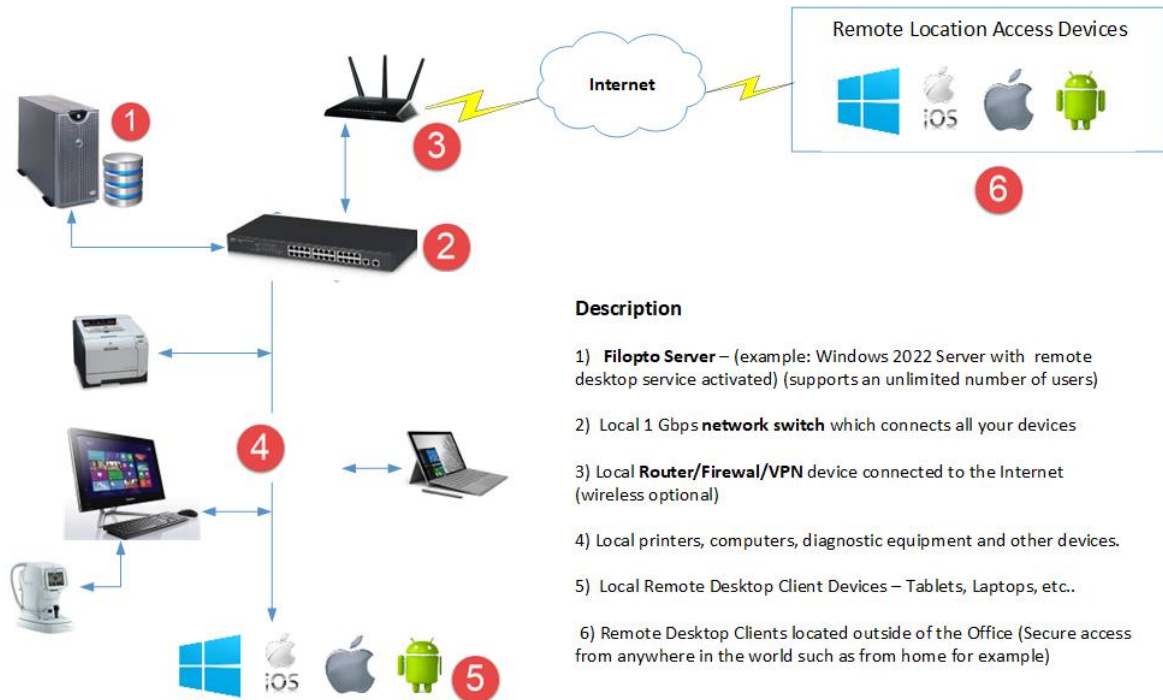
Starter or Home class PC or misconfigured devices may give you issue or may not run Filopto. A Starter/Home PC with Windows starter/home versions is not a Business class PC and is not recommended and will not perform adequately. A Home PC, is a PC typically running Windows **Home or Starter edition**, or a PC using a home-oriented CPU (Intel I3 or AMD Ryzen3 or APU type CPU) or a PC being sold with a CPU that is several years old.

Therefore, any PC using **today's latest business-oriented CPU and Windows version** such as the AMD Ryzen 5 or Intel I5 or better with at least 8+ GB of memory and a suitable hard drive will work.

The more current PC's come with NVMe drives, while mid-range(older) PC will have SDD drives. Low end PCs will have the slower mechanical hard drives.

Basic Configuration

Basic Filopto Configuration



Description

- 1) **Filopto Server** – (example: Windows 2022 Server with remote desktop service activated) (supports an unlimited number of users)
- 2) Local 1 Gbps **network switch** which connects all your devices
- 3) Local **Router/Firewall/VPN** device connected to the Internet (wireless optional)
- 4) Local printers, computers, diagnostic equipment and other devices.
- 5) Local Remote Desktop Client Devices – Tablets, Laptops, etc..
- 6) Remote Desktop Clients located outside of the Office (Secure access from anywhere in the world such as from home for example)

2020-12

Introduction

IMPORTANT:

These system requirements are routinely reviewed and updated.

This document represents the technology available at the time of writing. It does not mean that older technology will not work with Filopto, but rather presents to the reader the cost-effective options currently available for purchase.

The requirements outlined in this document represent the minimum hardware and system specifications required to effectively use the Filopto Practice Management software. Failure to meet these requirements will noticeably degrade the performance of the software.

Accra Med Software Inc, does not provide support for hardware, network or for other devices that make up your computer systems.

If you are unsure about whether your systems meet the minimum requirements, or if you're considering purchasing hardware, hardware support, or a hosting service, **Accra Med Software provides a Free system consulting service, do not hesitate to contact our Support team (1-888-321-0441 option 2) before you buy.**

Minimum Hardware Specifications

As a starting point, you must be realistic with your expectations. Filopto will run on most Windows devices. The question is **PERFORMANCE**. You cannot expect a \$200 PC to have the same performance, reliability and stability as a \$5000+ PC/Server.

This document attempts to provide guidance that can have a direct impact on the speed, performance and stability of your devices, networks and overall office. Please review it and if you have questions do not hesitate to contact us, we are here to help you.

(Support Team 1-888-321-0441 option 2)

Recommendation for improved performance'

What kind of server do you need for Filopto? It depends on your workload, but typically medium sized clients will have 20-25 workers, working 7 hours per day for 5-6 days a week. Their starting

database will represent about 50+GB of disk space and grow with usage. Based on this workload, here is what you need to focus on.

The most important element of a Filopto server is having the fastest hard drive possible.

The most critical resources for performance are:

1. **Hard Drive - Fast Disk Input/output (I/O) is required by any database system**, buy the fastest hard drive you can. NVMe hard drives are currently the fastest.
2. **RAM**, this is comparable to gas in a car if you do not have much, you won't go far, users should have 8-16 GB, Servers should have 16-32+ GB
3. **CPU**, this is what crunches the work, a fast multi-core CPU will do the work faster.

Hard Drive: Fast disk Input/Output (IO) means the fastest hard drives you can afford will give you the best performance. Today's it means NVMe type hard drives followed by SAS and then SSD type drives and at the bottom of speed are the spindle type hard drives. SAS type drives are expensive and designed for datacenters. They may not be applicable or cost effective to your business.

Unless you are a large enterprise FILOPTO installation, consumer grade NVMe and SDD drive offer an economical option that can meet your needs.

Keep in mind that regular usage, means replacing your hard drives on average every 3-4 years. If heavily use they will wear out earlier!

Hard drives will fail, it is only a matter of time. Therefore, it is worth paying for hard drives with a longer life such as a 5-year warranty, knowing that you will replace them before then. Also placing them in a RAID array will protect you from data loss in case of a failure. ***Only a good backup solution will protect you against a disaster, total failure or infected/ransomware events.***

What is the difference between an enterprise grade and consumer-grade hard drive? An enterprise grade hard drive will have a higher overall quality, which typically results in faster speeds and a longer life. They are designed for continuous and intensive use, such as is typically encountered in a data center serving a large amount of users.

Depending on your work load and if you are going to replace your drives regularly, the benefit of using an enterprise grade hard drive versus a consumer grade may be moot for a SMB (Small or Medium Business). Larger installations should always use enterprise grade drives.

RAM (Random Access Memory): The amount of needed RAM depends on the database size, the number of users and the speed of the hard drives.

Sixteen (16) GB is the recommended minimum. Anything above this minimum amount will improve the speed of Filopto and demand less workload on the hard drives. **Most SMB will find that 32+ GB is ideal for their environment.**

CPU (Computer Processor Unit): The Ghz speed of the CPU is how fast it can do the work but is less important than the number of cores/treads. The more cores/treads, the more work a CPU can do at the same time. More cores typically mean less wait time. Ghz is the speed at which the CPU can do the work, therefore the higher the Ghz, the faster it can process the work. Combining both, more CPU cores/treads with higher Ghz will provide the optimum performance. In this document, we use the Passmark rating standard which rates each CPU for the amount of work it can do. The higher the number the more work it can do. **We recommend a Passmark rating of at least 8600+.**

PCs using the latest (current) business class CPU such as the **AMD Ryzen 5 or Intel i5 CPU have performance ratings in the 28,000 - 38,000+ range.** (<https://www.cpubenchmark.net>)

The Filopto database does not require excessive CPU resources but if your server CPU is constantly at a 50% usage level you should consider upgrading. Constant CPU usage of 70%+ will result in delays and is not recommended.

Is there a difference between desktop CPU and Server CPU? The answer is yes. A server CPU has been optimized for “typical” server type workload versus a desktop CPU is tuned for more general work. Server CPU tend to be able to use more RAM memory and hard drives than a desktop CPU. That said, their reliability is the same and if you compare Passmark rating you will see that some desktop CPU are as fast, if not faster, than some server CPU. SMB can make use of a properly configured desktop CPU. Larger installations should always use Server class CPU. When considering a small business server, you will note that some models use Desktop CPUs and not server class CPU. The main reason is that depending on the server usage the cost benefit may not be noticeable for the business.

Operating System: It is widely recognized that the minimum system requirements as stipulated by Microsoft for their operating systems do not meet a normal user’s performance expectations. Therefore, for the usability of any application or system, you will need to improve on the minimum requirements listed for the Microsoft operating system. **For optimum performance of Windows and Filopto, you should have 8-16 GB of RAM for PC and 16-32+ of RAM for servers.** Desktop should use Windows 11 Pro or Enterprise as operating system and new servers should use Windows Server 2022.

Plan for the future

Computers evolve at a feverish pace, and there is no way to future-proof your hardware. The eventual obsolescence of your computer is a sad fact of life, no matter how high end the machine might be today. Most PC’s today have a business life expectancy of no more than 4-5 years.

Detail Equipment Recommendation

Network Equipment – Routers, Wireless Networks and Switches:



Figure 1 - WEB Smart Switch

The standard local area network (LAN) speed is 1000 Mbps, which should be sufficient in most instances. For standard 1000 Mbps LAN networks, cable type Cat 5e or above is recommended. If designing a 10+Gbps network, consider Cat 6a, 7 or 7a type cables.

Switches are the traffic coordinator between all your devices. It permits each device to get access to the requested resource such as the Internet or your server or a printer. The 10+ Gbps networks are typically used in datacenters and require special switches, servers and network cards to operate at these high speeds and are not typically required by Filopto users.

Routers are the first line of defense from the Internet and the bad guys. They provide the firewall you need between the internet and your internal network. Typically provided by your Internet service provider (ISP), some organizations may wish to install their own for a higher degree of security.



Figure 2 Modern Wireless Router

A good firewall will not allow unauthorized users getting into your private network. A good router will provide you with the speed and security you need. If you will be connecting to your network from a remote location, you are required to use a secure connection such as a VPN. Most routers today include both VPN and wireless connectivity. Wireless networks are slower than a wired network.

Wireless Networks come in many flavors which have a direct impact upon your speed and performance.

The Older WIFI standards are not recommended: Wi-Fi 1 to Wi-Fi 4

Wi-Fi 5: 802.11ac (2014) - 5300+Mbps (5 GHz)

Wi-Fi 6: 802.11ax (2019) Recommended

Wi-Fi 6e: 802.11ax (2020 Recommended)

When using a wireless network, certain devices you may have in your office may negatively impact the performance of the network. For example, optical grinders can emit electrical noise

that can interfere with network activity. It is important that you insulate your WI-FI network from these types of devices. A network specialist can assist you in properly configuring your network and protecting it from such electrical interference.

Desktop and Servers:

Today's desktop and servers are significantly faster than those available just a few years ago. When shopping for a PC, remember that each device/PC/server is designed for a specific group of people and possible use. Therefore, we do not recommend using a low-end home-oriented device in a business environment. They will underperform. These low-end devices are easily identified since their prices will be at the lower end of available PCs and most will come with an older model CPU and typically with the **Windows Starter/Home version which is not supported by Filopto**. Most low-end devices will not meet the performance recommendations described.

Computer Processor (CPU):



This is the brain of your computer system. Today's computer processors (CPU) are quite powerful with the trend being for significantly more powerful solutions in the near and mid-term. CPU/APU's of just a few years ago are significantly slower and costlier when comparing performance with comparable models from today.

What is the difference between a Server and Desktop CPU solution? Although to answer this question accurately we would need to go in extensive details between both types of processors and hardware they use, we will oversimplify the answer and provide a general response that clarify the main differences.

The most important difference between servers and desktop is the overall purpose:

- PC (desktop/workstation) is designed for human-to-computer interaction.
- A server is designed for computer-to-computer interaction.

CPUs with similar performance (Passmark) rating will provide similar compute power. A server typically uses more expensive parts that are designed for a more robust reliability. Servers CPU contains unique high-end technologies that are not always needed in small server environments and definitely not needed in desktop solutions.

In both cases the motherboards are designed to meet unique needs. For example, a desktop motherboard may be tuned for fast processing as seen in gaming, while a server motherboard can be designed to accommodate multiple CPU's, extremely large memory (RAM) and large storage capacity compared to desktop solutions. An advanced server motherboard may also offer advanced CPU management tools that can be useful in a datacenter environment.

Selecting the right CPU

Two elements should be considered when selecting a CPU; the number of cores/threads and the GHz speed of the CPU. More cores/threads mean more work can be done simultaneously while higher GHz mean it can do it faster. Also, the newer the CPU (year created) the faster the CPU.

Due to the vast array of CPU versions available in the marketplace, we use the Passmark CPU rating as guidance. The Passmark CPU rating provides a comparative rating of the performance between various CPU's. **A higher rating number means the CPU has more processing capacity and will be faster than a lower rated CPU.** You can check most CPU model available by visiting www.cpubenchmark.net.

CPU model are Intel i3, 5, 7, 9 and AMD Ryzen 3, 5, 7, 9, and for servers the Intel Xeon and AMD EPYC solutions. Each offer a different price/performance level.

Business class CPU are identified as the AMD/Intel 5 class CPU. The 7-class type of CPU are for power users and the type 9 CPUs are for power-hungry needs.

Typically, Filopto users will choose either the 5 and 7 range model type of desktop CPUs.

For servers', users can select from the 7, and 9 series as well as the Xeon and EPYC server series. Higher the Passmark rating the better.

Today's business class PC using the latest Intel I5 or AMD Ryzen 5 have a performance rating in the 18,000 - 38,000+ range.

You should expect that today's fastest CPU will have, at most, a useful life of about 5 years. Slower or older CPUs will typically have a shorter useful life expectancy.

If you are buying a new workstation/desktop, select a PC using the latest business class CPU (AMD Ryzen 5 or Intel i5, power users may benefit using AMD Ryzen 7 or Intel i7 models). Business class models will provide you with the best performance and longer useful life.

With regards to which Server type CPU to use, Filopto works well with high-end desktop CPU or server CPU that are properly configured for use in a SMB type installation. Larger installation requires CPU devices specifically designed for servers' usage (Intel Xeon or AMD EPYC).

If you wish to custom build your own server, you can do so using the information provided in this document or contacting Accra Med Software Inc for guidance.

Filopto also supports properly configured virtual servers such as Microsoft Hyper-V or VMware environments. Using virtual servers can combine all your server needs into one physical server, eliminating the cost of having to purchase multiple physical servers to meet your office needs.

The range of server solutions is large. **Therefore, depending on your needs, you can host Filopto on most any device as long as the device is properly configured.**

RAM Memory



Computers will under-perform if they do not have enough RAM memory. At a minimum, Windows 11 require 8+ GB of RAM to start. The more applications open at a time; the more RAM memory you will need. Windows will load programs in its RAM memory speeding up a program. If not, enough RAM memory is made available Windows will begin copying back and forth (paging) to the hard drives to keep your programs working. Hard Drives are significantly slower than the speed of the RAM memory. This paging process to the hard drive will slow down your overall system performance.

The norm today for desktop PC is a minimum of 8+ GB of RAM memory. Sixteen (16) Gigabytes is considered the current optimum for desktops. The more programs you have open, the more RAM you need.

Filopto will require a minimum of 250 MB of free unencumbered RAM on a desktop to start, with typical Filopto users using between 540 MB and 2+ GB of free RAM memory above what is required for Windows 11 (8+GB) and other applications to function properly.

The server RAM memory requirements are defined by the various applications running on your server at the same time, as well as, the number of virtual servers, computers and remote users connected. A server should have at a minimum **16+ GB** for small to medium installations of Filopto. Filopto users will average between 120MB to 250 MB per user of RAM memory on the server with power users able to use much more. Filopto uses a centralized database cache to minimize the RAM memory requirements.

If you are going to virtualize your server (Hyper-V or VMware) you will require additional RAM memory on your server. A good starting point for virtualizing **is to have 32GB of ram memory.**

If you are going to use the Windows or Citrix remote desktop protocol (RDP/direct access/Thin client) feature, you will require additional RAM memory for each remote user as well as additional CPU processing power. Depending on the number of remote users, you may find that a virtualized or dedicated Remote Desktop server will provide substantial performance gains over a combined Filopto/RDP server. Review the requirements for remote desktop processing support beforehand. A good starting point **is to have 32GB of ram memory if the Remote Desktop server is located on the same server as Filopto.**

With a Remote Desktop Protocol (RDP) server and client software you can use non-windows devices such as the IPAD, Android or Linux tablets (several native and third-party RDP client software are available for Android, Linux and Apple platforms). The Windows PC and Tablets

come with the Windows built-in RDP client. Note that some non-windows operating systems have **limits** on the available support for RDP features.

Video Card and Monitor Requirements:



Video cards Graphic Processing Units (GPU) cycle all of your screens and graphics, making them appear sharper and all around better.

The faster the video card, the faster your screens will appear, giving you the snappiness, you are looking for in a computer. Most business class PC support HD resolution (1920 X 1080) and the default video card is sufficient for Filopto's needs. If you are going to display multiple images at the same time or display DICOM images, a higher resolution and faster video card may be required.

Resolution: Filopto is optimized for a resolution of 1920 X 1080

Hard Disk Space:

The most important element of a Filopto server is having the fastest hard drive possible.



Hard drives are the storage device of your computer. The faster the hard drive, the faster you can retrieve and store your data. We recommend that at a minimum, SATA 3 disk drives be used in workstations and servers.

Hard Drives average speed:

Slow - Sata 3 – 5400 RPM	not recommended
Average - Sata 3 -7200 RPM	max. speed 180 MBps
Fast SSD Hard drives – Sata 3	max. speed 550 MBps
SAS Server Class -15000 RPM Business class	max. speed 1,500 MBps
Fastest Server & Desktop M.2 NVMe drives	max. speed 10,000+ MBps

The faster the hard drive, the faster your PC / Server can retrieve or save your data.

Desktop PC will require approximately 5 GB of FREE disk storage space to install / use Filopto

Server storage requirement: 10 GB for the program and 50+ GB (minimum) for your patient file database which will grow with usage (you will also require an additional 3 time the storage size

of your patient database for updates and best performance). Mid-size environment may require 1+ TB of Free storage space.

Today, the better devices come with NVMe drives, while mid-range PC will have SSD drives. Low end PCs will have the slower mechanical hard drives.

Computer Operating System (OS)



Filopto makes use of the latest features available in the latest Microsoft Windows Operating systems. As new operating systems are released, Filopto is upgraded to support it.

Desktop PC's should use the latest Windows version, such as the **Windows 11 Pro version**. **Due to the limitations of the "Start versions" and "HOME" editions of Windows, these versions are not supported.** Only the Pro, Workstation and Enterprise versions of Windows desktop OS are supported.

The Filopto client software can also run on a **Mac OS** using either the Parallel emulator or the Remote Desktop application. **IOS, Linux and Android** systems are supported via a Remote Desktop client. ***Some Windows functions may not be available on all non-Windows platforms due to the limitation of the emulator/remote desktop client, mouse or host OS limitations.***

Server PC: Your Servers can be a Windows 11 Pro for very small installations (note that some advanced Filopto server functionalities are not available when using Windows 11 as a server OS). Larger installations should use the Windows Server OS such as Windows Server 2022. Windows Server Core installations **are not supported**.

Accra Med Software Inc. cannot support operating systems no longer supported by its manufacturer.

BACKUPS



Accra offers a secure, Internet-based, rotating, encrypted remote backup service which meet or exceeds all HIPAA, PHI and government standards. For more information, call us at 1-888-321-0441).

It is **crucial** that you have regular backups of your data and applications in case of a disaster. Typically, these are done on a daily basis and **must be** stored outside your office location in a safe place. (Note that by law (USA), patient backup information must be encrypted). You should rotate the backup medium used, to have at any given time, at least 3 days of backups on hand. Many jurisdictions require specific security standards(encryption) and procedures to be implemented for backups (see PHI, HIPAA, PIPEDA, Meaningful Use, NIST, CMS, etc.)

UPS / BBU



An Uninterruptable Power Supply (UPS) or Battery Backup Unit (BBU) for the server is essentially a battery powered system that regulates the electrical power sent to the server. If your office is prone to power fluctuations or power loss, **this is a crucial piece of hardware** since it will give you the time to properly shutdown the server and reduce the chance of data corruption and loss of your patient data. **It is recommended that all servers have a UPS to safeguard your patient data files.**

Printers and other Peripherals



Filopto makes use of printers, scanners, barcode readers and digital cameras, diagnostic equipment for such things and features such as invoices, patient files, exams, inventory, reports and the general overall workings of Filopto. Verify that your peripherals will work properly with your version of Windows. We recommend that inkjet printers be only used for light duty, while large workloads are best served with laser printers. Filopto is tested with HP LaserJet printers.

Laptops / Tablets



It can be difficult to choose today, between a tablet, laptop and a desktop. There are so many more choices than ever before, and each comes with a variety of competitive features and price ranges.

When deciding between a laptop and desktop, consider where you will be using the computer the most and the processing speed/power you require.

Some laptops are designed and marketed towards professionals' vs novices' vs gamers. Professional laptops will allow you to use touch, dictate or use pen base writing (that Filopto supports) for speeding up data entry and for ease of use.

Screen Size This consideration is a bit obvious, but size—screen real estate—is important to consider. Keep in mind that on the desktop the screens sizes are bigger and getting bigger. You cannot fit a 27" screen on a 7" or 13" tablet and think everything is going to be the same.

Screen resolution is also important. Depending on the resolution and size of the screen you may be scrolling or squinting to see the software properly. Choose the resolution and screen size that works for you.

The Operating System: The Operating System (OS) will dictate how you can run Filopto. Except for the Windows base laptop / tablets, Filopto cannot be run directly on other operating systems due to the OS, CPU, memory and storage limitations.

For the Apple, iPad, Android, Linux and Windows RT/ARM type tablets you will need to run Filopto via an RDP client or emulator such as Parallel for Mac or Chrome RDP for Android. These apps range from free to a nominal cost.

The Filopto server (Windows 2022) must have client RDP licenses available for the RDP client to connect to it. These are sold separately for the Microsoft/ Citrix servers. (See RDP server below)

Storage vary depending on the device chosen. Make certain you have enough storage space for all the applications you will be running.

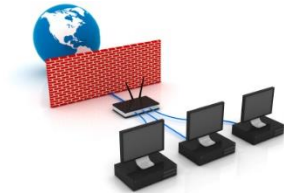
Voice Recognition, Hand Writing Recognition



If you are going to make use of the Filopto built-in voice recognition feature or handwriting recognition feature, we recommend that you invest in a high-quality microphone that can suppress environmental noises and that the pen used for handwriting recognition be comfortable for the end user. Using sub-par devices will result in end-user frustration and having to repeat or re-do work. Investing in a good to excellent devices will speed up your data entry.

Note that this technology requires additional RAM memory and CPU processing power on the PC/laptop/tablet using these features. We recommend that RAM memory be in the 16 GB range and that the speed of the CPU be in the high-medium processing range. The latest version of Windows will also perform better than previous Windows versions.

Firewalls, Anti-virus and Anti-Malware



Your Patient information must be protected per Canada's PIPEDA, the US HIPAA and other PHI security regulation and standards against any unauthorized access. A good Firewall and Anti-virus/anti-Malware software are the first steps in meeting your legal obligations, as well as protecting your overall network and PC from malicious attacks or virus/malware.

The latest version of Windows 11 and Windows server 2022 come with the Windows Security anti-malware solution. When properly configured it will perform as well as any third-party product. We recommend using the Windows product since some third-party anti-malware products are known to cause occasional issues in Windows and Filopto.

If you want to add a third-party product, consider www.malwarebytes.com on top (not as replacement) of the Windows Security product. For third party anti-malware solutions you may need to exclude Filopto folders from being scanned.

IMPORTANT: The Filopto database is not directly susceptible to virus or malware and must be exempt from scanning by your third-party anti-virus/malware software or performance issues will occur.

Remote Desktop Protocol (RDP) Server

Installing some antivirus software on an RDP Session Host server greatly affects overall system performance, especially CPU usage. The Windows Security solution does not present these issues and can be safely used with minimal impact.

VPN (Virtual Private Network)



In multi-office or remote access settings, a VPN will be required to secure the data transmissions between offices/locations. Quality routers offer the VPN function built-in to the equipment or you can use software-based solutions such as OpenVPN (<http://openvpn.net>) or a Windows type VPN (IPsec) solution.

Remote Desktop Protocol (RDP) server / Private Cloud Service



Filopto supports Windows and Citrix remote desktop server capabilities. Remote desktop is a thin client feature that allows the user to connect various devices (i.e. tablets, low power PC) to a computer (Filopto server, for example) located in-house or in another location (via the Internet) and interact with it as if it were local. **RDP is essentially your own private and secure cloud environment.**

The use of this service permits Filopto to be run on most devices (as a WEB APP or as a remote APP or as a remote desktop) from your home or from another remote location. The user has the exact same experience as if he/she was sitting in front of a full featured PC located at the same location as the Filopto server. Windows remote desktop can be configured to support a full VPN encrypted link between devices. Windows 11 has natively an RDP server that permit remote users to connect to the desktop.

A separate or virtualized Remote Desktop server is recommended for multiple users and additional RAM memory is also recommended when using the remote desktop service.

Native RDP clients are available for the following devices types: Windows, Apple IOS, Apple Mac, and Google Android (Chrome RDP).



[Windows APP Store](#)

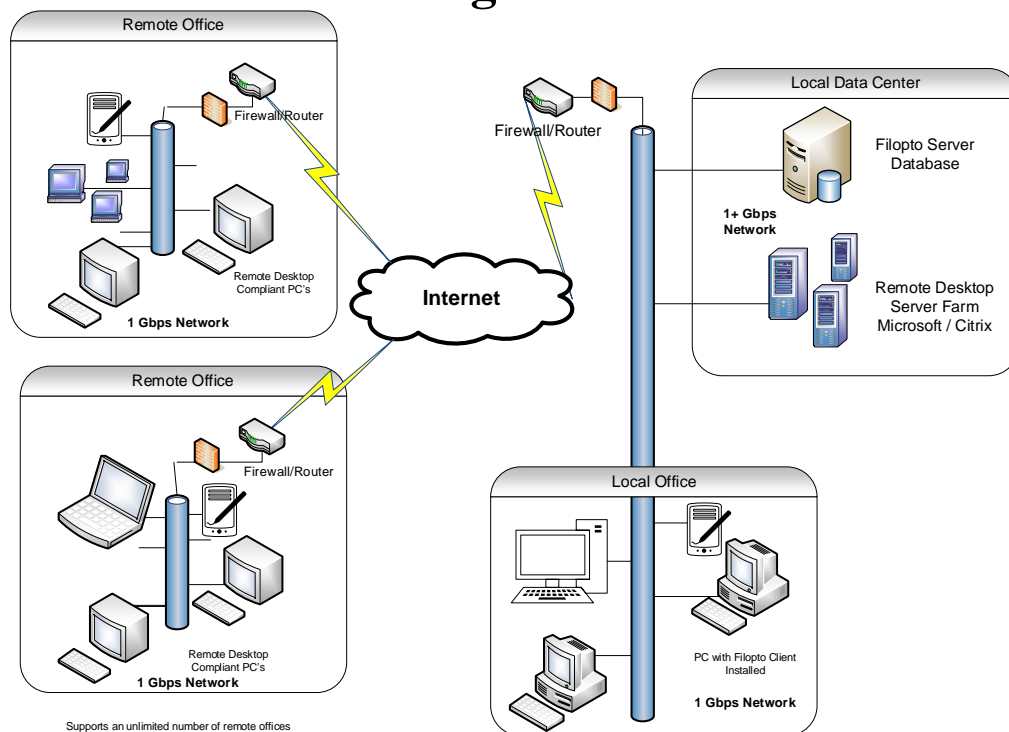
[Available from Microsoft for Apple](#)

[Available at the Google Play Store](#)

Filopto Multi-office Enterprise versions

The Filopto Multi-office version called Filopto DE and EE, permits organizations to distribute Filopto to multi-locations while using a single infrastructure and database. This permits multiple office and users to work simultaneously on Filopto while retaining access to all data in one location. The built-in security permits administrators to limit access to the data and key features on a user by user or group basis.

Typical Filopto DUO / EE & Remote Desktop type configuration



Local Data Center Configuration:

Please review the related Remote Desktop Protocol (RDP) and Virtual Desktop infrastructure (VDI) server manufacturer's system documentation and requirements before proceeding. Your remote network must be configured to support the utilization you will make of the network and servers. A rule of thumb is that one active standard remote desktop user will require a minimum of about 56Kb of bandwidth per connection and will use a minimum of 2 TCP/IP connections. Filopto power users can make use of more than 2 TCP/IP connection in an active session.

Virtualizing your Server

Virtualizing your server can provide many benefits from reduce power consumption to reduce. Virtualization permit you to reduce the number of servers required to process your workload. Most servers today can be easily virtualized using Windows Hyper-V service or VMware.

When using virtualization there are several items to consider. Your server has to be configured to meet your needs. Typically, the more CPU cores and RAM memory you have the faster that the workload can be done. Fast disk storage is also key, since having to wait for your server being able to read the file you need can become frustrating very fast. Microsoft/VMware have some documents that can assist in properly configuring your server.

Dedicated Remote Desktop Server / Private Cloud Service:

We strongly recommend that you size the workload based on the Remote Desktop Server's manufacturer specification (Microsoft/Citrix). Filopto is a multi-threaded application therefore the more CPU /cores the more threads (users) can be services simultaneously. Having more CPU cores and RAM memory will provide better performance. Fast disk drives is required to support your user's needs.

Local Office:

If you have an office which is local to the Filopto server, it is recommended that the local users be connected via the Filopto Client and not via the Remote Desktop Servers. Filopto is a Client/Server application and as such you can reduce the workload on your Remote Desktop Servers by using the Filopto client software for local users.

Note that we have many clients using remote desktop locally for ease of management and if you use this infrastructure format make certain that your server can serve both remote desktop clients and the Filopto database. Separate virtualized servers will always provide better performance. Disk I/O speed is the number one item that will affect the speed of Filopto, therefore using M.2 NVMe types drives, SAS or SSD drives will significantly be faster that using standard hard drives.

Basic Terminology

The following sections explain some of the system terminology and requirements when using the Filopto Practice Management solution:

Client / Server Architecture	Filopto is a Client / Server application. The Client-server is a software architecture model consisting of two parts, client systems (PC) and server systems, both communicating over a computer network or on the same computer. A client-server application is a distributed system capable of servicing an unlimited number of clients (PC) and growth.
Client systems	A client device can be any device such as a computer (PC), laptop, tablet, smart device, thin client device or a business class workstation that is connected to the server and relies on the server for data files and network connections
Database	The file which contains all the data entered into the Filopto software. It contains all of your patient data. It is your data repository or in other terms your filing cabinet. Filopto uses the Firebird SQL database.
Server System	A dedicated server is recommended for medium or large networks. Dedicated server networks are fast and can handle multiple users simultaneously. A Server is a computer running administrative software that controls access to the network and its resources. The server acts as the network's file cabinet, providing data files to other computers on the network. The server will store the Filopto database and server applications for the system. The server will also control the security for files located on the server.
Computer Network	A physically interconnected group of computers running software that allows them to share files and resources. Commonly known as a wired or wireless computer network. In an office setting the network is considered a private network and referred to as a Local Area Network (LAN), while the public network is referred to as the Internet. Typically to create a network you will require a network switch or network router or both.
Peripherals	An external hardware component added to your computer to extend functionality. Peripherals can include printers, scanners, keyboards, mice, cameras, bar code readers, diagnostic equipment and more. Peripherals may be wired or wireless.
Private Cloud Service Remote Desktop or Terminal Services	Private Cloud Service, Remote Desktop or Terminal Services allows a user to access the Filopto program from a non-windows computer or a Windows remote computer, or when using thin client's computers over your private network (LAN) or the Internet. Remote Desktop technology is used to support: non-Windows devices such as tablets, multi-office environments and for working remotely as well as devices in a thin computing environment. Apple products can be supported via remote desktop or by using the Parallel emulator product.
Hyper-V	Hyper-V is the virtualization server role in Windows Server 2019/2022. Virtualization servers can host multiple virtual machines that are isolated from each other but share the underlying hardware resources by virtualizing the processors, memory, and I/O devices. By consolidating servers onto a single machine, virtualization can improve resource usage and energy efficiency and reduce the operational and maintenance costs of servers. In addition, virtual machines and the management APIs offer more flexibility for managing resources, balancing load, and provisioning systems.
Backup System	Most jurisdictions require, by law, that you have a secure encrypted off-site backup of your patient data. These laws (PHI, HIPAA, Meaningful Use, PIPEDA, etc..) require you to meet or exceed their security and storage requirements. Accra Med Software offers an optional secure encrypted backup service which meets or exceeds all of your backup legal requirements. Contact us to get connected to this service.

Uninterruptable Power Supply (UPS) A device that provides battery backup when the electrical power fails or drops to an unacceptable voltage level. Small UPS systems provide power for a few minutes; enough to power down the computer in an orderly manner, while larger systems have enough battery for several hours.

**more information and answers to your questions, contact us.
It will be our pleasure to guide you in the selection of
appropriate hardware and network solutions for your
environment.**

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