White Paper on Targa OfficeStation Net Star

Introducing the Targa OfficeStation Net Star

Targa OfficeStation is the world's first CPU-less Windows XP desktop terminal device for multi-user access. It has a small sleek design to unleash the full powers of the Windows PC with ease of use and set up in mind. The Targa OfficeStation delivers web surfing, Internet game, Internet applications such as ASP, instant messenger, e-mail and any Windows applications like Office suites as well as semi-multimedia without the complexity of an expensive standard PC.

With the OfficeStation's multi-user Windows terminal solution, you will be able to maximize the power of your existing computer by sharing it among up to 10 client terminals.
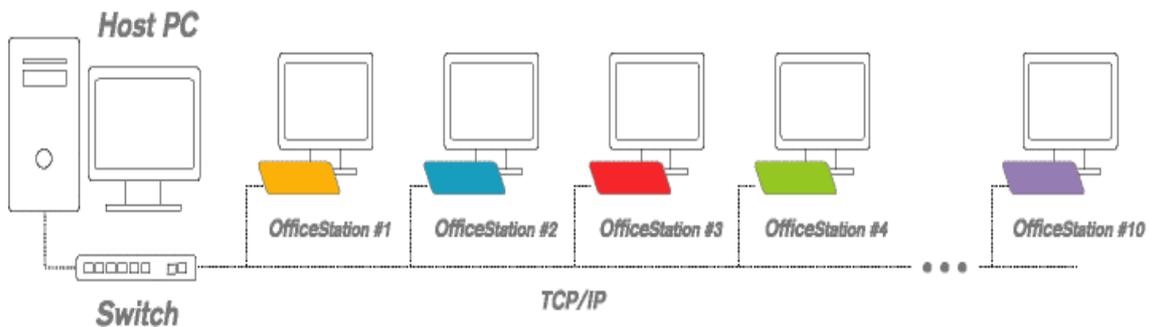
Specification

- Power   : AC110V ~ AC220V   50/60 Hz
- Size   : 215mm (W) X 40mm (H) X 160mm (D)
- Weight   : 550g
- Front Indicator: Power/LAN/Ready Indicators
- Top Button   : Power button with Indicators
- Interface Port : PS2 K/B, PS2 Mouse, Speaker Out, VGA(RGB),
                    RJ-45 Ethernet, DC-power in
- Protocol   : WoIP (Windows over IP)
- Host OS   : Windows2000 Pro/Windows XP Home/Windows XP Professional
- Keyboard, Mouse, monitor, Speaker may be required for each station

PS/2 Keyboard Connector — Connection for a PS/2 keyboard.

Speaker/Headphone Jack — Connection for speakers or headphone.

Power Inlet (DC-IN) Jack — connection for AC adapter power cord.

PS/2 Mouse Connector — You can connect a PS/2 type mouse.

LAN (RJ45) Jack — To connect OfficeStation™ to the Host PC, plug the network cable into the Host PC.

VGA Monitor Connector — You can connect an external monitor.

Power Button — Turns On/Off the system.

Power Indicators — Light up when the system is on.

LAN Operation Indicator — Blinks when OfficeStation™ communicates with Host PC.

Ready Indicator — Lights up when OfficeStation™ configuration ready to communicate with Host PC.

Power Indicators — Lights up when the system is on.

Special Features

- TCP/IP based standard Ethernet network
- Remote access over DSL
- Data security and scalability
- Hardware and software copy protection
- Proprietary WoIP (Windows®-over-IP) protocol
- Real time audio / video streaming Windows® desktop screens
- Low power consumption and ultra quiet operation
- Compact and lightweight design
- Affordably priced for multi-user computing applications

Host PC Recommend Spec

OfficeStation	1unit	2~3	4~7	8~10
CPU(Intel Pentium 4*)	>1.0GHz	>2.4GHz with HT	>3.0GHz with HT	>3.2GHz with HT
RAM	256MB	512MB+	1024MB+	2048MB+

*You can still use low-end PCs such as Celeron, Pentium III but it may only support up to 2 units

What is UTMA (UltraThin MultiAccess) ?

This is the world's first terminal unit that does not require a CPU, hard-drive, or CD-ROM yet executes as if it is an ordinary Windows PC. With this technology, it allows you to expand your existing PC to up to 10 network PC terminals easily and cost effectively.

How does it work?

Today's Pentium 4 is faster than a supercomputer 15 years ago and it is normally underutilized, so each UTMA-ready device (we called "OfficeStation") is programmed to access the host PC's excess computing power. By utilizing Windows XP/2000's multi-user features with UTMA technology, each terminal can operate like a separate PC desktop without noticeably decreasing the overall performance of either the host PC or each terminal. Therefore, each terminal unit can run any application from the host PC independently and securely. Using a standard FastEthernet connection, a user can also setup a wireless connection with a Wireless Ethernet Bridge. The host PC does not require a server OS - any XP Home, XP Professional or Windows 2000 Professional operating system will work.

UTMA

1. Cost effective network solution:
Network up to 10 OfficeStations per host PC at fraction of the cost when compared to the deployment of traditional PC desktops. Simply replace old Windows desktop and plug OfficeStation to upgrade the existing computing environment.

2. Field application usage:
Can be used in an office, training center, call center, factory, school, cyber cafe or government field.

3. Compatibility:
Runs any* Windows application, Internet browsing, games, instant messenger, email.

4. Security:
Complete security via encryption and password protection. With no FDD/CD/USB port, the administrator can control the data in and out of the computer.

5. Performance:
The high speed proprietary WoIP (Windows over IP) protocol allows connections with up to 1024x768x16 bit color depth and with multimedia features. It also supports 16 bits audio through speaker out jack. One host PC can support up to 10 OfficeStations simultaneously.

6. Simple to manage:
Only the host PC needs maintenance and/or program changes. Individual OfficeStations do not need any maintenance or hardware upgrades. By upgrading one PC, all OfficeStations instantly have increased resources with no additional installation required.

Some restrictions applied such as 3D games and old legacy apps.

Comparison of Total Cost of Ownership (TCO)

	Normal PC environment	Thin Client environment	Targa OfficeStation
Server Computer	X	High performance Win2000 Server (including Server /User license) $55,000+	P4 2.4GHz+ PC 1 unit (use Windows XP Professional or XP Home)+ Memory $7,000
Terminal (except monitor)	10 units (Celeron grade) with 15'' LCD $6000 x 10 = $60,000	10 units (Celeron grade) with 15'' LCD $6000 x 10 = $60,000	9 units/ UTMA Terminal with 15'' LCD $3000 x 9 = $27,000
S/W price***	S/W copies 10 sets (Office XP etc,) Around $15,600	1 copy set (network version) Around $4000	1 copy set (personal version) Around $1600
Total cost	$75,600 average $7,560	$119,000+ average $11,900**	$35,600 average $3560

**
The cost for additional CAL (Client Access License) & Citrix Metaframe License is not included
***
Usage of software may require the authorization of respective software companies. Please refer to the End User License Agreement.

## Advantages of "OfficeStation" compared to other typical PC solutions

• Lower TDC (total deployment cost) and TCO (total cost of ownership)
• Increased security through own encryption and password protection
• Compatibility: Internet browsing, application programs, any Windows applications can run using our "Office Station" terminal
• Remote Access from any worldwide internet station (You can access your Office/Home PC from anywhere via the internet)
• Easy to Set up (No hassle installation process, No additional add-on card)
• Quick start up and small footprint
• High quality display (support XGA, 16 bits color)
• Low energy consumption and no noise (No Fan, Less than 50 watts)
• Simple to manage : Easy to control UTMA terminal device

	Traditional PC	Office Station
Cost	Spend over USD 2,000 per PC station	Cut down expenses of H/W & S/W to less that $200 per station
Security	Exposure of outflow PC data, hacking & computer virus	Safe from outflow PC data, hacking & computer virus (No HDD)
Maintenance	Difficult to control and maintain each individual computer station	Easy maintenance because only Host PC needs to be updated/fixed (not each station attached to it)
Power Saving	Power consumption over 250W per PC	Very little power consumption (about 95% less than normal PC)
Noise / Heat	Noise & heat from CPU, HDD, and VGA fan & power supply fan	No noise and less hazardous electronic emissions - no hardware (improvement of office environment)
Remote Control	Unable to remote access	Easy to carry, every portable / Able to access Host PC with internet connection anywhere in the world
Upgrade	Replacement of equipment every 2 or 3 years	Cost effective because only Host PC needs any upgrades (not each station attached to it)
Space	Takes up a lot of space	Small sleek design creates huge benefit regarding space consumption

Enterprise/SMEs

Cost effectiveness, easy maintenance, quick installation, flexibility, data security and more and more ergonomic and ecological aspects have to be considered. Take advantage of the OfficeStation, the new Plug & Play TS/ Ultra Thin Client Terminal, which offers all these advantages by sharing the resources of a standard Windows PC.

Corporate Scenario
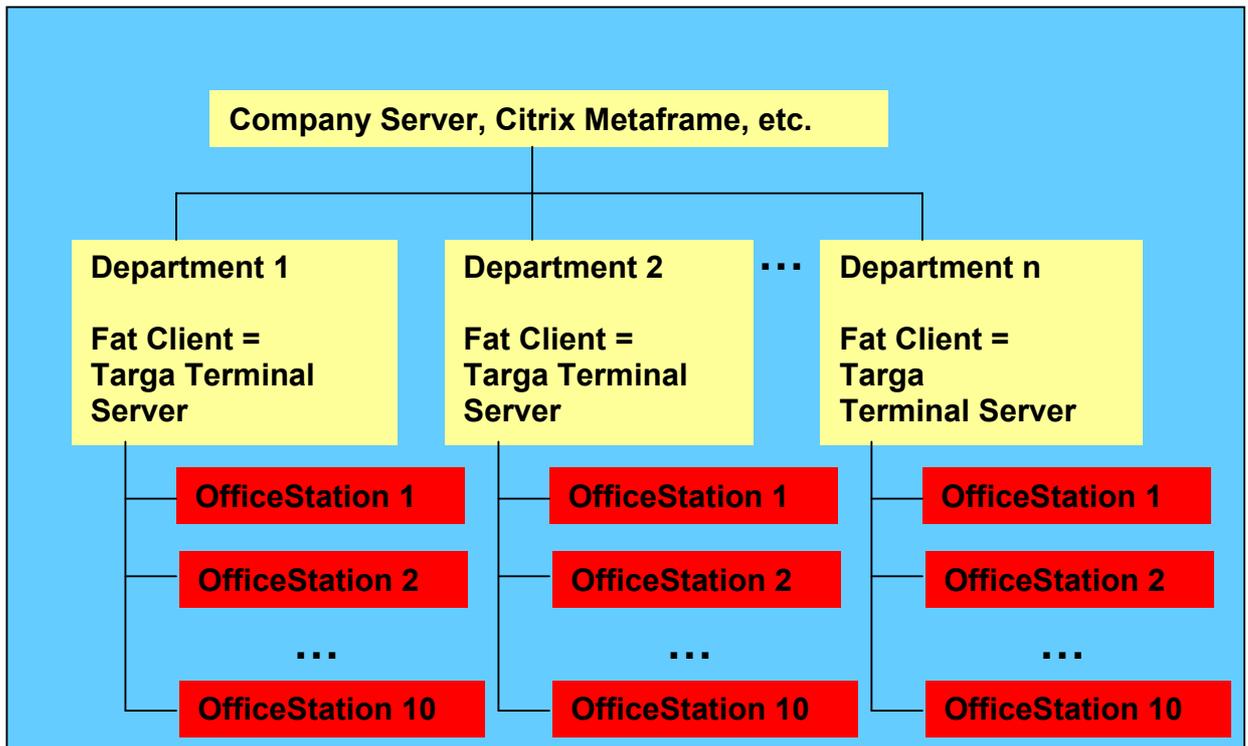
The **Top 500 companies worldwide** deploy Terminal Server/Thin Client solutions, e.g. the Citrix Terminal Server software to simplify support, maintenance and administration of the IT network in order to keep processes lean and finally save costs. A good decision, but still the common TS/Thin Client infrastructure is complicated enough to make companies dependent on a dedicated IT force. The Targa OfficeStation Net Star with a virtual Terminal Server included is significantly simple and much more cost-effective than Citrix or any other TS solution. It is suitable to be integrated as department or work group server into any network and can replace more a complicated IT architecture. The OfficeStation helps you make your IT simpler!

School/Training Center/Government Scenario

Every authority is facing the challenge to allocate its budget in a responsible and reasonable way. In view of shrinking IT budgets but higher requirements this is a tough job. In offices the productivity has to be increased steadily. In schools the pupils' proper education in IT is decisive for the future of whole societies and priority number one for many governments. Public institutes like libraries need up-to-date and easy to maintain IT equipment facing limited budgets. With the OfficeStation, the new TS/Ultra Thin Client Terminal you have the opportunity to set up an IT infrastructure easily for workgroups or classrooms at reasonable costs by optimally exploiting your IT capacity while offering a comfortable ergonomic working environment to your employees or pupils.

Vertical Markets Scenario

Internet cafes, libraries, hotels, restaurants, airplanes, airports, trains, train stations or any other location people stay at or use – they have a basic need for information like they do for food. Offering access to digital data is the fastest way of providing information. With the OfficeStation, the new TS/Ultra Thin Client Terminal you have the opportunity to easily install POS or information terminals with access to internal server data or the Internet thus granting your customer a basic service at a reasonable cost point. The flexibility of the OfficeStation allows it to be integrated very conveniently into any existing Windows networks. Especially the nDisplay solution with its integrated monitor and terminal is ideal for every POS or information terminal environment.

Home/Family Scenario
In many households one PC is shared by a couple or a family with children. Though another PC is not absolutely necessary or affordable it would be nice to have two or more people work simultaneously or surf in the Internet at the same time. With the cost effective OfficeStation, the new Plug & Play TS/Ultra Thin Client Terminal you easily install a second or third workplace in your home by making your PC a home server and sharing its performance.

Data Security

Corporate security is an important issue for every company, no matter how large or small. However, the nature and focus of corporate security have changed dramatically in the last 10 years. Most current businesses use digital technologies, computers, e-commerce solutions, wireless devices and other recent innovations to run more efficiently.

Unfortunately, these also pose a threat to system integrity with security breaches being reported regularly. The focus of corporate security is changing to include these new ways of doing business, and so has the budgets of security departments and agencies. In fact, billions of dollars are spent each year on electronic corporate security solutions intended to fight off hacker attacks. However, what most people fail to realize is that:

- statistically over 80% of security breaches are caused by insiders - most often employees.
- more than 20% of attacks on the corporate WEB sites are coming from the inside!
- almost 30% of companies, experience more than 5 attacks from the inside per year.

Usually, the goal of intrusions is to obtain valuable information, databases, research data, sales reports, marketing statistics, HR records, etc. The information can be sold and/or used by the perpetrators. Once information is located and duplicated, there are two ways to "carry" it out. The first is to transfer it via the Internet. The second is with physical media: floppies, CDs, external drives (ZIPs, USB drives, and many others), etc.

1. Internet Sniffer

OfficeStation Net Star has no CPU or storage device. OfficeStation exchanges command and variable sized packet stream (video bitmap and audio data) with proprietary encryption algorithm with the host PC. The data between OfficeStation and the host is further protected by the hardware copy protection chip inside OfficeStation to prevent H/W duplication or hacking of the encryption logic. Thus, packet sniffing of the OfficeStations packet will only reveal meaningless data.
The administrator can take full control of the OfficeStation groups through the host and can even control the OfficeStation clients online through the OfficeStation management console.

2. External Physical Media

Unfortunately, standard access control solutions coming with Windows operating systems do not allow the assignment of permissions for floppy drives, CD-ROMs, other removable devices and for network connections on a per user basis. Firewalls and antivirus software are no defense against acts of data theft and corruption from within your organization at local endpoints. You don't have to be an administrator to connect a small digital camera, MP3 player, or flash memory stick to the USB and begin uploading or downloading whatever you want. If you are a system administrator, you know you can't manage such device-level activity via Group Policy!

Deploying OfficeStation, you simply eliminate the possibility of internal intrusions as there is no external device for carrying your valuable information.

1. Can both users use the same program at the same time?

Most software products will allow all users to open and edit different documents at the same time, using the same program. Each user can also use different software products concurrently. Please note that users who intend to run the software products concurrently on the OfficeStation(s) and host PC are advised to review the Software Products' End User License Agreement.

2. Can you work independently from the host PC and other OfficeStation terminals?

Your individual OfficeStation works independently and separately from the host PC and other OfficeStation terminals as long as the host PC is turned on. You can access the same program applications without any interruption from the host PC or other OfficeStation terminals.

3. Can both users surf the Internet at the same time?

Yes, one of the best features of OfficeStation is that all users can surf the Internet independently from each other using a modem or broadband connection and one Internet Service Provider account.

4. Can I utilize peripherals, like a printer or CD ROM?

Yes, all users can share the same peripheral devices.

5. Can I play interactive games on both OfficeStation and host PC?

Yes, but it depends on the type of games being played. You can play most 3D games on your host PC if your graphic card supports it. You may play "Flash" or "Java" based games on your OfficeStation terminal.

6. Would it be possible to run mpeg-files from your OfficeStation terminal?

Yes, you can run mpeg files through Windows Media player.

7. Can I view and listen to video clips and music/sounds on my OfficeStation terminal?

Yes, you can view video clips on your OfficeStation via Windows Media player. If sound is required at your OfficeStation, amplified speakers or headphones are recommended.

8. Will multiple users of a single program make my computer work slower?

Most applications, once booted up, will run nearly as fast as with one user including Internet communications. Activities that place the most demand on the computer's resources may experience some slowing, but most users will notice little difference in speed or performance. Please check your current Windows Task Manager' Performance for monitoring your CPU computing resource availability. In most cases, you are only using less than 15% of your host PC' CPU computing power. Only in cases of heavy processing applications, (CAD/CAE graphics application or video editing) more memory for your host PC is highly recommended to achieve optimal computing results.

9. Can I use a monitor from an older PC for your second or more OfficeStation?

Yes. It should be either a VGA or Super VGA monitor. OfficeStation supports 60Hz/75Hz 640x480, 800x600 and 1024x768 with 16bits colors.

10. What is the maximum cable length that OfficeStation can support?

OfficeStation (LAN version) can support up to a maximum of 100-meters (CAT5e). The OfficeStation (USB version) can support up to 30 meters. Under USB 2.0 high speed specifications, up to 5 active USB 2.0 Repeaters are required for every 5-meter interval and a total of five (5) USB 2.0 Repeaters can be used in one link.

11. What's the minimum requirement for the host PC?

CPU (any vendor) 1.5 GHz or higher
512MB 7200 RPM HDD
Fast Ethernet switch to connect to the host PC

12. How many OfficeStations can you connect to the host PC?

You can connect up to ten OfficeStation terminals per one host PC using the LAN version.

13. How often do I need to maintain or upgrade my OfficeStation terminal(s)?

Only your host PC needs software/hardware maintenance. If new features or updates are available from Targa, the OfficeStation can be updated remotely in less than 2 minutes.

14. How can I increase my overall performance?

Overall performance can be improved depending on your host's PC configuration. Increased memory size, a faster hard-drive and CPU will increase overall performance for both host PC and individual OfficeStation terminals.

15. In order to enhance the speed of your OfficeStation terminal, should I increase the memory size or upgrade the CPU speed? I have a limited budget and can only afford one upgrade.

It depends on the types of applications you are running. If it is memory-intensive application, it is recommended that memory be increased. If it is a CPU-intensive application, it is recommended to upgrade your CPU to a high speed processor like Intel Pentium 4 HyperThreading technology.

16. Can your OfficeStation terminal run on Windows 95, Windows 98 or Windows Millennium?

No, OfficeStation only supports Windows 2000 Professional, Windows XP Home or Professional Edition.

17. Can I install programs on the OfficeStation?

It is recommended to install software applications on the host PC in order for your OfficeStation terminal to access it.

18. How many IP addresses can be assigned to the computer under Windows 2000 Professional and Windows XP Professional or Home Edition?

Windows 2000 Professional and Windows XP Professional or Home Edition allow account users to use multiple IP addresses per network connection for multiple IP numbering schemes, such as public addresses used for the Internet and private addresses, and for multiple logical IP networks on the same physical network segment.

19. Do I need to buy additional software licenses?

Streaming S/W processing utilized by Net Star is already approved in many countries to run the software through host-pc if you have enough S/W license.

Although OfficeStation does not require any additional software programs to be installed other than the OfficeStation install program for the host-PC, additional software licenses may be required by the application software that's installed on your host PC. Please kindly check your Software End User License Agreement. Users who intend to run software products concurrently on OfficeStation and host PC are advised to do the following:

(a) Review the Software Products' End User License Agreement to check if you are authorized to run multiple instance/sessions, using a single copy of the software products simultaneously on your OfficeStation terminal and your host PC and/or

(b) Check with the software provider for such usage and/or similar usages.

20. Can the host PC user track and monitor your activities on your OfficeStation terminal?

Yes and No. Depending on if you have administrator rights are not, the host PC user can not track and monitor your OfficeStation terminal. Security options provided by Windows XP/2000 allow each OfficeStation to be monitored or not monitored. Each user can have private storage space on host PC if host PC has NTFS formatted hard disk instead of FAT32.

21. When both users open the same file, can they save the file at the same time?

It depends on the types of applications you are running. Some applications will provide full read and write privileges to the user who opens or accesses the file first, the other users may then have read only privilege. This is same situation where many people access the file on the network hard-disk (NAS).

22. How can I prevent other OfficeStation users from shutting down my OfficeStation unit?

The Security Policy Settings in Windows 2000 Professional and Windows XP Professional Edition allows the host PC (Administrator) to control certain user's privileges, as well as control certain actions allowed for each user account. Administrators can modify the security-relevant settings on the host PC, including users' rights to shut down Windows, by configuring the Local Security Policy settings.

Networking FAQ

1. Can all users surf the Internet at the same time?

Yes, one of the best features of OfficeStation is that all users can surf the Internet independently from each other.

2. What is the maximum cable length that the OfficeStation can support?

OfficeStation can support up to a maximum of 100-meters (CAT5e).

3. How many IP addresses can be assigned to the computer under Windows 2000 Professional and Windows XP Professional or Home Edition?

Windows 2000 Professional and Windows XP Professional or Home Edition allow account users to use multiple IP addresses per network connection for multiple IP numbering schemes, such as public addresses used for the Internet and private addresses, and for multiple logical IP networks on the same physical network segment.

4. Can I use the OfficeStation as a remote solution?

Yes, the OfficeStation can be installed at a remote location. The OfficeStation only requires TCP/IP as the transport method to communicate with the Host PC. If firewall solution is deployed in the network, you will need to make sure that the correct ports are forwarded to the correct hosts. Use the ports below as a reference:

Forward all of these ports to the correct IP Address of the Host PC on the router/firewall

TCP	UDP
27605 3581 3597 3645	1283 3581

5. Will the OfficeStation work properly in a Windows 2000/2003 server/domain environment?

The OfficeStation will work perfectly in a server/domain environment. If the Host PC has the ability to communicate properly within the domain, then the OfficeStation will fit in perfect once implemented.

6. How secure is the OfficeStation's proprietary WoIP protocol?

The OfficeStation's WoIP protocol implements 128-bit encryption across the network for added security.

7. Does the OfficeStation support Gigabit Ethernet?

As of right now, the OfficeStation only supports speeds up to 100Mbits/sec. However, the OfficeStation should still work fine in a Gigabit Ethernet environment.

Multimedia FAQ

1. Can I play interactive games on both the OfficeStation and the Host PC?

Yes, but it depends on the type of games being played. You can play most 3D games on your host PC if your graphics card supports it. You may play "Flash" or "Java" based games on your OfficeStation terminal (anything that does not require 3D acceleration).

2. Would it be possible to run mpeg-files from your OfficeStation terminal?

Yes, you can run mpeg files through Windows Media player. The performance of video is optimal at web quality and will operate fine if not in full screen mode.

3. Can I view and listen to video clips and music/sounds on my PC OfficeStation terminal ?

Yes, you can view video clips on your OfficeStation via Windows Media player or any other video/audio enabled applications. If sound is required on your OfficeStation, amplified speakers or headphones are recommended.

Troubleshooting FAQ

1. Everytime I reboot the computer I have to reset the resolution for my monitor.

If you change the resolution in Windows only, you will have to reset the resolution each time you restart the OfficeStation. To keep a consistent resolution, you will need to change the resolution in the profile you are using for the OfficeStation. First, you will need to go to the 'TS Options' tab in the setup area within the OfficeStation's system configuration utility. Whichever profile has a check mark next to it is your default profile. Select the default profile (default is usually Autodetection) and press the 'Edit' button. At the bottom of the page, you will find many options for changing the resolution.

2. I have setup the OfficeStation and the Host PC properly according to your manual, but I am still receiving the error message 'Host Unreachable'. What do I need to do?

This is common when software on the Host PC had interfered with the installation of the OfficeStation software. The most common software applications that can conflict with our product are anti-virus, firewall, and anti-spyware utilities. If these applications were running while you installed the software initially, you will need to reinstall our utility. First, make sure to uninstall our software, then disable or uninstall the conflicting utilities. Once the utilities are disabled or uninstalled, you can now safely reinstall our software. Depending on the software, it might still conflict with our product if you re-enable it with our software running. Most of these utilities allow exceptions or rules. Please check the Networking FAQ for firewall exception ports.

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