



Network Configuration Guide I304NET



Table of Contents

TABLE OF CONTENTS	2
GETTING STARTED	4
INTRODUCTION.....	4
DISCLAIMER	4
QUICK SETUP GUIDE (POWER USERS ONLY)	4
PLANNING	4
EQUIPMENT NEEDED	4
GATHERING INFORMATION	5
INFORMATION GATHERING CHECKLIST	7
YOUR ROUTER'S INTERNAL IP ADDRESS	8
YOUR ROUTER'S PUBLIC IP ADDRESS.....	8
YOUR ROUTER'S USERNAME AND PASSWORD	8
YOUR NETWORK'S DHCP RANGE	8
YOUR NETWORK'S SUBNET MASK.....	8
THE IP ADDRESS YOU WILL GIVE YOUR 1304NET.....	8
YOUR 1304NET'S PASSWORD	9
EXISTING PORT FORWARD / NAT INFORMATION.....	9
PITFALLS TO AVOID	9
IP ADDRESSES IN YOUR DHCP RANGE.....	9
DYNAMIC IP ADDRESSES	9
USING DYNAMIC PUBLIC IP ADDRESSES WITHOUT DYNAMIC DNS.....	9
CONFIGURATION	10
CONFIGURING YOUR 1304NET	10
USER ACCOUNTS	10
NETWORK SETTINGS	10
CONFIGURING YOUR ROUTER	13
CHECKING FOR CONFLICTS	13
FINALIZING YOUR SETUP	14
TESTING	14
TESTING FROM YOUR LAN (INTERNAL).....	14
TESTING FROM THE WAN (INTERNET).....	16
ADDITIONAL RESOURCES	17
NETWORKING	17
DYNAMIC HOST CONFIGURATION PROTOCOL (DHCP)	17

IP ADDRESSING	17
LOCAL AREA NETWORKS (LAN)	17
NETWORK ADDRESS TRANSLATION (NAT)	17
PORT FORWARDING	17
PORTS	17
ROUTING / ROUTER CONFIGURATION	17
SUBNET / SUBNET MASKING	18
TRANSMISSION CONTROL PROTOCOL / INTERNET PROTOCOL (TCP/IP)	18
USER DATAGRAM PROTOCOL	18
WIDE AREA NETWORKS (WAN)	18
FIREWALLS	18
GENERAL INFORMATION	18
COMMON PORT NUMBERS	18
SOFTWARE FIREWALLS	18

ApexCCTV

Getting Started

Introduction

Thank you for choosing ApexCCTV. We hope that this document will assist you in configuring your new 1304NET for use on your network and via the internet. This document follows industry standard best practices, and while you do not need to follow every single step on this list, doing so will provide you with a reliable and secure connection to your 1304NET.

Disclaimer

This document requires a basic understanding of networking principles including, but not limited to, network address translation (NAT), transmission control protocol/internet protocol (TCP/IP), user datagram protocol (UDP), subnet and subnet mask configuration, dynamic host configuration protocol (DHCP), IP addresses, routing and router configuration, public vs. private networks, etc...

The basic knowledge described above is outside the scope of this document, and will be covered briefly or not at all, and only as it applies to an individual step you need to take in configuring your 1304NET. Please find other resources in the “Additional Resources” section at the end of this document.

Quick Setup Guide (Power Users Only)

The gist of setting up your 1304NET for network use is very straightforward.

- 1) Configure your 1304NET with an appropriate network address (use best practices).
- 2) Forward port 5400 through one or more routers, starting with your internet gateway.

Planning

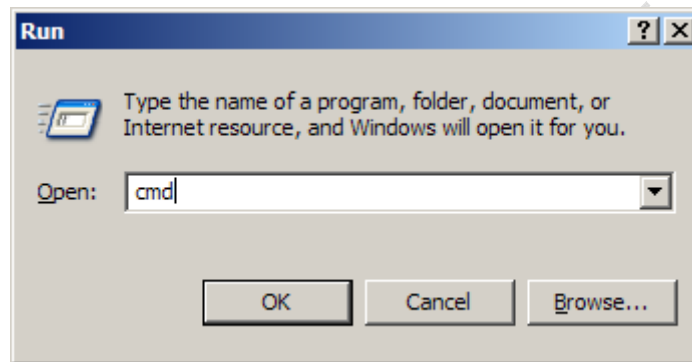
Equipment Needed

- 1) Your network enabled 1304NET from ApexCCTV, with working cameras connected.
- 2) The CD that came with your 1304NET.
- 3) Your 1304NET manual (may be on your CD)
- 4) A Television monitor, hooked up to the DVR.
- 5) A Network cable connecting your DVR to your network.
- 6) A router.
- 7) An additional PC on your network with Windows (Preferably XP) installed.

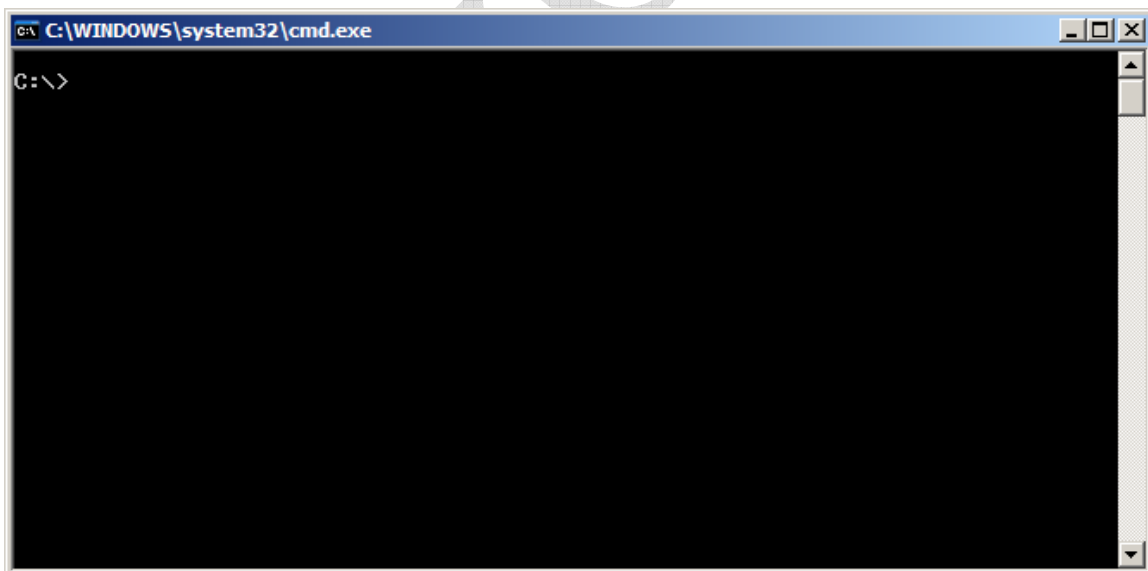
Gathering Information

Before continuing, you will need to gather the following information. If you do not know or cannot find some of this information, please contact your network administrator or your internet service provider (ISP).

There is some specific network information you will need to have readily available before you start configuring your network and surveillance product. You can find much of this information (in Windows XP) by clicking Start → Accessories → Command Prompt. If there is no option under accessories for “Command Prompt,” you can also click on Start → Run. A dialog box will appear:



Type “cmd” in the dialog box and click the OK button to continue. A command prompt will appear that looks similar to this:



Once you have a command prompt up, type the following line and press the Enter key:

```
ipconfig /all
```

You should have some information similar to what is below on your screen:

```
C:\WINDOWS\system32\cmd.exe
C:\>ipconfig /all

Windows IP Configuration

    Host Name . . . . . : eric
    Primary Dns Suffix . . . . . : us-us.local
    Node Type . . . . . : Hybrid
    IP Routing Enabled. . . . . : No
    WINS Proxy Enabled. . . . . : No
    DNS Suffix Search List. . . . . : us-us.local

Ethernet adapter Local Area Connection:

    Connection-specific DNS Suffix . . . . . :
    Description . . . . . : Attansic L1 Gigabit Ethernet 10/100/
1000Base-T Controller
    Physical Address. . . . . : 00-1B-FC-C9-FD-B7
    Dhcp Enabled. . . . . : No
    IP Address. . . . . : 192.168.1.33
    Subnet Mask . . . . . : 255.255.255.0
    Default Gateway . . . . . : 192.168.1.1
    DNS Servers . . . . . : 192.168.1.6
                          192.168.1.10
                          66.180.96.12
                          64.238.96.12
    Primary WINS Server . . . . . : 192.168.1.6
    Secondary WINS Server . . . . . : 192.168.1.10

C:\>
```

Please take special note of the Subnet mask, Default Gateway, and DNS Servers.

The complete list of information you will need is listed below. We recommend using the checklist on the following page as you gather information to be sure you will have everything you need before you begin. If you are unsure of how to find some of this information, there are tips for each item following the Information Gathering Checklist.

Information Gathering Checklist

Your router's internal IP address

Your router's public IP address

Your router's username and password

Your network's DHCP range

Your network's DNS server addresses

Your network's subnet mask

Your 1304NET's username and password

The IP Address you will give your 1304NET

Existing forwarded ports or NAT entries from your router

Your router's internal IP address

This is typically the same as the “default gateway” from the above information.

Your router's public IP address

You can find this by visiting www.whatismyip.com.

Your router's username and password

If you do not know this information, you will need to look in your router's manual or contact your network administrator or internet service provider. If you have not changed your router's default username and password, you can probably find it on the internet. Try looking at your router, jotting down its manufacturer and model number, and then doing a search on Google for the model number, plus “default username.” For instance, if my router is a D-Link DFL-200, I would search for:

DFL-200 default username

You can also use find your Router's default guide on www.portforward.com.

Either of these will more likely than not help you find the login information you need.

Your network's DHCP range

Most networks employ DHCP. Typically, your router doubles as your DHCP server. To find your network's DHCP range, you will need to log into your router (or other DHCP server) and find the page containing those settings. If you cannot find these settings, contact your network administrator or internet service provider.

Your network's subnet Mask

A subnet mask (this is a VERY short simplification) is used to “subdivide” your network into segments. You should be able to find your network's subnet mask in the settings you saw earlier when you ran “ipconfig /all” from a command prompt. You can also find these under Control Panel → Network Connections → Local Area Connection (or your network adapter's name) → Properties → Internet Protocol (TCP/IP) Properties.

The IP Address you will give your 1304NET

You should first log into your router (or other DHCP server) and determine your DHCP range. You need to pick a valid static IP address that is outside your DHCP range. You should also (as a minimum) ping the IP address you have selected to make sure another network device is not occupying it. On windows XP:

Start → Accessories → Command Prompt → Type:

```
ping [IP Address]
```

If you get a valid response, you should choose another address.

Your 1304NET's username and password

You will need the password for your 1304NET so that you can log into it and make changes. Your default username is “user” and your default password is “111111”. If your defaults have been changed, you will need to get this information from within your organization.

Existing port forward / NAT information

You need know your existing port forward and/or NAT settings before adding new ones in order to avoid conflicts. **If you use point of sales software on your network you should call your vendor and make CERTAIN you have the settings and know how to avoid creating conflicts with them.** Failing to do so could threaten your ability to create new transactions for a significant period of time.

Pitfalls to Avoid

IP Addresses in Your DHCP Range

DHCP servers are used for giving out temporary IP addresses to devices on your network that need them. This means that the IP address of any DHCP on your network can and will change as these IP address leases expire.

Your DHCP server will have a range of IP addresses that it can use for this purpose. If you set your 1304NET's static IP address to be within this range, you are creating the possibility that another device will be given the same IP address by your DHCP server. Should this occur, both of your devices will cease to function on your network until the problem is resolved.

A best practice is to set the static IP address of your 1304NET to be outside of your DHCP server range, avoiding the possibility of this type of conflict. For example, if your DHCP server's IP address range was 192.168.1.100 – 192.168.1.200, good IP addresses for your 1304NET would be 192.168.1.50 or 192.168.1.250, but not 192.168.1.105.

Dynamic IP Addresses

If you leave your 1304NET set to acquire a dynamic IP address, its IP address is likely to change over time, nullifying the effects of any forwarded ports or NAT routes to your 1304NET and breaking access to it from the internet. If this occurs, you will have to re-configure your router to pass the correct ports to it again.

A best practice is to use static IP addresses that are outside your DHCP range for all 1304NETs that will have ports forwarded to them.

Using Dynamic Public IP Addresses without Dynamic DNS

If your Internet Service Provider has given you a dynamic IP address with your internet connection, it is best, if possible, to acquire a static IP address from them. This way, you can browse to your 1304NET on the internet by simply using your public IP address. For example, if your public IP address (from your information gathering checklist) is

96.226.2.104, you would simply open Internet Explorer and enter [http:// 96.226.2.104/](http://96.226.2.104/) in your address bar to view your 1304NET.

If you cannot acquire a static IP address, there are two possibilities. First, if your public IP address changes and you can no longer view your 1304NET, simply browse to www.whatismyip.com from within your network to see your new public IP address, and use that one until it changes again (usually several months).

If you do not like this option, you can use a dynamic DNS service. This way, you can browse to a name, rather than address, such as <http://mydvr.mydomain.com>. There are several of these services that offer free accounts. We prefer www.dyndns.org, and wholeheartedly recommend them. Their setup is easy and free, and they offer software that prevents your free account from expiring if your public IP address does not change often enough. Please visit their site for more information.

Configuration

Configuring your 1304NET

User Accounts

First and foremost, if you are exposing your DVR to the internet, as a best practice you should change your default password to protect yourself from malicious individuals.

You should change your password every 90 days.

Network Settings

Before beginning this section, please make sure your 1304NET is connected to your network.

By now you should have determined the following settings to your 1304NET.

IP Address
Subnet Mask
Default Gateway (or just Gateway)
DNS Server

On your DVR remote control, press the stop button to stop recording, and press the “Menu” button.



Use the arrow keys to select the “Network Setup” menu.



Make sure the IP Mode is set to “Static”. Unless you have good reason to change them, leave the “Video Port” and “Upgrade Port” settings with their default values of 80 and 5005.

Highlight the IP Mode and press select on the remote two times.



Using the information you wrote down in the “Gathering Information” section of this guide, update the “IP Address,” “Sub Net,” “Gateway,” and “DNS” settings. Please be aware that this DVR DOES show the leading zeros for each octet of an IP address or subnet mask. Therefore, if you wrote down:

192.168.1.50

You would now enter:

192.168.001.050

These are equivalent.

Save your changes and go back to your 1304NET’s main screen. It will take a moment for the settings to save and the menu to refresh, so be patient and don’t press the button over and over.

Configuring Your Router

Checking For Conflicts

Be sure to look at any forwarded ports or NAT routes you already have configured. Make sure they do not conflict (use any of the same ports) as your 1304NET. If they do,

for any reason, you should change the conflicting default ports on your 1304NET to something else, so that you will not be causing problems for both applications.

Finalizing Your Setup

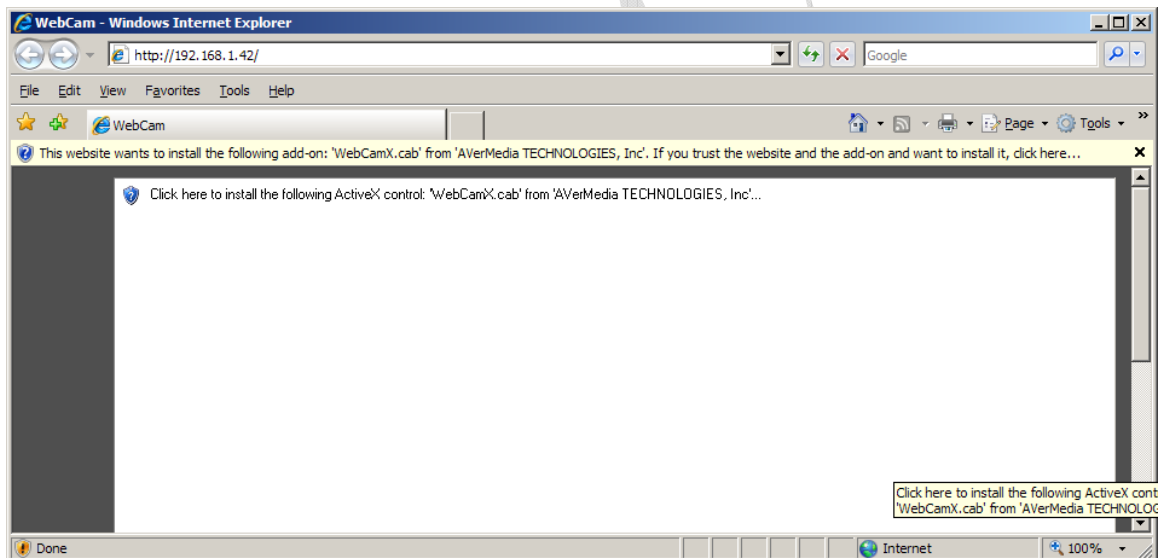
First, log into your Router with administrative privileges. Once you are logged in, locate the settings page/screen containing port forwarding (sometimes called application settings or triggers) or NAT configuration page. These settings are usually under the “Firewall” or “Advanced” section of your router configuration.

Using the appropriate page/screen in your router, make entries for port 5400 (TCP/UDP). Be sure your mappings point to the internal IP address you selected for your 1304NET, and that you click any “activate” or “enable” check boxes for each entry.

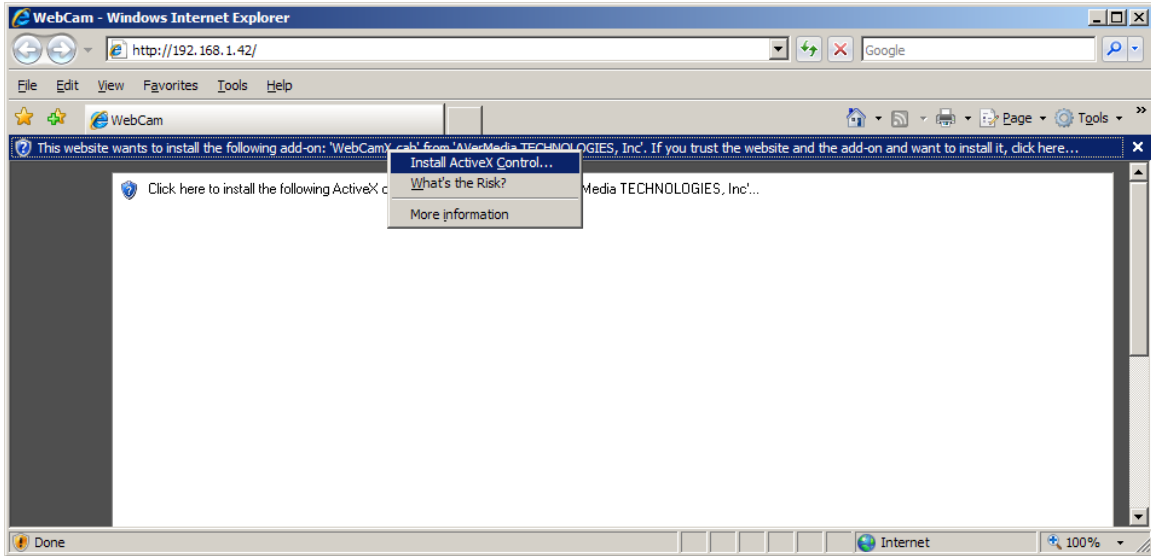
Testing

Testing from your LAN (Internal)

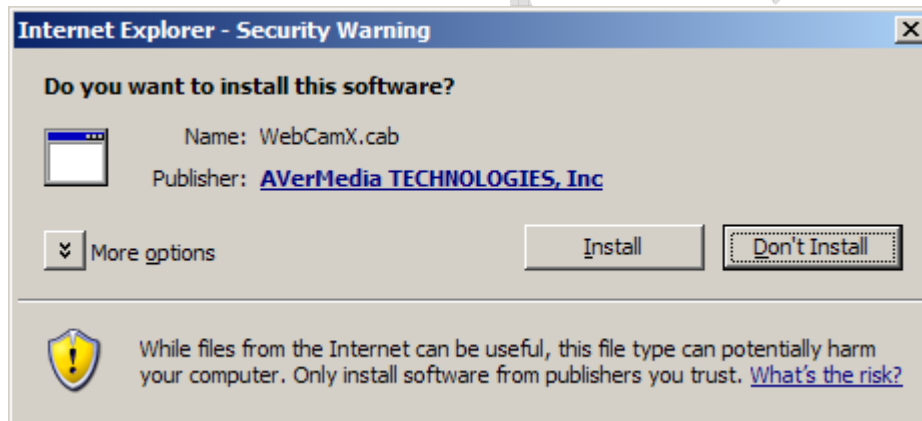
Open Internet Explorer and browse to your DVR’s internal IP address. For example, if your IP address is 192.168.1.42, you would browse to <http://192.168.1.42/>.



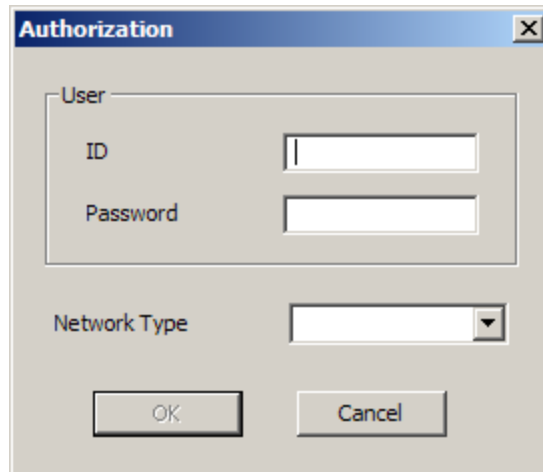
In later versions of Internet Explorer, and warning (Called the information bar) will appear near the top of the browser window. You must click on this bar and select “Install ActiveX Control” from the drop down menu.



Once you do, another warning will appear asking if you want to install the ActiveX control. You must click “Install.”



Once the ActiveX installer completes, you will be presented with a window asking for your username and password. The defaults for this model are “user” and “111111.” Please enter these and click the “OK.” Button.



Once you are logged in, you should see the webcam interface, with camera #1 loaded into the window.



After a moment, you should begin to see your video feed. Congratulations!

Testing from the WAN (Internet)

You should be able to substitute your public IP address for your internal one (see your information gathering checklist) from a PC outside your network (Viewing a 1304NET at

your office from home or vice-versa) and achieve the same result. For example, if your public IP address is 96.226.2.104 you would enter 96.226.2.104 instead of your 1304NET's internal IP address in the LAN testing process above.

Additional Resources

Networking

Dynamic Host Configuration Protocol (DHCP)

http://en.wikipedia.org/wiki/Dynamic_Host_Configuration_Protocol

<http://www.dhcp.org/>

http://www.dhcp-handbook.com/dhcp_faq.html

<http://www.webopedia.com/TERM/D/DHCP.html>

IP Addressing

http://en.wikipedia.org/wiki/IP_address

http://www.3com.com/other/pdfs/infra/corpinfo/en_US/501302.pdf

<http://computer.howstuffworks.com/question549.htm>

http://www.webopedia.com/TERM/I/IP_address.html

Local Area Networks (LAN)

http://en.wikipedia.org/wiki/Local_area_network

http://compnetworking.about.com/cs/lanvlanwan/g/bldef_lan.htm

http://www.webopedia.com/TERM/L/local_area_network_LAN.html

Network Address Translation (NAT)

http://en.wikipedia.org/wiki/Network_address_translation

<http://computer.howstuffworks.com/nat.htm>

<http://www.webopedia.com/TERM/N/NAT.html>

Port Forwarding

<http://www.portforward.com/>

http://en.wikipedia.org/wiki/Port_forwarding

<http://www.zeropaid.com/news/6160/Introduction+to+Port+Forwarding>

Ports

http://en.wikipedia.org/wiki/Computer_port_%28software%29

<http://itmanagement.webopedia.com/TERM/P/port.html>

Routing / Router Configuration

<http://en.wikipedia.org/wiki/Routing>

http://cisco.com/univercd/cc/td/doc/cisintwk/ito_doc/routing.htm

<http://www.webopedia.com/TERM/R/routing.html>

Subnet / Subnet Masking

<http://en.wikipedia.org/wiki/Subnetwork>

<http://www.networkcomputing.com/unixworld/tutorial/001.html>

<http://www.webopedia.com/TERM/S/subnet.html>

Transmission Control Protocol / Internet Protocol (TCP/IP)

http://en.wikipedia.org/wiki/Internet_protocol_suite

http://www.webopedia.com/TERM/T/TCP_IP.html

User Datagram Protocol

http://en.wikipedia.org/wiki/User_Datagram_Protocol

<http://www.webopedia.com/TERM/U/UDP.html>

Wide Area Networks (WAN)

http://en.wikipedia.org/wiki/Wide_area_network

http://www.webopedia.com/TERM/W/wide_area_network_WAN.html

Firewalls

While firewall configuration is outside the scope of this document, various hardware and software firewalls can create configuration and remote access problems for various security 1304NETs. The following information is provided in helps of providing starting points for troubleshooting firewall issues. Links to many common software firewall 1304NETs and vendors are provided.

General Information

[http://en.wikipedia.org/wiki/Firewall_\(networking\)](http://en.wikipedia.org/wiki/Firewall_(networking))

<http://www.howstuffworks.com/firewall.htm>

<http://www.webopedia.com/TERM/f/firewall.html>

Common Port Numbers

<http://www.iana.org/assignments/port-numbers>

http://en.wikipedia.org/wiki/List_of_TCP_and_UDP_port_numbers

http://www.webopedia.com/quick_ref/portnumbers.asp

Software Firewalls

BlackICE PC Protection

<http://www.iss.net/>

BullGuard Suite

<http://www.bullguard.com/default.aspx>

Comodo Personal Firewall

<http://www.personalfirewall.comodo.com/>

F-Secure Internet Security

http://www.f-secure.com/home_user/1304NETs_a-z/fsis2007.html

Jetico Personal Firewall

<http://www.jetico.com/>

Kaspersky Internet Security

<http://www.kaspersky.com/>

LavaSoft Personal Firewall

http://www.lavasoftusa.com/1304NETs/lavasoft_personal_firewall.php

McAfee Personal Firewall

<http://us.mcafee.com/default.asp>

Microsoft Windows Firewall

http://www.microsoft.com/windowsxp/using/security/internet/sp2_wfintro.mspx

NeT Firewall

<http://www.ntkernel.com/w&p.php?id=18>

Norman Personal Firewall

http://www.norman.com/1304NETs_npf.shtml

OutpostPro Firewall

<http://www.agnitum.com/>

Panda Platinum Internet Security

http://us.pandasoftware.com/1304NETs/platinum_is/

pcInternet Patrol

<http://www.pcinternetpatrol.com/>

Preventon

<http://www.preventon.com/>

PrivateFirewall

<http://www.privacyware.com/features.html>

Terminet

<http://www.infotecs.biz/Soft/terminet.htm>

Trend Micro PC-cillin Internet Security

<http://www.trendmicro.com/en/1304NETs/desktop/pc-cillin/evaluate/overview.htm>

VisNetic Firewall

<http://www.deerfield.com/1304NETs/visnetic-firewall/>

Webroot Personal Firewall

<http://send.onenetworkdirect.net/z/11246/CD45178/>

ApexCCTV