



# Global Information Assurance Certification Paper

Copyright SANS Institute  
Author Retains Full Rights

This paper is taken from the GIAC directory of certified professionals. Reposting is not permitted without express written permission.

## Interested in learning more?

Check out the list of upcoming events offering  
"Security Essentials: Network, Endpoint, and Cloud (Security 401)"  
at <http://www.giac.org/registration/gsec>

What is SubSeven?  
Giving away control of your machine!  
James Wentzel

## **What is SubSeven**

SubSeven is a backdoor Trojan for Windows 95/98, now being referred to as a Remote Administration Tool (RAT), which allows remote users to control and retrieve information from a system<sup>1</sup>. The SubSeven Trojan was first discovered in May of 1999 and has had many versions released since that time<sup>2</sup>. When SubSeven was developed it was done to improve on the capabilities that the NetBus Trojan was lacking. The powers of SubSeven can be grouped in to three major areas. File controls, Monitoring, and Network Control. SubSeven is now becoming the most popular RAT on the internet. Unlike most RAT's SubSeven normally has an update to the server every couple of weeks and with each update, it has more features added.<sup>3</sup>

The file controls of SubSeven include a huge number of utilities. Of these different utilities some of the most powerful allow the remote user the ability to transfer files to or from the remote computer. The ability to move, copy, rename or delete files off of the remote computer, the ability to erase the entire users hard drive, and the ability to Execute programs.<sup>4</sup> With these basic controls it gives the hacker the ability to install new versions of the Trojan onto the system, making all of the additional features that are added to the Trojan available to the hacker. These features also allow for the hacker to copy sensitive information off of the computer without the owner of the computer having any knowledge of it.

The Monitoring controls give the person that is remotely accessing the machine the ability to collect huge amounts of information. This information that can be gathered includes the ability to see exactly what is on the screen of the computer that is being remotely accessed. The hacker also has the ability to see all of key presses that the person using the computer types and these keystrokes can also be logged, what this means is that if a password is typed at the keyboard, the actual password will be logged. This gives the hacker the ability to collect usernames and passwords for access to other systems that the user has access to. You also have all of the capabilities as if you were using some type of package like PC-Anywhere to remotely access the computer.<sup>5</sup>

The Network controls have some powerful tools also. With these network tools you can see all open connections on a machine that is being accessed and the hacker can close any open connections that it wants to. One of the most powerful tools is the ability to relay off of the computer to attack another system, limiting the chance that the actual hacker will get caught and the person who's computer is being used to do scan or attack will be the one to get the blame.<sup>6</sup> In a recent release of SubSeven there is a new feature that is undocumented, this feature allows the machine that is running the Trojan to be used to send a huge number of ping to a Web server from numerous infected clients simultaneously causing a distributed denial of service attack. This information was gotten from research completed by the security outfit iDefense.<sup>7</sup>

When a hacker is creating the Trojan to be sent to an unsuspecting person, one of the features of SubSeven is the ability for it to be configured to inform the hacker by many different means that a machine has been infected and in this notification it contains all of the information that is necessary for the hacker to use the Trojan on the infected computer.<sup>8</sup>

When configuring the SubSeven Trojan the hack can select up to 4 different notification methods that a machine has been infected. The notification methods include ICQ notification to a specific user, IRC Notification using a specific server, port and user, or an e-mail notification sending the message to a specific user relaying off of a predefined relay server. Any one of these methods can be selected or any combination of these methods can be selected. If none of these methods are selected then no notification will be sent.

When configuring the SubSeven server, there are many ways to select for the SubSeven server to startup automatically on the infected computer. For these different methods to work, the installation of SubSeven modifies some key files on the infected machine. The normal files and entries that get updated are the following:

- 1) an entry on the "shell=" line in the SYSTEM.INI file
- 2) an entry on the "load=" or "run=" line in the WIN.INI file
- 3) In the registry  
"HKEY\_LOCAL\_MACHINE\Software\Microsoft\Windows\CurrentVersion\Run"
- 4) In the registry  
"HKEY\_LOCAL\_MACHINE\Software\Microsoft\Windows\CurrentVersion\Run Services"

On most of the systems that have been compromised with SubSeven, it has been found most often to be in the first location.<sup>9</sup>

The full list of features offered as part of SubSeven v2.1 are:

Address book

Wwp pager retriever

Win2ip

Remote IP scanner

Host backup

Get Windows CD-KEY

Update victim from URL

ICQ takeover

FTP root folder

Retrieve dial-up passwords along with phone numbers and usernames

Port redirect

IRC bot

File Manager bookmarks

Make folder, delete folder [empty or full]

Process manager

Text 2 speech

Clipboard manager [EDIT SERVER CHANGES]

Customizable colors

Change server ICON

Pick random port on server startup

Irc bot configuration

Restart server

AOL Instant messenger spy

Yahoo messenger spy

Microsoft messenger spy

Retrieve list of ICQ usernames and passwords

Retrieve list of AIM users and passwords

App redirect

Edit file

Perform clicks on victim's desktop

Set/change screen saver settings [Scrolling Marquee]

Restart Windows

Ping server

Compress/Decompress files before and after transfers

The matrix

Ultra fast IP scanner

IP Tool [Resolve Host names/Ping IP addresses]

Get victim's home info

Address

Business name

City

Company

Country

Customer type

e-mail

real name  
state  
city code  
country code  
local phone  
zip code

Configure Client colors  
Configure menu options [add/delete pages, change names]  
Automatically Display Image when downloaded [jpg, bmp]  
Automatically edit files when downloaded [txt, bat]  
Change port numbers for The Matrix, Keylogger and Spies  
Retrieve "SubSeven message of the day"  
Protect Server's port and Password once installed  
Melt server when executed  
Protect server settings with a password  
Open Web Browser to specified location  
Restart Windows [5 methods]:  
    Normal shutdown  
    Forced Windows shutdown  
    Log off Windows user  
    Shutdown Windows and turn off computer  
    Reboot System  
Reverse/restore Mouse buttons  
Hide/Show Mouse Pointer  
Control Mouse  
Mouse Trail Config  
Set Volume  
Record Sound file from remote mic.  
Change Windows Colors / Restore  
Hang up Internet Connection  
Change Time  
Change Date  
Change Screen resolution  
Hide Desktop Icons / show  
Hide Start Button / show  
Hide taskbar / show  
Open CD-Rom Drive / Close  
Beep computer Speaker /stop  
Turn Monitor off /on  
Disable CTRL+ALT+DEL / Enable  
Turn on Scroll Lock / off  
Turn on Caps Lock / Off  
Turn on Num Lock / Off  
Connect / Disconnect  
Fast IP Scanner

Get Computer Name  
Get User Name  
Get Windows and System Folder Names  
Get Computer Company  
Get Windows Version  
Get Windows Platform  
Get Current Resolution  
Get DirectX Version  
Get Current Bytes per Pixel settings  
Get CPU Vendor  
Get CPU Speed  
Get Hard Drive Size  
Get Hard Drive Free Space  
Change Server Port  
Set / Remove Server Password  
Update Server  
Close Server  
Remove Server  
ICQ Pager Connection Notify  
IRC Connection Notify  
E-Mail Connection Notify  
Enable Key Logger/Disable  
Clear the Key Logger Windows  
Collect Keys pressed while Offline  
Open Chat Victim + Controller  
Open Chat among all Connected Controllers  
Windows Pop-up Message Manager  
Disable Keyboard  
Send Keys to a remote Window  
ICQ Spy  
Full Screen Capture  
Continues Thumbnail Capture  
Flip Screen  
Open FTP server  
Find Files  
Capture from Computer Camera  
List Recorded Passwords  
List Cached Passwords  
Clear Password List  
Registry Editor  
Sent Text to Printer  
Show files/folders and navigate  
List Drives  
Execute Application  
Enter Manual Command  
Type Path Manually

Download Files  
Upload Files  
Get File Size  
Delete File  
Play \*.wav  
Set Wallpaper  
Print .txt/.rtf file  
Show image  
List Visible Windows  
List all active Applications  
Focus on Window  
Close Window  
Disable X (close] button  
Hide/unhide a Window from view  
Enable Disable Window  
Set Quality of Full Screen Capture  
Set Quality of Thumbnail Capture  
Set Chat font size and Colors  
Set Client's User Name  
Set Local 'Download' directory  
Set quick help [hints]  
Pre Set Target Port  
Preset Server Pass word  
Attach EXE File  
Pre Set filename after installation  
Pre Set Registry Key  
Pre Set Auto Start Methods:  
    Registry: Run  
    Registry: RunServices  
    Win.ini  
    Less Known Method  
    Not Known Method  
Pre Set Fake error message  
Pre Set Connection Notify Username  
Pre Set Connection Notify to ICQ#  
Pre Set Connection Notify to E-Mail  
Pre Set Connection Notify to IRC Channel or Nickname

All of the listed features are available in version 2.1 and will be included in newer releases of the program.<sup>10</sup> This list is a constantly changing list as newer versions of the program become available.

If you find that your machine has been infected with SubSeven, you are not completely out of luck. SubSeven is actually very easy to remove from the system. You just need to do some very basic steps.

- 1) delete the virus executable file



- 2) remove the virus startup entries in the registry
- 3) Correct the changed settings in the registry and system.ini file
- 4) After all is done, reboot and let the new settings take effect<sup>11</sup>

The best way to prevent a machine from being infected with subseven is to practice good habits. These good habits include no opening anything that you do not know the original source of. Also, you always want to have current Anti-Virus software running on your computer, what this does for you is to prevent older versions of the Trojan from infecting your computer and if your computer has been compromised when a new update becomes available it may find that your machine has been compromised. Finally, it is always a good idea to have some type of personal firewall running on your computer. I have found that the personal firewalls that prevent all outbound traffic from programs that have not been given this type of access to be the best to prevent this type of a Trojan. The only draw back to this is if the Trojan is installed with the name of an application that does have the type of access out of your computer to send the notification. However, most of these personal firewalls by default block outbound traffic from your computer on the standard ports that are used by this and many other Trojans.

---

<sup>1</sup> Symantec, "SunSeven 2.0 Server", 10/4/1999

<sup>2</sup> <http://www.symantec.com/avcenter/venc/data/sub.seven.20.html> (1/19/2001)

<sup>3</sup> rmbox, windos.exe/sub7info, 2/7/2000, <http://discussions.virtualdr.com/Forum1/HTML/007663.html> (2/13/2001)

<sup>4</sup> The Next Generation is Now, <http://www.sub7.org.uk/main.htm> (2/13/2001)

<sup>5</sup> HackFix "SubSeven – About SubSeven" <http://www.hackfix.org/subseven/about.shtml> (1/19/2001)

<sup>6</sup> ibid.

<sup>7</sup> ibid.

<sup>8</sup> Chris Pallack, Sub7 vid Trojan can launch distributed attacks, 6/17/2000, [http://www.linuxfw.org/articles/network\\_security\\_article-903.html](http://www.linuxfw.org/articles/network_security_article-903.html), (2/13/2001)

<sup>9</sup> HackFix "SubSeven – About SubSeven" <http://www.hackfix.org/subseven/about.shtml> (1/19/2001)

<sup>10</sup> Donald F. Kelloway, "The Basics of SubSeven (aks Sub7 or Backdoor\_G)" <http://www.commodon.com/threat/threat-sub7.htm>, (1/24/2001)

<sup>11</sup> About SubSeven, <http://www.sub7files.com/about/index.shtml> (2/13/2001)

<sup>12</sup> rmbox, windos.exe/sub7info, 2/7/2000, <http://discussions.virtualdr.com/Forum1/HTML/007663.html> (2/13/2001)