

The ChemCAD Security Server

Overview

The ChemCAD Security Server is a combination of both hardware and software which, when installed onto a machine which is networked, will control ChemCAD licenses from a single location. This gives your users more freedom, as you don't have to keep track of individual dongles

What is a Dongle?



A dongle is a hardware key which attaches to the parallel port on a computer. This device has internal circuitry which tells a program if it is licensed to run or not. Dongles come in two main types: Local dongles (also called "Sentinel Scribes") can only authorize the machine it is attached to. Network Dongles (also called "NetSentinels") can authorize several machines at once, through the existing network.

Dongle Care:

Do not expose your dongle to static electricity water, etc. Store in the (pink) plastic bag when not in use. Dongles must be connected directly to the computer. In other words don't attach a dongle to another dongle, they won't work properly.

How it Works

An engineer, whose computer is attached to a network, starts ChemCAD. ChemCAD searches all local possibilities (authorization code or locally attached dongle). Finding none, it sends a broadcast packet out on the network, asking for a ChemCAD license.

The ChemCAD Security Server, also attached to the network, receives this packet. It checks the current number of licenses in use against it's dongle's pre-set limit. If there is a license to be had, it checks that license out and sends a packet back to the engineer's computer, telling it to proceed.

When the engineer closes ChemCAD, the license used is not immediately released by the Security Server. Only when another machine requests the license does it release the unused license. This is done so that engineers may keep a ChemCAD license even if they are not actively running ChemCAD.

Technical Considerations

The Security Server system is flexible enough to be used over just about any modern network. This system can work via a LAN (Local Area Network) or a WAN (Wide Area Network). Please note if you plan to use this system over a WAN there are some special considerations listed in the Troubleshooting section.

The ChemCAD Security Server is designed to work on the following network protocols:

- *IPX/SPX*
- *NetBIOS (such as NetBEUI, some exceptions may apply)*
- *TCP/IP*
- *Named Pipes*

Several other programs, such as Autodesk's AutoCAD, use NetSentinel keys for authorization. It is possible that two NetSentinels, such as one from AutoCAD and one from ChemCAD, could interfere with each other's operation. When installing ChemCAD's Security Server, be sure to check operation of any other NetSentinels on your network. More on what to do if NetSentinels interfere with each other is in the Troubleshooting section.

Setting up a ChemCAD Security Server

Now that we know what a Security Server is, it's time to set one up. We must do the following:

- Select a computer to be a Security Server
- Install the hardware and software

Each step is discussed in detail below.

Step 1: Select a computer to be a Security Server.

Just about any computer attached to the network with an open parallel port can be a Security Server. You can use any of the following:

- Existing File Server (either running Windows NT or Novell 3.11 or higher)
- Any Windows 95 or NT machine
- Any machine running DOS. Currently only NetBIOS or IPX protocols are supported for DOS Security Servers.

The same dongle (hardware key) is used in each of these configurations. Different software is required for:

- Windows 95 or Windows NT machines (NT servers included)
- Novell File Servers
- DOS machines

Each set of software is provided in this package, giving you the flexibility you need to switch Security Server machines at a later date.

For Windows NT machines, the software may be installed as an NT Service if desired. Please see NSSERVICE.TXT on the "Tools and Documentation" disk for details.

Step 2: Install the Hardware and Software.

Installing the hardware is done by attaching the dongle to a parallel port on the computer to be a security server. A printer may be attached to the end of the dongle, and will not affect either the dongle's performance or the printer's.

Installing the software is also easy. Determine which set of software you need (Windows NT/95, Novell, or DOS) and follow the directions below.

Windows NT or Windows 95

Locate the first disk of the set labeled "ChemCAD Security Server for 32-bit Windows". Run the setup program on this disk and follow the directions of the setup program. Setup will install all the necessary drivers and files on your machine. You may have to restart the machine for these changes to take effect. The setup program will put a shortcut in the Startup program folder so that when the machine reboots the program will automatically load. To load the program without rebooting simply double-click on this shortcut. If you wish to install the system as an "NT service", read the NSSRVICE.TXT file now.

Novell File Server

Locate the disk labeled "ChemCAD Security Server for Novell File Servers". A Novell certified Loadable Module (NLM) is located on this disk. Copy this onto the file server, and activate it using the "LOAD" command. You may wish to edit your AUTOEXEC.NCF file so that the module is automatically reloaded if the machine is ever powered down.

DOS Machine

Locate the disk labeled "ChemCAD Security Server for DOS". Run the program called "SETUP.EXE" This program will create a directory called CCSRV and fill it with the necessary files. Among these files are two drivers: NSRVDN.EXE and NSRVDI.EXE. NSRVDN.EXE is used for NetBIOS installations. NSRVDI.EXE is used for IPX/SPX installations. Whichever you use, add a line to the AUTOEXEC.BAT of the computer to run it. That line should look like so:

```
C:\CCSRV\NSRVDI.EXE REM for IPX ChemCAD Server
                                OR
C:\CC3SRV\NSRVDN.EXE REM for NetBIOS ChemCAD Server
```

Now restart the computer, with the dongle attached, and your security server is ready for use.

Configuring The Security Server for Your Network

Most of the time you will not need any special configuration of the server program. After installing the hardware and software, test the dongles function using the procedure described in the next section, "Troubleshooting".

If special configuration is required it is done using "command line parameters." Command line parameters are special codes put into the command line which runs the server program. The command line is the line which actually runs the server, such as

```
C:\CCSRV\NSRVDI.EXE REM for IPX ChemCAD Server
```

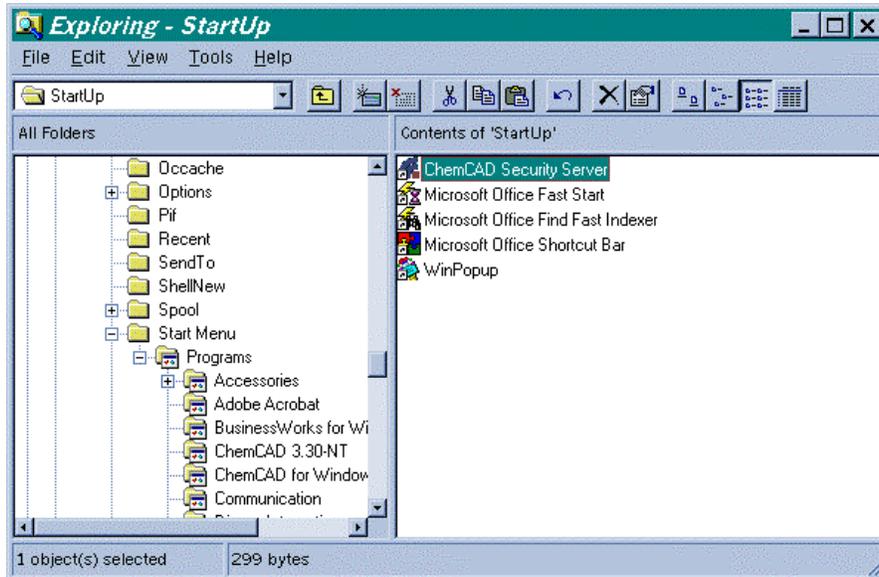
for a DOS IPX server. Each different server type (NT/95, DOS, or Novell) has its own set of codes to use. The codes are listed below along with examples for each server program.

Command Line Parameters for the Windows NT or Windows 95 Security Server

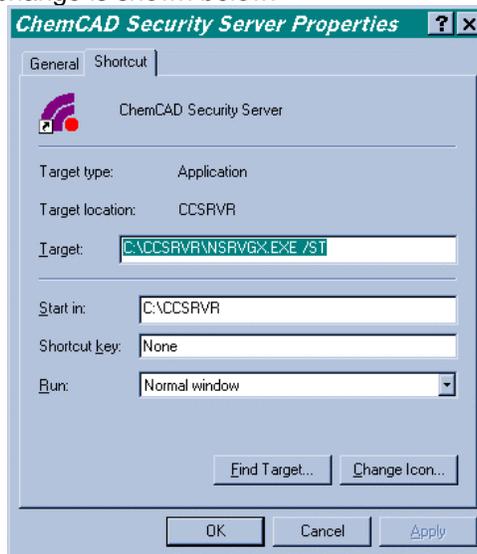
In windows NT or windows 95, we don't normally see the command line, we just double-click on an icon. The command line does still exist though, and to use these codes we need to edit it. Locate the shortcut (icon) to the server software by navigating through the explorer. It will most likely be in "C:\Windows\Start Menu\Programs\Start Up", unless you change the destination. Use a right-click to bring up the pop-up menu, and select properties. Select the "Shortcut" tab and you will see the command line. Don't worry, the example below will take you through all that.

Parameter	Description
/BI:<mask>	Overrides the default "Find_Server" UDP broadcast mask to limit the search over TCP/IP to within a specified subnet mask. The default mask is 255.255.255.255.
/DN:<name>	Changes the server's department name to <name>. If this is done for ChemCAD for Windows, you must also change the department name on the "Dongle Configurator" screen. Unavailable for ChemCAD DOS.
/MS:<num>	Sets the maximum number of servers running in this server's department and running this server's protocol to <num>. <num> is a value between 1 and 10, and it is used to determine server names. A value of 10, for example, causes servers to be named NETINEL0 through NETINEL9.
/N:<name>	Sets the name displayed by the monitor program for this server to <name>. The default is the Server's Ethernet address or IPX node number.
/Q	Suppresses sign-on messages on the server.
/RI:<num>	Defines the number of retry operations when searching for TCP/IP servers. The default is 3.
/SI:<num>	Sets the number of threads devoted to handling TCP/IP clients to <num>. Values range from 0 to 4, the default is 4. Specifying /SI:0 disables all TCP/IP support.
/SN:<num>	Sets the number of threads devoted to handling NetBIOS/NetBEUI clients to <num>. Values range from 0 to 4, the default is 4. Specifying /SN:0 disables all NetBIOS/NetBEUI support.
/ST:	Enables strict license time out enforcement. If this option is set, active licenses are revoked if the ChemCAD user sits Idle for approximately 6 minutes.
/SW:<num>	Sets the number of threads devoted to handling IPX/SPX clients to <num>. Values range from 0 to 4, the default is 4. Specifying /SW:0 disables all IPX/SPX support.
/TI:<num>	Sets the timeout value in seconds to <num> for each retry operation when searching for servers running over TCP/IP. The Default is 5 seconds.

Example: Enable strict license time out on a Windows NT Security Server:
To do this, select the shortcut or icon which starts the server program. Navigate through the Start Menu with the explorer as shown:



Look into the properties of this shortcut, and change the command line from "NSRVGX.EXE" to "NSRVGX.EXE /ST". This change is shown below.



Command Line Parameters for the Novell Security Server

With novell servers, the command line is typed in at the system console of the file server. This typically looks like a DOS prompt, but it is different. Dont forget to type "LOAD " before the filename. See the example for more details.

Parameter	Description
/AT:<num>	Sets the timing delay in milliseconds between instructions sent to the NetSentinel key. In the case of a fast server machine, /AT:50 or /AT:100 is recommended. The default is 0
/DN:<name>	Changes the server's department name to <name>. If this is done for ChemCAD for Windows, you must also change the department name on the "Dongle Configurator" screen. Unavailable for ChemCAD DOS.
/DT:<num>	Sets the timing delay in milliseconds between establishing the SPX connection and sending the handshake message to <num>. The default is 0. /DT:50 is recommended for working with Windows 95 clients. This option applies to the DOS and NLM server, for IPX/SPX protocol only.
/MS:<num>	Sets the maximum number of servers running in this server's department and running this server's protocol to <num>. <num> is a value between 1 and 10, and it is used to determine server names. A value of 10, for example, causes servers to be named NETINEL0 through NETINEL9.
/N:<name>	Sets the name displayed by the monitor program for this server to <name>. The default is the Server's Ethernet address or IPX node number.
/P:<port>	Overrides the server's use of BIOS parallel port addresses and uses the hexadecimal address <port>. This option may also be used as "/P", defining no port address. In this case, the standard values of 0x278, 0x378, 0x3BC are used. This option is needed when the server is run on a machine where other software (such as PowerLAN) has zeroed the BIOS table located in memory from 40:8 to 40:D.
/Q	Suppresses sign-on messages on the server.
/R	Conditionally unloads a previous instance of the server from memory if and only if there are no open ChemCAD users using this server.
/S:<num>	Sets the maximum number of sessions that can actively communicate with the server at one time to <num>. Half the sessions are used to turn away clients. The default is 4 (two clients at a time).
/ST:	Enables strict license time out enforcement. If this option is set, active licenses are revoked if the ChemCAD user sits Idle for approximately 6 minutes.
/U:	Unconditionally unloads a previous instance of the server from memory, whether or not there are clients using this server.
/W:<password >	Sets a password of up to 12 characters to use while managing licenses from the monitor programs (WinMon, etc.).
/?	Displays a list of available parameters (this table).

Example: Enable a 50 millisecond timing delay on a Novell Security Server

This is sometimes needed for Windows NT or Windows 95 client machines. To do this, simply modify the

```
LOAD NSRVNI command to
LOAD NSRVNI /AT:50
```

Command Line Parameters for the DOS Security Server

There's nothing to using command line parameters in DOS, you just time the server file name (NSRVDI.EXE or NSRVDN.EXE) and then you add any codes needed. See the example for more information.

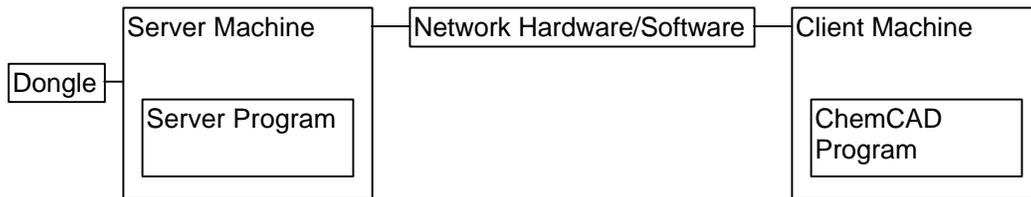
Parameter	Description
/DN:<name>	Changes the server's department name to <name>. If this is done for ChemCAD for Windows, you must also change the department name on the "Dongle Configurator" screen. Unavailable for ChemCAD DOS.
/DT:<num>	Sets the timing delay in milliseconds between establishing the SPX connection and sending the handshake message to <num>. The default is 0. /DT:50 is recommended for working with Windows 95 clients. This option applies to the DOS and NLM server, for IPX/SPX protocol only.
/MS:<num>	Sets the maximum number of servers running in this server's department and running this server's protocol to <num>. <num> is a value between 1 and 5, and it is used to determine server names. A value of 5, for example, causes servers to be named NETINEL0 through NETINEL4.
/N:<name>	Sets the name displayed by the monitor program for this server to <name>. The default is the Server's Ethernet address or IPX node number.
/P:<port>	Overrides the server's use of BIOS parallel port addresses and uses the hexadecimal address <port>. This option may also be used as "/P", defining no port address. In this case, the standard values of 0x278, 0x378, 0x3BC are used. This option is needed when the server is run on a machine where other software (such as PowerLAN) has zeroed the BIOS table located in memory from 40:8 to 40:D.
/Q	Suppresses sign-on messages on the server.
/R	Conditionally unloads a previous instance of the server from memory if and only if there are no open ChemCAD users using this server.
/S:<num>	Sets the maximum number of sessions that can actively communicate with the server at one time to <num>. Half the sessions are used to turn away clients. The default is 4 (two clients at a time).
/ST:	Enables strict license time out enforcement. If this option is set, active licenses are revoked if the ChemCAD user sits Idle for approximately 6 minutes.
/U:	Unconditionally unloads a previous instance of the server from memory, whether or not there are clients using this server.
/W:<password >	Sets a password of up to 12 characters to use while managing licenses from the monitor programs (WinMon, etc.).
/?	Displays a list of available parameters (this table).

Example: Enable a 50 millisecond timing delay on a DOS Security Server

This is sometimes needed for Windows NT or Windows 95 client machines. To do this, simply modify the "C:\CCSRVR\NSRVDI.EXE" command to "C:\CCSRVR\NSRVDI.EXE /DT:50"

Troubleshooting the Security Server system

It is very helpful to think of the security server as a system of parts and to confirm each part is working well. The following diagram shows the general layout of ChemCAD's Security Server system



The major parts of the system are as follows

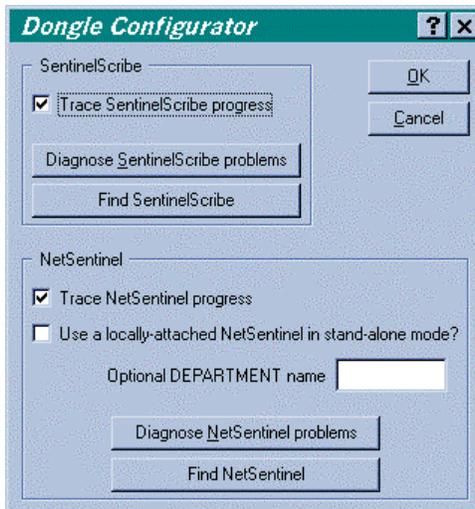
- Dongle
- Server Machine
- Server Software
- Network between Server and Client
- Client Machine
- ChemCAD Program

Now that we know how the system is put together we can start diagnosing our problem.

Start at either end of this system and work your way through it, asking yourself questions such as:

- ? Is the dongle attached properly?
- ? Is the computer on and the server program running?
- ? Is the network working properly between the client and the server?
- ? Is there a router bridge which may interfere with the client/server communication?
- ? Is the client machine logged into the network?
- ? Was ChemCAD installed properly?
- ? Is there another NetSentinel on the network?

If you start using ChemCAD for Windows and the security system is not functioning, you will see the following screen and a help screen:



Try the “Find NetSentinel” utility to see if it finds the NetSentinel. You can use the “Diagnose NetSentinel problems” button for suggestions as well. Of course you can always call us at 1-800-ChemCAD if you require assistance.

Special Wide Area Network (WAN) Considerations

There are many cases where a NetSentinel key could be accessed across a Wide Area Network (WAN). In all cases, the NetSentinel should work in this environment, but may require some configuration by the Network Administrator.

If the NetSentinel key is not recognized from a particular client on the WAN, or access to the key is EXTREMELY slow, then the routers connecting the various servers may need configuring to allow the NetSentinel packets access to the other servers without being filtered out. NetSentinel IPX packets have a Novell SAP (Service Advertising Protocol) ID of 361h, and are of Type 5.

If access is EXTREMELY slow, then the path the packets are taking to the NetSentinel server is too long. The routers should be configured to restrict access to the other servers, thereby minimizing the number of paths taken by NetSentinel to locate a server.

Two or more NetSentinel's on network

If you find the ChemCAD Security Server is interfering with another program, such as AutoCAD, check the version of the server software to see if the other software is up to date. If it is and there are still problems, change the department name of one of the servers by using the “/DN:” code. You will have to go back to each installation of the client program, to change the department name there as well. This option is not possible in ChemCAD for DOS. If you use ChemCAD for DOS, try changing the department name in the other software program (i.e. AutoCAD) to correct the conflict.

Additional Documentation

Additional documentation is available on the diskette labeled “Tools and Documentation”, in the form of two files; NS_GUIDE.DOC and WINMON.DOC. NS_GUIDE.DOC is a reference which describes specific concerns when configuring a NetSentinel to work over your particular network. WINMON.DOC describes how to use the monitor programs such as Winmon.exe which are also on the disk “Tools and Documentation.”