

CIS 76 MITM via ARP Poisoning

MITM ARP Poison Attack

DRAFT Last updated 9/4/2017

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CIS 76 MITM via ARP Poisoning

Admonition



Unauthorized hacking is a crime.

The hacking methods and activities learned in this course can result in prison terms, large fines and lawsuits if used in an unethical manner. They may only be used in a lawful manner on equipment you own or where you have explicit permission from the owner.

Students that engage in any unethical, unauthorized or illegal hacking may be dropped from the course and will receive no legal protection or help from the instructor or the college.



CIS 76 MITM via ARP Poisoning





Requirements

- 1. EH-Centos VM running with vsftp installed on uLab network.
- 2. OWASP VM at Baseline snapshot.
- 3. WinXP at Baseline snapshot.
- 4. pfSense VM at Baseline snapshot.
- 5. Cain and Abel software for WinXP VM
- 6. Older release of Wireshark for WinXP VM.



Tools

Cain and Abel site

http://www.oxid.it/index.html



Wireshark site

Download Wireshark

The current stable release of Wireshark is 2.0.5. It supersedes all previous releases.



https://www.wireshark.org/download.html

These websites are for reference only. No need to download anything from them for this exercise.

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Man in the Middle Attack via ARP poisoning



In this scenario the WinXP attacker will use Cain to poison the ARP caches on the pfSense firewall and the OWASP VM. The WinXP VM will intercept and sniff traffic between the OWASP and Centos VM.

Wireshark will be loaded on the WinXP VM to see how the ARP poisoning is accomplished.





root@owaspbwa:~# ping -c1 172.30.10.160 PING 172.30.10.160 (172.30.10.160) 56(84) bytes of data. 64 bytes from 172.30.10.160: icmp_seq=1 ttl=63 time=2.24 ms - 172.30.10.160 ping statistics --packets transmitted, 1 received, 0% packet loss, time Oms rtt min/aug/max/mdev = 2.246/2.246/2.246/0.000 ms root@owaspbwa:~# arp Address HWtype HWaddress Flags Mask 10.76.5.1 ether 00:50:56:af:f2:c3 eth0 С root@owaspbwa:~#

Ping EH-Centos from your OWASP VM to test connectivity.

Check the arp cache to show the MAC address of your router.

Iface

ping -c1 172.30.10.160 arp





root@owaspbwa:~# ftp 172.30.10.160 Connected to 172.30.10.160. 220 Welcome to CIS 76 FTP service. Name (172.30.10.160:root): anonymous 331 Please specify the password. Password: 230 Login successful. Remote system type is UNIX. Using binary mode to transfer files. ftp> passive Passive mode on. ftp> ls 227 Entering Passive Mode (172,30,10,160,82,12). 150 Here comes the directory listing. drwxr-xr-x 4096 Sep 05 01:01 pub 20 Θ 226 Directory send OK. ftp> cd pub 250 Directory successfully changed. ftp> ls 227 Entering Passive Mode (172,30,10,160,221,147). 150 Here comes the directory listing. -rw-r--r--10 205 Sep 05 01:01 admonition Û 226 Directory send OK. tp>

ftp to EH-Centos and login as anonymous with any password.

Change to passive mode, descend and list the contents of the pub directory.

ftp 172.30.10.160 anonymous NotSoSecret passive Is cd pub Is





ftp> get admonition
local: admonition remote: admonition
227 Entering Passive Mode (172,30,10,160,37,183).
150 Opening BINARY mode data connection for admonition (205 bytes).
226 Transfer complete.
205 bytes received in 0.00 secs (1551.9 kB/s)
ftp> exit
221 Goodbye.
root@owaspbwa:~# cat admonition
Remember ...

Unauthorized hacking is a crime!

An ethical hacker will only perform penetration testing with the explicit end-to-end authorization from the owners of the networks and systems being tested. root@owaspbwa:~# *Confirm you can download the admonition file.*

get admonition exit cat admonition







1) Use:

Start > Run ... > \\172.30.10.36\depot
to connect to the depot file share



2) Open the "Cain and Abel" and "Wireshark for XP" folders and drag their setup files to your desktop



Wireshark-win32-1.10.0

ca_setup







Open the Wireshark-win32-1.10.0 file on your desktop and install Wireshark.

You can ignore the XP warning.

Take the setup defaults.









1) Open the ca_setup file on your desktop and install Cain and Abel.

2) When prompted about reinstalling pcap click Cancel since this was already installed by Wireshark.







🧧 Capturing from L	ocal Area Connection [Wireshark 1.12.13 (v1.12.13-0-g969649d from master-1.12)]	
<u>File E</u> dit <u>V</u> iew <u>G</u> o	<u>Capture Analyze Statistics Telephony Iools Internals Help</u>	
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⊞ Frame 1: 216	bytes on wire (1728 bits), 216 bytes captured (1728 bits) on interface 0	previous lab.
	Src: Vmware_af:16:3a (00:50:56:af:16:3a), Dst: Broadcast (ff:ff:ff:ff:ff:ff) ocol Version 4. Src: 10.76.5.201 (10.76.5.201), Dst: 10.76.5.255 (10.76.5.255)	Revert WinXP to the
	Protocol, Src Port: 138 (138), Dst Port: 138 (138)	Raseline snanshot
⊞ SMB (Server M	essage Block Protocol)	
. ⊞ SMB MailSlot ⊞ Microsoft Win	Protocol dows Browser Protocol	
	1) Give yourself some more screen real estate:	
	Right click on screen > select Properties > Settings Tab > slide	e Screen
	Resolution to 1024 by 768 pixels.	
🔘 💅 Local Area Conne	2) Run Wireshark and start a capture:	
	Start > All Programs > Wireshark > Click on Start (after the "o	green fin")
	You can deselect Packet Bytes under the View menu for mo	re room.
		[4





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🙈 Decoders 🔮 Network 🏟 S	Sniffer 🥑 Cracker 🙋 Traceroute 📠 CCDU 🐒 Wireless 🚯 Query
Cached Passwords Protected Storage LSA Secrets Wireless Passwords E 7/8/9 Passwords Windows Mail Passwords	Press the + button on the toolbar to dump the Protected Storage
Dialup Passwords Edit Boxes Enterprise Manager Credential Manager Windows Vault	1) Using the Control Panel disable the Windows Firewall. Start > Control Panel > Security Center > Scroll down and click "Windows Firewall" > Off (not recommended)
	2) Run Cain: Start > All Programs, run Cain.
	Protected Storage
http://www.oxid.it	





	Configuration Dialog 🛛 🛛 🔀
Eile View Configure Tools Help 1 Image: Source of the second seco	Challenge Spoofing Filters and ports HTTP Fields Traceroute Certificate Spoofing Certificates Collector Sniffer APR (Arp Poison Routing) APR-SSL Options Adapter IP address Subnet Mask More NPF_(BAE2C6 10.76.5.201 255.255.255.0
1) Start by clicking (and depressing) the Sniffer icon button on the top ribbon.	Winpcap Version 4.1.0.2980
2) Click OK on the Configuration dialog box that comes up next.	Current Network Adapter \Device\NPF_{BAE2C689-7EC5-4795-8D47-E257A92330D2} WARNING !!! Only ethernet adapters supported
<i>3) Then click the Sniffer tab above.</i>	Options Start Sniffer on startup Don't use Promiscuous mode Start APR on startup
4) Then click on the Hosts tab below.	2 OK Cancel Apply Help
📃 Hosts 🐼 APR 🕂 Routing 🕅 Passwords 🌾 VoIP	

Lost packets: 0%





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Lost packets: 0%										//			





	🙍 Capturing from Local Area Connection [W	/ireshark 1.12.13 (v1.12.13-0-g96964	19d from master-1.12)]
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🐇 Decoders 🦉 Network 🎬 Sniffer 🥑 Cracker 🔯 Trac	203 1606.03005 Vmware_af:16:3a	Broadcast ARP	42 who has 10.76.5.149? Tell 10.76.5.201
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IP address MAC address OUI fingerprint	206 1606.06129 Vmware af:16:3a	Broadcast ARP	42 who has 10.76.5.1517 Tell 10.76.5.201
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10.76.5.150 005056AFE6BD VMware, Inc.	210 1606.12383 Vmware_af:16:3a	Broadcast ARP	42 who has 10.76.5.155? Tell 10.76.5.201
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	215	1606.7	20209 Vmwa	are_af:1	.6:3a	Broadcast	ARP	42 Who has	10.76.5.160?	Tell 1	0.76.5.201	
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	218	1606.7	24906 Vmwa	are_af:1	.6:3a	Broadcast	ARP	42 Who has	10.76.5.163?	Tell 1	0.76.5.201	
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In Wireshark you will see your WinXP VM has sent out ARP requests for every IP address on your pod subnet.





File View Configure Tools Help									
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root@owaspbwa:~# ping -c1 172.30.10.160 PING 172.30.10.160 (172.30.10.160) 56(84) bytes of data. 64 bytes from 172.30.10.160: icmp_seq=1 ttl=63 time=4.05 ms -- 172.30.10.160 ping statistics --packets transmitted, 1 received, 0% packet loss, time Oms rtt min/aug/max/mdev = 4.057/4.057/4.057/0.000 ms root@owaspbwa:~# arp Address HWtype HWaddress Flags Mask Iface 10.76.5.1 ether 00:50:56:af:16:3a eth0 С root@owaspbwa:~# _

ping -c1 172.30.10.160

Ping EH-Centos from your OWASP VM to test connectivity.

Notice the OWASP ARP cache no longer has the real MAC address for the pfSense VM!

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ost packets: 0%											





root@owaspbwa:~# ftp 172.30.10.160 Connected to 172.30.10.160. 220 Welcome to CIS 76 FTP service. Name (172.30.10.160:root): anonumous 331 Please specify the password. Password: 230 Login successful. Remote system type is UNIX. Using binary mode to transfer files. ftp> cd pub 250 Directory successfully changed. ftp> get admonition local: admonition remote: admonition 500 Illegal PORT command. ftp: bind: Address already in use ftp> passive Passive mode on. ftp> get admonition local: admonition remote: admonition 227 Entering Passive Mode (172,30,10,160,20,147). 150 Opening BINARY mode data connection for admonition (205 bytes). 226 Transfer complete. 205 bytes received in 0.00 secs (1450.7 kB/s) ftp> exit 221 Goodbye. root@owaspbwa:~#

Repeat downloading a file from the ftp server.

ftp 172.30.10.160 anonymous NotSoSecret passive Is cd pub Is get admonition exit





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🙈 Decoders 🔮 Network 🏟 Sniffer 🥑 Cracker 🔕 Traceroute 🌆 CCDU 🐒 Wireless 🔂 Query										
🚯 Passwords 🛛 🔨	Timestamp	FTP server	Client	Username	Password					
- 🔁 FTP (1)	05/09/2016 - 14:33:58	172.30.10.160	10.76.5.101	anonymous	NotSoSecret					
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Lost packets: 0%						1				





🖉 Follow TCP Stream (tcp.stream eq 0)		
Stream Content 220 welcome to CIS 76 FTP service. USER anonymous 331 Please specify the password. PASS NotSoSecret 230 Login successful. SYST 215 UNIX Type: L8 CWD pub 250 Directory successfully changed. TYPE I 200 Switching to Binary mode. PORT 10,76,5,101,147,191 500 Illegal PORT command. PASV 227 Entering Passive Mode (172,30,10 RETR admonition 150 Opening BINARY mode data connect 226 Transfer complete. QUIT 221 Goodbye.		
	to see the session.	
Entire conversation (477 bytes) Eind Save As Print ASCII	◯ EBCDIC ◯ Hex Dump ◯ C Arrays ⓒ Raw	
	Filter Out This Stream	





趫 Caj	ptu	ring from Local Area Connection [W	/ireshark 1.12.13 (v1.	12.13-0-g96964	9d from master-1.12)]		
<u>F</u> ile §	<u>E</u> dit	<u>View Go</u> <u>Capture</u> <u>Analyze</u> <u>Statistics</u>	Telephony <u>T</u> ools <u>I</u> ntern	als <u>H</u> elp			
0 (9	▲ ■ ▲ B B × 2 	⇔ ⇔ 중 ⊈		2, 0, 🖭 🎬 🔟 畅 % 💢		
Filter:			•	Expression C	lear Apply Save		
No	Ba	Time Source	Destination	Protocol Leng	ath Info	10.54	^
4	85	6335.48364 Vmware af:16:3a	Vmware af:63:bb	ARP	42 10.76.5.1 is at 00:50:56:af:16	1:3a	
4	86	6365.48349 Vmware af:16:3a	Vmware af:f2:c3	ARP	42 10.76.5.101 is at 00:50:56:af:	:16:3a	
4	87	6365.48365 vmware_af:16:3a	Vmware_af:63:bb	ARP	42 10.76.5.1 is at 00:50:56:af:16	5:3a	
4	88	6395.48382 Vmware_af:16:3a	Vmware_af:f2:c3	ARP	42 10.76.5.101 is at 00:50:56:af:	:16:3a	
4	89	6395.48403 vmware_af:16:3a	Vmware_af:63:bb	ARP	42 10.76.5.1 is at 00:50:56:af:16	5:3a	
4	90	6425.48368 Vmware_af:16:3a	Vmware_af:f2:c3	ARP	42 10.76.5.101 is at 00:50:56:af:	:16:3a	
4	91	6425.48395.vmware_af:16:3a	Vmware_af:63:bb	ARP	42 10.76.5.1 is at 00:50:56:af:16	5:3a	
4	92	6455.48376 Vmware_af:16:3a	Vmware_af:f2:c3	ARP	42 10.76.5.101 is at 00:50:56:af:	:16:3a	
4	93	6455.48387 Vmware_af:16:3a	Vmware_af:63:bb	ARP	42 10.76.5.1 is at 00:50:56:af:16	5:3a	
4	94	6485.48386 Vmware_af:16:3a	Vmware_af:f2:c3	ARP	42 10.76.5.101 is at 00:50:56:af:	:16:3a	
4	95	6485.48396 Vmware_af:16:3a	The Minesele and	constinue t	bot the neisening is by	abt	
4	96	6515.48383 Vmware_af:16:3a	In wiresnark	k notice ti	nat the poisoning is brou	gnt	
4	97	6515.48392 Vmware_af:16:3a	about by the	WinXP V	/M flooding the subnet w	ith ARP	
4	98	6545.48383 Vmware_at:16:3a	about by the whith with hooding the subject with Alt				
4	99	6545.48412 Vmware_at:16:3a	replies conta	aining the	e fraudulent IP/MAC pairs	5.	
5	00	6575.48353 Vmware_at:16:3a L					
5	01	6575.48367.Vmware_at:16:3a	vmware_at:63:00	ARP	42 10.76.5.1 15 at 00:50:56:at:16	o:3a	<u>×</u>
⊞ Frame 381: 102 bytes on wire (816 bits), 102 bytes captured (816 bits) on interface 0					~		
🗄 Etł	⊞ Ethernet II, Src: Vmware_af:f2:c3 (00:50:56:af:f2:c3), Dst: Vmware_af:16:3a (00:50:56:af:16:3a)						8
🗄 Internet Protocol Version 4, Src: 172.30.10.160 (172.30.10.160), Dst: 10.76.5.101 (10.76.5.101)						9	
표 Tra	ans	smission Control Protocol, Sr	c Port: 21 (21), D	st Port: 430	57 (43057), Seq: 1, Ack: 1, Len: 3	6	~
0 💆	Loca	al Area Connection: <live capture="" in="" progress=""></live>	Packets: 501 · Displayed: 5	501 (100.0%)		Profile: Default	



CIS 76 MITM via ARP Poisoning

References

- Cain
 <u>http://www.oxid.it/cain.html</u>
- Cain & Abel

https://www.concise-courses.com/hacking-tools/packetsniffers/cain-abel/