Sub Task 2

Place your two Kali Machines on the same virtual network. Perform the following scans with nmap, while performing a packet capture between the two. Submit the following.

1. A short explanation of each of the following scans, explaining the differences, when you would use them, and referencing the packet capture to illustrate your point.
   a) Full Connect
   b) Syn Scan
   c) Xmas Scan

Full Connect:

Running a Full Connect scan "nmap -sT 192.168.2.1/24" will broadcast an "ARP Broadcast Packet" asking who has every IP Address in the given range, if a response is received for a given IP Address the scan will then attempt a 3way TCP handshake the results of this will depend on firewall configuration

Block – will drop the packet and Wireshark will only show a SYN packet

Reject – will respond to the SYN packet with a RST, ACK packet (Reset, ACK)
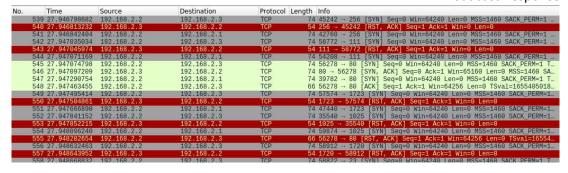
Accept – will perform the complete [SYN] [SYN ACK] [ACK]

ARP Broadcasts

ARP Broadcast Response

TCP 3-Way Handshake

SYN Scan:

Running a Full Connect scan "nmap -sS 192.168.2.1/24" for the most part will be the same as the Full Connect Scan, with the exception that during the TCP 3-Way Handshake the connection is never formed, rather Nmap analyses the [SYN ACK] response to produce the results of the scan.

No.	Time	Source	Destination	Protocol	Length	Info
518	9.931767807	192.168.2.2	192.168.2.1	DNS	84	Standard query 0x529a PTR 3.2.168.192.in-addr.arpa
519	14.935163328	192.168.2.2	192.168.2.1	DNS	84	Standard query 0x529b PTR 2.2.168.192.in-addr.arpa
520	18.936529761	192.168.2.2	192.168.2.1	DNS	84	Standard query 0x529c PTR 2.2.168.192.in-addr.arpa
521	22.938273444	192.168.2.2	192.168.2.1	DNS	84	Standard query 0x529d PTR 2.2.168.192.in-addr.arpa
522	27.939418585	192.168.2.2	192.168.2.3	TCP	60	51095 → 554 [SYN] Seq=0 Win=1024 Len=0 MSS=1460
523	27.939445619	192.168.2.3	192.168.2.2	TCP	54	554 → 51095 [RST, ACK] Seq=1 Ack=1 Win=0 Len=0
524	27.939464521	192.168.2.2	192.168.2.1	TCP	60	51095 → 554 [SYN] Seq=0 Win=1024 Len=0 MSS=1460
525	27.939466357	192.168.2.2	192.168.2.3	TCP	60	51095 → 25 [SYN] Seq=0 Win=1024 Len=0 MSS=1460
526	27.939471479	192.168.2.3	192.168.2.2	TCP	54	25 → 51095 [RST, ACK] Seq=1 Ack=1 Win=0 Len=0
527	27.939481327	192.168.2.2	192.168.2.1	TCP	60	51095 → 25 [SYN] Seq=0 Win=1024 Len=0 MSS=1460
528	27.939482847	192.168.2.2	192.168.2.3	TCP	60	51095 → 1723 [SYN] Seq=0 Win=1024 Len=0 MSS=1460
529	27.939486972	192.168.2.3	192.168.2.2	TCP	54	1723 → 51095 [RST, ACK] Seq=1 Ack=1 Win=0 Len=0
530	27.939497858	192.168.2.2	192.168.2.1	TCP	60	51095 → 1723 [SYN] Seq=0 Win=1024 Len=0 MSS=1460
531	27.939577720	192.168.2.2	192.168.2.3	TCP	60	51095 → 113 [SYN] Seq=0 Win=1024 Len=0 MSS=1460
532	27.939582315	192.168.2.3	192.168.2.2	TCP	54	113 → 51095 [RST, ACK] Seq=1 Ack=1 Win=0 Len=0
533	27.939592755	192.168.2.2	192.168.2.1	TCP	60	51095 → 113 [SYN] Seq=0 Win=1024 Len=0 MSS=1460
534	27.939687002	192.168.2.2	192.168.2.3	TCP	60	51095 → 110 [SYN] Seq=0 Win=1024 Len=0 MSS=1460
535	27.939691499	192.168.2.3	192.168.2.2	TCP	54	110 → 51095 [RST, ACK] Seq=1 Ack=1 Win=0 Len=0
536	27.939946538	192.168.2.2	192.168.2.1	TCP	60	51095 → 110 [SYN] Seq=0 Win=1024 Len=0 MSS=1460
537	27.942539549	192.168.2.2	192.168.2.3	TCP	60	51095 → 443 [SYN] Seq=0 Win=1024 Len=0 MSS=1460
538	27.942550090	192.168.2.3	192.168.2.2	TCP	54	443 → 51095 [RST, ACK] Seq=1 Ack=1 Win=0 Len=0
539	27.942561898	192.168.2.2	192.168.2.1	TCP	60	51095 → 443 [SYN] Seq=0 Win=1024 Len=0 MSS=1460
540	27.942636904	192.168.2.2	192.168.2.3	TCP	60	51095 → 5900 [SYN] Seq=0 Win=1024 Len=0 MSS=1460
541	27.942641476	192.168.2.3	192.168.2.2	TCP	54	5900 → 51095 [RST, ACK] Seq=1 Ack=1 Win=0 Len=0
542	27.942652199	192.168.2.2	192.168.2.1	TCP	60	51095 → 5900 [SYN] Seq=0 Win=1024 Len=0 MSS=1460
543	27.942730997	192.168.2.2	192.168.2.3	TCP	60	51095 → 135 [SYN] Seq=0 Win=1024 Len=0 MSS=1460
544	27.942736464	192.168.2.3	192.168.2.2	TCP	54	135 → 51095 [RST, ACK] Seq=1 Ack=1 Win=0 Len=0
545	27.942748361	192.168.2.2	192.168.2.1	TCP	60	51095 → 135 [SYN] Seq=0 Win=1024 Len=0 MSS=1460
546	27.942828641	192.168.2.2	192.168.2.3	TCP	60	51095 → 3389 [SYN] Seq=0 Win=1024 Len=0 MSS=1460
547	27.942833495	192.168.2.3	192.168.2.2	TCP	54	3389 → 51095 [RST, ACK] Seq=1 Ack=1 Win=0 Len=0
548	27.942855044	192.168.2.2	192.168.2.1	TCP	60	51095 → 3389 [SYN] Seq=0 Win=1024 Len=0 MSS=1460
549	27.942915161	192.168.2.2	192.168.2.3	TCP	60	51095 → 80 [SYN] Seq=0 Win=1024 Len=0 MSS=1460
550	27.942925393	192.168.2.3	192.168.2.2	TCP	58	80 → 51095 [SYN, ACK] Seq=0 Ack=1 Win=64240 Len=0 MSS=1460
551	27.943006504	192.168.2.2	192.168.2.1	TCP	60	51095 → 80 [SYN] Seq=0 Win=1024 Len=0 MSS=1460
552	27.943118582	192.168.2.2	192.168.2.3	TCP	60	51095 → 80 [RST] Seq=1 Win=0 Len=0
553	27.945486969	192.168.2.2	192.168.2.3	TCP	60	51095 → 8888 [SYN] Seq=0 Win=1024 Len=0 MSS=1460

SYN Scan:

Running a Full Connect scan "nmap -sX 192.168.2.1/24" starts with an ARP broadcast just as the previous scans then probes the ports of the found IP-Addresses with an unusual packet where the [PSH], [URG], [FIN] flags in the header manipulated, in general due to the way the TCP stack is implemented in the Windows Operating System it is unlikely that this scan will produce usable results on a Windows system.

No.	Time	Source	Destination	Protocol	Length	Info
507	1.821935897	PcsCompu_17:39:82	Broadcast	ARP	60	Who has 192.168.2.240? Tell 192.168.2.2
508	1.822087108	PcsCompu_17:39:82	Broadcast	ARP	60	Who has 192.168.2.247? Tell 192.168.2.2
509	1.822091944	PcsCompu_17:39:82	Broadcast	ARP	60	Who has 192.168.2.251? Tell 192.168.2.2
510	1.827567296	PcsCompu_17:39:82	Broadcast	ARP	60	Who has 192.168.2.43? Tell 192.168.2.2
511	1.827572349	PcsCompu_17:39:82	Broadcast	ARP	60	Who has 192.168.2.167? Tell 192.168.2.2
512	1.827574742	PcsCompu_17:39:82	Broadcast	ARP	60	Who has 192.168.2.168? Tell 192.168.2.2
513	1.934294440	192.168.2.2	192.168.2.1	DNS	84	Standard query 0xd2c7 PTR 1.2.168.192.in-addr.arpa
514	1.934310965	192.168.2.2	192.168.2.1	DNS	84	Standard query 0xd2c8 PTR 3.2.168.192.in-addr.arpa
515	5.935400739	192.168.2.2	192.168.2.1	DNS	84	Standard query 0xd2c9 PTR 3.2.168.192.in-addr.arpa
516	5.935406143	192.168.2.2	192.168.2.1	DNS	84	Standard query 0xd2ca PTR 1.2.168.192.in-addr.arpa
517	9.937660378	192.168.2.2	192.168.2.1	DNS	84	Standard query 0xd2cb PTR 1.2.168.192.in-addr.arpa
518	9.937668440	192.168.2.2	192.168.2.1	DNS	84	Standard query 0xd2cc PTR 3.2.168.192.in-addr.arpa
519	14.941045062	192.168.2.2	192.168.2.1	DNS	84	Standard query 0xd2cd PTR 2.2.168.192.in-addr.arpa
520	18.942836372	192.168.2.2	192.168.2.1	DNS	84	Standard query 0xd2ce PTR 2.2.168.192.in-addr.arpa
521	22.943445574	192.168.2.2	192.168.2.1	DNS	84	Standard query 0xd2cf PTR 2.2.168.192.in-addr.arpa
522	27.945978010	192.168.2.2	192.168.2.3	TCP	60	49504 → 1025 [FIN, PSH, URG] Seq=1 Win=1024 Urg=0 Len=0
523	27.945999441	192.168.2.3	192.168.2.2	TCP	54	1025 → 49504 [RST, ACK] Seq=1 Ack=2 Win=0 Len=0
524	27.946022065	192.168.2.2	192.168.2.1	TCP	60	49504 → 1025 [FIN, PSH, URG] Seq=1 Win=1024 Urg=0 Len=0
525	27.946024497	192.168.2.2	192.168.2.3	TCP	60	49504 → 8080 [FIN, PSH, URG] Seq=1 Win=1024 Urg=0 Len=0
526	27.946031193	192.168.2.3	192.168.2.2	TCP	54	8080 → 49504 [RST, ACK] Seq=1 Ack=2 Win=0 Len=0
527	27.946053794	192.168.2.2	192.168.2.1	TCP	60	49504 → 8080 [FIN, PSH, URG] Seq=1 Win=1024 Urg=0 Len=0
528	27.946056091	192.168.2.2	192.168.2.3	TCP	60	49504 → 139 [FIN, PSH, URG] Seq=1 Win=1024 Urg=0 Len=0
529	27.946062278	192.168.2.3	192.168.2.2	TCP	54	139 → 49504 [RST, ACK] Seq=1 Ack=2 Win=0 Len=0
530	27.946081474	192.168.2.2	192.168.2.1	TCP	60	49504 → 139 [FIN, PSH, URG] Seq=1 Win=1024 Urg=0 Len=0
531	27.946083893	192.168.2.2	192.168.2.3	TCP	60	49504 → 22 [FIN, PSH, URG] Seq=1 Win=1024 Urg=0 Len=0
532	27.946090164	192.168.2.3	192.168.2.2	TCP	54	22 → 49504 [RST, ACK] Seq=1 Ack=2 Win=0 Len=0
533	27.946190727	192.168.2.2	192.168.2.1	TCP	60	49504 → 22 [FIN, PSH, URG] Seq=1 Win=1024 Urg=0 Len=0
534	27.946346091	192.168.2.2	192.168.2.3	TCP	60	49504 → 135 [FIN, PSH, URG] Seq=1 Win=1024 Urg=0 Len=0
535	27.946352050	192.168.2.3	192.168.2.2	TCP	54	135 → 49504 [RST, ACK] Seq=1 Ack=2 Win=0 Len=0
536	27.946365321	192.168.2.2	192.168.2.1	TCP	60	49504 → 135 [FIN, PSH, URG] Seq=1 Win=1024 Urg=0 Len=0
537	27.948946652	192.168.2.2	192.168.2.3	TCP	60	49504 → 80 [FIN, PSH, URG] Seq=1 Win=1024 Urg=0 Len=0
538	27.948952430	192.168.2.2	192.168.2.1	TCP	60	49504 → 80 [FIN, PSH, URG] Seq=1 Win=1024 Urg=0 Len=0
539	27.949065747	192.168.2.2	192.168.2.3	TCP	60	49504 → 443 [FIN, PSH, URG] Seq=1 Win=1024 Urg=0 Len=0
540	27.949071701	192.168.2.3	192.168.2.2	TCP	54	443 → 49504 [RST, ACK] Seq=1 Ack=2 Win=0 Len=0
541	27.949085318	192.168.2.2	192.168.2.1	TCP	60	49504 → 443 [FIN, PSH, URG] Seq=1 Win=1024 Urg=0 Len=0
542	27.949087021	192.168.2.2	192.168.2.3	TCP	60	49504 → 21 [FIN, PSH, URG] Seq=1 Win=1024 Urg=0 Len=0
543	27.949091247	192.168.2.3	192.168.2.2	TCP	54	21 → 49504 [RST, ACK] Seq=1 Ack=2 Win=0 Len=0

No.	Time	Source	Destination	Protocol	Length	Info
2530	29.124236385	192.168.2.2	192.168.2.3	TCP	60	49504 → 2383 [FIN, PSH, URG] Seq=1 Win=1024 Urg=0 Len=0
2531	29.124241306	192.168.2.3	192.168.2.2	TCP	54	2383 → 49504 [RST, ACK] Seq=1 Ack=2 Win=0 Len=0
2532	29.124504454	192.168.2.2	192.168.2.3	TCP	60	49504 → 646 [FIN, PSH, URG] Seq=1 Win=1024 Urg=0 Len=0
2533	29.124512183	192.168.2.3	192.168.2.2	TCP	54	646 → 49504 [RST, ACK] Seq=1 Ack=2 Win=0 Len=0
2534	29.124528292	192.168.2.2	192.168.2.3	TCP	60	49504 → 1782 [FIN, PSH, URG] Seq=1 Win=1024 Urg=0 Len=0
2535	29.124533723	192.168.2.3	192.168.2.2	TCP	54	1782 → 49504 [RST, ACK] Seq=1 Ack=2 Win=0 Len=0
2536	29.124545624	192.168.2.2	192.168.2.3	TCP	60	49504 → 13 [FIN, PSH, URG] Seq=1 Win=1024 Urg=0 Len=0
2537	29.124550840	192.168.2.3	192.168.2.2	TCP	54	13 → 49504 [RST, ACK] Seq=1 Ack=2 Win=0 Len=0
2538	29.124564104	192.168.2.2	192.168.2.3	TCP	60	49504 → 6567 [FIN, PSH, URG] Seq=1 Win=1024 Urg=0 Len=0
2539	29.124569213	192.168.2.3	192.168.2.2	TCP	54	6567 → 49504 [RST, ACK] Seq=1 Ack=2 Win=0 Len=0
2540	29.124583526	192.168.2.2	192.168.2.3	TCP	60	49504 → 10001 [FIN, PSH, URG] Seq=1 Win=1024 Urg=0 Len=0
2541	29.124589293	192.168.2.3	192.168.2.2	TCP	54	10001 → 49504 [RST, ACK] Seq=1 Ack=2 Win=0 Len=0
2542	29.152112419	192.168.2.2	192.168.2.1	TCP	60	49504 → 1720 [FIN, PSH, URG] Seq=1 Win=1024 Urg=0 Len=0
2543	29.152117886	192.168.2.2	192.168.2.1	TCP	60	49504 → 143 [FIN, PSH, URG] Seq=1 Win=1024 Urg=0 Len=0
2544	29.152119401	192.168.2.2	192.168.2.1	TCP	60	49504 → 554 [FIN, PSH, URG] Seq=1 Win=1024 Urg=0 Len=0
2545	29.152173115	192.168.2.2	192.168.2.1	TCP	60	49504 → 995 [FIN, PSH, URG] Seq=1 Win=1024 Urg=0 Len=0
2546	29.152174832	192.168.2.2	192.168.2.1	TCP	60	49504 → 111 [FIN, PSH, URG] Seq=1 Win=1024 Urg=0 Len=0
2547	29.152326904	192.168.2.2	192.168.2.1	TCP	60	49504 → 113 [FIN, PSH, URG] Seq=1 Win=1024 Urg=0 Len=0
2548	29.155065314	192.168.2.2	192.168.2.1	TCP	60	49504 → 3389 [FIN, PSH, URG] Seq=1 Win=1024 Urg=0 Len=0
2549	29.155135150	192.168.2.2	192.168.2.1	TCP	60	49504 → 1723 [FIN, PSH, URG] Seq=1 Win=1024 Urg=0 Len=0
2550	29.155137121	192.168.2.2	192.168.2.1	TCP	60	49504 → 445 [FIN, PSH, URG] Seq=1 Win=1024 Urg=0 Len=0
2551	29.155257394	192.168.2.2	192.168.2.1	TCP	60	49504 → 8888 [FIN, PSH, URG] Seq=1 Win=1024 Urg=0 Len=0
2552	29.252654883	192.168.2.2	192.168.2.1	TCP	60	49504 → 113 [FIN, PSH, URG] Seq=1 Win=1024 Urg=0 Len=0
2553	29.252660961	192.168.2.2	192.168.2.1	TCP	60	49505 → 111 [FIN, PSH, URG] Seq=1 Win=1024 Urg=0 Len=0
2554	29.252662752	192.168.2.2	192.168.2.1	TCP	60	49505 → 995 [FIN, PSH, URG] Seq=1 Win=1024 Urg=0 Len=0
2555	29.252775474	192.168.2.2	192.168.2.1	TCP	60	49505 → 554 [FIN, PSH, URG] Seq=1 Win=1024 Urg=0 Len=0
2556	29.252777744	192.168.2.2	192.168.2.1	TCP	60	49505 → 143 [FIN, PSH, URG] Seq=1 Win=1024 Urg=0 Len=0
2557	29.252779477	192.168.2.2	192.168.2.1	TCP	60	49505 → 1720 [FIN, PSH, URG] Seq=1 Win=1024 Urg=0 Len=0
2558	29.255308916	192.168.2.2	192.168.2.1	TCP	60	49505 → 445 [FIN, PSH, URG] Seq=1 Win=1024 Urg=0 Len=0
2559	29.255313376	192.168.2.2	192.168.2.1	TCP	60	49505 → 1723 [FIN, PSH, URG] Seq=1 Win=1024 Urg=0 Len=0
2560	29.255496276	192.168.2.2	192.168.2.1	TCP	60	49505 → 3389 [FIN, PSH, URG] Seq=1 Win=1024 Urg=0 Len=0
2561	29.257963803	192.168.2.2	192.168.2.1	TCP	60	49505 → 8888 [FIN, PSH, URG] Seq=1 Win=1024 Urg=0 Len=0
2562	29.353737745	192.168.2.2	192.168.2.1	TCP	60	49504 → 587 [FIN, PSH, URG] Seq=1 Win=1024 Urg=0 Len=0
2563	29.353742349	192.168.2.2	192.168.2.1	TCP	60	49504 → 993 [FIN, PSH, URG] Seq=1 Win=1024 Urg=0 Len=0
2564	29.353743546	192.168.2.2	192.168.2.1	TCP	60	49504 → 199 [FIN, PSH, URG] Seq=1 Win=1024 Urg=0 Len=0
2565	29.353744960	192.168.2.2	192.168.2.1	TCP	60	49504 → 53 [FIN, PSH, URG] Seq=1 Win=1024 Urg=0 Len=0