572.5 - Encryption, Protocol Reversing, OPSEC and Intel

Encoding, encryption & SSL4-40
Encoding4-7
Overview4
Base645-7
Encryption8-21
Overview8
Strength9-10
Symmetric key encryption11-13
Overview11
Stream vs. block cipher modes12-13
Synchronous vs. self-synchronous 12-13
Asymmetric key encryption14-15
Basic SSL/TLS process16-17
Perfect Forward Secrecy (PFS)18
Diffie-Hellman exchange19-21
SSL/TLS22-33
HTTPS22
TLS handshake details23-30
Client Hello23
JA3 fingerprint24
Server Hello25
JA3S fingerprint
Certificate exchange
HTTPS data transferred problem31
HTTP vs. HTTPS32-33
Analytic mitigation34-40
NetFlow & DNS correlation34-35
Certificate metadata36
Wireshark decryption37-40
Example
Requirements39
PFS40
MITM45-61
Overview

ARP Spoofing	46-47
Port stealing (CAM table manipulation)	48
UDP first response wins	49-51
Common attack themes	52
Other MITM attacks	52
Open-source MITM tools	53-54
Bettercap & dsniff	53
Yersinia	54
Investigative use	55-58
Proxy, NSM, IDS/DLP	55-56
Commercial solutions	57-58
TLS inspection limitations	59-60
Analytics on encrypted data	61
Protocol Reversing	63-86
Overview	
Protocol attributes	
How to approach	
Compromised websites	
Overview	
IPHONE8.5 example	
Request	
Response	
More responses	
Downloaded file	71
Summary	72
Common protocol backdoors	73-77
Overview	73
Cookie example	74-77
Request	74-75
Request (decoded)	76-77
Mixed protocol analysis	78-81
Overview	78
No space example	79-81
Request headers	
Request body (binary data)	80

Decoded Windows shell81
Binary protocol analysis82-86
Overview82
GHOST RAT example83-68
gh0st_header83
Encoded message84
Decompressed payload85
Partially decoded86
OPSEC & Intel91-111
Overview91-92
Research OPSEC93-98
DNS lookup on bad domains93
OSINT94-95
IR: The attacker is watching96
IR: Premature blocking97-98
LAN Scope 99-102
DHCP/DNS traffic99-101
MDNS/UPNP/Bonjour99-101
Other traffic102
Research risk mitigations 103-105
Third party lookups103
VPN/TOR103
Air gapped103-104
Separate IR network105
Separate platforms105
Guarding intel from attackers 106-107
Responsible sharing (ISACs & ISAOs) 106-107
Traffic Light Protocol (TLP)110
Community resources111