Topics	Nmap 5-124-139 Malicious Software 5-140-147
Introduction and Information Gathering	Command Injection
Introduction and Information Gathering1–3-13	hping3
Defensible Network Architecture 1–14-53	
Protocols and Packet Analysis1–54-107	Image Steganography
Virtualization and Cloud Essentials 1–108-165	GNU Privacy Guard (GPG)5–184-203
Securing Wireless Networks1–166-235	Snort
becuring wireless retworks 100 200	Process Hacker
Defense-in-Depth	NTFS Permissions Reporter5–245-258
Defense-in-Depth2-3-45	SECEDIT.EXE5–259-266
Identity Access Managemnet2–46-76	
Authentication and Password Security 2–77-112	
Security Frameworks2–113-141	\mathbf{A}
Data Loss Prevention	11
Mobile Device Security	access control problems1–15
Mobile Device Security 2 102-209	Acunetix Vulnerability Scanner1–35
Vulnerability Management and Response	Administrative Pages
Vulnerability Assessments	AJAX
Penetration Testing3–33-76	Spidering
Attacks and Malicious Software3–77-128	Algorithms
Web Application Security3–129-162	Assymetric
Security Operations and Log Management .3–162-	DH
200	DSA
Digital Forensics and Incident Response 3–201-239	ECDH
Digital Foreignes and Incident Responde 5 201 200	ECDSA
Data Security Technologies	RSA1–131
Cryptography	Hashing
Cryptography Algroithms and Deployment . 4–53-	MD5
80	SHA1–131
Applying Cryptography4–81-129	SHA2561–131
Network Security Devices4–130-184	SHA3841–131
Endpoint Security 4–185-220	Symmetric
	AES1–131
Windows and Azure Security	DES1–131
Windows Security Infrastructure 5–3-43	TDES/3DES1–131
Windows as a Service	American Fuzzy Lop1–9
Windows Access Controls5–71-119	Application Frameworks
Enforcing Security Policy5–120-193	Application Information Gathering
Microsoft Cloud Computing 5–194-247	Spidering2–13
Automation, Logging, and Auditing5-248-296	Application Infrastructure1–150
	Application Security1–10
Linux, AWS, and Mac Security	Assessing
Linux Fundamentals 5–3-66	Dynamic Application Security Testing (DAST)
Linux Security Enhancements and Infrastructure	1–13, 1–17-18
5-67-121	Improving1–12
Containerized Security5–122-143	Interactive Application Security Testing (IAST)
AWS Fundamentals5–144-161	1–13
AWS Security Controls5–162-178	Out-of-Band Application Security Testing
AWS Hardening	(OAST)
macOS Security 5–201-215	Static Application Security Testing (SAST) .1–13, 1–16
Workbook	Testing
tcpdump	Full Knowledge1–13
Wireshark	Zero-Knowledge
Aircrack-ng	Arachni Scanner
Hashcat	ARPANET1–92
Cain and Abel	Assessments
AppLocker	Automated1–20

Frameworks	Required	$\dots 251$
OWASP Web Security Testing Guide \dots 1–22	Bugtraq	1–10
Penetration Testing Execution Standard	BuprSuite Pro Active/Live Scan	1–35
(PTES)1–22	Burp Suite	
Full-Knowledge	Infiltrator	1–13
Manual1–20	Request Parameters	1–111
Methodology	Burp Suite Professional1	-38, 1-42
Testing Techniques1–22	BApp Store	1–53
Zero-Knowledge1–13, 1–21	Comparer	
Assymetric	Crawling/Auditing	1–54
Attack Platform	Dashboard	1–43
Attack platform	Decoder	1–51
Attack strings2–36	Engagement Tools	
Auditing 1–54	Cenerage CSRF PoC	
Authentication	Content Discovery	
Basic2-52-53	Find Commment / Find Scripts	
Illustrated2–54	Search	
Issues2–55	Simulate Manual Testing	
Bearer	Target Analyzer	
Bypass	Extender	
Parameter Tampering and Direct Page Access	Heads-Up Dispaly	
2–120	Intruder	
SQLi2–121	Proxy	
Digest	Repeater	
Illustrated2–57	Inspector	
Issues2–58	Sequencer	1–50
Form-based	Target	
Illustrated	Scope	
Issues	Site Map	
Integrated Windows2–59	Site Map - Filter	1–46
Illustrated	BurpSuite	2 24
Issues	AJAX	
OAuth	Authenticating	
Openid/Oauth/SAML Authentication2-67	Discover Content	
Schemes	Intruder	
Authentication (ATHN)	Battering Ram	
Authorization	Cluster Bomb	
Attacks	Pitchfork	
Bypass	Sniper	
Role Enforcement	Sequencer 2	
Authorization (ATHZ)1–28	Spidering	
Automated Scanning1–20	business functionality testing	
	Business Logic (BUSL)	1–28
В		
В	\mathbf{C}	
backdoors 1–15		
BApp Store1–53	Cache-Control	1–124
Bash shell2–137	CERN	1–91
Basic Authentication	Certificate Authorities1-	
Illustrated	Certificate Transparency	*
Issues2–55	CEWL	
bcrypt2–87	Spidering	2–22
Bearer Authentication2–72	CGI Scripts	
Best1–20	CHAOSNET	
Bing1–65	Checklist	1–29
Browser	Cipher Suites	1–130
Browsers	Cipher suites	
Authentication Schemes	Testing	$\dots 1-134$

Client Side (CLNT)	Decoding1–51
Cloudflare Challenge 1–163	Default Web Pages1–151
Code review1–13	DELETE1–105
Command	Developer comments
HTTP/0.91–95	Diffie-Helman 1–129
HTTP/1.01–96	Dig1–74
HTTP/1.11–97	dig1–80
Commands	Syntax1–81
Base64 Encode	Digest Authentication
DELETE request1–116	Illustrated
dig (many)1–81	Issues
dig domain lookup1–80	DirBuster 2–29
DNSRecon1–83-84	Direct Page Access2–120, 2–125
echo prevent CR	Directory Broswing2–46
Enumerate HTTP methods1-153-154	Directory Browsing
FuFF2-30-32	Google2–47
full (AXFR) zone transfer1–75	Directory brute forcing2–27
HEAD request1–113	Disabled functionality2–23
heartbleed.py1-164	DNSRecon
nc port scan	Documentation
nmap https1–135	Domain Name System (DNS)1–74
OPTIONS request1–116-117	Brute Force Scans1–77
reverse DNS1–76	EDNS1–74
Server strings1–123-124	PTR1–76
SHA1 hash of session id1–104	Querying Directly1–75
testssl.sh1–136	Recon Tools1–78
Wget	dig1–80-81
robots off2–18	DNSRecon1–83-84
set proxy	Nmap1–82
Commmon Vulnerabilities and Exposures (CVE)	nslookup1–79
CVE-2014-62692-138	Repositories1–85-86
CVE-2014-62712-137	Dnsdumpster.com
CVE-2014-6277	Farsight Security's DNSDB1–85
CVE-2014-6278	Reverse1–75
CVE-2014-6286	Zone Transfer
Common Name	Dorking1–67
Common Vulnerabilities and Exposures (CVE) 2–48	Dorks
Concurrency attacks	DuckDuckGo
concurrency problems	Dynamic Application Security Testing (DAST)1–13,
Confidentiality	1–17-18, 1–35 Scanners1–35
1–28	Tools
1–28 Configuration Files	Dynamic web application security scanners 1–32
Content Management Systems(CMS)	Dynamic web application security scanners 1–32
Content-Type	
Cookie	${f E}$
Cookies	L
Protecting	Easter eggs
Crawling	EDNS1–74
Cross-Site Tracing (XST)	Electromagnetic Interference (EMI)2–84
CRUD	Encoding1–51
Cryptographic Failures	Enrors
cryptographic weaknesses	Information Leakage2–44
Cryptography (CRYP)	Entropy2–112
- Vr · O () · · · · · · · · · · · · · · · ·	Error Handling (ERRH)1–28
_	Exploit Database (EDB)1–10
${f D}$	
	T3
Databases 1–151	\mathbf{F}

FFuF2-30-32	Public Keys/Certificates and Certificate Authori-
Custom Filters2–32	ties1–132
HTTP request2–31	Testing
Virtual Host Discovery	nmap
Fingerprinting1–141	Transmission Security1–127
flawed business logic1–15	HTTPS Certificates
Forced Browsing2–27	Hypertext Transfer Protocol (HTTP)
BurpSuite2–28	0.91–95
FFuF2–30-32	$1.0 \dots 1-95-96$
file extensions2–27	1.1
ZAP2–29	3 QUIC1–100
Form-based Authentication	21–98-99
Illustrated	History1–9, 1–91
Issues	0.9
Fortify WebInspect	QUIC1–93
forward proxy	Request
Full Disclosure	Example
Full-Knowledge	Highlights
FuzzDB	Methods/Verbs1–105-116, 1–122
Fuzzing2–36	Referer
Examples	User-Agent1–120
Reviewing the Responses	Response
ZAP2–41	Cache-Control
	Example
${f G}$	Set-Cookie
G	Status Code
Generalized Markup Language (GML)1–91	Semantics
GET1–106-108	Syntax
URI Query Parameters	Testing
Globally Unique Identifiers (GUID)2–103	Methods
Google	URI Query Parameters
Directory Browsing2–47	Our Query rarameters1-100
Google Dorks1–66	
Google Hacking Database (GHDB)1–66-67	I
GHDB-ID 48041–67	-
Grep	idempotent1–105
•	Identifying Web Server Components1–151
	Identity Management (IDNT)1–28
\mathbf{H}	Identity Provider
	Incident Response
Hashing1–51, 1–131	Information Gathering1-59
HCL AppScan1–35	Information Gathering (INFO)1–28
HEAD1–113	Information Leakage2–44
Heartbleed	CVE search2–48
Effect1–162	Flaws2–48
Exploit Output	Types2-45
Hidden links2–23	Insecure Direct Object Reference (IDOR)2–125
High-risk functions	Insecure Directo Object Reference (IDOR)
HMAC	AuthZ attacks2–123
JWT Signature Cracking2–76	Integrated Windows Authentication 2–59
HPACK1–98-99	Illustrated
HttpOnly Bypass1–114	Issues
HTTPS	Integrity1–130
Authentication	Integrity hashes
Cipher Suites	Interactive Application Security Testing (IAST) . 1–13
Confidentiality1–130	Interception Proxies
Integrity1–130	Configuring

Zed Attack Proxy (ZAP)1–39	Netcraft Sitereport
Interception proxies	Network Vulnerability Scanner1–35
Internet	Nikto1–35
Invicti (formerly Netsparker)1–35	NIST
	800-30
${f J}$	Appendix D
J	NIST National Vulnerability Database1–10
JSON Web Token (JWT)2-72-73	Nmap
Issues	DNS NSE Scripts
Structure	nmap
5tructure	nslookup
	NTML
\mathbf{K}	NTP2–10
	O
Kali1–33-34	O
metapackages1–34	OAuth2–68
Update Command	Flow2-69-71
Kerberos2–59, 1–92	Offensive Security1–10
	Open-Source Intelligence (OSINT)1–60
Т	For Web Application Testers1–62
${f L}$	Micah Hoffman's OSINT MindMap 1–61
I: 1 D 41	Search Engines
Link Depth	Dorking
LinkedIn Open Networkers (LIONs)	Google Dorks1–66
Logged Events and Sources	Key Search Operators 1-65
Logging and Monitoring2–8	Social Media
Centralized Logs2–10	LinkedIn
Sources	SpiderFoot
Timestamping2-9	Suites
logic bombs1–15	OpenID/OAuth/SAML Authentication2-67
Logic Flaws	OpenSSL
	Operational Controls
${f M}$	Operational Security (OPSEC)
TVI.	OPTIONS
Mailing Lists	Other software
Bugtraq1–10	Out-of-Band Application Security Testing
Full Disclosure1–10	OWASP
Man-in-the-middle (MITM)	Top 101–25-26
Manual Assessments	A09:2021-Security Loggin and Monitoring Fail-
Manual Inspection and Reviews1–19	ures
MD5	Cryptographic Failures 1–126
META tags2–15	Web Application Penetration Testing Methodol-
Method Interchange	ogy1–27
Method Tampering	Web Security Testing Guide (WSTG) .1–19, 1–22,
Methodology	1–29
Micah Hoffman's OSINT MindMap1-61	Information Gathering1–59
Michal Zalewski	Testing Categories1–27
MITRE	Web Application Penetration Testing Methodol-
Morris Worm	ogy1–27
Multiplexing	-0/
Mutillidae	P
Hints	1
Reset DB	p0f1–9
Security Levels	Paros Proxy
mySQL	Password hashes
, ~ 100	PATCH
	PBKDF2
${f N}$	Penetration Testing1–17

Penetration Testing Execution Standard (PTES) .1–22	72351–97, 1–114
Pipelining1–98	75401–98
Port	75411–99
3306/tcp1-150	8446
Port Scanning1–142, 1–151	91141–100
Tools	Robot Exclusion Protocol2–15
Netcraft	Robots.txt
Nmap1–143	robots.txt
Shodan1–143	Role Enforcement
Zenmap1–143	RSA1–129
POST1–109	Runtime Application Self-Protection (RASP) 1–13
Parameters	() · · · ·
Post-exploitation	
Private key	\mathbf{S}
Privilege Escalation	~
Profiling	Scanning
Pseudo-random number generators (PRNG) 2–103	SecLists
Public key1–132	Security Information and Event Management (SIEM)
Push Button Pen Testing1–132	2–10
	Security Posture
Push Promise1–98	Semantics
	Server
\mathbf{O}	Configuration flaw
~	Session Analysis
quality of protection (qop)2–56	Session Management (SESS) 1–28
Qualys SSL Labs	Sessions Sessions
Qualys WAS1–35	Attacks
Quick UDP Internet Connection (QUIC) 1–100	Fixation
Quick CD1 Internet Connection (QCIC) 1–100	Logout and Timeout
	Predictability2-111-112
${f R}$	
16	Confidential
D :17 A C :1	Expire
Rapid7 AppSpider	Identifiers2–101
Realm	Management
Recon and Enum1–141	Testing
Reconaissance	Management Principles
Referer	Predicatbility
Reporting	Theft
Reverse DNS1–76	Unpredictable
RFC	Set-Cookie
2069 Digest OG2–56	Shellshock2–137-139
2617 Digest Auth	fuzzing2–94
6749 OAuth2–68	Payloads
6750 Bearer AuthN 2–72	Execution and Impact
7231book 1114	Injection Explained2–141-142
19181–92	Visualized
$1945 \dots 1-94-95$	Shodan1–146-148
22461–127	for Pentesters
$2616 \dots 1-97, 1-114$	Port Scanner1-148
26172–52	Side-Channel Attacks2-84
$3986 \dots 1-106, 1-108$	Practical
52461–127	Timing 2–86
57891–118	Practical2–88
$6265 \dots 1-114$	Single Sign On (SSO)
$6520 \dots 1-161$	Integrated Windows Authentication2-59
$7231 \dots 1-97$	Slow hashing
$7232 \dots 1-97$	SOCMINT1-68
72331–97	Software Development Lifecycle (SDLC) 1–17, 1–19
7234 1–97	Software Engineering Institute (SEI) 1–14

Source Code Review	User-Agent1–120
Advantages1–15	Username Enumeration2–81-82
Disadvantages	Results to look for
SpiderFoot	Side-Channel Attacks
Spidering	Username enumeration
AJAX2–21	Username Harvesting2–81-82
Analyzing Results2–23	Results to look for
BurpSuite2–19	Side-Channel Attacks 2–84
CEWL2–22	UTC2–10
Command-Line	2 10
Manual and Automated	T 7
Manual vs. Automated2–16	${f V}$
ZAP2–20	
SQL Injection (SQLi)	Verb Tampering1–112
Auth Bypass2–121	Version Detection
SSL	Virtual Host Discovery
Static Application Security Testing (SAST) 1–13, 1–16	DNS1–74-75
Status Codes	HTTPS Certificate1–87
	Vulnerability assessment1–22
Symmetric	vulnerability mailing lists1–10
Syntax1–93	Vulnerability Scans1–151
${f T}$	${f W}$
	**
Target	Web Application PenTester's Toolkit1–32
Profiling1–141	Web Applications
Testing Techniques	web client
testssl.sh	Web Security Testing Guide (WSTG)
The Tangled Web1–9	Information Gathering2–13
Threat Modeling	Review Webserver Metafiles for Information Leak-
Advantages1–14	age1–155
Disadvantages1–14	Test HTTP Methods 1–153-154
NIST 800-301-14	Testing for Weak Transport Layer Security .1–132
Threat modeling1–13	WSTG-ATHN-04: Testing for Bypassing Authen-
Tim Berners-Lee1–9, 1–91	tication Schema2–118
time bombs1–15	WSTG-CONF-04: Review Unreferenced Files for
Timing Attacks	Sensitive Information2–43
Practical2–88	WSTG-IDNT-04: Testing for Account Enumera-
Slow Hashing	tion
Timing-based attack2–38	Web Servers
TLS1–127	Wget2–18
Handshake1–128-129	Whitehat Sentinel
Token Authentiction	Wordlists
Tookkit1–32	World Wide Web
Tools	World Wide Web (W3)
heartbleed.py1-164	WWW-Authenticate
Netcraft Sitereport	W W W-Authenticate2-91
nmap1–144-145	<u>_</u>
Shodan1–146-147	${f Z}$
Total cost of ownership (TCO)2–83	
TRACE1–114	ZAP Active Scan1–35
Transmission Security	Zed Attack Proxy (ZAP)1–38, 39
Trojans1–15	AJAX2–21
	Attack Menu1–41
	Discover Content
\mathbf{U}	Functions
3	Active Scan1–41
Unlinked content	Forced browsing1–41
URI Query Parameters	Fuzzing1–41
5 7	

Spider and AJAX spider1–41	Spidering2–20
Fuzzer	Zero-Knowledge
Interface1–40	Zone Transfer