Topics	Infrastructure Attacks and Red Teaming Kubernetes & Service Meshes 588.5–4-23
Architecture, Discovery, & Recon at Scale Introduction .588.1–9-17 Cloud Assessment Methodology .588.1–18-21 Terms of Serv. & Demarcatoin Points 588.1–22-34 Ngrok .588.1–35-39 Recon at Cloud Scale .588.1–42-54 Discovery Tools & Wordlists .588.1–55-59 IP Addressing & Hosts .588.1–63-77 Mapping URLs .588.1–81-90 Commonspeak2 Wordlists .588.1–91-96 Visualizations During Recon .588.1–100-105	Backdooring Containers
Asset Discovery Frameworks	Labs
PP	Attacking with EC2
Attacking Identity Systems	
Mapping Process	AWS User Enumerations
AWS CLI	Azure VMs
AWS IAM	Backdooring CI/CD Pipelines
Username Harvesting in the Cloud 588.2–54-56 Unauthenticated File Shares 588.2–59-62	Backdooring Containers
Introduction to Microsoft Services588.2–65-68 Microsoft Identity Services588.2–69-78	Backdoors in Serverless Functions 588.4–65-66
Azure AD & RBAC	Command Line Injections
Azure AD & RDAC	
Golden SAML Attacks588.2–106-110	CTF Challenge
Postman for APIs	Databases & Exposed Ports
Attacking & Abusing Cloud Services	Domain Discovery Lab
Mimikatz & PRT588.3–5-9	$\dots \dots $
Microsoft Graph	Domain Fronting Attacks 588.5–103-104
AWS IAM Privilege Escalation588.3–19-28	
Introduction to socat	EC2 Attack Setup
AWS Compute	588.W-109-117
Compute Attack Scenarios 588.3–46-51 Amazon KMS 588.3–54-57	Getting Started
Pacu	Gobuster & CommonSpeak 2 WLs $\dots.588.1–97-99$
Azure VMs	
Code Execution on Azure 588.3–77-83	Heavy & Light Web Shells 588.5–60-61
Vulnerabilities in Cloud-Native Applications Introduction to Cloud Native Attacks . 588.4–4-10	Hunting for Open File Shares
Cloud Native Applications	Hunting Key Material
Web Application Injections588.4–32-34	Kubernetes & Peirates
Server-Side Request Forgeries 588.4–35-41	
Command Line Injections in Appls 588.4–44-50	Microsoft Graph API
Serverless Function with Lambda 588.4–53-60	
Serverless Function with Azure 588.4–61-64	PACU
Exposed Databases	
SQLi in a Hosted Environment	Password Attacks
Containers & Microservices 588.4–98-106	
Appendix	Port Scans at Scale in the Cloud 588.1–78-80

	Flippa 9
	GitLeaks
Scaling Discovery	Gobuster
Socat	
588.W-101-108	GrayHatWarfare Buckets
SQL Injections	Hashes.org 9
588.W-200-207	HaveIBeenPwned
SSRF Attack 588.4–42-43	Httpx588.W-48-49
$\dots \dots $	Hydra 588.5–86-88
Username Harvesting & Azure CLI588.2–57-58	588.W-246-248
588.W-68-74	Intrigue588.1–108-112
	Ident
Tools	588.W-46, 48-49, 76
Apache 588.3–35	IpTables △
AutoSSH 588.5–27-28	John The Ripper 588.W-148
Aws	Jq588.2–11, 27-28, 53
EC2 588.2–25, 28	
588.W–66	Kube-Hunter ▶
KMS 588.3–57	Kubeadm • 588.5–10, 13, 22
588.W-124	Kubectl
Lambda	588.W-212-217
S3588.2–25	Secrets 588.5–16
	MailSniper 588.W-100
588.W–65	Masscan
STS	588.W-27-31
Az588.2–11, 50-51, 70-74	Workflow
AD588.2–51	Metasploit 4
588.W-71	msfconsole
Disk	588.W-226, 228
Login	msfvenom
Role	Meterpreter
VM588.2–50, 53	588.5–31-36, 51, 98
$\dots \dots $	Mimikatz
AzCopy	
BFG Repo Cleaner 588.W-58	Mongo 588.W-196-198
Burp Suite	MosDef 🖲
Certbot	Nabuu
CeWL 4	Netcat
China Chopper	
Cobalt Strike	Netsh 8
Commonspeak2	NetSPI Microburst
	NfTables 4
Containerd	Nginx
CURL	Ngrok
Dism №	
DNSRecon	
	Options
Docker	Nmap
	588.4–69
Build	
Docker-Compose	Ntop
Domain Hunter •	Nuclei
env 🐧	Enum
Eye witness	Drovy 588.3-02

Recon
Patator 588.5–86
Peirates • 588.5–22-23
PortProxy (Netsh interface) № 588.3–35
Postman
588.W-93-99
Limitations
Microsoft Graph Collection 588.3–14
Supported Methods
PowerCat
PowerShell Empire
ProxyCannon-NG
PW-Inspector
Redis-CLI
RunC
Scanrand 588.1–68
Secretsdump.py 💆
Sequelize 9
set 🐉
ShhGit
SHIMIT I
ShuffleDNS
Socat
Bash Support
SQLmap 3
Storage Explorer
588.3–74
Unicornscan
Wappalyzer
Zmap
Zinap

\mathbf{A}

AAA	588.2–39
AaaS	
ABAC	$\dots 588.2-39, 48$
Abuse	$\dots 588.2-56, 76, 78$
	588.3–24
	588.4–39
Acceptable Rate	
Access Control List	
Access Token	
Account Attack	
Account Lockout	
Accuracy	
ACK	
ACL	
ACME	
Active Directory	· · · · · · · · · · · · · · · · · · ·
as a Service \rightarrow ADaaS	
Authentication	
Connector	
Attacker's View	
Domain Services	588.2–70
Federated Services	$\dots \dots 588.2 - 70, 73$
Active Technique	588.1–47
ActiveRecord	
ADaaS	
ADFS 588.2–39.	
ADFS588.2–39,	70, 73, 77, 105, 108
Administrator Account	70, 73, 77, 105, 108 588.3–80
Administrator Account	70, 73, 77, 105, 108 588.3–80 588.2–75
Administrator Account	70, 73, 77, 105, 108
Administrator Account Administrator Roles Agent Akamai (Proxy)	70, 73, 77, 105, 108
Administrator Account Administrator Roles Agent Akamai (Proxy)	70, 73, 77, 105, 108
Administrator Account Administrator Roles Agent Akamai (Proxy) Allow Model Allowances	70, 73, 77, 105, 108
Administrator Account Administrator Roles Agent Akamai (Proxy) Allow Model Allowances Alpine Linux	70, 73, 77, 105, 108
Administrator Account Administrator Roles Agent Akamai (Proxy)	70, 73, 77, 105, 108
Administrator Account Administrator Roles Agent Akamai (Proxy)	70, 73, 77, 105, 108
Administrator Account Administrator Roles Agent Akamai (Proxy) Allow Model Allowances Alpine Linux Amazon DocumentDB Amazon Web Services	70, 73, 77, 105, 108
Administrator Account Administrator Roles Agent Akamai (Proxy) Allow Model Allowances Alpine Linux Amazon DocumentDB Amazon Web Services 588.1–1	70, 73, 77, 105, 108
Administrator Account Administrator Roles Agent Akamai (Proxy) Allow Model Allowances Alpine Linux Amazon DocumentDB Amazon Web Services 588.1–1 Certification Manager	70, 73, 77, 105, 108
Administrator Account Administrator Roles Agent Akamai (Proxy) Allow Model Allowances Alpine Linux Amazon DocumentDB Certification Manager CLI	70, 73, 77, 105, 108
Administrator Account Administrator Roles Agent Akamai (Proxy) Allow Model Allowances Alpine Linux Amazon DocumentDB Amazon Web Services Certification Manager CLI Credentials	70, 73, 77, 105, 108 $$
Administrator Account Administrator Roles Agent Akamai (Proxy) Allow Model Allowances Alpine Linux Amazon DocumentDB Amazon Web Services Certification Manager CLI Credentials	70, 73, 77, 105, 108 $$
Administrator Account Administrator Roles Agent Akamai (Proxy) Allow Model Allowances Alpine Linux Amazon DocumentDB Amazon Web Services Certification Manager CLI Credentials Options	70, 73, 77, 105, 108 $$
Administrator Account Administrator Roles Agent Akamai (Proxy) Allow Model Allowances Alpine Linux Amazon DocumentDB Amazon Web Services Certification Manager CLI Credentials	70, 73, 77, 105, 108 $$
Administrator Account Administrator Roles Agent Akamai (Proxy) Allow Model Allowances Alpine Linux Amazon DocumentDB Amazon Web Services Certification Manager CLI Credentials Options	70, 73, 77, 105, 108 $$
Administrator Account Administrator Roles Agent Akamai (Proxy) Allow Model Allowances Alpine Linux Amazon DocumentDB Amazon Web Services 588.1–1 Certification Manager CLI Credentials Options Profile	70, 73, 77, 105, 108 $$
Administrator Account Administrator Roles Agent Akamai (Proxy) Allow Model Allowances Alpine Linux Amazon DocumentDB Amazon Web Services 588.1–1 Certification Manager CLI Credentials Options Profile ECR	70, 73, 77, 105, 108 $$
Administrator Account Administrator Roles Agent Akamai (Proxy) Allow Model Allowances Alpine Linux Amazon DocumentDB Amazon Web Services 588.1–1 Certification Manager CLI Credentials Options Profile ECR EKS IAM	70, 73, 77, 105, 108 $$
Administrator Account Administrator Roles Agent Akamai (Proxy) Allow Model Allowances Alpine Linux Amazon DocumentDB Amazon Web Services 588.1–1 Certification Manager CLI Credentials Options Profile ECR EKS	70, 73, 77, 105, 108 $$
Administrator Account Administrator Roles Agent Akamai (Proxy) Allow Model Allowances Alpine Linux Amazon DocumentDB Amazon Web Services 588.1–1 Certification Manager CLI Credentials Options Profile ECR EKS IAM Administrator	70, 73, 77, 105, 108 $$
Administrator Account Administrator Roles Agent Akamai (Proxy) Allow Model Allowances Alpine Linux Amazon DocumentDB Amazon Web Services 588.1–1 Certification Manager CLI Credentials Options Profile ECR EKS IAM Administrator Deny	70, 73, 77, 105, 108 $$
Administrator Account Administrator Roles Agent Akamai (Proxy) Allow Model Allowances Alpine Linux Amazon DocumentDB Amazon Web Services 588.1–1 Certification Manager CLI Credentials Options Profile ECR EKS IAM Administrator Deny Permissions	70, 73, 77, 105, 108 $$
Administrator Account Administrator Roles Agent Akamai (Proxy) Allow Model Allowances Alpine Linux Amazon DocumentDB Amazon Web Services 588.1–1 Certification Manager CLI Credentials Options Profile ECR EKS IAM Administrator Deny Permissions Policy	70, 73, 77, 105, 108
Administrator Account Administrator Roles Agent Akamai (Proxy) Allow Model Allowances Alpine Linux Amazon DocumentDB Amazon Web Services 588.1–1 Certification Manager CLI Credentials Options Profile ECR EKS IAM Administrator Deny Permissions	70, 73, 77, 105, 108 $$

Lambda	Automated Rollout and Rollback
Differences with Azure Functions 588.4–62	
Example 5	AV Bypass
Manually	
Shells	AD588.2–39, 74, 77
Roles 588.2–68	Authentication
List	Connector
PassRole	Domain Services588.2–61, 70, 76-77
Start/Stop Instances	Privilege Escalation
Root	Roles
SDK	Scope
Service Names	Synchronization
Session Tokens	Automation
	Blob
Testing Policy	
WAF 588.3–66	CLI
AMI	588.3–80
AMZN Header 588.W-48	Compute
Anti-Pattern 588.2–41	Files 588.2–60-62, 76
API588.2–10	
Gateway 588.4–55-56	Functions
$\dots \dots $	Differences with AWS Lambda588.4–62
Exploit	Login
Key	Portal 588.W-69-70
Server 💿	Resource Manager (RM) 588.2–51, 75
App (Windows Functions)	Roles 588.2–68
Application Mapping	Serverless
Aqua Security	Service Names
ARM588.2–18	Storage
ARN 588.2–35-37	Manager 588.3–73
Artifact Resolution Protocol588.2–103	Testing Policy 588.1–31-34
ASAPI	URL's
ASN	VM
Assertion Query and Request588.2–103	AzureStack
Asset Collection	112th op tack
Frameworks	
Asset Discovery Pipeline588.1–44	${f B}$
Assetnote	Backdoor
588.W-35-37	Implantation 588.3–43, 49, 67, 72-73, 81-82
Asymmetric Certificates	
Atlassian Bamboo	
Attack Rotation	Workflow
Attack Surface	Bad Password Count
Aurora 588.4–84	Banner Grabbing
Auth0588.2–78, 118	Bash
Authentication	Basic Authentication 588.2–88, 122
as a Service \rightarrow AaaS	Bastion Host
Bypass	Beacon
Code Grant	Bearer Authentication 588.2–88, 93, 95, 98, 101
Request 588.2–103-104	$\dots \dots $
Standards	Bearer Token
Web	Beijing
System-API	BGP 588.1-67
Authorization	BigTable
	Billing Administrator 588.2–81, 83
Grant	Blind Injection
Server588.2–91-92, 127	BLOB

Boot Features	CloudWatch
Box	
Breach Notification	CNAME
Bridge	
	,
BSON	Co-Administrator
Buckets	Code Execution
Bug Bounty 588.1–23, 107	Code Flow
	Code Injection
Build Systems	Codebuild
Output	
Busy Box	Collection #1
	Command Channel
\mathbf{C}	Command Injection
C	Primitives
G0 F F0 00	Command-and-Control Arthicecture 588.5–53
C2	Hardening
Hardening	Obfuscation
Implant	Command-and-Control Server
ca.crt	
Cassandra	?comp=list 588.2-60
Censys	
Cert Bot	Compute
Certificate	
Authority	588.3–41
Transparency 588.1–47-48, 51, 53-54, 57	Attack Scenarios
Certificate Store	Instance
Certificate-Based Authentication588.2–51, 87	
Certification Manager 588.1–50	Conditional Access
CGI-BIN	Containerd
Chrome	Containers
Chroot	588.2-8
$\dots \dots $	
CI Systems	588.5–8
CI/CD 588.2–9	Architectures
	Backdooring
	Cross-Communication
Attack	Escape
Detection	
CIDR	Management System
Circle CI	Content Filter
Classic Application	Database
Classic Subscription Model588.2–75, 83	Contributor
Cleartext Passwords	Cookie Jar
Client	CoreOS
Credentials 588.2–93	CouchDB
Client-Side Proxy	Credential Stuffing 588.5–79, 83-84, 86-87
Cloud Computing 588.1–15-16	CredentialGuard
Types	Credentials
Cloud Controller • 588.5–6	
Cloud Native Applications	CRI-O
$\dots \dots $	
Injections 588.4–48, 86	CRLF
Properties 588.4–12	Cron
Cloud Native Attacks	Cross-Account Copy
CloudAP Service	Cryptography
CloudTrail	CSE (Azure)
	CDL (11Zuic)

$\dots \dots $	Filter 588.5–9
CSP 588.1–65, 118, 120	Lookup
$\dots \dots $	DNSdb
Data	Docker
Mappings 588.1–67	588.2-
Custom Script Extension \rightarrow CSE	588.4–12, 101-10
CVE588.1–111	Container
CVS588.4–18	Datasheet
CyberArk	Dockerfile
588.3–20	
	Hub
_	588.5–3
D	Document Object-Storage
	Document Type
DaemonSet 🗐	Domain Administrator
Data Analysis	Domain Controller
588.2–6	Domain Fronting
Data Center	
Data Collection	Domain/Forest Structure
	DPAPI
Data Exfiltration	Drone
Data Exposure	Dropbox
Data Mining	588.5-7
Data Pivoting	
Data Smuggling	
Database Protocols	${f E}$
Databases	_
Databases as a Service \rightarrow DBaaS	EBS588.3-4
Dataset	Exploit
	EC2
DBaaS	
588.4-70	
Managed/Unmanaged	Attacks 588.3–43, 47-5
Defender Tip	Conditional Access
Delegated Access	Exploit
Demarcation Points	Instances
Denial of Service	Properties
Deny Model	Public IP Address
Deployment	Security Groups
	UserData
Automation	ECDSA
Pipeline	ECS
Developer Tools	
588.W-57	EIP
Development Pipeline	Elastic Container
Dictionary Attack	Registry \rightarrow AWS ECR
Digital Ocean	Elastic Kurbenetes Services \rightarrow AWS EKS
588.4–68	Elastic Search
DirectConnect	ELB
Directory Bruteforce	Elevation
· ·	
Dirty Container 588.1–126	Encrypted Command Channel
	Encryption
Disclosure Process	Endpoint Services
Discord	Endpoints Controller 💿
Discovery Tools	Enter-PSSession 2
DMZ588.2–70	Enterprise Administrator
	Enumeration
DNS	Env File
Bruteforce	Environment Information

Environment Variable	### Section
ExpressJS	$\begin{array}{llllllllllllllllllllllllllllllllllll$
F5	S88.2-10
FWaaS	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$
getSubdomain 588.1–93 Git 588.4–18-19 GitHub 588.2–15 Global Administrator 588.2–81, 83-85 Golden SAML Attack 588.2–105-110 Google Apps 588.2–56 Google BigQuery 588.1–92 Google Cache 588.1–57 Google Cloud 588.1–20, 92 Storage 588.1–121 Google Enumeration 588.1–57 Google Functions 588.4–68 Google Tink 588.5–58 GovCloud 588.2–41 GPG 588.2–16 Grep 588.1–53 GRPC 588.1–124	IAM

Initial Foothold	
$\dots \dots $	Features
Injections	Kubelet 💿
Instagram	Namespace
· ·	
Instance Metadata Service 588.3–26-28, 42, 50-51	Rights
$\dots \dots $	Kubernetes
Token Protections	588.2-8
Integrity Check	
IntelX	API
Invoke-Command $f 2$ $588.3-83$	Attacker's View
IP Addressing	Certificate
Space	Config (Default Location)
IP Blocking	Dashboard UI
IP Forwarding	Features
•	
IP Ranges	Managed/Unmanaged
IPC	Master 588.5–6, 9
IRC	Meterpreter
	Nodes
т	Secrets
\mathbf{J}	
	Vulnerabilities
Jail	Kudu
Jailbreak	KVM Hypervisor
JavaScript	
	_
$\dots \dots $	${f L}$
$\dots \dots $	-
Jenkins	Lambda 588.1–30, 128
JMESPath 588.2–53	
Job Control Channel	
JSON	
$\dots \dots $	
	Attacks 588.4–54-60
$\dots \dots $	Attacks
	Attacks 588.4–54-60 Data Decryption 588.3–56 Shell 588.4–60
Uery	Attacks 588.4–54-60 Data Decryption 588.3–56 Shell 588.4–60 Landing Page 588.2–56
Uery	Attacks 588.4–54-60 Data Decryption 588.3–56 Shell 588.4–60 Landing Page 588.2–56 LANMAN 588.3–6, 8
Query	Attacks 588.4–54-60 Data Decryption 588.3–56 Shell 588.4–60 Landing Page 588.2–56 LANMAN 588.3–6, 8 Laravel 588.2–19
Query	Attacks 588.4–54-60 Data Decryption 588.3–56 Shell 588.4–60 Landing Page 588.2–56 LANMAN 588.3–6, 8
Query	Attacks 588.4–54-60 Data Decryption 588.3–56 Shell 588.4–60 Landing Page 588.2–56 LANMAN 588.3–6, 8 Laravel 588.2–19
Query	Attacks 588.4–54-60 Data Decryption 588.3–56 Shell 588.4–60 Landing Page 588.2–56 LANMAN 588.3–6, 8 Laravel 588.2–19 . 588.4–86 Lateral Movement 588.2–41
Query	Attacks 588.4–54-60 Data Decryption 588.3–56 Shell 588.4–60 Landing Page 588.2–56 LANMAN 588.3–6, 8 Laravel 588.2–19 588.4–86 Lateral Movement 588.2–41 588.3–64
Query	Attacks 588.4–54-60 Data Decryption 588.3–56 Shell 588.4–60 Landing Page 588.2–56 LANMAN 588.3–6, 8 Laravel 588.2–19 588.4–86 Lateral Movement 588.2–41 588.3–64 588.4–26, 60
Query	Attacks 588.4–54-60 Data Decryption 588.3–56 Shell 588.4–60 Landing Page 588.2–56 LANMAN 588.3–6, 8 Laravel 588.2–19 . 588.4–86 Lateral Movement 588.2–41 . 588.3–64 . 588.4–26, 60 . 588.5–20, 23
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	Attacks 588.4–54-60 Data Decryption 588.3–56 Shell 588.4–60 Landing Page 588.2–56 LANMAN 588.3–6, 8 Laravel 588.2–19 . 588.4–86 Lateral Movement 588.2–41 . 588.3–64 . 588.4–26, 60 . 588.5–20, 23 LDAP 588.2–71-72
Query	Attacks 588.4–54-60 Data Decryption 588.3–56 Shell 588.4–60 Landing Page 588.2–56 LANMAN 588.3–6, 8 Laravel 588.2–19 . 588.4–86 Lateral Movement 588.2–41 . 588.3–64 . 588.4–26, 60 . 588.5–20, 23
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	Attacks 588.4–54-60 Data Decryption 588.3–56 Shell 588.4–60 Landing Page 588.2–56 LANMAN 588.3–6, 8 Laravel 588.2–19 . 588.4–86 Lateral Movement 588.2–41 . 588.3–64 . 588.4–26, 60 . 588.5–20, 23 LDAP 588.2–71-72
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	Attacks 588.4–54-60 Data Decryption 588.3–56 Shell 588.4–60 Landing Page 588.2–56 LANMAN 588.3–6, 8 Laravel 588.2–19
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	Attacks 588.4–54-60 Data Decryption 588.3–56 Shell 588.4–60 Landing Page 588.2–56 LANMAN 588.3–6, 8 Laravel 588.2–19
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	Attacks 588.4–54-60 Data Decryption 588.3–56 Shell 588.4–60 Landing Page 588.2–56 LANMAN 588.3–6, 8 Laravel 588.2–19 588.4–86 Lateral Movement 588.2–41 588.3–64 588.4–26, 60 588.5–20, 23 LDAP 588.2–71-72 Lessons Learned 588.1–21 Let's Encrypt 588.1–50 588.5–99-100 Lifecycle Management 588.4–106 LightSail 588.3–41
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	Attacks 588.4-54-60 Data Decryption 588.3-56 Shell 588.4-60 Landing Page 588.2-56 LANMAN 588.3-6, 8 Laravel 588.2-19
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	Attacks 588.4–54-60 Data Decryption 588.3–56 Shell 588.4–60 Landing Page 588.2–56 LANMAN 588.3–6, 8 Laravel 588.2–19 588.4–86 Lateral Movement 588.2–41 588.3–64 588.4–26, 60 588.5–20, 23 LDAP 588.2–71-72 Lessons Learned 588.1–21 Let's Encrypt 588.1–50 588.5–99-100 Lifecycle Management 588.4–106 LightSail 588.3–41
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	Attacks 588.4-54-60 Data Decryption 588.3-56 Shell 588.4-60 Landing Page 588.2-56 LANMAN 588.3-6, 8 Laravel 588.2-19
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	Attacks 588.4-54-60 Data Decryption 588.3-56 Shell 588.4-60 Landing Page 588.2-56 LANMAN 588.3-6, 8 Laravel 588.2-19
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	Attacks 588.4-54-60 Data Decryption 588.3-56 Shell 588.4-60 Landing Page 588.2-56 LANMAN 588.3-6, 8 Laravel 588.2-19
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	Attacks 588.4-54-60 Data Decryption 588.3-56 Shell 588.4-60 Landing Page 588.2-56 LANMAN 588.3-6, 8 Laravel 588.2-19
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	Attacks 588.4–54-60 Data Decryption 588.3–56 Shell 588.4–60 Landing Page 588.2–56 LANMAN 588.3–6, 8 Laravel 588.2–19
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	Attacks 588.4–54-60 Data Decryption 588.3–56 Shell 588.4–60 Landing Page 588.2–56 LANMAN 588.3–6, 8 Laravel 588.2–19
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	Attacks 588.4–54-60 Data Decryption 588.3–56 Shell 588.4–60 Landing Page 588.2–56 LANMAN 588.3–6, 8 Laravel 588.2–19 588.4–86 Lateral Movement 588.2–41 588.3–64 588.4–26, 60 588.5–20, 23 LDAP 588.2–71-72 Lessons Learned 588.1–21 Let's Encrypt 588.1–20 Lifecycle Management 588.4–106 LightSail 588.4–106 LightTPD 588.4–46 Lighttpd 588.1–101 Lightweight Shell 588.5–56-57 Link-Local Address 588.4–39 Linode 588.4–68 Linux Containers 588.4–100-101, 103 Linux Kernel 588.4–101
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	Attacks 588.4–54-60 Data Decryption 588.3–56 Shell 588.4–60 Landing Page 588.2–56 LANMAN 588.3–6, 8 Laravel 588.2–19 588.4–86 Lateral Movement 588.2–41 588.3–64 588.4–26, 60 588.5–20, 23 LDAP 588.2–71-72 Lessons Learned 588.1–21 Let's Encrypt 588.5–99-100 Lifecycle Management 588.4–106 LightSail 588.3–41 Exploit 588.3–65 LigHTTPD 588.4–46 Lighttyd 588.1–101 Lightweight Shell 588.5–56-57 Link-Local Address 588.4–39 Linode 588.4–68 Linux Containers 588.4–100-101, 103 Linux Kernel 588.4–101 Listener 588.5–32
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	Attacks 588.4–54-60 Data Decryption 588.3–56 Shell 588.4–60 Landing Page 588.2–56 LANMAN 588.3–6, 8 Laravel 588.2–19 588.4–86 Lateral Movement 588.2–41 588.3–64 588.4–26, 60 588.5–20, 23 LDAP 588.2–71-72 Lessons Learned 588.1–21 Let's Encrypt 588.1–20 Lifecycle Management 588.4–106 LightSail 588.4–106 LightTPD 588.4–46 Lighttpd 588.1–101 Lightweight Shell 588.5–56-57 Link-Local Address 588.4–39 Linode 588.4–68 Linux Containers 588.4–100-101, 103 Linux Kernel 588.4–101
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	Attacks 588.4–54-60 Data Decryption 588.3–56 Shell 588.4–60 Landing Page 588.2–56 LANMAN 588.3–6, 8 Laravel 588.2–19 588.4–86 Lateral Movement 588.2–41 588.3–64 588.4–26, 60 588.5–20, 23 LDAP 588.2–71-72 Lessons Learned 588.1–21 Let's Encrypt 588.5–99-100 Lifecycle Management 588.4–106 LightSail 588.3–41 Exploit 588.3–65 LigHTTPD 588.4–46 Lighttyd 588.1–101 Lightweight Shell 588.5–56-57 Link-Local Address 588.4–39 Linode 588.4–68 Linux Containers 588.4–100-101, 103 Linux Kernel 588.4–101 Listener 588.5–32

$\dots \dots $	Name Identifier Management Protocol 588.2	-103
Local System	Name Identifier Mapping Protocol588.2	
Logging	Namespaces	
Login Hint 588.2–97		
Loose Access Control	NAT588.1–37	
Lsadump 588.3–8	588.3–35-3	
LSASS 588.3–6	Net.WebClient 💆	
	Netcat as a Service	
Lua	Netflix588.	
	NetSPI588.	
Th. (f	Network Bridge 588.4	-101
${f M}$	Network Components588.1	
	Network Firewall as a Service \rightarrow FWaaS	
Makeshift Router	Network Forwarding588.	5-31
MAM 588.1–33	Network IPS/IDS	5-33
Man-In-The-Middle	Network Socket588.	3-32
		4-15
Managed Container	NFS588.1	-121
Management Group	NIST SP 500-291588.	1-16
Management Layer 588.1–23	Node Controller	3.5-6
Mapping	NodeJS588.	2-19
588.2-6-12	Lambda588.	4-57
	ORM588.	4-95
Client-Side	SQL Injection588.4–8	
Workflow 588.2–8	Non-Password-Based Authentication	2-87
MariaDB	NoSQL588.	
MD4		
MDM 588.1–33	Injection	
Memcached	Notification Form	
	NS Record 588.	
Memory Sharing	NSE	
Merkle Hash Tree	Ntdll.dll / Ntfs.dll	
meta-data/iam/security-credentials588.3-26	NTHash	
Method Type	NTLM 588.2–7	
MFA	588	3.3–6
Microservices	O	
Microsoft Cloud Services	O	
Microsoft Exchange	OASIS Group	_109
	OAuth	
API Examples	Issues	
Constraints	OAuth2	
Postman Collection	Flow Types	,
Microsoft Identity Services588.2–70-71	Code	
Attacker's View	Obfuscation	
Microsoft Services		
MIME-Encoding	OCI588.1	
MOD-PHP	Office365	
MongoDB	588.2–66, 73, 78	
Cheat Sheet	Administrators	
Port (27001)	$OIDC \rightarrow OpenIDConnect$	
Query 588.4–77-78	Okta588.2–56, 78	
Monitoring	On Premise Roles	
MX Record	OneDrive588.	
	588.3–1	
3. T	588.	5-72
${f N}$	OpenIDConnect	, 103
	,	

Flow	
OpenShift	$\dots \dots $
OpenSSH	PF_RING
Private Key 588.W-198	PHP-FPM
OpenSSL Connection	Pipe
ORM	Pivot
Orphaned Database	
Orphaned Disk	$\dots \dots $
Orphaned Security Groups	
OS Fingerprinting	Pods 🚳
OT588.1–105	588.5–14-16
Owner	Privileged
,	Policy Boundary
_	Policy Versioning \rightarrow AWS IAM User Versioning
P	Port Forwarding
_	
PaaS	
Attack	Port Proxy
PACU Exploit	Port Restriction
Pass-the-Hash Attack	Port Scanner
Pass-the-PRT Attack	588.2–7
Pass-the-Ticket Attack	
Passive Collection	588.W-48
Passive Technique	POSIX
PassRole Capability	Post Exploit Recon
588.W-114	Post Exploitation
Passthru Authentication	PostgreSQL
Password	PowerShell
Attacks	PPS
Types	Premium Drops
Guessing	Prepared Statements
	Primitive
Hash	Privacy Law
Synchronization	Private Key Check Bypass588.2–100
Lists	Privilege Escalation
Spraying	$\dots \dots $
PAT	
Payload	
	Privileged Container588.4–105
Beacon	Project Sonar 588.1–52-53
Build	Proof of Concept
Challenges	
Deployment	Proof of Session Key
Design Choices	Proprietary Stack
Injection	Protocol Buffers
Stages	Proxy Attacks
Traditional	PRT Attack \rightarrow Pass-the-PRT Attack
PEM	PTR Record
	Public Infrastructure Cloud 588.1–118
Penetration Testing	Python
Guidance 588.1–23	
Methodology	
	\cap
Pentester Tip	Q
	Qualys
Performance Hogging	Summy 0 900.2-110
Permission Boundary 588.2–42, 44	_
Permission Policy	${ m R}$
Permission Removal	
Persistence	RAT 588.5–50

Raw Socket	${f S}$
RBAC 588.1–122	S3 Buckets
	55 Buckets
	Administration
	Conditional Access
◎ V1.8+	Policy
Example	Restrictions
RDBM	SaaS
RDF	Attack
Reader	Sailpoint
Realm	Salesforce
Reconnaissance	SAM Database
	SAML588.2–55, 70-71, 74, 88, 102-105
	Flow
Tip	Insertion Message
Red Team	Protocols
Reddit	Token
Redirect	SAN 588.1–49-50
Redirection	Sandbox
Server	Escape
Redis	SASL
	SCADA
as a Service	Scanning 588.1–20
Port (6379)	
Refreshed Token	Workflow
Replication Controller	Scheduler 588.5–7, 9
Resource Owner	SCM
Password Credentials	$\dots \dots $
Resource Policy	Scope
Resource Server	
REST	Scope (OAuth) 588.2–91, 97
Restart-Service 2	Screenshot
RESTful API 588.2–33, 36, 61, 112-113	Scripting 588.1–119
$\dots \dots $	Scrubbing 588.1–47
Revocation Flow	Secret Exchange
RFC 3986 (URI)	Secrets Configuration and Management 588.5–5
RFC 5849 (OAuth)588.2–90	Secrets Format
RFC 6749 (OAuth2)588.2–90	Secrets Location
RFC 7519 (JWT) 588.2–99	Secrets Manager
RFC 8555 (ACME)588.1–50	Security Bypass
RFI	Security Credentials
Roles Comparison	Security Isolation Environment 588.1–125
Root	SecurityTrails
Route53 588.1–50	Seed
Routing (Attack)	Sekurlsa
	Selenium
Routing and Switching	Self-Healing
RPC	Self-Signed Certificate
	Sensitive Information
RSA Private Key588.W-199	
RST588.1–72	Commit
Ruby on Rails	Serial Connection
Rules and Permissions	Serverless Computing588.1–118
Rules of Engagement	
Rumble.run	Serverless Function
RunCommand	
588.W-151	
	Attacks 500 / 64

Serverless Infrastructure		Discovery	588.4–89
Service Administrator	$\dots 588.2 - 80, 83$	Workflow	
Service Chaining		Query	588.4 - 77
Service Control Policy	$\dots 588.2-42, 47$	SQLAlchemy	588.4–86
Service Mesh	$\dots \dots 588.4 - 106$	SRV Record	588.1 - 57
		SSH Keys	588.3–65
Service Names Comparison	588.2–67	SSH Tunnel	588.5–28
Service Orchestration	$\dots 588.1-118, 122$	SSM	588.3-50
Session Policy	$\dots \dots 588.2 - 42$	SSO588.2	-88, 102
Session State Storage	588.4-16, 74-75		.588.3-9
Set-Item 🔼	588.3–83	SSRF	588.2-15
SetDefault Policy	588.3–24		588.3-51
SG			.4-36-41
Shadow Admins		Stand-Alone Database	
Shared Database		Standardized Authorization Implementation . 3	
Shared File System		Standardized Scopes	
Shared Hosting		Stateless/Stateful Application	
Shared Infrastructure		Statically Compiled Binary	
Shared Responsibility		StatufulSets StatufulSets	
Shared Service		Storage Area	
SharePoint		Storage Blob	
Shell Access		Storage Environments	,
Shell Environments		Struts	
SHM		SUID	
Shodan		Supply Chain	
		Supply Chain	
Cl			
Shunning		Attack	
Silo Processes		Svchost	
Single Logout Protocol		SVN	
Site-to-Site VPN		Swagger API	
Slack		Symmetric Shared Keys	
SMB	*	SYN	
	,	Synchronization (AD)	
		Sysinternals	
		System Hardening	
Port (445)		System Manager Agent	588.3–65
SMTP			
Snapshots	,	T	
SNI (TLS Field)		1	
SOA Bus	$\dots \dots 588.4-15$	TTD 1.0	
Social Engineering		TBAC	
Socket Connector	588.3-30	TCP Half Open	
Socket Redirection	588.1 - 39	TCP Handshake	
Socket Router	$\dots 588.3-43$	Technologies	
SOCKS4	588.3-32	Tenant ID	,
Software Portability	588.1–118	Tenant/Subscription Model 588.	
Software Router		Terms of Service	
	588.5–48	588.	
Source Control Tools	588.4–18	588.	5-45, 64
SP		Tesla	588.5 - 17
SPA	*	Testing Policies	
Spiderfoot		Theoretical Limit (packets/sec)	
Spin-Down		TLS Handshake	588.5–97
Spoofing		TLS-Encrypted Channel	588.5-51
Spring		Token	
SQL		Hijacking	588.5-75
Injection58		Token 💿	
Defenses		Controller	
	ეგგ.4–9ე	Commoner	. 0000.0 0

TO 1 C' : D' / IZ	F00 F 01
Token-Signing Private Key	
TOML	Vulnerable Function
Traceroute	
Transitivity (Permissions)	${f W}$
Travis CI	·
TTL	WAF
Turnkey Cloud	$\dots \dots $
	Watcher Task
\mathbf{U}	Weak Password
	Web Browser Secrets
Undocumented Feature	Web Redirection
Universal Stack	Web Server
Unsecured Resource	Web Shells
URI	Web.config
URL 588.1–82	WhatsApp
	Whois XML API
Bruteforce	Wildcard Enumeration
Encoding	Windows 10
URN	Windows Containers
Useful Strings 588.2–18 User Access Administrator 588.2–80	Windows Decleton 588.4–111 Windows Decleton 588.4–100, 102
	Windows Desktop
User Administrator 588.2–81, 83-84 User-Agent 588.1–104	Attacker's View
588.4–94	Attacks
Userinfo Endpoint	Windows Kernel
Username	Windows Server Core
Harvesting	WinRM
	**
11at vesting	
	Ports (5985/5986)
${f V}$	Ports (5985/5986)
${f V}$	Ports (5985/5986)
V Vagrant 588.1–109	Ports (5985/5986)
V Vagrant	Ports (5985/5986)
V Vagrant	Ports (5985/5986)
V Vagrant	Ports (5985/5986)
Vagrant 588.1–109 Valid Domains 588.5–94 VHD 588.3–71 588.5–70 588.1–66, 85	Ports (5985/5986)
V Vagrant 588.1–109 Valid Domains 588.5–94 VHD 588.3–71	Ports (5985/5986)
Vagrant 588.1–109 Valid Domains 588.5–94 VHD 588.3–71 588.5–70 Virtual Hosting 588.1–66, 85 Virtual Machines 588.1–119 588.2–10	Ports (5985/5986)
V Vagrant	Ports (5985/5986)
Vagrant	Ports (5985/5986)
V Vagrant	Ports (5985/5986) 588.3–83 WLAN Passwords 588.3–8 Wordlists 588.1–56, 92-96 588.2–12 588.5–76-77 588.W-35-37 Worker Node 588.5–9 WSGI 588.4–45 X X-aws-ec2-metadata-token 588.4–40
Vagrant .588.1–109 Valid Domains .588.5–94 VHD .588.3–71	Ports (5985/5986) 588.3–83 WLAN Passwords 588.3–8 Wordlists 588.1–56, 92-96
Vagrant 588.1–109 Valid Domains 588.5–94 VHD 588.3–71 S88.5–70 Virtual Hosting 588.1–66, 85 Virtual Machines 588.1–119 588.2–10 588.4–103 Visualization 588.1–101 Voldemort DB 588.1–76 VPC 588.2–66-67	Ports (5985/5986)
Vagrant 588.1–109 Valid Domains 588.5–94 VHD 588.3–71 S88.5–70 588.1–66, 85 Virtual Hosting 588.1–119 S88.2–10 588.2–10 Visualization 588.1–101 Voldemort DB 588.1–76 VPC 588.2–66-67 588.3–42	Ports (5985/5986) 588.3–83 WLAN Passwords 588.3–8 Wordlists 588.1–56, 92-96
Vagrant 588.1–109 Valid Domains 588.5–94 VHD 588.3–71 588.5–70 Virtual Hosting 588.1–66, 85 Virtual Machines 588.1–119 588.2–10 588.2–10 Visualization 588.1–101 Voldemort DB 588.1–76 VPC 588.2–66-67 588.3–42 Blocking Blocking 588.2–43	Ports (5985/5986)
Vagrant 588.1–109 Valid Domains 588.5–94 VHD 588.3–71 588.5–70 588.1–66, 85 Virtual Hosting 588.1–119 588.2–10 588.2–10 Visualization 588.1–101 Voldemort DB 588.1–76 VPC 588.2–66-67 588.3–42 Blocking Flow Logs 588.3–66 VPN 588.1–120 .588.2–9	Ports (5985/5986)
Vagrant .588.1–109 Valid Domains .588.5–94 VHD .588.3–71 .588.5–70 .588.1–66, 85 Virtual Hosting .588.1–119 .588.2–10 .588.2–10 Visualization .588.1–101 Voldemort DB .588.1–76 VPC .588.2–66-67 .588.3–42 Blocking .588.2–43 Flow Logs .588.3–66 VPN .588.1–120 .588.2–9 .588.3–48, 64	Ports (5985/5986)
Vagrant 588.1–109 Valid Domains 588.5–94 VHD 588.3–71 588.5–70 588.1–66, 85 Virtual Hosting 588.1–119 588.2–10 588.2–10 Visualization 588.1–101 Voldemort DB 588.1–76 VPC 588.2–66-67 S88.3–42 Blocking 588.2–43 Flow Logs 588.3–66 VPN 588.1–120 588.2–9 588.3–48, 64 588.5–65	Ports (5985/5986)
Vagrant 588.1–109 Valid Domains 588.5–94 VHD 588.3–71 588.5–70 588.1–66, 85 Virtual Hosting 588.1–119 588.2–10 588.2–10 Visualization 588.1–101 Voldemort DB 588.1–76 VPC 588.2–66-67 S88.3–42 Blocking 588.2–43 Flow Logs 588.3–66 VPN 588.1–120 588.2–9 588.3–48, 64 588.5–65 Vulnerability Discovery 588.1–20	Ports (5985/5986)
Vagrant 588.1–109 Valid Domains 588.5–94 VHD 588.3–71 588.5–70 588.1–66, 85 Virtual Hosting 588.1–119 588.2–10 588.2–10 Visualization 588.1–101 Voldemort DB 588.1–76 VPC 588.2–66-67 588.3–42 Blocking 588.2–43 Flow Logs 588.3–66 VPN 588.1–120 588.3–48, 64 588.5–65 Vulnerability Discovery 588.1–20 Vulnerability Hunting 588.5–21	Ports (5985/5986)
Vagrant	Ports (5985/5986)
Vagrant 588.1–109 Valid Domains 588.5–94 VHD 588.3–71 588.5–70 588.1–66, 85 Virtual Hosting 588.1–119 588.2–10 588.2–10 Visualization 588.1–101 Voldemort DB 588.1–76 VPC 588.2–66-67 588.3–42 Blocking 588.2–43 Flow Logs 588.3–66 VPN 588.1–120 588.3–48, 64 588.5–65 Vulnerability Discovery 588.1–20 Vulnerability Hunting 588.5–21	Ports (5985/5986)