Networking

Employer Signaling System by the Greater Washington Partnership

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Cloud

Label	KSAC Description	KSA	Bloom's Taxonomy Level
a	Demonstrate an understanding of cloud architecture and the capabilities of services such as AWS, Azure, IBM, Oracle and Google.	knowledge	2
b	Describe the fundamental cloud components (e.g., shared or dedicated processing, storage, memory, networking, hypervisor).	knowledge	2
c	Identify common cloud misconfiguration errors and their security implications	knowledge	2
d	Differentiate between public, private, and hybrid clouds.	knowledge	2
e	Identify common breaches and threats in the cloud environment.	knowledge	1
f	Instantiate a small computing environment in a cloud service.	ability	3
g	Explain the pros and cons of on-premises vs cloud-based analytics solutions.	knowledge	2
h	Understand how to provision cloud services (e.g., Software as a Service [SaaS], Platform as a Service [PaaS], Infrastructure as a Service [IaaS], Security as a Service).	knowledge	2
i	Understand how to set security configurations and establish security baselines in a cloud environment.	knowledge	2
j	Understand the concept of opening/extending the network perimeter and the role of cloud access security (CAS).	knowledge	2
k	Explain and compare Cloud Services (IaaS, SaaS, PaaS, XaaS).	knowledge	2
l	Describe software defined networking concepts and their role in cloud environments	knowledge	2

Label	KSAC Description	KSA	Bloom's Taxonomy Level
m	Describe interoperability between on-premises and cloud environments	knowledge	2
n	Identify common secure cloud operations concepts, including monitoring and SOC-related considerations	knowledge	2
o	Identify what containers are, how they are used in cloud environments, and their relationship to orchestration platforms	knowledge	2
p	Explain basic cloud pricing models and cost-control mechanisms (e.g., budgets, limits, alerts)	knowledge	1

Protocols

Label	KSAC Description	KSA	Bloom's Taxonomy Level
a	Explain the DNS protocol.	knowledge	2
b	Define DNS Cache.	knowledge	2
c	Define Root DNS Servers.	knowledge	2
d	Explain DNS security concepts, including encrypted DNS	knowledge	2
	Use network traffic analysis tools to inspect and interpret packets (e.g. Wireshark, tcpdump, Splunk, Elastic)	skill	2
e	Use tracer tool to explore protocols.	skill	1
f	Interpret what a router is and how it functions, including how routing decisions are made (at the HS level).	knowledge	2
g	Explain the role and function of network switches, including MAC address forwarding and VLAN concepts at an introductory level	knowledge	2
h	Apply secure network Protocols and identify when encryption is required (e.g., IPSec, SNMP, SSH, DNS, TLS, SSL, TCP/IP, FTPS, HTTPS, SCP, ICMP).	ability	2

Label	KSAC Description	KSA	Bloom's Taxonomy Level
i	Identify and apply Transmission Control Protocol and Internet Protocol (TCP/IP), Internet Protocol Version 4 (IPv4), Internet Protocol Version 6 (IPv6) applications and services (e.g., rlogin, Simple Mail Transfer Protocol [SMTP], Telecommunications Network [Telnet], File Transfer Protocol [FTP], Domain Name System [DNS], Network File System [NFS], Voice over Internet Protocol [VoIP], Internet Control Message Protocol [ICMP]).	skill	2
j	Explain the relationship between ports, sockets, IP addresses and network services.	knowledge	3
k	Compare dynamic and static routing configuration.	knowledge	2
l	Explain the purpose of basic networking utilities (e.g. Netstat, Tracert, Traceroute, Ping IPConfig, IFConfig).	knowledge	2
m	Explain how routers forward traffic and the purpose of routing protocols	knowledge	2
n	Identify common wireless networking standards and naming conventions (e.g., IEEE 802.11a/b/g/n/ac/ax and Wi-Fi 6/7)	knowledge	2
o	Describe common wireless security protocols and their purposes (e.g., WPA2, WPA3, 802.1X)	knowledge	2
p	Explain the purpose and basic operation of Virtual Private Networks (VPNs), including encryption tunneling concepts and common use cases (remote access, site-to-site)	knowledge	2
q	Describe the purpose of network monitoring and logging tools (e.g., SNMP, Syslog, NetFlow), and how they support network performance and security monitoring	knowledge	2
r	Discuss remote desktop services.	knowledge	1

Networking Fundamentals

Label	KSAC Description	KSA	Bloom's Taxonomy Level
a	Explain DNS traffic.	knowledge	2
b	Understand OSI model and how it applies to an example.	knowledge	1

Label	KSAC Description	KSA	Bloom's Taxonomy Level
c	Describe at a high level how network traffic moves through an operating system from the network interface to an application	knowledge	2
d	Identify the layers of the OSI Model.	knowledge	1
e	Summarize the responsibilities of each layer of the OSI Model.	knowledge	2
f	Explain how the OSI Model is applied to Networking.	knowledge	3
g	Identify basic networking math concepts, including binary, hexadecimal, and simple subnetting calculations	knowledge	1
h	Configure IPv4 and IPv6 classful subnets.	skill	1
i	Compare public IP addresses and Private IP addresses.	knowledge	2
j	Identify IPv4 and IPv6 address network ID (Class A, Class B, Class C).	knowledge	2
k	Interpret classless network ID (CIDR block notation).	skill	2
l	Explain domain naming conventions (UNC path, FQDN, host name).	knowledge	3
m	Compare Network Address Translation and Port Address Translation (NAT vs PAT).	knowledge	2
n	Identify and represent basic network components and connections using standard network diagrams (e.g., switches, routers, endpoints)	skill	1
o	Design and document network topologies (e.g., star, mesh, hybrid) based on technical requirements and constraints	skill	3
p	Analyze the output from networking utilities (e.g. Netstat, Tracert, Traceroute, Ping IPConfig, IFConfig, IAM, SSO).	ability	3
q	Differentiate between firewalls, intrusion detection systems (IDS), and intrusion prevention systems (IPS)	knowledge	2
r	Discuss network software integration (client software (e.g. Windows 10 or Ubuntu) and server software).	knowledge	3
s	Discuss network hardware integration (workstations, desktop, mobile devices).	knowledge	2

Label	KSAC Description	KSA	Bloom's Taxonomy Level
t	Communicate best practices for troubleshooting networking issues (layers 1-2 at HS level) (7-step model).	knowledge	3
u	Explain the purpose of network segmentation and the role of VLANs in separating traffic and supporting basic security principles	knowledge	2
v	Apply basic network segmentation using VLANs in a small or simulated network environment	skill	3

Fundamental Security and Professional Practices

Label	KSAC Description	KSA	Bloom's Taxonomy Level
a	Apply fundamental networking design in a capstone project related to a real world experience.	skill	3
b	Identify basic security principles and common threats (e.g., CIA triad, phishing, intrusions, compromises)	knowledge	1
c	Use AI tools responsibly to support learning, troubleshooting, and interpretation of technical outputs (e.g., logs, command-line output, configurations)	skill	2
d	Launch a PC's OS, install patches, and network them together.	skill	2
e	Explain infrastructure as code concepts and common tools (e.g., declarative templates and configuration files)	knowledge	2

Operating System

Label	KSAC Description	KSA	Bloom's Taxonomy Level
a	Ability to install and configure software.	ability	3
b	Explain the boot process (Boot loader, Kernel).	knowledge	2
c	Perform software patching (update drivers, security, software).	skill	1

Label	KSAC Description	KSA	Bloom's Taxonomy Level
d	Understand difference between a server vs. client machine.	knowledge	2
e	Compare operating system characteristics (Windows and Linux).	knowledge	3
f	Apply file management skills in Linux and Microsoft environments (CLI and GUI).(create files, delete files, make directories, remove directories, search text)	ability	3
g	Explain and compare an absolute path with a relative path (file hierarchy).	knowledge	3
h	Navigate a directory structure.	ability	3
i	Create, modify, organize files in CLI.	skill	3
j	Identify the purpose and basic use cases of PowerShell for system and network administration	knowledge	1
k	Utilize system monitoring tools (e.g. task manager, top command).	skill	2
l	Identify common endpoint protection concepts (e.g., antivirus, endpoint detection and response)	knowledge	1
m	System Administration (Microsoft and Linux).(add users, add groups, configure password policies, modify user environments)	ability	3
n	Compare authorization vs authentication (including access and auditing)	knowledge	3