HPE Digital Learner CompTIA - Security+ Content Pack

The CompTIA Security+ exam will certify that the successful candidate has the knowledge and skills to:
- Install and configure systems to secure applications, networks and devices
- Perform threat analysis and respond with appropriate mitigation techniques
- Participate in risk mitigation activities
- Operate with an awareness of applicable policies, laws and regulations

The successful candidate will perform the above tasks, supporting the principles of CIA (Confidentiality, Integrity and Availability).

**Audience**

Security professionals working in IT administration with a focus on security who have day-to-day technical information, security experience and a broad knowledge of security concerns and implementations; a minimum of two years experience is recommended

**Content Pack Objectives**

Passing the associated examination will demonstrate your capability and skills in the areas (domains) that are tested:
- Threats, attacks and vulnerabilities (21%)
- Technologies and tools (22%)
- Architecture and design (15%)
- Identity and access management (16%)
- Risk management (14%)
- Cryptography and PKI (12%)

**Examinations**

- Exam Reference: SY0-501
- Number of questions: Maximum of 90
- Types of questions: Multiple choice and performance-based
- Time allowed to complete: 90 minutes
- Recommended experience: At least two years of experience
- Passing score: 750 (on a scale of 100–900)
## Detailed Content Pack outline

### CompTIA Security+ SY0-501: The Present Threat Landscape
- Describe the threat landscape
- Describe risks and vulnerabilities
- Define threats, threat agents, exploits, and payloads
- Define countermeasures and mitigation
- Describe script kiddies and hacktivists
- Compare organized crime, states, and APTs
- Describe insider and competitor threats
- Compare internal and external threats
- Compare structured and unstructured threats
- Define levels of sophistication, resources, and funding of threats
- Recognize threat intent and motivation
- Describe different open-source intelligence in threats
- Identify different malware threats
- Define and describe the threat landscape and agents

### CompTIA Security+ SY0-501: Types of Malware
- Describe viruses
- Define worms
- Describe Trojans
- Specify RATs
- Identify different vulnerabilities
- Describe ransomware
- Define cryptomalware
- Describe bots and botnets
- Define backdoors
- Define rootkits
- Define logic bombs
- Define keyloggers
- Classify spyware
- Define stegomalware
- Define polymorphic packers
- Describe and compare malware types

### CompTIA Security+ SY0-501: Social Engineering and Related Attacks
- Define impersonation and hoaxing
- Recognize tailgating and piggybacking
- Define shoulder surfing
- Describe dumpster diving
- CompTIA Security+ SY0-501: Social Engineering and Related Attacks
- Compare phishing, spear phishing, and whaling
- Describe watering hole attacks (social networks)
- Compare vishing and smishing
- Specify reasons for effectiveness
- Define clickjacking
- Describe session hijacking
- Describe URL hijacking
- Recognize typosquatting
- Define shimming
- Describe refactoring
- Recognize and classify social engineering and hijacking attacks

### CompTIA Security+ SY0-501: Application and Service Attacks
- Describe zero day attacks
- Classify spoofing
- Recognize DoS and DDoS attacks
- Describe man-in-the-middle attacks
- Define ARP poisoning
- Describe buffer overflow attacks
- Recognize injection attacks
- Define privilege escalation
- Compare reflection and amplification
- Describe DNS poisoning
- Recognize domain hijacking
- Define man-in-the-browser
- Compare cross-site scripting and request forgery
- Describe replay attacks
- Define pass the hash attacks
- Recognize application and service attacks

### CompTIA Security+ SY0-501: Cryptographic and Wireless Attacks
- Recognize brute-force and dictionary attacks
- Demonstrate brute-force tools
- Describe birthday, known plaintext, and cipher attacks
- Compare online vs. offline attacks
- Define collisions
- Describe downgrade attacks
- Recognize replay attacks
- Specify initialization vector weaknesses
- Compare evil twins and rogue apps
- Describe jamming
- Compare bluejacking and bluesnarfing
- Define WPS attacks
- Recognize disassociation attacks
- Compare RFID and near field communication (NFC)
- Recognize cryptographic and wireless attacks
### CompTIA Security+ SY0-501: Penetration Testing and Vulnerability Scanning

- Compare active vs. passive reconnaissance
- Describe a pivot
- Specify initial exploitation
- Define persistence
- Recognize escalation of privilege
- Compare black vs. gray vs. white box
- Compare pen testing vs. vulnerability scanning
- Passively test security controls
- Identify vulnerability
- Identify lack of security controls
- Identify common misconfigurations
- Compare intrusive vs. non-intrusive
- Compare credentialed vs. non-credentialed
- Describe false positives
- Recognize penetration testing and vulnerability scanning methods

### CompTIA Security+ SY0-501: Impacts from Vulnerability Types

- Describe race conditions
- Recognize system vulnerabilities
- Specify improper input and error handling
- Define misconfiguration
- Describe resource exhaustion
- Specify untrained users
- Work with improperly configured accounts
- Recognize vulnerable business processes
- Recognize weak cipher suites and implementations
- Define memory and buffer vulnerability
- Describe system sprawl and undocumented assets
- Describe architecture and design weaknesses
- Recognize new threats and zero-day attacks
- Define improper certificate and key management
- Specify the impact of different types of vulnerabilities

### CompTIA Security+ SY0-501: Components Supporting Organizational Security

- Define firewalls
- Describe VPN concentrators
- Compare NIDS and NIPS
- Compare bridges and switches
- Describe routers
- Compare proxies and load balancers
- Recognize wireless access points
- Define SIEM systems
- Describe DLP systems
- Define NAC gateways
- Describe mail gateways
- Define media gateways
- Define encryption gateways
- Recognize specialty appliances
- Describe the various components that support organizational security

### CompTIA Security+ SY0-501: Security Assessment Using Software Tools

- Work with protocol analyzers
- Work with network scanners
- Specify wireless scanners/cracker
- Work with password crackers
- Describe vulnerability scanners
- Define configuration compliance scanner
- Describe exploitation frameworks
- Compare data sanitization tools
- Define steganography tools
- Define honeypots
- Configure backup utilities
- Define banner grabbing
- Compare passive vs. active
- Describe other command line tools
- Work with security assessment using software tools

### CompTIA Security+ SY0-501: Cryptography

- Identify the role cryptography plays in maintaining CIA
- Identify the purpose of a cipher
- Identify the properties of a secure cipher
- Describe the function of block ciphers
- Describe the function of stream ciphers
- Describe the purpose of a cryptographic key
- Recognize the various ways to exchange cryptographic keys
- Describe the purpose of encryption
- Describe symmetric algorithms
- Identify various symmetric algorithms
- Describe asymmetric algorithms
- Identify various asymmetric algorithms
- Describe hashing
- Identify various hashing functions
- Describe data integrity
- Describe authentication
- Describe the purpose of digital signatures
- Describe the purpose of key stretching
- Identify additional security considerations such as steganography, obscurity, and weak algorithms
- Identify various cryptographic features and services
CompTIA Security+ SY0-501: Public Key Infrastructure
- Recall the purpose of a PKI and a trusted introducer
- Describe the benefits and uses of the public key infrastructure for an organization
- Recognize the various CA trust models that can be implemented, such as single CA, hierarchical, bridge, peer-to-peer, and mesh
- Describe the concept of certificate chaining
- Identify the purpose and types of pinning
- Describe the benefits of certificate expiration, revocation, and suspension, and distinguish between a CRL and OCSP
- Describe the benefits of key escrow and when you might consider using it
- Recognize the x.509 certificate format and file extensions
- Describe various types certificates and their uses
- Recall various PKI concepts

CompTIA Security+ SY0-501: Wireless Security Settings
- Describe the importance of authentication and encryption for wireless networks
- Identify the differences between the three different types of wireless networks
- Choose the most appropriate wireless standard and mode to secure your wireless communications
- Distinguish between PSK and Enterprise authentication for wireless networks
- Identify the common methods of encrypting communications on wireless networks
- Configure an open wireless network
- Configure a WPA PSK wireless network
- Configure a WPA Enterprise wireless network
- Configure a WPA2 PSK wireless network
- Configure a WPA2 Enterprise wireless network
- Describe and use Wi-Fi Protected Setup
- Describe and use a captive portal
- Recall various wireless security topics and concepts

CompTIA Security+ SY0-501: Analyzing Output from Security Technologies
- Work with Host Intrusion Detection System (HIDS) and Host Intrusion Prevention System (HIPS)
- Describe antivirus
- Define file integrity check
- Describe UTM
- Describe a host-based firewall
- Specify application whitelisting
- Define removable media control
- Compare patch management tools
- Define DLP
- Specify data execution prevention
- Describe web application firewall
- Work with technology output analysis

CompTIA Security+ SY0-501: Deploying Mobile Devices Securely
- Specify connection methods
- Compare deployment models
- Describe passwords, pins, and screen locks
- Define application and content management
- Describe remote wipe
- Compare geofencing and geolocation
- Describe push notification services
- Define biometrics and context-aware authentication
- Classify containerization and storage segmentation
- Describe full device encryption
- Describe enforcement and monitoring
- Describe ways to secure mobile devices

CompTIA Security+ SY0-501: Implementing Secure Protocols
- Work with SSH
- Describe Secure Sockets Layer and Transport Layer Security (SSL/TLS)
- Describe HTTPS
- Describe DNSSEC
- Describe SRTP
- Describe FTPS
- Describe SFTP
- Describe LDAPS
- Describe work with SNMPv3
- Describe NTPv3
- Describe Secure POP/IMAP
- Describe S/MIME
- Work with routing protocol authentication
- Recognize various secure versions of common protocols
<table>
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<th>CompTIA Security+ SY0-501: Troubleshooting</th>
<th>Common Security Issues</th>
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<td>Define unencrypted credentials</td>
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<td>Describe logs and events anomalies</td>
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<td>Specify permission issues</td>
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<td>Define access violations</td>
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<td>Specify certificate issues</td>
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<td>Describe data exfiltration</td>
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<td>Describe misconfigured devices</td>
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<td>Recognize weak security configurations</td>
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<td>Classify personnel issues</td>
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<td>Define unauthorized software</td>
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<td>Define baseline deviation</td>
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<td>Recognize license compliance violation</td>
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<td>Describe asset management</td>
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<td>Specify asset management</td>
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<td>Specify various security troubleshooting issues</td>
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<th>CompTIA Security+ SY0-501: Identity Concepts and Access Services</th>
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<td>Compare identity and access management concepts</td>
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<td>Compare and contrast identity and access management concepts</td>
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<td>Define NTLM</td>
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<td>Compare PAP, CHAP, and MSCHAP</td>
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<td>Describe RADIUS</td>
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<td>Describe Terminal Access Controller Access Control System (TACACS+)</td>
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<td>Define SAML</td>
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<td>Specify OpenID Connect</td>
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<td>Define OAuth</td>
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<td>Describe Shibboleth</td>
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<td>Define identity concepts and various access services</td>
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<th>CompTIA Security+ SY0-501: Identity and Access Management Controls</th>
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<td>Define MAC</td>
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<td>Define DAC</td>
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<td>Define ABAC</td>
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<tr>
<td>Describe role-based access control</td>
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<td>Describe rule-based access control</td>
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<tr>
<td>Use a fingerprint scanner</td>
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<td>Describe facial recognition</td>
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<td>Compare FAR, FRR, and CER</td>
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<td>Define tokens</td>
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<td>Describe certificate-based authentication</td>
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<td>Define file system security</td>
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<td>Define database security</td>
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<td>Compare access controls and biometrics</td>
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<th>CompTIA Security+ SY0-501: Common Account Management Practices</th>
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<tr>
<td>Define user accounts</td>
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<tr>
<td>Compare shared, guest, and generic accounts</td>
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<td>Describe privileged accounts</td>
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<td>Specify service accounts</td>
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<td>Recognize password best practices</td>
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<td>Define credential management and naming conventions</td>
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<td>Recognize group-based access control and Group Policy</td>
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<td>Describe location-based policies</td>
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<td>Define least privilege and time-of-day restrictions</td>
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<td>Compare onboarding and offboarding</td>
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<td>Describe recertification</td>
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<td>Define account maintenance</td>
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<td>Describe auditing and review</td>
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<td>Describe various account management best practices</td>
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<th>CompTIA Security+ SY0-501: Frameworks, Guidelines, and Physical Security</th>
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<tr>
<td>Identify the purpose of various frameworks and architectures</td>
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<td>Specify the reasoning behind following secure configuration guidelines</td>
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<td>Describe the benefits of implementing a layered security approach and the importance of diversity and user training</td>
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<td>Describe the importance of physical security in relation to the success of your organization</td>
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<td>Identify the importance of lighting in relation to security</td>
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<td>Identify the various methods that can be used to control or deter physical access</td>
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<td>Describe the importance of alarms and the difference between false alarms and true alarms</td>
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<td>Identify the benefits of using safes and secure cabinets</td>
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<tr>
<td>Identify different types of locks and describe the importance of key management</td>
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<td>Describe various authentication options</td>
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<td>Define the importance of HVAC systems and fire suppression systems</td>
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<td>Describe various types of motion detection systems</td>
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<td>Define the concept of a protected system and air gaps</td>
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<tr>
<td>Describe the purpose of various security controls such as Faraday cages, cable locks, screen filters, cameras, and sign-in and sign-out logs</td>
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<tr>
<td>Recall the purpose of various security controls</td>
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</tbody>
</table>
### CompTIA Security+ SY0-501: Implement Secure Network Architecture Concepts
- Describe the reasoning behind implementing different zones and topologies
- Define how physical, logical, virtual, and air gap separation provide security
- Describe site-to-site and remote access VPNs
- Define where various devices and technologies should be placed for maximum security benefits
- Describe the security concerns surrounding the SDN
- Recall the purpose of various secure network architecture concepts

### CompTIA Security+ SY0-501: Secure System and Application Design and Deployment
- Describe how anchoring the trust of a system within hardware using TPM, SED, and HSM improves security
- Describe the benefits of secure system booting and how UEFI plays a role in it
- Identify how systems may be protected from EMI and EMP
- Identify when security needs to be considered in the supply chain
- Recall key considerations of a secure operating system
- Define the concept of a trusted operating system
- Describe the security concerns when using wireless keyboards and mice, displays, Wi-Fi enabled MicroSD cards, printers, USB storage, and digital cameras
- Define secure development concepts
- Describe the security concerns of SCADA, IoT, and HVAC
- Describe the security concerns of SoC and RTOS
- Describe the security concerns of multi-function devices, camera systems, medical devices, vehicles, and aircraft
- Compare waterfall and Agile development life cycle models
- Describe the importance of security with DevOps
- Define various development concepts
- Describe various techniques that are used for secure coding
- Define various methods for code quality and testing
- Compare compiled code vs. runtime code
- Recall various concepts related to secure system design and application development

### CompTIA Security+ SY0-501: Cloud, Virtualization, and Resiliency Concepts
- Compare different types of hypervisors and the benefits of using application containers
- Describe the issues related to VMs
- Compare the different types of cloud offerings such as IaaS, PaaS, and SaaS.
- Define the purpose and benefit to using a VDI/VDE
- Describe the function of a cloud access security broker and security as a service
- Define how automation and scripting provide resiliency
- Describe how templates and master images provide resiliency
- Recall various virtualization, cloud, and resiliency concepts

### CompTIA Security+ SY0-501: Policies, Plans, and Procedures
- Describe the benefits of using standard operating procedures
- Define various agreements such as BPA, SLA, ISA, and MOU
- Define the benefits of enforcing mandatory vacations, job rotation, separation of duties, and the principle of least privilege
- Describe the benefits of a clean desk policy, a background check policy, exit interviews, NDA, and onboarding
- Describe the benefits of security awareness training
- Define the purpose of acceptable use policies
- Describe the benefits of social media policies and personal email policies
- Recall the purpose of various policies, plans, and procedures

### CompTIA Security+ SY0-501: Business Impact Analysis and Risk Management
- Define risk analysis
- Describe qualitative risk analysis
- Describe quantitative risk analysis
- Define methods that can be used to respond to risk
- Define procedures for implementing change
- Recall business impact assessment and risk management concepts
- Define the purpose of a BCP
- Identify the general steps in a BIA
- Define concepts related to recovery time such as MTD, RTO, and RPO
- Define Mean Time Between Failure (MTBF) and Mean Time to Repair (MTR)
- Describe privacy impact assessment and privacy threshold assessment
- Define risk management
- Describe risk assessment
- Identify risks to an organization
- Specify how to and who should be testing for risks
- Recall business impact assessment and risk management concepts
Content Pack data sheet

CompTIA Security+ SY0-501: Incident Response, Forensics, and Disaster Recovery

- Define incident response and the incident response process
- Describe the importance and components of an incident response plan
- Describe the purpose of forensic investigation

- Identify the steps required during a forensics investigation
- Compare strategic intelligence and strategic counterintelligence
- Define disaster recovery and the disaster recovery plan
- Describe the different types of recovery sites
- Describe the different types of backups
- Recognize the geographic implications of disaster recovery

- Identify different security controls
- Describe media sanitization and data destruction
- Describe the benefits of labeling and handling
- Define various data roles
- Describe the purpose of data retention
- Recall incident response, forensics, disaster recovery, and security concepts

TestPrep SYO-501 CompTIA Security+

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