SEC501: Advanced Security Essentials – Enterprise Defender

GCED
Enterprise Defender
giac.org/gced

6 Day Program | 38 CPEs | Laptop Required

You Will Be Able To

- Identify the threats against network infrastructures and build defensible networks that minimize the impact of attacks
- Access tools that can be used to analyze a network to prevent attacks and detect the adversary
- Decode and analyze packets using various tools to identify anomalies and improve network defenses
- Understand how the adversary compromises networks and how to respond to attacks
- Perform penetration testing against an organization to determine vulnerabilities and points of compromise
- Apply the six-step incident handling process
- Use various tools to identify and remediate malware across your organization
- Create a data classification program and deploy data loss prevention solutions at both a host and network level

Effective cybersecurity is more important than ever as attacks become stealthier, have a greater financial impact, and cause broad reputational damage. SEC501: Advanced Security Essentials – Enterprise Defender builds on a solid foundation of core policies and practices to enable security teams to defend their enterprise.

It has been said of security that "prevention is ideal, but detection is a must." However, detection without response has little value. Network security needs to be constantly improved to prevent as many attacks as possible and to swiftly detect and respond appropriately to any breach that does occur. This PREVENT – DETECT – RESPONSE strategy must be in place both externally and internally. As data become more portable and networks continue to be porous, there needs to be an increased focus on data protection. Critical information must be secured regardless of whether it resides on a server, in a robust network architecture, or on a portable device.

Despite an organization's best efforts to prevent network attacks and protect its critical data, some attacks will still be successful. Therefore, organizations need to be able to detect attacks in a timely fashion. This is accomplished by understanding the traffic that is flowing on your networks, looking for indications of an attack, and performing penetration testing and vulnerability analysis against your organization to identify problems and issues before a compromise occurs.

Finally, once an attack is detected we must react quickly and effectively and perform the forensics required. Knowledge gained by understanding how the attacker broke in can be fed back into more effective and robust preventive and detective measures, completing the security lifecycle.

"Immediate value of putting concepts into standard practice."

— Manny Cadiz, **EMF Broadcasting**

"If you want to take a deep-dive into enterprise security, then you must take SEC501."

— Nikolai Vinogradov, **JSC Severstal Management**

Available Training Formats

Live Training

Live Events
sans.org/information-security-training/by-location/all

Summit Events
sans.org/cyber-security-summit

Private Training
sans.org/private-training

Online Training

OnDemand
sans.org/ondemand

Simulcast
sans.org/simulcast

Section Descriptions

SECTION 1: Defensive Network Architecture

This course section will focus on security in the design and configuration of various enterprise infrastructures. From a security perspective, proper design and configuration protects both the components being configured, as well as the rest of the organization that depends on that gear to defend other components from attacks. In other words, a good house needs a good foundation!

TOPICS: Security Benchmarks, Standards, and the Role of Audit in Defending Infrastructure; Defense Using Authentication and Authorization, and Defending Those Services; The Use of Logging and Security Information and Event Management (SIEM) in Defending an Organization from Attack; Attacking and Defending Critical Protocols; Several Man-in-the-Middle Attack Methods, and Defenses against Each; Infrastructure Defense Using IPS, Next-Generation Firewalls, and Web Application Firewalls; Defense of Critical Servers and Services; Active Defense; Defense of Private and Public Cloud Architectures

SECTION 2: Penetration Testing

Security is all about understanding, mitigating, and controlling the risk to an organization's critical assets. An organization must understand the changing threat landscape and have the capacity to compare it against its own vulnerabilities that could be exploited to compromise the environment. In section two, students will learn about the variety of tests that can be run against an organization and how to perform effective penetration tests to better understand the security posture for network services, operating systems, and applications. In addition, we'll talk about social engineering and reconnaissance activities to better emulate increasingly prevalent threats to users.

TOPICS: Introduction to Penetration Testing Concepts; Penetration Testing Scoping and Rules of Engagement; Online Reconnaissance and Offensive Counterintelligence; Social Engineering; Network Mapping and Scanning Techniques; Enterprise Vulnerability Scanning; Network Exploitation Tools and Techniques; Web Application Exploitation Tools and Techniques; Post-Exploitation and Pivoting; OS and Application Exploit Mitigations; Reporting and Debriefing

Who Should Attend

- Incident response and penetration testers
- Security Operations Center engineers and analysts
- Network security professionals
- Anyone who seeks technical in-depth knowledge about implementing comprehensive security solutions

Course Preview

available at: **sans.org/demo**

SECTION 3: Security Operations Foundations

"Prevention is ideal, but detection is a must" is a critical motto for network security professionals. While organizations always want to prevent as many attacks as possible, some adversaries will still sneak into the network. In cases where an attack is not successfully prevented, network security professionals need to analyze network traffic to discover attacks in progress, ideally stopping them before significant damage is done. Packet analysis and intrusion detection are at the core of such timely detection. Organizations need to not only detect attacks but also to react in a way that ensures those attacks can be prevented in the future.

TOPICS: Network Security Monitoring; IP, TCP, and UDP Refresher; Advanced Packet Analysis; Introduction to Network Forensics with Security Onion; Identifying Malicious Content and Streams; Extracting and Repairing Content from PCAP files; Traffic Visualization Tools; Intrusion Detection and Intrusion Prevention; Handling Encrypted Network Traffic

SECTION 4: Digital Forensics and Incident Response

In this section, you will learn the core concepts of both "Digital Forensics" and "Incident Response." We'll explore some of the hundreds of artifacts that can give forensic investigators specific insight into what occurred during an incident. You will also learn how incident response currently operates, after years of evolving, in order to address the dynamic procedures used by attackers to conduct their operations. We'll look at how to integrate DFIR practices into a continuous security operations program.

TOPICS: DFIR Core Concepts: Digital Forensics; DFIR Core Concepts: Incident Response; Modern DFIR: A Live and Continuous Process; Widening the Net: Scaling the DFIR Process and Scoping a Compromise

SECTION 5: Malware Analysis

Malicious software is responsible for many incidents in almost every type of organization. Types of malware vary widely, from Ransomware and Rootkits to Crypto Currency Miners and worms. We will define each of the most popular types of malware and walk through multiple examples. The four primary phases of malware analysis will be covered: Fully Automated Analysis, Static Properties Analysis, Interactive Behavior Analysis, and Manual Code Reversing. You will complete various in-depth labs requiring you to fully dissect a live Ransomware specimen from static analysis through code analysis. You will get hands-on experience with tricking the malware through behavioral analysis techniques, as well as decrypting files encrypted by Ransomware by extracting the keys through reverse engineering. All steps are well defined and tested to ensure that the process to achieve these goals is actionable and digestible.

TOPICS: Introduction to Malware Analysis; The Many Types of Malware; ATM/Cash Machine Malware; Building a Lab Environment for Malware Analysis; Malware Locations and Footprints; Fully Automated Malware; Cuckoo Sandbox; Static Properties Analysis; Interactive Behavior Analysis; Manual Code Reversing; Tools such as IDA, PeStudio, ILSpy, Process Hacker, Process Monitor, NoFuserEx, etc.

SECTION 6: Enterprise Defender Capstone

The concluding section of the course will serve as a real-world challenge for students by requiring them to work in teams, use the skills they have learned throughout the course, think outside the box, and solve a range of problems from simple to complex. A web server scoring system and Capture-the-Flag engine will be provided to score students as they submit flags to score points. More difficult challenges will be worth more points. In this defensive exercise, challenges include packet analysis, routing protocols, scanning, malware analysis, and other challenges related to the course material.