TRAINING GOALS:

In this 4 day course, students are provided with a functional understanding of how to deploy, tune, and operate F5 Advanced Web Application Firewall to protect their web applications from HTTP-based attacks.

The course includes lecture, hands-on labs, and discussion about different F5 Advanced Web Application Firewall tools for detecting and mitigating threats from multiple attack vectors such as web scraping, Layer 7 Denial of Service, brute force, bots, code injection, and zero-day exploits.

Course is based on the system version v15.1.

Course Objectives

- Describe the role of the BIG-IP system as a full proxy device in an application delivery network
- Provision F5 Advanced Web Application Firewall resources
- Define a web application firewall
- Describe how F5 Advanced Web Application Firewall protects a web application by securing file types, URLs, and parameters
- Deploy F5 Advanced Web Application Firewall using the Rapid Deployment template (and other templates) and define the security checks included in each
- Define learn, alarm, and block settings as they pertain to configuring F5 Advanced Web Application Firewall
- Define attack signatures and explain why attack signature staging is important
- Contrast positive and negative security policy implementation and explain benefits of each
- Configure security processing at the parameter level of a web application
- Use an application template to protect a commercial web application
- Deploy F5 Advanced Web Application Firewall using the Automatic Policy Builder
- Tune a policy manually or allow automatic policy building
- Integrate third party application vulnerability scanner output into a security policy
- Configure login enforcement and session tracking
- Configure protection against brute force, web scraping, and Layer 7 denial of service attacks
- Implement iRules using specific F5 Advanced Web Application Firewall events and commands
- Use Content Profiles to protect JSON and AJAX-based applications
- Implement Bot Signatures
- Implement Proactive Bot Defense

Audience:
this course is intended for security and network administrators who will be responsible for the installation, deployment, tuning, and day-to-day maintenance of the F5 Advanced Web Application Firewall.

CONSPект:

- Setting Up the BIG-IP System
  - Introducing the BIG-IP System
  - Initially Setting Up the BIG-IP System
  - Archiving the BIG-IP System Configuration
  - Leveraging F5 Support Resources and Tools
- Traffic Processing with BIG-IP
  - Identifying BIG-IP Traffic Processing Objects
  - Overview of Network Packet Flow
  - Understanding Profiles
  - Overview of Local Traffic Policies
  - Visualizing the HTTP Request Flow
- Web Application Concepts
  - Overview of Web Application Request Processing
  - Web Application Firewall: Layer 7 Protection
  - F5 Advanced WAF Layer 7 Security Checks
  - Overview of Web Communication Elements
  - Overview of the HTTP Request Structure
  - Examining HTTP Responses
  - How F5 Advanced WAF Parses File Types, URLs, and Parameters
  - Using the Fiddler HTTP Proxy
- Common Web Application Vulnerabilities
  - A Taxonomy of Attacks: The Threat Landscape
  - What Elements of Application Delivery are Targeted?
  - Common Exploits Against Web Applications
- Security Policy Deployment
Defining Learning

Comparing Positive and Negative Security Models

The Deployment Workflow

Policy Type: How Will the Policy Be Applied

Policy Template: Determines the Level of Protection

Policy Templates: Automatic or Manual Policy Building

Assigning Policy to Virtual Server

Deployment Workflow: Using Advanced Settings

Selecting the Enforcement Mode

The Importance of Application Language

Configure Server Technologies

Verify Attack Signature Staging

Viewing Requests

Security Checks Offered by Rapid Deployment

Defining Attack Signatures

Using Data Guard to Check Responses

Policy Tuning and Violations

Post-Deployment Traffic Processing

Defining Violations

Defining False Positives

How Violations are Categorized

Violation Rating: A Threat Scale

Defining Staging and Enforcement

Defining Enforcement Mode

Defining the Enforcement Readiness Period

Reviewing the Definition of Learning

Defining Learning Suggestions

Choosing Automatic or Manual Learning

Defining the Learn, Alarm and Block Settings

Interpreting the Enforcement Readiness Summary

Configuring the Blocking Response Page

Attack Signatures

Defining Attack Signatures

Attack Signature Basics

Creating User-Defined Attack Signatures

Defining Simple and Advanced Edit Modes
Defining Attack Signature Sets
Defining Attack Signature Pools
Understanding Attack Signatures and Staging
Updating Attack Signatures

Positive Security Policy Building
Defining and Learning Security Policy Components
Defining the Wildcard
Defining the Entity Lifecycle
Choosing the Learning Scheme
How to Learn: Never (Wildcard Only)
How to Learn: Always
How to Learn: Selective
Reviewing the Enforcement Readiness Period: Entities
Viewing Learning Suggestions and Staging Status
Violations Without Learning Suggestions
Defining the Learning Score
Defining Trusted and Untrusted IP Addresses
How to Learn: Compact

Cookies and Other Headers
F5 Advanced WAF Cookies: What to Enforce
Defining Allowed and Enforced Cookies
Configuring Security Processing on HTTP headers

Reporting and Logging
Overview: Big Picture Data
Reporting: Build Your Own View
Reporting: Chart based on filters
Brute Force and Web Scraping Statistics
Viewing F5 Advanced WAF Resource Reports
PCI Compliance: PCI-DSS 3.0
The Attack Expert System
Viewing Traffic Learning Graphs
Local Logging Facilities and Destinations
How to Enable Local Logging of Security Events
Viewing Logs in the Configuration Utility
Exporting Requests
Logging Profiles: Build What You Need
Lab Project 1

Advanced Parameter Handling
- Defining Parameter Types
- Defining Static Parameters
- Defining Dynamic Parameters
- Defining Dynamic Parameter Extraction Properties
- Defining Parameter Levels
- Other Parameter Considerations

Policy Diff and Administration
- Comparing Security Policies with Policy Diff
- Merging Security Policies
- Restoring with Policy History
- Examples of F5 Advanced WAF Deployment Types
- ConfigSync and F5 Advanced WAF Security Data
- ASMQKVIEW: Provide to F5 Support for Troubleshooting

Automatic Policy Building
- Overview of Automatic Policy Building
- Defining Templates Which Automate Learning
- Defining Policy Loosening
- Defining Policy Tightening
- Defining Learning Speed: Traffic Sampling
- Defining Track Site Changes

Web Application Vulnerability Scanner Integration
- Integrating Scanner Output into F5 Advanced WAF
- Will Scan be Used for a New or Existing Policy?
- Importing Vulnerabilities
- Resolving Vulnerabilities
- Using the Generic XML Scanner XSD file

Layered Policies
- Defining a Parent Policy
- Defining Inheritance
- Parent Policy Deployment Use Cases

Login Enforcement, Brute Force Mitigation, and Session Tracking
- Defining Login Pages
- Configuring Automatic Detection of Login Pages
- Defining Session Tracking
- What Are Brute Force Attacks?
- Brute Force Protection Configuration
- Defining Source-Based Protection
- Source-Based Brute Force Mitigations
- Defining Session Tracking
- Configuring Actions Upon Violation Detection
- Session Hijacking Mitigation Using Device ID

- Web Scraping Mitigation and Geolocation Enforcement
  - Defining Web Scraping
  - Mitigating Web Scraping
  - Defining Geolocation Enforcement
  - Configuring IP Address Exceptions

- Layer 7 DoS Mitigation and Advanced Bot Protection
  - Defining Denial of Service Attacks
  - The General Flow of DoS Protection
  - Defining the DoS Profile
  - Overview of TPS-based DoS Protection
  - Applying TPS mitigations
  - Create a DoS Logging Profile
  - Defining DoS Profile General Settings
  - Defining Bot Signatures
  - Defining Proactive Bot Defense
  - Defining Behavioral and Stress-Based Detection
  - Defining Behavioral DoS Mitigation

- F5 Advanced WAF and iRules
  - Common Uses for iRules
  - Identifying iRule Components
  - Triggering iRules with Events
  - Defining F5 Advanced WAF iRule Events
  - Defining F5 Advanced WAF iRule Commands
  - Using F5 Advanced WAF iRule Event Modes

- Using Content Profiles
  - Defining Asynchronous JavaScript and XML
  - Defining JavaScript Object Notation (JSON)
  - Defining Content Profiles
The Order of Operations for URL Classification

Review and Final Labs
- Final Lab Project (Option 1) - Production Scenario
- Final Lab Project (Option 2) - JSON Parsing with the Default JSON Profile
- Final Lab Project (Option 3) - Managing Traffic with L7 Local Traffic Policies

REQUIREMENTS:

There are no F5-technology-specific prerequisites for this course. However, completing the following before attending would be very helpful for students with limited BIG-IP administration and configuration experience:

- Administering BIG-IP instructor-led course
- F5 Certified BIG-IP Administrator

The following free web-based training courses, although optional, will be very helpful for any student with limited BIG-IP administration and configuration experience. These courses are available at F5 University:

- Getting Started with BIG-IP web-based training
- Getting Started with BIG-IP Application Security Manager (ASM) web-based training

The following general network technology knowledge and experience are recommended before attending any F5 Global Training Services instructor-led course:

- OSI model encapsulation
- Routing and switching
- Ethernet and ARP
- TCP/IP concepts
- IP addressing and subnetting
- NAT and private IP addressing
- Default gateway
- Network firewalls
- LAN vs. WAN

Difficulty level
CERTIFICATE:

The participants will obtain certificates signed by F5 Networks (course completion).

TRAINER:

Certified F5 Networks Trainer.