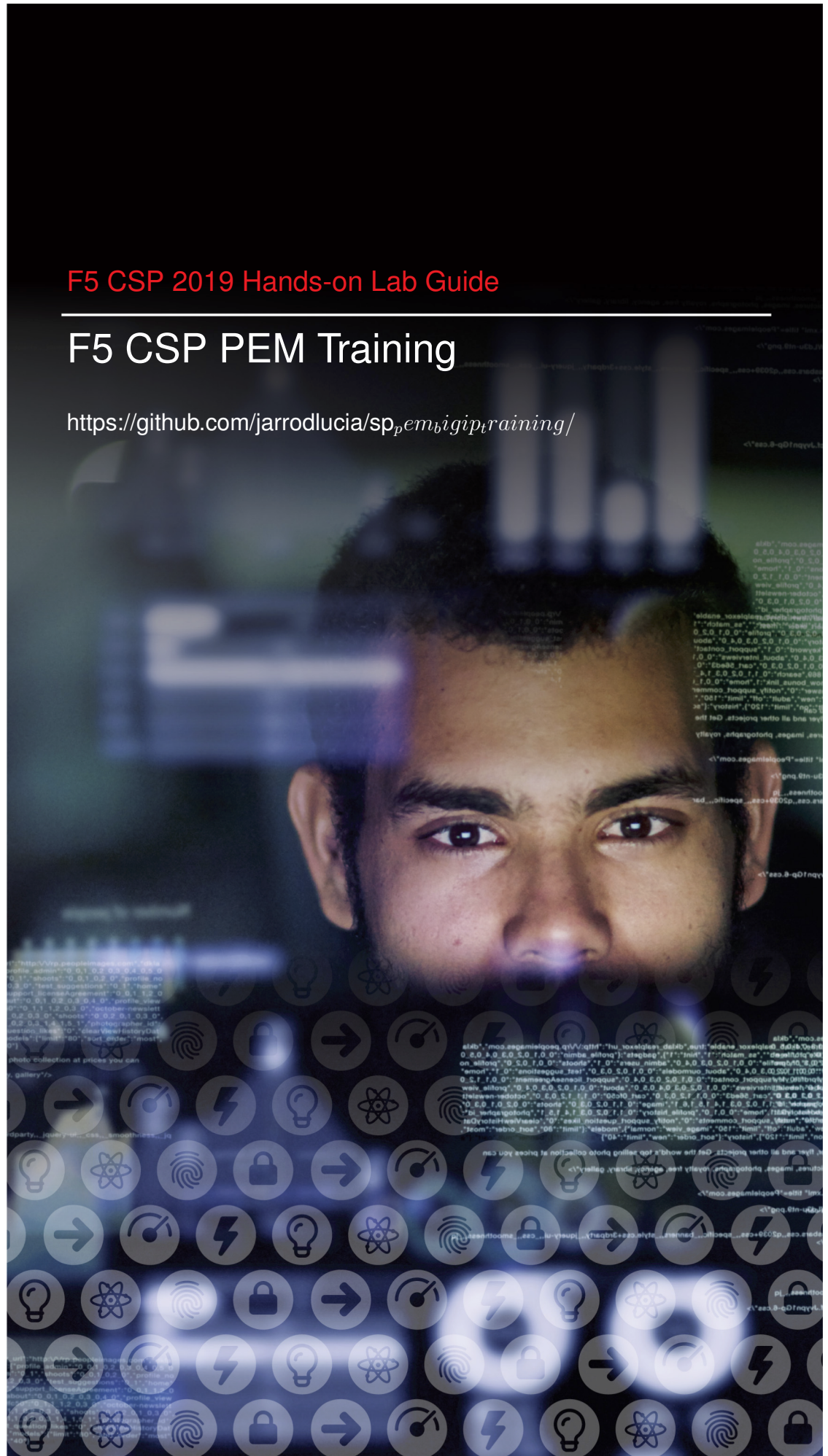




## F5 CSP 2019 Hands-on Lab Guide

# F5 CSP PEM Training

[https://github.com/jarrodlucia/sp\\_embigip\\_training/](https://github.com/jarrodlucia/sp_embigip_training/)





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**Welcome**

Welcome to F5's Service Provider PEM Training



## Getting Started

Please follow the instructions provided by this documentation to start your lab and access your lab.





## Prerequisites

In order to complete this series of training classes you will need to utilize the provided blueprint for the course session.

All pre-built environments implement the lab-topology shown below.

There will be three methods to utilise: - Local Laptop (Docker + VM) - Preferred

- Ravello Pre-Built Labs
- UDF Pre-Built Labs

### 3.1 Local Laptop

Please follow the instructions provided by your lab instructor to build the lab.

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**Note:** Need to build this

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### 3.2 UDF Blueprint

Please follow the instructions provided by your lab instructor to access your lab environment. The lab environment will be delivered via UDF blueprints to each student.

---

**Note:** Please deploy and start your lab as soon as you have access to the class as the lab takes some time to boot all the components.

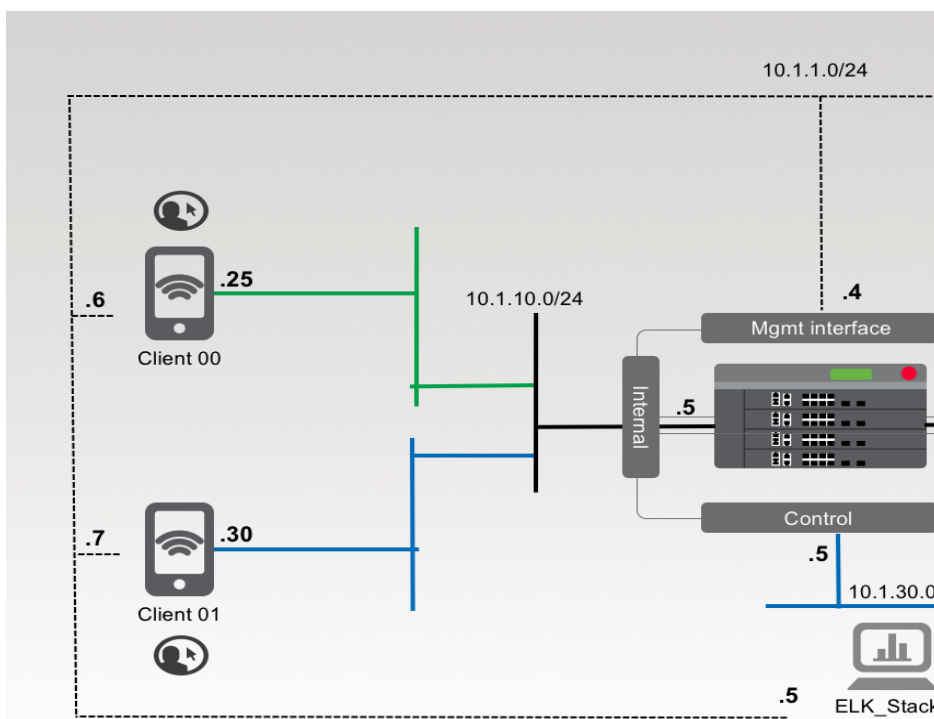
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## Lab Topology

The network topology below (need to add details) The following components have been included in your lab environment:

- 1 x F5 BIG-IP VE (v13.0 HF2)
- 1 x Docker Container Ship



Include UDF / Ravello Lab stuff here as well

The following table lists VLANs, IP Addresses and Credentials for all components:

Table 4.1: Lab Network Information

Component	VLAN	IP Address	Credentials
Linux Jumphost	Mgmt	10.1.1.20	
BIG-IP	Mgmt	10.1.1.4	admin/admin
	Internal	10.1.10.5	
	External	10.1.20.5	
	Control	10.1.30.5	
Client 00	Mgmt	10.1.1.9	udfclient/S3rv1ceP0weR
	Internal	10.1.10.25	
Client 01	Mgmt	10.1.1.7	udfclient/S3rv1ceP0weR
	Internal	10.1.10.30	
ELK Stack	Mgmt	10.1.1.5	ubuntu/default
	Control	10.1.30.15	

## Class 1: Overview of Policy Enforcement Manager

This class covers the following topics:

The first module will be instructor led.

- Module 1
  - PCEF / TDF
  - Use cases for PEM - Mobile / Fixed / University
  - Successful Deployments
- Module 2
  - What is PEM
  - Supported Platforms
  - Sizing Considerations

Expected time to complete: ?? mins

### 5.1 Module 1: Overview SP Architectures

- PCEF / TDF
- Use cases for PEM - Mobile / Fixed / University
- Successful Deployments

---

**Note:** PPT will be uploaded to hive after the event.

---

### 5.2 Module 2: What is PEM

- What is PEM
  - Concepts

- \* SP DAG

- Structure
  - DB's
  - Policy
- Supported Platforms
- Sizing Considerations

---

**Note:** PPT will be uploaded to hive after the event.

---

## Class 2: Basic PEM

This class covers the following topics:

### Module 1 - Initial PEM setup

- Provision + AVR
- Network setup
- Data Plane Wizard - PEM Policy
- Control Plane Wizard
- Global PEM Policy
- Unknown Subscriber Policy

### Module 2 - Verify PEM setup

- DB downloads
- Log files to check
- Pass PEM Traffic - Verify traffic paths - PEM traffic Stats
  - Data Plane
  - Control Plane

Expected time to complete: ?? hours

## 6.1 Module 1: Basic PEM Setup

### Module 1 - Initial PEM setup

- Provision + AVR
- Network setup
- Data Plane Wizard - PEM Policy
- Control Plane Wizard
- Global PEM Policy
- Unknown Subscriber Policy

### **6.1.1 Lab 1.1: Install and Provision PEM**

### **6.1.2 Lab 1.2: Network Setup**

network setup and SP DAG

### **6.1.3 Lab 1.3: Data Plane Wizard**

### **6.1.4 Lab 1.4: Control Plane Wizard**

### **6.1.5 Lab 1.5: Initial PEM Policies**

## **6.2 Module 2: Verify Basic PEM**

Module 2 - Verify PEM setup

- DB downloads
- Log files to check
- Pass PEM Traffic - Verify traffic paths - PEM traffic Stats
  - Data Plane
  - Control Plane

### **6.2.1 Lab 2.1 – Verify PEM Setup**

### **6.2.2 Lab 2.2 – Pass PEM Traffic**



## Class 4: Subscriber Discovery

This class covers the following topics:

- Subscriber Discovery

### Module 1

- RADIUS subscriber Discovery

### Module 2

- DHCP subscriber Discovery

### Module 3

- irules subscriber discovery

Expected time to complete: ?? hours

## 7.1 Module 1: RADIUS Subscriber Discovery

### Module 1

- RADIUS subscriber Discovery

#### 7.1.1 Lab 1.1: RADIUS Subscriber Discover

## 7.2 Module 2: DHSCP Subscriber Discovery

Module 2 - DHCP Subscriber discovery

#### 7.2.1 Lab 1.1: DHCP Subscriber Discovery

## 7.3 Module 3: irules and other subscriber discovery

Module 3 - irules and other subscriber discovery

### **7.3.1 Lab 1.1: Install and Provision PEM**

## Class 3: PEM Policy

This class covers the following topics:

### Module 1 - Policy

- PEM Policy
- PEM Rules
- PEM irules

Expected time to complete: ?? hours

## 8.1 Module 1: PEM Policy

### Module 1 - Policy

- PEM Policy
- PEM Rules
- PEM irules

### 8.1.1 Lab 1.1: Create Basic PEM Policy

basic multi rule Policy

### 8.1.2 Lab 1.2: Advanced PEM Policy

PEM policy with multiple rules and precedence

### 8.1.3 Lab 1.3: PEM iRULES

create and use PEM irule in Policy



## Class 5: Provisioning Subscribers

This class covers the following topics:

Module 1 - Static Subscribers

Module 2 - Dynamic Subscribers

Expected time to complete: ?? hours

### 9.1 Module 1: - Static subscriber provisioning

Module 1 - Static subscriber provisioning

#### 9.1.1 Lab 1.1: - Static subscriber provisioning

### 9.2 Module 2: Dynamic subscriber provisioning

Module 2 - Dynamic subscriber provisioning

#### 9.2.1 Lab 2.1 – Dynamic subscriber provisioning



## Class 6: Traffic classification

This class covers the following topics:

Module 1 - Traffic Classification

Module 2 - Custom Classification

- LTM profiles
- irules

Module 3 - updating signature files

Expected time to complete: ?? hours

### 10.1 Module 1: Traffic Classification

Module 1 - Traffic Classification

#### 10.1.1 Lab 1.1: Traffic Classification

### 10.2 Module 2: Custom Classifications

Module 2 - Custom Classifications - Ltm profiles - irules

#### 10.2.1 Lab 2.1 – Custom Classifications

### 10.3 Module 3: Updating Traffic Classification

Module 3 - Updating signature files

#### 10.3.1 Lab 2.1 – Updating Traffic Classification





This class covers the following topics:

Module 1 - Global BWC

Module 2 - Subscriber BWC - Application BWC

Expected time to complete: ?? hours

## 11.1 Module 1: Global BWC

Module 1 - Global BWC

### 11.1.1 Lab 1.1: Global BWC

## 11.2 Module 2: Subscriber BWC

Module 2 - Subscriber BWC - Application BWC

### 11.2.1 Lab 2.1 – Subscriber BWC



**Class 8: Reporting**

This class covers the following topics:

Module 1 - Reporting

- session
- flow
- AVR

Module 2 - Reporting Externally - ELK

Expected time to complete: ?? hours

## 12.1 Module 1: Reporting

Module 1 - Reporting

- session
- flow
- AVR

### 12.1.1 Lab 1.1: Reporting

## 12.2 Module 2: Advanced Externally

Module 2 - Reporting Externally - ELK

### 12.2.1 Lab 2.1 – Advanced Reporting



## Class 9: Troubleshooting PEM

This class covers the following topics:

Module 1 - PEM Troubleshooting

Expected time to complete: ?? hours

### 13.1 Module 1: Troubleshooting PEM

Module 1 - tmsh commands - Stats - tmctl - check dag settings - check VS types - check PEM profiles

#### 13.1.1 Lab 1.1: Troubleshooting PEM



This section contains useful HOWTOs

## 14.1 HOWTO - how to do stuff

Twill put extra stuff into here

### 14.1.1 Task 1 – PEM DB Keys

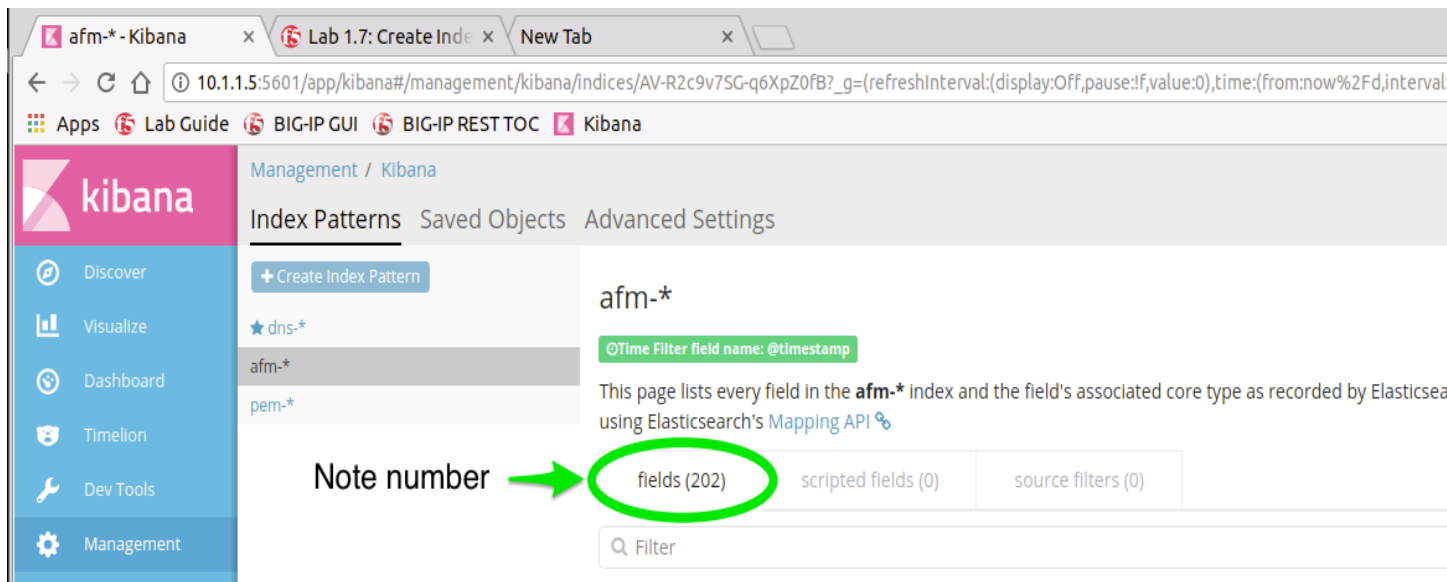
insert useful PEM DB keys stuff here (ignore pictures below / place holder)

The screenshot shows the Kibana interface with the Discover page. The left sidebar has a navigation menu with options: Discover, Visualize, Dashboard, Timelion, Dev Tools, and Management. The main panel displays a list of log entries. A green circle highlights the '?' symbol next to the 'dest\_ip' field in the field list on the left. The right panel shows the details of the selected log entry, including fields like Policy, Entity, Action, and DestinationIp\_geo.

**Note:** Notice the ? symbol next to the field.

Update by clicking on the refresh button





Note the increased change



### 14.1.2 Task 2 - tmctl classification stats

show class stats

1. tmsh
2. list classification

### 14.1.3 Task 2 - tmctl url stats

show url stats

1. tmsh
2. list url stats

WE MAKE APPS  FASTER.  
SMARTER.  
SAFER.

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