HDP® HADOOP Security
Course number: ADM-351, 3 days

What you will learn

This course is designed for experienced administrators who will be implementing secure Hadoop clusters using authentication, authorization, auditing and data protection strategies and tools.

Prerequisites

Students should be experienced in the management of Hadoop using Ambari and Linux environments. Completion of the following course is required before taking HDP Hadoop Security:

• ADM-221 HDP Hadoop Administration 1 Foundations

Target Audience

IT administrators and operators responsible for installing, configuring and supporting an Apache Hadoop deployment for a secure environment.

Format

50% Lecture
50% Hands-on Labs

Agenda Summary

Day 1:
Defining Security, Securing Sensitive Data, Integrating HDP Security and HDP Security Prerequisites

Day 2:
Enabling Kerberos and Installing Apache Ranger

Day 3:
Secure Access with Ranger and an Apache Knox Overview and Installation

Lab Format

The Labs are setup to accommodate the customer's Kerberos KDC preference. The initial version of the labs utilized " Active Directory as the Kerberos KDC". However, customer are now wanting to deploy using " MIT KDC as the Kerberos KDC with Cross Realm Trust to Active Directory". This course now provides both environments to allow the customer to choose the labs that best fits their Kerberos KDC choice.

Lab Tracks
• HDP 2.6 using Active Directory
• HDP 2.6 using MIT KDC

REGISTRATION AND INFORMATION
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DAY 1 OBJECTIVES

- Define Security
- Describe the 5 pillars of a secure environment
- List the reasons why a secure environment is needed
- Describe HDP Security
- List Security Implications
- Describe the Typical Flow of Security
- List Security Prerequisites
- Describe Authorization with Apache Ranger
- Describe the Use and Purpose of HDFS Encryption
- Describe the Use and Purpose of Wire Encryption
- Choose which security tool is best for specific use cases
- Describe the Purpose of the Apache Knox Gateway
- Describe the Process for Encryption with Apache Ranger KMS
- Describe the Purpose and Implementation Options of the Kerberos KBC
- Configure Ambari security
- Describe How to Encrypt Database and LDAP Passwords
- Describe How to Set Up SSL for the Ambari Server
- Describe How to Set Up Two-Way SSL Between Ambari Server/Agents
- Set up Ambari Views for controlled access
- Describe Kerberos use and architecture
- Install Kerberos
- Describe available partner security solutions

DAY 1 LABS

- Setting up the Lab Environment
- Configuring the AD Resolution Certificate
- Security Options for Ambari

DAY 2 OBJECTIVES

- Configure Ambari for Kerberos
- Configure Hadoop for Kerberos
- Enable Kerberos
- Describe the Purpose of Apache Ranger
- Describe the Apache Ranger Architecture
- List the Prerequisites for Apache Ranger
- Describe the Purpose of the Apache Ranger REST API
- List the Optional Apache Ranger Configurations
- Install and Configure Apache Knox
- Install and Configure Apache Ranger
- Install and Configure Ranger Key Management Services (KMS)
- Describe HDFS Encryption with Ranger KMS
- Describe the Purpose of the HDFS Encryption Zone

DAY 2 LABS

- Kerberizing the Cluster
- Installing Apache Ranger
- Setting up Apache Ranger KMS Data Encryption

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DAY 3 OBJECTIVES

- Describe the Process for Integrating the Apache Ranger Plugin with:
  - HDFS
  - Hive
  - HBase
  - Knox
  - Storm

- Describe the Function and Purpose of Apache Knox
- Describe the Apache Knox Architecture
- Install and Configure Apache Knox
- Describe the Purpose of Ambari Views
- Setup a Standalone Ambari View Server
- Configure Ambari Views Server for Kerberos

- Setup Kerberos for:
  - Files View
  - Tez View
  - Pig View
  - Hive View

DAY 3 LABS

- Secured Hadoop Exercises
- Configuring Apache Knox
- Exploring Other Security Features of Apache Ambari