

[DEV-307]: HDF Developer: YARN Applications

Length : 2 Days
Delivery Method : Instructor-led (Classroom)

Course Overview

This course is designed for developers who want to create custom YARN applications for Apache Hadoop. It will include: the YARN architecture, YARN development steps, writing a YARN client and ApplicationMaster, and launching Containers. The course uses Eclipse and Gradle connected remotely to a 7-node HDP cluster running in a virtual machine.

Audience Profile

Architects, software developers, analysts and data scientists who need to apply data science and machine learning on Hadoop

Pre-Requisites

Participants should be experienced Java developers who have attended HDP Developer: Java OR HDP Developer: Pig and Hive OR are experienced with Hadoop and MapReduce development.

Formats

Lecture/Discussion	50%
Hands-on Labs	50%

Course Outline

Module 1: Introduction to YARN

Lessons

- Identify Whether Storm Performs Batch or Real-Time Processing
- Describe the YARN architecture
- Describe the Purpose of the ResourceManager
- Describe the Purpose of the YARN Scheduler
- Describe the Purpose of the Application Manager
- Describe the Purpose of the ApplicationMaster Launcher
- Describe the Purpose of the ContainerAllocation Expirer
- Describe the Purpose of the NodeManager
- Describe the Purpose of the ApplicationMaster
- Describe the Purpose of Containers
- Describe the Life Cycle of a YARN Application
- Describe the YARN API
- List the Local Resource Types
- List the Requirements of a YARN Client

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- Run a YARN Application on a Hadoop Cluster
- Monitor the Status of a Running YARN Application
- Configure a ContainerLaunchContext
- Use a LocalResource to share application files across a cluster

Labs

- Running a YARN Application
- Setting up a YARN Development Environment
- Writing a YARN Client
- Submitting an ApplicationMaster

Module 2: Writing a YARN Application Master and Working with Containers and Job Scheduling

Lessons

- List Tool Used to Manage and Monitor Storm
- Write a YARN ApplicationMaster
- Describe the differences between synchronous and asynchronous ApplicationMasters
- Allocate Containers in a cluster
- Launch Containers on NodeManagers
- Describe the Purpose of Container Tokens
- Write a custom Container to perform specific business logic
- Explain the job schedulers of the ResourceManager
- Describe the Purpose of the Capacity Scheduler
- Describe How to Configure the Capacity Scheduler
- Describe How to Configure Capacity Limits
- Describe How to Configure Queue Permissions
- Define queues for the Capacity Scheduler
- Describe the Purpose of Fair Scheduling

LABS

- Writing an Application Master
- Requesting Containers
- Writing Custom Containers
- Putting it All Together

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