



## **Introduction to Cloud Computing and Big Data (Hadoop)**

### **40 Hours Workshop**

#### **About the Course**

Cloud Computing has become an alternative choice for enterprise IT organizations. It can be very cost effective by lowering the overall cost for some IT use cases (such as, web scale implementation) and applications (such as, backup and disaster recovery). As a result, many organizations including enterprise IT companies will increasingly need personnel with cloud computing skills in coming years. This course will prepare participants for developing their cloud computing skills.

Big Data platform is increasingly being used in enterprise business environments to gain insight into their business operations and provide better service to customers. Enterprises want to uncover operational and business intelligence from the digital data captured during their regular business. In other words, the enterprise IT is building data-intensive project/platform on top of their existing computation-intensive environment. As a result, the digital economy will drive enterprises to have more personnel with big data skills. This course will provide an introduction to big data so that participants can take the next step in building their skills in big data.

This forty hours workshop is an introduction to cloud computing and big data. It covers leading cloud products/platforms (Amazon AWS, Microsoft Azure, Google Cloud, IBM Bluemix and OpenStack) available in the market. The course addresses big data taking a holistic approach to answer what it is and its growing importance in digital economy. There are hands-on lab sessions on some of cloud platforms and Hadoop (an open source big data platform). Based on the hands-on experience in cloud platforms and Hadoop, participants could choose to decide future work and/or developing expertise.

#### **Course objectives**

Upon completion of this training course, attendees obtain knowledge on:

- Cloud service models and deployment models
- Cloud access
- Setup and use of cloud compute resource
- Security around compute resource
- Various higher level services available in each cloud platforms
- Big Data and its role in digital business
- Big Data usage in social media, data warehouse and sensor data
- Big Data integration with data-at-rest, data-in-motion, data warehouse and search

#### **Course Contents**

The forty hours course covers the topics as noted below. There are hands-on lab sessions focusing on access and compute aspects of some cloud and big data platforms.

- Introduction
- Overview of Cloud Computing
  - Definition of Cloud
  - Service models
    - Infrastructure-as-a-Service (IaaS)
    - Platform-as-a-Service (PaaS)
    - Software-as-a-Service (SaaS)
  - Deployment models
    - Private cloud
    - Public cloud

- Hybrid cloud
- Community cloud
- Strengths and weaknesses (Pros and Cons)
- Future of Cloud Computing
  
- Amazon AWS
  - Services offering
    - Compute, Storage & Content Delivery, Networking, Database, Analytics
  - Hands-on with AWS Compute (Amazon EC2)
  
- Microsoft Azure
  - Services offering
    - Compute, Web & Mobile, Data & Storage, Analytics, Internet of Things
  - Hands-on with Azure Compute (provision Windows and Linux virtual machines)
  
- Google Cloud
  - Services offering
    - Compute, Storage, Networking, Big Data
  - Hands-on with Google Compute (Compute Engine)
  
- IBM Bluemix
  - Services offering
    - Cloud Foundry Apps, Virtual Machines, Containers, Services & APIs
  - Hands-on with Bluemix Cloud Foundry application
  
- OpenStack
  - Open Source product development
  - Components (projects)
    - Compute, Networking, Orchestration, Block Storage and Object Storage
  - Hands-on with OpenStack Compute (Nova)
  
- Big Data
  - Define and describe Big Data and its role in digital economy
  - Describe components in Hadoop Big Data platform
    - Hadoop Distributed File System (HDFS) architecture
    - Map-Reduce paradigm
    - Other ecosystem components (such as YARN, Hive, Pig)
  - Hands-on with Hadoop environment
    - Installation and administration
    - Sample program
  
- Review and conclusion