Syllabus of Linux Fundamentals Course

Module 1: Introduction to Linux

- Need for Linux OS
- What is Linux
- History of Linux
- Relationship Between Unix And Linux
- Features of Linux
- False myths around Linux
- Where Linux is used?
- Components of a Linux OS
- The architecture of Linux OS
- Types of Kernel
- Shell
- Programming in Linux
- Linux Distribution
- Miscellaneous Linux Concepts
- Software Licencing
- Installation and initialisation of Linux
- Shell Scripting
- Practical Uses of Shell Scripting

Module 2 : Initialization of linux

- Understand User Interface in Linux
- Implement basic Linux Commands and Tools
- vim Editor
- Advanced Linux Commands
- File System
- File System Comparisons
- File Attributes
- File Operations
- File System Characteristics
- File Access Methods
- Formatting and Partitioning
- Multiboot System
- Learn Packaging Management in Linux

Module 3: User Administration

- Users in Linux
- User Configuration
- Adding/Deleting/Modifying Users
- Group Administration
- Password Aging Policies
- Switching Accounts
- Sudo
- Network Users
- Authentication Configuration
- SUID and SGID Executable
- SGID Directories
- The Sticky Bit
- Default File Permissions
- Access Control Lists (ACLs)
- Hidden Files

Module 4: Boot and Package Management

- Kernel Configuration
- Boot Management
- Grub Bootloader Configurations
- Red Hat Package Manager
- YUM
- DPKG
- APT
- Build from the source code
- Libraries

Module 5: Networking

- OSI layers and Protocols: IPv4, IPv6, TCP, UDP, FTP, TFTP, Telnet, SSH, HTTP, DNS, DHCP, ARP, ICMP etc.
- Packet capturing tools
- Linux commands/tools to troubleshoot networking: netstat, tcpdump, ip, etc.
- Linux utilities: e.g. dnsmasqd, samba server ftpd, webserver, netcat, scp etc.
- Linux Firewall: command, utility and usage.
- Security: SSH, SCP. Certificates, authentication, encryption etc.
- Remote log in: SSH, screen, VNC, etc.

Module 6: Linux Overview and Scripting

- Process Management
- Process Commands
- System Calls
- Output Redirection
- Special Variables in Bash
- Expect Script
- Python Scripting
- Dictionaries

Module 7: Linux for software development

- Programming languages overview
- Static and Shared libraries
- Compilers, debugger, IDE, ctags, make utility etc.
- Editors in Linux: vi, emacs,
- Troubleshooting and optimization using profiling tools
- Diff, patch and Configuration management system
- Test automation and CI/CD pipeline

Module 8: Security Administration, Shell Script and Virtualization

- Security in IT Industry
- SELinux
- Information gathering tools
- Grub security
- TCP Wrappers
- Securing Shell
- ClamAV
- Virtualization

Syllabus of Git Course

Module 1: What is Git and Gitlab

- History of Git
- Design Principles
- Distributed Version Control

Module 2: Installing Git

- Account Setup

- Installing Sourcetree Git GUI

Module 3: Git File Management

- Common Git Commands
- Configuring Git
- Creating Repositories
- Creating a Commit

Module 4: Branching

- Visualising Branches
- Branch Naming Conventions
- Creating a new Branch
- Handling Merge Conflicts

Module 5: Pull Requests

- Creating a Merge Request
- Accepting a Merge Request
- Rejecting a Merge Request

Module 6: Common Workflows

- Centralised Flow
- GitHub Flow
- Git Flow

Module 7: Advanced Topics

- SVN Branching vs Git Branching
- Inside a Local Repository
- The reflog Time Machine
- What is HEAD?
- Amending Commits

Module 8: Do and Don’t

- Checking in Binary Files
- Rewriting history
- Force Push
- Commit Descriptions
- Brain Overload

Syllabus of Jenkins Course

Module 1: What is Jenkins?

- Introduction
- About this Course
- About Jenkins
- History
- Splitting of Projects
- What is Continuous Integration?
- Where Jenkins Fits In
- Summary

Module 2: Installing

- Introduction
- Prerequisites
- Getting Jenkins
- Starting Jenkins
- Testing the Install
- Command Line Options
- Getting the Service Installer
- Installing as a Service
- Alternate Method
- Nodes
- Configuring a Node
- Setting up a Node
- UI Tour
- Summary

Module 3: Creating a Simple Job

- Introduction
- Basic Project
- Our Project
- Looking at the Code
- Moving to Jenkins
- Manually Building
- Build Triggers

- Jenkin Plugins
- Creating a Job
- Build Steps
- First Build Step
- Testing the Trigger
- Add Tests
- Workspaces
- Post Build Actions
- Reporting Test Results
- Failing the Build
- Fixing the Build
- Summary

Module 4: Plugins

- Introduction
- Plugin Architecture
- Extension Points
- Getting Plugins
- Plugin Wiki
- Useful Plugins Overview
- Source Code Plugins
- Trigger Plugins
- Build Tool Plugins
- Wrapper Plugins
- Notifier Plugins
- Reporting Plugins
- Artifact and UI Plugins
- Installing a Plugin
- Plugin Configuration
- Security Overview
- Summary

Module 5: The Big Picture

- Introduction
- A Case Study
- The Flow
- Stay Calm
- Areas of Discipline

- Unit Testing
- Test Coverage
- Acceptance Testing
- Code Quality Metrics
- Notifications
- Documentation
- Deployments
- Growing
- Summary
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Syllabus of Docker Course

Module 1: Complete Docker Installation on Ubuntu

- Selecting a Storage Driver
- Configuring Logging Drivers (Syslog, JSON-File, etc.)
- Namespaces and CGroups

Module 2: Image Creation, Management, and Registry

- Pull an Image from a Registry (Using Docker Pull and Docker Images)
- Searching an Image Repository
- How to Tag an Image
- Use CLI Commands to Manage Images (List, Delete, Prune, RMI, etc)
- Inspect Images and Report Specific Attributes Using Filter and Format

Module 3: Container Basics - Running, attaching to, and Executing Commands in Containers

- Create an Image with Dockerfile
- Dockerfile Options
- Dockerfile Structure
- Dockerfile Efficiencies

Module 4: Describe and Display How Image Layers Work

- Modify an Image to a Single Layer
- Selecting a Docker Storage Driver
- Prepare for a Docker Secure Registry
- Deploy, Configure, Log Into, Push, and Pull an Image in a Registry
- Managing Images in Your Private Repository
- Container Lifecycles - Setting the Restart Policies

Module 5: State the Difference Between Running a Container and Running a Service

- Understanding the 'docker inspect' Output
- Identify the Steps Needed to Troubleshoot a Service Not Deploying
- How Dockerized Apps Communicate with Legacy Systems
- Determine Which Graph Driver Should Be Used on Which OS

Module 6: How an Image Is Composed of Multiple Layers on the Filesystem
Module 7: How Storage and Volumes Can Be Used Across Cluster Nodes for Persistent Storage
Module 8: Identify the Steps You Would Take to Clean Up Unused Images (and Other Resources) On a File System (CLI)
Module 9: Create a Docker Bridge Network for a Developer to Use for Their Containers
Module 10: Configure Docker for External DNS
Module 11: Publish a Port So That an Application Is Accessible Externally and Identify the Port and IP It Is On
Module 12: Deploy a Service on a Docker Overlay Network

Syllabus of Ansible Course

Module 1: Introduction

- Why configuration management is a critical part of any DevOps team
- Strengths and weaknesses of Ansible
- Web scale
- How Ansible is different from other CM tools like Chef and Puppet
- Getting started with Ansible terminology
- Ansible and YML for describing your environments

Module 2: Getting set up

- Some prerequisites
- Getting set up on a Mac
- Getting set up on Linux
- Getting set up on Windows
- Testing with Vagrant
- Using SSH keys to connect to your target nodes

Module 3: Inventory

- Basic inventory example
- Hosts and groups

Module 4: Ansible Playbooks

- A useful directory structure to keep your Ansible code organized
- Using git to manage your Ansible code
- A first look at a playbook to install and configure NTP time synchronization

Module 5 : Provisioners

- Connecting Ansible to your preferred cloud provider (we'll use DigitalOcean)
- Creating a new server instance
- Dynamic inventory
- Dynamic inventory on Amazon AWS
- Mixing static and dynamic inventory

Module 6: Highly available infrastructure with Ansible

- Spec up our inventory and host groups
- Using roles
- Configure our database backend
- Configure our web server front-end
- Configure a replicated filesystem
- Configure centralized logging

Module 7: Application deployments with Ansible

- Deploying our app from SCM to our local Vagrant environment
- How we would deploy that code to production once tested by QA
- Updating our application
- How Ansible compares to alternatives such as Capistrano

Module 8: Docker containers with Ansible

- Brief intro to Docker
- The synergy of containerization and automation
- Using Ansible to build Docker containers
- MySQL containers
- Web application containers
- Data storage containers

Module 9: Testing and continuous integration

- Unit, integration and functional testing
- Automating your testing using GitHub and Travis CI

Module 10: Preparing for Ansible back at work

- Real-world use case: Using Ansible to automate CM and application pipelines through continuous integration, release, deployment and operations
- We'll review your own environments and processes and evaluate how to best integrate Ansible's configuration management for your own needs

Syllabus of Puppet Course

Module 1: The Basics

- Introduction To Configuration Management
- About The Author
- Why Puppet?
- How To Access Your Working Files

Module 2: The Puppet Run Cycle

- Introduction To Puppet Run Cycle
- Gathering System Facts
- Node Matching And Catalogue Compilation

Module 3: Organizing A Puppet Environment

- Defining Nodes
- Puppet Modules - Reusable Code
- Provisioning A Web Server
- Class Parameters - Applying Variables
- Hiera Parameters - Defining Variables
- Executing Modules Against A Puppet Master With An Agent
- Reporting With Puppet

Module 4: Additional Tools

- Managing Modules With Librarian-Puppet
- Managing Directory Environments And Modules With R10K
- External Node Classifiers And Reporting With Puppet Dashboard - Part 1
- External Node Classifiers And Reporting With Puppet Dashboard - Part 2

Module 5: The Puppet Infrastructure

- Puppet Agents
- Puppet Masters
- MCollective And Systems Orchestration
- Cross Platform Puppet

Module 6: The Puppet Language - A Basic Primer

- Puppet Resources - How To Define System Resources
- Applying A Simple Puppet Manifest
- Puppet Types
- The Package File Service Patter

- Applying Conditional Logic In Puppet
- Fact Conditionals - Choosing A Course Of Action

Module 7: MCollective

- MCollective And Live Management
- MCollective With Puppet
- Using MCollective To Interact With Services
- Using MCollective To Interact With Puppet

Module 8: Conclusion

- Wrap-Up And Further Resources

Syllabus of Kubernates Course

Module 1: Kubernetes Core Concepts and Networking

- Kubernetes Core Concepts
- Kubectl common commands
- Understanding Pods
- Configure network on cluster nodes
- Pod Networking Concepts
- Setting up a cluster - Kubernetes Certificates

Module 2: Kubernetes Services and Scheduling

- Services and Controllers
- Service Networking
- Deploy and configure network Load Balancer
- Primitives necessary for self-healing apps
- Effects of resource limiting on pod scheduling
- Configure Kubernetes Scheduler
- Running multiple Schedulers

Module 3: Kubernetes Controllers

- ReplicaSet and ReplicationController
- DaemonSets
- Deployments
- Rolling updates and Rollbacks
- Scaling applications
- Ingress

Module 4: Persistent Storage in Kubernetes

- PersistentVolume and PersistentVolumeClaim
- Access modes for volumes
- Primitives for PersistentVolumeClaim
- Secrets and ConfigMaps in your pods
- Storage classes
- Headless services
- StatefulSets

Module 5: Securing the Cluster

- Authentication
- Authorization
- Kubernetes security primitives
- Configure Network Policies
- Security Contexts

Module 6: Logging and Monitoring the Cluster

- Monitoring the cluster using Prometheus
- Visualizing cluster logs using EFK stack
- Jobs
- ETCD operations
- Helm Charts

Module 7: Troubleshooting the Cluster

- Troubleshooting application failures
- Troubleshooting cluster failures

Syllabus of Nagios Course

Module 1: Nagios Concepts

- Performance reporting
- Routers and switches
- NagiosQL
- MySQL DB integration
- Distributed monitoring
- NDOUtils
- NagVis
- BPI
- NRDP/NRDS DNX mod gearman

Syllabus of Splunk Course

Module 1: Introduction

- Overview of Buttercup Games Inc

Module 2: What is Splunk?

- Splunk components
- Installing Splunk
- Getting data into Splunk

Module 3: Introduction to Splunk's User Interface

- Understand the uses of Splunk
- Define Splunk Apps
- Customizing your user settings
- Learn basic navigation in Splunk

Module 4: Basic Searching

- Run basic searches
- Use autocomplete to help build a search
- Set the time range of a search
- Identify the contents of search results
- Refine searches
- Use the timeline
- Work with events
- Control a search job
- Save search results

Module 5: Using Fields in Searches

- Understand fields
- Use fields in searches
- Use the fields sidebar

Module 6: Search Language Fundamentals

- Review basic search commands and general search practices
- Examine the search pipeline
- Specify indexes in searches
- Use autocomplete and syntax highlighting
- Use SPL search commands to perform searches:

Module 7: Using Basic Transforming Commands

- The top command
- The rare command
- The stats command

Module 8: Creating Reports and Dashboards

- Save a search as a report
- Edit reports
- Create reports that include visualizations such as charts and tables
- Create a dashboard
- Add a report to a dashboard
- Edit a dashboard

Module 9: Datasets and the Common Information Model

- Naming conventions
- What are datasets?
- What is the Common Information Model (CIM)?

Module 10: Creating and Using Lookups

- Describe lookups
- Create a lookup file and create a lookup definition
- Configure an automatic lookup

Module 11: Creating Scheduled Reports and Alerts

- Describe scheduled reports
- Configure scheduled reports
- Describe alerts
- Create alerts
- View fired alerts

Module 12: Using Pivot

- Describe Pivot
- Understand the relationship between data models and pivot
- Select a data model object
- Create a pivot report
- Create an instant pivot from a search
- Add a pivot report to a dashboard