LINUX & DEVOPS

General Information

Description

Devops is a recent movement in the IT industry, that has brought developers and IT operations team close to each other. It is also often characterized by Operations team making use of tools and techniques used by developers for their work. With the emergence and widespread adoption of devops, much of what used to be considered infrastructure is now part of the code. **It's a different breed of engineers that makes Agile Infrastructure and deployment possible!!**.

Learning Linux System Administration in depth is the primary stepping stone and an inevitable component in reaching the target of Professional Devops. **With this training module, we help you achieve just that**!

Step	Module	Description
1	100	**Linux System Administration From Basics to Expert Level.**
2	200	**Devops Tools And Infrastructure Automation**

Course Deliverables

Classroom Training: Apart from the core conceptual knowledge that we deliver. All examples and practicals will be demonstrated practically on servers(Nothing will be just Theary!).

MODULE TOPICS (100)

Heading	Topics

Introduction to Linux And Getting Started	1. Introduction
	  1.1. History
	  1.2. The Linux Filesystem
	  1.3. Linux Distributions and Derivatives
	  1.4. Linux Booting Process, GRUB and Run Levels
	2. Getting Started
	  2.1. Installing Linux (Ubuntu)
	  2.2. Initial System Configuration(hostname, IP, dns)
	  2.3. Knowing the Environment
	  2.4. Terminal – Bash Shell
	  2.5. Bash command line redirections and regular expressions with grep

Command Line Essentials And Administration	3. Command line Continued.
	  3.1. Create, Delete, Move Directories.
	  3.2. Text Editors (vi, vim and nano)
	  3.3. Essential Commands in Linux with its use cases.
	  3.4. File and Directory Permissions
	  3.5. Hard Links & Soft Links
	  3.6. Managing Users and Groups
	  3.7. Networking Commands
	  3.8. The Super User (sudo)
	  3.9. Package Management in Linux
	4. General System Administration.
	  4.1. Working with Linux File Systems(MBR, GPT, EXT File Systems, XFS File Systems)
	  4.2. Mounting File System, UUID and labeling

	4.3. Configure Networking 4.4. Starting and Stopping Services, and Understanding Init Scripts 4.5. Network File Systems 4.6. Scheduling Tasks using Cron 4.7. Working With Package Repositories Like Yum and apt-get 4.8. Configuring Network Services Like HTTP, FTP, SSL, SSH, NTP, SMTP.
Advanced System Administration & Monitoring	5. Advanced System Administration 5.1. Getting Started with IPTABLES host level firewall 5.2. Advanced IPTABLES configuration 5.3. Configuring System Routes and Network Address Translation 5.4. Creating and Delivering Reports for System Monitoring 5.5. Modifying System Level Kernel Parameters 5.6. Configuring System Logging and Remote Logging 5.7. Installing and Configuring Authoritative, Caching only, Forward Only, DNS Server Using Bind 5.8. Administering Relational Database Servers (MySQL & PostGreSQL, MariaDB) 5.9. DNS infrastructure In depth (master slave, DNS zone transfer using HMAC/MD5, forwarding DNS) 5.10. Load Balancing Concepts For HTTP and TCP 5.11. Database Master and Slave with Backups(MySQL and Postgres) 5.12. Hardening Linux (Encrypted Access, Host Based Firewalls) 6. System Monitoring And

	Performance Tuning
	6.1. Collecting Performance and resource metrics from Linux.
	6.2. Monitoring and benchmark tools(vmstat, mpstat, iostat, top)
	6.3. Analyzing performance bottlenecks (Run Queue, Interrupts, Context Switching, CPU and Memory Utilization, System Activity Monitoring)
	6.4. Performance Tuning the Linux operating system
	6.5. Performance Tuning Linux Networks(TCP/IP tuning in sysctl)
	6.6. Linux System IO Monitoring
	6.7. Architecture Monitoring And Alerting with Nagios
	6.8. Graphing Performance Metrics using Ganglia and Cacti.
Centralized Logging & Getting Started with Automation	7. Centralized Logging
	7.1. Understanding Syslog
	7.2. Centralized Syslog
	7.3. Setting up Elasticsearch Cluster for Storing Logs
	7.4. Getting started with Logstash
	7.5. Shipping Log Events to Central Logstash server
	7.6. Filtering Log messages for easy searching
	7.7. Fluentd Centralized Logging
	7.8. Scaling Logstash and Alerting
	8. Getting Started with Scripting automation using Python and Bash
	8.1. Introduction to Shell programming and Scripting using Bash
	8.2. Bash Flow Controls, Command Line Options, Input & Output Processing
	8.3. Getting Started with Python Scripting
	8.4. Python Language components(conditional

	statements, Lists, Arrays, Loops, and Functions)
	8.5. Python Modules, Input and Output, working with files.

MODULE TOPICS (200)

Heading	Topics

Version Controlling	9. Getting Started with Version Controlling
	     9.1. Introduction To Git and its working Principles
	     9.2. Introduction To SVN and its Working Principles
	     9.3. Configuring and Administering a Central Git repository
	     9.4. Working with Branches and Tags
	     9.5. Setting up a web based Open-Source Git Server
	     9.6. Administering SVN Server using HTTP Authentication

Puppet	10. Configuration Management Using Puppet
	     10.1. Introduction To Configuration Management.
	     10.2. Getting Started with Puppet Master and Puppet Agents
	     10.3. Building Hosts with Puppet
	     10.4. Writing Puppet Modules(Example Module for Configuring Users and SSH keys)
	     10.5. Externalizing Puppet Configuration using ENC
	     10.6. Hiera and Puppet
	     10.7. Puppet Dashboard
	     10.8. Puppet Modules in Depth

	10.9. Puppet Reporting

Chef	11. Configuration Management Using Chef
	    11.1. Introduction To Chef and Its work flow
	    11.2. Understanding Chef components
	    11.3. Installing and Configuring a chef server and doing a first chef run on an agent
	    11.4. Getting Familiar with knife and chef solo
	    11.5. Writing Chef Cookbooks
	    11.6. Chef Best Practices for large scale deployments
	    11.7. Using Roles and Environments in Chef

Docker	12. Docker Container Virtualization.
	    12.1. Introduction to Docker
	    12.2. Installing And Configuring Docker in Linux
	    12.3. Running Docker Containers and run command options
	    12.4. Container interactions with Base system
	    12.5. Writing Dockerfiles to build Docker images
	    12.6. Working with Docker registries
	    12.7. Orchestration with Docker Compose, Docker Swarm and Consul

Ansible	13. Ansible Provisioning
	    13.1. Installing and configuring Ansible
	    13.2. Working with Ansible Playbooks
	    13.3. Describing Servers using Inventory
	    13.4. Running Ansible at scale

Continuous Integration and Build	14. Jenkins Build Automation

Management Using Jenkins	14.1. Installing and configuring Jenkins in Linux 14.2. Continuous Integration Fundamentals 14.3. Configuring Jenkins Environment and tools 14.4. Setting up build jobs and triggers 14.5. Jenkins and Docker image Building 14.6. Parametrized and Multiconfiguration builds