Excellence Educational Academy

Alipore, Kolkata

*[Where **TALENT** is the keyword]*

Sister Concern is

e-DIGITAL LEARNING

AN INSTITUTE FOR MULTIDISCIPLINE TECHNICAL COACHING CLASSES & GUIDANCE

[Founded and Directed by a Renowned Academicians & Corporate Professionals]

Ref. No. : EEA/TTD-SV/IT/2024 **Date : 10/11/2024**

IT Professional Corporate Training Curriculum for IT/Non-IT Participants

Name of the Corporate Training :

Server Management and Administration

Course Duration: 60 Hours
Course Code: TTD-SV
Target Audience: IT professionals, network administrators, and developers interested in server setup, management, and maintenance.
Prerequisites: Basic knowledge of networking, operating systems, and command-line tools.

Course Outline

Module 1: Introduction to Servers and Operating Systems

- **Topics Covered:**
  - What is a server? Types of servers (web, database, mail, file)
  - Differences between server and desktop operating systems
  - Server hardware and software requirements
  - Overview of popular server operating systems (Linux, Windows Server)
- **Milestone 1 Project:**
  - Set up a virtual server environment using VMware or VirtualBox and install a basic Linux distribution.

Module 2: Linux Server Essentials

- **Topics Covered:**

- Linux file system structure and essential commands
- Understanding user permissions and access control
- Using the package manager for software installation (apt, yum)
- Basic server configuration: hostname, time zones, and network settings

- **Milestone 2 Project:**
  - Configure a Linux server with basic system settings and install essential packages.

Module 3: Windows Server Essentials

- **Topics Covered:**
  - Overview of Windows Server versions and roles
  - Installing and managing roles and features
  - Active Directory basics: user, group, and organizational unit (OU) management
  - Introduction to PowerShell for automation
- **Milestone 3 Project:**
  - Set up a Windows Server environment and configure a simple Active Directory structure.

Module 4: Network Configuration and DNS Management

- **Topics Covered:**
  - IP addressing, subnetting, and DNS resolution basics
  - Setting up DNS on both Linux and Windows servers
  - Configuring network services (DHCP, DNS)
  - Overview of NAT and firewall basics for server security
- **Milestone 4 Project:**
  - Configure a DNS server on both Linux and Windows and test domain name resolution within a network.

Module 5: Web Server Setup and Configuration

- **Topics Covered:**
  - Setting up a web server (Apache/Nginx on Linux, IIS on Windows)
  - Configuring virtual hosts and SSL/TLS certificates for HTTPS
  - Basic website deployment and serving static and dynamic content
  - Web server performance tuning and logging
- **Milestone 5 Project:**
  - Deploy a simple website on both Apache/Nginx and IIS with SSL enabled.

Module 6: Database Server Management

- **Topics Covered:**
  - Overview of database servers (MySQL, PostgreSQL, SQL Server)
  - Installation, configuration, and securing database servers
  - Database backup, restore, and replication basics
  - Query optimization and performance tuning
- **Milestone 6 Project:**

- Install and configure a MySQL or PostgreSQL server, create a test database, and perform backup and restore operations.

Module 7: File and Storage Management

- **Topics Covered:**
  - Managing file permissions and shared folders
  - Understanding file storage types: DAS, NAS, SAN
  - Introduction to RAID configurations for redundancy
  - Disk management, quotas, and monitoring storage utilization
- **Milestone 7 Project:**
  - Set up a shared network drive, configure user permissions, and implement a basic RAID configuration.

Module 8: Server Security and Access Control

- **Topics Covered:**
  - Configuring firewalls (iptables, ufw on Linux; Windows Firewall)
  - Securing SSH and remote access (key-based authentication, RDP)
  - Best practices for user access control and permissions
  - Introduction to intrusion detection and prevention
- **Milestone 8 Project:**
  - Configure a secure SSH/RDP access to the server and implement basic firewall rules.

Module 9: Backup and Disaster Recovery Planning

- **Topics Covered:**
  - Types of backups and backup tools (rsync, Windows Backup, cloud-based solutions)
  - Implementing backup schedules and data redundancy
  - Disaster recovery plans and restoring services after failures
  - Overview of data replication and failover solutions
- **Milestone 9 Project:**
  - Set up a backup solution for critical data on both Linux and Windows servers and simulate a data recovery process.

Module 10: Server Monitoring and Performance Management

- **Topics Covered:**
  - Monitoring server health with tools (Nagios, Zabbix for Linux; Windows Performance Monitor)
  - Analyzing system logs and setting up alerts
  - Optimizing CPU, memory, and storage resources
  - Troubleshooting common server performance issues
- **Milestone 10 Project:**
  - Install a monitoring tool and set up alerts for CPU, memory, and disk usage thresholds.

Module 11: Automation with Scripting and Configuration Management

- **Topics Covered:**
  - Introduction to scripting in Bash (Linux) and PowerShell (Windows)
  - Automating tasks and creating scheduled jobs (cron, Task Scheduler)
  - Overview of configuration management tools (Ansible, Chef, Puppet)
  - Writing scripts for routine server management tasks
- **Milestone 11 Project:**
  - Write and deploy a script to automate a common server maintenance task, such as automated backups or log cleanup.

Module 12: Cloud Servers and Virtualization

- **Topics Covered:**
  - Understanding virtualization (VMware, Hyper-V) and containerization (Docker basics)
  - Overview of cloud-based servers (AWS EC2, Azure, Google Cloud)
  - Setting up and managing virtualized environments
  - Best practices for deploying and scaling cloud servers
- **Final Project:**
  - Deploy a virtualized server setup, configure a multi-server environment with web and database servers, and apply basic automation for management tasks.

Assessment and Evaluation

- Milestone Projects: 60% of final grade
- Final Project: 30% of final grade
- Participation and Attendance: 10% of final grade

Resources

- Recommended Books:
  - "Linux System Administration" by Tom Adelstein and Bill Lubanovic
  - "Windows Server Administration Fundamentals" by Microsoft Official Academic Course
- Online Platforms:
  - Microsoft Learn for Windows Server
  - DigitalOcean Tutorials for Linux
  - AWS and Azure Free Tier for cloud server practice, https://azure.microsoft.com/en-us/free/

Course Delivery

- Method: Blended learning (theory and practical)
- Format: Lectures, hands-on server setup sessions, and project work