

پک پیشرفته متخصص توسعه دهنده Back-End

فهرست سرفصل‌های دوره‌های آموزشی

LPIC-2	2
Ansible	41
My SQL	47

LPIC-2

Topic 200: Capacity Planning

200.1 Measure and Troubleshoot Resource Usage

Weight: 6

Description: Candidates should be able to measure hardware resource and network bandwidth, identify and troubleshoot resource problems.

Key Knowledge Areas:

- Measure CPU usage
- Measure memory usage
- Measure disk I/O
- Measure network I/O
- Measure firewalling and routing throughput
- Map client bandwidth usage
- Match / correlate system symptoms with likely problems
- Estimate throughput and identify bottlenecks in a system including networking

The following is a partial list of the used files, terms and utilities:

- iostat
- netstat
- w
- top
- sar
- processes blocked on I/O
- blocks out
- vmstat
- pstree, ps
- lsof
- uptime
- swap
- blocks in

200.2 Predict Future Resource Needs

Weight: 2

Description: Candidates should be able to monitor resource usage to predict future resource needs.

Key Knowledge Areas:

- Use monitoring and measurement tools to monitor IT infrastructure usage.
- Predict capacity break point of a configuration
- Observe growth rate of capacity usage
- Graph the trend of capacity usage
- Awareness of monitoring solutions such as Icinga2, Nagios, collectd, MRTG and Cacti

The following is a partial list of the used files, terms and utilities:

- diagnose
- predict growth
- resource exhaustion

Topic 201: Linux Kernel

201.1 Kernel Components

Weight: 2

Description: Candidates should be able to utilize kernel components that are necessary to specific hardware, hardware drivers, system resources and requirements. This objective includes implementing different types of kernel images, identifying stable and development kernels and patches, as well as using kernel modules.

Key Knowledge Areas:

- Kernel 2.6.x, 3.x and 4.x documentation

Terms and Utilities:

- /usr/src/linux/
- /usr/src/linux/Documentation/
- zImage
- bzImage
- xz compression

201.2 Compiling a kernel

Weight: 3

Description: Candidates should be able to properly configure a kernel to include or disable specific features of the Linux kernel as necessary. This objective includes compiling and recompiling the Linux kernel as needed, updating and noting changes in a new kernel, creating an initrd image and installing new kernels.

Key Knowledge Areas:

- /usr/src/linux/
- Kernel Makefiles
- Kernel 2.6.x/3.x make targets
- Customize the current kernel configuration.
- Build a new kernel and appropriate kernel modules.
- Install a new kernel and any modules.
- Ensure that the boot manager can locate the new kernel and associated files.
- Module configuration files
- Use DKMS to compile kernel modules.
- Awareness of dracut

Terms and Utilities:

- mkinitrd
- mkinitramfs
- make
- make targets (all, config, xconfig, menuconfig, gconfig, oldconfig, mrproper, zImage, bzImage, modules, modules_install, rpm-pkg, bin-rpm-pkg, deb-pkg)

- gzip
- bzip2
- module tools
- /usr/src/linux/.config
- /lib/modules/kernel-version/
- depmod
- dkms

201.3 Kernel runtime management and troubleshooting

Weight: 4

Description: Candidates should be able to manage and/or query a 2.6.x, 3.x or 4.x kernel and its loadable modules. Candidates should be able to identify and correct common boot and run time issues. Candidates should understand device detection and management using udev. This objective includes troubleshooting udev rules.

Key Knowledge Areas:

- Use command-line utilities to get information about the currently running kernel and kernel modules
- Manually load and unload kernel modules
- Determine when modules can be unloaded
- Determine what parameters a module accepts
- Configure the system to load modules by names other than their file name.
- /proc filesystem
- Content of /, /boot/, and /lib/modules/
- Tools and utilities to analyze information about the available hardware
- udev rules

Terms and Utilities:

- /lib/modules/kernel-version/modules.dep
- module configuration files in /etc/
- /proc/sys/kernel/
- /sbin/depmod
- /sbin/rmmod
- /sbin/modinfo
- /bin/dmesg
- /sbin/lspci
- /usr/bin/lsdev
- /sbin/lsmmod
- /sbin/modprobe
- /sbin/inssmod
- /bin/uname
- /usr/bin/lsusb
- /etc/sysctl.conf, /etc/sysctl.d/
- /sbin/sysctl
- udevmonitor
- udevadm monitor
- /etc/udev/

Topic 202: System Startup

202.1 Customizing SysV-init system startup

Weight: 3

Description: Candidates should be able to query and modify the behaviour of system services at various targets / run levels. A thorough understanding of the systemd, SysV Init and the Linux boot process is required. This objective includes interacting with systemd targets and SysV init run levels.

Key Knowledge Areas:

- Systemd
- SysV init
- Linux Standard Base Specification (LSB)

Terms and Utilities:

- /usr/lib/systemd/
- /etc/systemd/
- /run/systemd/
- systemctl
- systemd-delta
- /etc/inittab
- /etc/init.d/
- /etc/rc.d/
- chkconfig
- update-rc.d
- init and telinit

202.2 System Recovery

Weight: 4

Description: Candidates should be able to properly manipulate a Linux system during both the boot process and during recovery mode.

This objective includes using both the init utility and init-related kernel options. Candidates should be able to determine the cause of errors in loading and usage of bootloaders. GRUB version 2 and GRUB Legacy are the bootloaders of interest. Both BIOS and UEFI systems are covered.

Key Knowledge Areas:

- BIOS and UEFI
- NVMe booting
- GRUB version 2 and Legacy
- grub shell
- boot loader start and hand off to kernel
- kernel loading
- hardware initialisation and setup
- daemon/service initialisation and setup
- Know the different boot loader install locations on a hard disk or removable device.
- Overwrite standard boot loader options and using boot loader shells.
- Use systemd rescue and emergency modes.

Terms and Utilities:

- mount
- fsck
- inittab, telinit and init with SysV init
- The contents of /boot/, /boot/grub/ and /boot/efi/
- EFI System Partition (ESP)
- GRUB
- grub-install
- efibootmgr
- UEFI shell
- initrd, initramfs
- Master boot record
- systemctl

202.3 Alternate Bootloaders

Weight: 2

Description: Candidates should be aware of other bootloaders and their major features.

Key Knowledge Areas:

- SYSLINUX, ISOLINUX, PXELINUX
- Understanding of PXE for both BIOS and UEFI
- Awareness of systemd-boot and U-Boot

Terms and Utilities:

- syslinux
- extlinux
- isolinux.bin
- isolinux.cfg
- isohdpxf.bin
- efiboot.img
- pxelinux.0
- pxelinux.cfg/
- uefi/shim.efi
- uefi/grubx64.efi

Topic 203: Filesystem and Devices

203.1 Operating the Linux filesystem

Weight: 4

Description: Candidates should be able to properly configure and navigate the standard Linux filesystem. This objective includes configuring and mounting various filesystem types.

Key Knowledge Areas:

- The concept of the fstab configuration
- Tools and utilities for handling swap partitions and files
- Use of UUIDs for identifying and mounting file systems
- Understanding of systemd mount units

Terms and Utilities:

- /etc/fstab
- /etc/mtab
- /proc/mounts
- mount and umount
- blkid
- sync
- swapon
- swapoff

203.2 Maintaining a Linux filesystem

Weight: 3

Description: Candidates should be able to properly maintain a Linux filesystem using system utilities. This objective includes manipulating standard filesystems and monitoring SMART devices.

Key Knowledge Areas:

- Tools and utilities to manipulate and ext2, ext3 and ext4
- Tools and utilities to perform basic Btrfs operations, including subvolumes and snapshots
- Tools and utilities to manipulate XFS
- Awareness of ZFS

Terms and Utilities:

- mkfs (mkfs.*)
- mkswap
- fsck (fsck.*)
- tune2fs, dumpe2fs and debugfs
- btrfs, btrfs-convert
- xfs_info, xfs_check, xfs_repair, xfsdump and xfsrestore
- smartd, smartctl

203.3 Creating and configuring filesystem options

Weight: 2

Description: Candidates should be able to configure automount filesystems using AutoFS. This objective includes configuring automount for network and device filesystems. Also included is creating filesystems for devices such as CD-ROMs and a basic feature knowledge of encrypted filesystems.

Key Knowledge Areas:

- autofs configuration files
- Understanding of automount units
- UDF and ISO9660 tools and utilities
- Awareness of other CD-ROM filesystems (HFS)
- Awareness of CD-ROM filesystem extensions (Joliet, Rock Ridge, El Torito)
- Basic feature knowledge of data encryption (dm-crypt / LUKS)

Terms and Utilities:

- /etc/auto.master
- /etc/auto.[dir]
- mkisofs
- cryptsetup

Topic 204: Advanced Storage Device Administration

204.1 Configuring RAID

Weight: 3

Description: Candidates should be able to configure and implement software RAID. This objective includes using and configuring RAID 0, 1 and 5.

Key Knowledge Areas:

- Software raid configuration files and utilities

Terms and Utilities:

- mdadm.conf
- mdadm
- /proc/mdstat
- partition type 0xFD

204.2 Adjusting Storage Device Access

Weight: 2

Description: Candidates should be able to configure kernel options to support various drives. This objective includes software tools to view & modify hard disk settings including iSCSI devices.

Key Knowledge Areas:

- Tools and utilities to configure DMA for IDE devices including ATAPI and SATA
- Tools and utilities to configure Solid State Drives including AHCI and NVMe
- Tools and utilities to manipulate or analyse system resources (e.g. interrupts)
- Awareness of sdparm command and its uses
- Tools and utilities for iSCSI
- Awareness of SAN, including relevant protocols (AoE, FCoE)

Terms and Utilities:

- hdparm, sdparm
- nvme
- tune2fs
- fstrim
- sysctl
- /dev/hd*, /dev/sd*, /dev/nvme*
- iscsiadm, scsi_id, iscsid and iscsid.conf
- WWID, WWN, LUN numbers

204.3 Logical Volume Manager

Weight: 3

Description: Candidates should be able to create and remove logical volumes, volume groups, and physical volumes. This objective includes snapshots and resizing logical volumes.

Key Knowledge Areas:

- Tools in the LVM suite
- Resizing, renaming, creating, and removing logical volumes, volume groups, and physical volumes
- Creating and maintaining snapshots
- Activating volume groups

Terms and Utilities:

- /sbin/pv*
- /sbin/lv*
- /sbin/vg*
- mount
- /dev/mapper/
- lvm.conf

Topic 205: Network Configuration

205.1 Basic networking configuration

Weight: 3

Description: Candidates should be able to configure a network device to be able to connect to a local, wired or wireless, and a wide-area network. This objective includes being able to communicate between various sub-nets within a single network including both IPv4 and IPv6 networks.

Key Knowledge Areas:

- Utilities to configure and manipulate ethernet network interfaces
- Configuring basic access to wireless networks

Terms and Utilities:

- ip
- ifconfig
- route
- arp
- iw
- iwconfig
- iwlist

205.2 Advanced Network Configuration and Troubleshooting

Weight: 4

Description: Candidates should be able to configure a network device to implement various network authentication schemes.

This objective includes configuring a multi-homed network device and resolving communication problems.

Key Knowledge Areas:

- Utilities to manipulate routing tables
- Utilities to configure and manipulate ethernet network interfaces
- Utilities to analyze the status of the network devices
- Utilities to monitor and analyze the TCP/IP traffic

Terms and Utilities:

- ip
- ifconfig
- route
- arp
- ss
- netstat
- lsof
- ping, ping6
- nc
- tcpdump
- nmap

205.3 Troubleshooting Network Issues

Weight: 4

Description: Candidates should be able to identify and correct common network setup issues, to include knowledge of locations for basic configuration files and commands.

Key Knowledge Areas:

- Location and content of access restriction files
- Utilities to configure and manipulate ethernet network interfaces
- Utilities to manage routing tables
- Utilities to list network states.
- Utilities to gain information about the network configuration
- Methods of information about the recognized and used hardware devices
- System initialization files and their contents (SysV init process)
- Awareness of NetworkManager and its impact on network configuration

Terms and Utilities:

- ip
- ifconfig
- route
- ss
- netstat
- /etc/network/, /etc/sysconfig/network-scripts/
- ping, ping6
- traceroute, traceroute6
- mtr
- hostname
- System log files such as /var/log/syslog, /var/log/messages and the systemd journal
- dmesg
- /etc/resolv.conf
- /etc/hosts
- /etc/hostname, /etc/HOSTNAME
- /etc/hosts.allow, /etc/hosts.deny

Topic 206: System Maintenance

206.1 Make and install programs from source

Weight: 2

Description: Candidates should be able to build and install an executable program from source. This objective includes being able to unpack a file of sources.

Key Knowledge Areas:

- Unpack source code using common compression and archive utilities
- Understand basics of invoking make to compile programs
- Apply parameters to a configure script
- Know where sources are stored by default

Terms and Utilities:

- /usr/src/
- gunzip
- gzip
- bzip2
- xz
- tar
- configure
- make
- uname
- install
- patch

206.2 Backup operations

Weight: 3

Description: Candidates should be able to use system tools to back up important system data.

Key Knowledge Areas:

- Knowledge about directories that have to be include in backups
- Awareness of network backup solutions such as Amanda, Bacula, Bare-os and BackupPC
- Knowledge of the benefits and drawbacks of tapes, CDR, disk or other backup media
- Perform partial and manual backups.
- Verify the integrity of backup files.
- Partially or fully restore backups.

Terms and Utilities:

- /bin/sh
- dd
- tar
- /dev/st* and /dev/nst*
- mt
- rsync

206.3 Notify users on system-related issues

Weight: 1

Description: Candidates should be able to notify the users about current issues related to the system.

Key Knowledge Areas:

Automate communication with users through logon messages
Inform active users of system maintenance

Terms and Utilities:

- /etc/issue
- /etc/issue.net
- /etc/motd
- wall
- /sbin/shutdown
- systemctl

Topic 207: Domain Name Server

207.1 Basic DNS server configuration

Weight: 3

Description: Candidates should be able to configure BIND to function as a caching-only DNS server. This objective includes the ability to manage a running server and configuring logging.

Key Knowledge Areas:

- BIND 9.x configuration files, terms and utilities
- Defining the location of the BIND zone files in BIND configuration files
- Reloading modified configuration and zone files

- Awareness of dnsmasq, djbdns and PowerDNS as alternate name servers

The following is a partial list of the used files, terms and utilities:

- /etc/named.conf
- /var/named/
- /usr/sbin/rndc
- kill
- host
- dig

207.2 Create and maintain DNS zones

Weight: 3

Description: Candidates should be able to create a zone file for a forward or reverse zone and hints for root level servers. This objective includes setting appropriate values for records, adding hosts in zones and adding zones to the DNS. A candidate should also be able to delegate zones to another DNS server.

Key Knowledge Areas:

- BIND 9 configuration files, terms and utilities
- Utilities to request information from the DNS server
- Layout, content and file location of the BIND zone files
- Various methods to add a new host in the zone files, including reverse zones

Terms and Utilities:

- /var/named/
- zone file syntax
- resource record formats
- named-checkzone
- named-compilezone
- masterfile-format
- dig
- nslookup
- host

207.3 Securing a DNS server

Weight: 2

Description: Candidates should be able to configure a DNS server to run as a non-root user and run in a chroot jail. This objective includes secure exchange of data between DNS servers.

Key Knowledge Areas:

- BIND 9 configuration files
- Configuring BIND to run in a chroot jail
- Split configuration of BIND using the forwarders statement
- Configuring and using transaction signatures (TSIG)
- Awareness of DNSSEC and basic tools
- Awareness of DANE and related records

Terms and Utilities:

- /etc/named.conf
- /etc/passwd
- DNSSEC
- dnssec-keygen
- dnssec-signzone

Topic 208: Web Services

208.1 Implementing a web server

Weight: 4

Description: Candidates should be able to install and configure a web server. This objective includes monitoring the server's load and performance, restricting client user access, configuring support for scripting languages as modules and setting up client user authentication. Also included is configuring server options to restrict usage of resources. Candidates should be able to configure a web server to use virtual hosts and customize file access.

Key Knowledge Areas:

- Apache 2.4 configuration files, terms and utilities
- Apache log files configuration and content
- Access restriction methods and files
- mod_perl and PHP configuration
- Client user authentication files and utilities
- Configuration of maximum requests, minimum and maximum servers and clients

- Apache 2.4 virtual host implementation (with and without dedicated IP addresses)
- Using redirect statements in Apache's configuration files to customize file access

Terms and Utilities:

- access logs and error logs
- .htaccess
- httpd.conf
- mod_auth_basic, mod_authz_host and mod_access_compat
- htpasswd
- AuthUserFile, AuthGroupFile
- apachectl, apache2ctl
- httpd, apache2

208.2 Apache configuration for HTTPS

Weight: 3

Description: Candidates should be able to configure a web server to provide HTTPS.

Key Knowledge Areas:

- SSL configuration files, tools and utilities
- Generate a server private key and CSR for a commercial CA
- Generate a self-signed Certificate
- Install the key and certificate, including intermediate CAs
- Configure Virtual Hosting using SNI

- Awareness of the issues with Virtual Hosting and use of SSL
- Security issues in SSL use, disable insecure protocols and ciphers

Terms and Utilities:

- Apache2 configuration files
- /etc/ssl/, /etc/pki/
- openssl, CA.pl
- SSLEngine, SSLCertificateKeyFile, SSLCertificateFile
- SSLCACertificateFile, SSLCACertificatePath
- SSLProtocol, SSLCipherSuite, ServerTokens, ServerSignature, TraceEnable

208.3 Implementing a proxy server

Weight: 2

Description: Candidates should be able to install and configure a proxy server, including access policies, authentication and resource usage.

Key Knowledge Areas:

- Squid 3.x configuration files, terms and utilities
- Access restriction methods
- Client user authentication methods
- Layout and content of ACL in the Squid configuration files

Terms and Utilities:

- squid.conf
- acl
- http_access

208.4 Implementing Nginx as a web server and a reverse proxy

Weight: 2

Description: Candidates should be able to install and configure a reverse proxy server, Nginx. Basic configuration of Nginx as a HTTP server is included.

Key Knowledge Areas:

- Nginx
- Reverse Proxy
- Basic Web Server

Terms and Utilities:

- /etc/nginx/
- nginx

Topic 209: File Sharing

209.1 SAMBA Server Configuration

Weight: 5

Description: Candidates should be able to set up a Samba server for various clients. This objective includes setting up Samba as a standalone server as well as integrating Samba as a member in an Active Directory. Furthermore, the configuration of simple CIFS and printer shares is covered. Also covered is a configuring a Linux client to use a Samba server. Troubleshooting installations is also tested.

Key Knowledge Areas:

- Samba 4 documentation
- Samba 4 configuration files
- Samba 4 tools and utilities and daemons
- Mounting CIFS shares on Linux
- Mapping Windows user names to Linux user names
- User-Level, Share-Level and AD security

Terms and Utilities:

- smb, nmb, winbind
- smbcontrol, smbstatus, testparm, smbpasswd, nmblookup
- samba-tool
- net
- smbclient
- mount.cifs
- /etc/samba/
- /var/log/samba/

209.2 NFS Server Configuration

Weight: 3

Description: Candidates should be able to export filesystems using NFS. This objective includes access restrictions, mounting an NFS filesystem on a client and securing NFS.

Key Knowledge Areas:

- NFS version 3 configuration files
- NFS tools and utilities
- Access restrictions to certain hosts and/or subnets
- Mount options on server and client
- TCP Wrappers
- Awareness of NFSv4

Terms and Utilities:

- /etc/exports
- exportfs
- showmount
- nfsstat
- /proc/mounts
- /etc/fstab
- rpcinfo
- mountd
- portmapper

Topic 210: Network Client Management

210.1 DHCP configuration

Weight: 2

Description: Candidates should be able to configure a DHCP server. This objective includes setting default and per client options, adding static hosts and BOOTP hosts. Also included is configuring a DHCP relay agent and maintaining the DHCP server.

Key Knowledge Areas:

- DHCP configuration files, terms and utilities
- Subnet and dynamically-allocated range setup
- Awareness of DHCPv6 and IPv6 Router Advertisements

Terms and Utilities:

- dhcpd.conf
- dhcpd.leases
- DHCP Log messages in syslog or systemd journal
- arp
- dhcpd
- radvd
- radvd.conf

210.2 PAM authentication

Weight: 3

Description: The candidate should be able to configure PAM to support authentication using various available methods. This includes basic SSSD functionality.

Key Knowledge Areas:

- PAM configuration files, terms and utilities
- passwd and shadow passwords
- Use sssd for LDAP authentication

Terms and Utilities:

- /etc/pam.d/
- pam.conf
- nsswitch.conf
- pam_unix, pam_cracklib, pam_limits, pam_listfile, pam_sss
- sssd.conf

210.3 LDAP client usage

Weight: 2

Description: Candidates should be able to perform queries and updates to an LDAP server. Also included is importing and adding items, as well as adding and managing users.

Key Knowledge Areas:

- LDAP utilities for data management and queries
- Change user passwords
- Querying the LDAP directory

Terms and Utilities:

- ldapsearch
- ldappasswd
- ldapadd
- ldapdelete

210.4 Configuring an OpenLDAP server

Weight: 4

Description: Candidates should be able to configure a basic OpenLDAP server including knowledge of LDIF format and essential access controls.

Key Knowledge Areas:

- OpenLDAP
- Directory based configuration
- Access Control
- Distinguished Names
- Changetype Operations
- Schemas and Whitepages
- Directories
- Object IDs, Attributes and Classes

Terms and Utilities:

- slapd
- slapd-config
- LDIF
- slapadd
- slapcat
- slapindex
- /var/lib/ldap/
- loglevel

Topic 211: E-Mail Services

211.1 Using e-mail servers

Weight: 4

Description: Candidates should be able to manage an e-mail server, including the configuration of e-mail aliases, e-mail quotas and virtual e-mail domains. This objective includes configuring internal e-mail relays and monitoring e-mail servers.

Key Knowledge Areas:

- Configuration files for postfix
- Basic TLS configuration for postfix
- Basic knowledge of the SMTP protocol
- Awareness of sendmail and exim

Terms and Utilities:

- Configuration files and commands for postfix
- /etc/postfix/
- /var/spool/postfix/
- sendmail emulation layer commands
- /etc/aliases
- mail-related logs in /var/log/

211.2 Managing E-Mail Delivery

Weight: 2

Description: Candidates should be able to implement client e-mail management software to filter, sort and monitor incoming user e-mail.

Key Knowledge Areas:

- Understanding of Sieve functionality, syntax and operators
- Use Sieve to filter and sort mail with respect to sender, recipient(s), headers and size
- Awareness of procmail

Terms and Utilities:

- Conditions and comparison operators
- keep, fileinto, redirect, reject, discard, stop
- Dovecot vacation extension

211.3 Managing Remote E-Mail Delivery

Weight: 2

Description: Candidates should be able to install and configure POP and IMAP daemons.

Key Knowledge Areas:

- Dovecot IMAP and POP3 configuration and administration
- Basic TLS configuration for Dovecot
- Awareness of Courier

Terms and Utilities:

- `/etc/dovecot/`
- `dovecot.conf`
- `doveconf`
- `doveadm`

Topic 212: System Security

212.1 Configuring a router

Weight: 3

Description: Candidates should be able to configure a system to forward IP packet and perform network address translation (NAT, IP masquerading) and state its significance in protecting a network. This objective includes configuring port redirection, managing filter rules and averting attacks.

Key Knowledge Areas:

- iptables and ip6tables configuration files, tools and utilities
- Tools, commands and utilities to manage routing tables.
- Private address ranges (IPv4) and Unique Local Addresses as well as Link Local Addresses (IPv6)
- Port redirection and IP forwarding
- List and write filtering and rules that accept or block IP packets based on source or destination protocol, port and address
- Save and reload filtering configurations

Terms and Utilities:

- /proc/sys/net/ipv4/
- /proc/sys/net/ipv6/
- /etc/services
- iptables
- ip6tables

212.2 Securing FTP servers

Weight: 2

Description: Candidates should be able to configure an FTP server for anonymous downloads and uploads. This objective includes precautions to be taken if anonymous uploads are permitted and configuring user access.

Key Knowledge Areas:

- Configuration files, tools and utilities for Pure-FTPd and vsftpd
- Awareness of ProFTPd
- Understanding of passive vs. active FTP connections

Terms and Utilities:

- vsftpd.conf
- important Pure-FTPd command line options

212.3 Secure shell (SSH)

Weight: 4

Description: Candidates should be able to configure and secure an SSH daemon. This objective includes managing keys and configuring SSH for users. Candidates should also be able to forward an application protocol over SSH and manage the SSH login.

Key Knowledge Areas:

- OpenSSH configuration files, tools and utilities
- Login restrictions for the superuser and the normal users
- Managing and using server and client keys to login with and without password
- Usage of multiple connections from multiple hosts to guard against loss of connection to remote host following configuration changes

Terms and Utilities:

- ssh
- sshd
- /etc/ssh/sshd_config
- /etc/ssh/
- Private and public key files
- PermitRootLogin, PubKeyAuthentication, AllowUsers, PasswordAuthentication, Protocol

212.4 Security tasks

Weight: 3

Description: Candidates should be able to receive security alerts from various sources, install, configure and run intrusion detection systems and apply security patches and bugfixes.

Key Knowledge Areas:

- Tools and utilities to scan and test ports on a server
- Locations and organizations that report security alerts as Bugtraq, CERT or other sources
- Tools and utilities to implement an intrusion detection system (IDS)
- Awareness of OpenVAS and Snort

Terms and Utilities:

- telnet
- nmap
- fail2ban
- nc
- iptables

212.5 OpenVPN

Weight: 2

Description: Candidates should be able to configure a VPN (Virtual Private Network) and create secure point-to-point or site-to-site connections.

Key Knowledge Areas:

- OpenVPN

Terms and Utilities:

- /etc/openvpn/
- openvpn

سرفصل‌های دوره آموزشی

Ansible

Introduction of DevOps

Understanding DevOps concepts

DevOps Automation

Continuous Integration

Continues Delivery

Continuous Deployment

The roles of Ansible in CI/CD

The benefit of CICD

What is Ansible?

Automation Deployment Pipeline

Need of Ansible

What Ansible can do?

Advantages of using Ansible?

Agent-Based VS Agentless systems

Ansible's Agentless Architecture

Install Ansible

Validate Ansible Installation

Ansible Vs Puppet Vs Chef Vs SaltStack

Ansible Architecture

Host, Group and Host Inventory

Ansible Ad-Hoc commands

Playbooks, plays, tasks and modules

Ansible configuration

Ansible-playbook Structure

Taks, vars, files, templates, meta, defaults, handlers

Ansible-playbook Syntax

Run ansible playbook

Variables, variable types and priorities

Command, expect, script, shell and raw modules

file, copy and fetch modules

Group and user modules

zyper_repository, zypper, yum_repository and you modules

Template, lineinfile, replace and service module

Archive and unarchive module

Async actions and concurrent tasks

wait_for and wait_for_connection modules

Mail module

Subversion and git modules

get_url, timezone and iptables modules

Mariadb modules

Find module and local_action feature

Conditions

Loops

Standard loops

Nested loops

Import playbooks and tasks

Handlers

Ansible Vault

Encrypt files and strings

Vault ID

Implement an Ansible playBook to Setup a webserver

Integrate Jenkins & Ansible

CICD with Git, Jenkins and Ansible (Application Deployment)

Ansible & VMWare

Ansible & Cisco

Ansible & Mikrotik

Develop Custom Module

Module format

Module's return value and error handling

Setup nginx servers behind haproxy via Ansible playBook

Ansible & Windows Hosts

Manage windows features

Manage windows services

Execute shell module on windows

Windows Package management

Package Silent Installation

Implement an Ansible PlayBook to Setup IIS

Integrate Ansible and Docker

Docker_image and docker_image modules

docker_container and docker_container modules

docker_network and docker_network_info modules

docker_volume and docker_volume_info modules

docker_swarm module

Ansible Galaxy

Ansible Tower

Ansible AWX

AWX prerequisites and Installation

AWX Dashboard

AWX - organizations, teams and users

AWX - hosts, groups and inventory

AWX - credentials

AWX - projects and templates

AWX - Schedule templates, notification and permissions

MySQL

Basic MySQL Tutorial

Getting started with MySQL

- Installing MySQL database server
- Loading the sample database into your own MySQL database server

Querying data

- SELECT
- SELECT DISTINCT

Sorting data

- ORDER BY

Filtering data

- WHERE
- AND
- OR
- IN

- BETWEEN
- LIKE
- LIMIT
- IS NULL

Joining tables

- Table & Column Aliases
- Joins
- INNER JOIN
- LEFT JOIN
- RIGHT JOIN
- CROSS JOIN
- Self-join

Grouping data

- GROUP BY
- HAVING
- ROLLUP

Subqueries

- Subquery
- Derived table
- EXISTS

Common Table Expressions

- Common Table Expression or CTE
- Recursive CTE

Set operators

- UNION and UNION ALL
- INTERSECT
- MINUS

Modifying data in MySQL

- INSERT
- INSERT INTO SELECT
- INSERT IGNORE
- UPDATE
- UPDATE JOIN
- DELETE
- ON DELETE CASCADE
- DELETE JOIN
- REPLACE
- Prepared Statement

MySQL transaction

- Transaction
- Table locking

Managing MySQL databases and tables

- Selecting a MySQL database
- Managing databases
- CREATE DATABASE
- DROP DATABASE
- MySQL storage engines
- CREATE TABLE
- MySQL sequence
- ALTER TABLE
- Renaming table
- Removing a column from a table
- Adding a new column to a table
- DROP TABLE
- Temporary tables
- TRUNCATE TABLE

MySQL data types

- INT
- DECIMAL
- BIT
- BOOLEAN
- CHAR
- VARCHAR
- TEXT

- DATE
- TIME
- DATETIME
- TIMESTAMP
- JSON
- ENUM

MySQL constraints

- NOT NULL constraint
- Primary key constraint
- Foreign key constraint
- UNIQUE constraint
- CHECK constraint emulation

MySQL globalization

- MySQL character Set
- MySQL collation

MySQL import & export

- Import CSV File Into MySQL Table
- MySQL Export Table to CSV

Advanced techniques

Natural sorting

Advanced MySQL Tutorial

MySQL Stored Procedure

- Introduction to MySQL Stored Procedures
- Getting Started with MySQL Stored Procedures
- MySQL Stored Procedure Variables
- MySQL Stored Procedure Parameters
- MySQL Stored Procedures That Return Multiple Values
- MySQL IF Statement
- MySQL CASE Statement
- Hints for Choosing Between IF and CASE Statements
- MySQL Loop in Stored Procedures
- MySQL Cursor
- Listing Stored Procedures in a MySQL Database
- MySQL Error Handling in Stored Procedures
- Raising Error Conditions with MySQL SIGNAL / RESIGNAL Statements
- MySQL Stored Function

MySQL Views

- Introduction to Database View
- Views in MySQL
- Creating Views in MySQL
- Creating MySQL Updatable Views
- Ensuring Views Consistency Using WITH CHECK OPTION Clause
- Understanding LOCAL & CASCADED in WITH CHECK OPTION Clause
- Managing Views in MySQL

MySQL Triggers and Event

- Introduction to SQL Trigger
- MySQL Triggers Implementation
- Create Trigger in MySQL
- Create Multiple Triggers For The Same Trigger Event And Action Time
- Managing Triggers in MySQL
- Working with MySQL Scheduled Event
- Modifying MySQL Events

MySQL Index

- Creating indexes
- Removing indexes
- Listing table indexes
- Unique indexes
- Prefix indexes
- Invisible indexes
- Descending indexes
- Composite indexes
- Clustered indexes
- Index cardinality
- USE INDEX hint
- FORCE INDEX hint

MySQL Full-Text Search

- Introduction to MySQL Full-Text Search
- Defining FULLTEXT Indexes for MySQL Full-Text Searching
- MySQL Natural Language Full-Text Searches
- MySQL Boolean Full-Text Searches
- Using MySQL Query Expansion
- MySQL ngram Full-Text Parser

MySQL Administration

- Getting Started with MySQL Access Control System
- How To Create User Accounts Using MySQL CREATE USER Statement
- 3 Best Ways to Change MySQL User Password By Examples
- How To Use MySQL GRANT Statement To Grant Privileges To a User
- Revoking Privileges From Users Using MySQL REVOKE
- The Ultimate Guide To MySQL Roles By Examples
- How To Remove User Accounts Using MySQL DROP USER Statement
- Maintaining MySQL Database Tables
- How To Backup Databases Using mysqldump Tool
- MySQL SHOW DATABASES: List All Databases in MySQL
- MySQL SHOW TABLES: List Tables In a MySQL Database
- MySQL SHOW COLUMNS and DESCRIBE: List All Columns in a Table
- MySQL SHOW USERS: List All Users in a MySQL Database Server

MySQL Functions

- MySQL aggregate functions
- MySQL aggregate functions
- AVG
- COUNT
- INSTR
- SUM
- MIN
- MAX
- GROUP_CONCAT
- MySQL standard deviation functions

MySQL string functions

- CONCAT
- LENGTH & CHAR_LENGTH
- LEFT
- REPLACE
- SUBSTRING
- TRIM
- FIND_IN_SET
- FORMAT

MySQL control flow functions

- CASE
- IF
- IFNULL
- NULLIF

MySQL date and time functions

- CURDATE
- DATEDIFF
- DAY
- DATE_ADD
- DATE_SUB
- DAYOFWEEK
- EXTRACT
- NOW
- MONTH
- STR_TO_DATE

- SYSDATE
- TIMEDIFF
- TIMESTAMPDIFF
- WEEK
- WEEKDAY
- YEAR

MySQL comparison functions

- COALESCE
- GREATEST & LEAST
- ISNULL

MySQL Math functions

- ABS
- CEIL
- FLOOR
- MOD
- ROUND
- TRUNCATE

MySQL partitioning

- Overview of Partitioning in MySQL
- Partitioning Types
- Partition Management
- Partition Pruning
- Partition Selection
- Restrictions and Limitations on Partitioning

Other MySQL functions

- LAST_INSERT_ID
- CAST

MySQL Tips

- An Introduction to MySQL CTE
- A Definitive Guide To MySQL Recursive CTE
- Managing Hierarchical Data in MySQL Using the Adjacency List Model
- MySQL Row Count: How to Get Row Count in MySQL
- MySQL Compare Two Tables
- How To Find Duplicate Values in MySQL
- How To Delete Duplicate Rows in MySQL
- MySQL UUID Smackdown: UUID vs. INT for Primary Key
- MySQL Copy Table With Examples
- How To Copy a MySQL Database
- MySQL Variables
- MySQL SELECT INTO Variable
- How To Use The MySQL Generated Columns
- How To Compare Successive Rows Within The Same Table in MySQL
- How To Change MySQL Storage Engine
- MySQL REGEXP: Search Based On Regular Expressions
- MySQL ROW_NUMBER, This is How You Emulate It
- MySQL Select Random Records
- How To Select The nth Highest Record In MySQL
- MySQL Reset Auto Increment Values
- MariaDB vs. MySQL
- MySQL Interval
- MySQL NULL: The Beginner's Guide
- How to Get MySQL Today's Date
- How To Map NULL Values To Other Meaningful Values
- MySQL Comment In Depth