CompTIA Linux+ and LPIC Practice Tests

Chapter 9
Networking Fundamentals (Domain 109)

THE FOLLOWING COMPTIA LINUX+/LPIC-1 EXAM
OBJECTIVES ARE COVERED IN THIS CHAPTER:

- ✓ **109.1 Fundamentals of Internet protocols**
- Demonstrate an understanding of network masks and CIDR notation
- Knowledge of the differences between private and public "dotted quad" IP addresses
- Knowledge about common TCP and UDP ports (20, 21, 22, 23, 25, 53, 80, 110, 123, 139, 143, 161, 162, 389, 443, 465, 514, 636, 993, 995)
- Knowledge about the differences and major features of UDP, TCP and ICMP
- Knowledge of the major differences between IPv4 and IPv6
- Knowledge of the basic features of IPv6
- The following is a partial list of the used files, terms and utilities:
- /etc/services
- IPv4, IPv6
- Subnetting
- TCP, UDP, ICMP
- ✓ **109.2 Basic network configuration**
- Manually and automatically configure network interfaces
- Basic TCP/IP host configuration
- Setting a default route
- The following is a partial list of the used files, terms and utilities:
- /etc/hostname
- /etc/hosts
- /etc/nsswitch.conf
- ifconfig
- ifup
- ifdown
- ip
- route
- ping
- ✓ **109.3 Basic network troubleshooting**
- Manually and automatically configure network interfaces and routing tables to include adding, starting, stopping, restarting, deleting or reconfiguring network interfaces
- Change, view or configure the routing table and correct an improperly set default route manually

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- ifconfig
- ip
- ifup
- ifdown
- route
- host
- hostname
- dig
- netstat
- ping
- ping6
- traceroute
- traceroute6
- tracepath
- tracepath6
- netcat
- ✓ **109.4 Configure client side DNS**
- Query remote DNS servers
- Configure local name resolution and use remote DNS servers
- Modify the order in which name resolution is done
- The following is a partial list of the used files, terms and utilities:
- /etc/hosts
- /etc/resolv.conf
- /etc/nsswitch.conf
- Host
- Dig
- getent

1. **1.** Which of the following commands shows the current default route without performing DNS lookups on the IP address(es) involved?

   1. `netstat -rn`
   2. `netstat -n`
   3. `netstat -r`
   4. `netstat -f`

2. **2.** You are having difficulty with an interface on the server, and it is currently down. Assuming that there is not a hardware failure on the device itself, which command and option can you use to display information about the interface?

   1. `ifconfig -a`
   2. `ifup`
   3. `netstat -n`
   4. `ifconfig`

3. **3.** Which of the following is not used as a private address for internal, non-Internet, use?

   1. `172.16.4.2`
   2. `192.168.40.3`
   3. `10.74.5.244`
   4. `143.236.32.231`

4. **4.** Which of the following commands adds a default gateway of 192.168.1.1 for interface eth0?

   1. `route add default gateway 192.168.1.1 eth0`
   2. `eth0 --dg 192.168.1.1`
   3. `route add default gw 192.168.1.1 eth0`

4. `route define eth0 192.168.1.1`

5. 5. Which option for the `host` command will query for the authoritative nameservers for a given domain?

   1. `-t ns`
   2. `-t all`
   3. `-ns`
   4. `-named`

6. 6. Which port(s) and protocol(s) should be opened in a firewall in order for the primary and secondary name servers to communicate for a given domain?

   1. UDP/53
   2. Both TCP/53 and UDP/53
   3. TCP/53
   4. UDP/53 and TCP/503

7. 7. Which option for the `ping` command enables you to choose the interface from which the ICMP packets will be generated?

   1. `-i`
   2. `-I`
   3. `-t`
   4. `-a`

8. 8. You need to split a subnet to enable four subnets with up to 30 hosts each. Which subnet mask, in CIDR notation, facilitates this scenario?

   1. `/25`
   2. `/24`
   3. `/32`
   4. `/27`

9. 9. Which of the following commands queries the mail servers for the domain `example.com`?

   1. `dig example.com mx`
   2. `dig example.com`
   3. `host -t smtp example.com`
   4. `dig example.com smtp`

10. 10. Which of the following addresses represents the localhost in IPv6?

    1. `0:1`
    2. `::1`
    3. `127:0:1`
    4. `:127:0:0:1`

11. 11. Which option to the `traceroute` command will use TCP SYN packets for the path trace?

    1. `-T`
    2. `-t`
    3. `-s`
    4. `-i`

12. 12. Which of the following commands will attempt to bring online all interfaces marked as auto within the networking configuration?

    1. `ifconfig -a`
    2. `ifup auto`

3. `ifup -a`

4. `ifstat`

13. **13.** In a scripting scenario, which command will return the domain name configured for the server?

1. `dnsname`

2. `fqdn`

3. `hostname`

4. `hostname -d`

14. **14.** Which command can be used to listen for netlink messages on a network?

1. `ip monitor`

2. `netlink -a`

3. `ip netlink`

4. `route`

15. **15.** If the `traceroute6` command is not available, which option to the `traceroute` command can be used for an IPv6 traceroute?

1. `-ipv6`

2. `-net6`

3. `-v6`

4. `-6`

16. **16.** Which of the following configuration lines in `/etc/nsswitch.conf` causes a lookup for group information to use local files first and then to use LDAP?

1. `group: files ldap`

2. `lookup: group [local ldap]`

3. `group: [local ldap]`

4. `group: localfiles ldap`

17. **17.** Which of the following `dig` commands sends the query for `example.com` directly to the server at `192.168.2.5` rather than to a locally configured resolver?

1. `dig example.com @192.168.2.5`

2. `dig -t 192.168.2.5 example.com`

3. `dig -s 192.168.2.5 example.com`

4. `dig server=192.168.2.5 example.com`

18. **18.** Which ports need to be allowed through the firewall for SNMP traffic?

1. Ports 23 and 25

2. Ports 110 and 143

3. Ports 80 and 443

4. Ports 161 and 162

19. **19.** Which of the following commands will enumerate the hosts database?

1. `getent hosts`

2. `gethosts`

3. `nslookup`

4. `host`

20. **20.** Which of the following netmasks is used for a subnet described with a /25 in CIDR notation?

1. `255.255.255.0`

2. `255.255.0.0`

3. `255.255.255.192`

4. `255.255.255.128`

21. **21.** Which of the following configuration lines will set the DNS server to 192.168.1.4 using `/etc/resolv.conf`?

   1. `dns 192.168.1.4`

   2. `dns-server 192.168.1.4`

   3. `nameserver 192.168.1.4`

   4. `name-server 192.168.1.4`

22. **22.** When examining open ports on the server, you see that TCP port 3000 is listed with no corresponding protocol name, such as smtp, imaps, and so on. In which file would you find a list of port-to-protocol translations that could be customized to add this new port?

   1. `/etc/ports`

   2. `/etc/p2p`

   3. `/etc/ppp`

   4. `/etc/services`

23. **23.** Which of the following commands adds a route to the server for the network 192.168.51.0/24 through its gateway of 192.168.51.1?

   1. `route add -net 192.168.51.0 netmask 255.255.255.0 gw 192.168.51.1`

   2. `route add -net 192.168.51/24 gw 192.168.1.51`

   3. `route -net 192.168.51.0/24 192.168.51.1`

   4. `route add 192.168.51.1 -n 192.168.51.0//255.255.255.0`

24. **24.** Which of the following commands shows network services or sockets that are currently along with sockets that are not listening?

   1. `netstat -a`

   2. `netlink -a`

   3. `sockets -f`

   4. `opensock -l`

25. **25.** Which of the following represents a correct configuration line for `/etc/hosts`?

   1. `192.168.1.4 cwa.braingia.org cwa`

   2. `cwa.braingia.org cwa 192.168.1.4`

   3. `cwa.braingia.org 192.168.1.8 alias cwa`

   4. `alias cwa.braingia.org cwa 192.168.1.4`

26. **26.** Which of the following commands configures the `eth0` device with an IP address of 192.168.1.1 in a /24 network?

   1. `ifconfig eth0 192.168.1.1/24`

   2. `ifconfig eth0 192.168.1.1/255.255.255.0`

   3. `ifconfig eth0 192.168.1.1 netmask 255.255.255.0`

   4. `ifconfig 192.168.1.1 netmask 255.255.255.0 eth0`

27. **27.** Which of the following describes a primary difference between IPv4 and IPv6?

   1. IPv4 is for internal networks only, while IPv6 is for public networks.

   2. IPv4 is for public networks, while IPv6 is for internal networks.

   3. IPv4 uses a 32-bit address, while IPv6 uses a 128-bit address.

   4. With IPv6, there is no subnetting necessary.

28. 28. On which port does ICMP operate?

    1. TCP/43
    2. UDP/111
    3. UDP/69
    4. ICMP does not use ports.

29. 29. Which of the following commands will change the default gateway to 192.168.1.1 using eth0?

    1. `ip route default gw 192.168.1.1`
    2. `ip route change default via 192.168.1.1 dev eth0`
    3. `ip route default gw update 192.168.1.1`
    4. `ip route update default 192.168.1.1 eth0`

30. 30. Which of the following ports is used for Secure Shell communication?

    1. TCP/23
    2. TCP/25
    3. TCP/22
    4. TCP/2200

31. 31. Which options for `netcat` will create a server listening on port 8080?

    1. `netcat -p 8080`
    2. `nc -l -p 8080`
    3. `nc -p 8080`
    4. `nc -s 8080`

32. 32. Which of the following commands displays the Start of Authority information for the domain `example.com`?

    1. `dig example.com soa`
    2. `dig example.com authority`
    3. `dig example.com -auth`
    4. `dig -t auth example.com`

33. 33. Assume that you want to enable local client services to go to hosts on the network without needing to qualify the name fully by adding the domain for either `example.com` or `example.org`. Which option in `/etc/resolv.conf` will provide this functionality?

    1. `search`
    2. `domain`
    3. `local-domain`
    4. `local-order`

34. 34. Which of the following commands sends an IPv6 ping to a unique local address?

    1. `ping -6 127.0.0.1`
    2. `ping6 fddi/128`
    3. `ping6 fdd6:551:b09f::`
    4. `ping -6 fdd6:551:b09f::`

35. 35. Which of the following commands prevents traffic from reaching the host `192.168.1.3`?

    1. `route add -host 192.168.1.3 reject`
    2. `route -nullroute 192.168.1.3`
    3. `route add -null 192.168.1.3`
    4. `route add -block 192.168.1.3`

36. 36. Which of the following describes a primary difference between `traceroute` and `tracepath`?

1. The `traceroute` command requires root privileges.
2. The `tracepath` command provides the MTU for each hop whereas `traceroute` does not.
3. The `tracepath` command cannot be used for tracing a path on an external network.
4. The `traceroute` command is not compatible with IPv6.

37. 37. Which of the following commands will emulate the `ping` command in Microsoft Windows, where the `ping` is sent for four packets and then exits?

1. `ping -n 4`
2. `ping -t 4`
3. `ping -p 4`
4. `ping -c 4`

38. 38. You are troubleshooting a DNS problem using the `dig` command, and you receive a `"status: NXDOMAIN"` message. Which of the following best describes what NXDOMAIN means?

1. NXDOMAIN means that you have received a non-authoritative answer for the query.
2. NXDOMAIN means that the domain or host is not found.
3. NXDOMAIN indicates a successful query.
4. NXDOMAIN signifies a new domain record has been added.

39. 39. Which of the following commands configures `eth1` with an additional IPv6 address of `fdd6:551:b09e::`?

1. `ifconfig eth1 inet6 add fdd6:551:b09e::/128`
2. `ifconfig add fdd6:551:b09e::`
3. `ifconfig fdd6:551:b09e:: eth1`
4. `ifconfig eth1 fdd6:551:b09e`

40. 40. On which port does LDAP over SSL operate?

1. Port 53
2. Port 389
3. Port 636
4. Port 443

41. 41. You need to prevent local clients from going to a certain host, www.example.com (http://www.example.com), and instead redirect them to a localhost. Which of the following is a method to override DNS lookups for the specified host?

1. Add a firewall entry for the IP address of www.example.com (http://www.example.com) to prevent traffic from passing through it.
2. Delete www.example.com (http://www.example.com) from the route table using the `route` command.
3. Add a null route to prevent access to the IP address for www.example.com (http://www.example.com).
4. Add an entry for www.example.com (http://www.example.com) in `/etc/hosts` to point to `127.0.0.1`.

42. 42. Which of the following commands should be executed after running `ip route change`?

1. `ip route flush cache`
2. `ip route reload`
3. `ip route cache reload`
4. `ip route restart`

43. **43.** Which option should be used to send a DNS query for an SPF record with dig?

    1. `-t txt`
    2. `-t spf`
    3. `-t mx`
    4. `-t mailspf`

44. **44.** Which of the following protocols uses a three-way handshake?

    1. ICMP
    2. TCP
    3. UDP
    4. IP

45. **45.** How many IP addresses are available in the `172.16.0.0` private range in IPv4?

    1. `/32`
    2. 16,777,216
    3. 65,536
    4. 1,048,576

46. **46.** When troubleshooting a connectivity issue, you have found that you can reach a server via the web but cannot ping it. Which of the following best describes a possible cause for this scenario?

    1. TCP traffic has been blocked at the firewall.
    2. The DNS lookup is failing.
    3. ICMP traffic has been blocked.
    4. There is a reject route in place.

47. **47.** When viewing the available routes using the `route` command, one route contains flags `UG` while the others contain `U`. What do the letters `UG` signify in the route table?

    1. The `G` signifies that the route is good.
    2. The `G` signifies that the route is unavailable.
    3. The `G` signifies that this is a gateway.
    4. The `G` signifies that the route is an aggregate.

48. **48.** Which of the following commands requests a zone transfer of `example.org` from the server at `192.168.1.4`?

    1. `dig example.org @192.168.1.4 axfr`
    2. `dig example.org @192.168.1.4`
    3. `dig example.org @192.168.1.4 xfer`
    4. `dig example.org #192.168.1.4 xfer`