

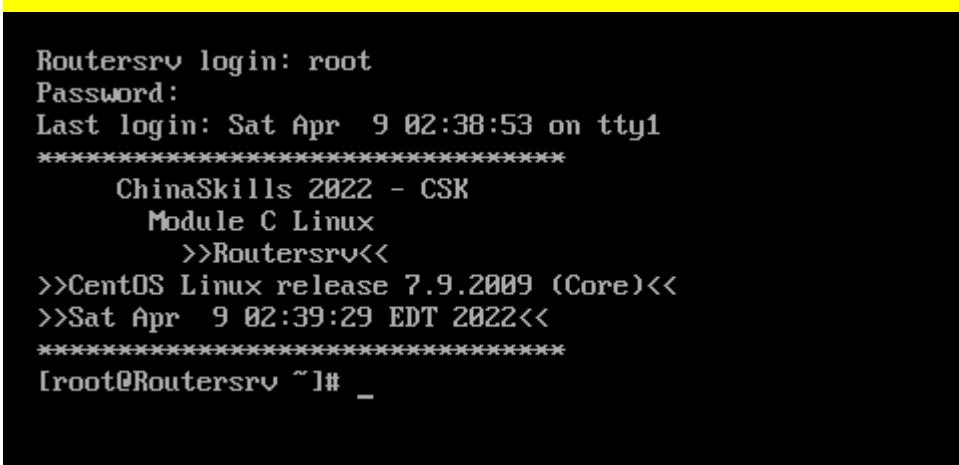
C 模块 Linux 部署评分标准 (300)

要求：使用下面指令查看其运行状态，并使用 FSCapture 截图软件进行截图，将输入结果的截图插入到文档中；

注：

◆ 答题卡中如果整个大题没有截图则整个大题不得分，未使用抓图工具截图的或截图不完整不清晰，则不给分。

基础分 (2 分)

评分要点	分值	评分
1、本地登录提示信息（在任意设备上进行本地登录） 评分要点：本地登录提示信息（在任意设备上进行本地登录）（评分要点：在不同的机器上截图，登录提示信息中会显示对应的主机，提示信息存在版本信息，存在日期和时间信息。特别注意，该信息是在登录成功过后弹出！）	2 分	
		

网络地址规划 (31 分)

评分要点	分值	评分
1、ISPSRV: (1) 域名 (执行指令: <code>hostname -f</code>) ; 【1分】 (评分要点: 主机名信息, 大小写不要求。) <pre>root@ispsrv:~# root@ispsrv:~# root@ispsrv:~# hostname -f [ispsrv] root@ispsrv:~# _</pre>	1 分	
1、ISPSRV: (2) 网络地址/掩码/网关(执行指令: <code>ip addr show grep inet && ip route</code>); 【每个点 1 分, 共 3 分】 (评分要点: 检查是否存在 81.6.63.100/24 的地址信息, 掩码为 24 位, 不存在默认路由, 无 default 字样。) <pre>root@ispsrv:~# root@ispsrv:~# root@ispsrv:~# ip addr show grep inet && ip route inet 127.0.0.1/8 scope host lo inet6 ::1/128 scope host inet 81.6.63.100/24 brd 81.6.63.255 scope global ens192 inet6 fe80::20c:29ff:fe73:8bdf/64 scope link 81.6.63.0/24 dev ens192 proto kernel scope link src 81.6.63.100 root@ispsrv:~# _</pre>	3 分	
2、APPSRV: (1) 域名 (执行指令: <code>hostname -f</code>) ; 【1分】 (评分要点: 主机名等信息, 大小写不要求。) <pre>root@appsrv:~# [root@appsrv ~]# [root@appsrv ~]# hostname -f Appsrv.chinaskills.cn [root@appsrv ~]#</pre>	1 分	
2、APPSRV: (2) 网络地址/掩码/网关(执行指令: <code>ip addr show grep inet && ip route</code>); 【每个点 1 分, 共 4 分】 (评分要点: 检查是否存在 192.168.100.100/24 的地址信息, 存在 172.16.1.1/24 的 br-vxlan 网桥, 存在默认路由, 网	4 分	

关为 192.168.100.254。)

```
[root@appsr ~]# ip addr show | grep inet && ip route
inet 127.0.0.1/8 scope host lo
inet6 ::1/128 scope host
inet 192.168.100.100/24 brd 192.168.100.255 scope global noprefixroute ens192
inet6 fe80::516b:4457:b7e4:f3ed/64 scope link noprefixroute
inet 172.16.1.1/24 brd 172.16.1.255 scope global br-vxlan
inet6 fe80::6c6c:d9ff:fed8:5de1/64 scope link
inet6 fe80::347d:7cff:fe4a:6a06/64 scope link
default via 192.168.100.254 dev ens192 proto static metric 100
172.16.1.0/24 dev br-vxlan proto kernel scope link src 172.16.1.1
192.168.100.0/24 dev ens192 proto kernel scope link src 192.168.100.100 metric 100
[root@appsr ~]#
```

3、STORAGESRV: (1) 域名 (执行指令: hostname -f) ; 【1分】

(评分要点: 主机名等信息, 大小写不要求。)

```
[root@storagesrv ~]#
[root@storagesrv ~]# hostname -f
storagesrv.chinaskills.cn
[root@storagesrv ~]#
[root@storagesrv ~]#
```

3、STORAGESRV: (2)网络地址/掩码/网关(执行指令: ip addr show | grep inet && ip route); 【每个点 1 分, 共 4 分】

(评分要点: 检查是否存在 192.168.100.200/24 的地址信息, 存在地址为 172.16.1.2, 名称为 br-vxlan 网桥, 存在默认路由, 网关为 192.168.100.254。)

```
[root@storagesrv ~]#  
[root@storagesrv ~]# ip addr show | grep inet && ip route  
  inet 127.0.0.1/8 scope host lo  
    inet6 ::1/128 scope host  
      inet 192.168.100.200/24 brd 192.168.100.255 scope global noprefixroute ens33  
      inet6 fe80::4777:5346:7c55:589d/64 scope link noprefixroute  
      inet 172.16.1.2/24 brd 172.16.1.255 scope global br-vxlan  
      inet6 fe80::700b:93ff:fe17:3f9d/64 scope link  
      inet6 fe80::c875:a8ff:fedab82a/64 scope link  
default via 192.168.100.254 dev ens33 proto static metric 100  
172.16.1.0/24 dev br-vxlan proto kernel scope link src 172.16.1.2  
192.168.100.0/24 dev ens33 proto kernel scope link src 192.168.100.200 metric 100  
[root@storagesrv ~]#
```

4、ROUTERSRV: (1) 域名 (执行指令: `hostname -f`) ; 【1分】

1分

(评分要点: 主机名等信息, 大小写不要求。)

```
[root@Routersrv ~]#  
[root@Routersrv ~]# hostname -f  
routersrv.chinaskills.cn  
[root@Routersrv ~]#
```

4、ROUTERSRV: (2) 网络地址/掩码/网关(执行指令: `ip addr show | grep inet && ip route`); 【每个点 1 分, 共 5 分】

5分

(评分要点: 检查是否存在 81.6.63.254/24, 192.168.100.254/24, 192.168.0.254/24, 172.16.0.X/24, 不存在默认路由, 无 `default` 字样。)

```
[root@routersrv ~]#  
[root@routersrv ~]# ip addr show | grep inet && ip route  
  inet 127.0.0.1/8 scope host lo  
    inet6 ::1/128 scope host  
      inet 192.168.100.254/24 brd 192.168.100.255 scope global noprefixroute ens33  
      inet6 fe80::5def:b99a:f3f0:ba86/64 scope link noprefixroute  
      inet 192.168.0.254/24 brd 192.168.0.255 scope global noprefixroute ens36  
      inet6 fe80::9ada:a9a7:69e3:4bd6/64 scope link noprefixroute  
      inet 81.6.63.254/24 brd 81.6.63.255 scope global noprefixroute ens37  
      inet6 fe80::686d:356a:49f:61e3/64 scope link noprefixroute  
      inet 172.16.0.1/24 brd 172.16.0.255 scope global tun0  
      inet6 fe80::ad1d:4d34:a550:906a/64 scope link flags 800  
81.6.63.0/24 dev ens37 proto kernel scope link src 81.6.63.254 metric 102  
172.16.0.0/24 dev tun0 proto kernel scope link src 172.16.0.1  
192.168.0.0/24 dev ens36 proto kernel scope link src 192.168.0.254 metric 101  
192.168.100.0/24 dev ens33 proto kernel scope link src 192.168.100.254 metric 100  
[root@routersrv ~]# _
```

5、INSIDECLI: (1) 域名 (执行指令: `hostname -f`) ; 【2分】;

2分

(评分要点: 主机名等信息, 大小写不要求。)

```
[root@insidecli ~]#  
[root@insidecli ~]#  
[root@insidecli ~]# hostname -f  
insidecli.chinaskills.cn  
[root@insidecli ~]# _
```

5、INSIDECLI: (2) 网络地址/掩码/网关(执行指令: `ip addr show | grep inet && ip route`); 【每个点 1 分, 共 3 分】

3分

(评分要点: 检查是否存在 192.168.0.190/24 的地址信息, 并且地址通过动态 dynamic 获取, 默认网关为 192.168.0.254。)

```
root@insidecli:~# ip addr show | grep inet && ip route
  inet 127.0.0.1/8 scope host lo
    inet6 ::1/128 scope host
      inet 192.168.0.190/24 brd 192.168.0.255 scope global nopref ixroute dynamic ens33
      inet6 fe80::20c:29ff:fecc:1ccc/64 scope link
default via 192.168.0.254 dev ens33 proto dhcp metric 100
192.168.0.0/24 dev ens33 proto kernel scope link src 192.168.0.190 metric 100
[root@insidecli:~#]
```

6、OUTSIDECLI: (1) 域名 (执行指令: `hostname -f`) ; 【1分】

(评分要点: 主机名等信息, 大小写不要求。)

```
root@outsidecli:~#
root@outsidecli:~#
root@outsidecli:~# hostname -f
outsidecli.chinaskills.cn
root@outsidecli:~#
```

6、OUTSIDECLI: (2) 网络地址/掩码/网关(执行指令: `ip addr show | grep inet && ip route`); 【每个点 1 分, 共 5 分】

(评分要点: 存在 81.6.63.110 /24, 172.16.0.X/24 地址信息, 存在 192.168.0.0/24 和 192.168.100.200/24 的路由, 没有默认路由信息, 无 default 字样。)

```

root@outsidecli:~# ip addr show | grep inet && ip route
    inet 127.0.0.1/8 scope host lo
        inet6 ::1/128 scope host
            inet 81.6.63.110/24 brd 81.6.63.255 scope global ens33
            inet6 fe80::20c:29ff:fedb:c9a/64 scope link
            inet 172.16.0.2/24 brd 172.16.0.255 scope global tun0
            inet6 fe80::cf30:c07e:921:99a2/64 scope link stable-privacy
81.6.63.0/24 dev ens33 proto kernel scope link src 81.6.63.110
172.16.0.0/24 dev tun0 proto kernel scope link src 172.16.0.2
192.168.0.0/24 via 172.16.0.1 dev tun0
192.168.100.200 via 172.16.0.1 dev tun0
root@outsidecli:~#

```

ISPSRV 工作任务 (15 分)

评分要点	分值	评分
1、DNS: (1) 安装 BIND9 (执行指令: systemctl status bind9) ; 【6分】 (评分要点: bind9 服务征程运行 “active (running) ; 运行目录为 -t /var/named/chroot ; 注意如果不是 /var/named/chroot 该小题不得分。)	6分	
<pre> root@ispsrv:/var/named/chroot# root@ispsrv:/var/named/chroot# systemctl status bind9 * bind9.service - BIND Domain Name Server Loaded: loaded (/lib/systemd/system/bind9.service; enabled; vendor preset: enabled) Active: active (running) since Mon 2022-08-08 14:11:35 CST; 14s ago Docs: man:named(8) Process: 2720 ExecStart=/usr/sbin/named \$OPTIONS (code=exited, status=0/SUCCESS) Main PID: 2721 (named) Tasks: 7 (limit: 2281) Memory: 14.5M CPU: 0.000 CPU(s) (idle) CGroup: /system.slice/bind9.service `-2721 /usr/sbin/named -u bind -t /var/named/chroot </pre>		
1、DNS: (2) 根域服务器搭建; 【2分】	2分	

(评分要点: 存在 “zone ./IN loaded serial 2”)

```
root@ispssrv:/etc/bind#  
root@ispssrv:/etc/bind#  
root@ispssrv:/etc/bind# named-checkconf -z  
zone ./IN: loaded serial 2  
zone localhost/IN: loaded serial 2  
zone 127.in-addr.arpa/IN: loaded serial 1  
zone 0.in-addr.arpa/IN: loaded serial 1  
zone 255.in-addr.arpa/IN: loaded serial 1  
root@ispssrv:/etc/bind#  
root@ispssrv:/etc/bind#
```

1、DNS: (3) 正向区域“chinaskills.cn”搭建。【2分】

2分

(评分要点: type 类型为 slave, masters 设置为 81.6.63.254) ;

```
zone "chinaskills.cn" {  
    type slave;  
    masters { 81.6.63.254; };  
    file "/etc/bind/db.chinaskills.cn";  
};  
~
```

2、WEB: (1) 安装 nginx (执行指令: systemctl status nginx) ; 【1分】

1分

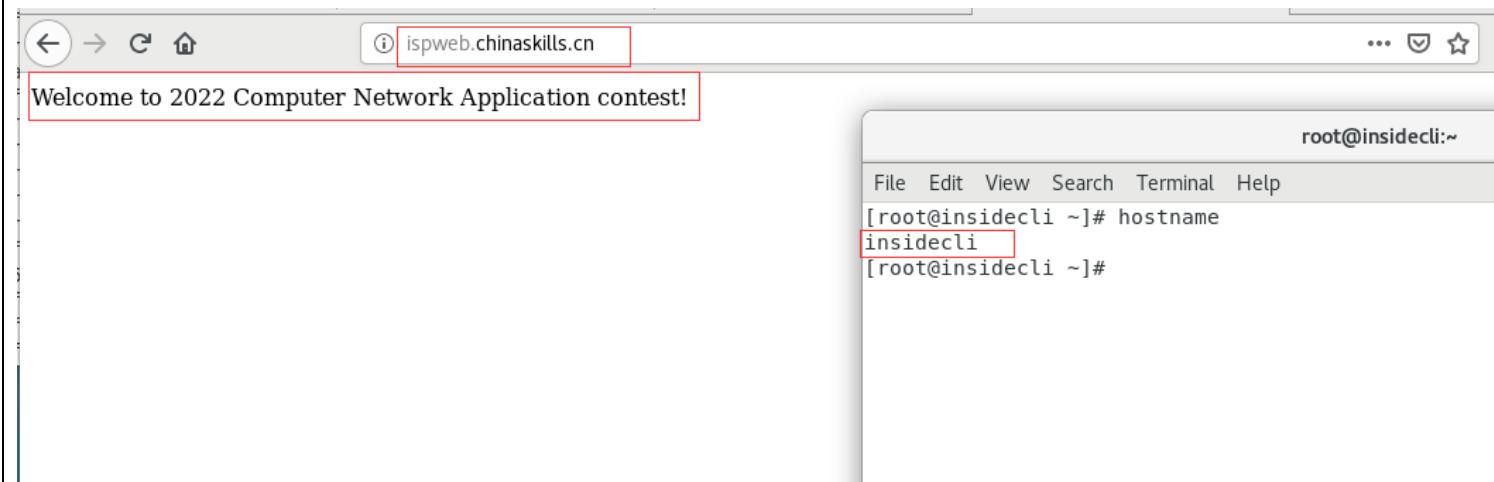
(评分要点: nginx 服务状态运行 “active (running) ”)

```
root@isp srv:~#  
root@isp srv:~# systemctl status nginx.service  
* nginx.service - A high performance web server and a reverse proxy server  
  Loaded: loaded (/lib/systemd/system/nginx.service; enabled; vendor preset: enabled)  
  Active: active (running) since Sat 2022-04-09 14:41:10 CST; 18min ago  
    Docs: man:nginx(8)  
 Process: 743 ExecStartPre=/usr/sbin/nginx -t -q -g daemon on; master_process on; (code=exited, status=0/SUCCESS)  
 Process: 804 ExecStart=/usr/sbin/nginx -g daemon on; master_process on; (code=exited, status=0/SUCCESS)  
 Main PID: 806 (nginx)  
   Tasks: 9 (limit: 2308)  
  Memory: 12.2M  
 CGroup: /system.slice/nginx.service  
     |-806 nginx: master process /usr/sbin/nginx -g daemon on; master_process on;  
     |-807 nginx: worker process  
     |-808 nginx: worker process  
     |-809 nginx: worker process  
     |-810 nginx: worker process  
     |-811 nginx: worker process  
     |-812 nginx: worker process  
     |-813 nginx: worker process  
     `--814 nginx: worker process
```

2、WEB: (2) 客户端测试（使用 insidecli 网页访问 ispweb.chinaskills.cn 站点，并且要携带命令行输入 hostname 的界面。然后在 outsidecli 上使用 curl <http://ispweb.chinaskills.cn>）；【4分】

4分

(评分要点: insidecli 能够正常访问 ispweb.chinaskills.cn, outsidecli 通过 curl <http://ispweb.chinaskills.cn> 能够正常显示网页内容。如果 inside 没有携带 hostname 或者 hostname 的主机名不是 insidecli 扣 2 分)



```

root@outsidecli:~#
root@outsidecli:~# curl http://ispweb.chinaskills.cn
Welcome to 2022 Computer Network Application contest!
root@outsidecli:~#

```

ROUTERSRV 工作任务 (40 分)

评分要点	分值	评分
1、DHCP 中继: (1) 在 insidecli 上使用 ip addr show grep inet 查看 insidecli 获取正确的 IP 地址【1分】; (2) cat /etc/resolv.conf 获取正确的 DNS【1分】; (3) ip route 查看 GW 地址。【1分】	3 分	
(1) 获取正确 IP (评分要点: 能看到客户端的地址为 192.168.0.190, 而且是 dynamic 获取。)		
<pre> [root@insidecli ~]# ip addr show grep inet inet 127.0.0.1/8 scope host lo inet6 ::1/128 scope host inet 192.168.0.190/24 brd 192.168.0.255 scope global noprefixroute dynamic ens33 inet6 fe80::599a:eda0:5690:1e81/64 scope link noprefixroute inet 192.168.122.1/24 brd 192.168.122.255 scope global virbr0 [root@insidecli ~]# </pre>		
(2) DNS(评分要点: 能看到 dns 服务器是 192.168.100.100)		
<pre> [root@insidecli ~]# cat /etc/resolv.conf # Generated by NetworkManager search chinaskills.cn nameserver 192.168.100.100 [root@insidecli ~]# </pre>		
(3) 网关(评分要点: 存在默认路由, 而且下一跳是 192.168.0.254)		

```
[root@insidecli ~]# ip route
default via 192.168.0.254 dev ens192 proto dhcp metric 100
192.168.0.0/24 dev ens192 proto kernel scope link src 192.168.0.190 metric 100
192.168.122.0/24 dev virbr0 proto kernel scope link src 192.168.122.1
[root@insidecli ~]#
```

2、ROUTING: 开启路由转发，使用 `sysctl -p` 命令查询；【2分】

(评分要点: 查询结果为 `net.ipv4.ip_forward = 1`, 不满足不得分。)

```
[root@Routersrv ~]#
[root@Routersrv ~]# sysctl -p
net.ipv4.ip_forward = 1
[root@Routersrv ~]#
```

3、SSH: (1) 查看 SSH 服务状态；【1分】

(评分标准: 能看到服务状态为 running 即可)

```
[root@Routersrv ~]#
[root@Routersrv ~]#
[root@Routersrv ~]# systemctl status sshd
● sshd.service - OpenSSH server daemon
  Loaded: loaded (/usr/lib/systemd/system/sshd.service; enabled; vendor preset: enabled)
  Active: active (running) since Fri 2022-04-08 11:44:15 EDT; 15h ago
    Docs: man:sshd(8)
          man:sshd_config(5)
  Main PID: 10523 (sshd)
    CGroup: /system.slice/sshd.service
           └─10523 /usr/sbin/sshd -D
```

3、SSH: (2) 查看 SSH 监听端口(`ss -ntpl | grep ssh`)；【1分】

(评分标准: 显示监听端口号为 2021 即可)

```
[root@Routersrv ~]#
[root@Routersrv ~]#
[root@Routersrv ~]# ss -ntpl | grep ssh
LISTEN      0      128      *:2021          *:*
LISTEN      0      128      [::]:2021        [::]:*
[root@Routersrv ~]#
```

<p>3、SSH: (3) 测试 SSH 登录用户(使用 insidecli 先用 root 用户登录 routersrv, 然后再使用 user01 用户登录); 【2分】</p> <p>(评分要点:先使用 root 用户进行 ssh 登录, 显示 permission denied, 失败三次后弹出, 再使用 user01 用户登录 ssh, 成功。)</p>	2分	
<pre> [root@insidecli ~]# [root@insidecli ~]# ssh -p 2021 root@192.168.0.254 root@192.168.0.254's password: Permission denied, please try again. root@192.168.0.254's password: Permission denied, please try again. root@192.168.0.254's password: Permission denied (publickey,gssapi-keyex,gssapi-with-mic,password). [root@insidecli ~]# ssh -p 2021 user01@192.168.0.254 user01@192.168.0.254's password: Last login: Sat Apr 9 03:15:36 2022 from 192.168.0.190 ***** ChinaSkills 2022 - CSK Module C Linux >>Routersrv<< >>CentOS Linux release 7.9.2009 (Core)<< >>Sat Apr 9 03:18:35 EDT 2022<< ***** [user01@Routersrv ~]\$ █ </pre>		
<p>3、SSH: (4) 安全测试(使用 user01 用户连续登录失败 3 次, 然后再登录一次后截图。); 【4分】</p> <p>(评分要点:先失败三次, 然后自动弹出, 再一次登录后显示连接超时。)</p>	4分	

```

[root@insidecli ~]#
[root@insidecli ~]# ssh -p 2021 user01@192.168.0.254
user01@192.168.0.254's password:
Permission denied, please try again.
user01@192.168.0.254's password:
Permission denied, please try again.
user01@192.168.0.254's password:
Permission denied (publickey,gssapi-keyex,gssapi-with-mic,password).
[root@insidecli ~]# ssh -p 2021 user01@192.168.0.254
ssh: connect to host 192.168.0.254 port 2021: Connection timed out
[root@insidecli ~]#

```

3、SSH: (5) 查看 SSH 日志 tail -f /var/log/ssh.log; 【2 分】

2 分

(评分标准: 能够显示源 IP, 源端口号即可, 源端口号是随机的。)

```

[root@outersrv ~]#
[root@outersrv ~]# tail -f /var/log/ssh.log
Apr 9 03:18:35 routersrv sshd[12653]: Accepted password for user01 from 192.168.0.190 port 44130 ssh2
Apr 9 03:18:37 routersrv sshd[12622]: Failed password for invalid user root from 192.168.0.190 port 44124 ssh2
Apr 9 03:18:37 routersrv sshd[12622]: Connection closed by 192.168.0.190 port 44124 [preauth]
Apr 9 03:19:53 routersrv sshd[12655]: Received disconnect from 192.168.0.190 port 44130:11: disconnected by user
Apr 9 03:19:53 routersrv sshd[12655]: Disconnected from 192.168.0.190 port 44130
Apr 9 03:19:58 routersrv sshd[12717]: Failed password for user01 from 192.168.0.190 port 44132 ssh2
Apr 9 03:20:01 routersrv sshd[12717]: Failed password for user01 from 192.168.0.190 port 44132 ssh2
Apr 9 03:20:03 routersrv sshd[12717]: Failed password for user01 from 192.168.0.190 port 44132 ssh2
Apr 9 03:20:03 routersrv sshd[12717]: Connection closed by 192.168.0.190 port 44132 [preauth]
Apr 9 03:20:11 routersrv sshd[12719]: Failed password for user01 from 192.168.0.190 port 44134 ssh2

Apr 9 03:22:47 routersrv sshd[12739]: Failed password for user01 from 192.168.0.190 port 44138 ssh2
Apr 9 03:22:50 routersrv sshd[12739]: Failed password for user01 from 192.168.0.190 port 44138 ssh2
Apr 9 03:22:53 routersrv sshd[12739]: Failed password for user01 from 192.168.0.190 port 44138 ssh2
Apr 9 03:22:53 routersrv sshd[12739]: Connection closed by 192.168.0.190 port 44138 [preauth]
Apr 9 03:26:19 routersrv sshd[12749]: Failed password for user01 from 192.168.0.190 port 44142 ssh2
Apr 9 03:26:19 routersrv sshd[12749]: Connection closed by 192.168.0.190 port 44142 [preauth]
Apr 9 03:26:20 routersrv sshd[12751]: Accepted password for user01 from 192.168.0.190 port 44144 ssh2

```

4、IPTABLES: SNAT (在 routersrv 上执行指令: iptables -t nat -nvL POSTROUTING); 【2 分】

2 分

(评分要点: 存在源为 192.168.0.0/24 和 192.168.100.0/24 的 MASQUERADE 规则, 其他参数不做评判标准。)

```
[root@Routersrv ~]# iptables -t nat -nvl POSTROUTING
Chain POSTROUTING (policy ACCEPT 161K packets, 10M bytes)
pkts bytes target  prot opt in    out    source          destination
  2   134 MASQUERADE  all  --  *    ens256  192.168.100.0/24    0.0.0.0/0
 11   732 MASQUERADE  all  --  *    ens256  192.168.0.0/24    0.0.0.0/0
[root@Routersrv ~]# _
```

4、IPTABLES: (2) DNAT (在 routersrv 上执行指令: iptables -t nat -nvl PREROUTING) ; 【2分】

(评分要点: 存在目的地为 81.6.63.254 的 DNAT 规则, 规则中至少需要存在 udp53, tcp53、tcp80、tcp443、tcp465、tcp993。)

```
[root@Routersrv ~]# iptables -t nat -nvl PREROUTING
Chain PREROUTING (policy ACCEPT 199K packets, 13M bytes)
pkts bytes target  prot opt in    out    source          destination
  4   240 DNAT    tcp  --  *    81.6.63.0/24  81.6.63.254  multiport dports 53,80,443,465,993 to:192.168.100.100
   0     0 DNAT    tcp  --  *    81.6.63.0/24  81.6.63.254  multiport dports 20,21,137,138,139,444,445,3358 to:192.168.100.200
 875 63084 DNAT    udp  --  *    81.6.63.0/24  81.6.63.254  udp dpt:53 to:192.168.100.100
[root@Routersrv ~]# [root@Routersrv ~]#
```

4、IPTABLES: (3) 默认链拒绝流量通行 (在 routersrv 上执行指令: iptables -nL | grep Chain) ; 【1分】

(评分要点: INPUT 、OUTPUT 和 FORWARD 链的默认规则为 DROP)

```
[root@Routersrv ~]# iptables -nL | grep Chain
Chain INPUT (policy DROP)
Chain FORWARD (policy DROP)
Chain OUTPUT (policy DROP)
Chain s2l (0 references)
```

4、IPTABLES: (4) 放行必要流量 (在 routersrv 上执行: iptables -nL) ; 【2分】

(评分要点: INPUT 链至少需要放行 tcp2021, tcp1194, udp67, 流量。FORWARD 链至少需要放行 tcp 20, 21, 53, 80, 433, 465, 993 udp53 流量。)

```
[root@routersrv ~]# iptables -nL
Chain INPUT (policy DROP)
target  prot opt source               destination
ACCEPT  udp  --  0.0.0.0/0            0.0.0.0/0           multiport dports 67,68
ACCEPT  tcp  --  0.0.0.0/0            0.0.0.0/0           multiport dports 1194,2021

Chain FORWARD (policy DROP)
target  prot opt source               destination
ACCEPT  tcp  --  0.0.0.0/0            0.0.0.0/0           multiport dports 53,80,443,465,993,20,
21,137,138,139,444,445,4500:5000
ACCEPT  udp  --  0.0.0.0/0            0.0.0.0/0           udp dpt:53

Chain OUTPUT (policy DROP)
target  prot opt source               destination
ACCEPT  udp  --  0.0.0.0/0            0.0.0.0/0           multiport dports 67,68
[root@routersrv ~]# _
```

5、Web Proxy: (1) 检查 nginx 服务状态 (routersrv 执行 `systemctl status nginx`) ; 【1分】

1分

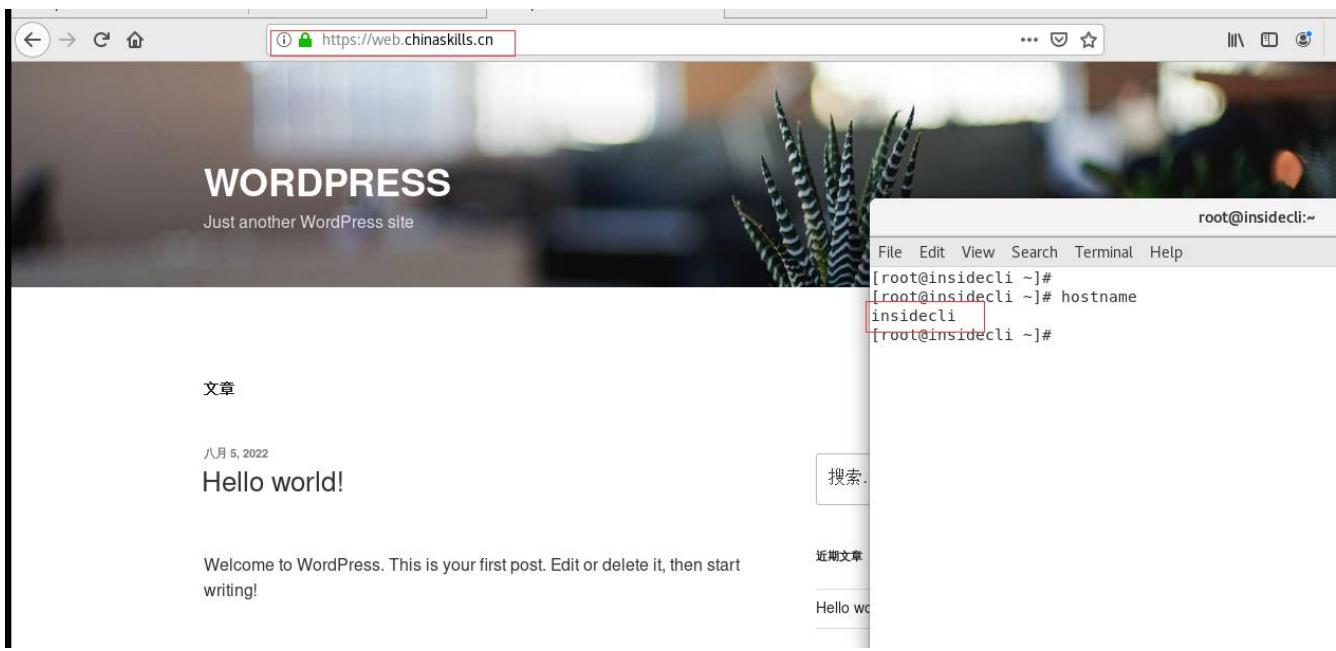
(评分要点: 服务状态为 running 即可得分)

```
[root@Routersrv ~]# systemctl status nginx.service
● nginx.service - The nginx HTTP and reverse proxy server
   Loaded: loaded (/usr/lib/systemd/system/nginx.service; enabled; vendor preset: disabled)
   Active: active (running) since Fri 2022-04-08 02:54:02 EDT; 24h ago
     Main PID: 8691 (nginx)
        CGroup: /system.slice/nginx.service
                  ├─8691 nginx: master process /usr/sbin/nginx
                  ├─8692 nginx: worker process
                  ├─8693 nginx: worker process
                  ├─8694 nginx: worker process
                  ├─8695 nginx: worker process
                  ├─8696 nginx: worker process
                  ├─8697 nginx: worker process
                  ├─8698 nginx: worker process
                  ├─8699 nginx: worker process
                  └─8700 nginx: cache manager process
```

5、Web Proxy: (2) 客户端访问测试 (使用 `insidecli` 访问 `web.chinaskills.cn`,并且携带在终端输入 `hostname` 的截图) ; 【2分】

2分

(评分要点: 通过 `web.chinaskills.cn` 能访问到 `www.chinaskills.cn` 页面的内容, `www.chinaskills.cn` 是 `wordpress` 主页面, 而且有绿色带锁的标志, 如果不携带 `hostname` 的截图或者 `hostname` 截图主机名不是 `insidecli` 本题不得分)



WORDPRESS
Just another WordPress site

八月 5, 2022
Hello world!

Welcome to WordPress. This is your first post. Edit or delete it, then start writing!

搜索.

近期文章
Hello wo

```
root@insidecli:~#
[root@insidecli ~]# hostname
insidecli
[root@insidecli ~]#
```

5、Web Proxy: (3) 检查网页日志 (appsrv 执行 tail -f /etc/httpd/logs/access_log) ; 【2分】

(评分要点: 能够看到代理服务器 IP 和客户端真实 IP 即可得分, 例如 192.168.100.254 192.168.0.190 的地址。第二个地址必须是 192.168.0.190, 第一个地址可以是 192.168.100.254 或 192.168.0.254)

```
tail -f /etc/httpd/logs/access_log
192.168.100.254 - - [18/Jul/2022:18:30:28 -0400] "HEAD / HTTP/1.1" 200 - "-" "curl/7.29.0"
192.168.100.254 - - [18/Jul/2022:18:30:31 -0400] "HEAD / HTTP/1.1" 200 - "-" "curl/7.29.0"
192.168.100.254 - - [18/Jul/2022:18:30:34 -0400] "HEAD / HTTP/1.1" 200 - "-" "curl/7.29.0"
192.168.100.254 - - [18/Jul/2022:18:30:36 -0400] "HEAD / HTTP/1.1" 200 - "-" "curl/7.29.0"
192.168.100.254 - - [18/Jul/2022:18:30:41 -0400] "HEAD / HTTP/1.1" 200 - "-" "curl/7.29.0"
192.168.100.254 - - [18/Jul/2022:18:30:44 -0400] "HEAD / HTTP/1.1" 200 - "-" "curl/7.29.0"
192.168.100.254 - - [18/Jul/2022:18:30:47 -0400] "HEAD / HTTP/1.1" 200 - "-" "curl/7.29.0"
192.168.100.254 - - [18/Jul/2022:18:30:50 -0400] "HEAD / HTTP/1.1" 200 - "-" "curl/7.29.0"
192.168.100.254 - - [18/Jul/2022:18:30:53 -0400] "HEAD / HTTP/1.1" 200 - "-" "curl/7.29.0"
192.168.100.254 192.168.0.190 - - [19/Jul/2022:09:41:08 -0400] "GET / HTTP/1.0" 401 381 "-" "Mozilla/5.0 (X11; Linux x86_64; rv:68.0) Gecko/20100101 Firefox/68.0"
192.168.100.254 192.168.0.190 - - [19/Jul/2022:09:42:04 -0400] "GET /favicon.ico HTTP/1.0" 404 209 "-" "Mozilla/5.0 (X11; Linux x86_64; rv:68.0) Gecko/20100101 Firefox/68.0"
192.168.100.100 - - [19/Jul/2022:09:42:06 -0400] "POST /wp-cron.php?doing_wp_cron=1658238126.2228890522003173828125 HTTP/1.1" 200 - "https://www.chinaskills.cn/wp-cron.php?doing_wp_cron=1658238126.2228890522003173828125" "WordPress/5.1.13; https://www.chinaskills.cn"
192.168.100.254 192.168.0.190 - - [19/Jul/2022:09:42:05 -0400] "GET / HTTP/1.0" 200 11094 "-" "Mozilla/5.0 (X11; Linux x86_64; rv:68.0) Gecko/20100101 Firefox/68.0"
192.168.0.190 - - [19/Jul/2022:09:42:06 -0400] "GET /wp-includes/js/wp-emoji-release.min.js?ver=5.1.13 HTTP/1.1" 304 - "https://web.chinaskills.cn/" "Mozilla/5.0 (X11; Linux x86_64; rv:68.0) Gecko/20100101 Firefox/68.0"
192.168.0.190 - - [19/Jul/2022:09:42:06 -0400] "GET /wp-content/themes/twenty nineteen/style.css?ver=1.3 HTTP/1.1" 304 - "https://web.chinaskills.cn/" "Mozilla/5.0 (X11; Linux x86_64; rv:68.0) Gecko/20100101 Firefox/68.0"
192.168.0.190 - - [19/Jul/2022:09:42:06 -0400] "GET /wp-includes/css/dist/block-library/theme.min.css?ver=5.1.13 HTTP/1.1" 304 - "https://web.chinaskills.cn/" "Mozilla/5.0 (X11; Linux x86_64; rv:68.0) Gecko/20100101 Firefox/68.0"
```

<p>5、Web Proxy: (4) 测试服务器监控脚本(router srv 先执行网页检测脚本, app srv 执行 tail -f /etc/httpd/logs/access_log); 【3分】</p>	3分
<p>(评分要点: 每三秒作为一次间隔。进行网页监测, 如图所示的 11:42:28 - 11:42:31 - 11:42:34)</p> <pre>192.168.100.254 - - - [09/Apr/2022:11:42:28 -0400] "GET / HTTP/1.1" 200 11039 "-" "curl/7.29.0" 192.168.100.254 - - - [09/Apr/2022:11:42:31 -0400] "GET / HTTP/1.1" 200 11039 "-" "curl/7.29.0" 192.168.100.254 - - - [09/Apr/2022:11:42:34 -0400] "GET / HTTP/1.1" 200 11039 "-" "curl/7.29.0"</pre>	
<p>6、OPENVPN: (1) 测试 VPN 用户验证 (在 outsidecli 上执行 systemctl restart openvpn@client; 然后输入用户密码截图; 然后再执行 systemctl status openvpn@client); 【每个点 2 分, 共 6 分】</p>	6分
<p>(评分要点: 用户认证后, 能看到服务状态为 running, 而且显示 Initialization Sequence Completed)</p> <pre>root@outsidecli:~# root@outsidecli:~# systemctl restart openvpn@client Enter Auth Username: vpnuuser1 Enter Auth Password: ***** root@outsidecli:~# root@outsidecli:~# systemctl status openvpn@client * openvpn@client.service - OpenVPN connection to client Loaded: loaded (/lib/systemd/system/openvpn@.service; enabled-runtime; vendor preset: enabled) Active: active (running) since Thu 2022-08-11 00:28:42 CST; 30s ago Docs: man:openvpn(8) https://community.openvpn.net/openvpn/wiki/Openvpn24ManPage https://community.openvpn.net/openvpn/wiki/HOWTO Main PID: 22003 (openvpn) Status: "Initialization Sequence Completed" Tasks: 1 (limit: 2281) Memory: 904.0K CGroup: /system.slice/system-openvpn.slice/openvpn@client.service `--22003 /usr/sbin/openvpn --daemon openvpn-client --status /run/openvpn/client.status 10 --cd /etc/openvpn --config /etc Aug 11 00:28:44 outsidecli openvpn-client[22003]: Incoming Data Channel: Cipher 'AES-256-GCM' initialized with 256 bit key Aug 11 00:28:44 outsidecli openvpn-client[22003]: ROUTE: default_gateway=UNDEF Aug 11 00:28:44 outsidecli openvpn-client[22003]: TUN/TAP device tun0 opened Aug 11 00:28:44 outsidecli openvpn-client[22003]: TUN/TAP TX queue length set to 100 Aug 11 00:28:44 outsidecli openvpn-client[22003]: do_ifconfig, tt->did_ifconfig_ipv6_setup=0 Aug 11 00:28:44 outsidecli openvpn-client[22003]: /sbin/ip link set dev tun0 up mtu 1500 Aug 11 00:28:44 outsidecli openvpn-client[22003]: /sbin/ip addr add dev tun0 172.16.0.2/24 broadcast 172.16.0.255 Aug 11 00:28:44 outsidecli openvpn-client[22003]: /sbin/ip route add 192.168.0.0/24 via 172.16.0.1 Aug 11 00:28:44 outsidecli openvpn-client[22003]: /sbin/ip route add 192.168.100.200/32 via 172.16.0.1 Aug 11 00:28:44 outsidecli openvpn-client[22003]: Initialization Sequence Completed lines 1-23/23 (END)</pre>	
<p>6、OPENVPN: (2) 然后查看 VPN 日志 (router srv 执行 tail -f /var/log/openvpn.log); 【2分】</p>	2分
<p>(评分要点: 存在登陆成功的条目, 和题目要求格式一致即可得分)</p>	

```
[root@routersrv openvpn]# tail -f /var/log/openvpn.log
2022-08-11 00:12:18: Successful authentication: username="vpnuser1".
2022-08-11 00:12:18 Successful authentication: username="vpnuser1"
2022-08-11 00:14:28 Successful authentication: username="vpnuser1"
2022-08-11 00:14:55 Successful authentication: username="vpnuser1"
2022-08-11 00:18:40 Successful authentication: username="vpnuser1"
2022-08-11 00:19:01 Successful authentication: username="vpnuser1"
2022-08-11 00:22:59 Successful authentication: username="vpnuser1"
2022-08-11 00:23:07 Successful authentication: username="vpnuser1"
2022-08-11 00:28:42 Successful authentication: username="vpnuser1"
2022-08-11 00:28:47 Successful authentication: username="vpnuser1"
```

2022-08-11 00:30:26 Successful authentication: username="vpnuser1"

6、OPENVPN: (3) 查看 VPN 端口号 (routersrv 执行 ss -ntpl | grep openvpn) ; 【2分】

(评分要点: 监听 TCP1194 即可得分)

```
[root@routersrv ~]# ss -ntpl | grep openvpn
LISTEN      0      32          *:1194                               *:*                               users:(("openvpn",pi
d=10922,fd=5))
[root@routersrv ~]# _
```

APPSRV 工作任务 (95 分)

评分要点	分值	评分
1、SSH: (1) 安装和监听端口设置 (在 appsrv 上执行: ss -nltp grep ssh) ; 【1分】	1分	
(评分要点: sshd 程序监听 tcp2101 端口)		

```
[root@appsrv ~]#  
[root@appsrv ~]# ss -ntpl | grep ssh  
LISTEN      0      128          *:2101          *:*          users:(("sshd",pid=82487,fd=3))  
LISTEN      0      128          [::]:2101        [::]:*          users:(("sshd",pid=82487,fd=4))  
[root@appsrv ~]#  
[root@appsrv ~]#
```

1、SSH: (2) 访问限制 (在 storagesrv 上执行指令: ssh -p 2101 root@192.168.100.100) ; 【2分】

2分

(评分要点: 返回结果为 Connection reset by peer)

```
[root@storagesrv ~]#  
[root@storagesrv ~]# ssh -p 2101 root@192.168.100.100  
ssh_exchange_identification: read: Connection reset by peer  
[root@storagesrv ~]#
```

1、SSH: (3) 免密登录 (InsideCli 的 cskadmin 用户环境下执行指令: ssh -p 2101 root@192.168.100.100) ; 【2分】

2分

(评分要点: Insidecli 可以进行 SSH 免密登录, 并且成功)

```
[root@insidecli ~]$ ssh -p 2101 root@192.168.100.100  
Last login: Tue Jul 19 05:01:03 2022 from 192.168.0.190  
*****  
ChinaSkills 2022 - CSK  
Module C Linux  
>>appsrv<<  
>>CentOS Linux release 7.9.2009 (Core)<<  
>>Tue Jul 19 09:53:01 EDT 2022<<  
*****  
[root@appsrv ~]#
```

1、SSH: (4) 分离 SFTP (appsrv 执行 systemctl status sftp) ; 【3分】

3分

(评分要点: 状态显示为 running 得分)

```
[root@appsrv ~]# 
[root@appsrv ~]# systemctl status sftpd
● sftpd.service - sftpd server daemon
  Loaded: loaded (/etc/systemd/system/sftpd.service; disabled; vendor preset: disabled)
  Active: active (running) since Sat 2022-07-30 20:56:42 EDT; 2s ago
    Docs: man:sshd(8)
          man:sshd_config(5)
  Main PID: 2223 (sftpd)
  CGroup: /system.slice/sftpd.service
          └─2223 /usr/sbin/sftpd -f /etc/ssh/sftpd_config

Jul 30 20:56:42 appsrv systemd[1]: Starting sftpd server daemon...
Jul 30 20:56:42 appsrv sftpd[2223]: Server listening on 0.0.0.0 port 12345.
Jul 30 20:56:42 appsrv sftpd[2223]: Server listening on :: port 12345.
Jul 30 20:56:42 appsrv systemd[1]: Started sftpd server daemon.
[root@appsrv ~]#
```

1、SSH: (5) SFTP 端口号 (appsrv 执行 ss -ntpl | grep sftpd) ; 【2分】

2分

(评分要点: 监听端口号为 54321 得分)

```
[root@appsrv ~]# 
[root@appsrv ~]# ss -ntpl | grep sftpd
LISTEN      0      128          *:54321                               *:*          users:(("sftpd",pid=21541,fd=3))
LISTEN      0      128          [::]:54321                            [::]:*          users:(("sftpd",pid=21541,fd=4))
[root@appsrv ~]#
```

2、DHCP: (1) 客户端地址范围、DNS 选项、网关选项 (查看 DHCP 配置文件, 截取相关的部分配置即可) ; 【4分】

4分

(评分要点: 范围在 192.168.0.110-192.168.0.190, DNS 设置为: 192.168.100.100, 网关设置为 192.168.0.254)

```
#  
## A slightly different configuration for an internal subnet.  
subnet 192.168.0.0 netmask 255.255.255.0 {  
    range 192.168.0.110 192.168.0.190;  
    option domain-name-servers 192.168.100.100;  
    option domain-name "chinaskills.cn";  
    option routers 192.168.0.254;  
    # option broadcast-address 10.5.5.31;  
    # default-lease-time 600;  
    # max-lease-time 7200;  
}  
subnet 192.168.100.0 netmask 255.255.255.0 {
```

2、DHCP: (2) 分配固定地址 (查看 DHCP 配置文件, 截取固定地址分配的配置即可) ; 【2分】

2分

(评分要点: 存在 fixed-address 192.168.0.190; 和 hardware ethernet 即可)

```
host insidecli {  
    hardware ethernet 00:0c:29:df:ac:b3;  
    fixed-address 192.168.0.190;  
}
```

2、DHCP: (3) 查看租约时间 (查看 DHCP 配置文件中租约时间的配置) ; 【2分】

2分

(评分要点: 默认租约时间为 43200 秒, 最大租约时间为 259200 秒)

```
option domain-name servers 192.168.100.100;  
#  
default-lease-time 43200;  
max-lease-time 259200;  
#  
...
```

2、DHCP: (4) 查看日志信息 (在 appsrv 执行指令: tail -f /var/log/dhcpd.log) ; 【2分】

2分

(评分要点: 存在日志信息即可得分)

<pre>[root@appsrv ~]# tail -f /var/log/dhcpd.log Jul 30 14:14:22 appsrv dhcpcd: DHCPACK on 192.168.0.190 to 00:0c:29:df:ac:b3 via ens33 Jul 30 14:14:22 appsrv dhcpcd: Dynamic and static leases present for 192.168.0.190. Jul 30 14:14:22 appsrv dhcpcd: Remove host declaration insidecli or remove 192.168.0.190 Jul 30 14:14:22 appsrv dhcpcd: from the dynamic address pool for 192.168.0.0/24 Jul 30 14:14:22 appsrv dhcpcd: DHCPREQUEST for 192.168.0.190 from 00:0c:29:df:ac:b3 via 192.168.0.254 Jul 30 14:14:22 appsrv dhcpcd: DHCPACK on 192.168.0.190 to 00:0c:29:df:ac:b3 via 192.168.0.254 Jul 30 14:14:22 appsrv dhcpcd: Dynamic and static leases present for 192.168.0.190. Jul 30 14:14:22 appsrv dhcpcd: Remove host declaration insidecli or remove 192.168.0.190 Jul 30 14:14:22 appsrv dhcpcd: from the dynamic address pool for 192.168.0.0/24 Jul 30 14:14:22 appsrv dhcpcd: DHCPREQUEST for 192.168.0.190 from 00:0c:29:df:ac:b3 via 192.168.100.254: ignored (not authoritative).</pre>	
<p>3、DNS: (1) chinaskills.cn 域解解析 (在 appsrv 上执行指令: named-checkconf -z grep china) ; 【2分】</p> <p>(评分要点:在 appsrv 上执行指令: named-checkconf -z grep china, 存在 2 条 chinaskills.cn 即可)</p>	2 分
<pre>[root@Appsrv ~]# [root@Appsrv ~]# named-checkconf -z grep china zone chinaskills.cn/IN: loaded serial 0 zone chinaskills.cn/IN: loaded serial 0 [root@Appsrv ~]#</pre>	
<p>3、DNS: (2) A 记录; (在 insidecli 上进入 nslookup 解析视图, 分别解析 www.chinaskills.cn、 download.chinaskills.cn 和 mail.chianskills.cn); 【3分】</p> <p>(评分要点: www、 download、 mail 主机均解析到 192.168.100.100, 一条解析记录 1 分)</p>	3 分

```
[root@insidecli ~]#  
[root@insidecli ~]# nslookup  
> www.chinaskills.cn  
Server: 192.168.100.100  
Address: 192.168.100.100#53  
  
Name: www.chinaskills.cn  
Address: 192.168.100.100  
> download.chinaskills.cn  
Server: 192.168.100.100  
Address: 192.168.100.100#53  
  
Name: download.chinaskills.cn  
Address: 192.168.100.100  
> mail.chinaskills.cn  
Server: 192.168.100.100  
Address: 192.168.100.100#53  
  
Name: mail.chinaskills.cn  
Address: 192.168.100.100  
>
```

3、DNS: (3) MX 记录 (在 insidecli 上执行指令: host -t MX chinaskills.cn 192.168.100.100) ; 【1分】

1分

(评分要点: chinaskills.cn 的 MX 解析解析到 mail.chinaskills.cn. 主机)

```
[root@insidecli ~]#  
[root@insidecli ~]# host -t MX chinaskills.cn 192.168.100.100  
Using domain server:  
Name: 192.168.100.100  
> Address: 192.168.100.100#53  
Aliases:  
  
chinaskills.cn mail is handled by 10 mail.chinaskills.cn.
```

<p>3、DNS: (4) 内外网解析 (在 <code>outsidecli</code> 上进入 <code>nslookup</code> 视图解析 <code>www.chinaskills.cn</code>) ; 【2分】</p> <p>(评分要点: 在 <code>outsidecli</code> 进入 <code>nslookup</code> 视图解析 <code>www.chinaskills.cn</code> 域名, 结果为 <code>81.6.63.254</code>。)</p> <pre>root@outsidecli:~# root@outsidecli:~# nslookup > www.chinaskills.cn Server: 81.6.63.254 Address: 81.6.63.254#53 Name: www.chinaskills.cn Address: 81.6.63.254 ></pre>	2分	
<p>3、DNS: (5) 上游 DNS 设置 (在 <code>insidecli</code> 上进入 <code>nslookup</code> 视图解析 <code>host1.test1.com</code>) ; 【2分】</p> <p>(评分要点: , 均显示 <code>Non-authoritative answer</code>, 并解析到 <code>81.6.63.100</code> 的地址。)</p> <pre>[root@insidecli ~]# [root@insidecli ~]# nslookup > > host1.test1.com Server: 192.168.100.100 Address: 192.168.100.100#53 Non-authoritative answer: Name: host1.test1.com Address: 81.6.63.100 ></pre>	2分	
<p>3、DNS: (6) 隐藏 DNS 版本 (在 <code>insidecli</code> 上执行 <code>nslookup -q=txt -class=CHAOS version.bind 192.168.100.100</code>) ; 【2分】</p> <p>(评分要点: 版本显示 <code>unknow</code>)</p>	2分	

```
[root@insidecli ~]# nslookup -q=txt -class=CHAOS version.bind 192.168.100.100
Server: 192.168.100.100
Address: 192.168.100.100#53

version.bind text = "unknow"

```

4、httpd: (1) 安装 apache2 (执行指令: systemctl status httpd) ; 【1分】

1分

(评分要点: httpd 服务征程运行 “active (running) ”)

```
[root@appsrv ~]# systemctl status httpd
● httpd.service - The Apache HTTP Server
  Loaded: loaded (/usr/lib/systemd/system/httpd.service; disabled; vendor preset: disabled)
  Active: active (running) since Tue 2022-07-19 09:41:46 EDT; 18min ago
    Docs: man:htpd(8)
          man:apachectl(8)
   Process: 96243 ExecStop=/bin/kill -WINCH ${MAINPID} (code=exited, status=0/SUCCESS)

```

4、httpd: (2) 网站根目录 (在 appsrv 上执行指令: cat /etc/fstab | grep webdata; 然后使用 vim 查看 wordpress 站点的 wp-config.php 配置内容) ; 【5分】

5分

(评分要点: cat /etc/fstab | grep webdata 能看到挂载源为 192.168.100.200:/webdata, 挂载点为 /webdata 得 2分; wordpress 配置文件每个标记点匹配得 1分)

```
[root@appsrv ~]# cat /etc/fstab | grep webdata
192.168.100.200:/webdata /webdata nfs defaults 0 0

```

```

/*
// ** MySQL - - - - - ** //
/** WordPress */
define('DB_NAME', 'wordpress');

/** MySQL */
define('DB_USER', 'root');

/** MySQL */
define('DB_PASSWORD', 'root@123');

/** MySQL */
define('DB_HOST', '192.168.100.200');

/** */
define('DB_CHARSET', 'utf8');

/** */
define('DB_COLLATE', '');

...

```

4、httpd: (3) 运行用户 (appsrv 上执行 id webuser && ps aux | grep webuser) ; 【2分】

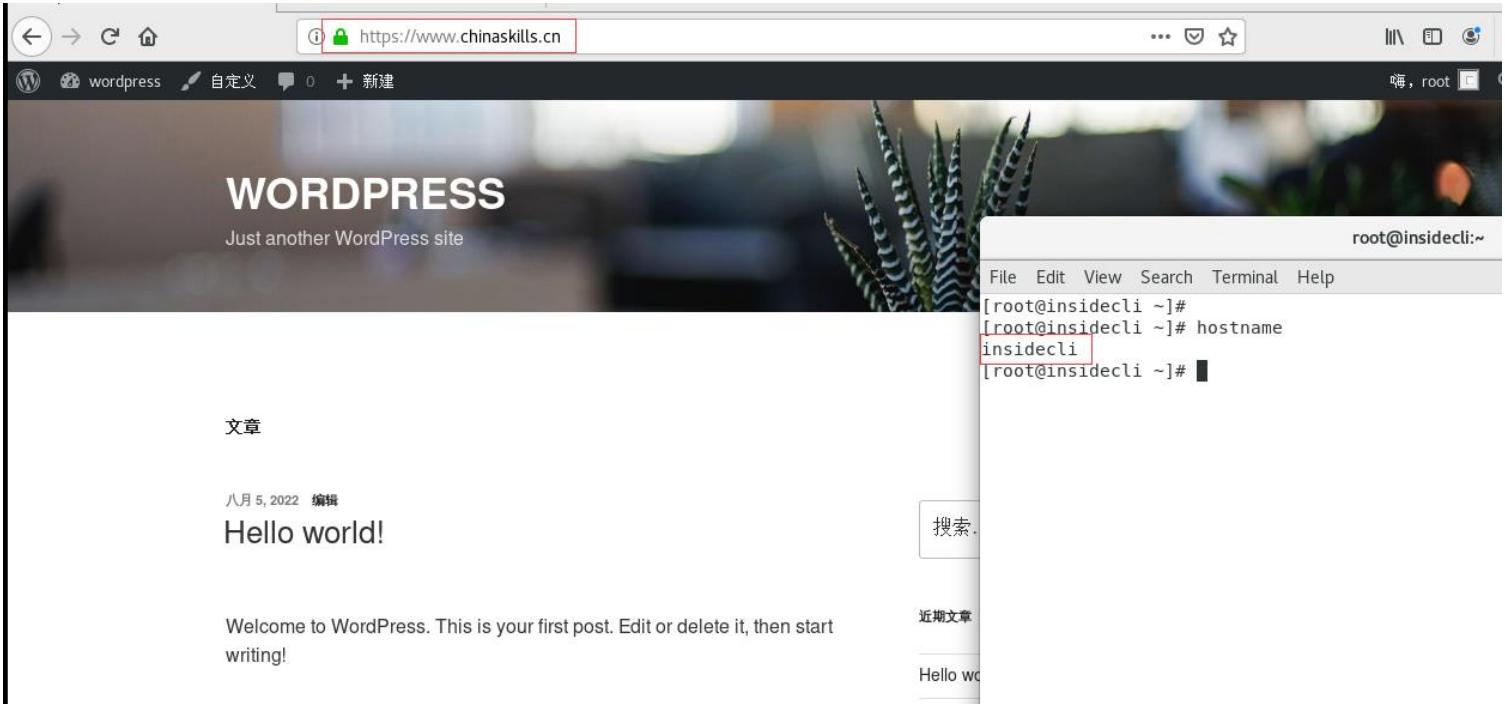
2分

(评分要点: 在 appsrv 上执行: id webuser && ps aux | grep webuser, webuser 的 uid 需要小于 1000, 大于 1000 不得分。显示 httpd 的进程由 webuser 运行。每个点 1 分)

```

[root@appsrv ~]# id webuser && ps aux | grep webuser
uid=666(webuser) gid=1001(webuser) groups=1001(webuser)
webuser 96251 0.0 1.0 512180 10084 ? S 09:41 0:00 /usr/sbin/httpd -DFOREGROUND
webuser 96252 0.0 2.0 527768 20828 ? S 09:41 0:00 /usr/sbin/httpd -DFOREGROUND
webuser 96253 0.0 1.7 516892 16988 ? S 09:41 0:00 /usr/sbin/httpd -DFOREGROUND
webuser 96254 0.0 1.0 512180 10080 ? S 09:41 0:00 /usr/sbin/httpd -DFOREGROUND
webuser 96255 0.0 1.0 512180 10080 ? S 09:41 0:00 /usr/sbin/httpd -DFOREGROUND
webuser 96287 0.0 0.9 512180 9576 ? S 09:42 0:00 /usr/sbin/httpd -DFOREGROUND
webuser 96296 0.0 0.8 512040 8328 ? S 09:42 0:00 /usr/sbin/httpd -DFOREGROUND
webuser 96297 0.0 0.8 512040 8328 ? S 09:42 0:00 /usr/sbin/httpd -DFOREGROUND
webuser 96298 0.0 0.8 512040 8328 ? S 09:42 0:00 /usr/sbin/httpd -DFOREGROUND
webuser 96299 0.0 0.8 512040 8328 ? S 09:42 0:00 /usr/sbin/httpd -DFOREGROUND
root 97439 0.0 0.0 112808 968 tty1 S+ 10:04 0:00 grep --color=auto webuser
[root@appsrv ~]#

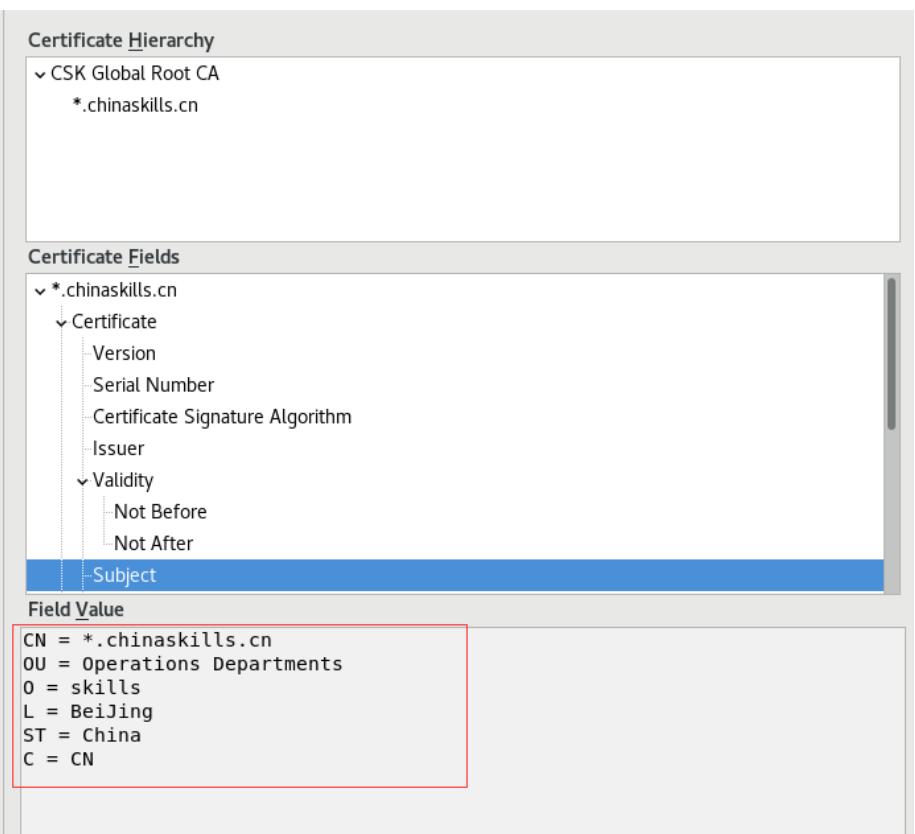
```

<p>4、httpd: (4) 限制内存 (在 <code>appsrv</code> 上执行: <code>cat /etc/systemd/system/multi-user.target.wants/httpd.service grep memory</code>) ; 【2分】</p> <p>(评分要点: , 存在下图标记的配置即可得分)</p> <pre>[root@appsrv ~]# cat /etc/systemd/system/multi-user.target.wants/httpd.service grep memory memory_limit_in_bytes=500*1024*1024 [root@appsrv ~]# -</pre>	2分	
<p>4、httpd: (5) www 网页内容 (在 <code>insidecli</code> 上使用浏览器访问 <code>www.chinaskills.cn</code> 站点, 打开终端输入 <code>hostname</code> 后, 一起截图) ; 【4分】</p> <p>(评分要点: 显示出 wordpress 主页面, 得 4 分; URL 中小锁必须为绿色, 不为绿色本题都不得分, 如果不携带 <code>hostname</code> 或者 <code>hostname</code> 不是 <code>insidecli</code> 扣 2 分)</p>	4分	
		
<p>4、httpd: (6) download 网站身份认证及网站内容 【4分】</p> <p>(评分要点: (1) 在 <code>insidecli</code> 上输入 <code>download.chinaskills.cn</code> 网址, 弹出输出用户名和密码框; 【1分】 (2) 输入</p>	4分	

LDAP 上设置的三个用户中的一个 zsuser/ lsusr/ wuusr 和相应的密码，成功登录该网站；【1分】(3) download 站点页面列出目录文件，存在 test.mp3\test.mp4\test.pdf 文件，其它多余文件不作判断；【1分】且 test.mp4 文件大小为 100M。【1分】注意 download 页面也要有一个绿色的锁，没有的话本题不得分。如果不携带 hostname 或者 hostname 不是 insidecli 扣 2 分）

The screenshot illustrates a penetration testing environment. At the top, a terminal window shows the root shell on a host named 'insidecli'. The command 'hostname' is run, and the output 'insidecli' is highlighted with a red box. Below the terminal is a Firefox browser window. A tab labeled 'download.chinaskills.cn' is active, showing an 'Authentication Required' dialog box. The dialog box contains fields for 'User Name:' and 'Password:' with a 'Cancel' and 'OK' button. The URL 'https://download.chinaskills.cn' is visible in the address bar. To the left of the browser, another tab labeled 'wordpress - Just another' is visible. Below the browser, a file listing titled 'Index of /' is shown. It contains a table with columns 'Name', 'Last modified', 'Size', and 'Description'. The table lists three files: 'test.mp3' (size 0), 'test.mp4' (size 100M), and 'test.pdf' (size 0). The 'test.mp4' file is highlighted with a red box. The entire screenshot is framed by a thick black border.

4、httpd: (7) 证书信息; 【4分】 (评分要点: 在 insidecli 上使用浏览器访问 www.chinaskills.cn 站点后, 打开证书, 查看证书使用者信息。, 证书使用者信息需要严格匹配。两个证书的信息和下图中标记严格匹配即可。每个证书匹配得 2 分, 共 4 分) The screenshot shows a certificate viewer with three main sections: Certificate Hierarchy, Certificate Fields, and Field Value. - Certificate Hierarchy:** Shows a tree structure with CSK Global Root CA as the root, which issues *.chinaskills.cn. - Certificate Fields:** Shows the structure of the certificate fields: - Subject: *.chinaskills.cn - Certificate - Version - Serial Number - Certificate Signature Algorithm - Issuer** (highlighted with a red box) - Validity - Not Before - Not After - Subject - Field Value:** Shows the detailed values for the Subject field: - CN = CSK Global Root CA - OU = Operations Departments - O = skills - L = Beijing - ST = China - C = CN

 <p>Certificate Hierarchy</p> <ul style="list-style-type: none"> ✓ CSK Global Root CA <ul style="list-style-type: none"> *.chinaskills.cn <p>Certificate Fields</p> <ul style="list-style-type: none"> ✓ *.chinaskills.cn <ul style="list-style-type: none"> ✓ Certificate <ul style="list-style-type: none"> Version Serial Number Certificate Signature Algorithm Issuer ✓ Validity <ul style="list-style-type: none"> Not Before Not After ✓ Subject <p>Field Value</p> <div style="border: 1px solid red; padding: 5px;"> <p>CN = *.chinaskills.cn OU = Operations Departments O = skills L = BeiJing ST = China C = CN</p> </div>	
<p>4、httpd: (8) 无证书警告 (在 insidecli 上执行: curl -I https://www.chinaskills.cn) ; 【2分】</p>	2分
<p>(评分要点: curl 指令不允许使用-k 参数, 访问 https 站点不提示任何的证书提示信息)</p>	

```
[root@insidecli ~]#  
[root@insidecli ~]# curl -I https://www.chinaskills.cn  
HTTP/1.1 200 OK  
Date: Sat, 09 Apr 2022 16:06:34 GMT  
Server: Apache  
X-Powered-By: PHP/5.4.16  
Link: <https://www.chinaskills.cn/index.php/wp-json/>; rel="https://api.w.org/  
Content-Type: text/html; charset=UTF-8  
  
[root@insidecli ~]#
```

4、httpd: (9) http 跳转 https (在 insidecli 上执行: curl -I http://www.chinaskills.cn) ; 【2分】

2分

(评分要点: 能看到 Location: https://www.chinaskills.cn)

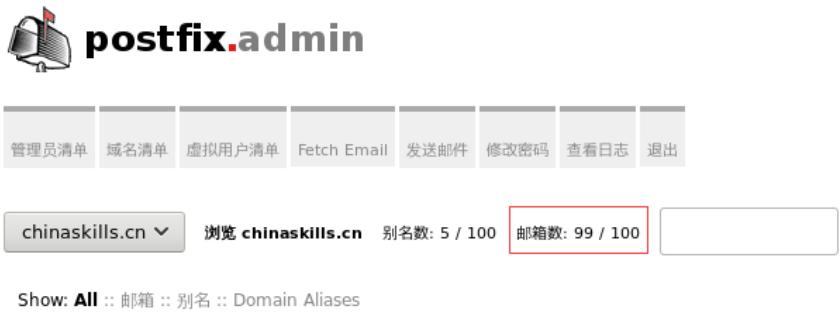
```
[root@insidecli ~]#  
[root@insidecli ~]# curl -I http://www.chinaskills.cn  
HTTP/1.1 301 Moved Permanently  
Date: Sat, 09 Apr 2022 16:07:04 GMT  
Server: Apache  
Location: https://www.chinaskills.cn  
Content-Type: text/html; charset=iso-8859-1  
  
[root@insidecli ~]#
```

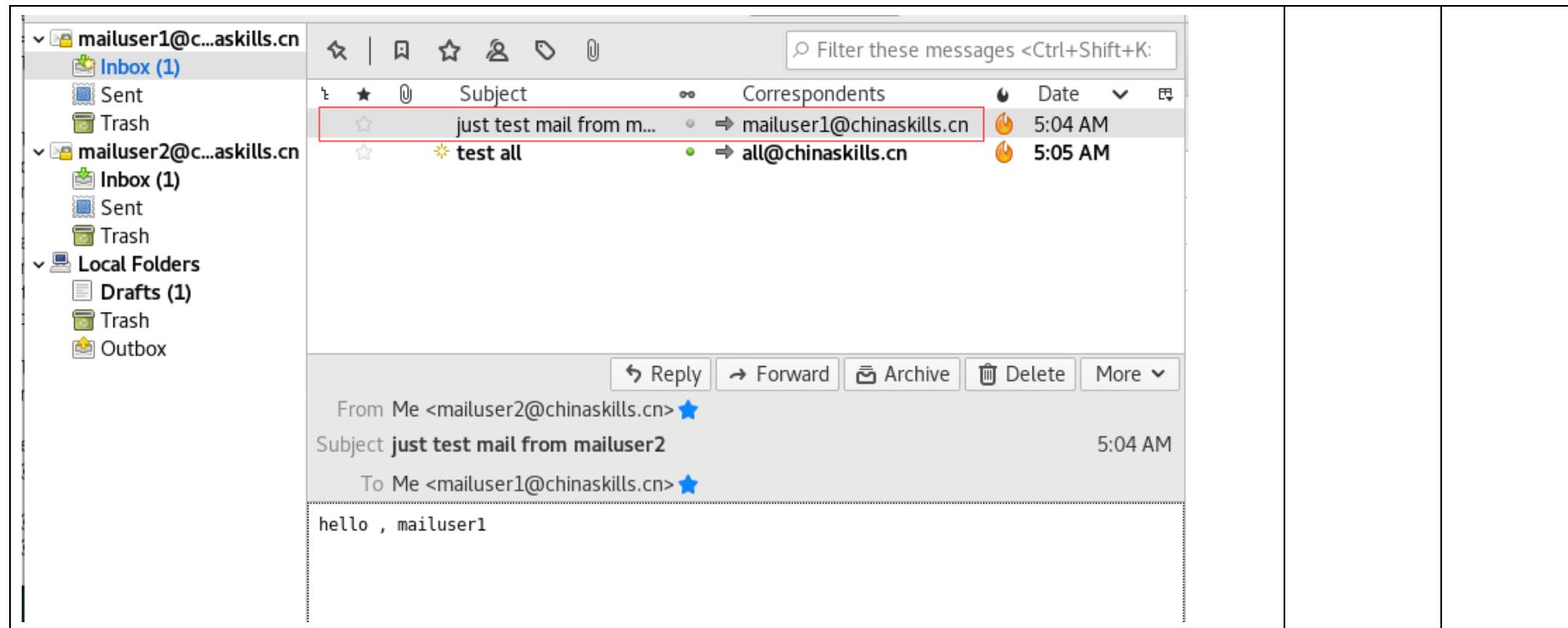
4、httpd: (9) 不显示非安全系统信息;【1分】

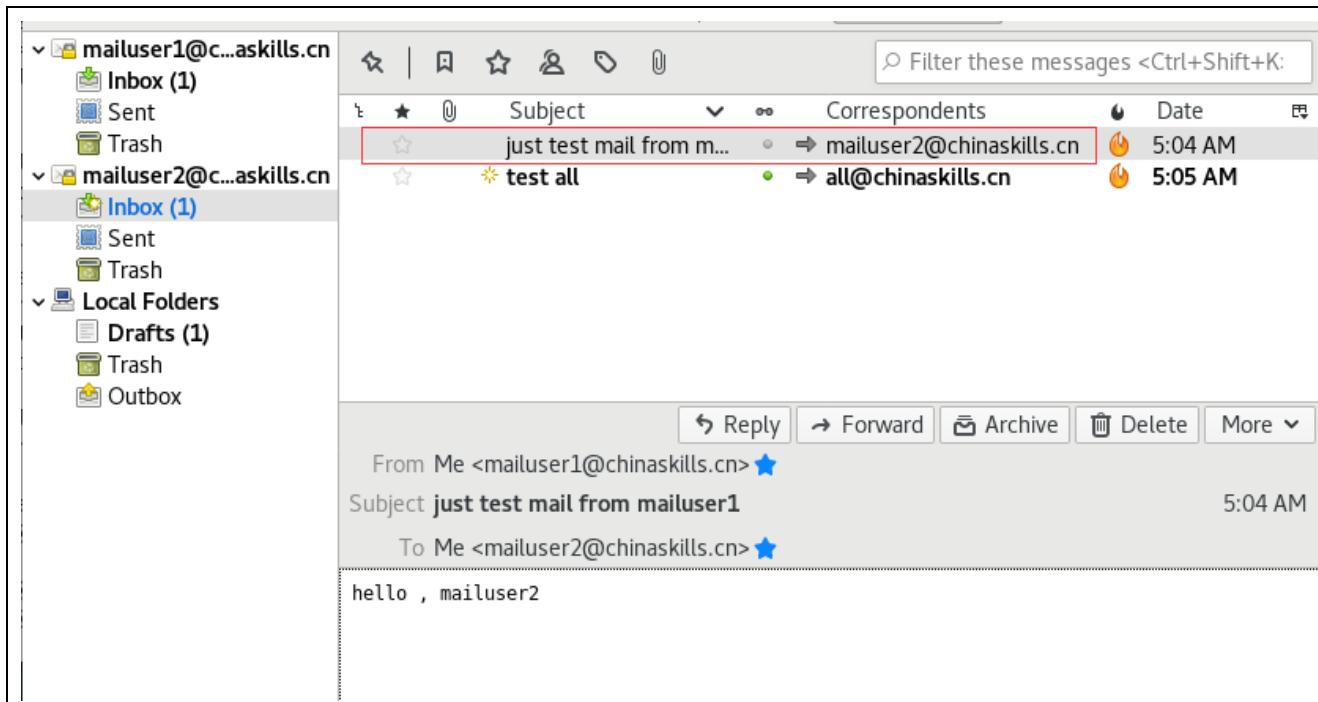
1分

(评分要点: download 站点的任何页面不存在任何的系统版本以及 web 服务器的版本信息)

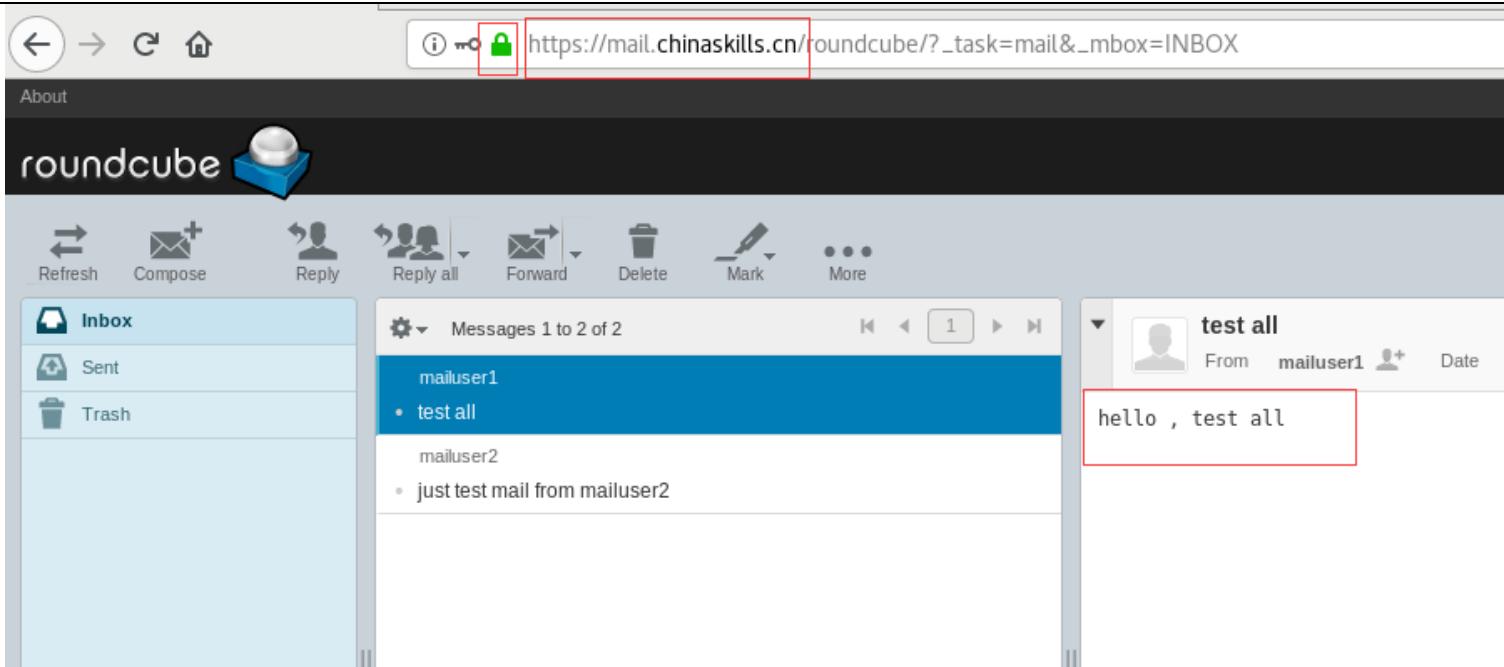
		
<h2>Not Found</h2> <p>The requested URL /sdadas was not found on this server.</p>		
<p>5、数据库备份: (1) 测试数据库备份脚本 (使用 vim 查看数据库脚本的编写) ; 【2分】</p> <p>(评分要点: 能看到 mysqldump 关键字 和 --all-databases 即可得分。)</p> <pre>#!/bin/bash mysqldump --all-databases root -proot@123 gzip > /root/mysqlbackup/all-databases-\$(date +%Y%m%d%H%M%S) ~</pre>	2 分	
<p>5、数据库备份: (2) 查看定时任务 (执行命令 cat /etc/crontab grep 30) ; 【2分】</p> <p>(评分要点:能看到第一个* 为 */30 即可)</p> <pre>[root@storagesrv ~]# [root@storagesrv ~]# cat /etc/crontab grep 30 */30 * * * * root /shells/mysqlbk.sh [root@storagesrv ~]#</pre>	2 分	
<p>5、数据库备份: (3) 查看备份文件(执行命令 ls /root/mysqlbackup); 【1分】</p> <p>(评分要点: 只要存在文件名为 all-databases-年月日, 精确到秒即可得分。)</p> <pre>[root@storagesrv ~]# [root@storagesrv ~]# ls /root/mysqlbackup/ all-databases-20220718000001 all-databases-20220718013001 all-databases-20220718030001 all-databases-20220718043001 all-databases-20220718060001 all-databases-20220718003001 all-databases-20220718020001 all-databases-20220718033001 all-databases-20220718050002 all-databases-20220718063001 all-databases-20220718011001 all-databases-20220718023001 all-databases-20220718040001 all-databases-20220718053001 [root@storagesrv ~]#</pre>	1 分	
<p>6、MAIL: (1) 启用 IMAPS 和 SMTPS, 禁止非安全 IMAP\SMTP(在 appsrv 上执行指令: ss -nltp grep -E</p>	2 分	

<p>“master dovecot”， ）； 【2分】</p> <p>（评分要点：监听端口在仅允许 465 和 993 端口，出现其他端口不得分）</p> <pre>[root@appsrv ~]# ss -ntpl grep -E "master dovecot" LISTEN 0 100 *:465 *:* users:(("master",pid=14643,fd=13)) LISTEN 0 100 *:993 *:* users:(("dovecot",pid=14646,fd=34)) LISTEN 0 100 [::]:465 [::]:* users:(("master",pid=14643,fd=14)) LISTEN 0 100 [::]:993 [::]:* users:(("dovecot",pid=14646,fd=35)) [root@appsrv ~]#</pre>	
<p>6、MAIL: (2) 邮件用户（通过 postfixadmin 的网页查看 appsrv 上的虚拟用户）； 【4分】</p> <p>（评分要点：通过 postfixadmin 查看 appsrv 上的虚拟用户，邮箱数为 99 即可得分）</p> 	4分
<p>6、MAIL: (3) 测试邮件（在 insidecli 上使用 thunderbird 登录邮箱客户端，从 mailuser1 和 mailuser2 分别向对方发送邮件）； 【6分】</p> <p>（评分要点：在 insidecli 上使用 thunderbird 登录邮箱客户端，从 mailuser1 和 mailuser2 分别向对方发送邮件，收件箱中查看邮件接收成功）</p>	6分





<ul style="list-style-type: none"> mailuser1@c...askills.cn <ul style="list-style-type: none"> Inbox (1) Sent Trash mailuser2@c...askills.cn <ul style="list-style-type: none"> Inbox (1) Sent Trash Local Folders <ul style="list-style-type: none"> Drafts (1) Trash Outbox 	<p>Filter these messages <Ctrl+Shift+K:</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 10%;">*</th><th style="width: 20%;">Subject</th><th style="width: 10%;">Correspondents</th><th style="width: 10%;">Date</th></tr> </thead> <tbody> <tr> <td style="text-align: center;">★</td><td>just test mail from m...</td><td>⇒ mailuser2@chinaskills.cn</td><td style="color: orange;">5:04 AM</td></tr> <tr> <td style="text-align: center;">★</td><td>test all</td><td>⇒ all@chinaskills.cn</td><td style="color: orange;">5:05 AM</td></tr> </tbody> </table> <p style="margin-top: 10px;"> <input style="margin-right: 10px;"/> Reply <input style="margin-right: 10px;"/> Forward <input style="margin-right: 10px;"/> Archive <input style="margin-right: 10px;"/> Delete <input style="margin-right: 10px;"/> More </p> <p>From Me <mailuser1@chinaskills.cn> ★ Subject just test mail from mailuser1 5:04 AM To Me <mailuser2@chinaskills.cn> ★ hello , mailuser2 </p>	*	Subject	Correspondents	Date	★	just test mail from m...	⇒ mailuser2@chinaskills.cn	5:04 AM	★	test all	⇒ all@chinaskills.cn	5:05 AM	
*	Subject	Correspondents	Date											
★	just test mail from m...	⇒ mailuser2@chinaskills.cn	5:04 AM											
★	test all	⇒ all@chinaskills.cn	5:05 AM											
6、MAIL: (4) 广播邮件 (insidecli 通过网页查看广播邮箱, 使用 mailuser1 用户登录) ; 【4分】	4 分													
(评分要点: 通过网页查看广播邮箱, 使用 mailuser1 用户登录, 网页有绿色的小锁, 而且能看到广播邮箱)														

		
<p>7、CA: 根证书路径和根证书信息(在 appsrv 上执行指令: openssl x509 -text -in /csk-rootca/csk-ca.pem -noout grep Subject); 【5分】</p> <p>(评分要点: 在 appsrv 上执行指令: openssl x509 -text -in /csk-rootca/csk-ca.pem -noout grep Subject, 6个信息点都对才能得分)</p> <pre>root@appsrv ~]# openssl x509 -text -in /csk-rootca/csk-ca.pem -noout grep Subject [redacted] [redacted] [redacted] [redacted] [redacted] [redacted]</pre>	5 分	
<p>8、网桥 VXLAN 服务: (1) 查看 appsrv 和 storagesrv 上的 vxlan 网桥 (分别在 appsrv 和 storagesrv 执行 brctl show); 【每个 4 分, 共 8 分】</p> <p>(评分要点: 能看到网桥为 br-vxlan, 接口为 vxlan10)</p>	8 分	

[root@appsrv ~]# [root@appsrv ~]# brctl show bridge name bridge id STP enabled br-vxlan 8000.367d7c4a6a06 no [root@appsrv ~]#	interfaces vxlan10
[root@storagesrv ~]# [root@storagesrv ~]# brctl show bridge name bridge id STP enabled br-vxlan 8000.ca75a8dab82a no [root@storagesrv ~]#	interfaces vxlan10

8 网桥 VXLAN 服务： (2) appsrv 测试 vxlan 隧道连通性（使用 ping -I 172.16.1.1 172.16.1.2）； 【2分】

2 分

(评分要点：能够 ping 通即可)

[root@appsrv ~]# [root@appsrv ~]# ping -I 172.16.1.1 172.16.1.2 PING 172.16.1.2 (172.16.1.2) from 172.16.1.1 : 56(84) bytes of data. 64 bytes from 172.16.1.2: icmp_seq=1 ttl=64 time=0.200 ms 64 bytes from 172.16.1.2: icmp_seq=2 ttl=64 time=0.163 ms 64 bytes from 172.16.1.2: icmp_seq=3 ttl=64 time=0.178 ms ^C --- 172.16.1.2 ping statistics --- 3 packets transmitted, 3 received, 0% packet loss, time 2000ms rtt min/avg/max/mdev = 0.163/0.180/0.200/0.018 ms [root@appsrv ~]#
--

STORAGESRV 工作任务 (80 分)

评分要点	分值	评分
1、 (1) 磁盘管理：查看新加磁盘（右击虚拟机属性查看）； 【1分】	1 分	
(评分要点：看到一块大小为 10G 的硬盘即可)		

		
<p>1、磁盘管理: (2) 查看 vdo 重删和压缩 (vdo status grep Compression && vdo status grep Deduplication) ; 【2分】</p> <p>(评分要点: 能看到压缩和重删 都是 enable 即可, 每个 1分)</p> <pre>[root@storagesrv ~]# vdo status grep Compression && vdo status grep Deduplication Compression: enabled Deduplication: enabled [root@storagesrv ~]#</pre>	2 分	
<p>1、磁盘管理: (3) 查看挂载 (在 storagesrv 上执行指令: df -Th) ; 【3分】</p> <p>(评分要点: 看到文件系统是 ext4, 大小为 148G (150G 左右即可), 挂载点为/vdodata; 每个 1分)</p>	3 分	

```
[root@storagesrv dev]# 
[root@storagesrv dev]# df -Th
Filesystem           Type      Size  Used Avail Use% Mounted on
/dev/tmpfs            devtmpfs  894M   0  894M  0% /dev
tmpfs                tmpfs    910M   0  910M  0% /dev/shm
tmpfs                tmpfs    910M  10M  900M  2% /run
tmpfs                tmpfs    910M   0  910M  0% /sys/fs/cgroup
/dev/mapper/centos-root xfs      39G  4.9G  34G  13% /
/dev/sr0              iso9660  9.5G  9.5G   0 100% /mnt/cdrom
/dev/mapper/centos-home xfs      19G  37M  19G  1% /home
/dev/sda1              xfs     1014M 185M  830M  19% /boot
tmpfs                tmpfs    182M   0  182M  0% /run/user/0
/dev/mapper/snapvg-snapsrc ext4    4.8G  20M  4.6G  1% /snap
/dev/mapper/vdodisk      ext4    148G  61M  140G  1% /vdodata
[root@storagesrv dev]#
[root@storagesrv dev]#
[root@storagesrv dev]#
```

2、SSH: (1) 查看 SSH 服务 (在 storagesrv 上执行指令: systemctl status sshd) ; 【1分】

1分

(评分要点: 状态为 running 即可得分)

```
[root@storagesrv ~]# 
[root@storagesrv ~]# systemctl status sshd
● sshd.service - OpenSSH server daemon
  Loaded: loaded (/usr/lib/systemd/system/sshd.service; enabled; vendor preset: enabled)
  Active: active (running) since Sat 2022-04-09 11:16:26 EDT; 22s ago
    Docs: man:sshd(8)
          man:sshd_config(5)
  Main PID: 23536 (sshd)
    CGroup: /system.slice/sshd.service
            └─23536 /usr/sbin/sshd -D

Apr 09 11:16:26 storagesrv systemd[1]: Starting OpenSSH server daemon...
Apr 09 11:16:26 storagesrv sshd[23536]: Server listening on 0.0.0.0 port 3358.
Apr 09 11:16:26 storagesrv sshd[23536]: Server listening on :: port 3358.
Apr 09 11:16:26 storagesrv systemd[1]: Started OpenSSH server daemon.
```

2、SSH: (2) 查看 ssh 端口监听(ss -ntpl | grep ssh); 【1分】

1分

(评分要点: ssh 的监听端口是 2022 即可)

```
[root@storagesrv ~]# ss -ntpl | grep ssh
LISTEN      0      128      *:2022
LISTEN      0      128      [::]:2022
[root@storagesrv ~]#
```

users:(("sshd",pid=4

users:(("sshd",pid=4

2、SSH: (3) 测试 ssh 用户访问 (在 insidecli 上分别使用 user01、user02、root 用户通过 SSH 来登录 storagesrv) ; 【3分】

(评分要点: user01 和 user02 都可以正常登录, root 用户无法登录, 失败提示 permission denied, 失败三次后自动退出)

```
[root@insidecli ~]#
[root@insidecli ~]# ssh -p 3358 user01@192.168.100.200
user01@192.168.100.200's password:
Last failed login: Sat Apr  9 11:19:11 EDT 2022 from 192.168.0.190 on ssh:notty
There were 2 failed login attempts since the last successful login.
Last login: Sat Apr  9 11:15:08 2022
[user01@storagesrv ~]$ exit
logout
Connection to 192.168.100.200 closed.
[root@insidecli ~]# ssh -p 3358 user02@192.168.100.200
user02@192.168.100.200's password:
[user02@storagesrv ~]$ exit
logout
Connection to 192.168.100.200 closed.
[root@insidecli ~]# ssh -p 3358 root@192.168.100.200
root@192.168.100.200's password:
Permission denied, please try again.
root@192.168.100.200's password:
Permission denied, please try again.
root@192.168.100.200's password:
Permission denied (publickey,gssapi-keyex,gssapi-with-mic,password).
[root@insidecli ~]#
```

2、SSH: (4) 查看 sudo 组用户 (在 storagesrv 上执行指令: cat /etc/sudoers | grep user0) ; 【2分】

(评分标准: 存在 user01 和 user02 对应的信息即可得分, 每个 1 分)

```
[root@storagesrv ~]#  
[root@storagesrv ~]# cat /etc/sudoers | grep user0  
user01  ALL=(ALL)          ALL  
user02  ALL=(ALL)          ALL  
[root@storagesrv ~]#
```

3、VSFTPD: (1) 测试 ftps (insidecli 使用 lftp -u webuser,密码 ftp.chinaskills.cn 登录, 然后使用 ls 截图) ; 【2分】

(评分要点: FTP 登陆后能够查看 文件内容, 不报 SSL 错误即可)

```
[root@insidecli ~]#  
[root@insidecli ~]# lftp -u webuser,1234 ftp.chinaskills.cn  
lftp webuser@ftp.chinaskills.cn:~> ls  
-rwxrwxrwx  1 65534  65534      0 Jul 26 16:28 test.mp3  
-rwxrwxrwx  1 65534  65534  104857600 Jul 26 16:29 test.mp4  
-rwxrwxrwx  1 65534  65534      0 Jul 26 16:28 test.pdf  
drwxr-xr-x  5 65534  65534    4096 Jul 31 07:54 wordpress  
lftp webuser@ftp.chinaskills.cn:/> ■
```

3、VSFTPD: (2) quote pwd 查看 chroot; 【2分】

(评分要点: 显示为 “/”)

```
lftp webuser@ftp.chinaskills.cn:/> quote pwd  
257 "/"  
lftp webuser@ftp.chinaskills.cn:/>
```

3、VSFTPD: (3) 测试 ftp 文件上传权限(分别上传 test.doc,test.docx,test.xlsx,test.txt 文件,然后 ls); 【4分】

(评分要点: 上传 test.doc、test.docx、test.xlsx 后缀文件会提示错误 550 代码, 如果不是 550 错误则不得分, 每个 1 分, 【3分】; 上传 test.txt 成功, 并且 ls 能够显示【1分】)

```

lftp webuser@ftp.chinaskills.cn:/> put test.doc
put: Access failed: 550 Permission denied. (test.doc)
lftp webuser@ftp.chinaskills.cn:/> put test.docx
put: Access failed: 550 Permission denied. (test.docx)
lftp webuser@ftp.chinaskills.cn:/>
lftp webuser@ftp.chinaskills.cn:/> put test.xlsx
put: Access failed: 550 Permission denied. (test.xlsx)
lftp webuser@ftp.chinaskills.cn:/>
lftp webuser@ftp.chinaskills.cn:/> put test.txt
lftp webuser@ftp.chinaskills.cn:/>
lftp webuser@ftp.chinaskills.cn:/> ls
-rwxrwxrwx 1 65534 65534 0 Jul 26 16:28 test.mp3
-rwxrwxrwx 1 65534 65534 104857600 Jul 26 16:29 test.mp4
-rwxrwxrwx 1 65534 65534 0 Jul 26 16:28 test.pdf
-rw-r--r-- 1 1001 1001 0 Jul 31 08:20 test.txt
drwxr-xr-x 5 65534 65534 4096 Jul 31 07:54 wordpress

```

3、VSFTPD: (4) 查看 vsftpd 配置文件中限速限制的配置 (在 storagesrv 上执行指令: cat /etc/vsftpd/vsftpd.conf | grep rate) ; 【1分】

1分

(评分要点: 显示出 local_max_rate=100000 即可, 如果显示的是其它关键字则不得分。)

```

[root@storagesrv vsftpd]#
[root@storagesrv vsftpd]# cat /etc/vsftpd/vsftpd.conf | grep rate
local_max_rate=100000

```

3、VSFTPD: (5) 测试 ftp 中同一个 IP 地址登录 (insidecli 上通过 lftp -u webuser, 密码 ftp.chinaskills.cn 打开三个终端, 第三个终端执行 ls 命令后截图) 【1分】

1分

(评分要点: 打开第三个终端输入 ls 后显示 delaying before reconnect, 显示其它不得分;)

```

`ls` at 0 [Delaying before reconnect: 30]

```

3、VSFTPD: (6) 查看端口范围 (截取配置文件中相关配置) ; 【2分】

2分

(评分要点: 和截图中配置信息一致即可得分)

```

user_config_dir /etc/vsftpd
pasv_min_port=40000
pasv_max_port=41000

```

3、VSFTPD: (7) 测试匿名用户 (storagesrv 执行 ls -l /webdata/test.txt) ; 【3分】

3分

(评分要点: 之前上传的 test.txt 的文件所属者为 webadmin 即可得分)

```
[root@storagesrv ~]# ls -l /webdata/test.txt
-rw-r--r-- 1 webadmin webadmin 0 Jul 31 04:20 /webdata/test.txt
[root@storagesrv ~]#
```

4、NFS: (1) 共享目录 (在 appsrv 上执行指令: showmount -e 192.168.100.200) ; 【2分】

(评分要点: 在 appsrv 上执行 showmount -e 192.168.100.200, 存在/webdata 即可)

```
[root@appsrv ~]# showmount -e 192.168.100.200
Export list for 192.168.100.200:
/webdata 192.168.100.100
[root@appsrv ~]#
```

4、NFS: (2) 仅允许 AppSrv 访问 (在 storagesrv 上执行指令: exportfs -av) ; 【2分】

(评分要点: storagesrv 上执行 exportfs -av, 能看到 192.168.100.100 的地址即可。)

```
[root@storagesrv ~]# exportfs -av
exporting 192.168.100.100:/webdata
[root@storagesrv ~]#
```

4、NFS: (3) 访问身份 (在 appsrv 上执行指令: ls -l /webdata) ; 【3分】

(评分要点: 在 appsrv 上执行 ls -l /webdata; test.mp3, test.mp4, test.pdf 得所有者都是 nfsnobody 即可得分, 每个 1分)

```
[root@appsrv ~]# ls -l /webdata/
total 102404
-rwxrwxrwx 1 nfsnobody nfsnobody 0 Jul 26 12:28 test.mp3
-rwxrwxrwx 1 nfsnobody nfsnobody 104857600 Jul 26 12:29 test.mp4
-rwxrwxrwx 1 nfsnobody nfsnobody 0 Jul 26 12:28 test.pdf
drwxr-xr-x 5 nfsnobody nfsnobody 4096 Jul 31 2022 wordpress
```

<p>5、SAMBA: (1) samba 用户创建 (在 storagesrv 上执行指令: pdbedit -L) ; 【3分】</p> <p>(评分要点: 通过 pdbedit -L 查询出存在 zouser, lsusr, wuusr 用户, 每个 1 分)</p> <pre>[root@storagesrv ~]# pdbedit -L wuusr:1007:wuusr lsusr:1006:lsusr zouser:1005:zuser [root@storagesrv ~]#</pre>	3 分
<p>5、SAMBA: (2) 文件共享 (在 insidecli 执行指令: smbclient -L=192.168.100.200 -U zouser) ; 【2分】</p> <p>(评分要点: 在 insidecli 上查询发布出来的目录(smbclient -L=192.168.100.200 -U zouser), , 有 share1 和 public 即可得分, 其它不做评判, 每个 1 分)</p> <pre>[root@insidecli ~]# [root@insidecli ~]# smbclient -L=192.168.100.200 -U zouser Enter SAMBA\zuser's password: Sharename Type Comment ----- ----- print\$ Disk Printer Drivers share1 Disk share1 public Disk public IPC\$ IPC IPC Service (Samba 4.10.16) zouser Disk Home Directories Reconnecting with SMB1 for workgroup listing. Server Comment ----- Workgroup Master ----- [root@insidecli ~]#</pre>	2 分
<p>5、SAMBA: (3) share1 目录的用户权限管理 (使用 zouser 测试; 用户登录后先进行 ls, 然后上传 test.txt; 最后再进行 ls 之后在截图) ; 【1分】</p> <p>(评分要点: zouser 可以上传文件并成功查看)</p>	1 分

```
[root@insidecli smb]# smbclient //192.168.100.200/share1 -U zsuser
Enter SAMBA\zsuser's password:
Try "help" to get a list of possible commands.
smb: \> ls
.
..
D 0 Mon Jul 18 11:03:43 2022
D 0 Mon Jul 18 10:56:23 2022

38770180 blocks of size 1024. 36837152 blocks available
smb: \> put test.txt
putting file test.txt as \test.txt (0.0 kb/s) (average 0.0 kb/s)
smb: \> ls
.
..
D 0 Tue Jul 19 05:23:03 2022
D 0 Mon Jul 18 10:56:23 2022
A 0 Tue Jul 19 05:23:03 2022

38770180 blocks of size 1024. 36837152 blocks available
smb: \> █
```

5、SAMBA: (4) share1 目录的用户权限管理 (wuusr 测试; 用户登录后先进行 ls, 然后上传 test.txt;最后再进行 ls 之后在截图);

【1分】

1 分

(评分要点: wuusr 上传文件提示 access_denied, 上传文件失败)

```
[root@insidecli smb]# smbclient //192.168.100.200/share1 -U wuusr
Enter SAMBA\wuusr's password:
Try "help" to get a list of possible commands.
smb: \> ls
.
..
D 0 Tue Jul 19 05:23:51 2022
D 0 Mon Jul 18 10:56:23 2022

38770180 blocks of size 1024. 36837152 blocks available
smb: \>
smb: \> put test.txt
NT_STATUS_ACCESS_DENIED opening remote file \test.txt
smb: \> ls
.
..
D 0 Tue Jul 19 05:23:51 2022
D 0 Mon Jul 18 10:56:23 2022

38770180 blocks of size 1024. 36837152 blocks available
smb: \>
```

5、SAMBA: (5) share1 目录的用户权限管理 (lsusr 测试; 用户登录后先进行 ls, 然后上传 test.txt;最后再进行 ls 之后在截图) ;
【1分】

(评分要点: lsusr 上传文件提示 access_denied, 上传文件失败)

```
[root@insidecli smb]# smbclient //192.168.100.200/share1 -U lsusr
Enter SAMBA\lsusr's password:
Try "help" to get a list of possible commands.
smb: \> ls
.
..
D      0  Tue Jul 19 05:23:51 2022
D      0  Mon Jul 18 10:56:23 2022

38770180 blocks of size 1024. 36837124 blocks available
smb: \> put test.txt
NT_STATUS_ACCESS_DENIED opening remote file \test.txt
smb: \> ls
.
..
D      0  Tue Jul 19 05:23:51 2022
D      0  Mon Jul 18 10:56:23 2022

38770180 blocks of size 1024. 36837124 blocks available
smb: \>
```

5、SAMBA: (6) public 目录的用户权限管理 (使用 smbclient //192.168.100.200/public -U anonymous, 登录后上传 test.txt 进行测试)；【2分】

2分

(评分要点: anonymous 可以上传文件, 通过 ls 也能查看到上传的文件)

```

[1] 0:0@192.168.100.200:~# 
[root@insidecli smb]# smbclient //192.168.100.200/public -U anonymous
Enter SAMBA\anonymous's password:
Try "help" to get a list of possible commands.
smb: \> ls
.
..
D 0 Tue Jul 19 05:22:38 2022
D 0 Mon Jul 18 10:56:23 2022

38770180 blocks of size 1024. 36837144 blocks available
smb: \> put test.txt
putting file test.txt as \test.txt (0.0 kb/s) (average 0.0 kb/s)
smb: \> ls
.
..
D 0 Tue Jul 19 05:25:25 2022
D 0 Mon Jul 18 10:56:23 2022
test.txt A 0 Tue Jul 19 05:25:25 2022

38770180 blocks of size 1024. 36837144 blocks available
smb: \>

```

6、LDAP: (1) 查询 LDAP 中的 chinaskills.cn 目录 (在 storagesrv 上执行指令: ldapsearch -x -b "dc=chinaskills,dc=cn | grep "dn: dc") ; 【3分】 3分

(评分要点: 存在 dc=chinaskills,dc=cn 即可得分)

```

[root@storagesrv ~]# ldapsearch -x -b "dc=chinaskills,dc=cn" | grep "dn: dc"
dn: dc=chinaskills,dc=cn
[root@storagesrv ~]# 

```

6、LDAP: (2) ldap 用户 (在 storagesrv 上执行指令: ldapsearch -x -b "dc=chinaskills,dc=cn | grep "dn: uid") ; 【3分】 3分

(评分要点: 存在用户 zsuser, lsusr, wuusr 即可, 每个用户 1 分)

```

[root@storagesrv ~]# 
[root@storagesrv ~]# ldapsearch -x -b "dc=chinaskills,dc=cn" | grep "dn: uid"
dn: uid=zsuser,ou=users,dc=chinaskills,dc=cn
dn: uid=lsusr,ou=users,dc=chinaskills,dc=cn
dn: uid=wuusr,ou=users,dc=chinaskills,dc=cn
[root@storagesrv ~]# 

```

6、LDAP: (3) ldap 用户组 (storagesrv 执行指令: ldapsearch -x -b "dc=chinaskills,dc=cn | grep "dn: cn") ; 【2分】 2分

<p>(评分要点: 存在 cn=ldsgp 的用户组即可得分)</p> <pre>[root@storageSRV ~]# ldapsearch -x -b "dc=chinaskills,dc=cn" grep "dn: cn" dn: cn=ldsgp,ou=users,dc=chinaskills,dc=cn [root@storageSRV ~]#</pre>	
<p>7、Shell 脚本: (1) 运行 userAdd.sh 脚本后截图 (在 storageSRV 上执行指令 /shells/userAdd.sh lifei) ; 【1分】</p>	1分
<p>(评分要点: 运行 shell 脚本后, 提示 adding new entry 即可)</p> <pre>[root@storageSRV shells]# ./userAdd.sh lifei User lifei password set to none. adding new entry "uid=lifei,ou=users,dc=chinaskills,dc=cn" [root@storageSRV shells]#</pre>	
<p>7、Shell 脚本: (2) 查看 ldap 用户 lifei 的情况 (在 storageSRV 上执行指令: ldapsearch -x -b "dc=chinaskills,dc=cn" grep "dn: uid=lifei") ; 【2分】</p>	2分
<p>(评分要点: 存在 dn: uid=lifei 这一行信息即可得分)</p> <pre>[root@storageSRV shells]# ./userAdd.sh lifei User lifei password set to none. adding new entry "uid=lifei,ou=users,dc=chinaskills,dc=cn" [root@storageSRV shells]#</pre>	
<p>7、Shell 脚本: (3) 查看 samba 用户 (在 storageSRV 执行指令: pdbedit -L grep lifei) ; 【2分】</p>	2分
<p>(评分要点: 存在 lifei 用户即可)</p> <pre>[root@storageSRV ~]# pdbedit -L grep lifei lifei:1008: [root@storageSRV ~]#</pre>	
<p>8、Cockpit: (1) 查看 cockpit 运行状态 (systemctl status cockpit) ; 【1分】</p>	1分
<p>(评分要点: 看到服务状态为 running 即可)</p>	

```
root@storage:~# systemctl status cockpit
● cockpit.service - Cockpit Web Service
  Loaded: loaded (/usr/lib/systemd/system/cockpit.service; static; vendor preset: disabled)
  Active: active (running) since Sat 2022-06-04 21:48:20 EDT; 1s ago
    Docs: man:cockpit-ws(8)
   Process: 2838 ExecStartPre=/usr/sbin/remotectl certificate --ensure --user=root --group=cockpit-ws --selinux-type=etc_t (code
 Main PID: 2841 (cockpit-ws)
  CGroup: /system.slice/cockpit.service
         └─2841 /usr/libexec/cockpit-ws

Jun 04 21:48:20 storage systemd[1]: Starting Cockpit Web Service...
Jun 04 21:48:20 storage remotectl[2838]: /usr/bin/chcon: can't apply partial context to unlabeled file '/etc/cockpit/ws-cert
Jun 04 21:48:20 storage remotectl[2838]: remotectl: couldn't change SELinux type context 'etc_t' for certificate: /etc/cockp
Jun 04 21:48:20 storage systemd[1]: Started Cockpit Web Service.
Jun 04 21:48:20 storage cockpit-ws[2841]: Using certificate: /etc/cockpit/ws-certs.d/0-self-signed.cert
Hint: Some lines were ellipsized, use -l to show in full.
root@storage:~#
```

8、cockpit: (2) 通过网页查看 cockpit 监测的服务器状态页面; 【4分】

4分

(评分要点: 网页中能看到主机名是 storage 即可)

<p>storagesrv</p> <p>系统</p> <p>日志</p> <p>网络</p> <p>账户</p> <p>服务</p> <p>内核转储</p> <p>终端</p> <p>Diagnostic Reports</p> <p>SELinux</p>	<p>硬件 VMware, Inc. VMware Virtual Platform</p> <p>资产标签 VMware-56 4d 39 d8 fb f8 48 6a-19 a8 ec 95 1c ec 9f 7c</p> <p>机器编号 955681399d1b4280b993ce945575a27b</p> <p>操作系统 CentOS Linux 7 (Core)</p> <p>错误修复的更新可以使用</p> <p>安全 Shell 密钥 显示指印</p> <p>主机名 storagesrv</p> <p>域 加入域</p> <p>系统时间 2022-08-13 19:01</p> <p>电源选项 重启 ▾</p> <p>性能配置集 virtual-guest</p> <p>启用保存的指标...</p>	
<p>9、系统优化 (在 storagesrv 上执行指令: <code>sysctl -p</code>) ; 【8分】</p> <p>(评分要点: 存在标记出信息即可, 顺序不分先后, 每个 2 分)</p> <pre>root@storagesrv ~# [root@storagesrv ~]# sysctl -p net.ipv4.tcp_syncookies = 1 net.ipv4.icmp_ignore_bogus_error_responses = 1 net.ipv4.ip_local_port_range = 1024 65000 fs.file-max = 65535 [root@storagesrv ~]#</pre>	<p>8 分</p>	

<p>10、磁盘快照：（1）查看 snaplv 逻辑卷信息（lvdisplay 截取 snaplv 相关信息）；【3分】</p> <p>（评分要点：标记出匹配即可得分，每个 1 分）</p> <pre>--- Logical volume --- LV Path /dev/snapvg/snaplv LV Name snaplv VG Name snapvg LV UUID y7TxRP-KFTL-LtWr-Nv5B-Re1D-Z0Qk-gynB6A LV Write Access read/write LV Creation host, time storagesrv, 2022-07-30 08:32:40 -0400 LV snapshot status source of snapsrc [active] LV Status available # open 1 LV Size 5.00 GiB Current LE 1280 Segments 1 Allocation inherit Read ahead sectors auto - currently set to 8192 Block device 253:4</pre>	3 分	
<p>10、磁盘快照：（2）查看 snapsrc（lvdisplay 截取 snapsrc 相关信息）；【4分】</p> <p>（评分要点：标记出匹配即可得分；read only 2 分，其它每点 1 分）</p>	4 分	

```

--- Logical volume ---
LV Path          /dev/snapvg/snapsrc
LV Name          snapsrc
VG Name          snapvg
LV UUID          COJ21c-qc9A-1zUs-yno-z9bz-ayU5-RcDLDC
LV Write Access  read only
LV Creation host, time storagesrv, 2022-07-31 04:06:46 -0400
LV snapshot status active destination for snaplv
LV Status        available
# open           1
LV Size          5.00 GiB
Current LE       1280
COW-table size   4.00 GiB
COW-table LE     1024
Allocated to snapshot 0.01%
Snapshot chunk size 4.00 KiB
Segments         1
Allocation       inherit
Read ahead sectors auto
- currently set to 8192
Block device     253:7

```

10、磁盘快照：（3）测试磁盘快照（挂载快照后；执行 tail /snap/cs.txt）；【2分】

2分

（评分要点：能够正常查看 cs.txt 的信息，内容为“this is test!”）

```

[root@storagesrv ~]# tail /snap/cs.txt
>this is test!
[root@storagesrv ~]#

```

OUTSIDECLI & INSIDECLI 工作任务（2分）

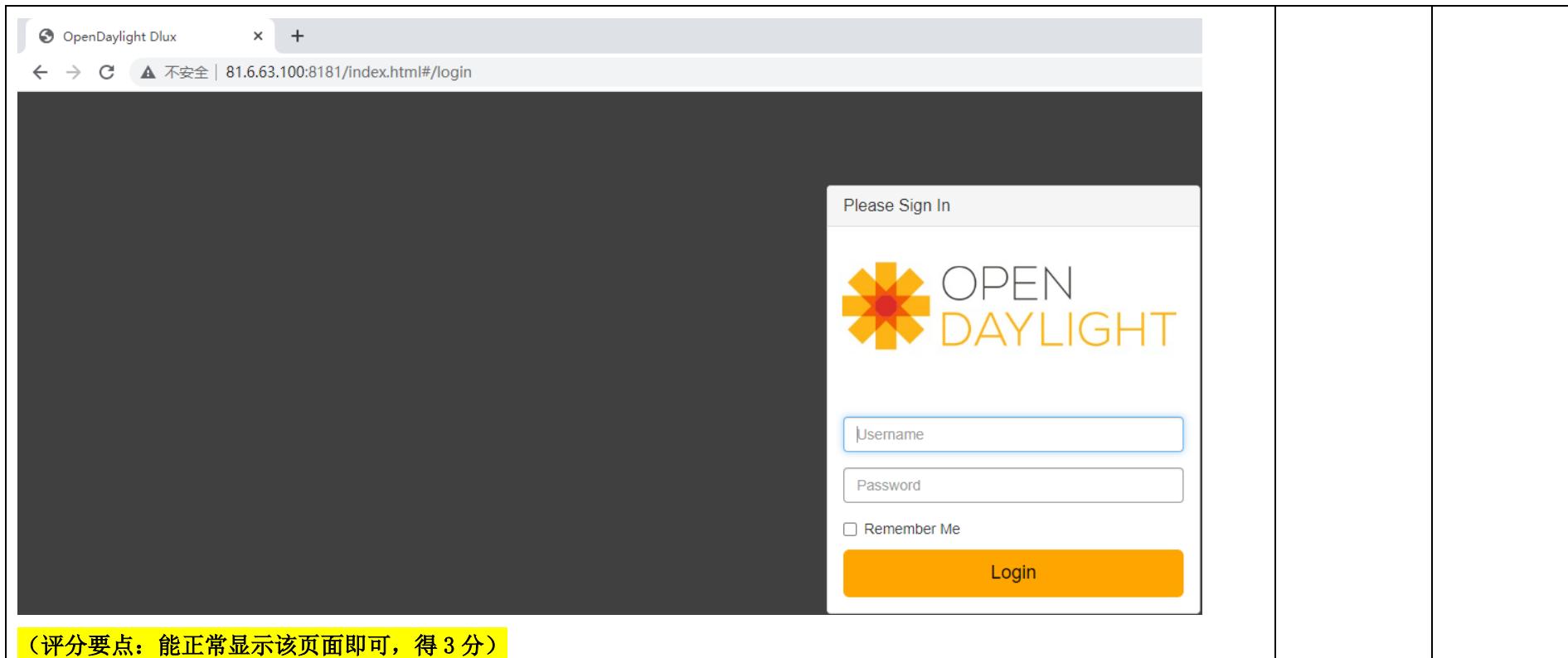
评分要点	分值	评分
1、基本配置：安装测试工具（在 outsidecli 或 insidecli 上执行指令（随便一个客户机即可）；whereis nslookup dig firefox curl ssh smbclient lftp ping）；【2分】	2分	

(评分要点: 在 outsidecli 或 insidecli 上执行指令 (任意一个客户端即可) : whereis nslookup dig firefox curl ssh smbclient lftp ping, 所有指令均存在对应的路径信息, 完全匹配得分)

```
[root@insidecli ~]# whereis nslookup dig firefox curl ssh smbclient lftp ping
nslookup: /usr/bin/nslookup /usr/share/man/man1/nslookup.1.gz
dig: /usr/bin/dig /usr/share/man/man1/dig.1.gz
firefox: /usr/bin/firefox /usr/lib/firefox /usr/lib64/firefox /etc/firefox /usr/share/man/man1/firefox.1.gz
curl: /usr/bin/curl /usr/share/man/man1/curl.1.gz
ssh: /usr/bin/ssh /etc/ssh /usr/share/man/man1/ssh.1.gz
smbclient: /usr/bin/smbclient /usr/share/man/man1/smbclient.1.gz
lftp: /usr/bin/lftp /usr/lib64/lftp /etc/lftp.conf /usr/share/man/man1/lftp.1.gz
ping: /usr/bin/ping /usr/share/man/man8/ping.8.gz
[root@insidecli ~]#
```

SDN 服务部署 (35 分)

评分要点	分值	评分
在 ODL 主机上, opendaylight-user@root>输入: feature:list grep odl-mdsal-apidocs 获取结果; 【3 分】 (评分要点: 能看到一个 X 标记即可)	3 分	
		
在 ODL 主机上, opendaylight-user@root>输入: feature:list grep odl-l2switch-switch-ui 获取结果; 【3 分】 (评分要点: 能看到一个 X 标记即可)	3 分	
		
评分要点	分值	评分
谷歌浏览器访问 URL 地址, 并通过默认账号进入管理界面, 登录界面和通过默认账号进入管理界面分别截 1 张图; 【6 分】 (评分要点: 能正常显示该页面即可, 得 3 分)	6 分	



OPEN DAYLIGHT YangUI

Logout (admin)

API HISTORY COLLECTION PARAMETERS

Yang UI

Yang Visualizer

Yangman

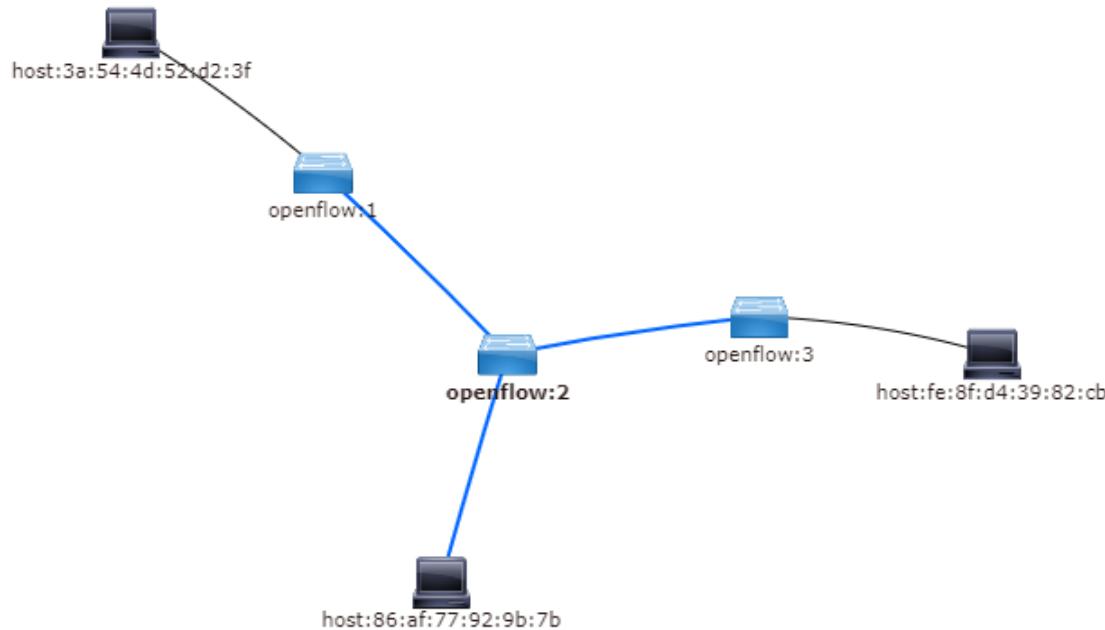
ROOT

Expand all Collapse others

- aaa rev.2016-12-14
- aaa-cert rev.2015-11-26
- aaa-cert-mdsal rev.2016-03-21
- aaa-cert-ipc rev.2015-12-15
- aaa-encrypt-service-config rev.2016-09-15
- address-tracker-config rev.2016-06-21
- arp-handler-config rev.2014-05-28
- cluster-admin rev.2015-10-13
- config rev.2013-04-05
- entity-owners rev.2015-08-04
- flow-capable-transaction rev.2015-03-04
- flow-topology-discovery rev.2013-08-19
- forwarding-rules-manager-config rev.2016-05-11
- general-entity rev.2015-08-20

Custom API request

登录 ODL 管理界面，查看 topology 界面，截图拓扑示意图；【3 分】	3 分	
--	-----	--



在 ODL 主机上通过 `mininet> sh netstat -an |grep 81.6.63.100:6653` 并截图 【5 分】

5 分

(评分要点: 存在 6 个 established 即可)

```

mininet>
mininet> sh netstat -an | grep 81.6.63.100:6653
tcp      0      0 81.6.63.100:43714      81.6.63.100:6653      ESTABLISHED
tcp      0      0 81.6.63.100:43710      81.6.63.100:6653      ESTABLISHED
tcp      0      0 81.6.63.100:43712      81.6.63.100:6653      ESTABLISHED
tcp6     0      0 81.6.63.100:6653      81.6.63.100:43710      ESTABLISHED
tcp6     0      0 81.6.63.100:6653      81.6.63.100:43714      ESTABLISHED
tcp6     0      0 81.6.63.100:6653      81.6.63.100:43712      ESTABLISHED
mininet>_

```

通过 OVS 下发流表前，在 ODL 主机上的 mininet 模式下，执行 mininet> pingall 并截图获取主机直接 ping 测试；【5 分】

（评分要点：能够全通即可）

```

mininet> pingall
*** Ping: testing ping reachability
h1 -> h2 h3
h2 -> h1 h3
h3 -> h1 h2
*** Results: 0% dropped (6/6 received)
mininet>

```

通过 OVS 下发流表后，在 ODL 主机上的 mininet 模式下，执行 mininet> pingall 并截图获取主机之间的 ping 测试；【5 分】

（评分要点：H1 只能和 H3 互通，其他都无法互通）

```

mininet> pingall
*** Ping: testing ping reachability
h1 -> X h3
h2 -> X X
h3 -> h1 X
*** Results: 66% dropped (2/6 received)
mininet>

```

mininet> h3 wget http://10.0.0.1:8080 【5 分】

（评分要点：存在 saved 关键字即可得分）

```
mininet>
mininet> h3 wget http://10.0.0.1:8080
--2022-07-19 10:03:40-- http://10.0.0.1:8080/
Connecting to 10.0.0.1:8080... connected.
HTTP request sent, awaiting response... 200 OK
Length: 9 [text/html]
Saving to: 'index.html.2'

index.html.2      100%[=====]      9  --.-KB/s   in 0s

2022-07-19 10:03:40 (2.83 MB/s) - 'index.html.2' [9/9]
mininet>
```