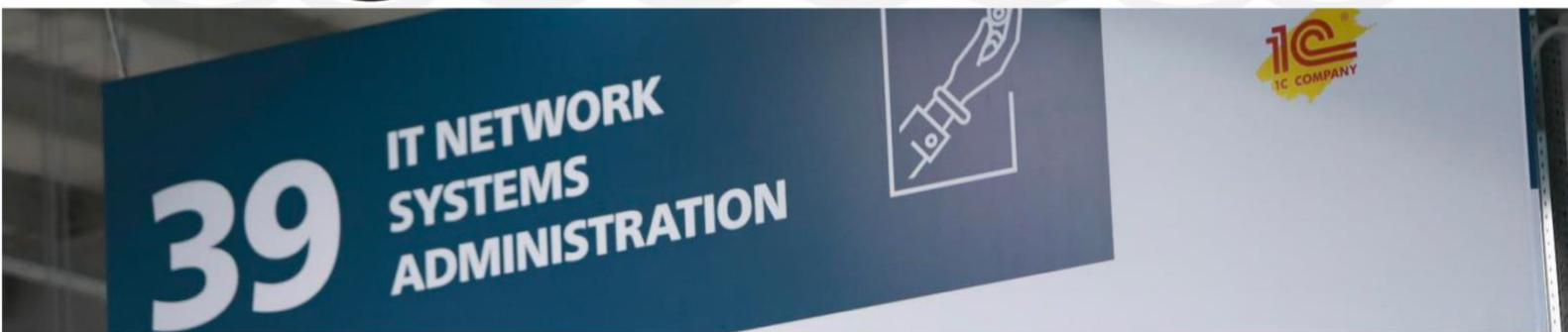


MODUL 1

LINUX ENVIRONMENT



IT NETWORK SYSTEM ADMINISTRATION

**Lomba Kompetensi Siswa
Sekolah Menengah Kejuruan
Tingkat Kabupaten Pati
Tahun 2023**

Basic Configuration

- Configure all servers with hostname and IP Address according to appendix
- Configure all servers to allow non-root login via SSH

NAT and Routing

- Configure routing to the internet so all servers can connect to internet
- Enable NAT to all internal network so that all servers can connect to internet

DHCP Server

- Access FW and install any dhcp server, Configure to serve DHCP for the internal network
 - Network: 172.16.0.0/24
 - Available Address: 172.16.0.1-172.16.0.20
 - Gateway: 172.16.0.254
- Create static lease for WEB1, WEB2, and CA according to appendix. Configure those servers to use DHCP.
- If you can't configure static lease, configure WEB1, WEB2, and CA with static IP according to appendix, but you will lose some points.

Secure Virtual Private Network

- Access FW and configure to provide remote access VPN to remote clients.
- Configure remote clients to use following credentials:
 - Username: vpn-test
 - Password: vpn-secure
- Configure remote clients to use following IP:
 - Start: 10.20.22.10
 - End: 10.20.22.50
 - Subnet: 255.255.255.0
 - Gateway: 10.20.22.1
 - DNS: 172.16.0.3
- Configure remote clients to connect to VPN

DNS Servers

- Access CA and install bind9. Configure it to serve domain pati.net using the private address
- Create A records for all servers that points to their respective addresses
- Create NS records that points to address of CA
- Create following subdomain using CNAME records
 - www.pati.net that points to address of FW
 - 100 user subdomain that points to address of FW
 - user001.pati.net
 - user002.pati.net

- user003.pati.net
 - ...
 - ...
 - user099.pati.net
 - user100.pati.net
- If you can't create 100 user subdomain using automation, create at least 5 user subdomain manually

Web Server

- Access WEB1 and WEB2 and install apache2. Configure it to server all websites in pati.net
- Create /var/www/index.html default page with content specified in Appendix
- Create /var/www/userXXX/index.html default page for 100 users with content specified in Appendix.
- Create virtualhost www.pati.net serving /var/www/index.html
- Create 100 virtualhost userXXX.pati.net serving /var/www/userXXX/index.html
- If you can't create 100 users website using automation, create at least 5 users website manually
- Add the HTTP header "X-Served-By" with the server hostname as the value
- Disable HTTP and only enable HTTPS for all sites
- Use certificate signed by CA
- Make sure no certificate warning is shown.
- Install and configure rsync on WEB1 and synchronize /var/www directory (recursive) from WEB1 to WEB2
- Configure crontab to automatically synchronize for every minute.

CA (openssl)

- Access CA and configure Certificate Authority using openssl
- Use /etc/ca as the CA root directory
- Create a CA private named cakey.pem, save it in the /etc/ca/private/, key should have minimal permission.
- CA attributes should be set as follows:
 - CA attributes should be set as follows:
 - Organization is set to LKSNSMK.
 - The common name is set to "LKSNSMK CA".
- Create a root CA certificate named cacert.pem, save it in the /etc/ca/
- All certificates required in the test project should be published by CA.

Load Balancer

- Access FW and install load balancer. Configure it to load balance web requests.
- Use round robin algorithm

SSH Server

- Configure CA to enable key based authentication for SSH
- Disable root login
- Create new local user named pati with password Skills39
- Install sudo and then add local user pati to the sudo group
- Create new local user named smk in FW and make sure user smk in FW can ssh to user pati in CA without password

Appendix

Device Name	IP Address	Network
FW	172.16.0.254/24	Internal Network
	192.168.2.x/24 <i>x = 40+nomor_peserta (atau bebas gunakan ip yang belum terpakai di lab computer)</i>	External Network
WEB1	172.16.0.1/24	Internal Network
WEB2	172.16.0.2/24	Internal Network
CA	172.16.0.3/24	Internal Network
Remote Client	DHCP	External Network

/var/www/index.html

```
<h1> Default Page </h1><br>
<br>
This page has not been modified by the owners.
```

/var/www/userXXX/index.html [Replace XXX in the folder name and file content with user number, for example /var/www/user009/index.html]

```
<h1> Default Page for userXXX </h1><br>
<br>
This page has not been modified by the user.
```

Topology

