



ITNetwork System Administrator
SMKN 22 JAKARTA

PART I BASIC CONFIGURATION WORK TASK ALL VMs. INSTALL SYSTEM TOOLS

- Install smbclient, curl, lynx, dnsutils, ldap-utils, ftp, lftp, wget, ssh, nfs-common, rsync, telnet, traceroute on all VMs.

CONFIGURE LOGIN BANNER

- Must be shown before the login prompt. Must appear for local and network(ssh) logins with message below without double quote and change Hostname accordingly. “Welcome to [Hostname] - SMK Hebat”
- Example: Welcome to ServerCloud - SMK N 22 Jakarta

PART II (SERVERCLOUD)

DNS (bind9)

- Configure a forward zone called “smkn22-jkt.sch.id”
- Create for each host an A record to the respective IP in the cloud zones.
- Create a CNAME record for ‘www’ that point to the appropriate host that serves websites for all clients.
- Create A record for ‘mail’ that points to the mail server.
- Create the appropriate MX records.
- Configure a reverse zone for each host defined for network 110.22.22.0/29.
- Configure multiple views DNS for external and internal client, with the specification below:
- External client will resolve www.smkn22-jkt.sch.id to 110.22.22.1.
- Internal client will resolve www.smkn22-jkt.sch.id to 192.168.22.1.

SSH

- Use key based for SSH authentication.
- Disable root login.
- Create a new Local User named “awaludin” with password: Skill39.
- Install sudo and then add Local User named “awaludin” to sudo group.
- Change SSH port default to 2019.
- Make sure user “competitor” in ClientExt and ClientInt can SSH to user “awaludin” in server cloud without password

LDAP (OPENLDAP)

- Configure the directory service of smkn22-jkt.sch.id
- Create users with OU and password specified in the appendix
- Mail services should be available for LDAP users.

Mail (POSTFIX, DOVECOT)

- Configure SMTPS (TCP 465) and IMAPS (TCP 993) server for “smkn22-jkt.sch.id” domain using certificates issued by ServerInt.

- Configure mail directory in “/home/[user]/Maildir”
- Authentication has to be done through LDAP.
- Make sure that the corresponding local user do not exist and make sure LDAP user cannot login locally.
- Limit mailbox for each user to 5 MB.

WEB SERVER (Apache)

- The website page should display the following message:
- “Welcome to SMKN 22 JAKARTA on [Hostname]”
- Add the Hostname dynamically with PHP.
- Disable HTTP and Enable HTTPS only for both sites.
- Use certificate signed by CA in ServerInt
- Make sure no certificate warning is shown.
- Make sure PHP script can be run.
- Create php info page with the filename info.php

PART III (EDGE) WORK TASK RouterCloud and RouterInt

ROUTING

- Enable routing to forward IPv4 packet.

SITE TO SITE VPN (OPENVPN)

- Configure site-to-site VPN between RouterCloud and RouterInt.
- Use tun0 interface with IP: 10.0.0.1 for RouterCloud and 10.0.0.2 for RouterInt.
- Use port 1194 for both.
- Traffic from internal server network to cloud network and vice versa should use the VPN (static route via IP tun0).
- Site to site VPN connection should be established automatically and be always on.

FIREWALL (IPTABLES)

- Drop Port FTP 21, SSH 22

REMOTE ACCESS VPN (OPENVPN) ON ServerInt.

- Configure VPN access to Internal networks (server and client).
- Use port 1195 for VPN server.
- Configure ClientExt as VPN client.
- Use password with certificates for authentication
- Use LDAP user with OU “VPN” for OpenVPN client login.

Load balancer (HAProxy)

- Configure HTTP & HTTPS load balancer for www.smkn22-jkt.sch.id, which is hosted by ServerCloud and ServerInt.

- Use roundrobin as algorithm.

PART IV (INTERNAL & CLIENT)

CA (openssl)

- Configure as CA 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:
 - Country code is set to ID.
 - Organization is set to SMKN22.
 - The common name is set to “SMKN22 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.

DHCP

- Create DHCP for internal client with the following requirement below:
 - Range: 192.168.44.20-192.168.44.200
 - Netmask: /24
 - Gateway 192.168.44.1
 - DNS: 202.22.22.2

WORK TASK LKS-I-CLIENT

- Make sure LDAP user in OU “SISWA” can login locally.
- Make sure the ca certificate is installed.
- Install & configure Icedove mail client using smtps & imaps for user siswa11

WORK TASK LKS-E-CLIENT

- Make sure ClientExt can access http or https://www.smkn22-jkt.sch.id.
- Make sure ClientExt can access to ServerCloud (via IP of RouterInt)
- Make sure VPN connection can be established using Openvpn GUI.
- Make sure the ca certificate is installed.
- Client certificate for authentication VPN must be store /home/competitor/vpn.pem
- Install & configure Icedove mail client using smtps & imaps for user siswa22

APPENDIX

LDAP USERS

| Username | OU | Password |
|---------------------------|-------|----------|
| vpnuser1 – vpnuser10 | VPN | Skill39 |
| siswa1 – siswa22 | MAIL | Skill39 |
| localuser21 – localuser99 | SISWA | Skill39 |

SPECIFICATION

| | |
|--------------------|------------------|
| Operating System | Linux Debian 9.6 |
| FQDN: | ServerCloud |
| Root Password: | Skill39 |
| Local Username: | competitor |
| User Password: | Skill39 |
| Network Adapter 1: | 202.22.22.2/29 |

| | |
|--------------------|------------------|
| Operating System | Linux Debian 9.6 |
| FQDN: | RouterCloud |
| Root Password: | Skill39 |
| Local Username: | competitor |
| User Password: | Skill39 |
| Network Adapter 1: | 110.22.22.2/29 |
| Network Adapter 2: | 202.22.22.1/29 |

| | |
|--------------------|------------------|
| Operating System | Linux Debian 9.6 |
| FQDN: | RouterInt |
| Root Password: | Skill39 |
| Local Username: | competitor |
| User Password: | Skill39 |
| Network Adapter 1: | 110.22.22.1/29 |
| Network Adapter 2: | 192.168.22.1/28 |
| Network Adapter 3: | 192.168.44.1/24 |

| | |
|--------------------|------------------|
| Operating System | Linux Debian 9.6 |
| FQDN: | ServerInt |
| Root Password: | Skill39 |
| Local Username: | competitor |
| User Password: | Skill39 |
| Network Adapter 1: | 192.168.22.2/28 |

| | |
|--------------------|------------------|
| Operating System | Linux Debian 9.6 |
| FQDN: | ClientExt |
| Root Password: | Skill39 |
| Local Username: | competitor |
| User Password: | Skill39 |
| Network Adapter 1: | 202.22.22.3/29 |

| | |
|--------------------|------------------|
| Operating System | Linux Debian 9.6 |
| FQDN: | ClientInt |
| Root Password: | Skill39 |
| Local Username: | competitor |
| User Password: | Skill39 |
| Network Adapter 1: | DHCP |

NETWORK DIAGRAM

