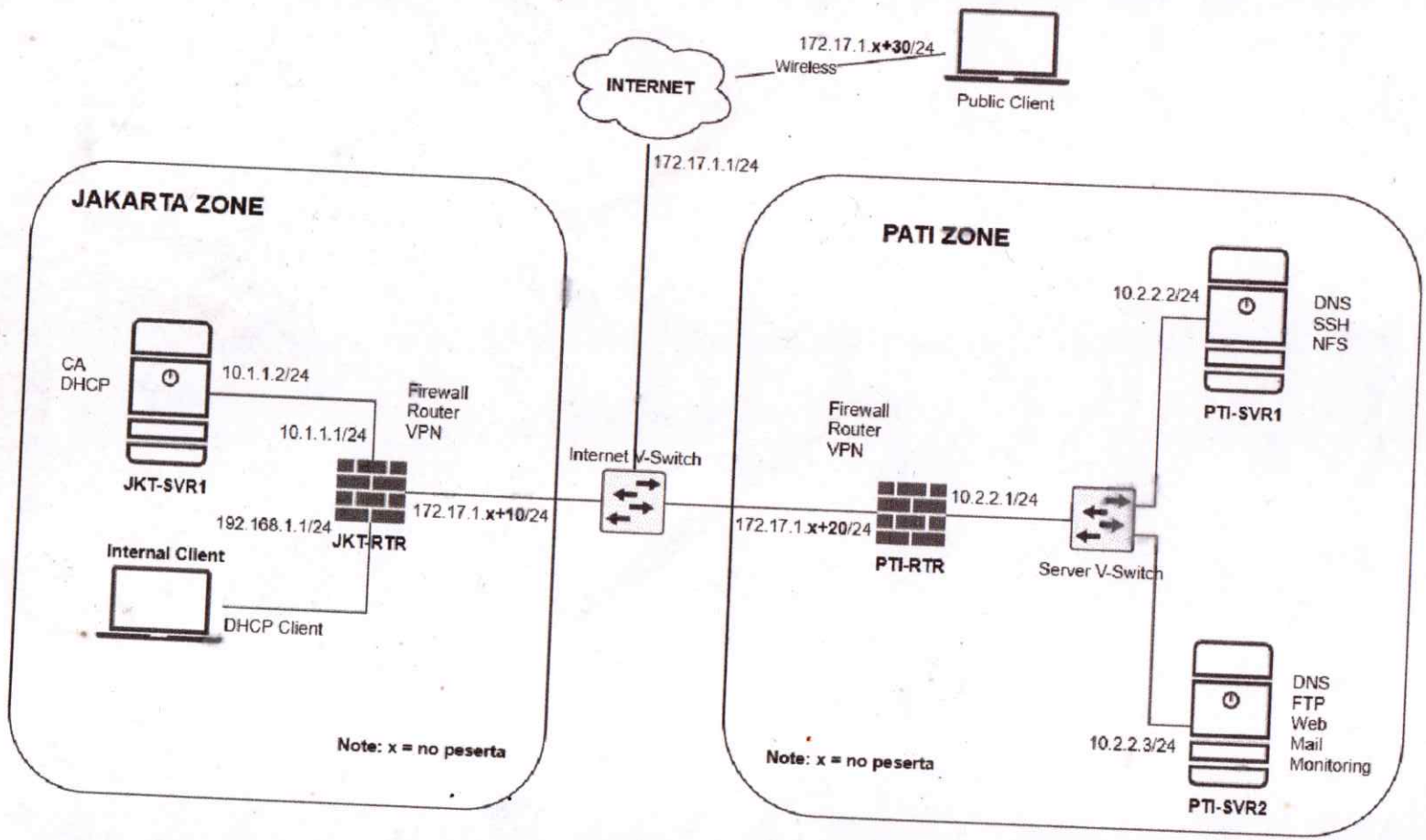
LKS KABUPATEN PATI 2020

IT NETWORK SYSTEM ADMINISTRATOR

MODUL LINUX

Contents


INTERNET
172.17.1.x+30/24
Wireless
Public Client
172.17.1.1/24
JAKARTA ZONE
CA
DHCP
10.1.1.2/24
JKT-SVR1
Firewall
Router
VPN
10.1.1.1/24
192.168.1.1/24
JKT-RTR
172.17.1.x+10/24
Internet V-Switch
Internal Client
DHCP Client
Note: x = no peserta
PATI ZONE
10.2.2.2/24
DNS
SSH
NFS
PTI-SVR1
Firewall
Router
VPN
10.2.2.1/24
172.17.1.x+20/24
PTI-RTR
Server V-Switch
10.2.2.3/24
DNS
FTP
Web
Mail
Monitoring
PTI-SVR2
Note: x = no peserta

PART I – INSTALLATION & BASIC CONFIGURATION

INSTALL OPERATING SYSTEM

- Install Debian 10.6 on all of server. You can install one by one or just install one VM and create a clone

CONFIGURE LOGIN BANNER

- Configure on all Router & Server
- 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 PTI-SVR1 - SMK Hebat

CONFIGURE REPOSITORY

- Use this online repository on all Debian Router & Servers
- **deb http://kartolo.sby.datautama.net.id/debian/ buster main contrib non-free**
- **deb http://kartolo.sby.datautama.net.id/debian/ buster-updates main contrib non-free**
- **deb http://kartolo.sby.datautama.net.id/debian-security/ buster/updates main contrib non-free**

CONFIGURE HOSTNAME, USER CREATION, AND IP ADDRESS ACCORDING TO APPENDIX

PART II – PATI ZONE

WORK TASK PTI-SVR1

DNS (bind9)

- Configure PTI-SVR1 as recursive DNS Server. It's means that if client request a domain that PATI-SVR1 don't have record about that domain, PTI-SVR1 should forward the request to Public DNS Server. In this case, forward the request to google (8.8.8.8, 8.8.4.4)
- Configure forward zone called **pati.com** and point to the PTI-SVR2 IP Address
- Create a CNAME record for **www**and **web** that point to the appropriate host that serves websites for all clients.
- Create A record for **mail** that points to the mail server
- Create A record for all server with prefix **<hostname>.pati.com**, include for JKT-SVR1

SSH

- Use key based for SSH authentication.
- Disable root login.
- Create a new Local User named **sshuser** with password: **S3cur3**
- Install sudo and then add Local User named **sshuser** to sudo group.
- Change SSH port default to 2020
- Make sure user **user** in Internal Client can SSH to user **sshuser** in PTI-SVR1 without password

NFS

- Create directory **/nfs1** and share it to everyone with read only permission
- Create directory **/nfs2** and share it to Internal Client Network with read write permission

WORK TASK PTI-RTR

Site to Site VPN (OpenVPN)

- Configure site-to-site VPN between PTI-RTR and JKT-RTR
- Use tun0 interface with IP: 10.0.0.1 for PTI-RTR and 10.0.0.2 for JKT-RTR
- Traffic from PATI ZONE to JAKARTA ZONE 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

Routing

- Enable routing for IPv4
- Make sure PTI-SVR1 & PTI-SVR2 can ping to google.com

Firewall IPTABLES

- Configure DNAT for SSH on PTI-SVR1, so when Public Client doing ssh to PTI-RTR port 2021, the packet should forwarded to PTI-SVR1

PART III – JAKARTA ZONE

WORK TASK JKT-SVR1

CA (openssl)

- Configure as CA.
- 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 LKSSMK.
- The common name is set to "LKSSMK 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

- Configure DHCP Server for Internal Client Network
- Make sure that Internal Client get an IP Address **192.168.1.100/24**

WORK TASK JKT-RTR

Site to Site VPN (OpenVPN)

- Configure site-to-site VPN between PTI-RTR and JKT-RTR
- Use tun0 interface with IP: 10.0.0.1 for PTI-RTR and 10.0.0.2 for JKT-RTR
- Traffic from PATI ZONE to JAKARTA ZONE 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

WORK TASK PTI-SVR2

DNS (bind9)

- Configure PTI-SVR2 as Slave DNS Server

FTP Server

- Use proftpd
- Publish this ftp so Internal Client can access via **ftp.pati.com**
- Disallow anonymous login, create local user **userftp**with password **S3cur3** to authenticate users.
- Permit download and upload of new file for users, make sure they cannot delete any file(s) on the server.

Web Server

- The**www.pati.com** website page should display the following message:
- "Welcome to WWW.PATI.COM"
- The **web.pati.com** website page should display the following message:
- "Welcome to WEB.PATI.COM"
- Redirect HTTP to HTTPS for both sites.
- Use certificate signed by CA in JKT-SVR1.
- Make sure no certificate warning is shown in the client
- Make sure PHP script can be run.
- Create php info page with the filename info.php.

Mail Server

- Configure mail server using anything you want, as long as all user can send & receive email, we will not complain about technology you use
- Enable web mail
- Make sure user login to web mail using @domain, example: usermail1@pati.com
- Create a local user for mail, usermail1 – usermail50, make sure you use scripting to do this. You can use bash or python

Monitoring Server

- Configure monitoring server with anything you can, you can use cacti, icinga2 or anything
- Make sure the monitoring server is accessible via monitoring.pati.com
- Create an admin-user **master** with password **S3cur3**
- Create a graph showing the statictic of CPU, Memory, and Interface traffic of PTI-RTR

DHCP Relay

- Configure DHCP Relay, so Internal Client can get an IP Address served by JKT-SVR1

Routing

- Enable routing for IPv4
- Make sure JKT-SVR1 &Internal Client can ping to google.com

PART IV – CLIENT

WORK TASK Public Client

- **Make sure public client can ssh to PTI-SVR1 using public IP Address of PTI-RTR port 2021**
- **The authentication should use username and password (not using key)**

WORK TASK Internal Client

- Make sure the ca certificate is installed
- Make sure that directory shared by PTI-SVR2 is mounted automatically when booting
- Make sure that Internal Client can access web server, ftp server, mail server, and others served by PATI ZONE

SPECIFICATION

PTI-SVR1

Operating System	Debian 10.6
FQDN	pti-svr1.pati.com
Root Password	S3cur3
Local Username	user
User Password	S3cur3
Network Adapter 1	10.2.2.2/24

PTI-SVR2

Operating System	Debian 10.6
FQDN	pti-svr2.pati.com
Root Password	S3cur3
Local Username	user
User Password	S3cur3
Network Adapter 1	10.2.2.3/24

PTI-RTR

Operating System	Debian 10.6
FQDN	pti-rtr.pati.com
Root Password	S3cur3
Local Username	user
User Password	S3cur3
Network Adapter 1	172.17.1.**x+20**/24 (x is participant's number)
Network Adapter 2	10.2.2.1/24

JKT-SVR1

Operating System	**Debian 10.6**
FQDN	**jkt-svr1.pati.com**
Root Password	S3cur3
Local Username	user
User Password	S3cur3
Network Adapter 1	**10.1.1.2/24**

JKT-RTR

Operating System	Debian 10.6
FQDN	jkt-rtr.pati.com
Root Password	S3cur3
Local Username	user
User Password	S3cur3
Network Adapter 1	172.17.1.**x+10**/24 (x is participant's number)
Network Adpater 2	10.1.1.1/24
Network Adapter 3	192.168.1.1/24

Internal Client

Operating System	Ubuntu 20.04
FQDN	internal-client.pati.com
Local Username	user
User Password	S3cur3
Network Adapter 1	DHCP Client