

# **LOMBA KETERAMPILAN SISWA**

## **SEKOLAH MENENGAH KEJURUAN**

### **TINGKAT NASIONAL XXV 2017**



#### **MODUL A**

#### **LINUX ISLAND**

## **IT NETWORK SYSTEMS**

## **ADMINISTRATION**

[LKS2017\\_ITNSA\\_MODUL\\_A](#)

## ISLAND A – LINUX ISLAND

### CONTENTS

This Test Project proposal consists of the following document/file:

LKSN2017\_ITNSA\_MODULA.pdf

### INTRODUCTION

The competition has a fixed start and finish time. You must decide how to best divide your time.

Please **carefully** read the following instructions!

When the competition time ends, please leave your station in a running state.

### PHYSICAL MACHINE (HOST)

#### FOLDER PATHS

Virtual Machines: C:\LKS\Virtual Machine

ISO Images: C:\LKS\ISO

Password for OS Pre-Install : Skills39

## PART I

### WORK TASK INSTALLATION (SOLOSRV, SEMARANGSRV)

Note Please use the default configuration if you are not given details.

#### WORK TASK SERVER SOLOSRV

Configure the server with the hostname, domain and IP specified in the appendix.

- Configure the disk and partitions
  - Add 3 disk with 7 GB of each disk.
  - Use the three virtual disks to create a software RAID 5.
  - Mount it as /files
- Create 30 local UNIX users with password “InaSkills2017”
  - Username: user[1-30]. ex: user1, user2, ..., user30
- Install the services:
  1. DNS (bind9)
    - Configure and install DNS Server with two domain
      - **skills4future.net** to SOLOSRV
      - **skills39.edu.id** to SEMARANGSRV
    - Create subdomain **files.skills4future.net** and **internal.skills4future.net**
    - Create subdomain **monitor.skills39.edu.id** and **vpn.skills39.edu.id**
    - Create a host **www.skills4future.net** for IP Public JATENGRO
  2. Web Server (apache2 including php5)
    - Create website “http://internal.skills4future.net” and “http://www.skills4future.net”
      - Use the following code for index.html in the http://internal.skills4future.net
 

```
<html>
                    <h1>Welcome in the INTERNAL skills4future.net</h1>
</html>
```
      - Use the following code for index.html in the http://www.skills4future.net
 

```
<html>
                    <h1>Welcome in the skills4future.net</h1>
</html>
```
    - Make sure “http://internal.skills4future.net” is protected by authentication
      - Allow users from “user11” to “user20”
    - Enable HTTPs for both sites
      - Use a certificate signed by CA Service in SEMARANGSRV
      - Make sure no certificate warning is shown.
  3. FTP (proftpd)
    - Enable FTPS
      - Use a certificate signed by SEMARANGSRV
    - Each user (user21 to user30) will have a home directory.

- Make sure the user is jailed in their respective website document root directories.
  - Make sure file transfer to the server is possible.
4. Mail
    - Make sure user11 to user20 have access via POP3, IMAP and SMTP
    - Before you finish your project make sure you send an email message from user14 to user19 and another message from user19 to user14.
    - Do not delete these email messages.
  5. File Server (Samba)
    - Share "MANAGER"
      - Path is /files/manager
      - Give access only to users "user1" to "user10"
      - Make sure the share is not shown in the network browser of the clients
    - Share "GUEST"
      - Path is /files/guest
      - Enable read-only access to everyone
  6. SSH Server
    - Install SSH Server
    - Use RADIUS SEMARANGSRV to authentication users.
    - Change SSH port default to 1945

## WORK TASK SERVER SEMARANGSRV

Configure the server with the hostname, domain and IP specified in the appendix.

- Install the services:
  1. CA (openssl)
    - Configure as CA
    - CA attributes should be set as follows
      - Country code is set to ID
      - Organization is set to LKSN2017
    - Create a root CA certificate
    - Store the certificate in directory /cert
  2. Monitoring Server (Cacti)
    - Configure Cacti with url <http://monitor.skills39.edu.id>
    - Create an admin-user "master" with password "InaSkills2017"
    - Create a graph showing the statistics of the CPU, Memory and interfaces traffic of JATENGRO
  3. RADIUS (FreeRadius)
    - Create 5 users with password "InaSkills2017" for SSH login SOLOSRV
      - Username: user[31-35]. ex: user31, user32, ..., user35
    - Use "InaSkills2017" as share key

#### 4. DHCP

- Create DHCP Pool INTERNAL:
  - Range: 192.168.150.51 – 192.168.150.100
  - Netmask: /25
  - Gateway: 192.168.150.1
  - DNS: 172.23.199.3
- DNS-Suffix: skills4future.net
- SOLOCLT should always receive the following IP: 192.168.150.88
- The clients should automatically register their name with the DNS server after they have been assigned with an IP address by the DHCP server.

## PART II

### WORK TASK NETWORK CONFIGURATION (JATENGRO)

Note Please use the default configuration if you are not given details.

#### WORK TASK ROUTER JATENGRO

Configure the server with the hostname, domain and IP specified in the appendix.

- Install the services:
  1. Routing
    - Enable routing to router forward IPv4 Packet
  2. DHCP Relay
    - Configure DHCP Relay to SEMARANGSRV for internal client
  3. Reverse Proxy (nginx)
    - Configure a reverse proxy for <http://www.skills4future.net> (<https://www.skills4future.net>), which is hosted by SOLOSRV
  4. VPN Server
    - Configure VPN for access to SOLOSRV and SEMARANGSRV. External clients should connect to 212.99.45.65
    - Use address range 10.20.0.1 to 10.20.0.10 and DNS SOLOSRV for VPN clients
    - For login create a user “remote” with password “InaSkills2017”
  5. Firewall
    - External network allows the ICMP packet to interface external JATENGRO
    - External network can access to <http://www.skills4future.net>
    - External network can't access to SOLOSRV and SEMARANGSRV before the vpn established.
    - Ensure the vpn client can't access to internal client (SOLOCLT) when the vpn established. (Can only access to SOLOSRV and SEMARANGSRV)
    - Deny all other traffic from external to all internal network.

## PART III

### WORK TASK LINUX CLIENT (JEPARACTL, SOLOCLT)

Note Please use the default configuration if you are not given details.

#### WORK TASK LINUX EXTERNAL (JEPARACTL)

Note Please use the default configuration if you are not given details.

- Install the base OS and use Gnome for the GUI
- Configure the client with the hostname, domain and IP specified in the appendix.
- Make sure the JEPARACTL can access to <http://www.skills4future.net>
- Make sure the JEPARACTL can access to SEMARANGSRV and SOLOSRV (via JATENGRO) through VPN
- Make sure the root CA certificate of SEMARANGSRV is trusted
- Make sure the client certificate is installed
- Install FileZilla FTP client
- Install Icedove mail client
  - Configure mailbox of user14
  - Make sure user14 can send mails to user19
- Make sure the client can access samba shares.

#### WORK TASK LINUX INTERNAL (SOLOCLT)

Note Please use the default configuration if you are not given details.

- Install the base OS and use Gnome for the GUI
- Configure the client with the hostname, domain and IP specified in the appendix.
- Make sure the root CA certificate of SEMARANGSRV is trusted
- Make sure the client certificate is installed
- Install FileZilla FTP client
- Install Icedove mail client
  - Configure mailbox of user19
  - Make sure user19 can send mails to user14
- Make sure the client can access samba shares.
  - Mount the MANAGER SMB share to /mnt/manager on boot using fstab

## APPENDIX

### SPECIFICATIONS

#### SOLOSRV

Operating System	Linux Debian 7.8
Computer name:	SOLOSRV
Root password	Nasional2017
User Name:	batik
User Password:	Semarang2017
eth0:	172.23.199.3/29

#### SEMARANGSRV

Operating System	Linux Debian 7.8
Computer name:	SEMARANGSRV
Root password	Nasional2017
User Name:	batik
User Password:	Semarang2017
IP address:	172.23.199.4/29

#### JATENGRO

Operating System	Linux Debian 7.8
Computer name:	JATENGRO
Root password	Nasional2017
User Name:	batik
User Password:	Semarang2017
eth0:	212.99.45.65/28
eth1:	172.23.199.1/29
eth2:	192.168.150.1/25

#### JEPARACLT

Operating System	Linux Debian 7.8 (GUI)
Computer name:	JEPARACLT
Root password	Nasional2017
User Name:	Batik
User Password:	Semarang2017
IP address:	212.99.45.70/28



**SOLOCLT**

Operating System	Linux Debian 7.8 (GUI)
Computer name:	SOLOCLT
Root password	Nasional2017
User Name:	batik
User Password:	Semarang2017
IP address:	DHCP

# NETWORK SPESIFICATION

