



DESAIN & IMPLEMENTASI SISTEM LAB FROM HOME (LFH)



I PUTU HARIYADI

putu.hariyadi@universitasbumigora.ac.id

www.iputuhariyadi.net

MATERI:

1. Pengenalan Administrasi Sistem (AS)
2. Pengenalan Sistem Lab From Home (LFH)
3. Rancangan Jaringan Ujicoba LFH.
4. Rancangan Sistem LFH.
5. Demo Implementasi Sistem LFH.
6. Demo akses ke sistem LFH UBG.
7. Rancangan Sistem Otomasi Manajemen Layanan LFH menggunakan Ansible.
8. Demo Hasil Implementasi Sistem Otomasi Manajemen Layanan LFH.

PENGENALAN ADMINISTRASI SISTEM (AS)

- Menurut [Standar Kompetensi Kerja Nasional Indonesia \(SKKNI\) 2017-082](#), Administrasi Sistem (AS) pada sistem komputer meliputi fungsi-fungsi selayaknya siklus hidup sistem. Mulai dari menganalisa dan merancang kebutuhan sistem, menginstalasi dan mengoptimasi sistem, serta memelihara dan memperbaiki sistem.
- Cakupan tugas AS tidak hanya mengadministrasi sistem dari server yang berlokasi di perusahaan atau instansi (**on-premise**) tetapi juga yang terdapat di **cloud**.
- Berdasarkan siklus hidup sistem tersebut maka lingkup bidang AS dapat dibedakan menjadi:
 - a) Bidang perencanaan administrasi sistem.
 - b) Bidang implementasi sistem.
 - c) Bidang pemeliharaan sistem.

DAFTAR UNIT KOMPETENSI AS (1)

NO	KODE UNIT	JUDUL UNIT KOMPETENSI
1.	J.63SAM00.001.2	Mengumpulkan Kebutuhan Pengguna
2.	J.63SAM00.002.2	Mengidentifikasi <i>System Environment</i> dengan Teknologi yang Sesuai
3.	J.63SAM00.003.2	Merancang Arsitektur <i>Server Environment</i>
4.	J.63SAM00.004.2	Merancang Sistem Keamanan <i>Server Environment</i>
5.	J.63SAM00.005.1	Merancang Skenario Pengujian <i>Server</i>
6.	J.63SAM00.006.1	Meng-install Sistem Operasi <i>Server</i>
7.	J.63SAM00.007.2	Meng-install Sumber Daya Berbagi Pakai pada <i>Server Environment</i>
8.	J.63SAM00.008.1	Meng-upgrade <i>Server</i>
9.	J.63SAM00.009.1	Memigrasi <i>Server</i>
10.	J.63SAM00.010.1	Meng-install <i>Virtual Server</i>

DAFTAR UNIT KOMPETENSI AS (2)

NO	KODE UNIT	JUDUL UNIT KOMPETENSI
11.	J.63SAM00.011.2	Meng-install <i>Common Network Services</i> pada <i>Server</i>
12.	J.63SAM00.012.2	Meng-install <i>Common Application Services</i> pada <i>Server</i>
13.	J.63SAM00.013.1	Mengkonfigurasi Sistem Operasi <i>Server</i>
14.	J.63SAM00.014.2	Mengkonfigurasi <i>Common Network Services</i> pada <i>Server</i>
15.	J.63SAM00.015.2	Mengkonfigurasi <i>Common Application Services</i> pada <i>Server</i>
16.	J.63SAM00.016.1	Mengkonfigurasi <i>Virtual Server</i>
17.	J.63SAM00.017.2	Membuat Kode Program untuk Keperluan Administrasi Sistem
18.	J.63SAM00.018.2	Mengimplementasikan Keamanan Sistem <i>Server</i>
19.	J.63SAM00.019.1	Memantau Ketersediaan Sistem
20.	J.63SAM00.020.1	Memantau Kinerja Sistem

DAFTAR UNIT KOMPETENSI AS (3)

NO	KODE UNIT	JUDUL UNIT KOMPETENSI
21.	J.63SAM00.021.2	Memantau Keamanan Sistem
22.	J.63SAM00.022.1	Menginvestigasi Kerusakan Sistem
23.	J.63SAM00.023.1	Memperbaiki Kerusakan Sistem
24.	J.63SAM00.024.1	Mengevaluasi Sistem untuk Pengembangan Masa Depan
25.	J.63SAM00.025.2	Melakukan <i>Restore</i> Sistem

Rencana Pembelajaran Semester (RPS)

1	 UNIVERSITAS BUMIGORA FAKULTAS TEKNIK DAN KESEHATAN PROGRAM STUDI ILMU KOMPUTER Jln. Ismail Marzuki, Cakranegara, Mataram Telp/fax (0370)-638369 Whatsapp 0859-3615-9726 Email: univ.bumigora@gmail.com www.universitasbumigora.ac.id RENCANA PEMBELAJARAN SEMESTER (RPS) Nomor Dokumen: Nomor Revisi: Halaman: Tanggal Terbit:	
2.	Nama Mata Kuliah	: Manajemen Jaringan
3.	Kode Mata Kuliah	: TSKB351537
4.	Semester	: 5
5.	Bobot (sks)	: 3
6.	Dosen Pengampu	: I Putu Hariyadi, M.Kom
7	Capaian Pembelajaran	: Dapat mengelola administrasi sistem jaringan komputer sesuai dengan kebutuhan pengguna meliputi: 1. Mampu merencanakan administrasi sistem jaringan komputer baik mensurvei dan merancang kebutuhan sistem. 2. Mampu menerapkan administrasi sistem jaringan komputer baik menginstalasi dan mengoptimasi sistem.

PRAKTIKUM MANAJEMEN JARINGAN

- Menginstalasi dan mengkonfigurasi *virtual server* menggunakan **hypervisor Proxmox Virtual Environment (PVE)**.
- Menginstalasi dan mengkonfigurasi sistem operasi server serta manajemen **User & Permission** menggunakan **Linux CentOS 7.x**.
- Menginstalasi dan mengkonfigurasi **Common Network Services** pada server meliputi **Domain Name System (DNS)**, **Dynamic Host Configuration Protocol (DHCP)**, **Simple Network Management Protocol (SNMP)**.
- Menginstalasi dan mengkonfigurasi **Common Application Services** pada server meliputi **HyperText Transfer Protocol (HTTP)**, **Simple Mail Transfer Protocol (SMTP)**, **Post Office Protocol version 3 (POP3)**, **Internet Message Access Protocol (IMAP)**, **File Transfer Protocol (FTP)**, **Trivial File Transfer Protocol (TFTP)**, **Telnet**, **Secure Shell (SSH)**.
- Membuat kode program untuk keperluan administrasi sistem.
- Mengimplementasikan dan memantau keamanan sistem server menggunakan **PVE Firewall** dan **IPTables**.
- Manajemen **User & Permission**, serta **backup** dan **Restore Virtual Server** pada **PVE**.

PENGENALAN SISTEM LAB FROM HOME (LFH)

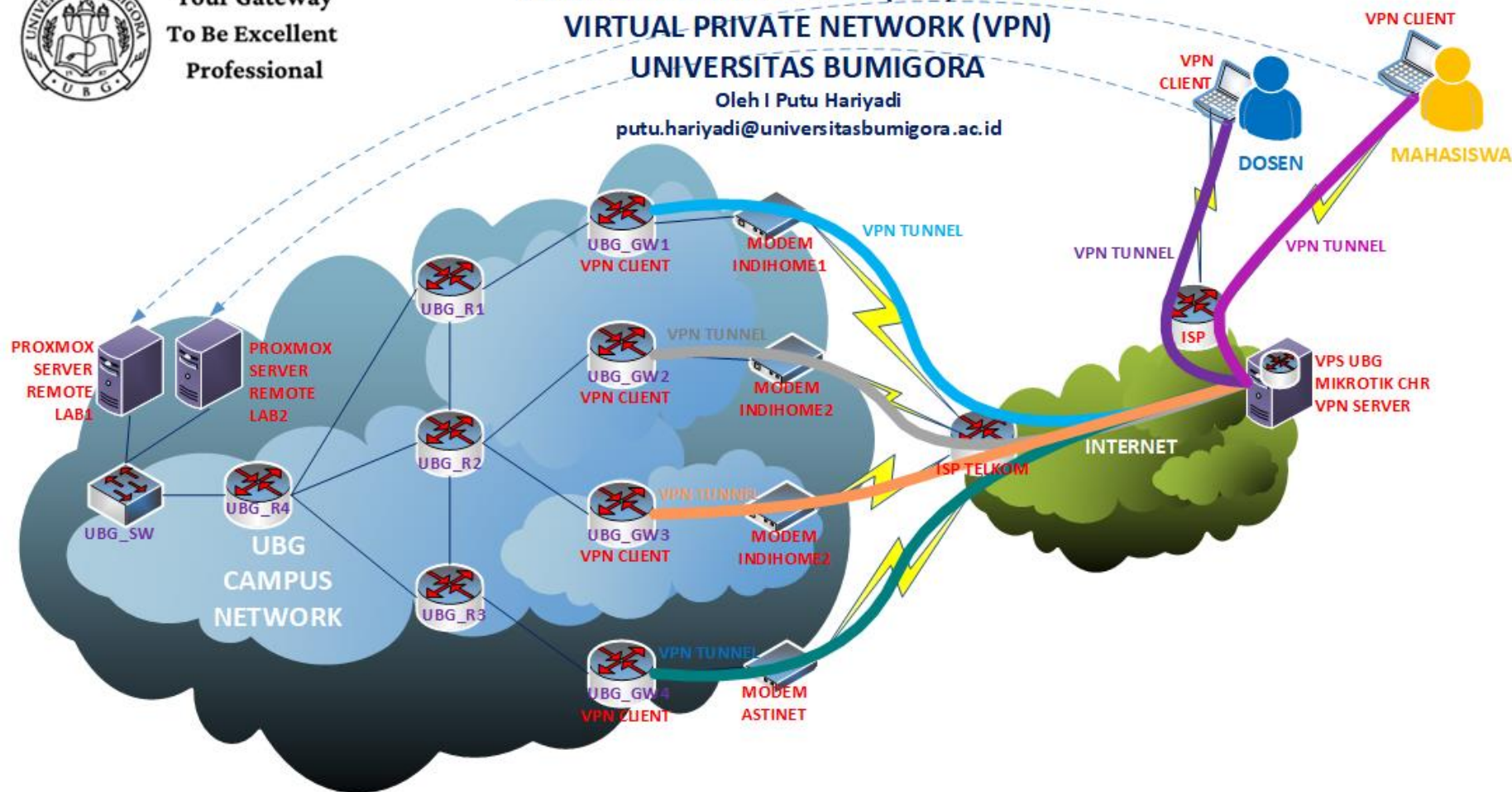


Your Gateway
To Be Excellent
Professional

DESAIN LAB FROM HOME (LFH) BERBASIS VIRTUAL PRIVATE NETWORK (VPN)

UNIVERSITAS BUMIGORA

Oleh I Putu Hariyadi
putu.hariyadi@universitasbumigora.ac.id



Sistem Lab From Home (LFH) merupakan sistem laboratorium komputer yang dibangun dengan mengintegrasikan teknologi virtualisasi dan **Virtual Private Network (VPN)** sebagai media pembelajaran praktikum bagi civitas akademika [Universitas Bumigora \(UBG\)](http://UniversitasBumigora.ac.id) selama pandemi **COVID-19** sehingga dapat diakses dari rumah.

PENGENALAN SISTEM LAB FROM HOME (LFH)

- LFH mengintegrasikan teknologi virtualisasi berbasis **Kernel-based Virtual Machine (KVM)** dan **Linux Container (LXC)** pada **Proxmox Virtual Environment (PVE)** dan **Virtual Private Network (VPN)** berbasis **Point-to-Point Tunneling Protocol (PPTP)** pada **Mikrotik RouterOS**.

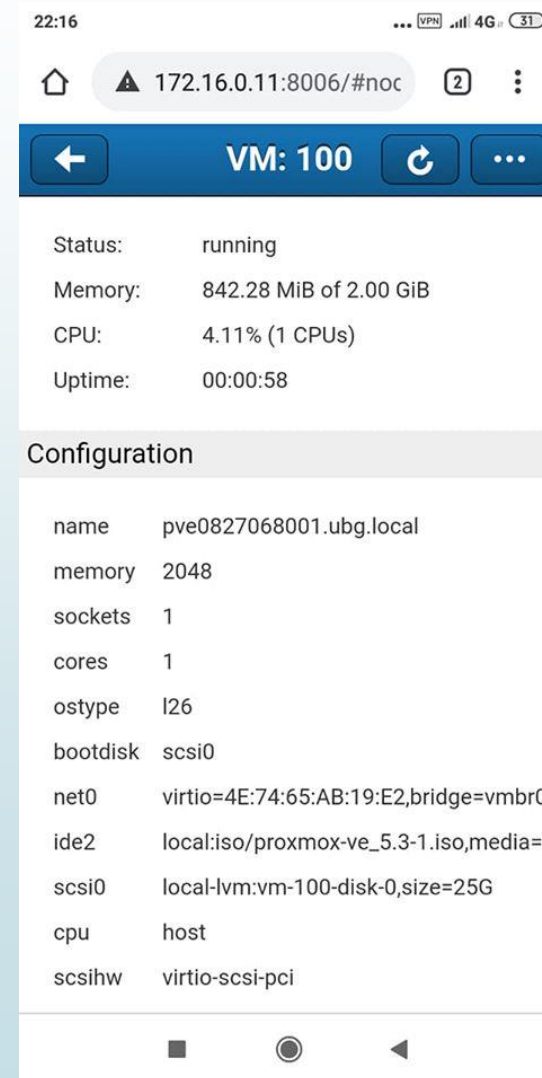
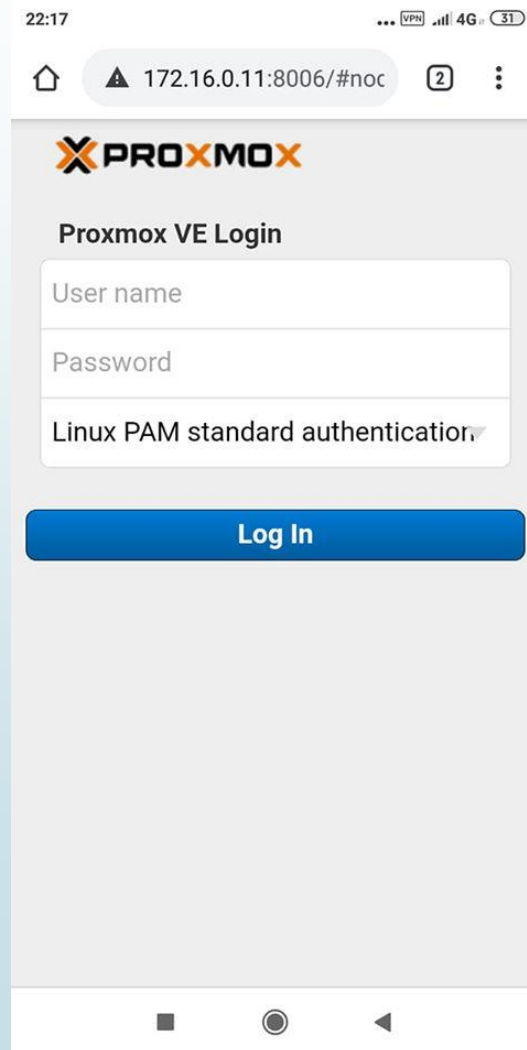
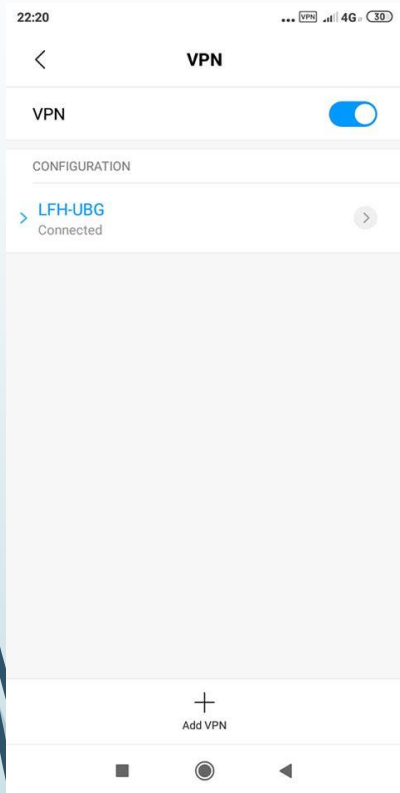
The image displays two overlapping web interfaces. On the left is the Proxmox Virtual Environment (PVE) interface, showing a 'Server View' of a datacenter named 'bumigora' with two virtual machines, 'pve1' and 'pve2', both in a 'Running' state. On the right is the Mikrotik WinBox interface, specifically the 'PPP' configuration page. It shows a list of PPP profiles configured for PPTP authentication, each with a unique name, password, and service type.

Name	Password	Service	Caller ID	Profile	Local Address	Remote
1410520031-Kdk Gina Dayasa	*****	pptp		PPTP-profile		
1410520031	*****	pptp		PPTP-profile		
1510530221 Edey susanto	*****	pptp		PPTP-profile		
1510530221	*****	pptp		PPTP-profile		
1610530088 lauhimmahfud	*****	pptp		PPTP-profile		
1610530088	*****	pptp		PPTP-profile		
1610530095-ahmad dahan	*****	pptp		PPTP-profile		
1610530095	*****	pptp		PPTP-profile		
1610530160 Arif Setiawan	*****	pptp		PPTP-profile		
1610530160	*****	pptp		PPTP-profile		
1610530177 alif rahmattullah	*****	pptp		PPTP-profile		
1610530177	*****	pptp		PPTP-profile		
1710510002-Kamaria	*****	pptp		PPTP-profile		
1710510002	*****	pptp		PPTP-profile		
1710510021 I Gede Krisna Mahardita	*****	pptp		PPTP-profile		
1710510021	*****	pptp		PPTP-profile		
1710510022-Kadek Evan Puspa Wiguna	*****	pptp		PPTP-profile		
1710510022	*****	pptp		PPTP-profile		
1710510028 Rahmat Bayu Zaruki	*****	pptp		PPTP-profile		
1710510028	*****	pptp		PPTP-profile		

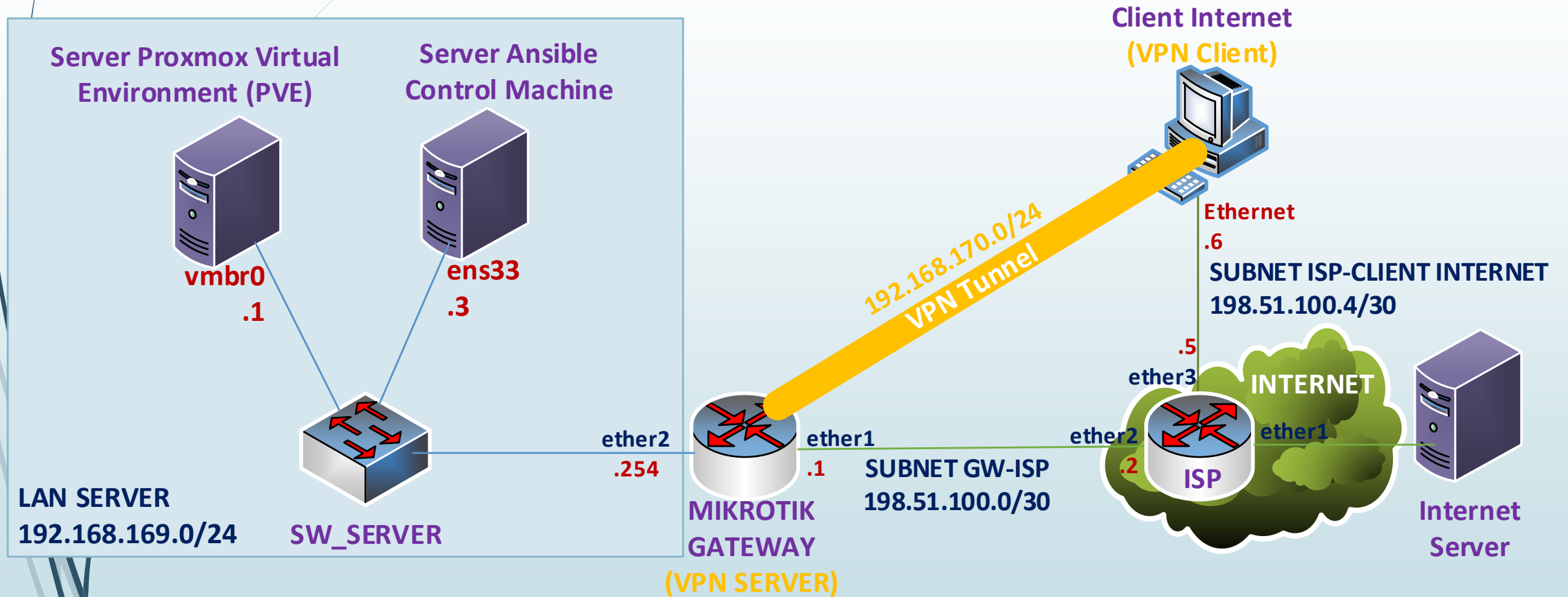


DEMO AKSES KE SISTEM LFH UBG

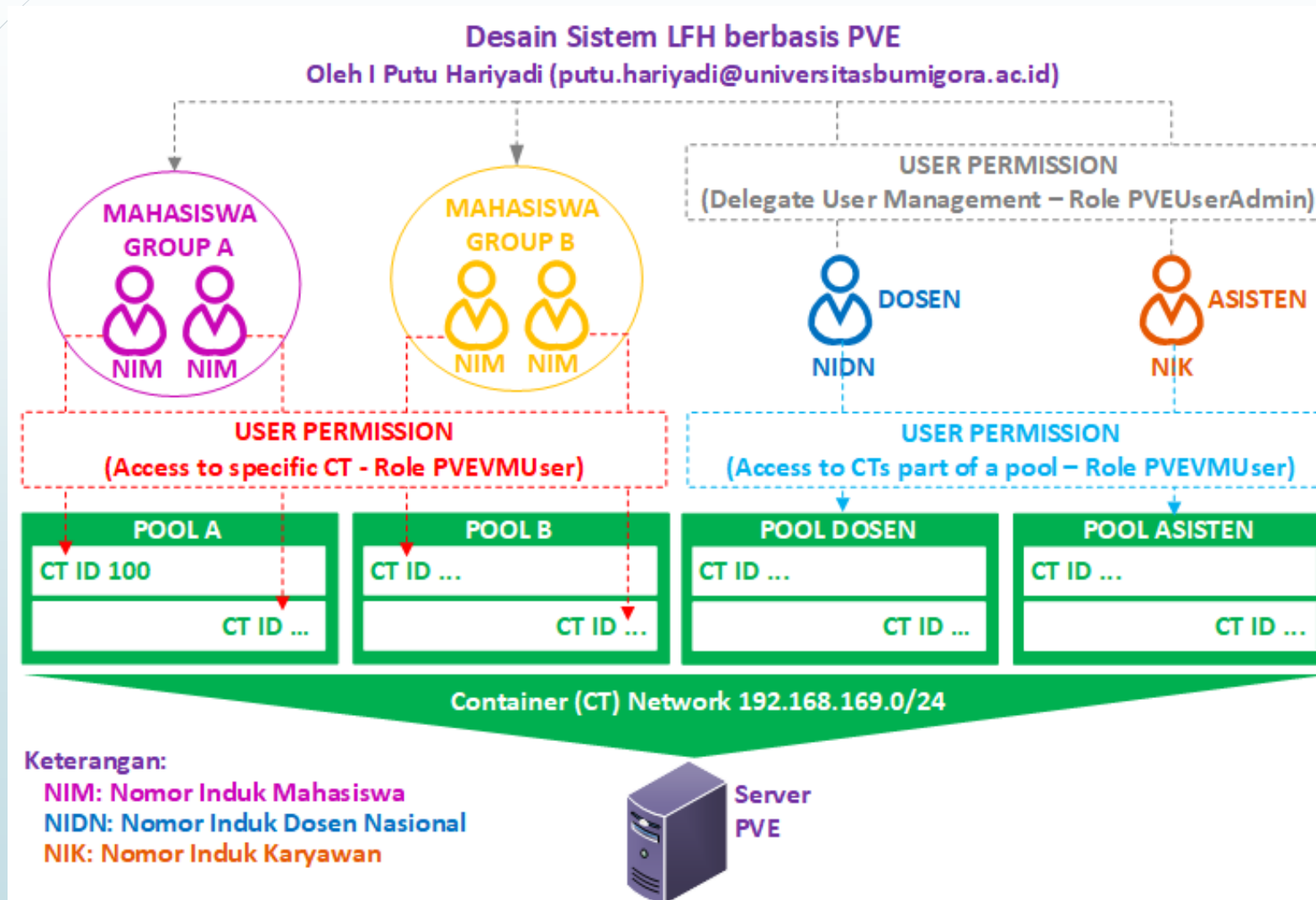
CUPLIKAN AKSES SISTEM LFH UBG DARI MOBILE PHONE



RANCANGAN JARINGAN UJICOBA SISTEM LFH



RANCANGAN SISTEM LFH UNTUK MATAKULIAH ATAU MATA PELAJARAN ADMINISTRASI SISTEM JARINGAN



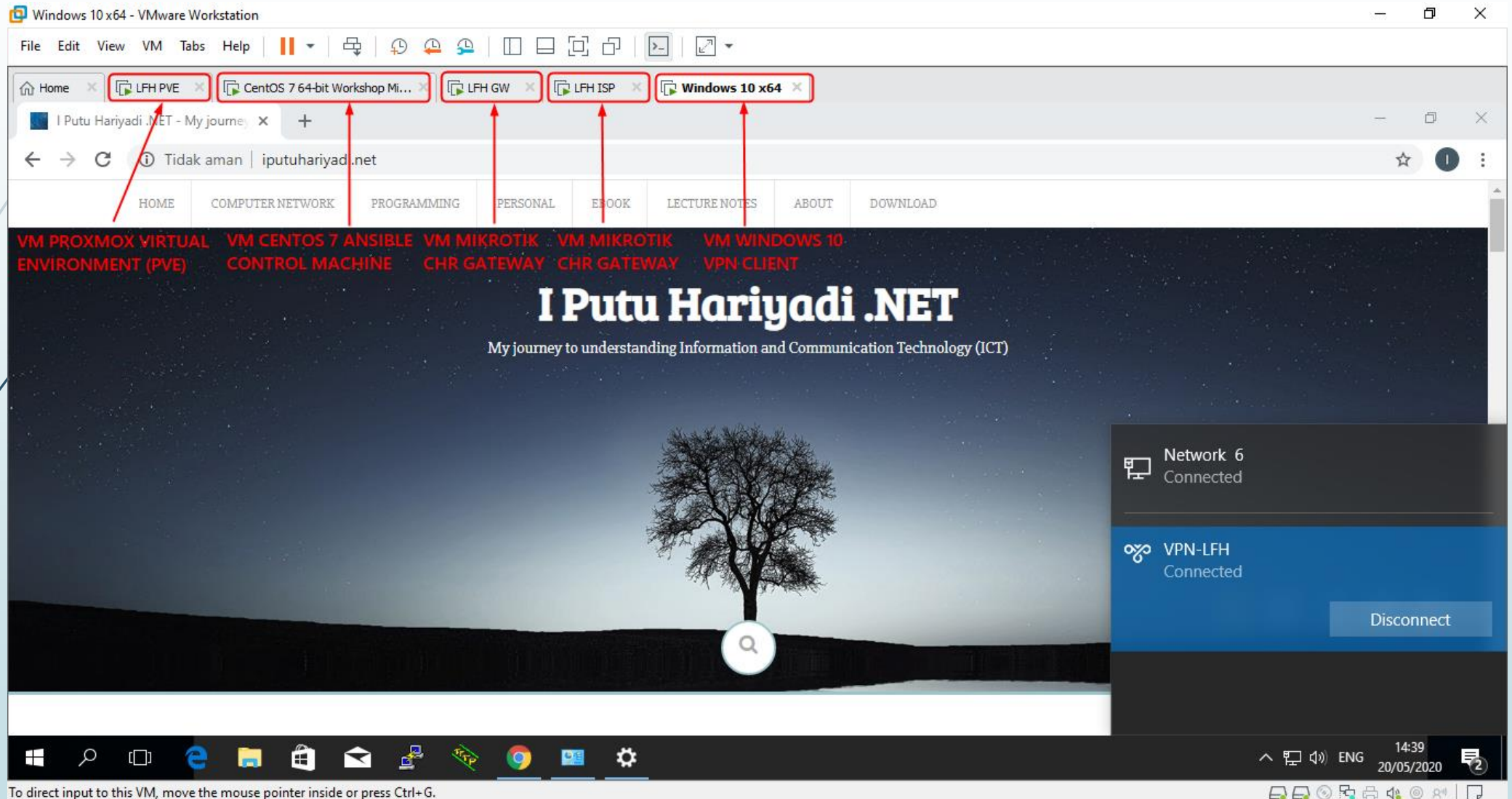
KEBUTUHAN PERANGKAT KERAS & LUNAK UNTUK UJICOBA SISTEM LFH

- Kebutuhan **Hardware** yaitu satu unit computer dengan spesifikasi: *Prosesor 64 bit, Memori 8 GB, Hard drive, 1 Network Interface Adapter (NIC)*.
- Kebutuhan **Software** meliputi:
 - a) **Proxmox Virtual Environment (VE) versi 5.3** yang dapat diunduh pada situs Proxmox di alamat <https://www.proxmox.com/en/downloads>
 - b) **VMWare Workstation 14 Pro** atau **15 Pro**.
 - c) **Putty SSH Client** yang dapat diunduh pada alamat <https://www.putty.org/>
 - d) **Browser Chrome** yang dapat diunduh pada alamat <https://www.google.com/chrome/>.
 - e) **Mikrotik Cloud Hosted Router (CHR)** dan **Winbox** yang dapat diunduh pada situs Mikrotik pada alamat <https://mikrotik.com/download>
 - f) **Linux CentOS 7 Container Image Templates** untuk Proxmox yang dapat diunduh pada alamat <http://download.proxmox.com/images/system/>
 - g) **Linux CentOS 7** sebagai **Ansible Automation Server** bagi Proxmox VE 5.3 yang dapat diunduh pada alamat <https://www.centos.org/>
- Koneksi **Internet**.



DEMO IMPLEMENTASI RANCANGAN SISTEM LFH YANG DISIMULASIKAN MENGGUNAKAN VMWARE WORKSTATION

5 (LIMA) VM PADA VMWARE WORKSTATION



To direct input to this VM, move the mouse pointer inside or press Ctrl+G.

CUPLIKAN HASIL KONEKSI DARI VPN CLIENT KE VPN SERVER MENGGUNAKAN AKUN MAHASISWA DAN VERIFIKASINYA DI MIKROTIK GATEWAY

The screenshot displays a Windows desktop environment with various icons on the left and a taskbar at the bottom. Two windows are open:

Command Prompt (C:\Windows\system32\cmd.exe):

```

Reply from 198.51.100.1: bytes=32 time=1ms TTL=63
Reply from 198.51.100.1: bytes=32 time=1ms TTL=63
Reply from 198.51.100.1: bytes=32 time=2ms TTL=63
Reply from 198.51.100.1: bytes=32 time=2ms TTL=63

Ping statistics for 198.51.100.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 1ms, Maximum = 2ms, Average = 1ms

C:\Users\I Putu Hariyadi>ping 192.168.169.1

Pinging 192.168.169.1 with 32 bytes of data:
Reply from 192.168.169.1: bytes=32 time=2ms TTL=63
Reply from 192.168.169.1: bytes=32 time=1ms TTL=63
Reply from 192.168.169.1: bytes=32 time=2ms TTL=63
Reply from 192.168.169.1: bytes=32 time=1ms TTL=63

Ping statistics for 192.168.169.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 1ms, Maximum = 2ms, Average = 1ms

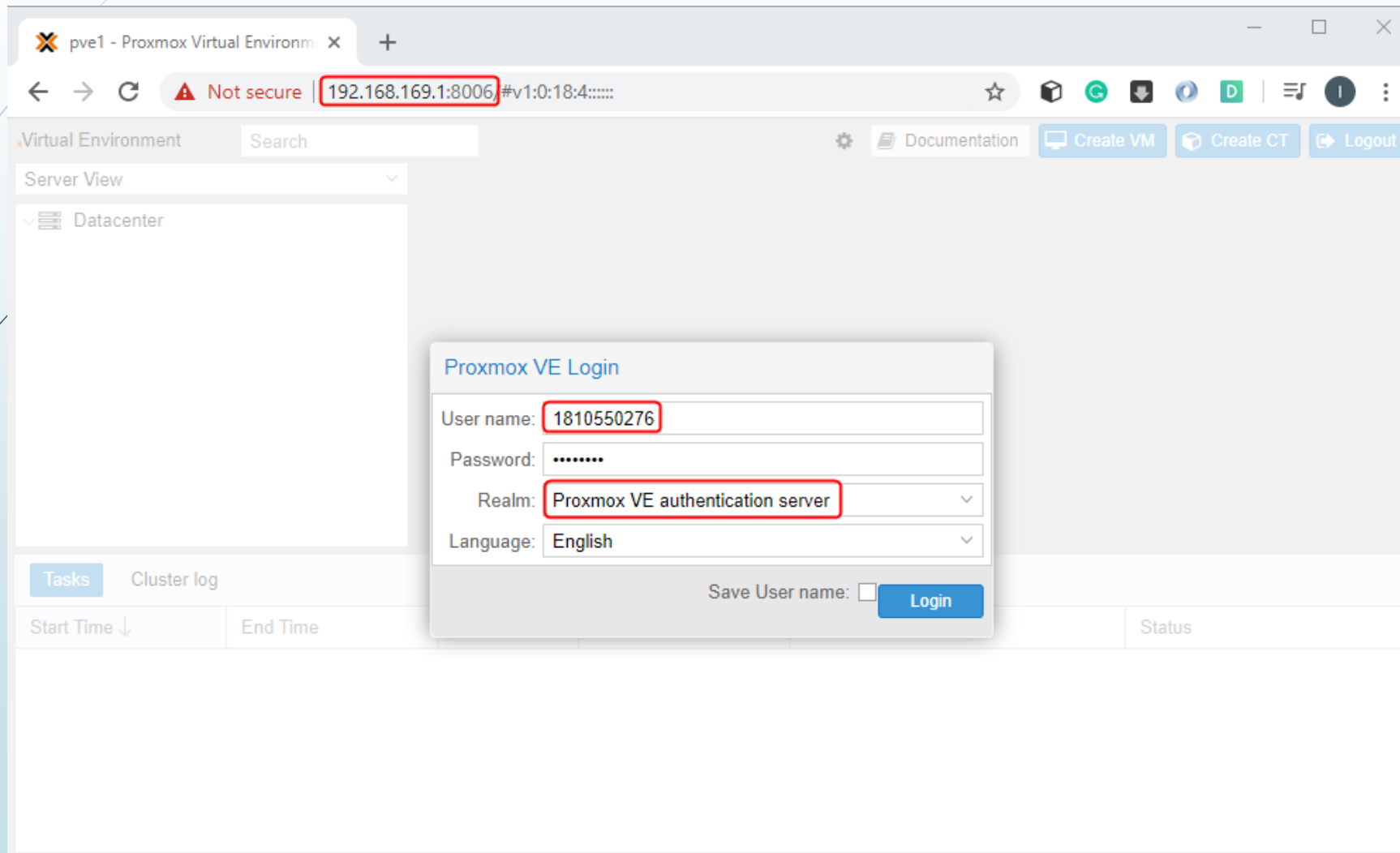
C:\Users\I Putu Hariyadi>
  
```

Mikrotik WinBox (admin@00:0C:29:01:AB:28 (GW) - WinBox (64bit) v6.46.6 on CHR (x86_64)):

The WinBox interface shows the 'Active Connections' tab selected. A red box highlights the connection details for a user named Gladys Alisa Suciani-B.

Name	Service	Caller ID	Encoding	Address	Uptime
... Gladys Alisa Suciani-B	pptp	198.51.100.6	MPPE128 stateless	192.168.170.254	00:01:55

AKSES KE WEB GUI DARI PVE MENGGUNAKAN AKUN MAHASISWA (1)



AKSES KE WEB GUI DARI PVE MENGGUNAKAN AKUN MAHASISWA (2)

Server View

Datacenter

pve1

102 (srv102.ubg.local)

Node 'pve1'

Reboot Shutdown Shell Bulk Actions Help

Search

Search:

Type ↑	Description	Disk usage...	Memory us...	CPU usag
lxc	102 (srv102.ubg.local)			

Tasks Cluster log

Start Time ↓	End Time	Node	User name	Description	Status
May 20 09:59:44	May 20 09:59:58	pve1	1810550276@pve	VM/CT 102 - Console	OK
May 20 09:59:30	May 20 09:59:31	pve1	1810550276@pve	CT 102 - Start	OK

START & CONSOLE CONTAINER MAHASISWA SERTA VERIFIKASI KONEKSI INTERNET

The screenshot displays the Proxmox Virtual Environment (VE) web interface. On the left, the 'Server View' sidebar shows the 'Datacenter' containing a node 'pve1', which in turn contains a container '102 (srv102.ubg.local)'. The container is highlighted with a red box. The main panel shows the 'Container 102 (srv102.ubg.local) on node 'pve1'' with buttons for 'Start', 'Shutdown', 'Console', 'More', and 'Help'. Below this, a 'Google Chrome' window titled 'pve1 - Proxmox Console' displays the terminal output of the container. The terminal shows network configuration commands and the execution of 'ip route' and 'ping google.com'. The 'ip route' command shows a default route via 192.168.169.254 and a specific route for 192.168.169.0/24. The 'ping google.com' command shows successful connectivity with a 0% packet loss and a round-trip time of approximately 78ms.

valid_lft forever preferred_lft forever
inet6 ::1/128 scope host
valid_lft forever preferred_lft forever
4: eth0@if5: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc noqueue state UP qlen 1000
link/ether c2:9a:96:27:ff:5b brd ff:ff:ff:ff:ff:ff link-netnsid 0
inet 192.168.169.102/24 brd 192.168.169.255 scope global eth0
valid_lft forever preferred_lft forever
inet6 fe80::c09a:96ff:fe27:ff5b/64 scope link
valid_lft forever preferred_lft forever
[root@srv102 ~]# ip route
default via 192.168.169.254 dev eth0
192.168.169.0/24 dev eth0 scope link metric 1004
192.168.169.0/24 dev eth0 proto kernel scope link src 192.168.169.102
[root@srv102 ~]# ping google.com
PING forcesafesearch.google.com (216.239.38.120) 56(84) bytes of data.
64 bytes from any-in-2678.1e100.net (216.239.38.120): icmp_seq=1 ttl=126 time=78.7 ms
64 bytes from any-in-2678.1e100.net (216.239.38.120): icmp_seq=2 ttl=126 time=65.4 ms

--- forcesafesearch.google.com ping statistics ---
2 packets transmitted, 2 received, 0% packet loss, time 1002ms
rtt min/avg/max/mdev = 65.402/72.086/78.770/6.684 ms
[root@srv102 ~]#

AKSES KE WEB GUI DARI PVE MENGGUNAKAN AKUN DOSEN

Proxmox VE Login

User name: 0827068001

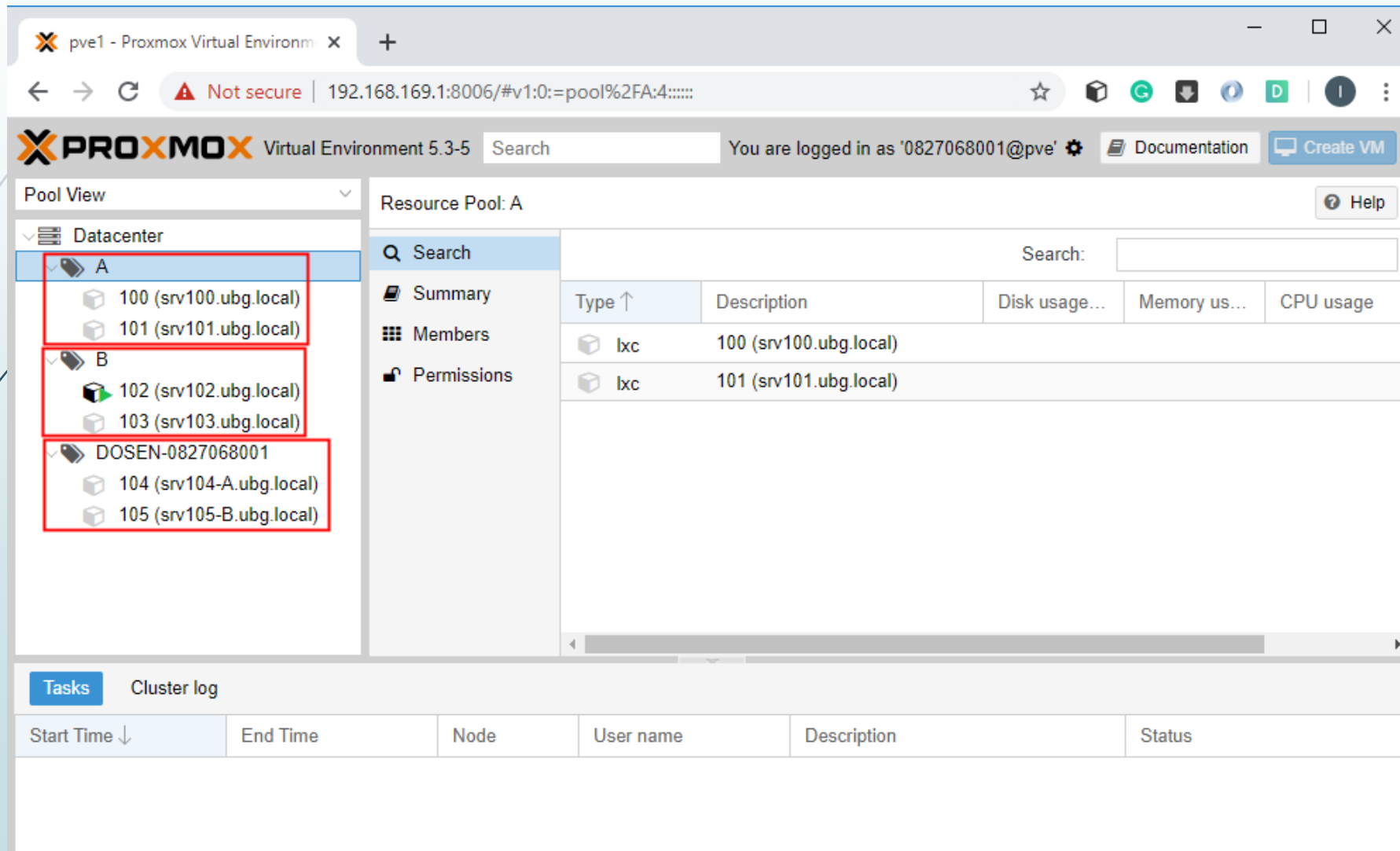
Password:

Realm: Proxmox VE authentication server

Language: English

Save User name: ☐ Login

VERIFIKASI DOSEN DAPAT MEMANAJEMN CONTAINER PADA POOL MAHASISWA



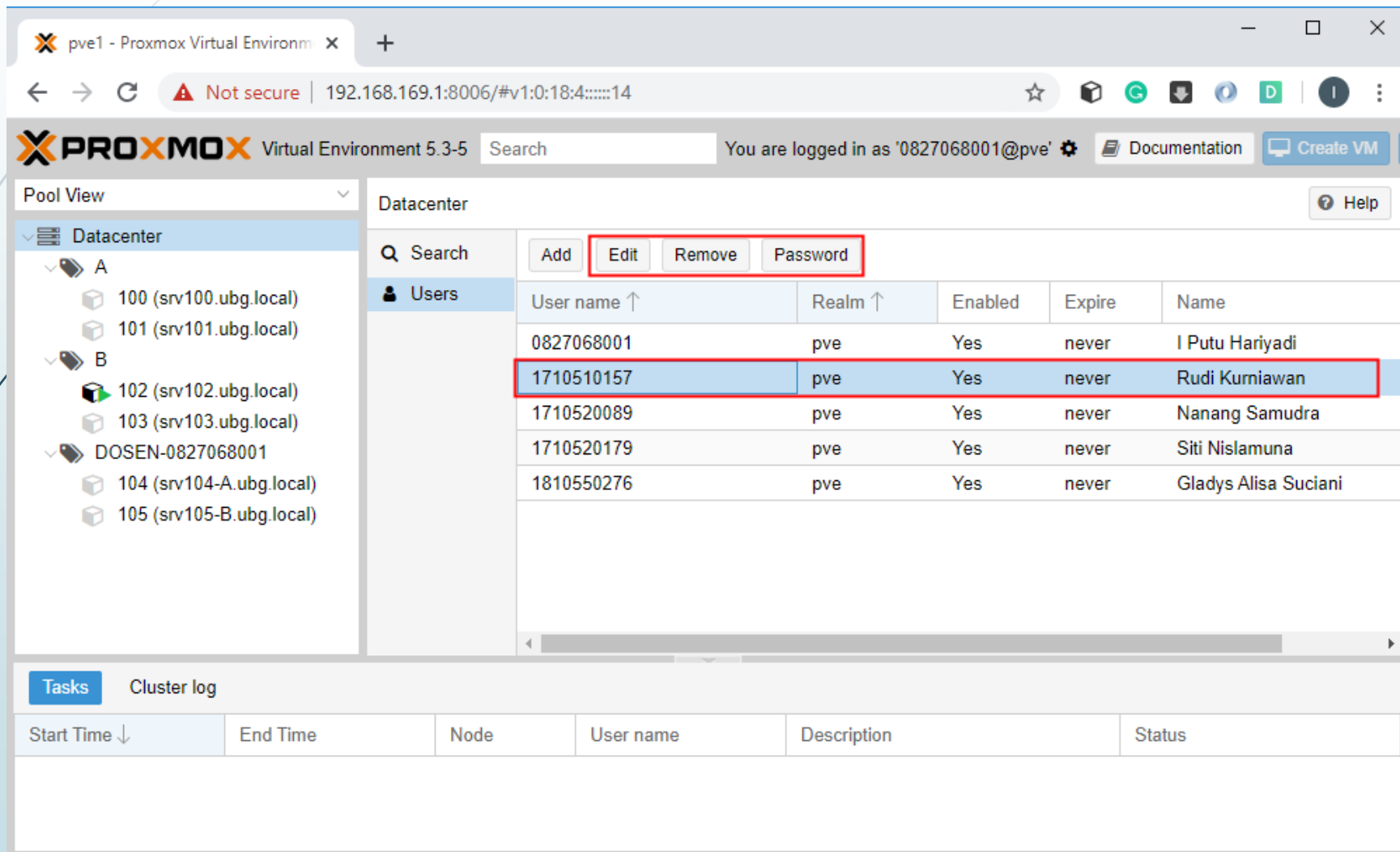
The screenshot shows the Proxmox Virtual Environment (PVE) web interface. The browser address bar indicates the URL is `192.168.169.1:8006/#v1:0:=pool%2FA:4:.....`. The interface displays the 'Resource Pool: A' configuration. On the left, a tree view shows the 'Datacenter' containing three resource pools: 'A', 'B', and 'DOSEN-0827068001'. Each pool contains a list of containers (lxc). The 'DOSEN-0827068001' pool is highlighted, showing containers 104 (srv104-A.ubg.local) and 105 (srv105-B.ubg.local). The main panel shows a table of containers for 'Resource Pool: A'.

Type	Description	Disk usage...	Memory us...	CPU usage
lxc	100 (srv100.ubg.local)			
lxc	101 (srv101.ubg.local)			

At the bottom, there is a 'Tasks' tab and a 'Cluster log' section with a table showing log entries.

Start Time	End Time	Node	User name	Description	Status
------------	----------	------	-----------	-------------	--------

VERIFIKASI DOSEN MEMPEROLEH DELEGASI MANAJEMEN USER PADA POOL MAHASISWA



The screenshot displays the Proxmox Virtual Environment (PVE) web interface. The browser address bar shows the URL `192.168.169.1:8006/#v1:0:18:4:.....14`. The interface is titled "PROXMOX Virtual Environment 5.3-5" and indicates the user is logged in as `'0827068001@pve'`. The "Datacenter" section is active, showing a list of users. The "Edit", "Remove", and "Password" buttons are highlighted in red. The user "Rudi Kurniawan" is highlighted in the table.

User name ↑	Realm ↑	Enabled	Expire	Name
0827068001	pve	Yes	never	I Putu Hariyadi
1710510157	pve	Yes	never	Rudi Kurniawan
1710520089	pve	Yes	never	Nanang Samudra
1710520179	pve	Yes	never	Siti Nislamuna
1810550276	pve	Yes	never	Gladys Alisa Suciani

AKSES KE WEB GUI DARI PVE MENGGUNAKAN AKUN ASISTEN

Proxmox VE Login

User name: 19.4.01

Password:

Realm: Proxmox VE authentication server

Language: English

Save User name: ☐ Login

Start Time ↓	End Time	Node	User name	Description	Status
--------------	----------	------	-----------	-------------	--------

VERIFIKASI ASISTEN DAPAT MEMANAJEMN CONTAINER PADA POOL MAHASISWA

The screenshot shows the Proxmox Virtual Environment (PVE) web interface. The browser address bar indicates the URL is `192.168.169.1:8006/#v1:0:=pool%2FA:4:::14`. The interface is titled "PROXMOX Virtual Environment 5.3-5" and shows the user is logged in as "19.4.01@pve".

The "Pool View" section shows the "Datacenter" tab selected. Under "Datacenter", there are three groups of containers, each highlighted with a red box:

- A**: 100 (srv100.ubg.local), 101 (srv101.ubg.local)
- ASISTEN-19.4.01**: 106 (srv106-A.ubg.local), 107 (srv107-B.ubg.local)
- B**: 102 (srv102.ubg.local), 103 (srv103.ubg.local)

The "Resource Pool: A" section shows a table with the following data:

Type	Description	Disk usage...	Memory us...	CPU usage
lxc	100 (srv100.ubg.local)			
lxc	101 (srv101.ubg.local)			

The "Tasks" section shows a table with the following columns: Start Time, End Time, Node, User name, Description, and Status.

VERIFIKASI ASISTEN MEMPEROLEH DELEGASI MANAJEMEN USER PADA POOL MAHASISWA

Proxmox Virtual Environment 5.3-5

You are logged in as '19.4.01@pve'

Documentation Create VM

Pool View

Datacenter

- A
 - 100 (srv100.ubg.local)
 - 101 (srv101.ubg.local)
- ASISTEN-19.4.01
 - 106 (srv106-A.ubg.local)
 - 107 (srv107-B.ubg.local)
- B
 - 102 (srv102.ubg.local)
 - 103 (srv103.ubg.local)

Datacenter

Search

Add Edit Remove Password

Users

User name ↑	Realm ↑	Enabled	Expire	Name
1710510157	pve	Yes	never	Rudi Kurniawan
1710520089	pve	Yes	never	Nanang Samudra
1710520179	pve	Yes	never	Siti Nislamuna
1810550276	pve	Yes	never	Gladys Alisa Suciani
19.4.01	pve	Yes	never	Naufal Hanif

Tasks Cluster log

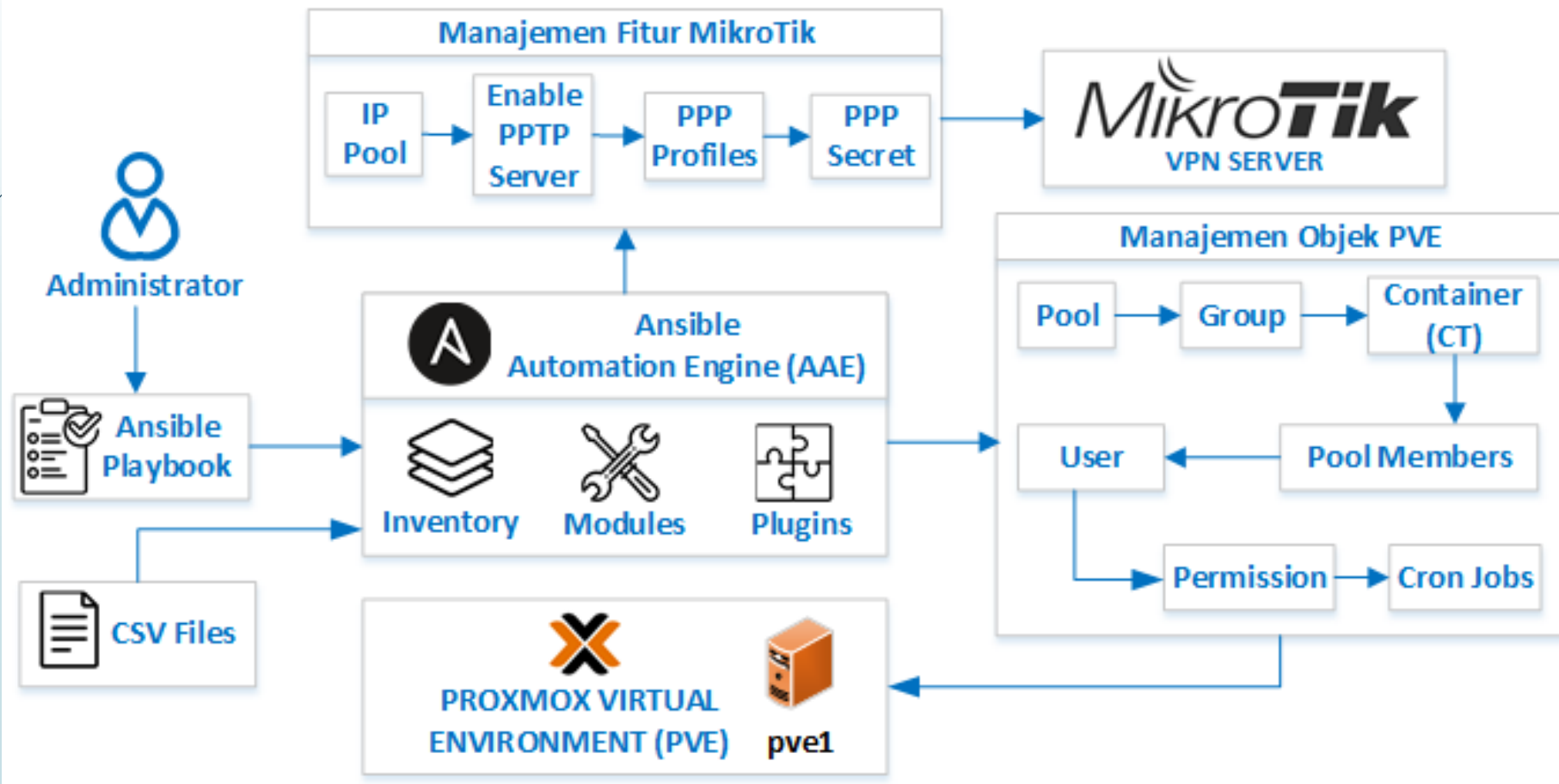
Start Time ↓	End Time	Node	User name	Description	Status
--------------	----------	------	-----------	-------------	--------

MODUL WORKSHOP SEBAGAI REFERENSI IMPLEMENTASI SISTEM LFH



RANCANGAN SISTEM OTOMASI MANAJEMEN LFH MENGGUNAKAN ANSIBLE

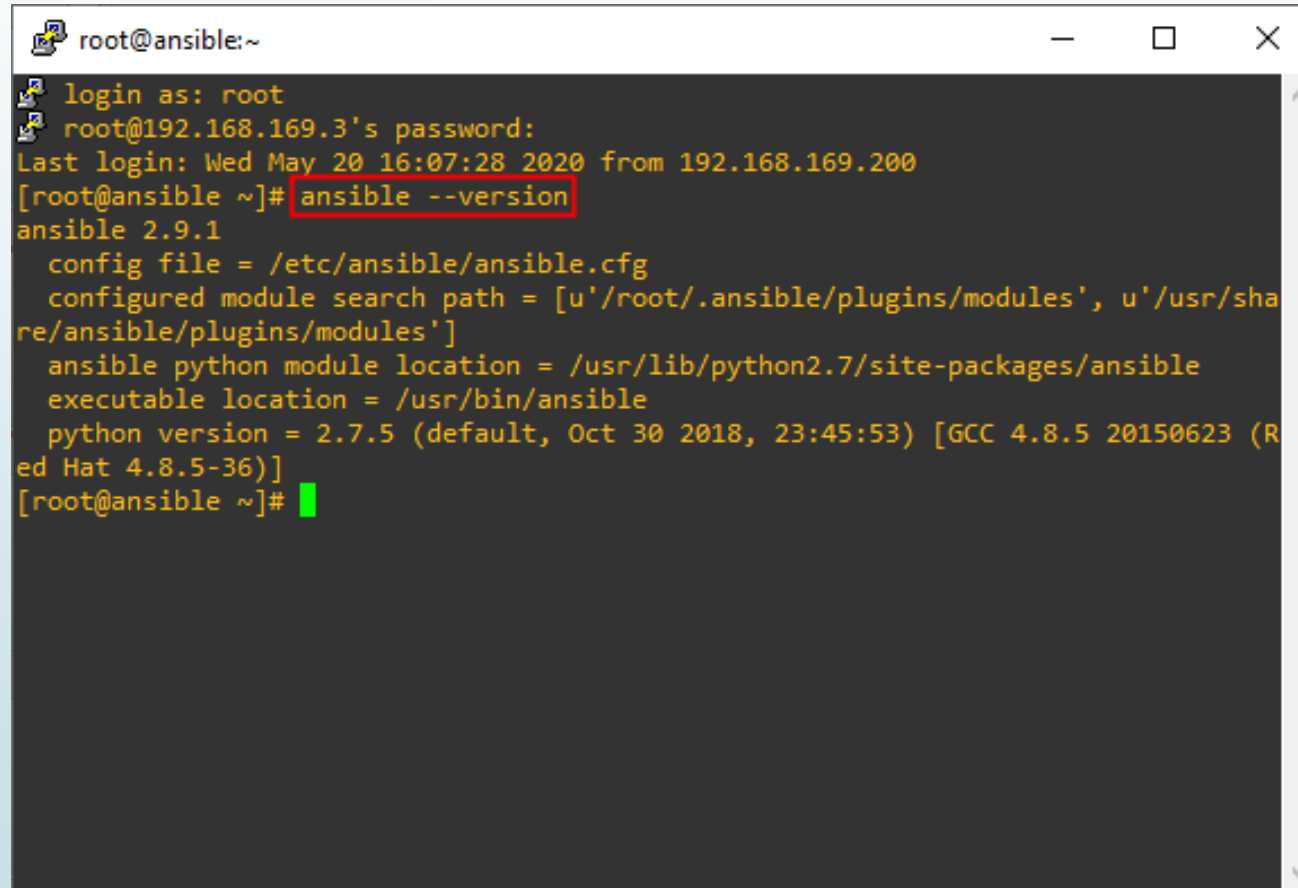
Desain Sistem Otomasi LFH menggunakan Ansible
Oleh I Putu Hariyadi (putu.hariyadi@universitasbumigora.ac.id)





DEMO HASIL IMPLEMENTASI RANCANGAN OTOMASI SISTEM LFH MENGGUNAKAN ANSIBLE

REMOTE ACCESS SSH KE SERVER ANSIBLE CONTROL MACHINE



```
root@ansible:~  
login as: root  
root@192.168.169.3's password:  
Last login: Wed May 20 16:07:28 2020 from 192.168.169.200  
[root@ansible ~]# ansible --version  
ansible 2.9.1  
  config file = /etc/ansible/ansible.cfg  
  configured module search path = [u'/root/.ansible/plugins/modules', u'/usr/share/ansible/plugins/modules']  
  ansible python module location = /usr/lib/python2.7/site-packages/ansible  
  executable location = /usr/bin/ansible  
  python version = 2.7.5 (default, Oct 30 2018, 23:45:53) [GCC 4.8.5 20150623 (Red Hat 4.8.5-36)]  
[root@ansible ~]#
```

DATA UJICOBAA UNTUK OTOMATISASI KELOMPOK PRAKTIKUM MAHASISWA, DOSEN & ASISTEN YANG DISIMPAN DALAM FILE BERFORMAT CSV

```
root@ansible:~  
[root@ansible ~]# cat kelompok-praktikum-mahasiswa.csv  
nim,nama_mahasiswa,kelompok  
1710510157,Rudi Kurniawan,A  
1710520179,Siti Nislamuna,A  
1810550276,Gladys Alisa Suciani,B  
1710520089,Nanang Samudra,B  
[root@ansible ~]# cat dosen-kelompok-praktikum.csv  
nidn,nama_dosen,kelompok  
0827068001,I Putu Hariyadi,A-B  
[root@ansible ~]# cat asisten-kelompok-praktikum.csv  
nik,nama_asisten,kelompok  
19.4.01,Naufal Hanif,A-B  
[root@ansible ~]# cat jadwal-praktikum.csv  
kelompok,hari,jam  
A,rabu,10:24-10:26  
B,rabu,10:27-10:29  
[root@ansible ~]#
```

CUPLIKAN ANSIBLE INVENTORY HOSTS /etc/ansible/hosts

```
root@ansible:~/LFH
## alpha.example.org
## beta.example.org
## 192.168.1.100
## 192.168.1.110

# If you have multiple hosts following a pattern you can specify
# them like this:

## www[001:006].example.com

# Ex 3: A collection of database servers in the 'dbservers' group

## [dbservers]
##
## db01.intranet.mydomain.net
## db02.intranet.mydomain.net
## 10.25.1.56
## 10.25.1.57

# Here's another example of host ranges, this time there are no
# leading 0s:

## db-[99:101]-node.example.com
[servers]
pve1 ansible_host=192.168.169.1

[routers]
gw ansible_host=192.168.169.254 ansible_user=admin ansible_connection=network_cli ansible_network_os=routeros
[root@ansible LFH]#
```

CUPLIKAN HASIL EKSEKUSI ANSIBLE PLAYBOOK UNTUK OTOMASI MANAJEMEN OBYEK PVE DARI SISTEM LFH

```
root@ansible:~  
Last login: Wed May 20 11:15:42 2020 from 192.168.169.200  
[root@ansible ~]# ansible-playbook -i /etc/ansible/hosts main.yml  
Otomasi Manajemen Virtual Private Server (VPS)  
Lab From Home (LFH) Menggunakan Ansible Pada Media  
Pembelajaran Praktikum Manajemen Jaringan Berbasis  
Proxmox Virtual Environment (PVE) Cluster  
Oleh I Putu Hariyadi  
(putu.hariyadi@universitasbumigora.ac.id)  
  
1. Menampilkan Data Dari File CSV.  
2. Membuat Pool, Group, Container, Pool Members,  
   HA Resources, User dan Permission untuk mahasiswa,  
   dosen & asisten.  
3. Menjalankan/menghentikan Container Per  
   Kelompok.  
4. Mengubah Sandi User.  
5. Menonaktifkan/mengaktifkan Akun User.  
6. Menampilkan status container dari mahasiswa,  
   dosen & asisten.  
7. Menghapus Pool, Group, Container, Pool Members,  
   HA Resources, User dan Permission dari mahasiswa,  
   dosen & asisten.  
8. Manajemen penjadwalan start & stop container per  
   kelompok mahasiswa secara berkala.  
Keluar (Tekan Enter atau CTRL+C).  
  
Pilih menu (1-8):
```

VERIFIKASI HASIL EKSEKUSI ANSIBLE PLAYBOOK UNTUK MEMBUAT OBYEK VPS DI PVE

Proxmox Virtual Environment 5.3-5

You are logged in as 'root@pam'

Documentation Create VM Create CT Logout

Server View

Datacenter

pve1

- 100 (srv100.ubg.local)
- 101 (srv101.ubg.local)
- 102 (srv102.ubg.local)
- 103 (srv103.ubg.local)
- 104 (srv104-A.ubg.local)
- 105 (srv105-B.ubg.local)
- 106 (srv106-A.ubg.local)
- 107 (srv107-B.ubg.local)
- local (pve1)
- local-lvm (pve1)
- A
- ASISTEN-19.4.01
- B
- DOSEN-0827068001

Datacenter

Search

Summary

Cluster

Options

Storage

Backup

Replication

Permissions

Users

Groups

Pool

Add Remove

Path	User/Group	Role	Propag...
/access/groups/A	0827068001@pve	PVEUserAdmin	true
/access/groups/A	19.4.01@pve	PVEUserAdmin	true
/access/groups/B	0827068001@pve	PVEUserAdmin	true
/access/groups/B	19.4.01@pve	PVEUserAdmin	true
/access/realm/pve	0827068001@pve	PVEUserAdmin	true
/access/realm/pve	19.4.01@pve	PVEUserAdmin	true
/vms/100	1710510157@pve	PVEVMUser	true
/pool/B	0827068001@pve	PVEVMUser	true
/pool/B	19.4.01@pve	PVEVMUser	true
/pool/ASISTEN-19.4.01	19.4.01@pve	PVEVMUser	true
/pool/DOSEN-0827068001	0827068001@pve	PVEVMUser	true
/vms/103	1710520089@pve	PVEVMUser	true

Tasks Cluster log

Start Time	End Time	Node	User name	Description	Status
May 20 06:37:36	May 20 06:37:39	pve1	0827068001@pve	CT 104 - Shutdown	OK
May 20 06:37:19	May 20 06:37:33	pve1	0827068001@pve	VM/CT 104 - Console	OK
May 20 06:37:12	May 20 06:37:15	pve1	0827068001@pve	CT 104 - Start	OK
May 20 06:35:03	May 20 06:35:23	pve1	root@pam	CT 107 - Create	OK
May 20 06:34:38	May 20 06:34:57	pve1	root@pam	CT 106 - Create	OK
May 20 06:33:45	May 20 06:34:05	pve1	root@pam	CT 105 - Create	OK

CUPLIKAN ANSIBLE PLAYBOOK UNTUK OTOMASI MANAJEMEN FITUR MIKROTIK

```
root@ansible:~/LFH
[root@ansible LFH]# more mikrotik-lfh.yml
---
- name: Manajemen Fitur Mikrotik Lab From Home
  hosts: gw
  connection: network_cli
  gather_facts: no
  tasks:
    - name: Membaca file csv kelompok praktikum mahasiswa
      include_tasks: read-csv-mahasiswa.yml
      tags: add

    - name: Membuat PPP Secret Mahasiswa
      include_tasks: create-ppp-secret-mahasiswa.yml
      with_items: "{{ mahasiswa.list }}"
      when:
        - item.nim != 'nim'
      tags: add

    - name: Membaca file csv kelompok praktikum dosen
      include_tasks: read-csv-data-dosen.yml
      tags: add

    - name: Membuat PPP Secret Dosen
      include_tasks: create-ppp-secret-dosen.yml
      with_items: "{{ dosen.list }}"
      when:
        - item.nidn != 'nidn'
[root@ansible LFH]# ansible-playbook -i /etc/ansible/hosts mikrotik-lfh.yml --skip-tags "remove"
```


HASIL EKSEKUSI ANSIBLE PLAYBOOK UNTUK MENAMBAHKAN PPP SECRET DI MIKROTIK GW

```

root@ansible:~/LFH
ok: [gw]

TASK [Membaca file csv kelompok praktikum asisten] *****
included: /root/LFH/read-csv-data-asisten.yml for gw

TASK [Membaca File CSV] *****
ok: [gw -> localhost]

TASK [Menampilkan Data Asisten] *****
skipping: [gw] => (item={u'nik': u'nik', u'kelompok': u'kelompok', u'nama_asisten': u'Naufal Hanif KELOMPOK: A-B'})
ok: [gw] => (item={u'nik': u'19.4.01', u'kelompok': u'A-B', u'nama_asisten': u'Naufal Hanif KELOMPOK: A-B'})
msg: 'NIK: 19.4.01, NAMA ASISTEN: Naufal Hanif KELOMPOK: A-B'

TASK [Membuat PPP Secret Asisten] *****
skipping: [gw] => (item={u'nik': u'nik', u'kelompok': u'kelompok', u'nama_asisten': u'Naufal Hanif KELOMPOK: A-B'})
included: /root/LFH/create-ppp-secret-asisten.yml for gw

TASK [Menambahkan Data PPP Secret Asisten] *****
ok: [gw]

TASK [Menampilkan Data PPP Secret] *****
ok: [gw]

TASK [debug] *****
ok: [gw] =>
  result.stdout:
  - |-
    Flags: X - disabled
    #  NAME      SERVICE CALLER-ID  PASSWORD  PROFILE  REMOTE-ADDRESS
    0  ;; Rudi Kurniawan-A  1710510157 ptp  12345678  profile-VPN
    1  ;; Siti Nislamuna-A  1710520179 ptp  12345678  profile-VPN
    2  ;; Gladys Alisa Suciani-B  1810550276 ptp  12345678  profile-VPN
    3  ;; Nanang Samudra-B  1710520089 ptp  12345678  profile-VPN
    4  ;; I Putu Hariyadi-DOSEN  0827068001 ptp  12345678  profile-VPN
    5  ;; Naufal Hanif-ASISTEN  19.4.01 ptp  12345678  profile-VPN

PLAY RECAP *****
gw : ok=22  changed=0  unreachable=0  failed=0  skipped=0  rescued=0  ignored=0

[root@ansible LFH]#
  
```

admin@00:0C:29:01:AB:28 (GW) - WinBox (64bit) v6.46.6 on CHR (x86_64)

Session Settings Dashboard

Safe Mode Session: 00:0C:29:01:AB:28

Quick Set
CAPsMAN
Interfaces
Wireless
Bridge
PPP
Mesh
IP
MPLS
Routing
System
Queues
Files
Log
RADIUS
Tools
New Terminal
Dot1X
Dude
Make Supout.rtf
Manual
New WinBox

PPP

Interface PPPoE Servers Secrets Profiles Active Connections L2TP Secrets

PPP Authentication&Accounting

Name	Password	Service	Caller ID	Profile	Local Address	Remote Address
Naufal Hanif-ASISTEN	19.4.01	pptp		profile-VPN		
I Putu Hariyadi-DOSEN	0827068001	pptp		profile-VPN		
Rudi Kurniawan-A	1710510157	pptp		profile-VPN		
Nanang Samudra-B	1710520089	pptp		profile-VPN		
Siti Nislamuna-A	1710520179	pptp		profile-VPN		
Gladys Alisa Suciani-B	1810550276	pptp		profile-VPN		

6 items

HASIL EKSEKUSI ANSIBLE PLAYBOOK UNTUK MENGHAPUS SELURUH PPP SECRET DI MIKROTIK GW

The image shows a terminal window on the left and a Mikrotik WinBox interface on the right.

Terminal Window:

```
root@ansible:~/LFH
[root@ansible LFH]# ansible-playbook -i /etc/ansible/hosts mikrotik-lfh.yml --skip-tags "add"

PLAY [Manajemen Fitur Mikrotik Lab From Home] *****

TASK [Menghapus Seluruh Data PPP Secret] *****
ok: [gw]

TASK [Menampilkan Data PPP Secret] *****
ok: [gw]

TASK [debug] *****
ok: [gw] =>
  result.stdout:
    - |-
      Flags: X - disabled
      #  NAME      SERVICE CALLER-ID  PASSWORD  PROFILE  REMOTE-ADDRESS

PLAY RECAP *****
gw                : ok=3    changed=0    unreachable=0    failed=0    skipped=0

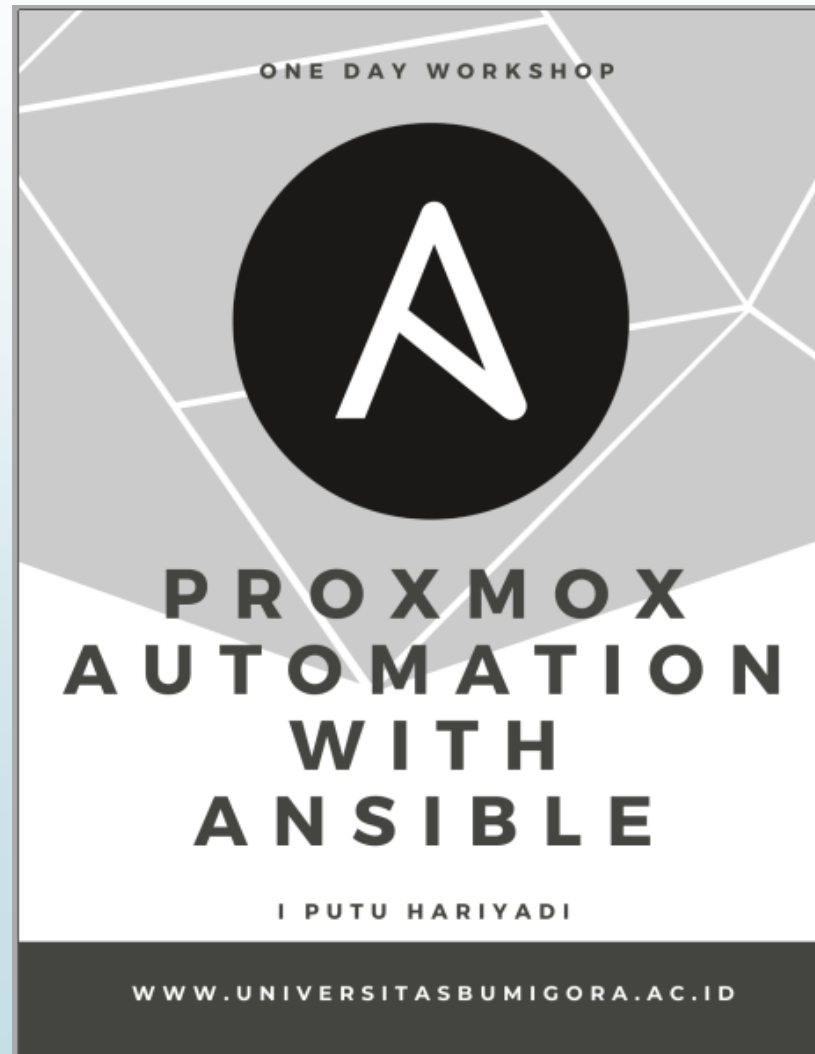
[root@ansible LFH]#
```

WinBox Interface:

The WinBox interface shows the 'PPP' configuration page. The 'Secrets' tab is selected, displaying a table for PPP secrets. The table has columns: Name, Password, Service, Caller ID, Profile, Local Address, and Remote Address. The table is currently empty, showing 0 items.

Name	Password	Service	Caller ID	Profile	Local Address	Remote Address
------	----------	---------	-----------	---------	---------------	----------------

MODUL WORKSHOP SEBAGAI REFERENSI OTOMASI MANAJEMEN LAYANAN LFH



ADA PERTANYAAN?

REFERENSI (1)

- Standar Kompetensi Kerja Nasional Indonesia (SKKNI) 2017-082 tentang Administrasi Sistem, <https://bpptik.kominfo.go.id/download/skkni-2017-082-administrasi-sistem/>
- I Putu Hariyadi, **Modul One Day Workshop for Charity “Membangun Server Virtualisasi Dengan Proxmox VE 5.3”**, Universitas Bumigora, 2019, <https://iputuhariyadi.net/2019/02/05/one-day-workshop-for-charity-network-community-universitas-bumigora/>
- I Putu Hariyadi, **Modul One Day Workshop for Professional IT Lombok “Proxmox VE 5.3 High Availability”**, 2019, <https://iputuhariyadi.net/2019/05/12/membangun-high-availability-ha-virtualization-server-berbasis-proxmox-ve-5-3/>
- I Putu Hariyadi, **Modul One Day Workshop “Proxmox Automation With Ansible”**, Universitas Bumigora, 2019, <https://iputuhariyadi.net/2019/11/04/modul-one-day-workshop-proxmox-automation-with-ansible/>
- I Putu Hariyadi, **Ansible Playbook dari Modul One Day Workshop “Proxmox Automation with Ansible”**, 2019, <https://github.com/iputuhariyadi/ansible-proxmox-playbook>

REFERENSI (2)

- I Putu Hariyadi, **Modul One Day Workshop “Mikrotik Internet Connection Sharing (ICS), Hotspot & VPN PPTP”**, <https://iputuhariyadi.net/2020/05/19/modul-workshop-mikrotik-internet-connection-sharing-hotspot-dan-vpn-pptp/>.
- I Putu Hariyadi, **Diktat Praktikum Manajemen Jaringan**, 2018, <https://iputuhariyadi.net/2018/12/07/diktat-praktikum-manajemen-jaringan/>
- I Putu Hariyadi & Akbar Juliansyah, **Analisa Penerapan Private Cloud Computing Berbasis Proxmox VE Sebagai Media Pembelajaran Praktikum Manajemen Jaringan**, 2018, https://drive.google.com/open?id=1GIW0_Z2Nh47Jke7WVL4PNHIODz80Nsr1
- I Putu Hariyadi, **Modul Monthly Knowledge Sharing (MKS) Network Community STMIK Bumigora tentang “Network Automation With Ansible”**, 2018, <https://iputuhariyadi.net/2018/01/07/network-automation-with-ansible/>

TERIMA KASIH