



MikroTik & VMware ESXi untuk Jaringan Kampus

Azriel Christian Nurcahyo, M.Kom.

**Institut Shanti Bhuana
2021/2022**



Perkenalan

Azriel C. Nurcahyo, M.Kom.

azriel@shantibhuana.ac.id / WA Text Only 081335678161

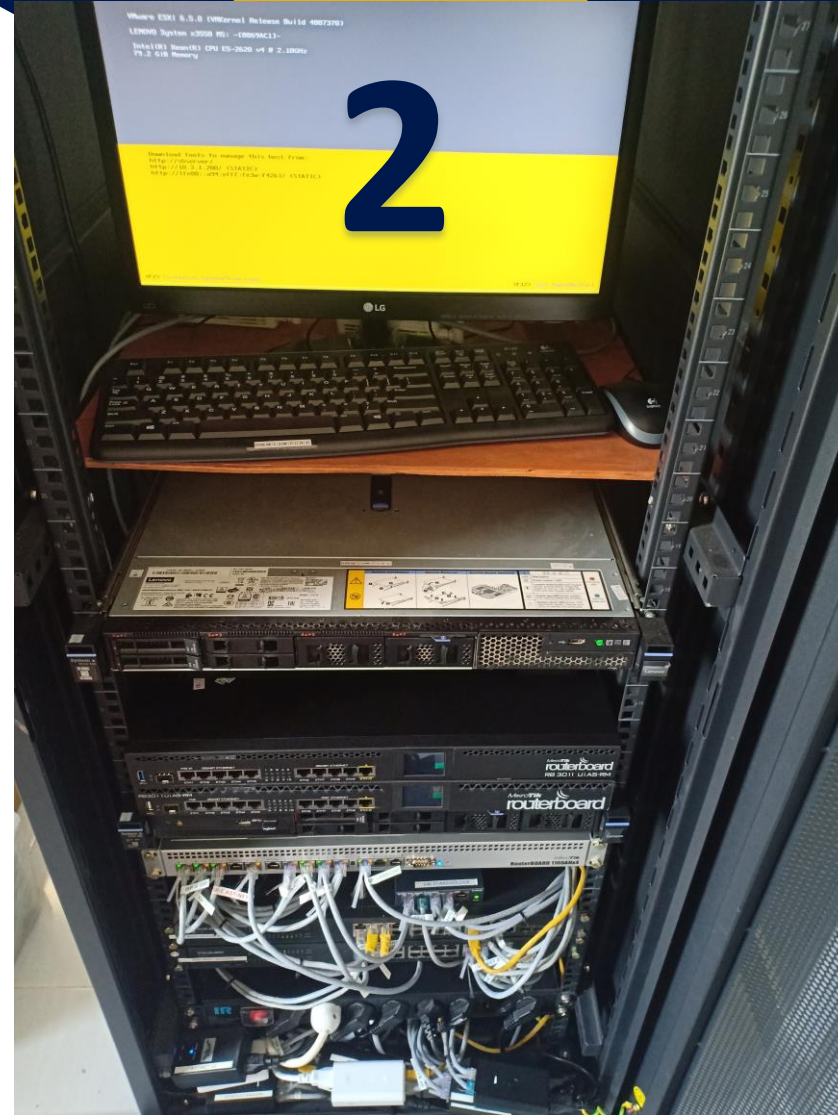
- S1 Teknik Informatika Universitas Kristen Immanuel, Yogyakarta (2017)
- S2 Teknik Informatika Universitas AMIKOM, Yogyakarta (2019)
- Network Administrator UKRIM, Yogyakarta (2016-2018)
- System Administrator Institut Shanti Bhuana, Bengkayang, Kalimantan Barat.
- Dosen Teknologi Informasi, Institut Shanti Bhuana, Bengkayang, Kalimantan Barat.



MikroTik

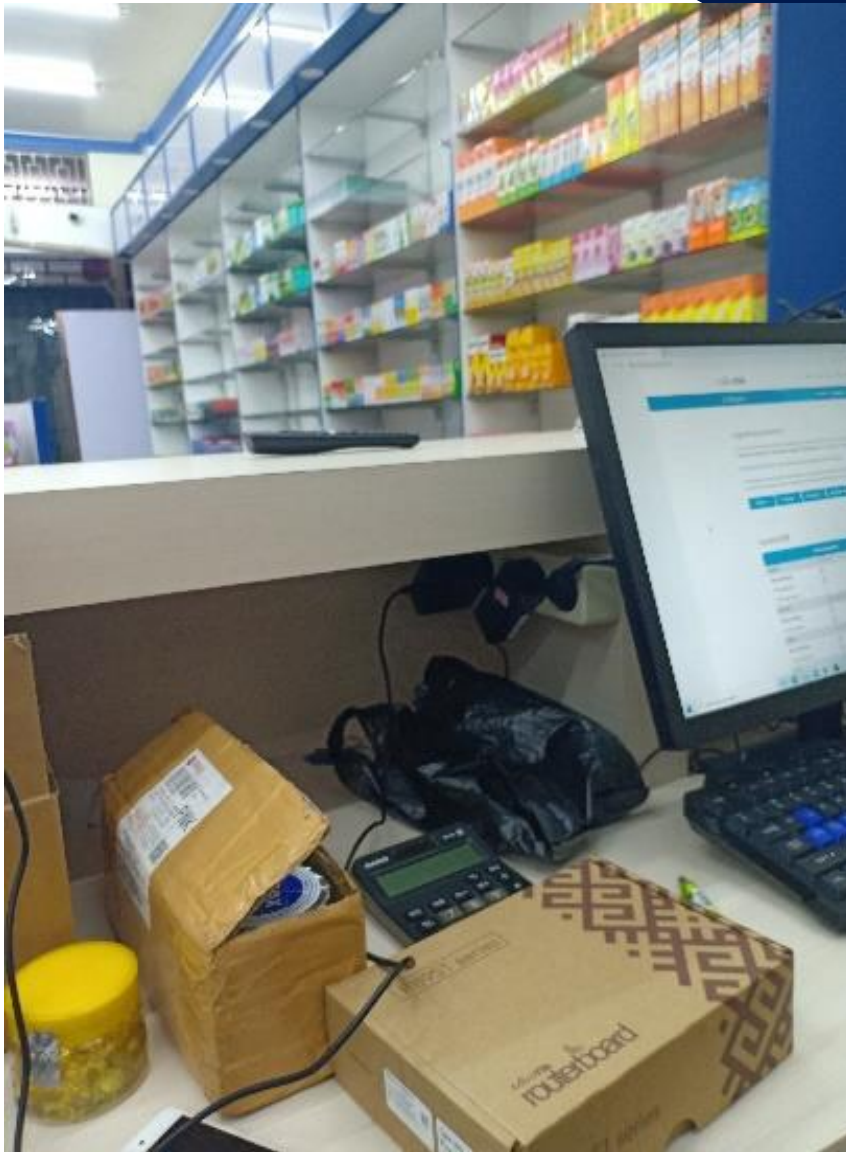


Tipe-tipe User MikroTik



Tipe-tipe User MikroTik

5



6



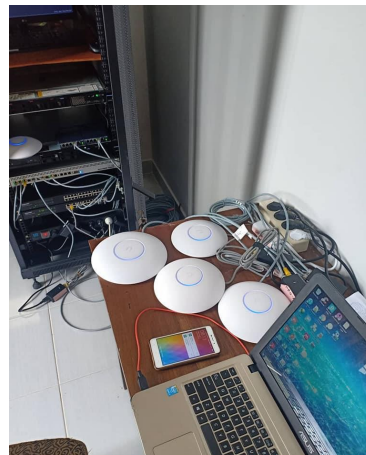
Tipe-tipe User MikroTik

7



MASALAH JARINGAN KAMPUS DI ERA COVID-19

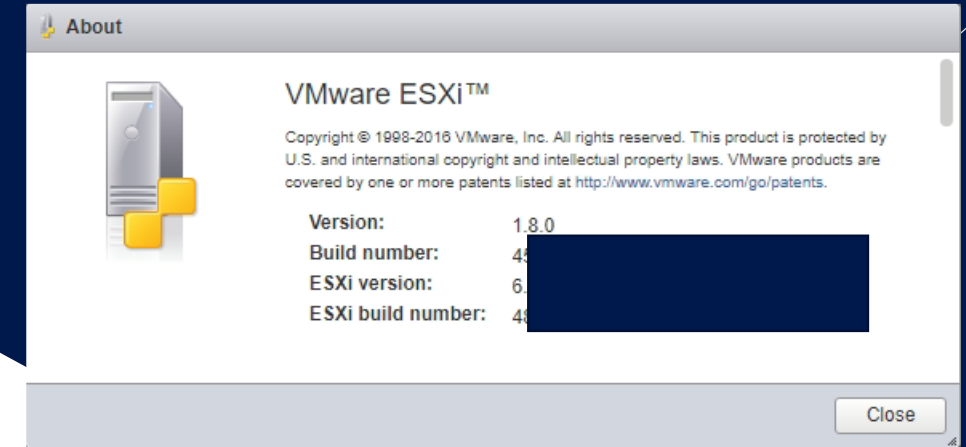
Pandemi saat ini pembelajaran tentu semuanya berjalan via online. Namun hal itu menjadi tantangan bagi kami yang berada di zona perbatasan Kalimantan Barat di mana ip publik saat ini jumlahnya terbatas, dan juga koneksi kebutuhan untuk hosting ke publik semakin hari semakin banyak hal ini terjadi di kampus kami yang membutuhkan alokasi seperti website kampus, server moodle kampus, server siakad, repository, sister dikti dan lain lain.



<https://shantibhuana.ac.id/>

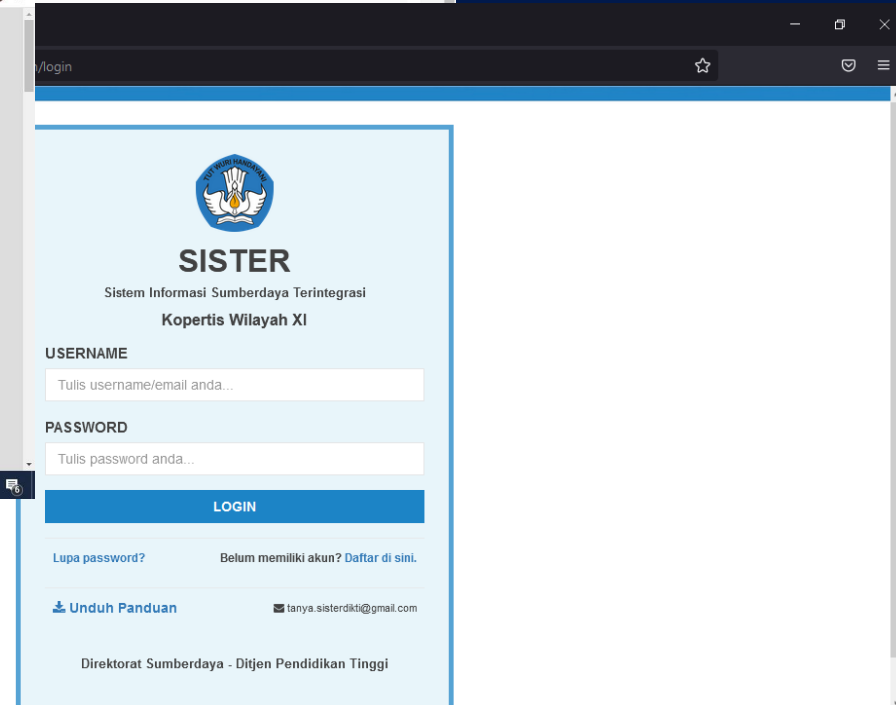
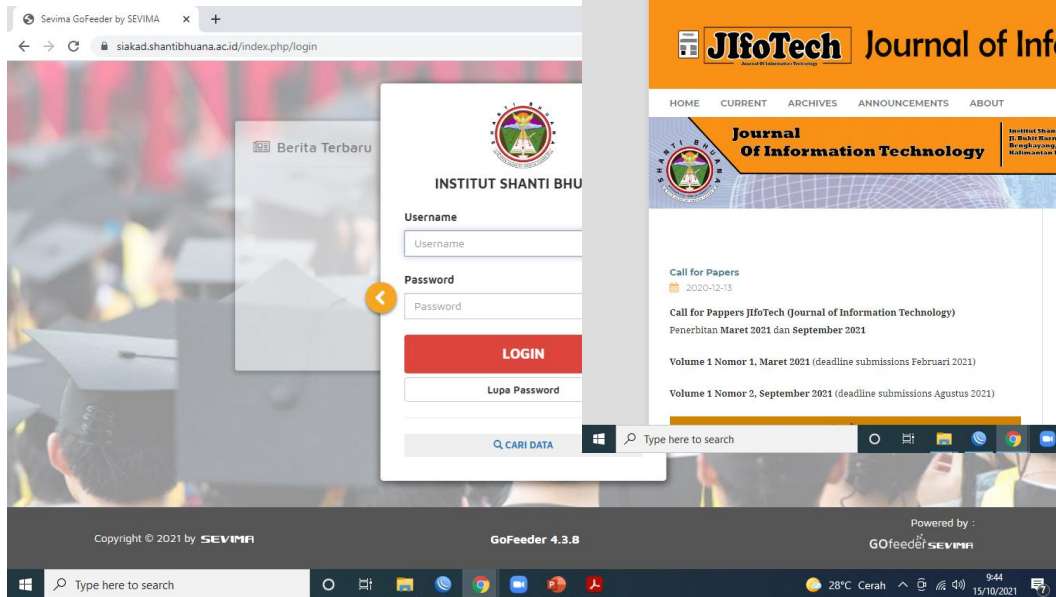
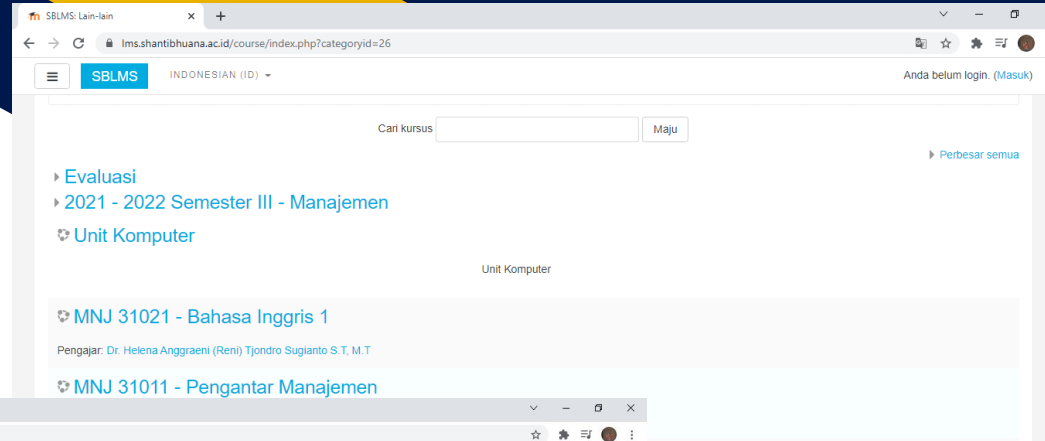
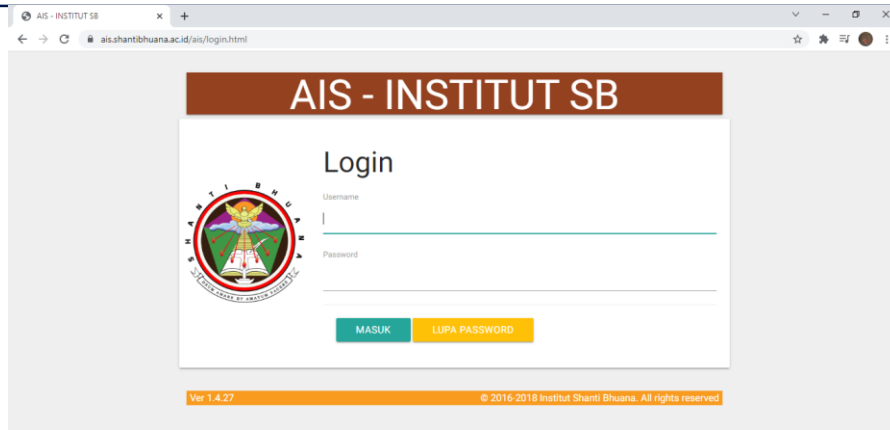
MASALAH JARINGAN KAMPUS DI ERA COVID-19

Pandemi saat ini pembelajaran tentu semuanya berjalan via online. Namun hal itu menjadi tantangan bagi kami yang berada di zona perbatasan Kalimantan Barat di mana ip publik saat ini jumlahnya terbatas, dan juga koneksi kebutuhan untuk hosting ke publik semakin hari semakin banyak hal ini terjadi di kampus kami yang membutuhkan alokasi seperti website kampus, server moodle kampus, server siacad, repository, sister dikti dan lain lain.



<input type="checkbox"/>	Virtual machine	Guest OS	Host name
<input type="checkbox"/>	VM2Linux	Ubuntu Linux (64-bit)	vm2
<input type="checkbox"/>	VM3Linux	Ubuntu Linux (64-bit)	vm3
<input type="checkbox"/>	VM4Linux	Ubuntu Linux (64-bit)	vm4
<input type="checkbox"/>	VM1Linux	Ubuntu Linux (64-bit)	vm1
<input type="checkbox"/>	Windows	Microsoft Windows 10 (6...	
<input type="checkbox"/>	VM5Linux	Ubuntu Linux (64-bit)	Unknown

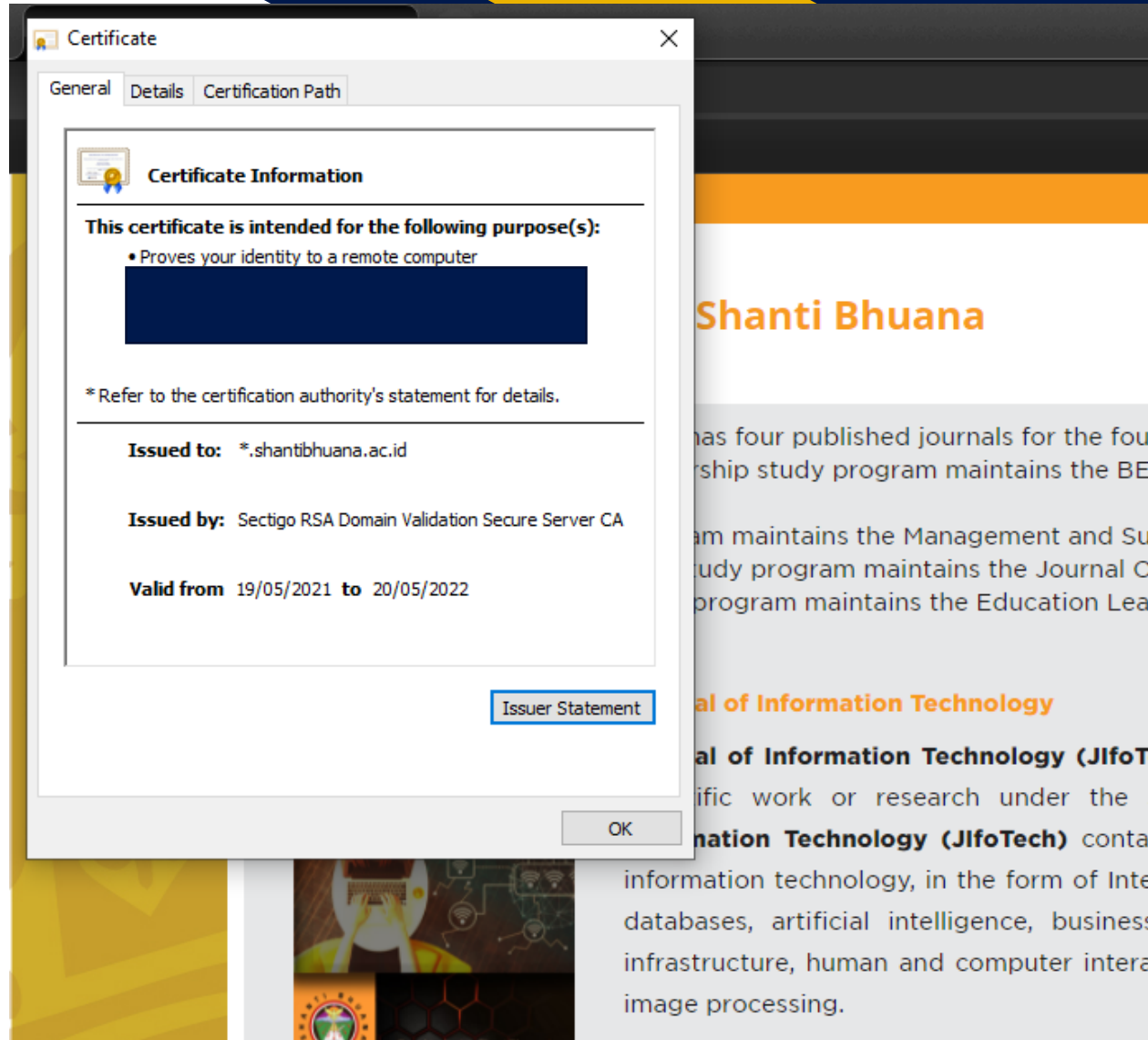
MASALAH JARINGAN KAMPUS DI ERA COVID-19



<https://shantibhuana.ac.id/>



MASALAH JARINGAN KAMPUS DI ERA COVID-19



The image shows a Windows 'Certificate' dialog box with the 'General' tab selected. The dialog box contains the following information:

- Certificate Information**
- This certificate is intended for the following purpose(s):**
 - Proves your identity to a remote computer
- Issued to:** *.shantibhuana.ac.id
- Issued by:** Sectigo RSA Domain Validation Secure Server CA
- Valid from:** 19/05/2021 **to:** 20/05/2022

Buttons for 'Issuer Statement' and 'OK' are visible at the bottom of the dialog box.

The background shows a website for Shanti Bhuana with the following text:

Shanti Bhuana

has four published journals for the four...
ship study program maintains the BEE...
am maintains the Management and Sus...
study program maintains the Journal Of...
program maintains the Education Lear...

al of Information Technology

al of Information Technology (JifoTe

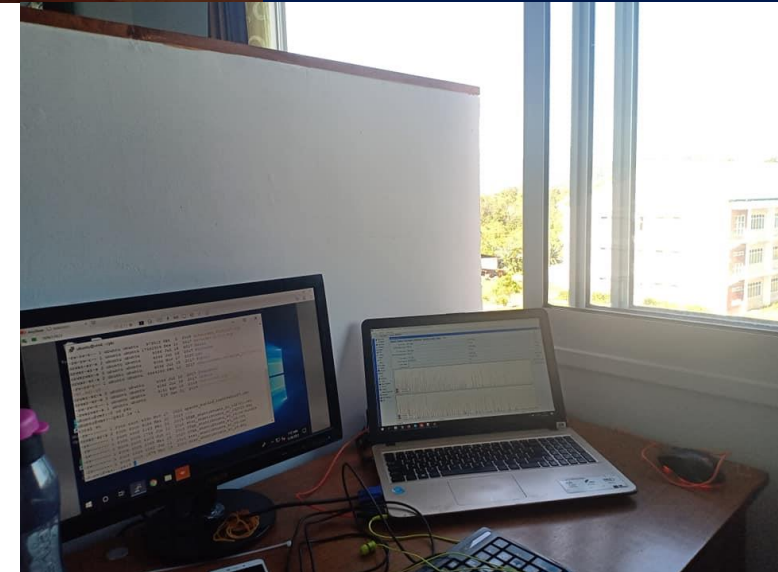
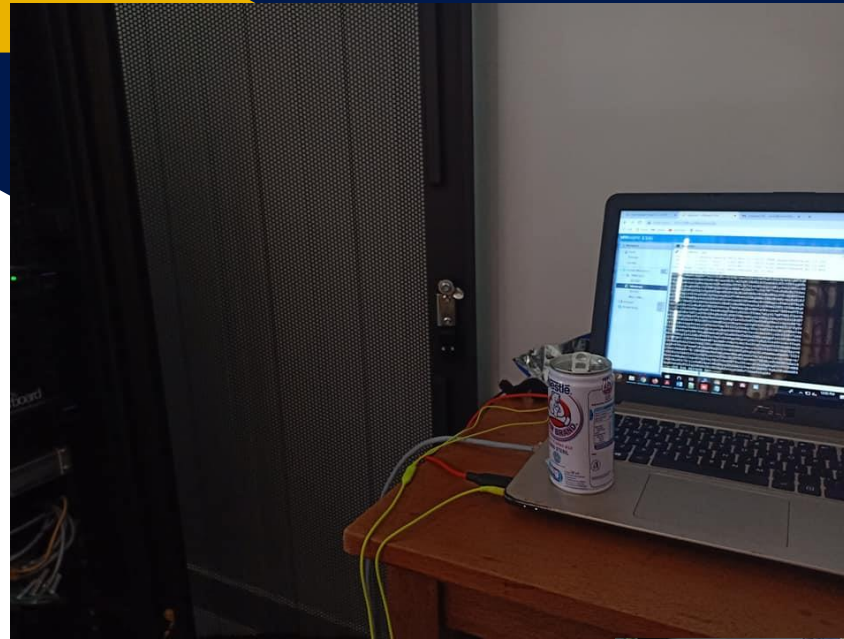
ific work or research under the S...
nation Technology (JifoTech) contain...

information technology, in the form of Inter...
databases, artificial intelligence, business...
infrastructure, human and computer interac...
image processing.

<https://shantibhuana.ac.id/>

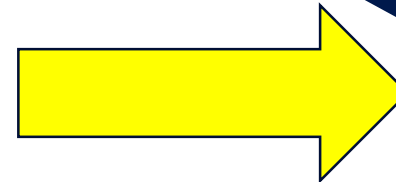
MASALAH JARINGAN KAMPUS DI ERA COVID-19

Pandemi saat ini pembelajaran tentu semuanya berjalan via online. Namun hal itu menjadi tantangan bagi kami yang berada di zona perbatasan Kalimantan Barat di mana ip publik saat ini jumlahnya terbatas, dan juga koneksi kebutuhan untuk hosting ke publik semakin hari semakin banyak hal ini terjadi di kampus kami yang membutuhkan alokasi seperti website kampus, server moodle kampus, server siacad, repository, sister dikti dan lain lain.



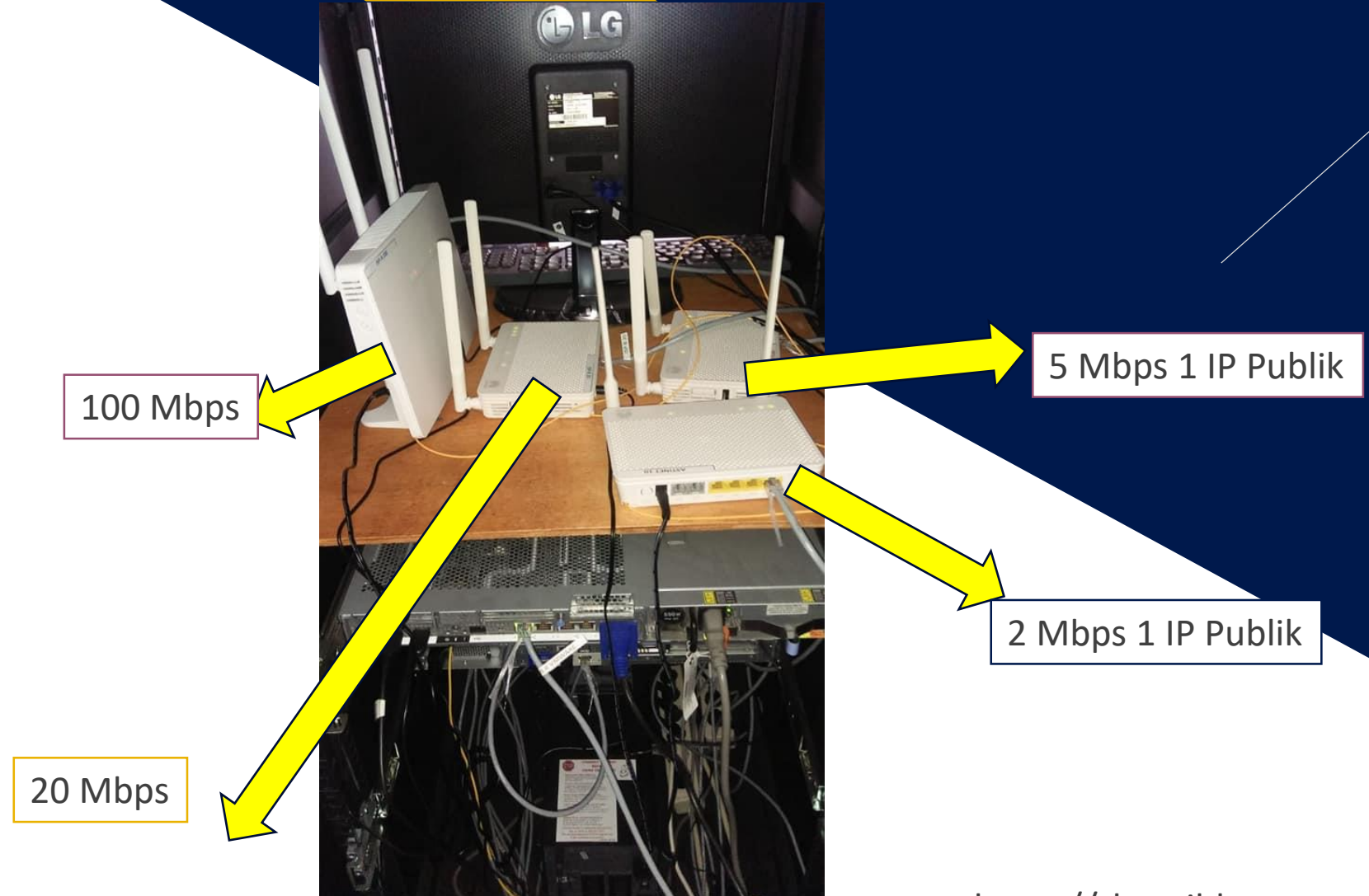
SOLUSI JARINGAN KAMPUS DI ERA COVID-19

Sebagai solusi kami menerapkan VMWare untuk menghemat biaya pengeluaran daripada harus membeli pc server yang jumlahnya puluhan. Tetapi dengan keterbatasan ip publik, kami dituntut untuk mengkonfigurasi jaringan agar dapat diterapkan proxy untuk terhubung publik hanya dengan 1 ip publik saja.



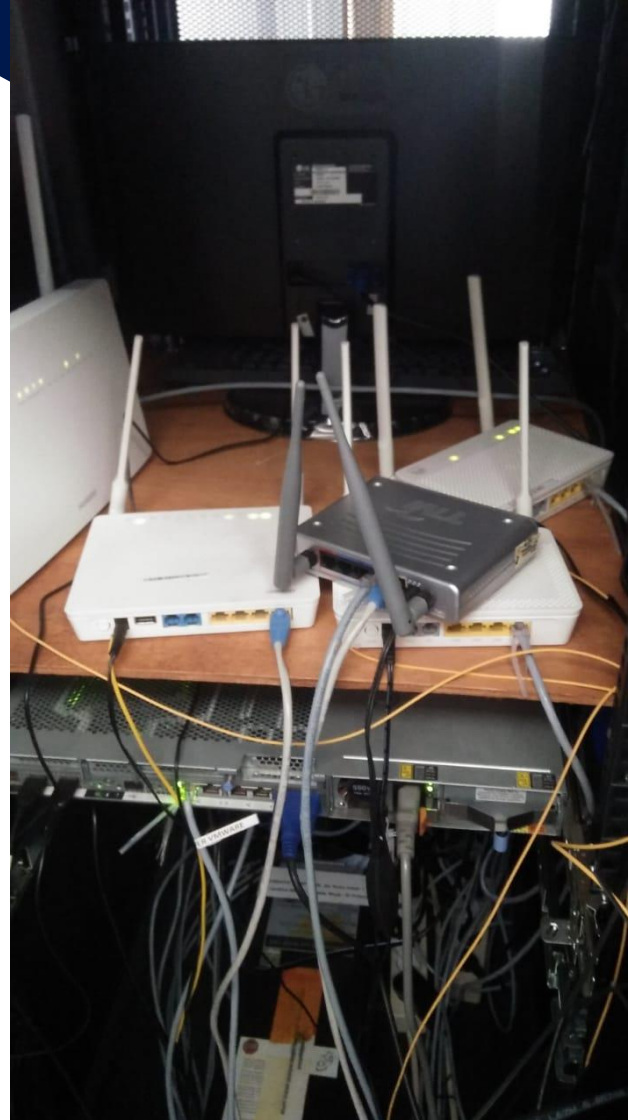
SOLUSI JARINGAN KAMPUS DI ERA COVID-19

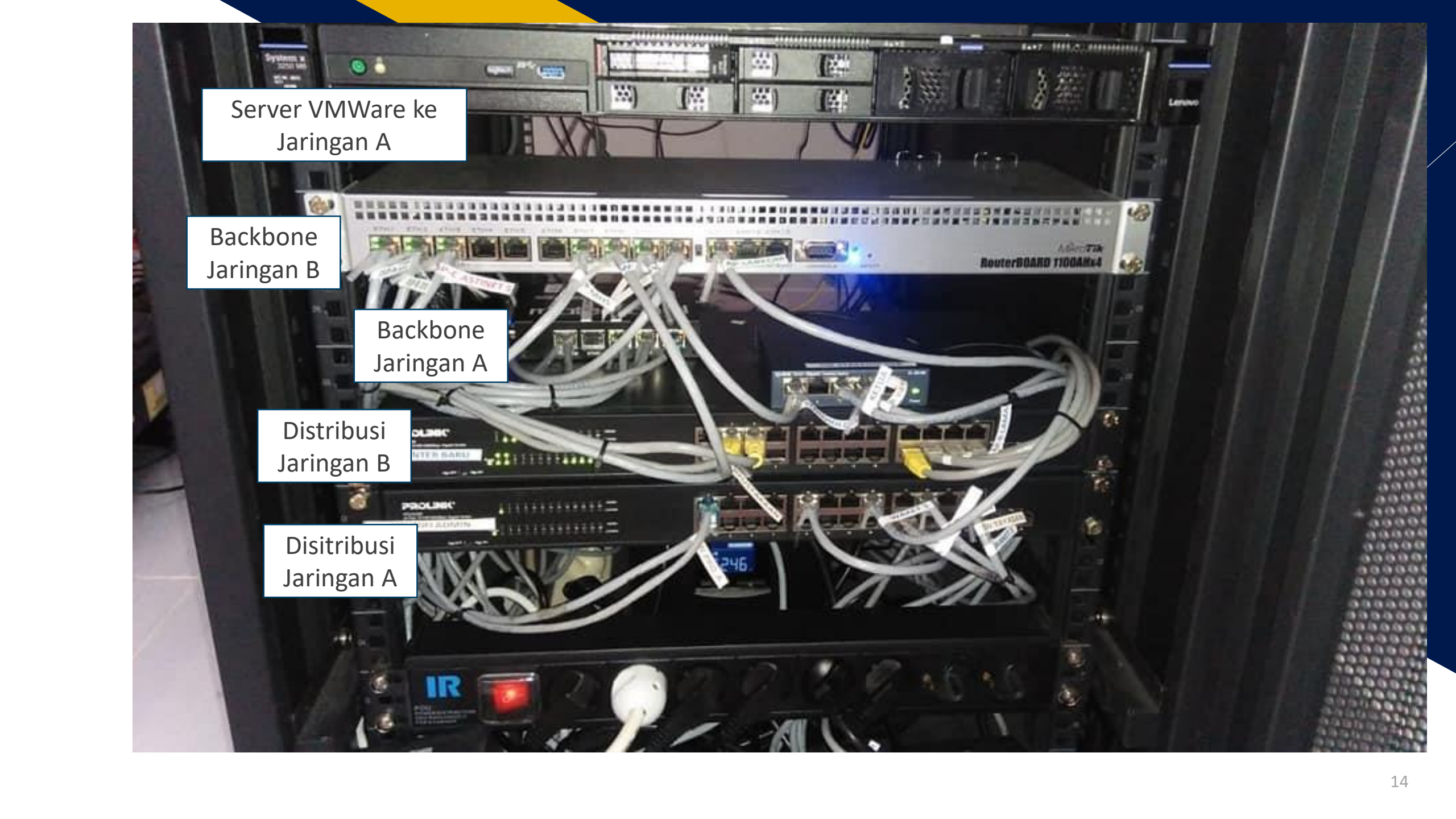
Sebagai solusi kami menerapkan VMWare untuk menghemat biaya pengeluaran daripada harus membeli pc server yang jumlahnya puluhan. Tetapi dengan keterbatasan ip publik, kami dituntut untuk mengkonfigurasi jaringan agar dapat diterapkan proxy untuk terhubung publik hanya dengan 1 ip publik saja.



SOLUSI JARINGAN KAMPUS DI ERA COVID-19

Sebagai solusi kami menerapkan VMWare untuk menghemat biaya pengeluaran daripada harus membeli pc server yang jumlahnya puluhan. Tetapi dengan keterbatasan ip publik, kami dituntut untuk mengkonfigurasi jaringan agar dapat diterapkan proxy untuk terhubung publik hanya dengan 1 ip publik saja.





Server VMWare ke Jaringan A

Backbone Jaringan B

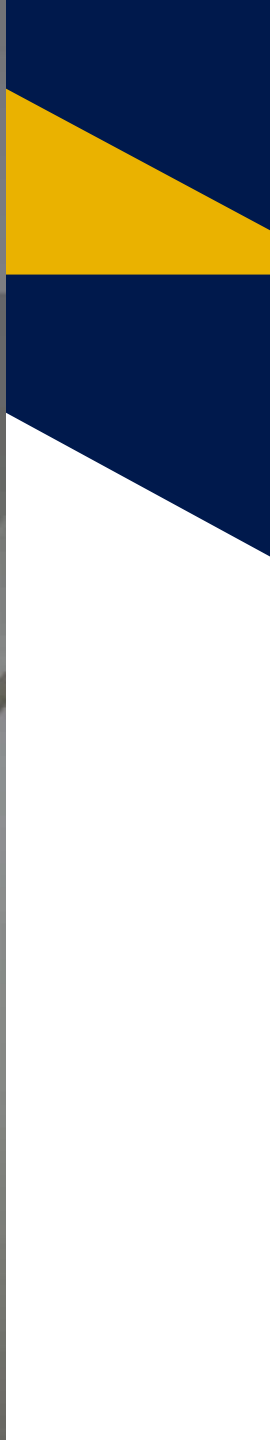
Backbone Jaringan A

Distribusi Jaringan B

Disitribusi Jaringan A



AP tiap
Ruangan



AP tiap
Ruangan



Perangkat Sebelum Konfigurasi



Gedung Kelas



Server dan Router Backbone

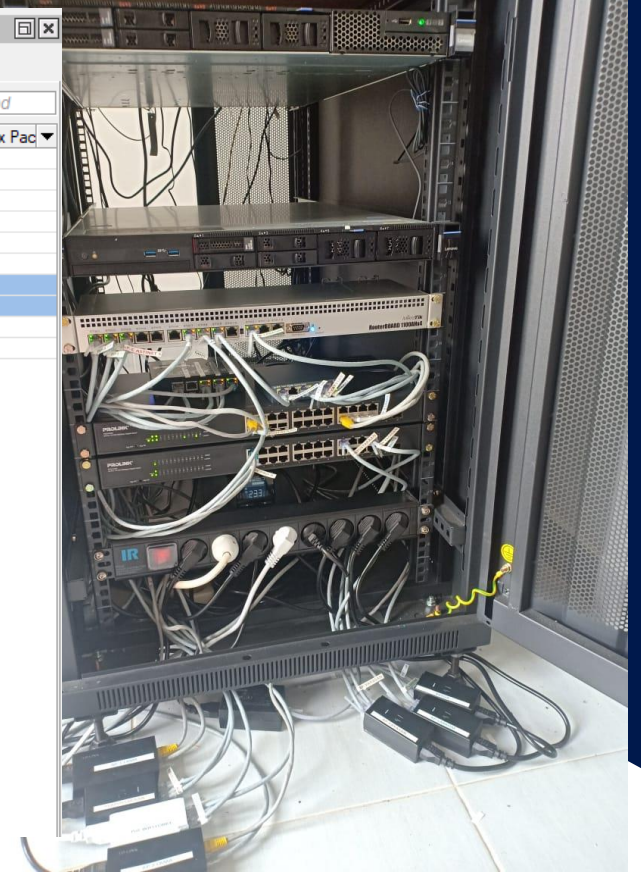


Sisi MikroTik Jaringan A

The screenshot displays the MikroTik WinBox interface. On the left is a sidebar menu with categories like Quick Set, CAPsMAN, Interfaces, Wireless, Bridge, PPP, Switch, Mesh, IP, MPLS, Routing, System, Queues, Files, Log, RADIUS, Tools, New Terminal, Dot1X, MetaROUTER, Partition, Make Supout.rif, New WinBox, and Exit. The main window is titled 'Interface List' and shows a table of network interfaces. A 'DNS Static' dialog box is open, displaying a list of static DNS entries. The table in the dialog has columns for #, Name, Regexp, Address, and TTL (s). The entries are as follows:

#	Name	Regexp	Address	TTL (s)
0	ibhuana.ac.id		.1.201	1d
1	ibhuana.ac.id		.1.202	1d
2	ibhuana.ac.id		.1.202	1d
3	ibhuana.ac.id		.1.202	1d
4	ibhuana.ac.id		.1.203	1d
5	ibhuana.ac.id		.1.204	1d
6	ibhuana.ac.id		.1.204	1d
7	ibhuana.ac.id		.1.204	1d
8	ibhuana.ac.id		.1.204	1d
9	ibhuana.ac.id		.1.220	1d
10	ibhuana.ac.id		.1.202	1d
11	ibhuana.ac.id		.1.202	1d
12	ibhuana.ac.id		.1.204	1d
13	ibhuana.ac.id		.1.204	1d
14	ibhuana.ac.id		.1.201	1d
15	ibhuana.ac.id		.1.230	1d

The background interface shows the 'Interface List' table with columns: Name, Type, Actual MTU, L2 MTU, Tx, Rx, Tx Packet (p/s), Rx Packet (p/s), FP Tx, FP Rx, FP Tx Packet (p/s), and FP Rx Packet. The interface 'ether5' is selected.



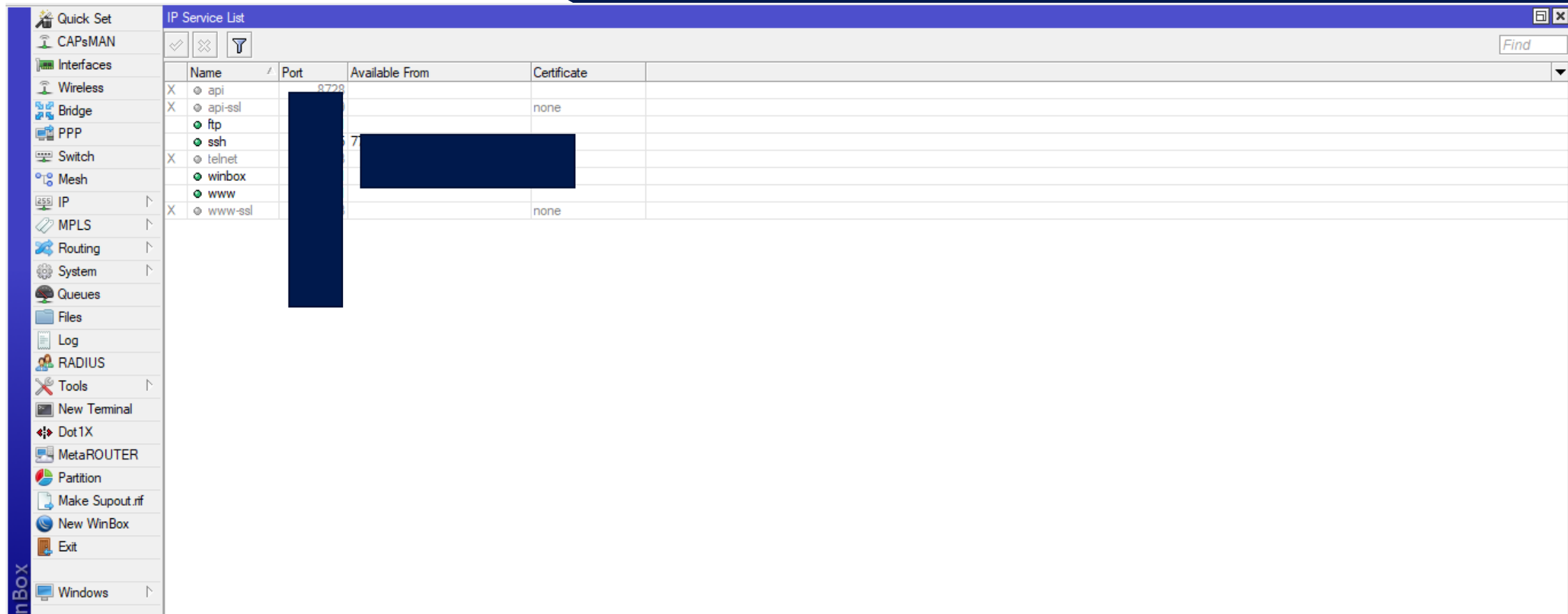
Sisi MikroTik Jaringan A

The screenshot displays the MikroTik WinBox interface. On the left is a vertical menu with various system and network management options. The main window is titled "Interface List" and shows a table of network interfaces. An "Address List" popup window is open, showing a list of IP addresses assigned to the interfaces. The interface "ether3" is highlighted in the main table, and its corresponding IP address is selected in the Address List popup.

Name	Type	MTU	Actual MTU	L2 MTU	Tx	Rx	Tx Packet (p/s)	Rx Packet (p/s)	FP Tx	FP Rx	FP Tx Packet (p/s)
ether1						0 bps	0	0	0 bps	0 bps	0
ether2						0 bps	0	0	0 bps	0 bps	0
ether3	R					0 bps	0	0	0 bps	0 bps	0
ether4 TELKOM	R					365.3 kbps	677	671	0 bps	0 bps	0
ether5	R					9.6 kbps	10	14	0 bps	0 bps	0

Address	Network	Interface
SERVER		ether3
WA		ether4 TELKOM
LAN		ether2
		ether5

Sisi MikroTik Jaringan A



The screenshot shows the MikroTik WinBox interface with the 'IP Service List' window open. The left sidebar contains a navigation menu with categories like Quick Set, CAPsMAN, Interfaces, Wireless, Bridge, PPP, Switch, Mesh, IP, MPLS, Routing, System, Queues, Files, Log, RADIUS, Tools, New Terminal, Dot1X, MetaROUTER, Partition, Make Supout.rif, New WinBox, and Exit. The main window displays a table of IP services with columns for Name, Port, Available From, and Certificate. The 'Name' column lists services such as api, api-ssl, ftp, ssh, telnet, winbox, www, and www-ssl. The 'Port' column shows values like 8728 and 22. The 'Available From' column contains a redacted area. The 'Certificate' column shows 'none' for several services. A search bar labeled 'Find' is located in the top right corner of the window.

Name	Port	Available From	Certificate
X api	8728		
X api-ssl			none
ftp			
ssh	22		
X telnet			
winbox			
www			
X www-ssl			none

Sisi MikroTik Jaringan B

azriel@... .6 on RB1100AHx4 (arm)
Session S

- Quick Set
- CAPsMAN
- Interfaces
- Wireless
- Bridge
- PPP
- Switch
- Mesh
- IP
- MPLS
- Routing
- System
- Queues
- Files
- Log
- RADIUS
- Tools
- New Terminal
- Dot1X
- Partition
- Make Supout.nf
- Manual
- New WinBox
- Exit

Interface List

Interface	Name	Type	Actual MTU	L2 MTU	Tx	Rx	Tx Packet (p/s)	Rx Packet (p/s)	FP Tx	FP Rx	FP Tx Packet (p/s)	FP Rx Packet (p/s)
::: ISP - A 125 Mbps Indihome Mix GGC												
R	ether1	Ethernet	1500	1592	1115.3 kbps	1198.7 kbps	290	320	1192.5 kbps	10.8 Mbps	397	1 272
::: ISP - B 20 Mbps Indihome												
R	ether2	Ethernet	1500	1592	0 bps	0 bps	0	0	0 bps	0 bps	0	0
::: ISP - C 5 Mbps Astinet												
R	ether3	Ethernet	1500	1592	162.0 kbps	12.6 kbps	18	14	132.5 kbps	13.6 kbps	23	22
R	ether4	Ethernet	1500	1592	0 bps	0 bps	0	0	0 bps	0 bps	0	0
R	ether5	Ethernet	1500	1592	0 bps	0 bps	0	0	0 bps	0 bps	0	0
R	ether6	Ethernet	1500	1592	0 bps	0 bps	0	0	0 bps	0 bps	0	0
::: WIFI OUTDOOR												
R	ether7	Ethernet	1500	1592	0 bps	0 bps	0	0	0 bps	0 bps	0	0
::: WIFI HOTSPOT LOGIN												
R	ether8	Ethernet	1500	1592	1195.1 kbps	1069.4 kbps	310	283	10.8 Mbps	1171.9 kbps	1 255	385
::: WIFI REKTORAT												
R	ether9	Ethernet	1500	1592	14.7 kbps	25.9 kbps	11	13	12.8 kbps	23.3 kbps	9	11
::: LAB KOMPUTER												
R	ether10	Ethernet	1500	1592	0 bps	0 bps	0	0	0 bps	0 bps	0	0
R	ether11	Ethernet	1500	1592	0 bps	512 bps	0	1	0 bps	480 bps	0	1
R	ether12	Ethernet	1500	1592	0 bps	0 bps	0	0	0 bps	0 bps	0	0
R	ether13	Ethernet	1500	1592	0 bps	0 bps	0	0	0 bps	0 bps	0	0

Interface <ether1>

General | Ethernet | Loop Protect | Overall Stats | Rx Stats | Tx Stats | Status | Traffic

Tx/Rx Rate: 1115.3 kbps / 1198.7 kbps
Tx/Rx Packet Rate: 290 p/s / 320 p/s
FP Tx/Rx Rate: 1192.5 kbps / 10.8 Mbps
FP Tx/Rx Packet Rate: 397 p/s / 1 272 p/s
Tx/Rx Bytes: 9.8 GiB / 47.0 GiB

Legend:
Tx: 1115.3 kbps
Rx: 1198.7 kbps
Tx Packet: 290 p/s
Rx Packet: 320 p/s

enabled | running | slave | link ok

Sisi MikroTik Jaringan B

Hotspot

Servers Server Profiles Users User Profiles Active Hosts IP Bindings Service Ports Walled Garden

Name	Session Time...	Idle Timeout	Shared U...	Rate Limit (x/tx)
default	1d 00:00:00	1d 00:00:00	1000	
dosen		none	100	45M/45M 0/0 0/0 0/0 6 40M/40M
mahasiswa		none	220	20M/20M 0/0 0/0 0/0 8 10M/10M
mhs		none	220	

Hotspot User Profile <dosen>

General Queue Scripts

Name: dosen

Address Pool: hs-pool-8

Session Timeout: []

Idle Timeout: none

Keepalive Timeout: 08:00:00

Status Autorefresh: 08:00:00

Shared Users: 100

Rate Limit (x/tx): 45M/45M 0/0 0/0 0/0 6 40M/40M

Add MAC Cookie

MAC Cookie Timeout: 1d 00:00:00

Address List: []

Incoming Filter: []

Outgoing Filter: []

Incoming Packet Mark: wifihotspoteth8-Upload

Outgoing Packet Mark: wifihotspoteth8-Download

Open Status Page: always

Transparent Proxy

OK Cancel Apply Copy Remove

Sisi MikroTik Jaringan B

- Quick Set
- CAPsMAN
- Interfaces
- Wireless
- Bridge
- PPP
- Switch
- Mesh
- IP
- MPLS
- Routing
- System
- Queues
- Files
- Log
- RADIUS
- Tools
- New Terminal
- Dot1X
- Partition
- Make Supout.nf
- Manual
- New WinBox
- Exit

Queue List

Simple Queues Interface Queues Queue Tree Queue Types

Reset Counters Reset All Counters Find

Name	Parent	Packet Marks	Priority	Limit At (b...	Max Limit ...	Avg. Rate	Queued Byt...	Bytes	Packets
00-ICMP	global	icmp	1	512k	728k	176 bps	0 B	16.7 MiB	91 785
01-DOWNLOAD	global		2			4.2 Mbps	0 B	46.1 GiB	43 160 259
01-WIFIHOTSPOTDOSENSTAFF-dn	01-DOWNLOAD		8	75M	90M	3.7 Mbps	0 B	21.5 GiB	21 055 371
WIFI REKTORAT DOSEN STAFF STAKEH...	01-WIFIHOTSPOTD...	wifihotspoteth8-Download	4	60M	68M	3.7 Mbps	0 B	21.5 GiB	21 055 371
01-WIFI_MAHASISWA-dn	01-DOWNLOAD		4	18M	20M	0 bps	0 B	0 B	0
1-WIFIHOTSPOT-dn	01-WIFI_MAHASIS...	wifihotspoteth7-Download	4	15M	20M	0 bps	0 B	0 B	0
LABORATORIUM-UTAMA-TOTAL-dn	01-DOWNLOAD		7	20M	25M	0 bps	0 B	15.2 GiB	13 218 792
LABORATORIUM_UTAMA_Download	LABORATORIUM-U...	LABORATORIUM_UTAMA_Download	7	19M	20M	0 bps	0 B	15.2 GiB	13 218 792
PIMPINANRAPAT-TOTAL-dn	01-DOWNLOAD		3	59M	60M	530.0 kbps	0 B	9.4 GiB	8 884 737
PIMPINAN_RUANGRAPAT_Download	PIMPINANRAPAT-T...	PIMPINAN_RUANGRAPAT_Download	3	54M	55M	530.0 kbps	0 B	9.4 GiB	8 884 737
02-UPLOAD	global		2			724.6 kbps	0 B	9.6 GiB	22 859 959
01-WIFIHOTSPOTDOSENSTAFF-up	02-UPLOAD		8	28M	50M	559.9 kbps	0 B	5.3 GiB	10 874 967
WIFI REKTORAT DOSEN STAKEHOLDER	01-WIFIHOTSPOTD...	wifihotspoteth8-Upload	5	25M	45M	559.9 kbps	0 B	5.3 GiB	10 874 967
01-WIFI_MAHASISWA-up	02-UPLOAD		4	2M	8M	0 bps	0 B	0 B	0
1-WIFIHOTSPOT-up	01-WIFI_MAHASIS...	wifihotspoteth7-Upload	4	2M	8M	0 bps	0 B	0 B	0
LABORATORIUM-UTAMA-TOTAL-up	02-UPLOAD		5	25M	31M	0 bps	0 B	2146.8 MiB	6 738 396
LABORATORIUM_UTAMA_Upload	LABORATORIUM-U...	LABORATORIUM_UTAMA_Upload	5	23M	30M	0 bps	0 B	2146.8 MiB	6 738 396
PIMPINANRAPAT-TOTAL-up	02-UPLOAD		3	38M	40M	164.6 kbps	0 B	2299.1 MiB	5 246 596
PIMPINAN_RUANGRAPAT_Upload	PIMPINANRAPAT-T...	PIMPINAN_RUANGRAPAT_Upload	3	38M	40M	164.6 kbps	0 B	2299.1 MiB	5 246 596

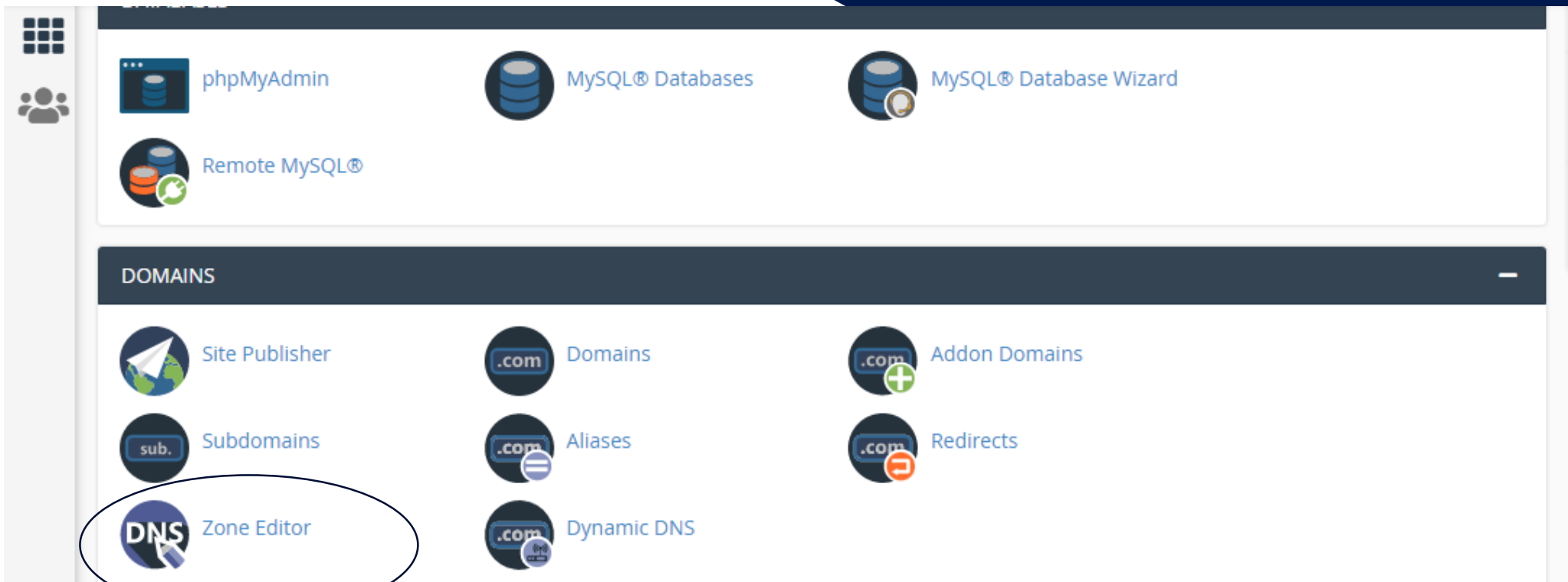
Interface List

Interface Interface List Ethernet EoIP Tunnel IP Tunnel GRE Tunnel VLAN VRRP Bonding LTE

Detect Internet Find

Name	Type	Actual MTU	L2 MTU	Tx	Rx	Tx Packet (p/s)	Rx Packet (p/s)	FP Tx	FP Rx	FP Tx Packet (p/s)	FP Rx Packet (p/s)
::: ISP - A 125 Mbps Indihome Mix GGC											
R ether1	Ethernet	1500	1592	910.7 kbps	33.3 Mbps	709	3 528	848.7 kbps	20.0 Mbps	603	2 241
::: ISP - B 20 Mbps Indihome											
ether2	Ethernet	1500	1592	0 bps	0 bps	0	0	0 bps	0 bps	0	0
::: ISP - C 5 Mbps Astinet											
R ether3	Ethernet	1500	1592	157.1 kbps	9.5 kbps	16	11	189.2 kbps	14.3 kbps	21	17
ether4	Ethernet	1500	1592	0 bps	0 bps	0	0	0 bps	0 bps	0	0
ether5	Ethernet	1500	1592	0 bps	0 bps	0	0	0 bps	0 bps	0	0
ether6	Ethernet	1500	1592	0 bps	0 bps	0	0	0 bps	0 bps	0	0
::: WIFI OUTDOOR											
ether7	Ethernet	1500	1592	0 bps	0 bps	0	0	0 bps	0 bps	0	0
::: WIFI HOTSPOT LOGIN											
R ether8	Ethernet	1500	1592	33.9 Mbps	786.1 kbps	3 521	646	19.8 Mbps	766.2 kbps	2 169	541
::: WIFI REKTORAT											
R ether9	Ethernet	1500	1592	27.8 kbps	47.6 kbps	28	27	191.2 kbps	82.1 kbps	57	51
::: LAB KOMPUTER											
R ether10	Ethernet	1500	1592	0 bps	0 bps	0	0	0 bps	0 bps	0	0
R ether11	Ethernet	1500	1592	0 bps	5.8 kbps	0	4	0 bps	3.9 kbps	0	3
ether12	Ethernet	1500	1592	0 bps	0 bps	0	0	0 bps	0 bps	0	0

Sisi CPANEL



Sisi CPANEL

The screenshot displays the 'Zone Editor' section of a cPanel interface. At the top left, there is a 'DNS Domains' header with a grid icon and a user icon. Below this, a descriptive text states: 'DNS converts domain names into computer-readable IP addresses. Use this feature to manage DNS zones. For more information, read the [documentation](#).' The main heading is 'Domains', followed by a search input field labeled 'Filter by domain' and a search icon. To the right of the search field are navigation arrows and the text 'Displaying 1 to 1 out of 1 item'. Below this is a table with two columns: 'Domain' and 'Actions'. The table contains one entry for the domain 'kampusq.ac.id', which is circled in black. The 'Actions' column for this entry includes buttons for '+ A Record', '+ CNAME Record', '+ MX Record', and 'Manage'. The footer of the interface shows the 'cPanel 98.0.12' logo on the left and a navigation menu with links for 'Home', 'Trademarks', 'Privacy Policy', 'Documentation', and 'Help' on the right.

Sisi CPANEL

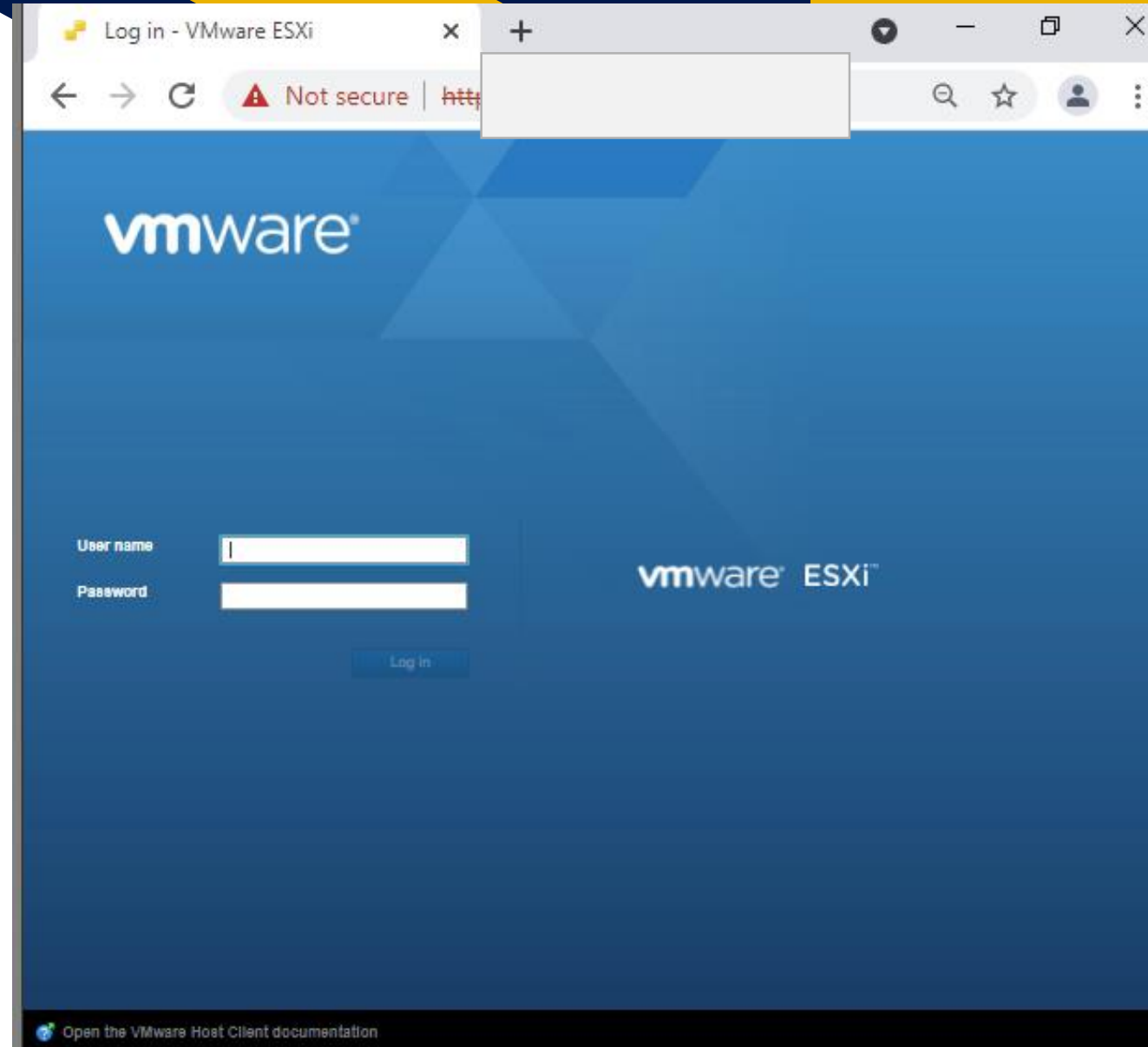
The screenshot shows the CPanel DNS zone editor interface. On the left, three domains are listed: ojsque.ac.id, latihan.ac.id, and sister.ac.id. The main area displays a table of DNS records for these domains. A red box highlights a set of A records for the IP address 14400. Arrows indicate the mapping from domain names to specific A records and from these records to the IP address 36.89.x.x/32.

Domain	IP Address	Record Type
ojsque.ac.id	14400	MX
	14400	MX
	14400	MX
	14400	MX
latihan.ac.id	14400	A
	14400	A
	14400	A
	14400	A
sister.ac.id	14400	A
	14400	A
	14400	A
	14400	A

IP Address: 36.89.x.x/32

Sisi VMWare

Pada VM aplikasi terpasang dan sudah bisa diakses menggunakan IP address VM tersebut secara langsung.



Sisi VMWare

Pada VM aplikasi terpasang dan sudah bisa diakses menggunakan IP address VM tersebut secara langsung.

The screenshot displays the VMware vSphere interface for a virtual machine named 'observer'. The interface includes a top navigation bar with search and help options, and a left sidebar with navigation icons. The main content area shows the VM's status and performance metrics.

VM Status:

- Version: 6.5.0 (Build 4887370)
- State: Normal (not connected to any vCenter Server)
- Uptime: 0.26 days

Performance Metrics:

- CPU:** FREE: 15.5 GHz (8%), USED: 1.3 GHz, CAPACITY: 16.8 GHz
- MEMORY:** FREE: 56.49 GB (29%), USED: 22.7 GB, CAPACITY: 79.19 GB
- STORAGE:** FREE: 1.14 TB (37%), USED: 691.44 GB, CAPACITY: 1.81 TB

Warning: SSH is enabled on this host. You should disable SSH unless it is necessary for administrative purposes.

Hardware Details:

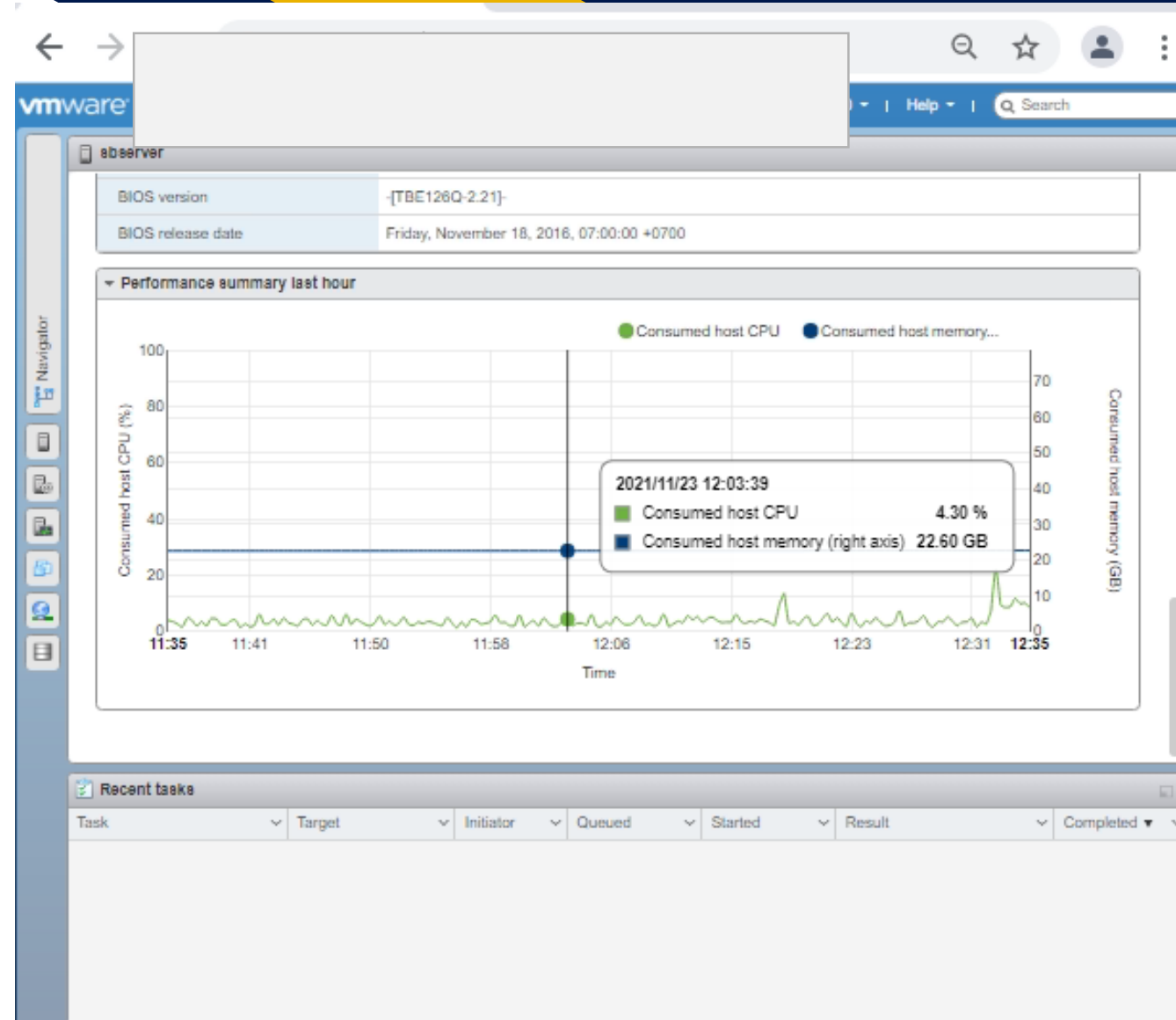
Hardware	
Manufacturer	LENOVO
Model	System x3550 M5: -[8869AC1]-
CPU	8 CPUs x Intel(R) Xeon(R) CPU E5-2620 v4 @ 2.10GHz
Memory	79.19 GB
Virtual flash	0 B used, 0 B capacity

Recent tasks:

Task	Target	Initiator	Queued	Started	Result	Completed
------	--------	-----------	--------	---------	--------	-----------

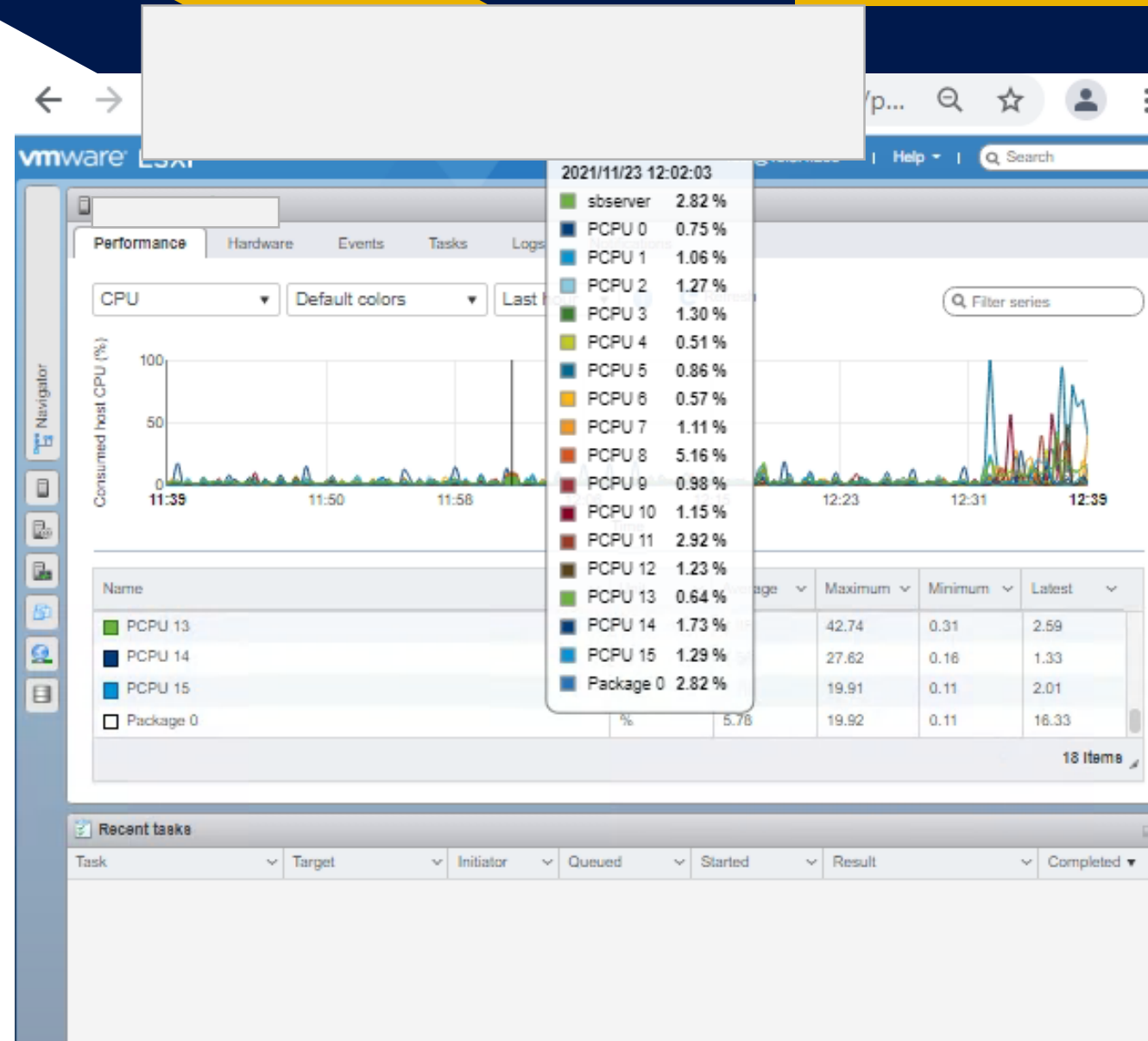
Sisi VMWare

Pada VM aplikasi terpasang dan sudah bisa diakses menggunakan IP address VM tersebut secara langsung.



Sisi VMWare

Pada VM aplikasi terpasang dan sudah bisa diakses menggunakan IP address VM tersebut secara langsung.



Sisi VMWare

Pada VM aplikasi terpasang dan sudah bisa diakses menggunakan IP address VM tersebut secara langsung.

The screenshot displays the VMware ESXi management console for a virtual machine named 'Eprints'. The interface includes a top navigation bar with search and user options, and a left-hand 'Navigator' sidebar. The main content area shows the VM's status and configuration details.

VMware ESXi

vmware ESXi | Help | Search

Eprints

Console | Monitor | Power on | Power off | Suspend | Restart | Edit | Refresh | Actions

Eprints

Guest OS	Ubuntu Linux (64-bit)	CPU	0 MHz
Compatibility	ESXi 6.5 and later (VM version 13)	MEMORY	0 B
VMware Tools	No	STORAGE	5.17 GB
CPUs	1		
Memory	7.84 GB		

VMware Tools is not installed in this virtual machine. VMware Tools allows detailed guest information to be displayed as well as allowing you to perform operations on the guest OS, e.g. graceful shutdown, reboot, etc. You should install VMware Tools.

General Information

Networking	No network information	
VMware Tools	Not installed	Actions
Storage	1 disk	
Notes		Edit notes

Recent tasks

Task	Target	Initiator	Queued	Started	Result	Completed
------	--------	-----------	--------	---------	--------	-----------

Sisi VMWare

Pada VM aplikasi terpasang dan sudah bisa diakses menggunakan IP address VM tersebut secara langsung.

The screenshot displays the VMware ESXi management console for a virtual machine named 'Eprints'. The interface includes a top navigation bar with 'vmware ESXi' and 'root' labels. Below this, there are control buttons for 'Console', 'Monitor', 'Power on', 'Power off', 'Suspend', 'Reset', 'Edit', 'Refresh', and 'Actions'. The main area shows the 'Eprints' VM details, including 'Guest OS: Ubuntu Linux (64-bit)', 'Compatibility: ESXi 6.5 and later (VM version 13)', and 'VMware Tools: No'. A notification indicates that VMware Tools is not installed, preventing certain operations. The 'Recent tasks' table at the bottom shows a successful 'Power On VM' task.

Task	Target	VM	Start Time	End Time	Status	Completion Time
Power On VM	Eprints	root	11/23/2021 12:41...	11/23/2021 12:41...	Completed successfully	11/23/2021 12:41...

Sisi VMWare

Pada VM aplikasi terpasang dan sudah bisa diakses menggunakan IP address VM tersebut secara langsung.

The screenshot displays the VMware Workstation interface. The main window shows a terminal window for a Linux VM. The terminal output includes a file system listing for the root directory, showing permissions, owner, group, and size for various files and directories. The listing is as follows:

```
root/initrd.img-4.4.0-176-generic
lrwxrwxrwx 1 root root 33
-> boot/initrd.img-4.4.0-174-generic
drwxr-xr-x 22 root root 4096
drwxr-xr-x 2 root root 4096
drwx----- 2 root root 16384
drwxr-xr-x 2 root root 4096
drwxr-xr-x 2 root root 4096
drwxr-xr-x 5 root root 4096
dr-xr-xr-x 291 root root 0
drwx----- 6 root root 4096
drwxr-xr-x 33 root root 1060
drwxr-xr-x 2 root root 12288
drwxr-xr-x 2 root root 4096
drwxr-xr-x 2 root root 4096
dr-xr-xr-x 13 root root 0
drwxrwxrwt 13 root root 4096
drwxr-xr-x 11 root root 4096
drwxr-xr-x 15 root root 4096
lrwxrwxrwx 1 root root 30
/vmlinuz-4.4.0-176-generic
lrwxrwxrwx 1 root root 30
boot/vmlinuz-4.4.0-174-generic
```

Below the terminal window, the VMware Workstation interface shows a task log with the following entry:

Task	Target	Initiator	Queued	Started	Result	Completed
Power On VM	Eprints	root	11/23/2021 12:41...	11/23/2021 12:41...	Completed successfully	11/23/2021 12:41...

The right side of the interface shows system status information for the VM:

- CPU: 145 MHz
- MEMORY: 3.64 GB
- STORAGE: 347.8 GB

The bottom of the interface shows a task log with the following entry:

Task	Target	Initiator	Queued	Started	Result	Completed
Power On VM	Eprints	root	11/23/2021 12:41...	11/23/2021 12:41...	Completed successfully	11/23/2021 12:41...

Sisi VMWare

Pada VM aplikasi terpasang dan sudah bisa diakses menggunakan IP address VM tersebut secara langsung.

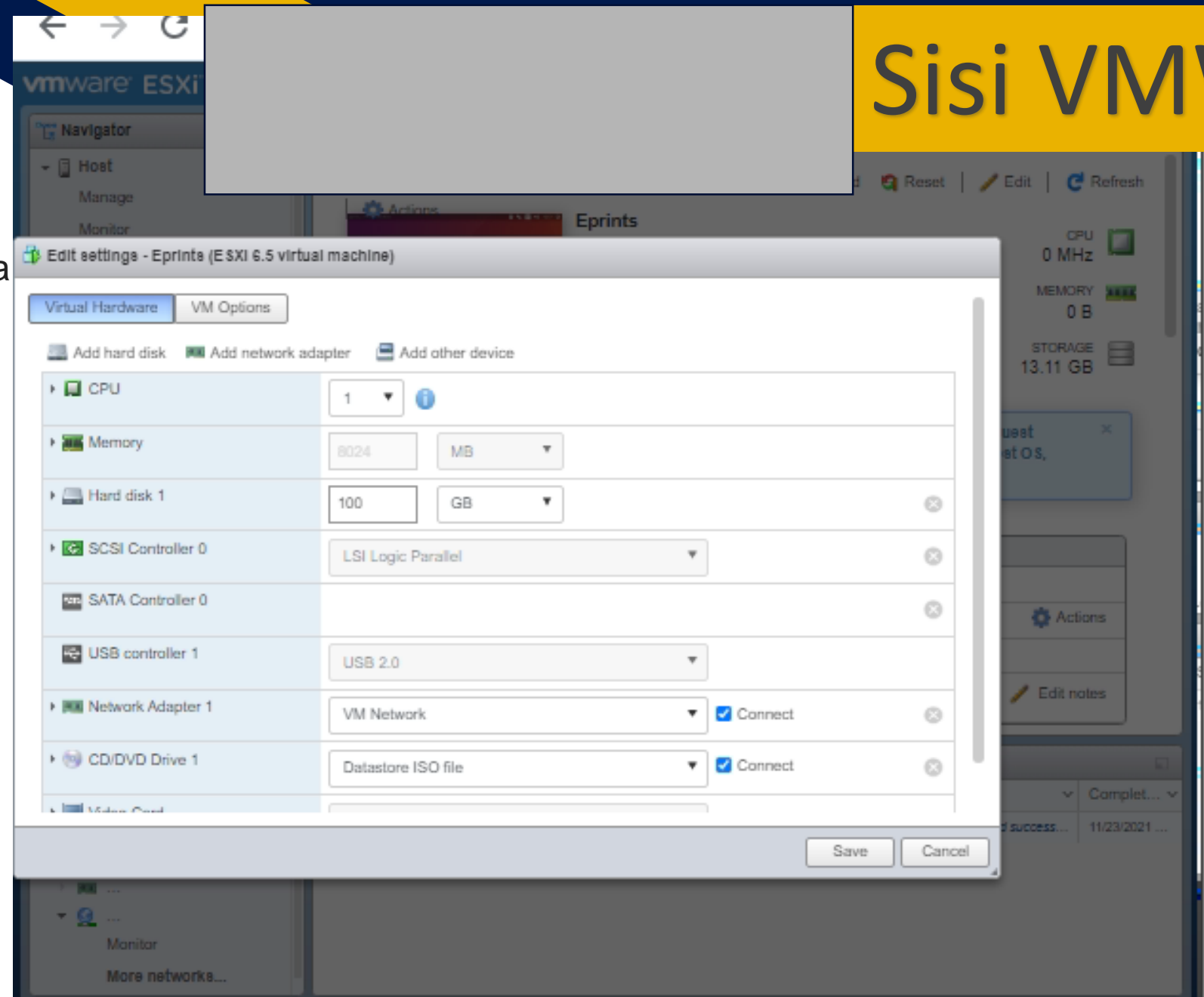
The screenshot shows the VMware vSphere interface. The 'Port groups' tab is selected, displaying a table with the following data:

Name	Active p...	VLAN ID	Type	vSwitch	VMs
VM Network	8	0	Standard port group	vSwitch0	10
Management Network	1	0	Standard port group	vSwitch0	N/A

Below the table, it indicates '2 items'. At the bottom of the interface, the 'Recent tasks' section shows a task 'Power On VM' with a target of 'Eprints', initiated by 'root', which was completed successfully on 11/23/2021 at 12:41:00.

Sisi VMWare

Pada VM aplikasi terpasang dan sudah bisa diakses menggunakan IP address VM tersebut secara langsung.



Sisi Server Ubuntu

```
vmware ESXi
Azriel
rd.img-4.4.0-176-generic
lrwxrwxrwx 1 root root 33 Mar nitrd.img.old -> boot/
initrd.img-4.4.0-174-generic
drwxr-xr-x 22 root root 4096 Jul ib
drwxr-xr-x 2 root root 4096 Sep ib64
drwx----- 2 root root 16384 Jul ost+found
drwxr-xr-x 2 root root 4096 Jul edia
drwxr-xr-x 2 root root 4096 Jul nt
drwxr-xr-x 5 root root 4096 Jul pt
dr-xr-xr-x 302 root root 0 Nov roc
drwx----- 6 root root 4096 Sep oot
drwxr-xr-x 33 root root 1080 Nov un
drwxr-xr-x 2 root root 12288 Feb bin
drwxr-xr-x 2 root root 4096 Feb nap
drwxr-xr-x 2 root root 4096 Jul rv
dr-xr-xr-x 13 root root 0 Nov ys
drwxrwxrwt 14 root root 4096 Nov ng
drwxr-xr-x 11 root root 4096 Jul sr
drwxr-xr-x 15 root root 4096 Jul ar
lrwxrwxrwx 1 root root 30 Mar mlinux -> boot/vmlinux
-4.4.0-176-generic
lrwxrwxrwx 1 root root 30 Mar mlinux.old -> boot/vml
inuz-4.4.0-174-generic
Azriel :/#
```

Masuk ke dalam folder `/var/www` dan buat direktori “home” untuk web baru. Mis: `/var/www/aplikasique`

Sisi Server Ubuntu

```
drwxr-xr-x 18 root root 4096 Feb
drwxrwsrwt 2 root whoopsie 4096 Feb
drwxr-xr-x 76 root root 4096 Jul
drwxrwsr-x 2 root staff 4096 Apr
lrwxrwxrwx 1 root root 9 Jul
drwxrwxr-x 17 root syslog 4096 Nov
drwxrwsr-x 2 root mail 4096 Jul
drwxrwsrwt 2 root whoopsie 4096 Jul
drwxr-xr-x 2 root root 4096 Jul
lrwxrwxrwx 1 root root 4 Jul
drwxr-xr-x 2 root root 4096 Jun
drwxr-xr-x 8 root root 4096 Jul
drwxrwxrwt 243 root root 32768 Nov
drwxr-xr-x 7 root root 4096 Agu

Azriel /var# cd www
Azriel /var/www# ls -l
total 44
-rw-r--r-- 1 root root 15802 config.inc.php
drwxr-xr-x 2 root root 4096
drwxrwxr-x 16 appuser www-data 12288
drwxrwxr-x 50 appuser www-data 4096
drwxr-xr-x 18 www-data www-data 4096
drwxrwxr-x 18 appuser www-data 4096

Azriel /var/www#
```

Masuk ke dalam folder `/var/www` dan buat direktori “home” untuk web baru. Mis: `/var/www/moodle`

Sisi Server Ubuntu

```
vmware ESXi
Azriel /etc# cd apache2
Azriel /etc/apache2# ls -l
total 84
-rw-r--r-- 1 root root 7115 apache2.conf
drwxr-xr-x 2 root root 4096 conf-available
drwxr-xr-x 2 root root 4096 conf-enabled
-rw-r--r-- 1 root root 1782 envvars
-rw-r--r-- 1 root root 31063 magic
drwxr-xr-x 2 root root 16384 mods-available
drwxr-xr-x 2 root root 4096 mods-enabled
-rw-r--r-- 1 root root 342 ports.conf
drwxr-xr-x 2 root root 4096 sites-available
drwxr-xr-x 2 root root 4096 sites-enabled
Azriel /etc/apache2#
```

Masuk ke folder web server misal /apache2/sites-available

Sisi Server Ubuntu

```
<VirtualHost *:80>
  ServerName      aplikasique.ac.id

  ServerAdmin webmaster@localhost
  DocumentRoot /var/www/aplikasique

  # Available loglevels: trace8, ..., tracel, debug, info, notice,
warn,
  # error, crit, alert, emerg.
  # It is also possible to configure the loglevel for particular
  # modules, e.g.
  #LogLevel info ssl:warn

  ErrorLog ${APACHE_LOG_DIR} aqe_error.log
  CustomLog ${APACHE_LOG_DIR} aqe_access.log combined

  # For most configuration files from conf-available/, which are
  # enabled or disabled at a global level, it is possible to
  # include a line for only one particular virtual host. For exampl
e the
  # following line enables the CGI configuration for this host only
  # after it has been globally disabled with "a2disconf".
```

User dapat membuat file sesuai nama aplikasi kemudian berisi

- 1. ServerName*
- 2. VirtualHost *:80*
- 3. ErrorLog*
- 4. CustomLog*
- 5. ProxyPass*
- 6. ProxyPassReversed*

Dan jangan lupa

- 7. SSLCertificateFile*

Sisi Server Ubuntu

```
vmware ESXi
root@vm4: /etc/apache2/sites-available

# It is also possible to configure the loglevel for particular
# modules, e.g.
#LogLevel info ssl:warn

ErrorLog ${APACHE_LOG_DIR}/lms_error.log
CustomLog ${APACHE_LOG_DIR}/lms_access.log combined

# For most configuration files from conf-available/, which are
# enabled or disabled at a global level, it is possible to
# include a line for only one particular virtual host. For exampl
e the
# following line enables the CGI configuration for this host only
# after it has been globally disabled with "a2disconf".
#Include conf-available/serve-cgi-bin.conf

RewriteEngine On
RewriteCond %{REMOTE_ADDR} != Berikan IP Lokal
RewriteCond %{HTTPS} !on
RewriteRule (.*) https://%{HTTP_HOST}$1 [L]
#RewriteRule ^/(.*) https://%{SERVER_NAME}%{REQUEST_URI} [R]
#Redirect permanent "/" "https: aplikasique.ac.id"

</VirtualHost>
<VirtualHost *:443>
```

User dapat membuat file sesuai nama aplikasi kemudian berisi

- 1. ServerName*
- 2. VirtualHost *:80*
- 3. ErrorLog*
- 4. CustomLog*
- 5. ProxyPass*
- 6. ProxyPassReversed*

Dan jangan lupa

- 7. SSLCertificateFile*

Sisi Server Ubuntu

```
</VirtualHost>
<VirtualHost *:443>
    ServerName : aplikasi.ac.id
    ServerAlias : aplikasi.ac.id
    DocumentRoot : var/www/aplikasique

    ErrorLog ${APACHE_LOG_DIR}/lms_error.log
    CustomLog ${APACHE_LOG_DIR}/lms_access.log combined

    SSLEngine On

    SSLCertificateFile /home/ubuntu/pki/STAR_aplikasique_ac_id.crt
    SSLCertificateKeyFile /home/ubuntu/pki/star_aplikasique_ac_id.ke
y
# SSLCertificateChainFile /home/ubuntu/pki/STAR_aplikasique_ac_id
.ca-bundle
    SSLCertificateChainFile /home/ubuntu/pki/apache_bundle_Kodeunik
67.crt

    BrowserMatch ".*MSIE.*" nokeepalive ssl-unclean-shutdown downgrad
e-1.0 force-response-1.0
    SSLCipherSuite ALL:!ADH:!EXPORT56:RC4+RSA:+HIGH:+MEDIUM:+LOW:+SSL
```

Azriel

```
sudo apache2ctl configtest
```

Khusus kasus global DNS bisa memakan waktu 1-3 hari.

“MikroTik sangat membantu untuk mengalokasikan jaringan, manajemen bandwidth dan membagi jalur” publik dan lokal dengan proxy dari VMWare dan Server Virtual di dalamnya. “