BAB V IMPLEMENTASI DAN PEMBAHASAN

5.1 Proses Installasi Perangkat Keras

Proses installasi perangkat keras adalah proses yang pertama dilakukan sebelum installasi perangkat lunak. Installasi perangkat keras dengan cara penginstallasi kabel-kabel yang akan di hubungkan dari komputer satu kekomputer lainya, dan menghubungkan perangkat-perangkat keras lainya seperti menghubungkan hub dengan access point, hub dengan komputer client dan juga server.

5.2 Proses Install Mikrotik OS

Setting BIOS, Setting urutan boot computer pada BIOS agar computer boot pertama kali ke cdrom.



Gambar 5.1 Settingan Bios

Masukan CD Mikrotik ke cdrom, setelah itu lakukan booting melalui CDROM.



Gambar 5.2 Proses Booting

Setelah proses booting selesai, muncul pilihan paket-paket yang mau di install, pilihlah paket sesuai kebutuhan.

Select all with 'a', winiwuw with 'w'. Press 'i' to install locally or 'q' f cancel and reboot. EXI system [X] ipv6 [X] routerboard [X] ppp [X] isdan [X] routing [X] dhep [X] kvw [X] security [X] advanced-tools [X] lcd [X] ups [X] calea [X] wils [X] ups [X] calea [X] wils [X] ups [X] outer-wanager [X] pps [X] wilticast [X] wireless [X] hotspot [X] ntp	Helcome Move around menu using	e to MikroTik Router Sof 'p' and 'n' or атгон ke	tware installation ys, select with 'spacebar'.
[X] system [X] ipv6 [X] routerboard [X] ppp [X] isdn [X] routing [X] dhcp [X] kww [X] security [X] advanced-tools [X] led [X] ups [X] calea [X] mp1s [X] user-manager [X] pps [X] multicast [X] wireless [X] hotspot [X] ntp [X] wireless	Select all with 'a', mi cancel and reboot.	inimum with 'm'. Press '	i'to install locally or 'q' '
	[X] system [X] ppp [X] dhcp [X] advanced-tools [X] advanced-tools [X] calea [X] gps [X] hotspot	(X) ipu6 (X) isdn (X) kovi (X) led (X) mpls (X) multicast (X) mtp	[X] routerboard [X] routing [X] security [X] ups [X] ups [X] user-wanager [X] wireless
system (depends on nothing): Main package with basic services and drivers	systeм (depends on not) Main package with basic	ning): services and drivers	

Setelah memilih paket yg akan di install, tekan tombol " i " pada keyboard. Setelah itu tekan tombol " y ". lalu tekan tombol y lagi untuk melanjutkan installasi. Karena MikroTikOS akan membuat partisi secara otomatis, maka data dalam hardisk semuanya akan hilang.



Gambar 5.4 Melanjutkan Installasi

Proses installasi mikrotik

installed	system-5.20	
installed	wireless-5.20	
installed	user-manager-5.20	
installed	ups-5.20	
installed	security-5.20	
installed	routing-5.20	
installed	routerboard-5.20	
installed	ntp-5.20	
installed	multicast-5.20	
installed	mpls-5.20	
installed	lcd-5.20	
installed	kvm-5.20	
installed	isdn-5.20	
installed	ipv6-5.20	
installed	hotspot-5.20	
installed	gps-5.20	
installed	calea-5.20	
installed	advanced-tools-5.20	
installed	dhcp-5.20	
installed	ppp-5.20	
Software	installed.	
Press ENT	ER to reboot	

Gambar 5.5 Proses Installasi.

Jika proses installasi berhasil, maka akan muncul tampilan Login Mikrotik. Untuk login masukan username admin dan passwordnya di biarkan kosong.



Gambar 5.6 Login

Maka kita telah masuk di dalam operating system mikrotik

MMM MMMM M MMM MMMM MMM MM	MMM MMM MMM III MMM III	ККК ККК ККК ККК ККККК	RRRRRR RRR RRR	000000 000 000	TTTTTTTTTTT TTTTTTTTTTT TTT TTT TTT		KKK KKK KKK KKK KKKKK
ммм	MMM TTT	עעע עעע	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	000 000	111		עעע עעע
ROUTER HAS	NO SOFTWAJ	RE KEY					
You have 23 and to ente See www.mik	h38m to co r the key rotik.com/	onfigure tl by pasting key for mo	ne router j it in a pre detail:	to be remo Telnet wir s.	ntely accessi ndow or in Wi	ible, inbox.	
Current ins Please pres	tallation s "Enter"	"software to continu	ID": W5EY ie!	-LHT9			

Gambar 5.7 Masuk Mikrotik

5.3 Konfigurasi IP Address

Jalankan program winbox dari komputer client yang telah di download sebelumnya. Klik tanda (...), kemudian klik Connect.

S MikroTik Wi	nBox Loader v2.2.	18 🗖	
Connect To:	92.168.88.1		Connect
Login: a	dmin		
Password:			
	Keep Password		Save
	Secure Mode		Remove
V	Load Previous Se	ssion	Tools
Note: N	1ikroTik		
Address	User	Note	

Masuk ke menu IP => Address => tekan tombol ADD (+), tambahkan semua ip yang akan digunakan dan pilih interface dimana ip tersebut dipasang , pemasangan harus menggunakan profik (biasanya untuk jaringan local menggunakan prefik x.x.x.x/24)

Contoh :

Ip address => add(+) address = 192.168.5.99/24, interface= ether1 yang terhubung dengan internet/modem.

Ip address => add(+) address= 192.168.99.1/24, interface= ether2 yang terhubung dengan pc/switch jaringan local.



Setting dns yang di peroleh dari ISP pada menu /ip dns tombol setting parameter server/primary server,centang parameter allow-remote reques di menu setting tersebut

Contoh : IP => DNS=>SETTING add SERVER 202.152.0.2 allowremote reques= yes

0	admin@1C:BD:B9:FF	:87:37 (MikroTik) - WinBox v4.16 on x86 (x86)
5	C	✓ Hide Passwords ■ million
	Interfaces	
	Wireless	
	Bridge	DNS 23
	PPP	Static Cache
	Mesh	+ - V X Y Settings Find
	IP D	# Name Address TTL (s)
	IPv6 D	DNS Settings
	MPLS	
	VPLS	Servers: ZUZ. 152.0.2
	Routing D	✓ Allow Remote Requests Cancel
	System 🗅	Max UDP Packet Size: 512 Apply
	Queues	Cache Size: 2048 KiB
\times	Files	Cache Lised: 5
8	Log	
/in	Radius	
1	Tools D	
Sol	New Terminal	
er	ISDN Channels	0 items
F	Make Supout.rif	
L N	Manual	
Ľ	_	

Tambahkan nat menggunakan interfave yang terhubung ke modem/internet di menu /ip forewall pilih nat dengan action= masquerade dengan posisi chain = srcnat.

Contoh : /ip forewall nat add chain=srcnat out-interface=(interface yang terhubung ke internet/modem) action=masquerade.

Ce Safe Mode									✓ Hide	Passwords
Interfaces	NAT Rule 🔿									
Bridge	General Advance	d Extra Activ	on Statistics	3				ОК		
PPP	Chain:	sronat					Ŧ	Cancel		
Switch	Src. Address						-	Annh		
Mesh	Det Address							1444		
IP 1	Dst. Address:						•	Disable		
MPLS D	Protocol:						-	Comment		
Routing 1	Src. Port:						-	Сору		
System P	Det Port						-	Remove		
Queues	for Det									
Files	Any. Port:							Reset Counters		
Log	In. Interface:						•	Reset All Counters		
Radius	Out. Interface:	ether1				Ŧ]▲			
Tools	Packet Made						1-			
New Terminal	Packot Mark.									
MetaHOUTER	Connection Mark:						•			
Make Supout nt	Routing Mark:						•			
Manual	Routing Table:						•			
Da	Connection Type:						•			
	enabled				[

Tambahkan defaul gateway dimenu /ip route dengan parameter dstaddress=0.0.0.0/0 gateway =(ip modem/gateway internet anda)

Contoh : /ip routes add dst-address=0.0.0.0/0 gateway=192.168.5.1.

🕒 adm	nin@D4:CA:6D	F1:97:31 (MikroTik)	- WinBox v5.25 on	RB750 (mipsbe)						×
6	Safe Mode							🖌 Hid	le Passwords	•
Brid	erfaces dge p									
Swi	itch		Boute <0.0.0.0/0>							
Me	sh		General Attribut	as.				OK		
IP	1		Dst. Address:	0.0.0.0/0				Cancel		
MP Box	vLS ▷		Gateway:	192.168.5.1	Fireachable ether1		¢	Apply		
Sys	stem ト		Check Gateway:				•	Disable		
Que	eues		Type:	unicast			₹	Comment		
Log	3		Distance:	1				Сору		
Rat	dius		Scope:	30				Hemove		
Too	ols h		Target Scope:	10						
Net	w Terminal		Routing Mark:				-			
X Met	taROUTER		Pref. Source:				•			
Mal Mal	ke Supout.rif									
Mar	nual									
U Exit	t									
outerO			enabled		 active	1	static			
2	Ø		. 🍥 🤇	♀< ○			IN ~ [*	8 A 12 4) 10:11)) 21/04/201	4

Setelah langkah di atas sudah dilakukan , set pc dengan menggunakan ip yang satu subnet, dengan ip yg sudah dipasang di ether 2 roter dan set gateway serta DNS pada pc menggunakan ip g terpasang di interface local router

Contoh :	
ip address	= 192.168.99.2
Netmask	= 255.255.255.0
Gateway	= 192.168.99.1
DNS	= 202.152.0.2

5.4 Konfigurasi DHCP

Pastikan semua konfigurasi mikrotik selesai dan siap pakai. Lalu masuk ke menu **IP > DHCP SERVER**

9	admin@1C:BD:B9:F	F:87:37 (MikroTik) - WinBox v4.16 on x86 (x86)	
ъ	Q4		💌 Hide Passwords 📗 🛅
	Interfaces		
	Wireless		
	Bridge	DHCP Server	
	PPP	DHCP Networks Leases Options Alerts	
	Mesh	+ - V X Y DHCP Config DHCP Setup Find	
	IP D	Name / Interface Relay Lease Time Address Pool Add AR	
	IPv6 D		
	MPLS		
	VPLS		
	Routing 1		
	System 1		
	Queues		
	Files		
	Log		
	Radius		
ŏ	Tools P		
nB	New Terminal		
Wi	ISDN Channels	0 items	
S	Make Supout.m		
20	Manual		
ute	CAL		
8			
RouterO	Manual Exit		

Pada menu **DHCP SERVER**, pilih menu **DHCP** Setup untuk memulainya pilih **INTERFACE** yang digunakan untuk memberikan layanan **DHCP**. Pilih interface **LAN** lalu klik **NEXT**

NEXT, nanti automatis DHCP address space di subnet yang sama dengan ETHER2

<mark>©</mark> 8	admin@1C:BD:B9:FF	-87:37 (MikroTik) - WinBox v4.16 on x86 (x86)
Ю	(⁴	🗹 Hide Passwords 📕 🛅
	Interfaces	
	Wireless	
	Bridge	DHCP Server I
	PPP	DHCP Networks Leases Options Alerts
	Mesh	+ - V X T DHCP Config DHCP Setup Find
	IP D	Name / Interface Relay Lesse Time Address Pool Add AR
	IPv6 D	
	MPLS	DHCP Setup
	VPLS	Select network for DHCP addresses
	Routing 1	DUCC ALL
	System 1	DHCP Address Space: 192.168.10.0/24
	Queues	Back Next Cancel
	Files	
	Log	
	Radius	
×	Tools D	
B	New Terminal	
Vin	ISDN Channels	0 items
\geq	Make Supout rif	
ò	Manual	
E	Exit	
our		
Ř		

NEXT. nanti automatis terisi gatewaynya

C*		 Hide Passwords
Interfaces		
Wireless		
Bridge	DHCP Server	
PPP	DHCP Networks Leases Options Alerts	
Mesh	+ - V X T DHCP Config DHCP Setup	
IP	Name (Interface Relay Lease Time Address Pool Add AB	
IPv6		
MPLS	DHCP Setur	
VPLS	Salact anteurus for niven network	
Routing	Solide getoring for given and the	
System	Gateway for DHCP Network: 192.168.10.1	
Queues	Back Next Cancel	
Files		
Log		
Radius		
Tools		
New Terminal		
ISDN Channels	Ditems	
Make Supout.rif		
Manual		
Evit		

NEXT, isikan range dhcp yg mau diberikan. saya ngeset antara 2-254

🚫 admin@1C:BD:B9:FF	:87:37 (MikroTik) - WinBox v4.16 on x86 (x86)	
\$ @		🗹 Hide Passwords 📕 🛅
Interfaces		
Wireless		
Bridge	DHCP Server	
PPP	DHCP Networks Leases Options Alerts	
Mesh	+ - X X DHCP Config DHCP Setup	
IP D	Name / Interface Relay Lease Time Address Pool Add AB	
IPv6 D		
MPLS	DHCP Setup	
VPLS	Select pool of in addresses given out by DHCP server	
Routing D		
System 1	Addresses to Give Out: 68.10.2-192.168.10.254	
Queues	Back Next Cancel	
Files		
Log		
Radius		
Tools		
New Terminal		
ISDN Channels	0 items	
Make Supout.nf	·	
Manual		
Exit		
no		
R		

NEXT. nanti automatis terisi DNS spt yg diset tadi

nterraces		
/Vireless		
snage	DHCP Server	
PPP	DHCP Networks Leases Options Alerts	
Mesh	_ 🛉 📼 🖉 💥 🍸 DHCP Config DHCP Setup Find	
P 1	Name / Interface Relay Lease Time Address Pool Add AR 💌	
Pv6		
MPLS	III DHCP Setup	
VPLS	Select DNS servers	
Routing D		
System 🗈	UNS Servers: ZUZ. 152.0.2	
Queues	Back Next Cancel	
Files		
og		
Radius		
Tools N		
New Terminal		
SDN Channels	0	
Make Supout if		
Manual		
Harroan		

NEXT. isikan lease time. disini artinya brp lama ip address yg diberikan expired. disini saya isi 3 hari. jadi kalo ada klien yg dpt IP address dan pada saat expired (3 hari) kemudian dia tidak lagi konek, maka IP address tsb dihapus. ini berguna untuk menghemat IP address kita

Seleni leese	time		
Lease Time:	3d 00:00:	00	

Setelah selesai maka akan muncul tulisan successfuly



5.5 Konfigurasi Acces Point

Langkah pertama masuk winbox, kemudian /ip > address klik + (warna merah), kemudian masukan ip

Contoh : ip = 192.168.100.50/24 nedwork =192.168.100.0 interface= ether 3(tergantung portmana yang digunakan).



Setelah ip di tetapkan selanjutnya masuk ke /ip >hotspot >ether 3(pilih port yang di gunakan), klik Next.



Selanjutnya pada **local address of network** ip langsung otomastis, **conteng pada masquarade network, klik Next**



Pada address pool of network klik Next, karena sudah terisi secara otomatis.



Pada tampilan select sertificate pilih none,kemudian klik Next.



Pada bagian ip address of SMTP server klik Next saja.

Safe Mode efaces dge p Rch S sh	anad	✓ Hde Passwords
efaces dge P [] itch S sh	unar	
dge P E Roh S rsh I	TE	
P E	Servert Sanar Berline Have House Mote 10 Stations Santra Enter Waled Garbon	
itch S ish	Servers Gener Define Lines Lines Define Active Moste ID Berdines Capita Ports Walked Garden	
sh 🖡	Server Server route over over route route in analysis Server route many departs	
	+ C S T Reset HTML Hotspot Setup	
1	Name / Interface Address Pool Profile Addresses	
PLS 1	Chetapot1 ether3 hapool-3 hapof1 2	
uting 1		
stem 1		
eues	Hotapot Setup	
15	Select SMTP server	
9	IP Address of SMTP Server:	
dus		
ols F		
w Teminal	Back Next Cancel	
CaHDUTER		
ike Supout iff		
nual 1	len .	

Selanjutnya DNS server sudah terisi automatis, jadi langsung klik Next saja.



Kemudian **DNS name** di isi sesuai yang di inginkan, ataupun di kosongkan juga tak apa-apa klik **Next**

1 Start Mode Marce Start Mode Marce Start Mode LS P Marce Marce Marce P Marce P <tr< th=""><th>₩ Hids Passord</th></tr<>	₩ Hids Passord
enforces PP P P P P P P P P P P P P P P P P P	
dog P2 etch etch h P ↓ P ↓ P ↓ P ↓ P ↓ P ↓ P ↓ P ↓ P ↓ P	
PP etch sen PLS sen ses ses ses ses ses ses ses	
Action and a series of the ser	
PLS t PLS t PLS t Nume of the T succes of the	
PLS t None PLS t None None PLS t None None PLS t None PLS t None PLS t None PLS t None PLS t None PLS t None Pls t None None None None None None None None	
PLS P outing P stells P	
nuting (*) nstem (*) source	
vstem 1 ovces es os solus bola 1 etaROUTER	
ueuee ee 99 adus 1 ee Terminal etaROUTER	
les 99 solus P evols P eteROUTER	
ig adus cols ⊢ ew Terminal etaROUTER	
adus cols l' ew Terminal etaROUTER	
ew Terminal etaROUTER	
ew Teminal IstaROUTER	
etaROUTER	
ake Supout nf	
anual 1 tem	
d and a second sec	

Setelah itu muncul tulisan succesfull, maka proses konfigurasi Acces point selesai



5.6 Konfigurasi Block Situs

Remote mikrotik anda dengan Winbox,di halaman utama winbox pilih "Ip" kemudian **"Firewall"** kemudian "Layer7 Protocols" dan klik + seperti gambar di bawah ini:



Selanjutnya di halaman "New Firewall L7 Protocol" isi: Name=KOMPAS<nama situs yang akan di blok Regexp = www.kompas.com Dan klik "Ok" <alamat situs yang akan di blok Seperti gambar di bawah ini:

adm	in@D4:CA	:6D:F	1.97:31 (MikroTik) - WinBox v5.25	on RB750 (mipsbe)	-	
00	Safe I	lode				🗹 Hide Passwords 📲 👼
h	erfaces					
Br	dge					
PF	P		Frewall			
Si	witch		Filter Rules NAT Mangle Service	e Ports Connections Address Lists Layer7 Protocols		
м	ssh		+ - 2 7		Find	
P		1	Name / Regexp		-	
М	PLS	1	100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100	67.		
R	outing	1		New Frewall L7 Protocol		
Sy	stem	1		Name: KOMPAS	OK	
Q.	veues			Regexp:	Cancel	
Fi	es			www.kompas.com		
Lo	9				Apply	
Ra	adius				Comment	
Te	ols	1			Сору	
Ne	w Terminal				Remove	
× M	staROUTEF	2		-	Tenore	
ă Mi	ske Supout	đ				
M	anual		Oitems			
D B	t					
ö						
9						
5						
x.						
	1	2			-	N . B B m 40 12-39
						21/04/2014

Selanjutnya klik Tab "Filter Rules" dan klik + dan isi: Di Tab "General" Chain= forward

C ⁴ Safe Mo	le	✓ I	lide Passwords
Interfaces	Firewall Rule <>		(
Bridge	General Advanced Extra Action	Statistics	ОК
PPP	Chain: forward	Ŧ	Cancel
Switch	Src. Address:	· · · · · · · · · · · · · · · · · · ·	Apply
Mesh	Det Address:	•	
IP			Enable
MPLS	Protocol:		Comment
Routing	Src. Port:		Сору
System	Dst Port	•	Remove
Queues	- Any Date		
Files	Mny. Polt.	¥	Reset Counte
Log	P2P:	•	Reset All Count
Radius	In. Interface:		
Tools	Out. Interface:	•	
New Terminal	_		
MetaROUTER	Packet Mark:		
Make Supout rif	Connection Mark:	· · · · · · · · · · · · · · · · · · ·	
Manual	Routing Mark:	▼	
Exit	Pauting Table:		

Di Tab "Advanced" Layer7 Protocol=KOMPAS <<<nama yang di isi di Ip Firewall-Layer7 Protocol tadi

🗧 Safe	e Mode			5	Hide Passwor
Interfaces			Firewall Rule 🗢		×
Bridge			General Advanced Extra Action Statistics	ОК	1
PP	_	Frewall	Src. Address List:	Cancel	1
witch	_	Filter Rules	Det Address liet	- Apply	1
lesh	_	+ -			1
P	1	#	Layer7 Protocol: KOMPAS	T A Disable	
IPLS	1	0	Content	Comment	
Routing	T			Сору]
lystem			Connection Bytes:	Remove	Ĩ
lueues	_		Connection Rate:	· · · · · · · · · · · · · · · · · · ·	1
iles	_		Per Connection Classifier:	Reset Counters	
.og	_		Src. MAC Address:	Reset All Counters	
Kadius					
loois	1		Out. Bridge Port:	-	
New Termin			In. Bridge Port:	•	
Metanou I			Instant Désilie	-	
Make Supo	u.m		ingress money.		
Mariual	_	1 item (1 se	e DSCP (TOS):	*	
	_		TCP MSS:	Ψ	
			Packet Size:		
			Random:	•	
_			▼ TCP Hags		

Di Tab "Action" Action=drop Dan klik "Ok" Seperti gambar di bawah ini:



Setelah langkah-langkah di atas telah dilakukan, buka browser dan ketik situs yang telah di blok.

5.7 Konfigurasi Bandwidth

/ip firewall mangle add chain=forward src-address=192.168.0.0/24 action=mark-connection new-connection-mark=users-con

246 M006						✓ Hide Passw
tefaces						
freless						
Indge	Gmt					
PP	Fite	r Rules NAT Man	gle Service Ports Connections Address Lists	Laver7 Protocols		
Switch	-		1 V 00 Reset Courters 00 Reset Al C	And Find	19 19	
Mesh	#					
P ľ	0	Mangle Rule O	a free and a second			
MPLS 1		General Advance	d Extra Action Statistica		ок	
Routing		Chain:	forward	Ŧ	Cancel	
System		Src. Address:		•	Apply	
Queues		Dat. Address:		•	Deable	
rees		Destaurt		1.	Commant	
Radius		Fictocol.				
Tools		Sec. Port				
New Terminal		Det. Port:		v	Hemove	
MetaROUTER		Any, Port:		*	Reset Counters	
Make Supout rf	٠	P2P:		•	Reset All Counters	
Manual	2 te	In. Interface:		•		
Exit		Out. Interface:				
		Destant Martin	- Invent	[w] .		
		Packet Mark.		1		
		Connection Mark:	L no mark			
		Routing Mark:		•		
		Routing Table:		•		
		Connection Type:				
		Connection State:				

add connection-mark=users-con action=mark-packet new-packet-mark=users chain=forward

C* Safe Mode					✓ Hide Passwords
stationes					
//reiess					
Didge	Fitesal				
PPP	Elter Bules	NAT Manule Service Posts Connections Address Lists	Laver7 Protocola	Contract (
Switch					
Vesh	-	Mange Hue (192:165:100.25			
P P	0	General Advanced Extra Action Statistics			
MPLS 1	1	Chain: forward		Cancel	
Routing P		Src. Address: 192.168.100.2	•	Apply	
System P		Dst. Address	•	Disable	
Jueues		Pentageni		Comment	
105		- 0.4		Can	
adus.		Src. Port	Ť		
Tools		Dit. Port:	*	Premove	
Vew Teminal		Any. Port	Ψ	Reset Counters	
MetaROUTER		P2P:	•	Reset All Counters	
Make Supout rf	•	In Interface:	•		
Vanual	2 items (1 si	Out. Interface:	•		
5et		Desing Made			
		Connection Mark:			
		Routing Mark:	•		
		Routing Table:	•		
		Connection Type:	•		
		Connection State			
		200309/000107A			

 $/ queue \ type \ add \ name=pcq-download \ kind=pcq \ pcq-classifier=dst-address$

Ca Safe Mode			✓ Hide Passwords
Interfaces			
Wireless			
Bridge			
PPP			
Switch	[
Meah	Garder Litt		
IP P	Simple Queues Interface Queues Queue Tree	Queue Types	
MPLS 1	+ - 7		Find
Routing 1	Queue Type (pop-download)		
System I	Tupe Name: and doubled	L or L	
Queues	Keet and T		
Files	Nine. poq	Cancel	
99	Rate: 0	Apply	
Radius	Limit: 50	Copy	
lools	Total Limit: 2000	Benove	
New Terminal			
MetaHOUTER	Bunst Rate:		
Marke Support in	Burst Threshold:		
Cue .	Burst Time: 00:00:10		
	- Classfier		
	Src. Address 🔽 Dst. Address		
	Sic. Port Dat. Port		
	Src. Address Mask: 32		
	Dat. Address Mask: 32		
	Sec. Arithmen 6 Marie 64		
	Da Addaned Marke Ed		
	UK. AUGESTO Mask. 54		

add name=pcq-upload kind=pcq pcq-classifier=src-address

in any other open that is a	(MIRTOTIK) - WINBOX V3.23 OF	(mipsoe)			9
C* Safe Mode				🖌 Hide Pase	words
interfaces					
Wreless					
Bridge					
PPP					
Switch					
Mesh	Queue Lint				
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Marce Support in	Burst Threshold:		•		
Eva	Bunt Time:	00:00:10			
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	Sic. Port	Det. Port			
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	Dat. Address Mask:	32			
	Ser. Address Mask	64			
	Dat. Addressed March	64			
	UN. ADDRESSS Mask.	04			

/queue tree add parent=lan queue=pcq-download packet-mark=users

C* Safe Mode		Hide Passwords
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add parent=wan queue=pcq-upload packet-mark=users kemudian Reboot RBnya.

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	bunt Threshold.	
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	mabled	

5.8 Pengujian Metode Black Box

Adapun proses pengujian yang dilakukan untuk menguji jaringan adalah sebagai berikut:

N 0	Bahan Uii	Description	Hasil Uji	Kesimpulan
1	IP Address	Dengan cara melakukan ping ip gateway, ip modem, dam ip lan padakomputer client	Apabila sudah dilakukan dengan benar dan terkoneksi maka akan muncul tulisan "reply" yang artinya sudah terkoneksi.	bila sudah terkoneksi dengan benar, maka hasil ping akan "Reply"
2	DHCP 192.168.1 0.1	Dengan cara melakukan pengecekan ip pada komputer client	Hasilnya IP Address yang muncul pada komputer client 192.168.10.2	ip yang masuk dan ip yang keluar hasilnya berbeda
3	Access point	Dengan cara melukan koneksi wifi dari laptop dengan access point	Setelah di koneksi dengan hotspot access laptop langsung bisa digunakan untuk internet	Dengan menggunakan hotspot dari access point maka client dengan mudah terhubung internet.
4	Blogsitus	Dengan cara melakukan pemblokan pada www.kompas.com	Setelah di buka di web situs yang di blog, dan situs tersebut tidak bisa di buka.	Jaringan yang akan di blog tidak bisa digunakan dan di buka dari browser.
5	Bandwidt h	Dengan melakukan pengecekan di http://speedtest.cbn.ne t.id/	Bandwidth Semua client akan terbagi sama rata.	Dengan dilakukan pengecekan bandwidth pada <u>http://speedtest.cb</u> <u>n.net.id/</u> maka dapat diketahui berapa besar bandwidth yang digunakan oleh setiap komputer.

 Tabel 5.1 Tabel Pengujian Metode Blackbox

5.9 Pengujian Metode Pingtest

Adapun pengujian metode pingtest yang dilakukan untuk menguji jaringan ini adalah sebagai berikut:

a. Ping dari Server ke client dengan perintah "Ping 192.168.1.30"

I	[admim#fikroTik] >
	stadminingfikrofikj > ping 152/160/1.10
	192.168.1.38 64 byte
	192.160.1.30 64 byte pile televent20 time(1 mi
	192.168.1.38 64 byte plag: ttl=128 time(1 ms
	192.168.1.38 64 bute ping: ttl=128 time(1 mt
	142 168 1 38 64 bute ping: ttl=128 time(1 m
	192 168 1 38 64 bute play: ttl=128 time(1 at
	112 168 t 18 64 hote plus: ttl=128 tige(] at
	the sea a the fit had a slagt thing? I then a
	The log is a set of the start start the log is
	152.108.1.38 of sque ping. tstatute that! m
L	192.168.1.38 61 byte ping: 111-120 their a
	192.160.1.30 64 byte ping: ttt=120 timets m
L	192.168.1.30 64 byte ping: ttl=128 timets m
	192 168 1.38 64 bute ping: ttl=128 timeti m

b. Ping dari Client ke server dengean perintah "Ping 192.168.1.1"

and Command Promot	
Microsoft Windows (Version 6.1.7600) Copyright (c) 2009 Microsoft Corporation.	All rights reserv
C: Users kelonpok 8)ping 192.168.1.1	
Pinging 192.168.1.1 with 32 bytes of data Beply from 192.168.1.1: bytes=32 time(ins Reply From 192.168.1.1: bytes=32 time(ins Reply From 192.168.1.1: bytes=32 time(ins Reply From 192.168.1.1: bytes=32 time(ins	: TIL-64 TIL-64 TIL-64
Ping statistics for 192.168.1.1: Packets: Sent = 4, Received = 4, Lost Approximate round trip times in milli-se Minimum = Ons, Maximum = Ons, Average	t = 0 (0x loss), conds: c = 0ms
C:\Users\kelompok 8>	

5.10 Kesimpulan

Berdasarkan hasil penelitian yang telah dilakukan di SMPN 3 Sipang Teritip kabupaten Bangka Barat maka dapat di ambil simpulkan sebagai berikut :

a. Belum adanya fasilitas internet yang digunakan untuk mengajar dan mengajar.

- b. Belum adanya jaringan yang Local Area nedwork .
- c. Sharing data masih bersifat manual USB
- d. Kurangnya pengetahuan siswa tentang internet karena belum pernah ada pembelajaran di sekolah.
- e. Susahnya mendapatkan imformasi yang bersifat internet.

5.11 Saran

Berdasarkan kesimpulan diatas yang telah dilakukan di SMPN 3 Simpang Teritip kabupaten bangka barat, maka dapat disarankan beberapa hal sebagai berikut :

- a. Perlunya pemasangan internet untuk mempermudah pembelajaran dan pengaksesan informasi bagi guru dan siswa.
- b. Perlunya pembekalan/pembelajaran kepada siswa supaya mereka mengerti betapa pentingnya internet.
- c. Pemasangan jaringan Local Area Nedwork untuk mermudah sharing data atau informasi.