



# Mikrotik Script

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# Mikrotik Script

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- Script configuration
- Scripting language

# Script configuration คืออะไร

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Script configuration คือชุดคำสั่งที่จะทำให้อุปกรณ์ Mikrotik ตั้งค่าตามที่ต้องการ โดยจะเขียนในรูปแบบ command line ใช้สำหรับ config ได้แก่การ config Interface, VLAN, Firewall หรือกำหนด User เป็นต้น สามารถ Export ตัว script configuration ออกมาในรูปแบบของ Text file ไฟล์ที่ได้จะเป็น .rsc ในไฟล์ก็จะประกอบด้วยค่า config ต่าง ๆ สามารถเก็บไว้เป็น Backup เวลาอุปกรณ์มีปัญหาหรือต้องเปลี่ยนใหม่ ตัว Mikrotik script config นี้สามารถนำไปใช้กับอุปกรณ์ Mikrotik รุ่นอื่นที่เป็นประเภทเดียว แต่ต้องระวังเรื่องความไม่เข้ากันของ Interface ในกรณีที่ใช้ต่างรุ่น

# ตัวอย่าง Mikrotik script configuration

```
/interface bridge
add name=SW-TON protocol-mode=none
add name=VEN
/interface ethernet
set [ find default-name=ether1 ] speed=100Mbps
set [ find default-name=ether2 ] speed=100Mbps
set [ find default-name=ether3 ] speed=100Mbps
set [ find default-name=ether4 ] speed=100Mbps
set [ find default-name=ether5 ] speed=100Mbps
/interface l2tp-client
add allow-mschap1,mschap2 connect-to-vpn disabled=no keepalive-timeout=10 name=ReadyIDC password= user=
/interface vlan
add interface=SW-TON name=VLAN101 vlan-id=101
add interface=SW-TON name=VLAN102 vlan-id=102
/interface list
add name=WAN
add name=LOCAL
/ip dhcp-server option
add code=1 name=NOGW
/ip dhcp-server option sets
add name=set1 options=NOGW
/ip firewall layer7-protocol
add name=BlockDomain regexp='.facebook.'
/ip hotspot profile
set [ find default=yes ] html-directory=flash/hotspot http-proxy=0.0.0.0:8080 login-by=cookie,http-chap,https,http-pap
add dns-name= html-directory=flash/hotspot http-proxy=0.0.0.0:80 login-by=https name=ProfileTon radius-default-domain= ssl-certificate=full
/ip ipsec policy group
add name=VEN
/ip ipsec profile
set [ find default=yes ] enc-algorithms=aes-256,aes-192,aes-128,3des
add dh-group=ecp256,modp2048,modp1024 enc-algorithm=aes-256,aes-128,3des hash-algorithm=sha256 name=VEN
/ip ipsec peer
add exchange-mode=ike2 name=VEN passive=yes profile=VEN
/ip ipsec proposal
set [ find default=yes ] auth-algorithms=sha512,sha256,shal,md5 enc-algorithms=aes-256-cbc,aes-256-ctr,aes-256-gcm,aes-192-cbc,aes-192-ctr,aes-192-gcm,aes-128-cbc,aes-128-ctr,aes-128-gcm,sha256,shal,md5
add auth-algorithms=sha256,shal enc-algorithms=aes-256-cbc,aes-128-cbc name=VEN pfs-group=none
/ip pool
add name=pool-tondev ranges=192.168.2.100-192.168.2.200
add name=VEN-L2TP ranges=10.3.3.10-10.3.3.20
add name=VEN ranges=10.5.5.10-10.5.5.20
add name=POOL101 ranges=192.168.11.20-192.168.11.30
add name=test ranges=10.5.5.2-10.5.5.10
add name=POOL102 ranges=192.168.20.20-192.168.20.30
add name=LOCALL2TP ranges=10.10.10.2-10.10.10.30
/ip dhcp-server
add address-pool=pool-tondev disabled=no interface=SW-TON lease-script="local lease [/ip dhcp-server lease print active as-value where mac-address=\$leaseActMAC]:\n\n:local hostname \$lease-hostname:\r\n\n:local expires (\$lease->expires-after):\r\n\n:local tld \".mc":\r\n\n:local dnsStatic [/ip dns static print as-value where name=\$hostname\$tld]:\r\n\n\n\n:if (\$dnsStatic = \"\") do={\r\n\n\tlog info "Add static DNS \$leaseActIP > \$hostname\$tld"\r\n
```

# Mikrotik scripting language คืออะไร

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**Scripting language** คือภาษาสคริปต์ที่ช่วยเพิ่มประสิทธิภาพการทำงานให้กับ RouterOS โดยการทำงานจะเป็นแบบอัตโนมัติ ซึ่งจะถูกกำหนดไว้ในเหตุการณ์ต่างๆ ของตัวอุปกรณ์ การเขียนภาษาสคริปต์นั้น จะเป็นการเขียนแบบคลาดการณ์ล่วงหน้าเหมือนกับการเขียนโปรแกรมทั่วไป จะมีเรื่องของอัลกอริทึม (algorithm) และตรรกะ(logic) หรืออื่นๆ เข้ามาเกี่ยวข้องด้วย

# ตัวอย่าง Mikrotik scripting language

```
1 ##### PPPOE up #####
2 :local createRoute do={
3   /log info message="Add route $remoteAddress"
4   /ip route add dst-address=$dstAddress gateway=$remoteAddress scope=10 target-scope=10 comment=("D".$wan)
5   /ip route add dst-address=0.0.0.0/0 gateway=$gateway scope=30 target-scope=10 distance=$distance check-gateway=ping comment=("D".$wan)
6 }
7
8 :local wanArr {
9   {
10    "remoteAddress"="$remote-address";
11    "dstAddress"=8.8.8.8/32;
12    "gateway"=8.8.8.8;
13    "distance"=1;
14    "wan"="PPOE_3BB"
15  };
16  {
17    "remoteAddress"="$remote-address";
18    "dstAddress"=8.8.4.4/32;
19    "gateway"=8.8.4.4;
20    "distance"=2;
21    "wan"="PPOE_AIS"
22  };
23 }
24
25 :local intf1 [/interface get $interface];
26 :foreach w in=$wanArr do={
27   if (($w->"wan") = ($intf1->"name")) do={
28     $createRoute remoteAddress=($w->"remoteAddress") dstAddress=($w->"dstAddress") gateway=($w->"gateway") distance=($w->"distance") wan=($w->"wan")
29   }
30 }
31
32 ##### PPPOE down #####
33 :local removeRoute do={
34   /ip route remove [find comment=$wan]
35 }
36
37 :local gw [/ip route print as-value where gateway=$remote-address];
38 :if (($gw->0->"comment") != "") do={
39   $removeRoute wan=($gw->0->"comment")
40 }
```



# การสาธิต config mikrotik ให้ยืดหยุ่น นำไปใช้ต่างรุ่นได้

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# Requirement

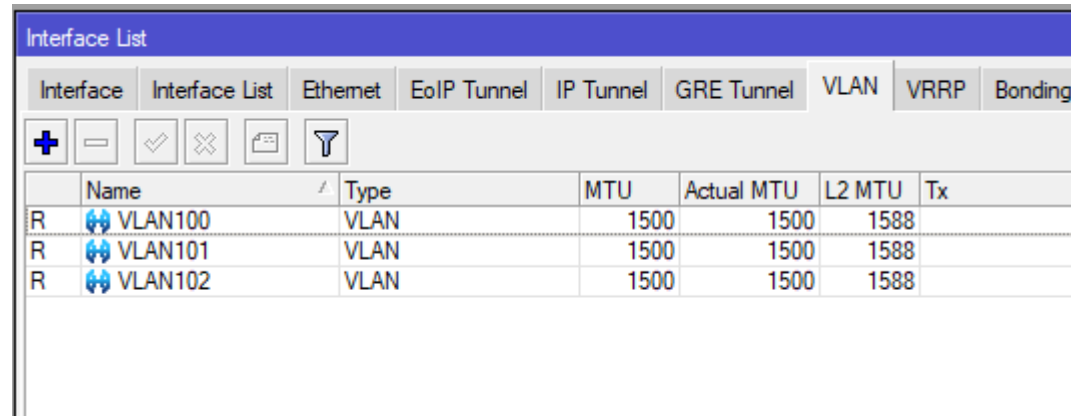
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- แบ่ง Network ออกเป็นสามวงมี Server, แผนกซ์พพอร์ต, แผนกบัญชี
- โดยให้ แผนกซ์พพอร์ต, แผนกบัญชี สามารถเข้าถึง Server ได้
- แผนกซ์พพอร์ตสามารถใช้งาน Internet ได้อย่างมีข้อจำกัด
- แผนกบัญชีให้ใช้งาน Internet ได้แค่เว็บเท่านั้น
- หากเกิดปัญหาอุปกรณ์เสีย สามารถนำอื่นที่ต่างรุ่นมา import script configuration โดยแก้ไขเรื่อง interface ไม่เข้ากันให้น้อยที่สุด

# VLAN

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- VLAN100 = Server
- VLAN101 = Support
- VLAN102 = Account



The screenshot shows a network management interface titled "Interface List". It features a tabbed menu with options: Interface, Interface List, Ethernet, EoIP Tunnel, IP Tunnel, GRE Tunnel, VLAN, VRRP, and Bonding. Below the menu is a toolbar with icons for adding (+), deleting (-), confirming (checkmark), canceling (X), saving (floppy), and filtering (funnel). The main area contains a table with the following data:

	Name	Type	MTU	Actual MTU	L2 MTU	Tx
R	VLAN100	VLAN	1500	1500	1588	
R	VLAN101	VLAN	1500	1500	1588	
R	VLAN102	VLAN	1500	1500	1588	

# Interface list

The screenshot displays two windows from a network management application. The main window, titled 'Interface List', shows a table of interface lists and their associated interfaces. The 'LOCAL-BRIDGE' list is selected. A secondary dialog box, titled 'Interface List <LOCAL-BRIDGE>', is open, showing configuration options for this list.

List	Interface
FREE-ZONE	VLAN101
InterfaceList Vlan100	ether4
InterfaceList Vlan101	ether2
InterfaceList Vlan101	wlan1
InterfaceList Vlan101	wlan2
InterfaceList Vlan102	ether3
LIMITED-ZONE	VLAN102
SERVER-ZONE	VLAN100
WAN	ether1

Name
FREE-ZONE
InterfaceList Vlan100
InterfaceList Vlan101
InterfaceList Vlan102
LIMITED-ZONE
<b>LOCAL-BRIDGE</b>
SERVER-ZONE
WAN
::: contains all interfaces
* all
::: contains dynamic interfaces
* dynamic
::: contains no interfaces
* none

Interface List <LOCAL-BRIDGE> configuration dialog:

- Name: LOCAL-BRIDGE
- Include: InterfaceList Vlan101, InterfaceList Vlan102
- Exclude: (empty)
- Buttons: OK, Cancel, Apply, Comment, Copy, Remove

# Bridge

Interface <BRI-TEST>

General STP VLAN Status Traffic

Name:

Type:

MTU:

Actual MTU:

L2 MTU:

MAC Address:

Interface <BRI-TEST>

General STP VLAN Status Traffic

VLAN Filtering

EtherType:

PVID:

Frame Types:

Ingress Filtering

Bridge

Bridge Ports VLANs MSTIs Port MST Overrides Filters NAT

#	Interface	Bridge
0	InterfaceList Vlan 101	BRI-TEST
1 DI	ether2	BRI-TEST
2 DI	wlan 1	BRI-TEST
3 DI	wlan 2	BRI-TEST
4	InterfaceList Vlan 102	BRI-TEST
5 DI	ether3	BRI-TEST
6	InterfaceList Vlan 100	BRI-TEST
7 DI	ether4	BRI-TEST

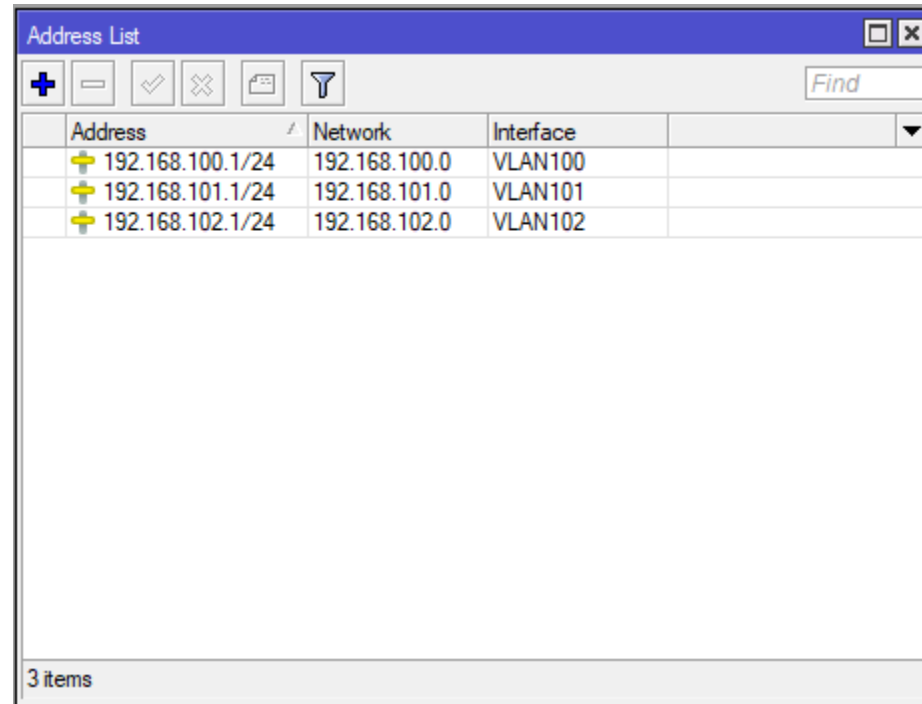
Bridge

Bridge Ports VLANs MSTIs Port MST Overrides Filters NAT Hosts MDB

Bridge	VLAN IDs	Current Tagged	Current Untagged
BRI-TEST	102	BRI-TEST	
BRI-TEST	100	BRI-TEST	
BRI-TEST	101	BRI-TEST	
D BRI-TEST	1		BRI-TEST

# IP Address

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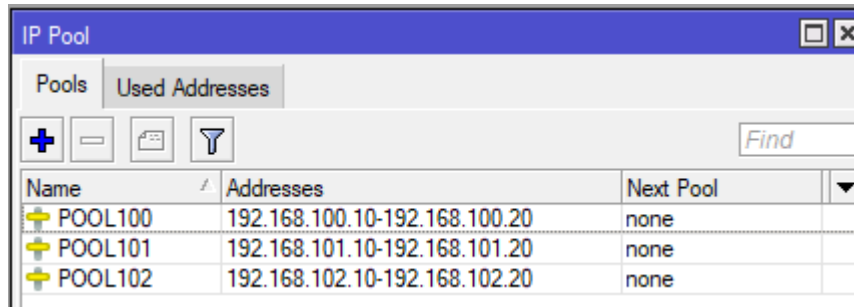


The screenshot shows a window titled "Address List" with a toolbar containing icons for adding (+), deleting (-), checking (✓), unchecking (✗), printing (🖨), and filtering (🔍). A search box labeled "Find" is also present. The main area contains a table with the following data:

Address	Network	Interface
192.168.100.1/24	192.168.100.0	VLAN100
192.168.101.1/24	192.168.101.0	VLAN101
192.168.102.1/24	192.168.102.0	VLAN102

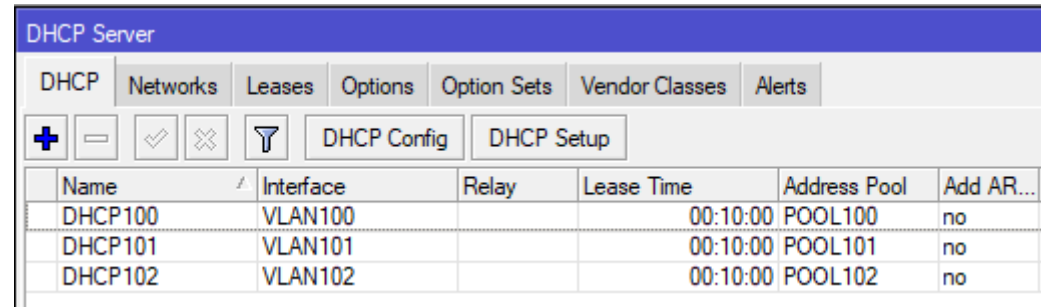
3 items

# DHCP Server และ IP Pool



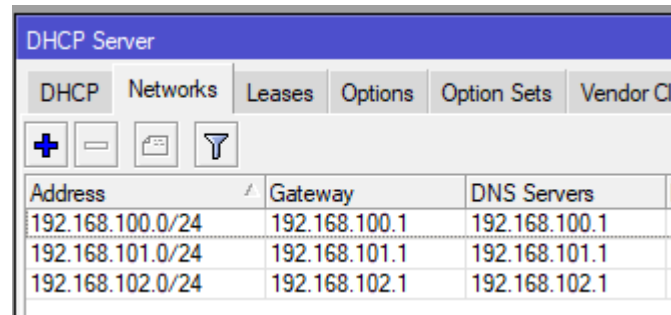
The screenshot shows the 'IP Pool' configuration window with the 'Used Addresses' tab selected. It contains a table with three rows of IP pools.

Name	Addresses	Next Pool
POOL100	192.168.100.10-192.168.100.20	none
POOL101	192.168.101.10-192.168.101.20	none
POOL102	192.168.102.10-192.168.102.20	none



The screenshot shows the 'DHCP Server' configuration window with the 'DHCP' tab selected. It contains a table with three rows of DHCP server configurations.

Name	Interface	Relay	Lease Time	Address Pool	Add AR...
DHCP100	VLAN100		00:10:00	POOL100	no
DHCP101	VLAN101		00:10:00	POOL101	no
DHCP102	VLAN102		00:10:00	POOL102	no



The screenshot shows the 'DHCP Server' configuration window with the 'Networks' tab selected. It contains a table with three rows of network configurations.

Address	Gateway	DNS Servers
192.168.100.0/24	192.168.100.1	192.168.100.1
192.168.101.0/24	192.168.101.1	192.168.101.1
192.168.102.0/24	192.168.102.1	192.168.102.1

# DNS

---

DNS Settings

Servers: 8.8.8.8  
8.8.4.4

Dynamic Servers:

Use DoH Server:

Verify DoH Certificate

Allow Remote Requests

Max UDP Packet Size: 4096

Query Server Timeout: 2.000 s

Query Total Timeout: 10.000 s

Max. Concurrent Queries: 100

Max. Concurrent TCP Sessions: 20

Cache Size: 2048 KiB

Cache Max TTL: 7d 00:00:00

Cache Used: 25 KiB

OK  
Cancel  
Apply  
Static  
Cache

# ทำ Masquerade(NAT) ให้สามารถถออกเน็ตได้

The screenshot shows the 'NAT Rule' configuration window with the 'General' tab selected. The 'Chain' dropdown is set to 'srcnat'. The 'Out. Interface List' is set to 'WAN'. The 'Connection Type' is set to 'enabled'. The 'Action' tab is visible but not selected.

General | Advanced | Extra | Action | Statistics

Chain: srcnat

Src. Address: [ ]

Dst. Address: [ ]

Protocol: [ ]

Src. Port: [ ]

Dst. Port: [ ]

Any. Port: [ ]

In. Interface: [ ]

Out. Interface: [ ]

In. Interface List: [ ]

Out. Interface List:  WAN

Packet Mark: [ ]

Connection Mark: [ ]

Routing Mark: [ ]

Routing Table: [ ]

Connection Type: [ ]

enabled

OK

Cancel

Apply

Disable

Comment

Copy

Remove

Reset Counters

Reset All Counters

The screenshot shows the 'NAT Rule' configuration window with the 'Action' tab selected. The 'Action' dropdown is set to 'masquerade'. The 'Log' checkbox is unchecked. The 'To Ports' dropdown is empty. The 'Connection Type' is set to 'enabled'.

General | Advanced | Extra | Action | Statistics

Action: masquerade

Log

Log Prefix: [ ]

To Ports: [ ]

enabled

OK

Cancel

Apply

Disable

Comment

Copy

Remove

Reset Counters

Reset All Counters

# Firewall rule

The screenshot shows the 'Firewall Rule' configuration window with the 'General' tab selected. The 'Chain' dropdown is set to 'forward'. The 'In. Interface List' is set to 'LOCAL-BRIDGE' and the 'Out. Interface List' is set to 'SERVER-ZONE'. The 'enabled' checkbox is checked at the bottom.

Field	Value
Chain	forward
Src. Address	
Dst. Address	
Protocol	
Src. Port	
Dst. Port	
Any. Port	
In. Interface	
Out. Interface	
In. Interface List	LOCAL-BRIDGE
Out. Interface List	SERVER-ZONE
Packet Mark	
Connection Mark	
Routing Mark	
Routing Table	
Connection Type	
Connection State	
Connection NAT State	

enabled

The screenshot shows the 'Firewall Rule' configuration window with the 'Action' tab selected. The 'Action' dropdown is set to 'jump'. The 'Log' checkbox is unchecked. The 'Jump Target' dropdown is set to 'ChainForwardAll'. The 'enabled' checkbox is checked at the bottom.

Field	Value
Action	jump
Log	<input type="checkbox"/>
Log Prefix	
Jump Target	ChainForwardAll

enabled

# Firewall rule

#	Action	Chain	Protocol	Src. Port	Dst. Port	In. Interface List	Out. Interface List	Jump Target
0	jump	forward				LOCAL-BRIDGE	SERVER-ZONE	ChainForwardAll
1	jump	forward				SERVER-ZONE	LOCAL-BRIDGE	ChainForwardAll
2	jump	forward				LIMITED-ZONE	WAN	ChainForwardLimited
3	jump	forward				WAN	LIMITED-ZONE	ChainForwardLimited
4	jump	forward				FREE-ZONE	WAN	ChainForwardAll
5	jump	forward				WAN	FREE-ZONE	ChainForwardAll
6	drop	forward						
7	jump	input	17 (udp)	53		WAN		AcceptInput
8	drop	input				WAN		
9	accept	ChainForwardLimited	6 (tcp)		80,443,8080			
10	accept	ChainForwardLimited	6 (tcp)	80,443,8080				
11	accept	ChainForwardLimited	1 (icmp)					
12	accept	ChainForwardAll						
13	accept	AcceptInput						

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# Q&A



# การย้าย config ไป เครื่องต่างรุ่น

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# เปรียบเทียบขาน wlan

Interface <wlan1>

General Wireless Data Rates Advanced HT HT M

Mode: ap bridge

Band: 5GHz-A/N/AC

Channel Width: 20/40/80MHz Ceee

Frequency: 5180

Secondary Channel:

SSID: MikroTik5G

Radio Name: B869F4C5C943

Interface <wlan2>

General Wireless Data Rates Advanced HT

Mode: ap bridge

Band: 2GHz-B/G/N

Channel Width: 20/40MHz Ce

Frequency: 2412

SSID: MikroTik2.4G

Radio Name: B869F4B1A8A6

RB4011iGS+5Hac

Interface <wlan1>

General Wireless Data Rates Advanced HT WDS

Mode: station

Band: 2GHz-B/G

Channel Width: 20MHz

Frequency: 2412

SSID: MikroTik

Radio Name: C4AD3420E587

Scan List:

default

Skip DFS Channels: disabled

Wireless Protocol: any

Interface <wlan2>

General Wireless Data Rates Advanced HT WDS

Mode: station

Band: 5GHz-A

Channel Width: 20MHz

Frequency: 5180

SSID: MikroTik

Radio Name: C4AD3420E588

Scan List:

default

Skip DFS Channels: disabled

Wireless Protocol: any

hap ac2