

MIXED BROADBAND AND DEDICATED INTERNET

FOR COWORKING AND HOSPITALITY

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Speaker Profile

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 - Outpost Coworking & Coliving Service
 - Weligama Bay – Srilanka | SiemReap – Cambodia | Bali – Indonesia



Highlights

- Typical Coworking & Hospitality Service
 - Guest / Users comes from Various job or background needs
 - Speedtest are their measurement test
 - Require an stable connection for some important traffic
 - Beside selling space, actually they sell internet service
 - Bad internet means they will Loosing sales / Loosing customer
 - Due to pandemic COVID'19 situation with Less occupancy, we have to keep maintain the reliable service with minimum budget as low as possible.
 - Mixing Broadband and Dedicated internet service are the ideal solution instead of having only one of them.

Highlights

- Why MikroTik
 - MikroTik are powerful router with rich networking feature.
 - MikroTik have various type of router that we can choose
 - Choose based on our needs
 - With our without wireless feature
 - Wider option from SOHO routers to Enterprise class router.
 - MikroTik Custom Policy Routing are easy to setup and maintain
 - Fast and Instant Deployment
 - Easy to Troubleshoot
 - We can backup – restore, undo – redo without worry on

Highlights

- **Dedicated Internet Service**
 - High SLA 99.5 and up.
 - Stable and Reliable
 - BUT its costly (expensive)
 - We still need dedicated bandwidth to ensure that we always have the reliable internet service for some important traffic and also used as backup internet when the broadband internet are fails.
 - Instead of paying more on high capacity dedicated internet, better we pay small dedicated bandwidth and mixed it with broadband.
- **Broadband Internet Service**
 - High Speed Internet
 - Cheap and Affordable
 - BUT NO SLA Service

What we need to do ?

- Assume we already have 2 Internet Source Installed
 - One Dedicated 20 megs
 - One Broadband 100 Megs
- Setup Dedicated Internet as a Default Gateway
- Download NICE.rsc List for Domestic Address List
- Make an address List for heavy internet traffic For
 - Google Prefix
 - Facebook Prefix
 - Less Priority Traffic (Custom)
- Make Ip Firewall NAT Masquerade for Both ISP

Custom Mangle

- Mark connection of any traffic, with firewall mangle based on :
 - Protocol are TCP also UDP
 - Destination are goes to the address-list that we have
 - Source from Users (LAN)
 - New-Connection-Mark = `CONN_BROADBAND`
- Make a custom Routing with :
 - Dst-address = `0.0.0.0/0`
 - Gateway = ISP Broadband
 - Mark-Routing = `VIA_BROADBAND`
- Make a Mark Routing mangle based on :
 - Mark Connection = `CONN_BROADBAND`
 - New-Routing-Mark = `VIA_BROADBAND`

Goals

- Domestic Traffic will goes trough Broadband Internet
- Social Media and Streaming Service will goes trough Broadband Service
- SpeedTest
 - Most of the test by default Looking for nearby speedtest server
 - Speedtest traffic test will goes trough Broadband because domestic network already routed to broadband.
 - Speedtest IP will remain using Dedicated ISP, because Speedtest IP Check are international traffic.
 - User will feels having dedicated service with high speed internet
- International Access and High Priority traffic
 - Will Remain goes trough dedicated service as it's a default gateway

Step By Step Configuration

Download & Import NICE.rsc

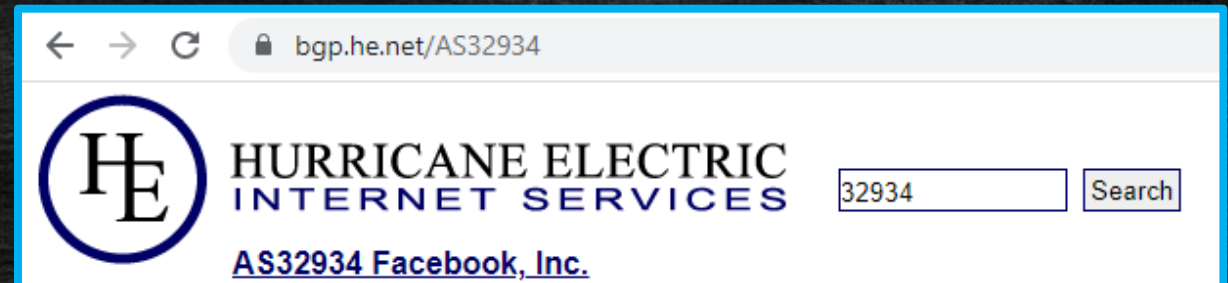
- Nice.rsc are Indonesian prefix domestic address List.
- fetch the nice.rsc file from new-terminal
 - `/tool fetch url=http://ixp.mikrotik.co.id/download/nice.rsc mode=http`
- Import the nice.rsc file from new-terminal
 - `/import nice.rsc`

```
[adhielesmana@Outpost>Yarralumla>Router] > /tool fetch url=http://ixp.mikrotik.co.id/download/nice.rsc mode=http
status: finished
downloaded: 218KiBz pause]
total: 218KiB
duration: 1s


[adhielesmana@Outpost>Yarralumla>Router] > █
```

Get Facebook & Google Prefix

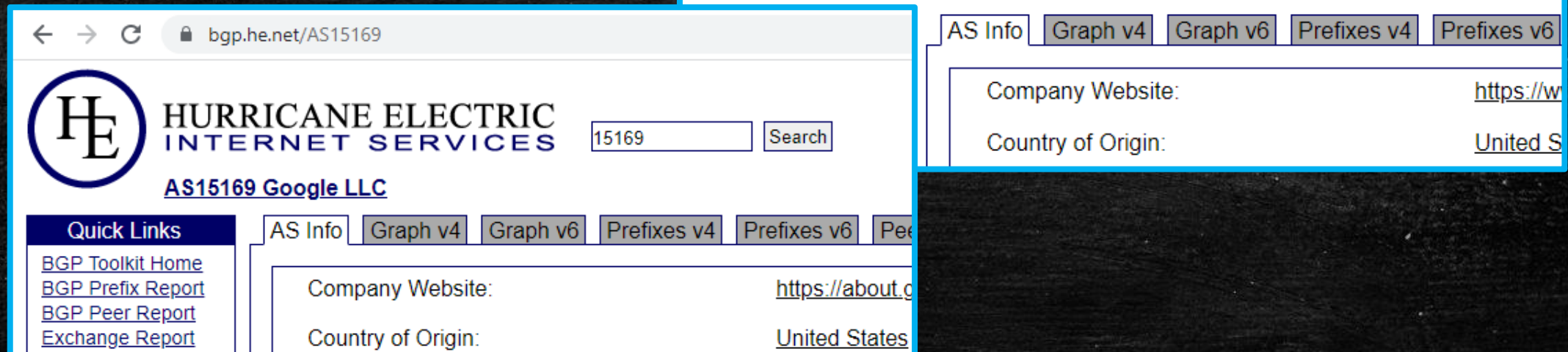
- Finds Google & Facebook Prefix on <https://bgp.he.net>
 - Google AS Number : 15169, 139190
 - Facebook AS Number : 32934




← → ↻ bgp.he.net/AS32934

 HURRICANE ELECTRIC
INTERNET SERVICES

AS32934 Facebook, Inc.



← → ↻ bgp.he.net/AS15169

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AS15169 Google LLC

Quick Links

- [BGP Toolkit Home](#)
- [BGP Prefix Report](#)
- [BGP Peer Report](#)
- [Exchange Report](#)

AS Info | Graph v4 | Graph v6 | Prefixes v4 | Prefixes v6 | Peers


Company Website: <https://about.google.com/>

Country of Origin: [United States](#)

Get Facebook & Google Prefix

- Go to Prefix Tab

← → ↻ bgp.he.net/AS15169#_prefixes



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AS15169 Google LLC

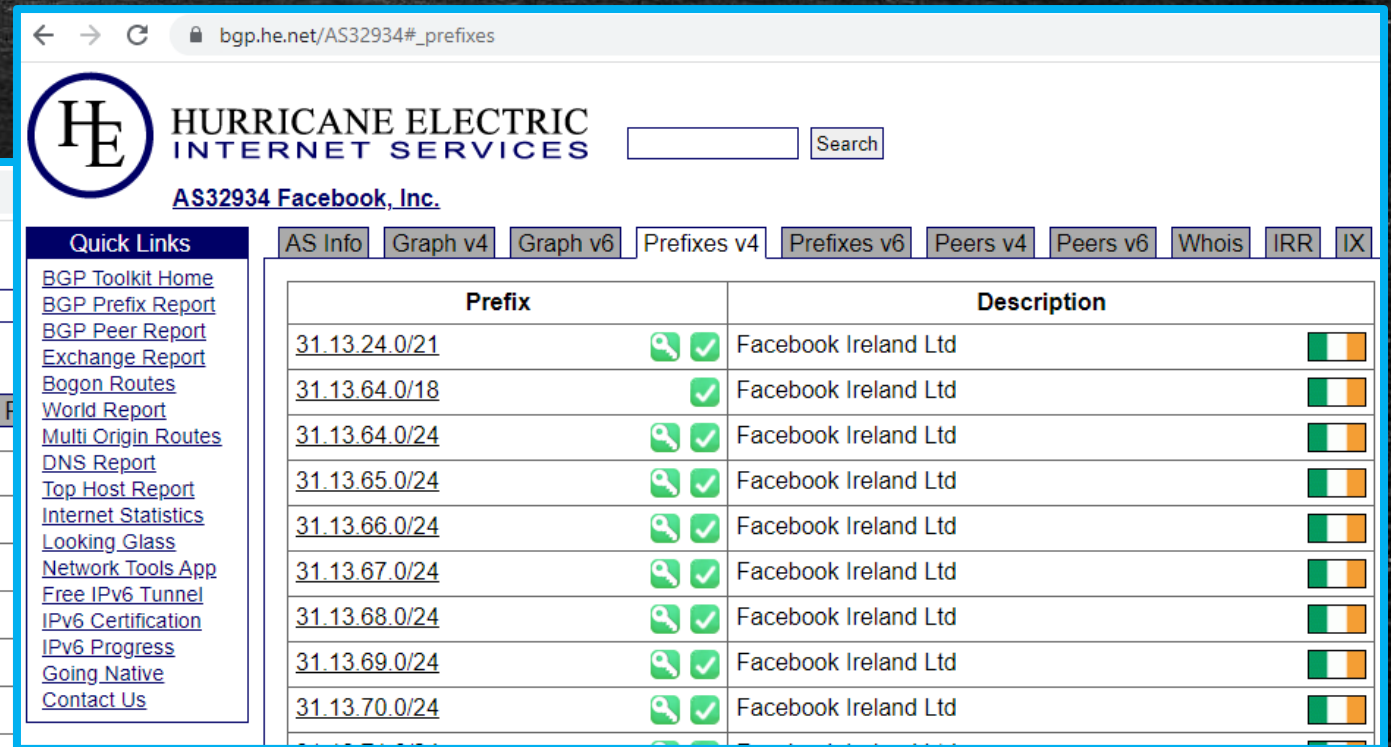
Quick Links

- BGP Toolkit Home
- BGP Prefix Report
- BGP Peer Report
- Exchange Report
- Bogon Routes
- World Report
- Multi Origin Routes
- DNS Report
- Top Host Report
- Internet Statistics
- Looking Glass
- Network Tools App
- Free IPv6 Tunnel
- IPv6 Certification
- IPv6 Progress
- Going Native
- Contact Us

AS Info Graph v4 Graph v6 Prefixes v4

Prefix			
8.8.4.0/24			Google LLC
8.8.8.0/24			Google LLC
8.34.208.0/21			Google LLC
8.34.216.0/21			Google LLC
8.35.192.0/21			Google LLC
8.35.200.0/21			Google LLC
23.236.48.0/20			Google LLC
23.251.128.0/19			Google LLC
34.64.0.0/11			Google LLC

← → ↻ bgp.he.net/AS32934#_prefixes



HURRICANE ELECTRIC
INTERNET SERVICES

AS32934 Facebook, Inc.

Quick Links

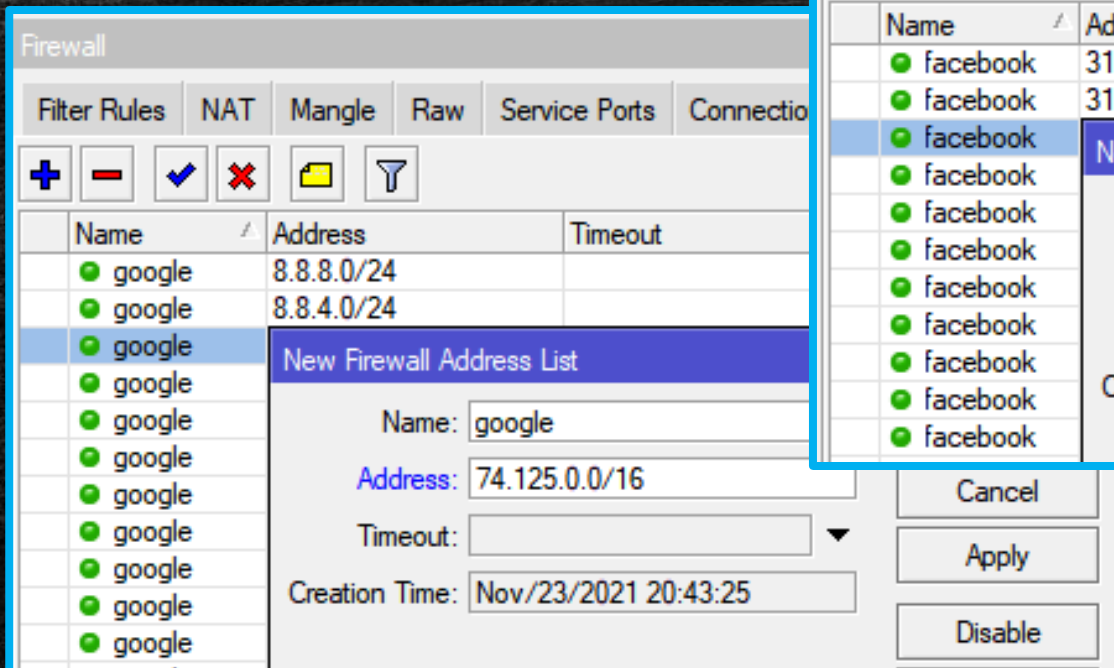
- BGP Toolkit Home
- BGP Prefix Report
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AS Info Graph v4 Graph v6 Prefixes v4 Prefixes v6 Peers v4 Peers v6 Whois IRR IX

Prefix			Description	
31.13.24.0/21			Facebook Ireland Ltd	
31.13.64.0/18			Facebook Ireland Ltd	
31.13.64.0/24			Facebook Ireland Ltd	
31.13.65.0/24			Facebook Ireland Ltd	
31.13.66.0/24			Facebook Ireland Ltd	
31.13.67.0/24			Facebook Ireland Ltd	
31.13.68.0/24			Facebook Ireland Ltd	
31.13.69.0/24			Facebook Ireland Ltd	
31.13.70.0/24			Facebook Ireland Ltd	

Add Address-List

- Group The Address on the same List
- Add the address-List



Name	Address	Timeout	Creation Time
google	8.8.8.0/24		
google	8.8.4.0/24		
google			
google			
google			
google			
google			
google			
google			
google			
google			
google			

New Firewall Address List

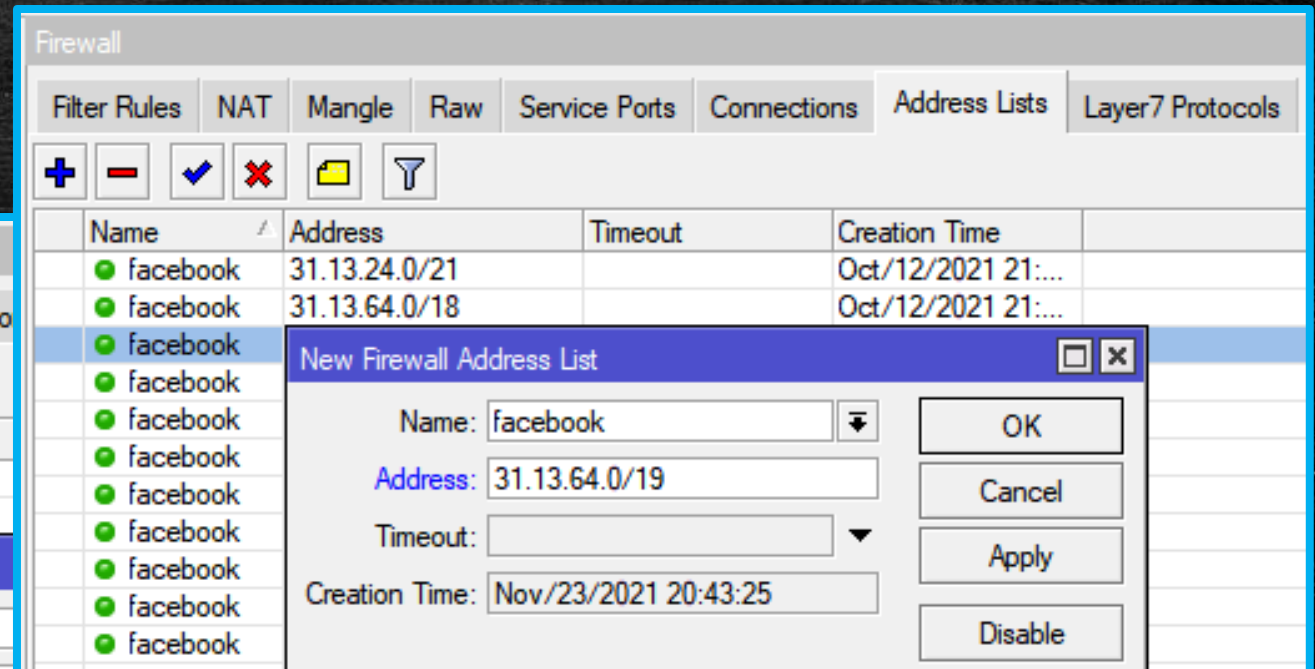
Name: google

Address: 74.125.0.0/16

Timeout: [Dropdown]

Creation Time: Nov/23/2021 20:43:25

Buttons: Cancel, Apply, Disable



Name	Address	Timeout	Creation Time
facebook	31.13.24.0/21		Oct/12/2021 21:...
facebook	31.13.64.0/18		Oct/12/2021 21:...
facebook			
facebook			
facebook			
facebook			
facebook			
facebook			
facebook			
facebook			
facebook			

New Firewall Address List

Name: facebook

Address: 31.13.64.0/19

Timeout: [Dropdown]

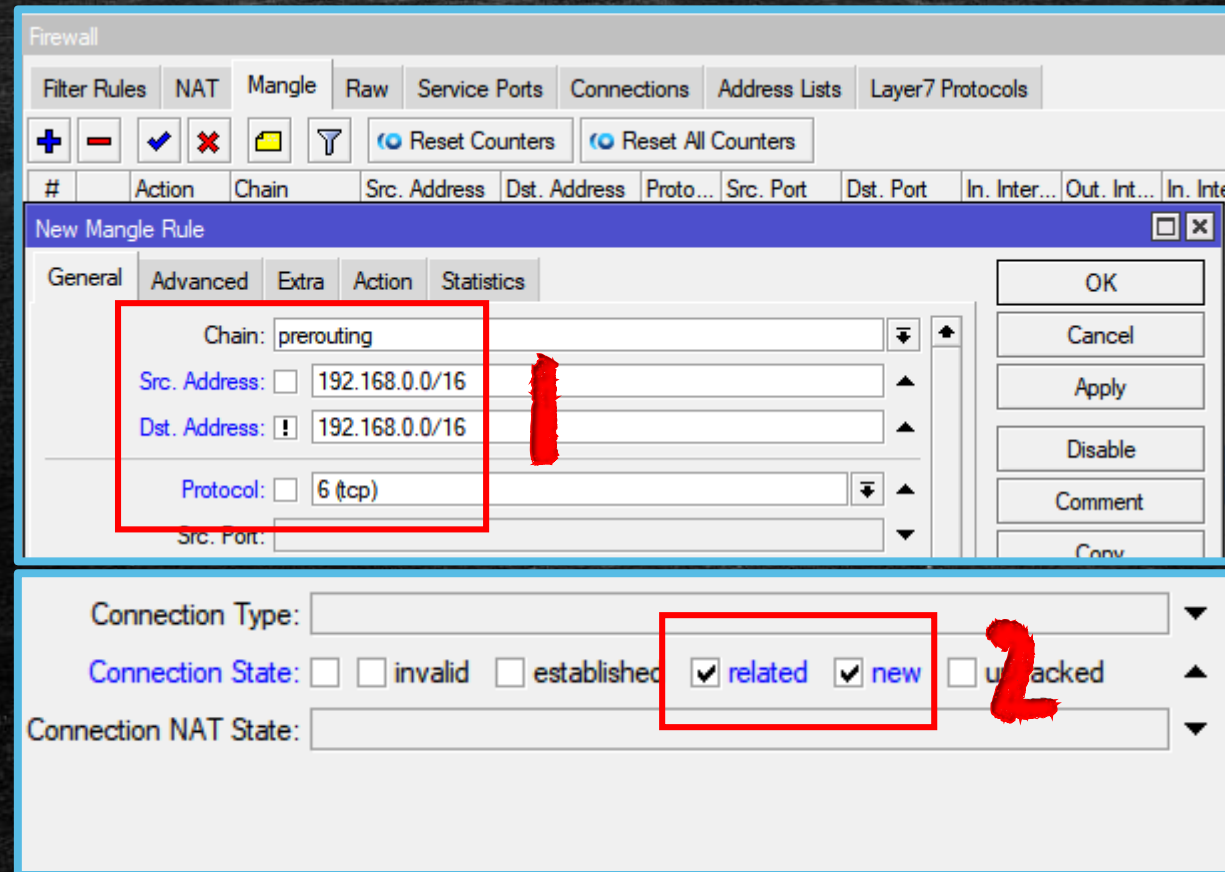
Creation Time: Nov/23/2021 20:43:25

Buttons: OK, Cancel, Apply, Disable

Routing Policy & NAT

- Default Gateway via ISP Dedicated
 - /ip route add gateway=**XX.XX.XX.XX** (Gateway ISP Dedicated)
- Custom Routing Mark VIA_BROADBAND
 - /ip route add gateway=**XX.XX.XX.XX** routing-mark=VIA_BROADBAND
- NAT Masquerade for BOTH ISP
 - /ip firewall nat add action=masquerade chain=srcnat out-interface=**Ether_To_ISP_Dedicated**
 - /ip firewall nat add action=masquerade chain=srcnat out-interface=**Ether_To_ISP_Broadband**

Mark Connection in Mangle



The screenshot shows the Mikrotik WinBox Firewall configuration interface. The 'Mangle' tab is selected. A 'New Mangle Rule' dialog box is open, showing the following configuration:

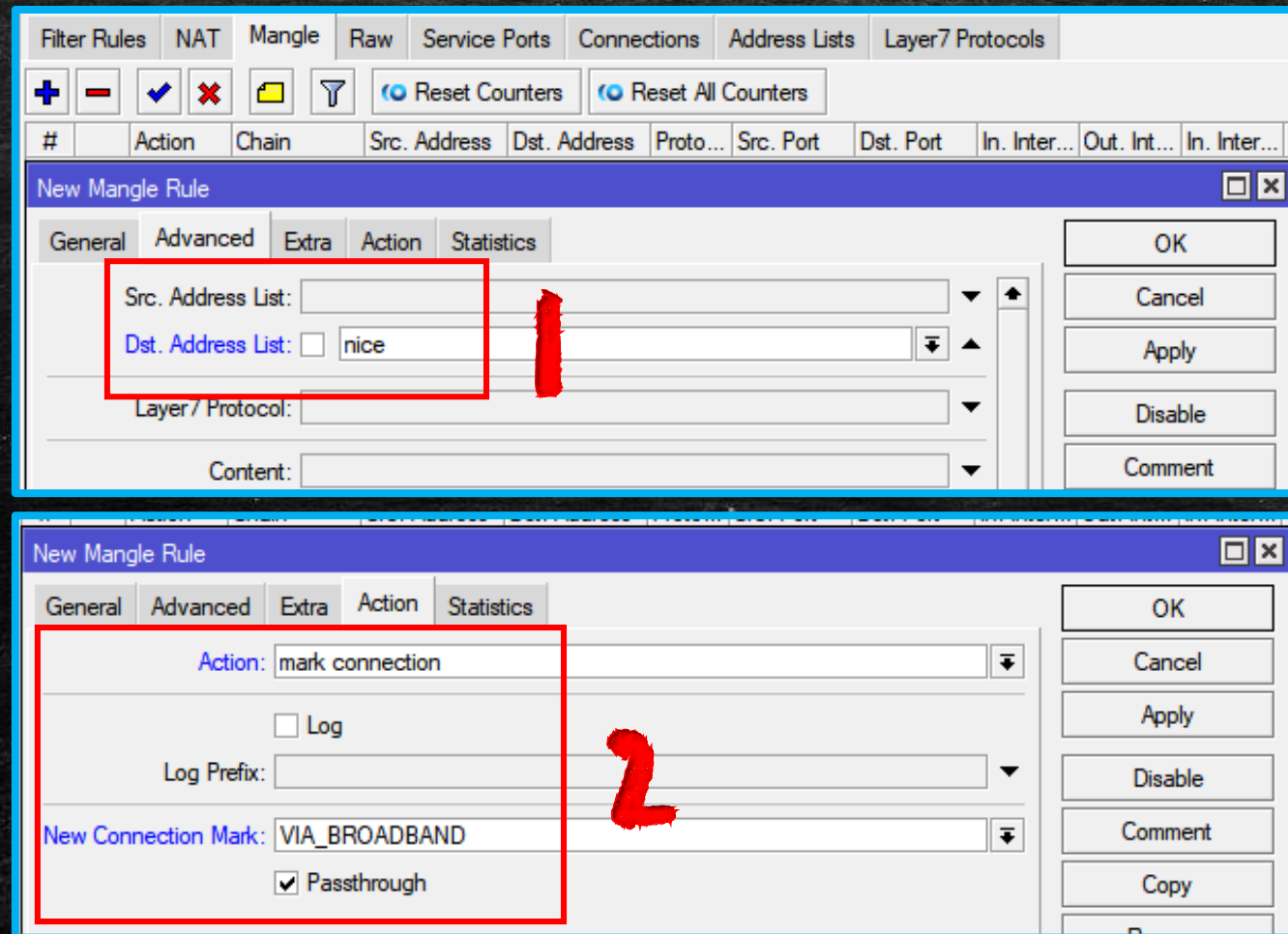
- Chain: prerouting
- Src. Address: 192.168.0.0/16
- Dst. Address: 192.168.0.0/16
- Protocol: 6 (tcp)

Below the dialog box, the 'Connection State' section is visible, with the following options:

- Connection Type: (empty)
- Connection State: invalid established related new untracked
- Connection NAT State: (empty)

Red boxes and numbers highlight the configuration details: a red box around the Chain, Src. Address, Dst. Address, and Protocol fields; a red box around the 'related' and 'new' checkboxes; and a red number '2' next to the 'untracked' checkbox.

Mark Connection in Mangle



The image shows two screenshots of the Mikrotik WinBox interface for configuring a new Mangle rule. The top screenshot shows the 'General' tab with the 'Src. Address List' and 'Dst. Address List' fields highlighted by a red box. The 'Dst. Address List' field contains the text 'nice'. A red vertical line is drawn next to the 'Dst. Address List' field. The bottom screenshot shows the 'Action' tab with the 'Action' field set to 'mark connection', the 'Log' checkbox unchecked, the 'Log Prefix' field empty, the 'New Connection Mark' field set to 'VIA_BROADBAND', and the 'Passthrough' checkbox checked. A red box highlights the 'Action' and 'New Connection Mark' fields, and a red number '2' is written next to the 'Log Prefix' field.

Filter Rules NAT Mangle Raw Service Ports Connections Address Lists Layer7 Protocols

+ - ✓ ✗ 📁 🗑️ 🔍 ⚙️ ⚙️

Reset Counters Reset All Counters

#	Action	Chain	Src. Address	Dst. Address	Proto...	Src. Port	Dst. Port	In. Inter...	Out. Int...	In. Inter...
---	--------	-------	--------------	--------------	----------	-----------	-----------	--------------	-------------	--------------

New Mangle Rule

General Advanced Extra Action Statistics

Src. Address List:

Dst. Address List: nice

Layer / Protocol:

Content:

OK Cancel Apply Disable Comment

New Mangle Rule

General Advanced Extra Action Statistics

Action: mark connection

Log

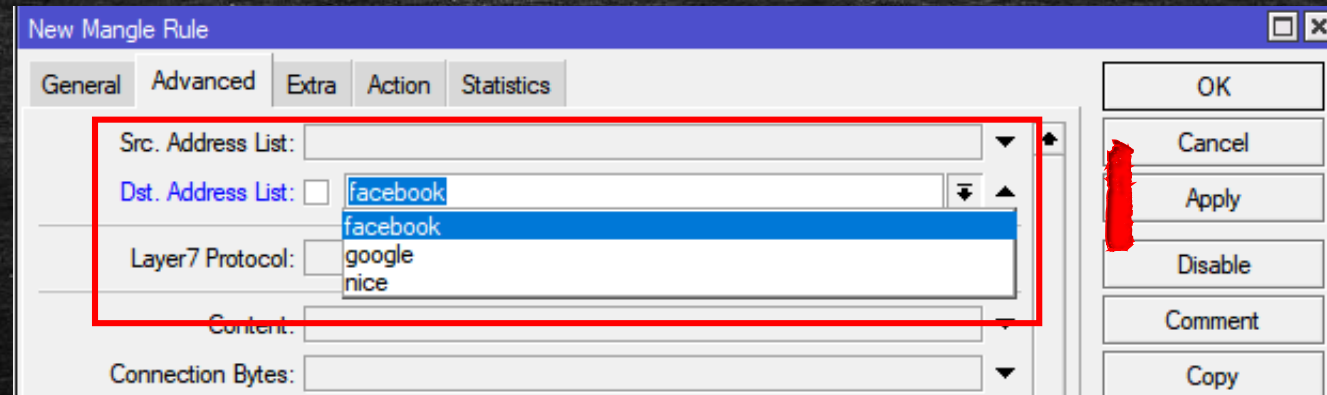
Log Prefix:

New Connection Mark: VIA_BROADBAND

Passthrough

OK Cancel Apply Disable Comment Copy

Mark Connection in Mangle



New Mangle Rule

General Advanced Extra Action Statistics

Src. Address List: []

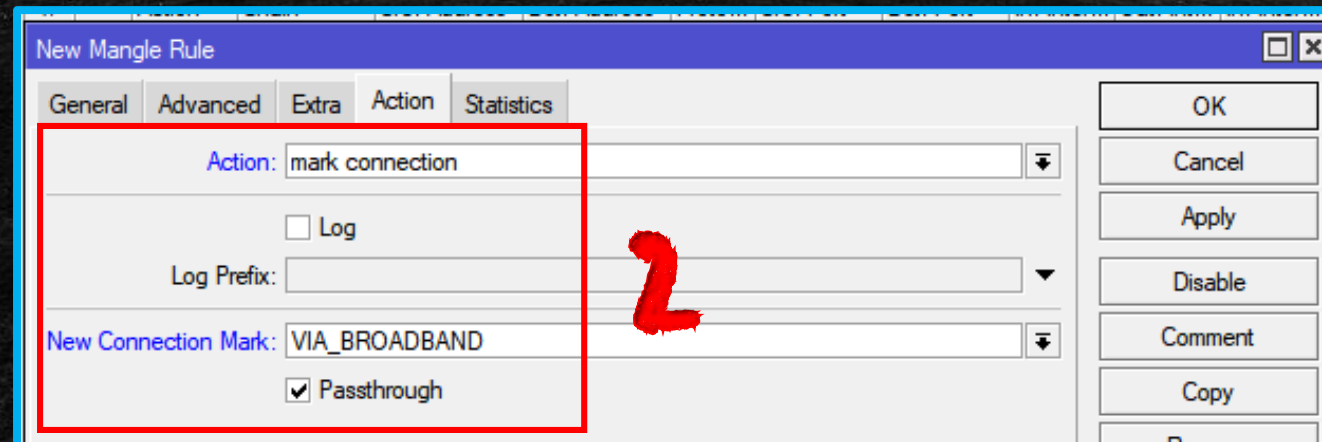
Dst. Address List: facebook

Layer7 Protocol: google
 nice

Content: []

Connection Bytes: []

OK
Cancel
Apply
Disable
Comment
Copy



New Mangle Rule

General Advanced Extra Action Statistics

Action: mark connection

Log

Log Prefix: []

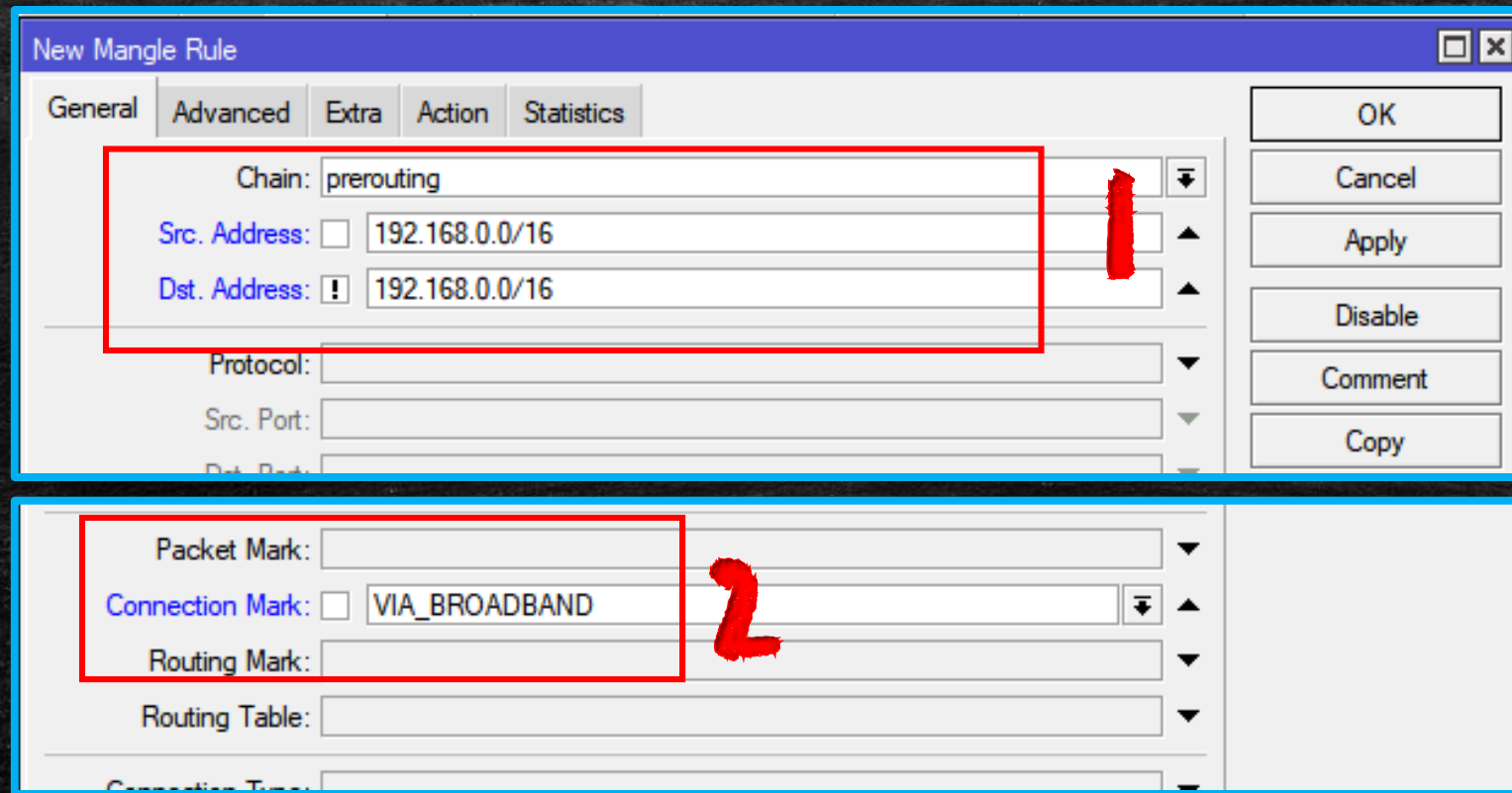
New Connection Mark: VIA_BROADBAND

Passthrough

OK
Cancel
Apply
Disable
Comment
Copy

2

Mark Routing in Mangle



New Mangle Rule

General | Advanced | Extra | Action | Statistics

Chain: prerouting

Src. Address: 192.168.0.0/16

Dst. Address: 192.168.0.0/16

Protocol:

Src. Port:

Dst. Port:

Packet Mark:

Connection Mark: VIA_BROADBAND

Routing Mark:

Routing Table:

Connection Type:

OK

Cancel

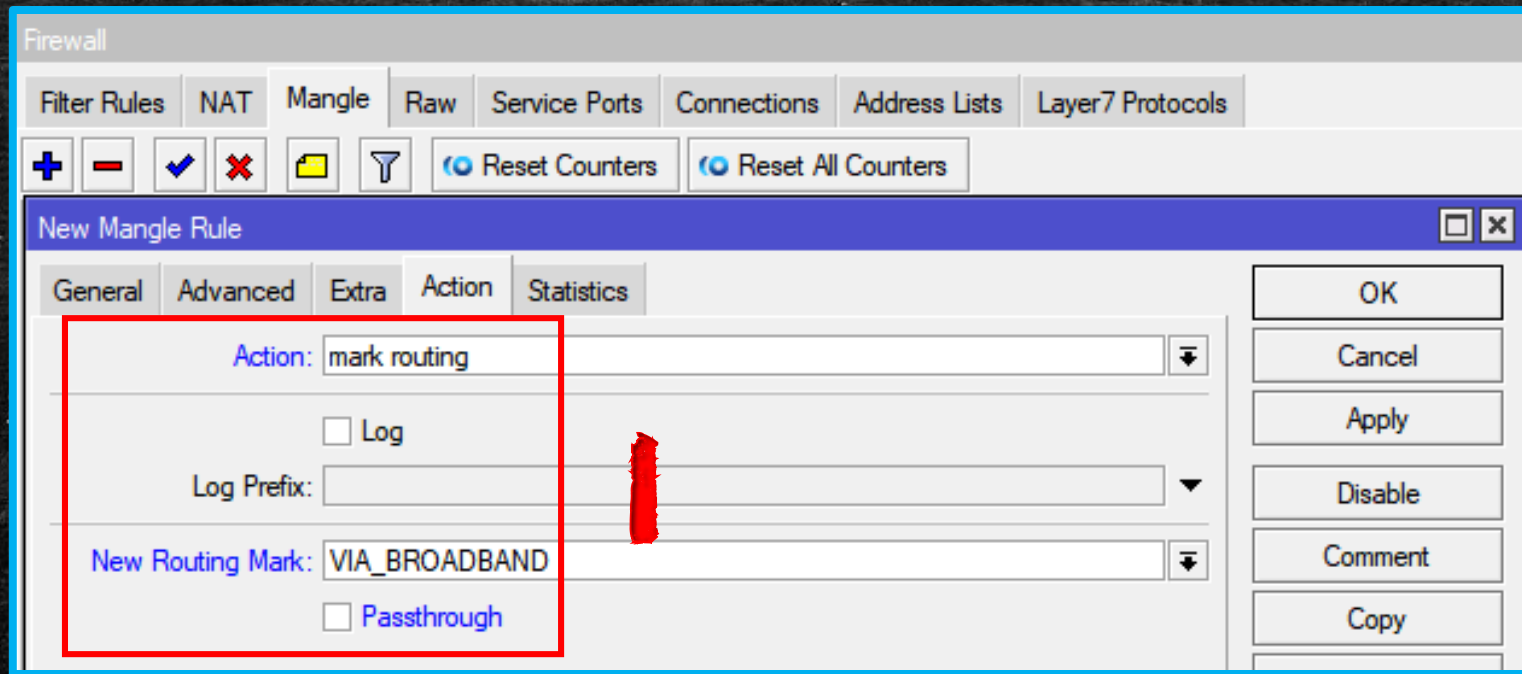
Apply

Disable

Comment

Copy

Mark Routing in Mangle



Q & A
Thank You

– Adhie Lesmana –
– Fb : adhielesmana – IG : @adhielesmana –

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