

MIXED BROADBAND AND DEDICATED INTERNET

FOR COWORKING AND HOSPITALITY

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Speaker Profile

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- Chief Network Engineer Outpost Asia
 - 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

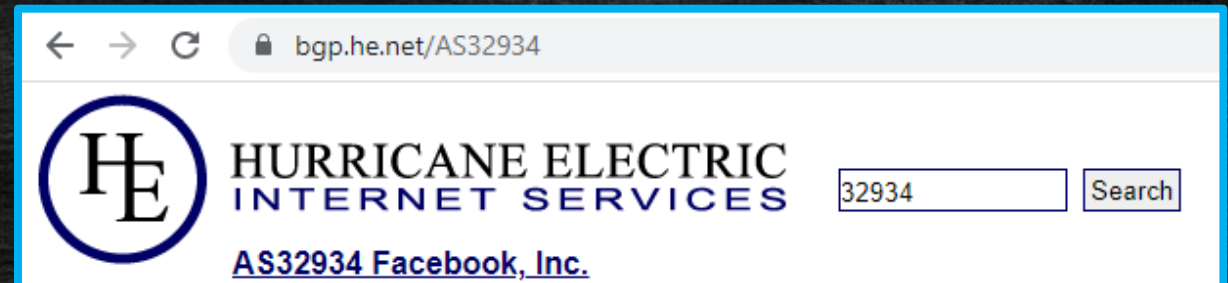
- Nice.rsc are Indonesian prefix domestic address List.
- fetch the nice.rsc file from new-terminal
 - `/tool fetch url=http://ixp.mikrotik.co.id/download/nice.rsc mode=http`
- Import the nice.rsc file from new-terminal
 - `/import nice.rsc`

```
[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

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INTERNET SERVICES

32934 Search

AS32934 Facebook, Inc.



← → ↻ bgp.he.net/AS15169

 HURRICANE ELECTRIC
INTERNET SERVICES

15169 Search

AS15169 Google LLC

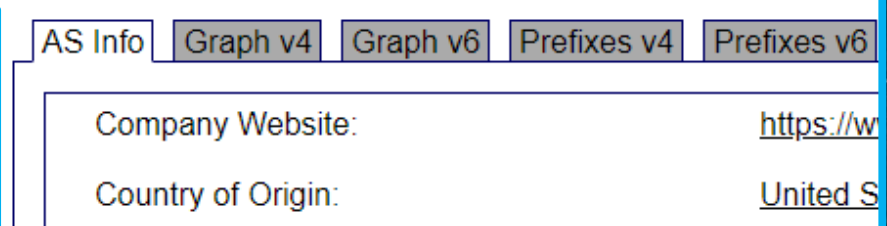
Quick Links

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

AS Info Graph v4 Graph v6 Prefixes v4 Prefixes v6

Company Website: <https://about.g>

Country of Origin: United States



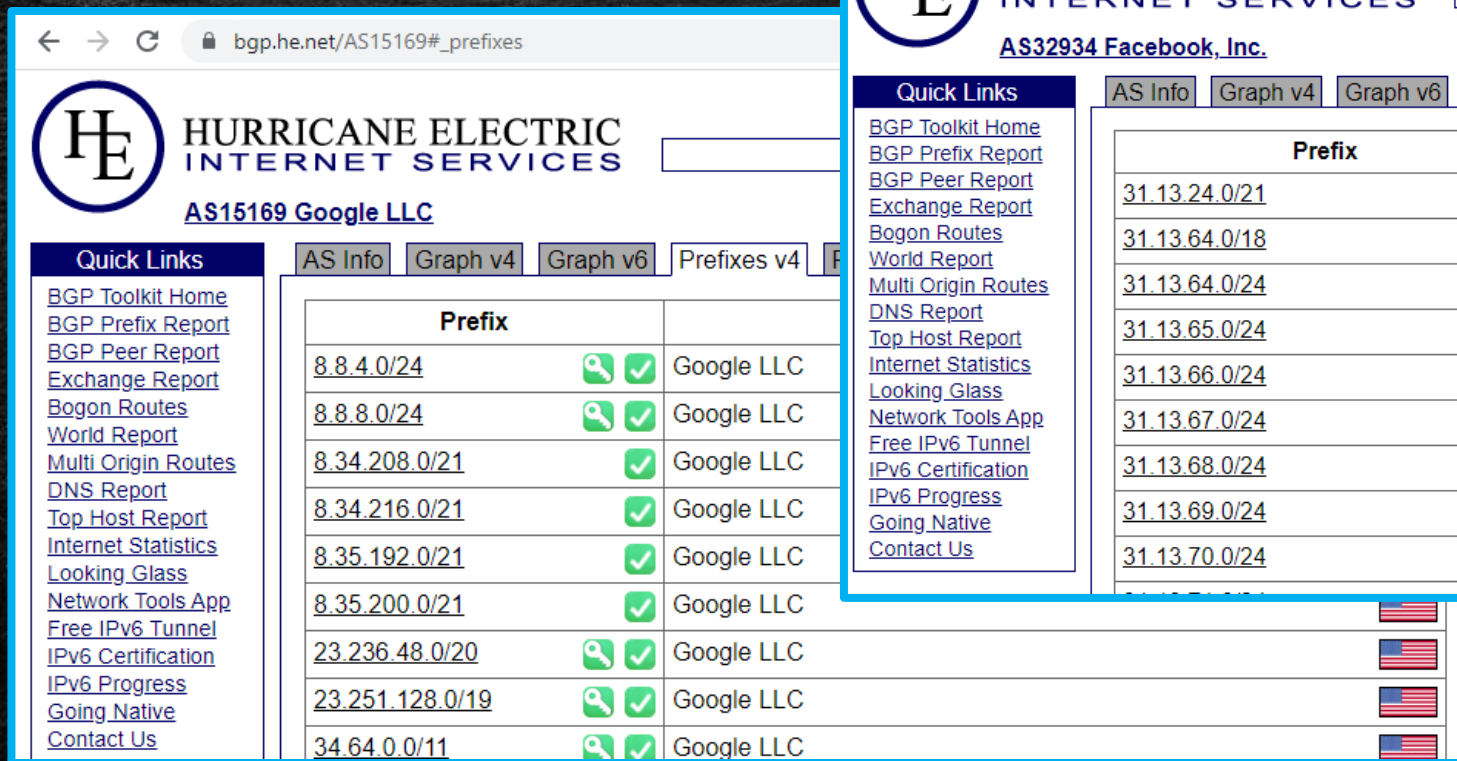
AS Info Graph v4 Graph v6 Prefixes v4 Prefixes v6

Company Website: <https://w>

Country of Origin: United S

Get Facebook & Google Prefix

- Go to Prefix Tab

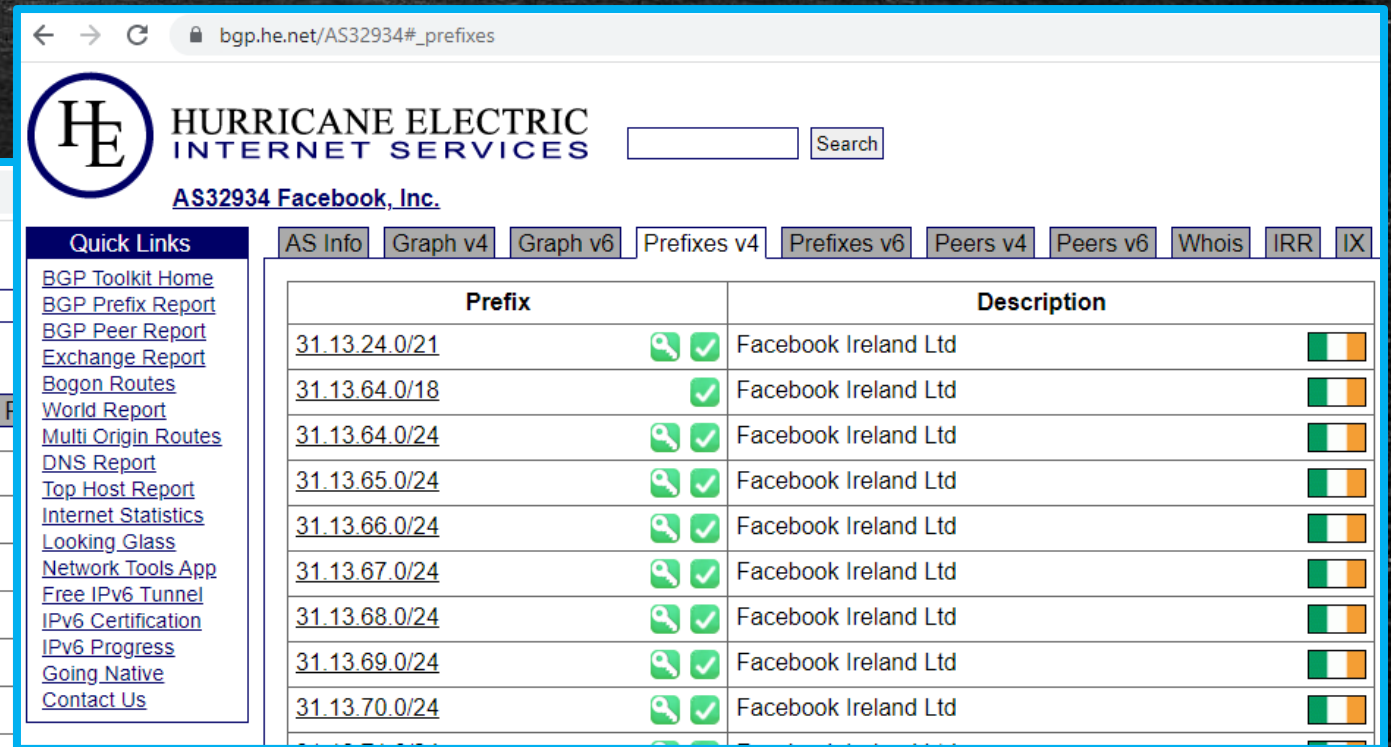


AS15169 Google LLC

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

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



AS32934 Facebook, Inc.

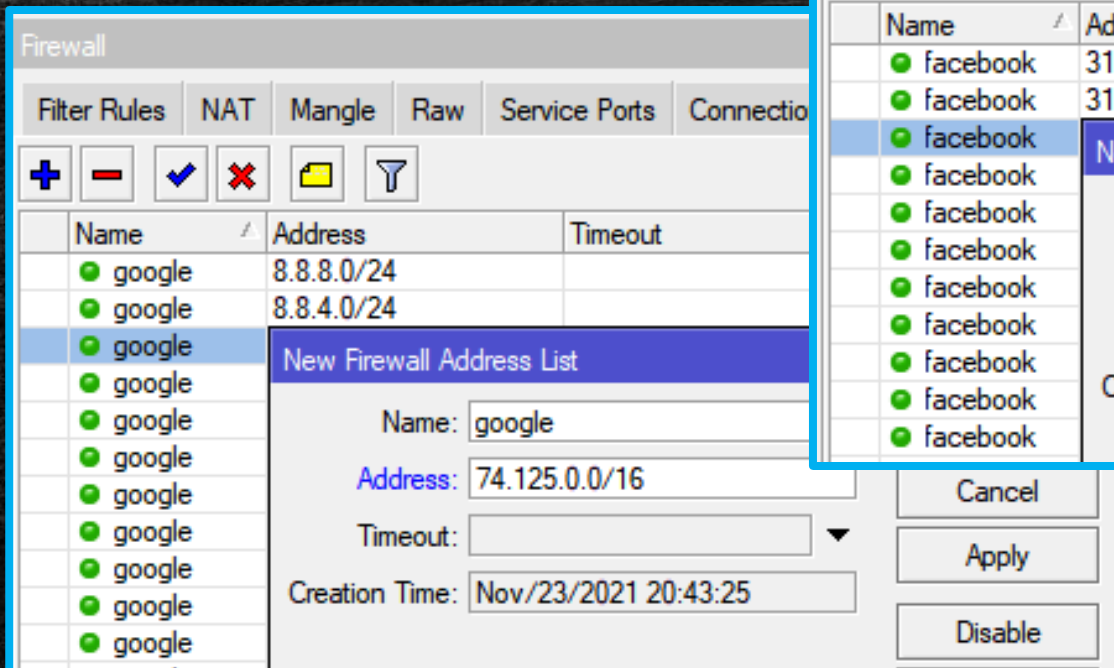
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- Looking Glass
- Network Tools App
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- IPv6 Certification
- IPv6 Progress
- Going Native
- Contact Us

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



Firewall

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

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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			
google			
google			
google			

New Firewall Address List

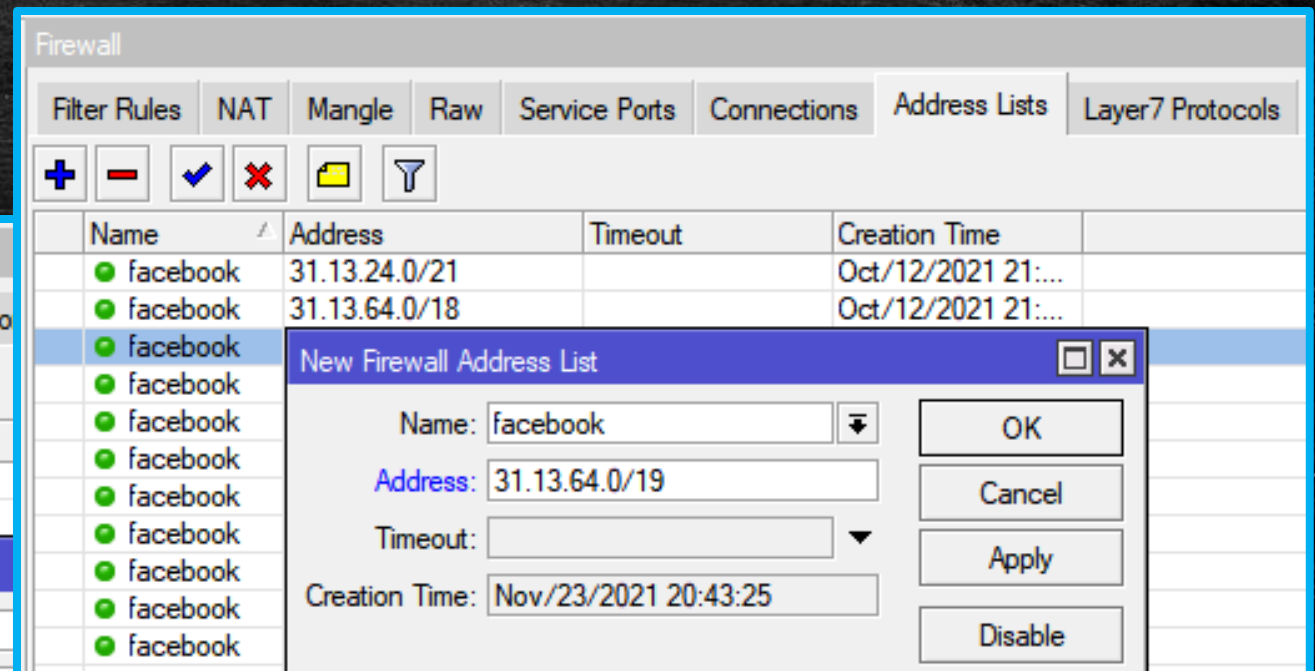
Name: google

Address: 74.125.0.0/16

Timeout: [dropdown]

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

Cancel Apply Disable



Firewall

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

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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			
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

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

Firewall

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

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Reset Counters Reset All Counters

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

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: 6 (tcp)

Src. Port:

Connection Type:

Connection State: invalid established related new unack

Connection NAT State:

OK Cancel Apply Disable Comment Conv

Mark Connection in Mangle

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

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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:


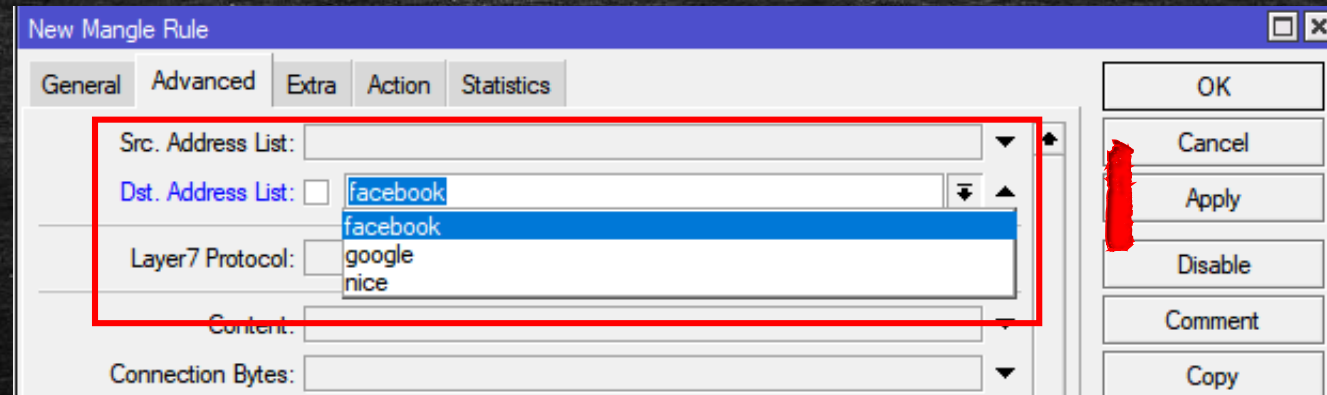
Dst. Address List: facebook

Layer7 Protocol: google
 nice

Content:

Connection Bytes:

OK
Cancel
Apply
Disable
Comment
Copy



New Mangle Rule

General Advanced Extra Action Statistics

Action: mark connection


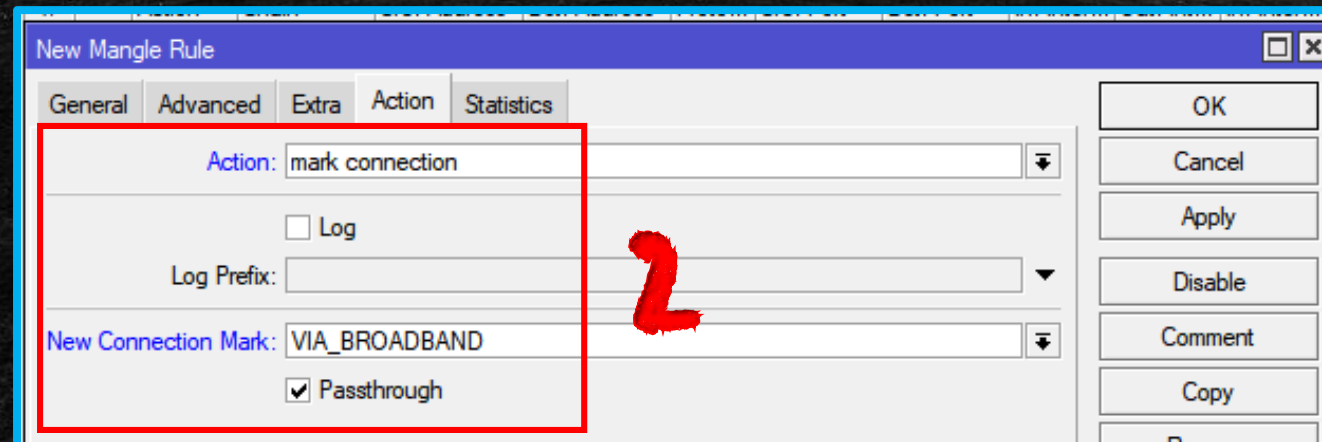
Log

Log Prefix:

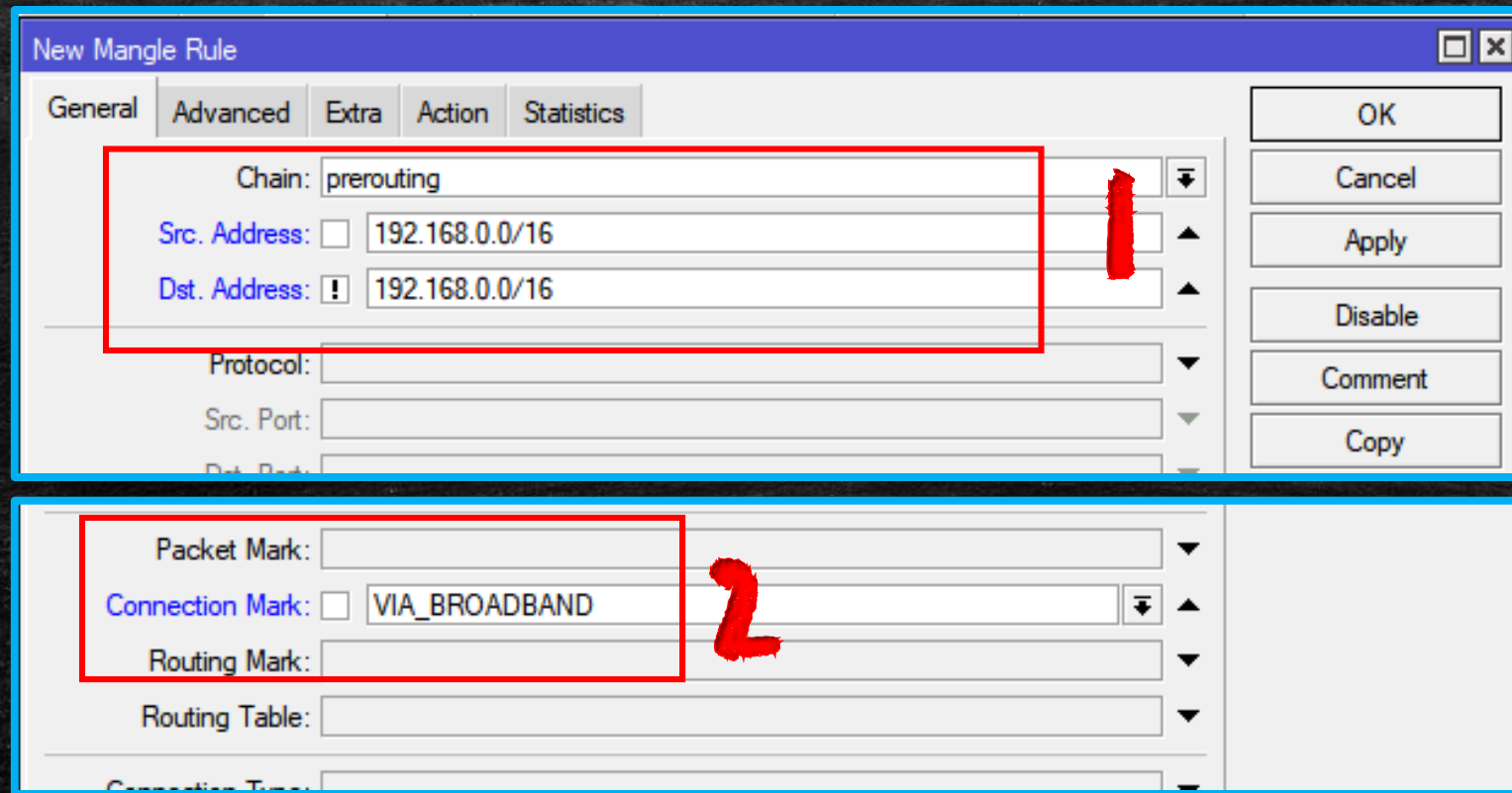
New Connection Mark: VIA_BROADBAND

Passthrough

OK
Cancel
Apply
Disable
Comment
Copy



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

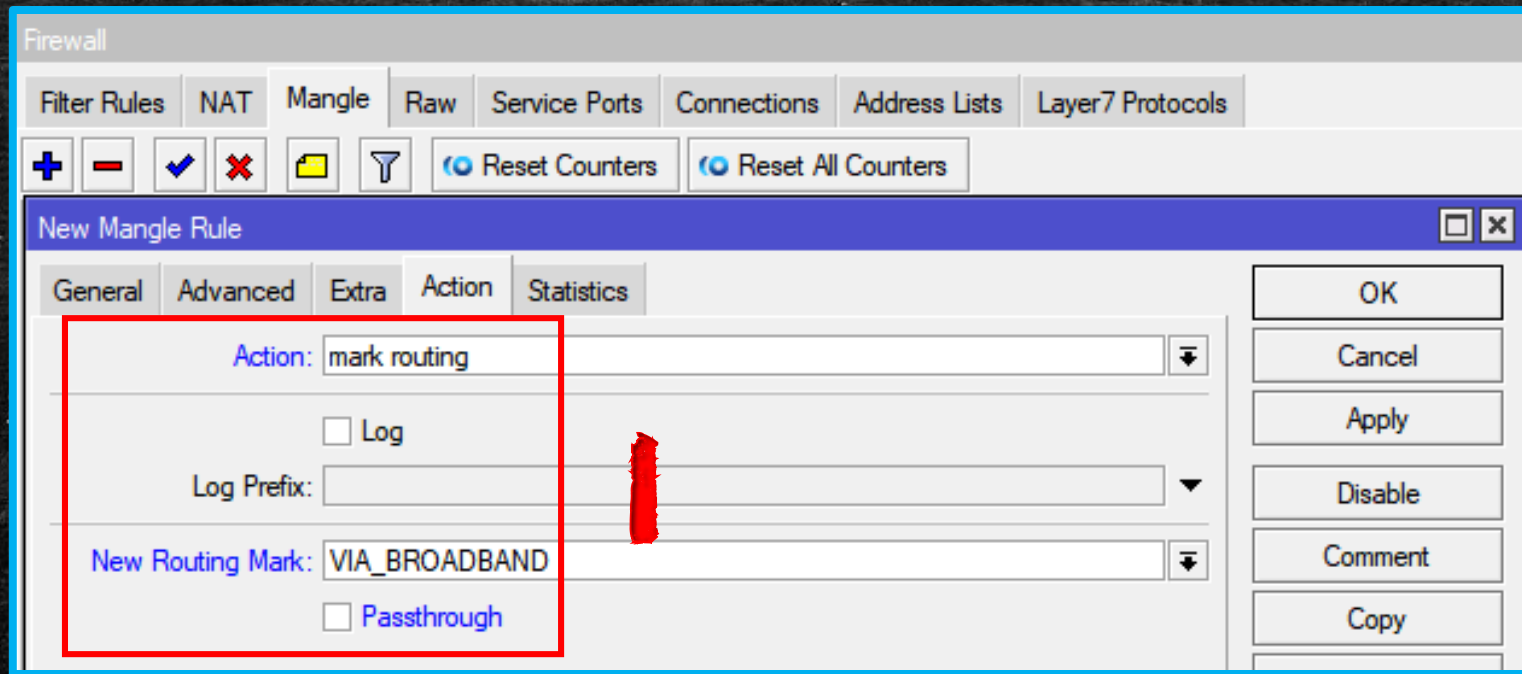
Apply

Disable

Comment

Copy

Mark Routing in Mangle



Q & A

Thank You

– Adhie Lesmana –
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