Connection Tracking Implementation and Case

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Intro

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- MikroTik Certified Trainer (TR0619) at BelajarMikroTik.COM
- Certificate Taken :
  - MTCNA
  - MTCTCE
  - MTCRE
  - MTCWE
  - MTCIPv6E
  - MTCUME
  - MTCINE
  - MTCSE

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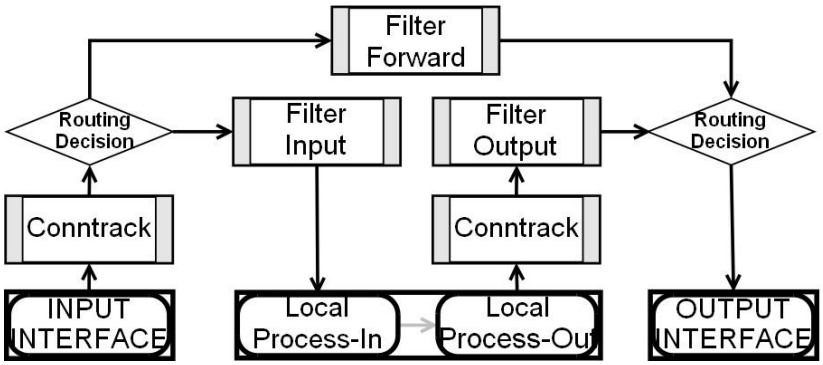
BelajarMikroTik.COM

- BelajarMikroTik.COM is the one of MikroTik Training Center in Indonesia
- BelajarMikroTik.COM founded by Herry Darmawan & Akbar Azwir on 2013
- Located in Surabaya but we also hold training around Indonesia even in Australia and Philippines
- Certification that you can take : MTCNA, MTCTCE, MTCRE, MTCUME, MTCWE, MTIPv6E, MTCSE, MTCINE

What is Connection Tracking?

- In Router, all the active traffic will be stored real-time to restored them to the correct request source
- In MikroTik RouterOS, This feature called Connection-Tracking

How Connection Tracking Work?

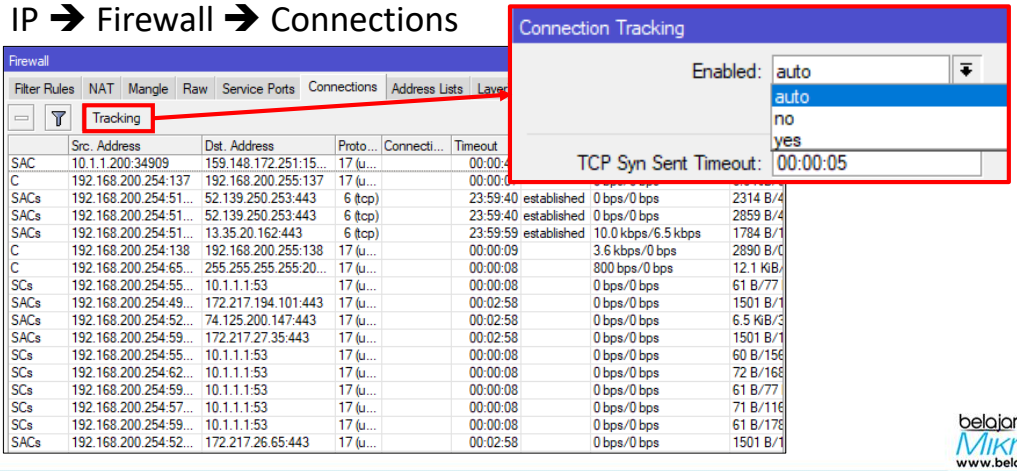


Connection Tracking

- Disabling connection tracking will effect with some Firewall feature
- Feature affected by Connection-Tracking :
  - NAT
  - Connection-bytes
  - Connection-mark
  - Connection-state
  - Connection-limit
  - Connection-rate
  - Layer7-protocol
  - New-connection-mark
  - Tarpit

Connection Tracking Menu

- IP ➔ Firewall ➔ Connections



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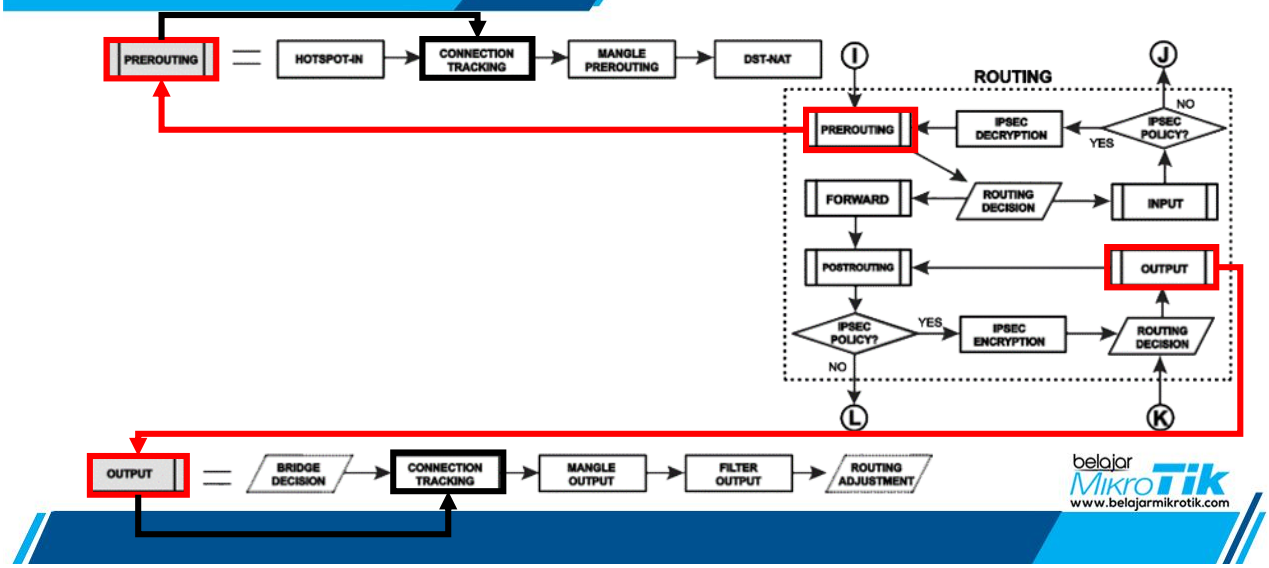
Connection Tracking in Packet Flow



Connection State

- Each connection has a state
- This state called Connection-state

Firewall

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

Tracking | Find

	Src. Address	Dst. Address	Proto...	Connecti...	Timeout	TCP State	Orig./Repl. Rate	Orig./
SAC	10.1.1.200:34909	159.148.172.251:15...	17 (u...		00:00:42		0 bps/0 bps	846 B/38
C	192.168.200.254:137	192.168.200.255:137	17 (u...		00:00:07		0 bps/0 bps	6.6 KiB/0
SACs	192.168.200.254:51...	52.139.250.253:443	6 (tcp)		23:59:40	established	0 bps/0 bps	2314 B/4
SACs	192.168.200.254:51...	52.139.250.253:443	6 (tcp)		23:59:40	established	0 bps/0 bps	2859 B/4
SACs	192.168.200.254:51...	13.35.20.162:443	6 (tcp)		23:59:59	established	10.0 kbps/6.5 kbps	1784 B/1
C	192.168.200.254:138	192.168.200.255:138	17 (u...		00:00:09		3.6 kbps/0 bps	2890 B/0

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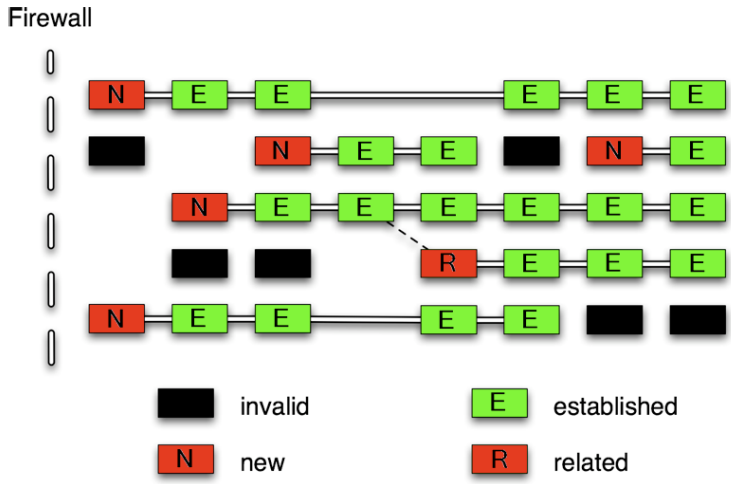
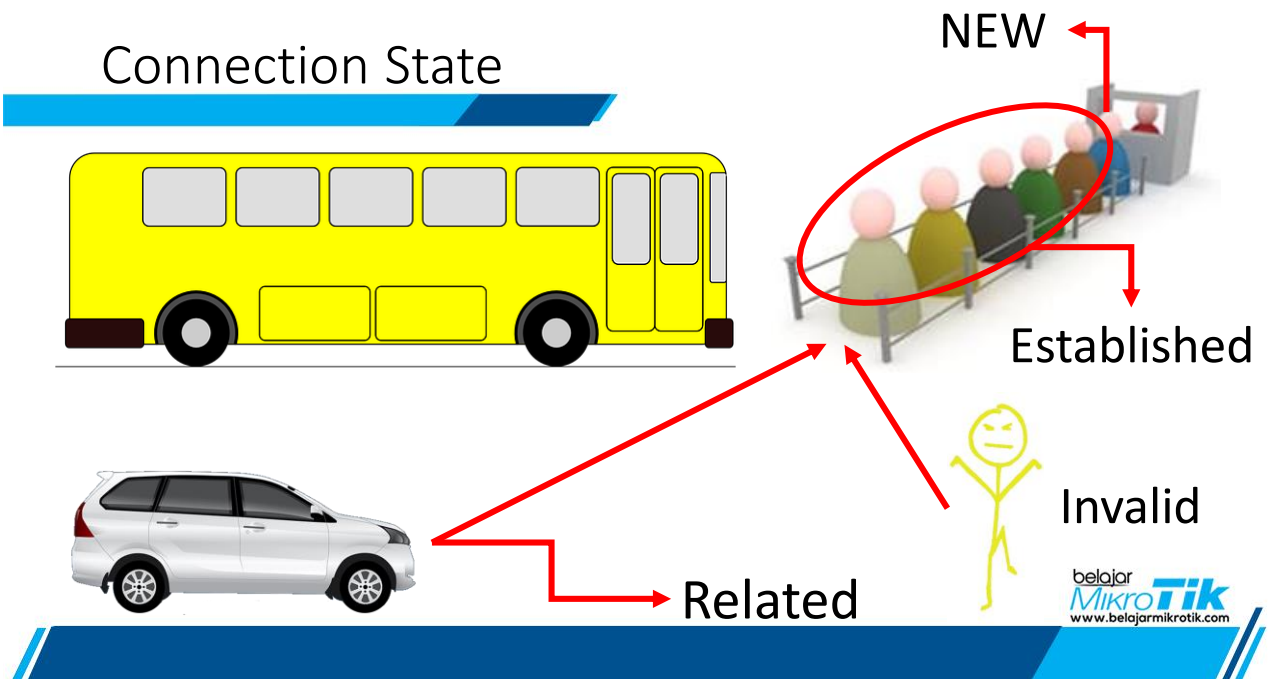
Connection State




Connection State
NEW
Established
Invalid
Related
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Tips for connection state

- DROP Invalid Packet
- ACCEPT Established and Related Packet
- Another rule will only check the NEW Packet
- Less Check = Less CPU Load

Implementation

Firewall

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

Reset Counters | Reset All Counters | Find

#	Action	Chain	S...	D...	Protocol	S...	Dst. Port	In. ...	Out. I...	Connection State	E
0	drop	input								invalid	
1	accept	input								established	
2	accept	input								related	
3	jump	input									
4	jump	input									
5	log	input			6 (tcp)		8291				
6	accept	input									
7	accept	input			17 (udp)	53					
8	accept	input			17 (udp)		20561,5678				

This Rule only checking the NEW PACKET

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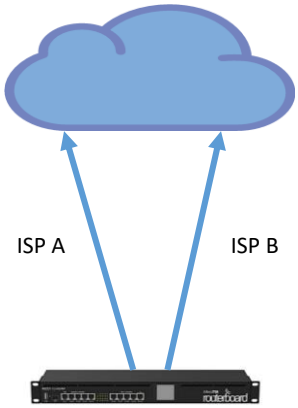
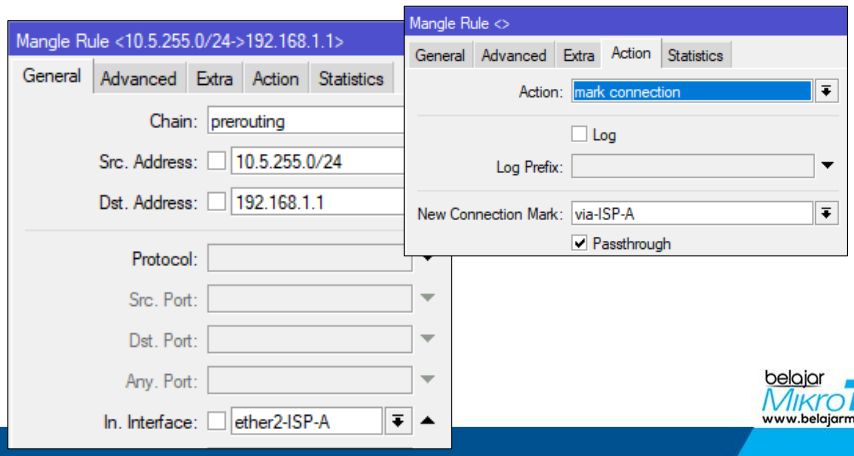
Connection Tracking Stuck?

- For some case we need to mark other connection.



Mark Connection

- To know which connection that we have to delete we can mark that connection



Delete the Conn-Track

Firewall

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

Tracking

	Src. Address	Dst. Address	Proto...	Connection Mark	Timeout	TCP State	Orig./Repl. Rate
SC	10.255.100.100	10.255.100.254	1 (ic...	via-ISP-A	00:00:09		896 bps/896 bps
SCs	192.168.99.2	10.255.100.254	1 (ic...		00:00:09		960 bps/960 bps
SACs	192.168.99.2:53417	172.217.27.46:443	17 (u...		00:01:53		0 bps/0 bps
SCs	192.168.99.2:53421	10.5.255.140:161	17 (u...		00:00:09		0 bps/0 bps
SACs	192.168.99.2:61701	74.125.68.188:5228	6 (tcp)		23:59:30	established	0 bps/0 bps
SACs	192.168.99.2:61705	40.90.189.152:443	6 (tcp)		23:43:01	established	0 bps/0 bps
SACs	192.168.99.2:61732	103.20.90.197:8290	6 (tcp)		23:59:59	established	1760 bps/17.6 kbps
SACs	192.168.99.2:61734	10.5.255.125:8291	6 (tcp)		23:59:59	established	640 bps/7.8 kbps
SACs	192.168.99.2:61853	104.244.42.8:443	6 (tcp)		23:59:17	established	0 bps/0 bps
SACs	192.168.99.2:61856	103.20.90.211:443	6 (tcp)		23:59:17	established	0 bps/0 bps
C	192.168.99.2:63641	255.255.255.255:20...	17 (u...		00:00:10		8.4 kbps/0 bps

This Connection that we should Delete!!

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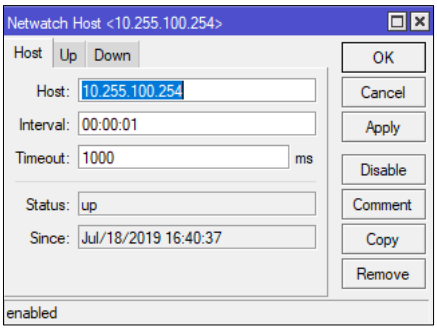
Ensure Gateway is reachable

- To ensure that gateway always reachable we can use Tools ➔ Netwatch



PROBLEM SOLVED?

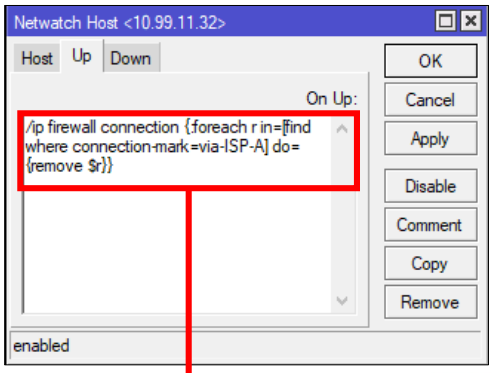
NO

How if the problems always come?

Solution

- We can use Script in Netwatch deleting the connection tracking automatically

```
/ip firewall connection
{:foreach r in=[find where
connection-mark=via-ISP-A]
do={remove $r}}
```



Thanks!

Any questions?

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