The Brothers WISP

Greg Sowell Consulting

Mikrotik as the troubleshooting tool

Who Am I

- Greg Sowell – A+, Network+, CCNA, CCNP, CCIE Written, MTCNA, MTCRE, MTCINE, Mikrotik Certified Trainer
- VP of Technology FIBERTOWN Datacenters
- Consultant – GregSowell.com
- Author at Lynda.com/gregsowell

The Brothers WISP

TheBrothersWISP.com

- WISP/Network industry scuttlebutt
- Greg Sowell - Texas
- Andrew Cox - Australia
- Andrew Thrift – New Zealand
- Tomas Kirnak – Slovakia
- Tom Smyth – Ireland
- Mike Hammett - Chicago
- JJ Boyd – North Carolina
- Alex Heart – Oregon
- Justin Miller – Virginia
- Justin Wilson – Indiana

Assumptions

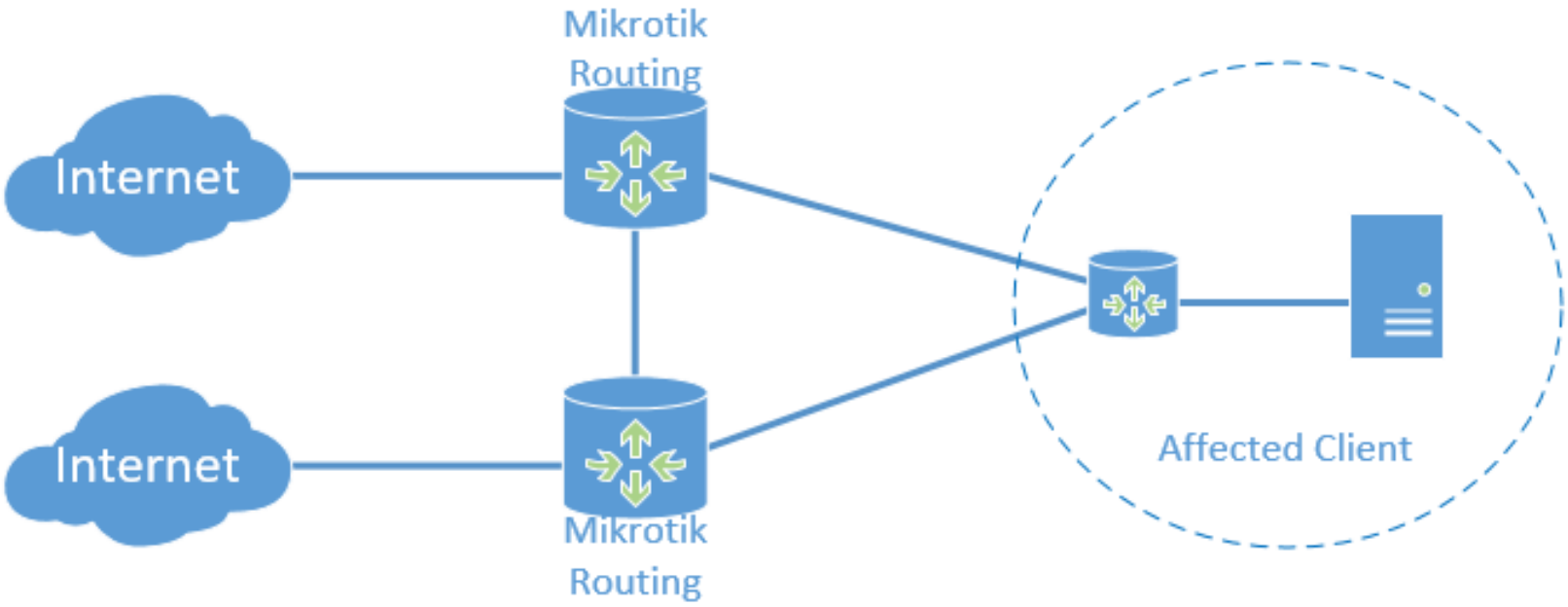
- You are familiar with the Mikrotik interface
  - Adding Addresses
  - Adding Static Routes
  - Configuring Interfaces
  - Etc.

Troubleshoot W/ Mikrotik as Router

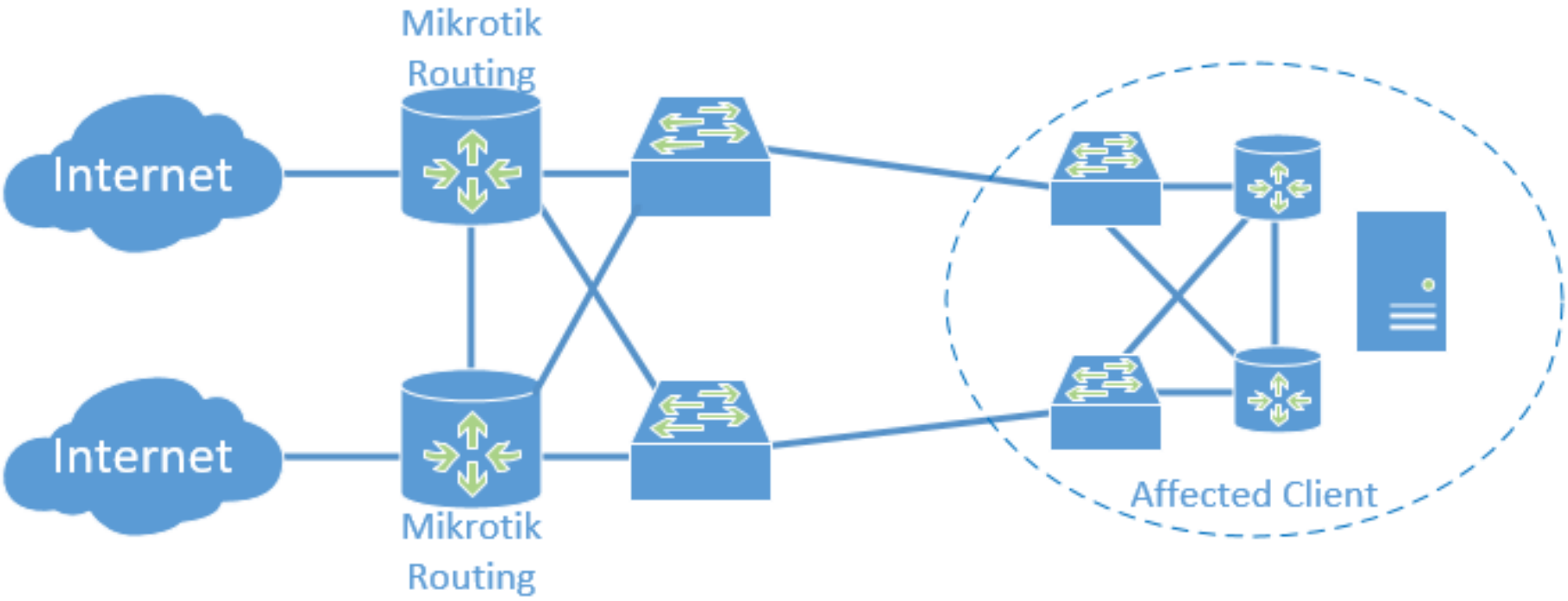
- "I can't reach GregSowell.com!"

1. Try from my desk
2. Ping from router
3. Traceroute from router
4. Traceroute from customer

How about now



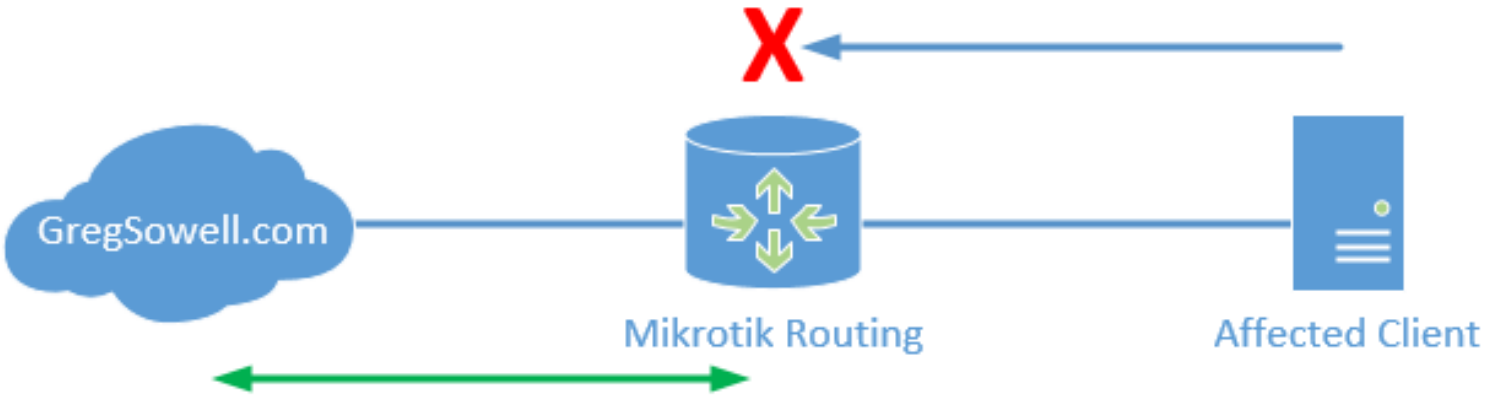
And now


Mikrotik
Routing
Internet
Internet
Mikrotik
Routing
Affected Client

Router Is The Failure

- "I can't reach GregSowell.com!"

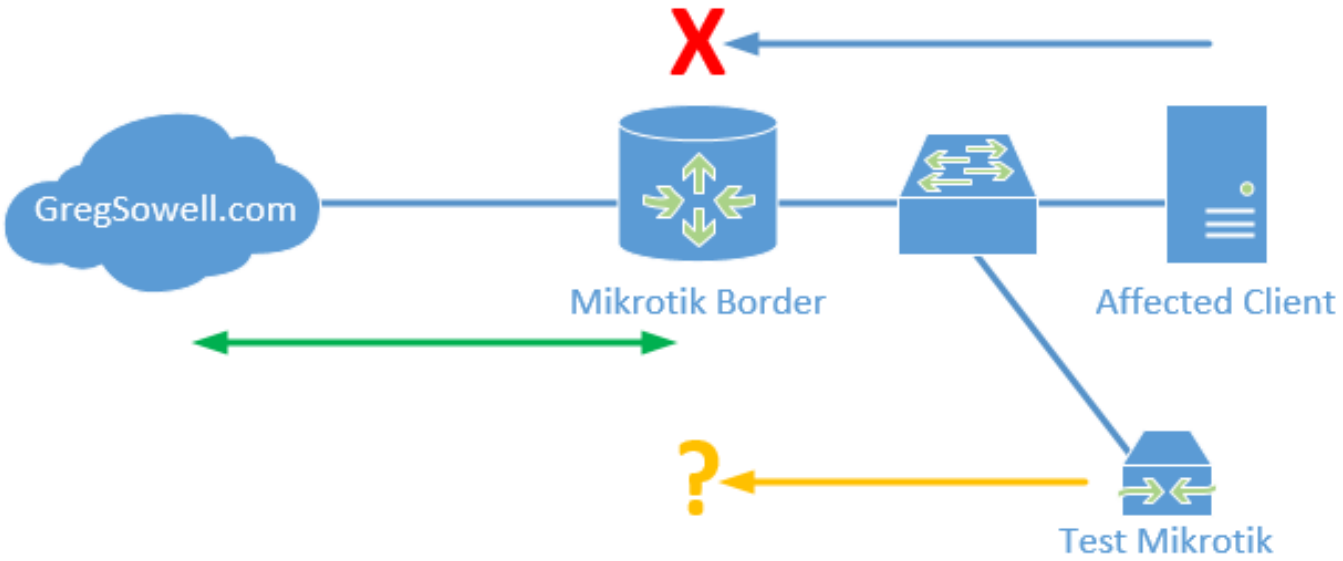
1. NATing issue
2. Firewall filter
3. Tunnel problem
4. Internal routing issue



Utilizing a test Mikrotik

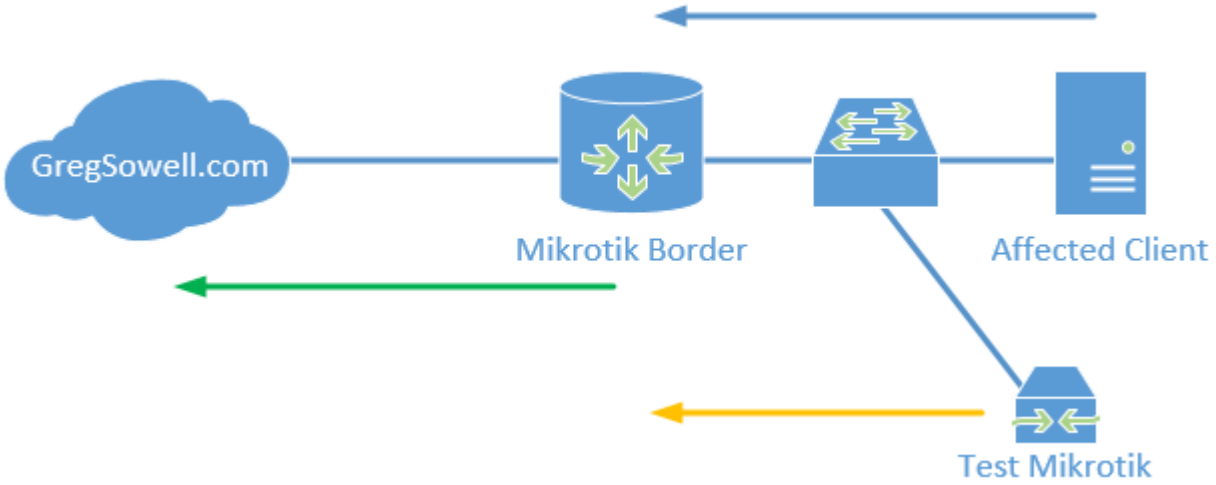
- "I can't reach GregSowell.com!"

1. Test outside of network *if possible*
2. Test at your desk
3. Use "Test" Mikrotik
4. Test from border



ICMP Testing

- Can the client ping the resource – (developed in 1983)
- Collect Trace Routes(1987) from client(both directions if possible), test Mikrotik, border, outside resource



ICMP Results

Traceroute (Running)

Traceroute To: gregsowell.com
Packet Size: 56
Timeout: 1000
Protocol: icmp
Port: 33434
Use DNS
Count:
Max Hops:
Src. Address:
Interface:
DSCP:
Routing Table:

Hop	Host	Loss	Sent	Last	Avg.	Best	Worst	Std. Dev.	History
1		100.0%	32	timeout					
2	173.219.229.76	0.0%	31	10.5ms	12.8	8.3	21.6	3.7	
3	173.219.241.242	0.0%	31	16.5ms	16.5	12.1	32.3	4.8	
4	173.219.227.49	32.3%	31	498.3ms	534.8	477.8	668.6	444.5	
5	213.248.90.101	0.0%	31	13.5ms	16.1	12.1	28.8	4.2	
6	213.248.102.198	0.0%	31	31.9ms	27.3	16.0	138.9	26.2	
7	209.189.244.90	0.0%	31	38.2ms	28.8	16.8	234.7	37.9	
8	209.189.228.152	0.0%	31	33.0ms	19.0	16.7	33.0	3.4	
9	209.189.228.152	0.0%	31	18.9ms	20.4	15.2	35.7	4.8	

Ping (Running)

General | Advanced

Start
Stop
Close
New Window

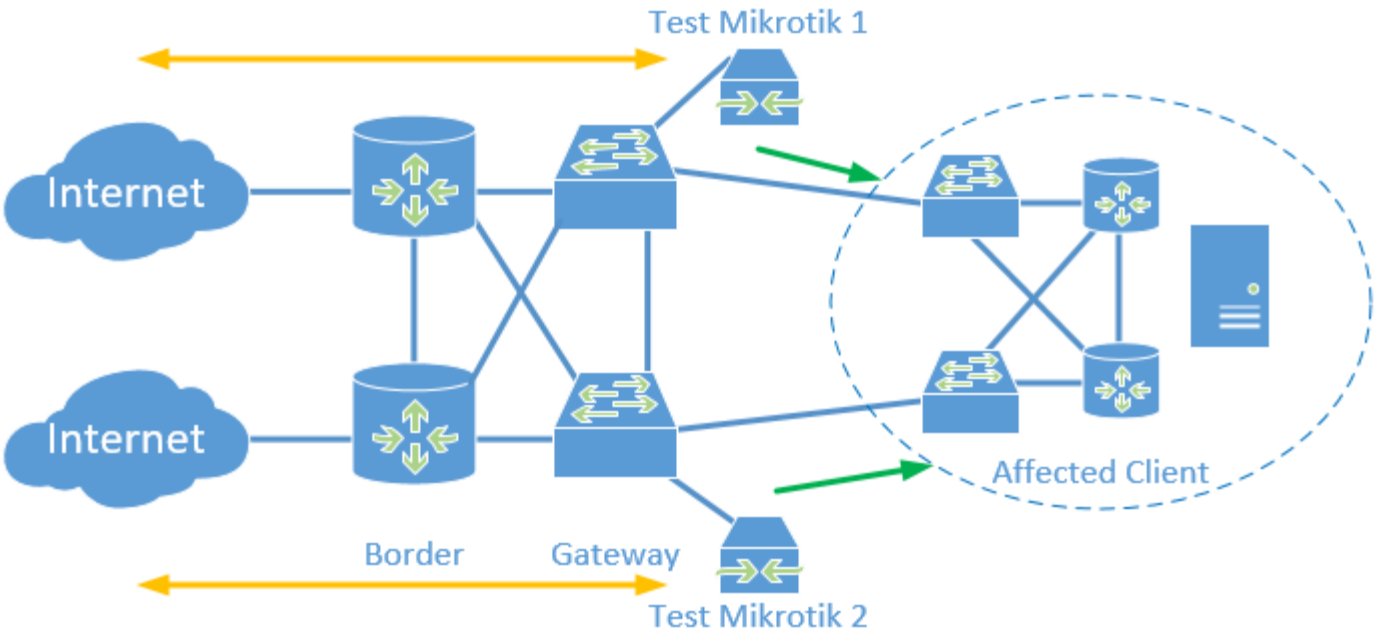
Ping To: gregsowell.com
Interface:
ARP Ping
Packet Count:
Timeout: 1000 ms

Seq #	Host	Time	Reply Size	TTL	Status
186	209.189.228.152	17ms	50	57	
187	209.189.228.152	20ms	50	57	
188	209.189.228.152	19ms	50	57	
189	209.189.228.152	18ms	50	57	
190	209.189.228.152	17ms	50	57	
191	209.189.228.152	17ms	50	57	
192	209.189.228.152	20ms	50	57	
193	209.189.228.152	19ms	50	57	
194	209.189.228.152	17ms	50	57	
195	209.189.228.152	17ms	50	57	
196	209.189.228.152	18ms	50	57	
197	209.189.228.152	21ms	50	57	
198	209.189.228.152	34ms	50	57	

199 items | 199 of 199 packets... | 0% packet loss | Min: 15 ms | Avg: 19 ms | Max: 35 ms

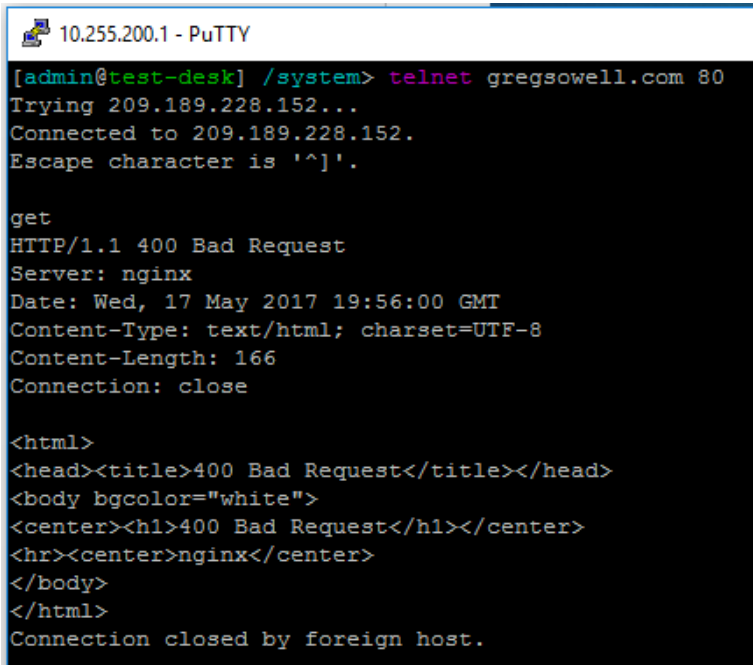
Multiple Gateways

- Test to failed resource
- Test to affected client



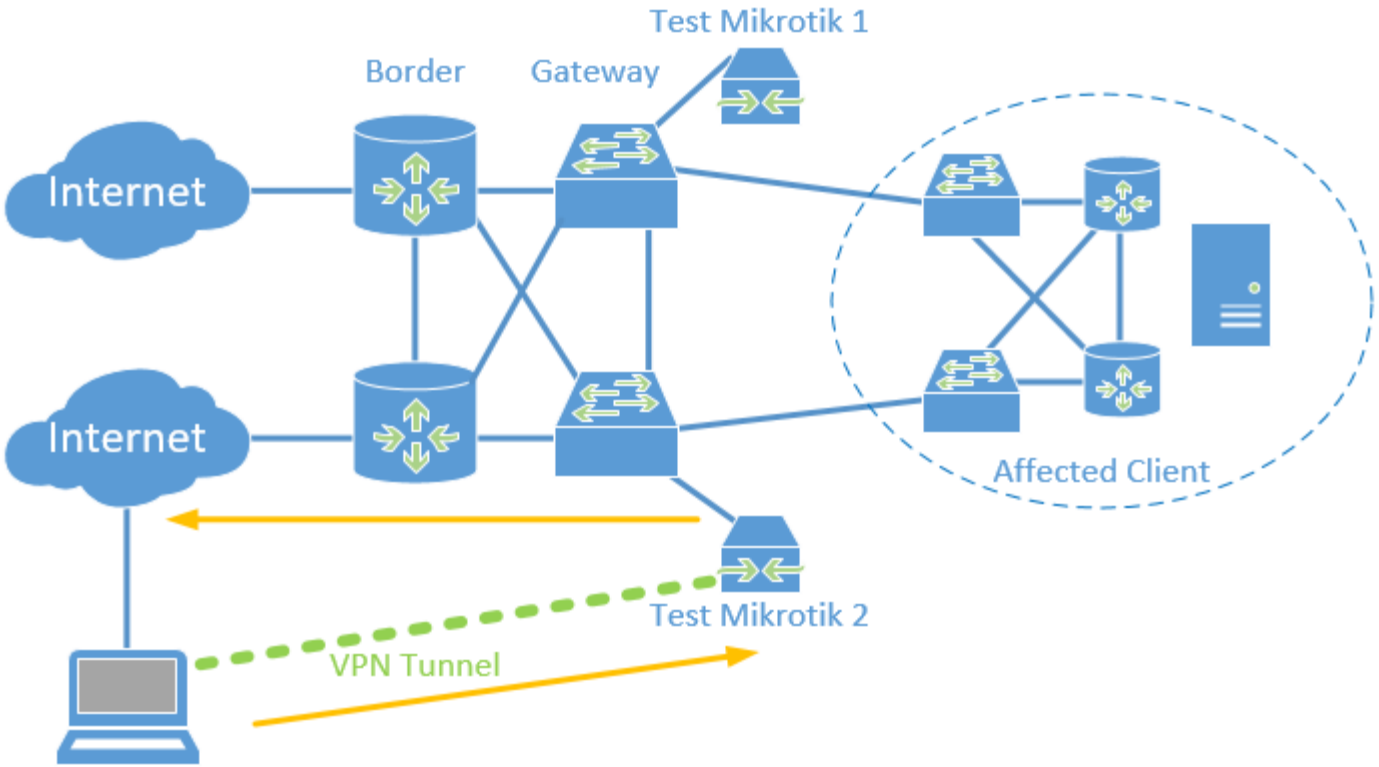
Telnet for TCP Port Testing

- Telnet to address on perspective port – desk, test mtk, border
  - Good for plain text protocols especially – www, telnet, SMTP, etc.
  - This can be paired with torch/packet sniffer to show two way communication.
  - Doesn't 100% duplicate the experience



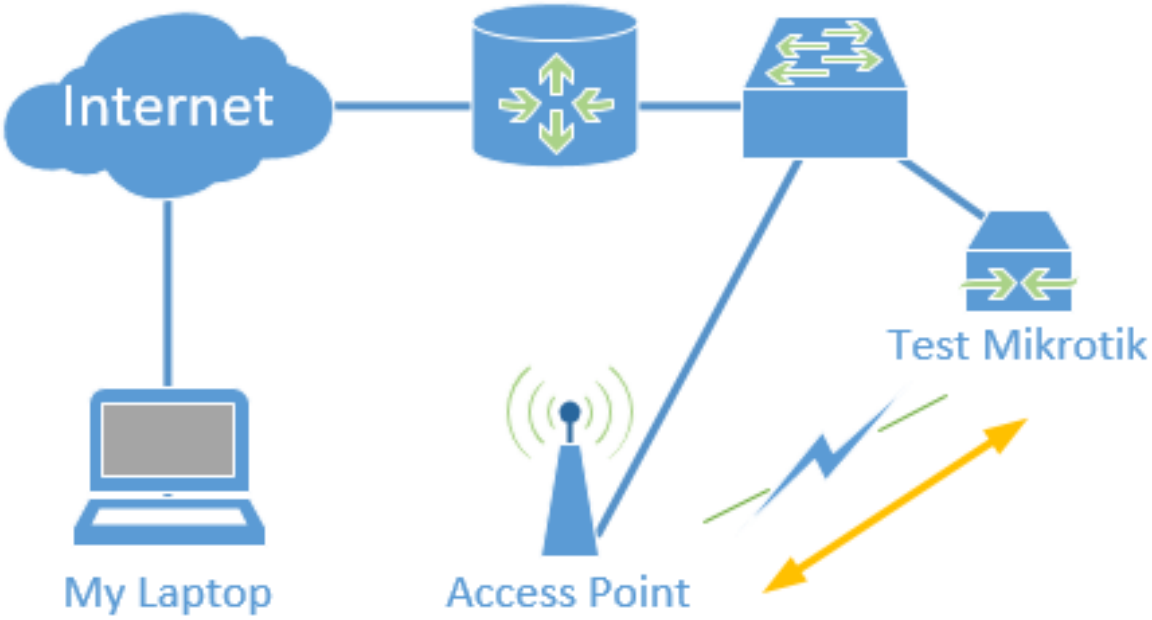
Testing Via VPN Tunnel

- Security isn't a concern, just test the resource(PPTP, L2TP, SSTP, whatever works)



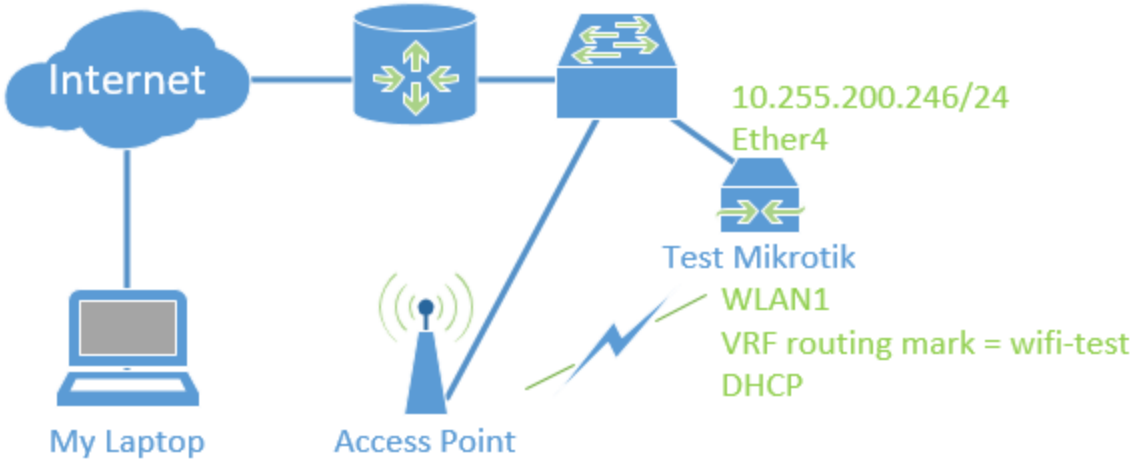
Test WiFi

- The WiFi is down…or nah?
- Scan function to look for other APs/look at frequency utilization
- Utilizing a VRF for network segregation

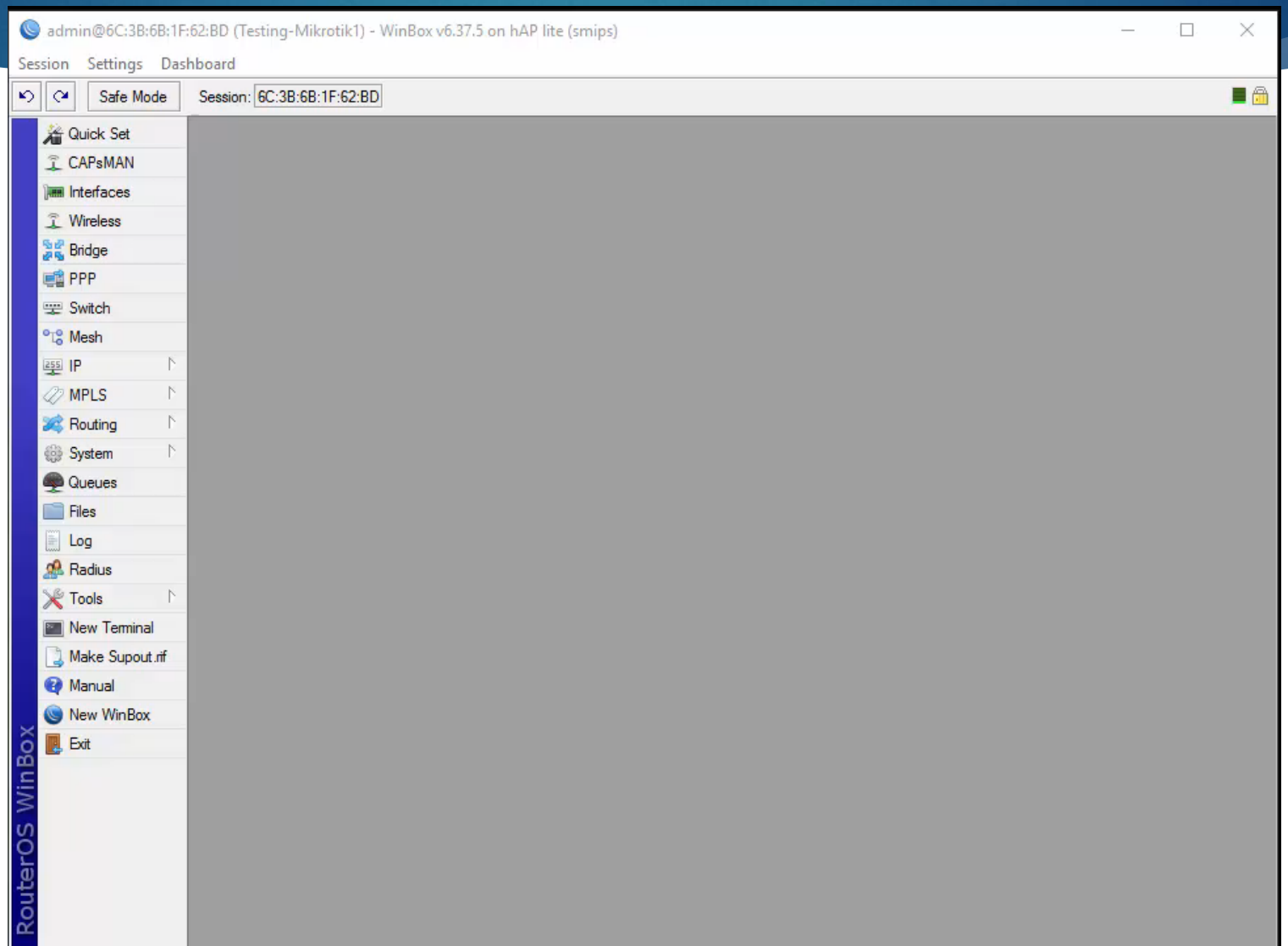


Test WiFi

- Put WLAN1 into a VRF with routing mark “wifi-test”
- Add DHCP client to run on WLAN1 interface
- Add masquerade rule for WLAN1 interface
- Connect WLAN1 to the SSID/AP in need of testing

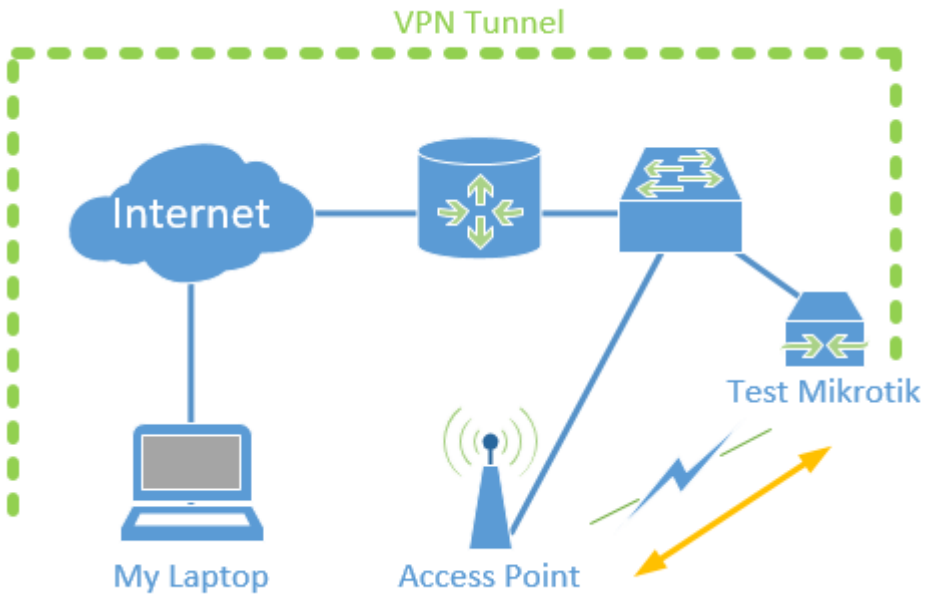


WiFi Test Demo



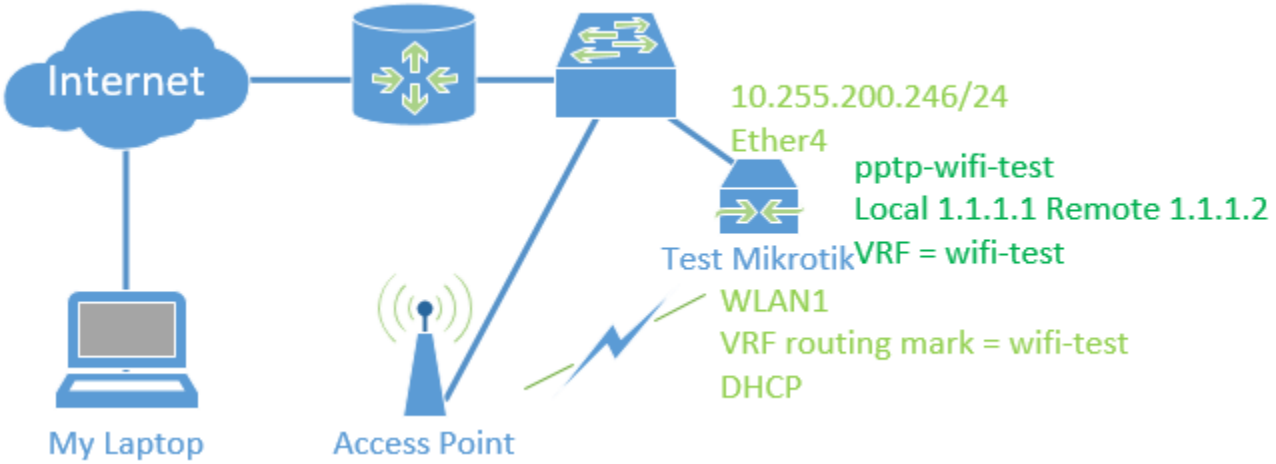
WiFi Test W/VPN Tunnel

- Test from the router like any WiFi client

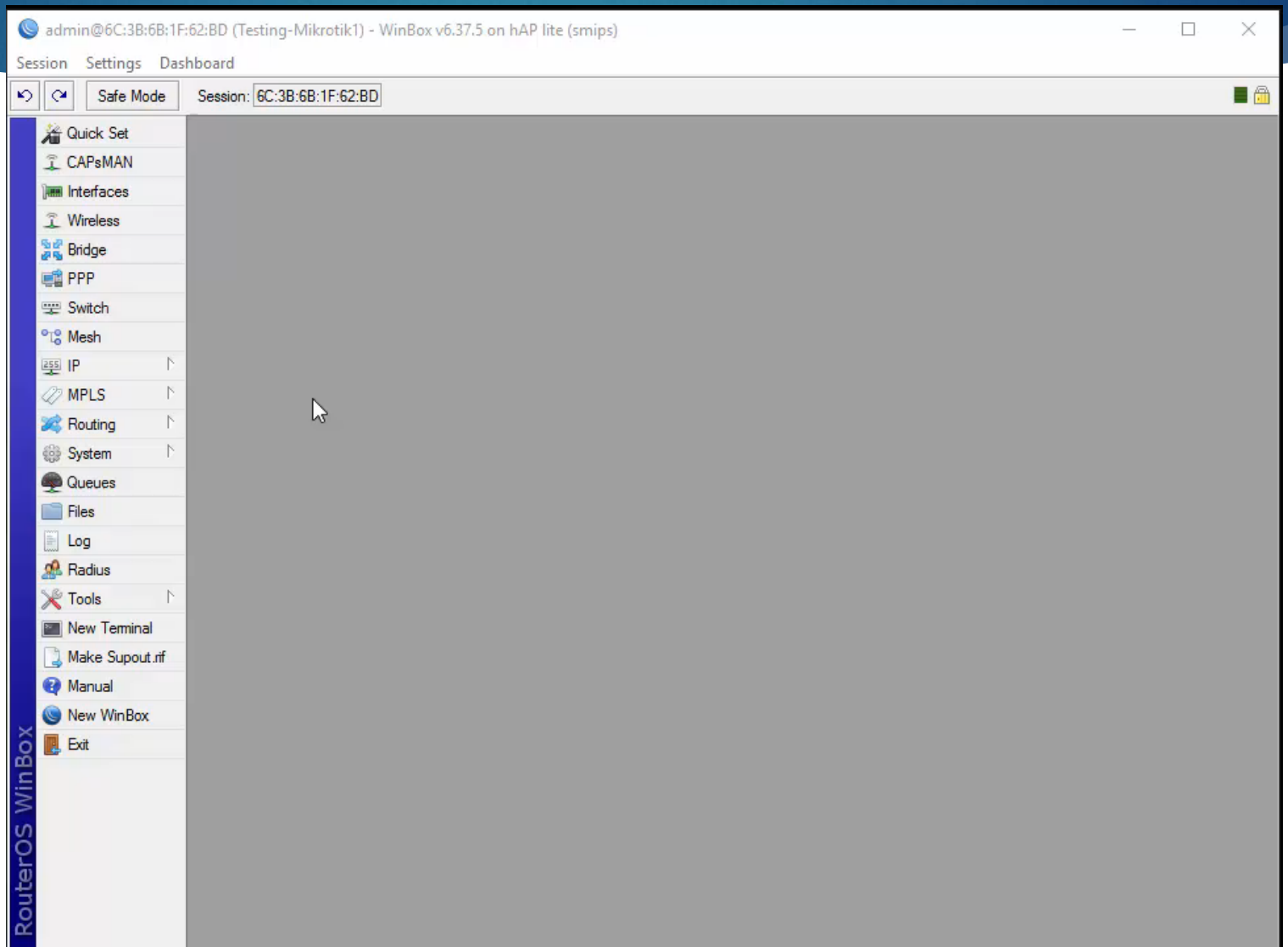


WiFi Test W/VPN Tunnel

- Enable pptp server
- Create ppp secret for testing/edit default-encryption profile
- Create pptp server interface “pptp-wifi-test”
- Add pptp interface to VRF

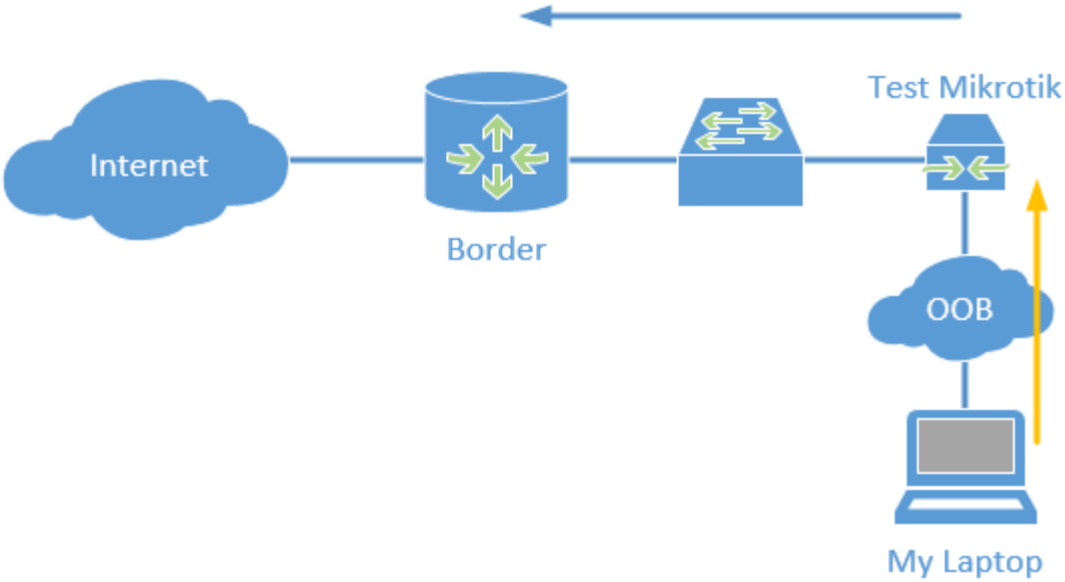


WiFi VPN Test Demo



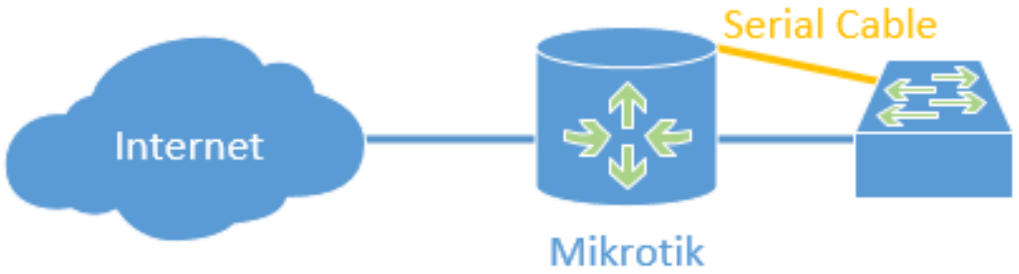
Utilize Out-Of-Band Management

- Allows for access to network during severe issues
- Use VRF for non-OOB interface(similar to wifi test config)
  - Ethernet in VRF instead of WLAN1

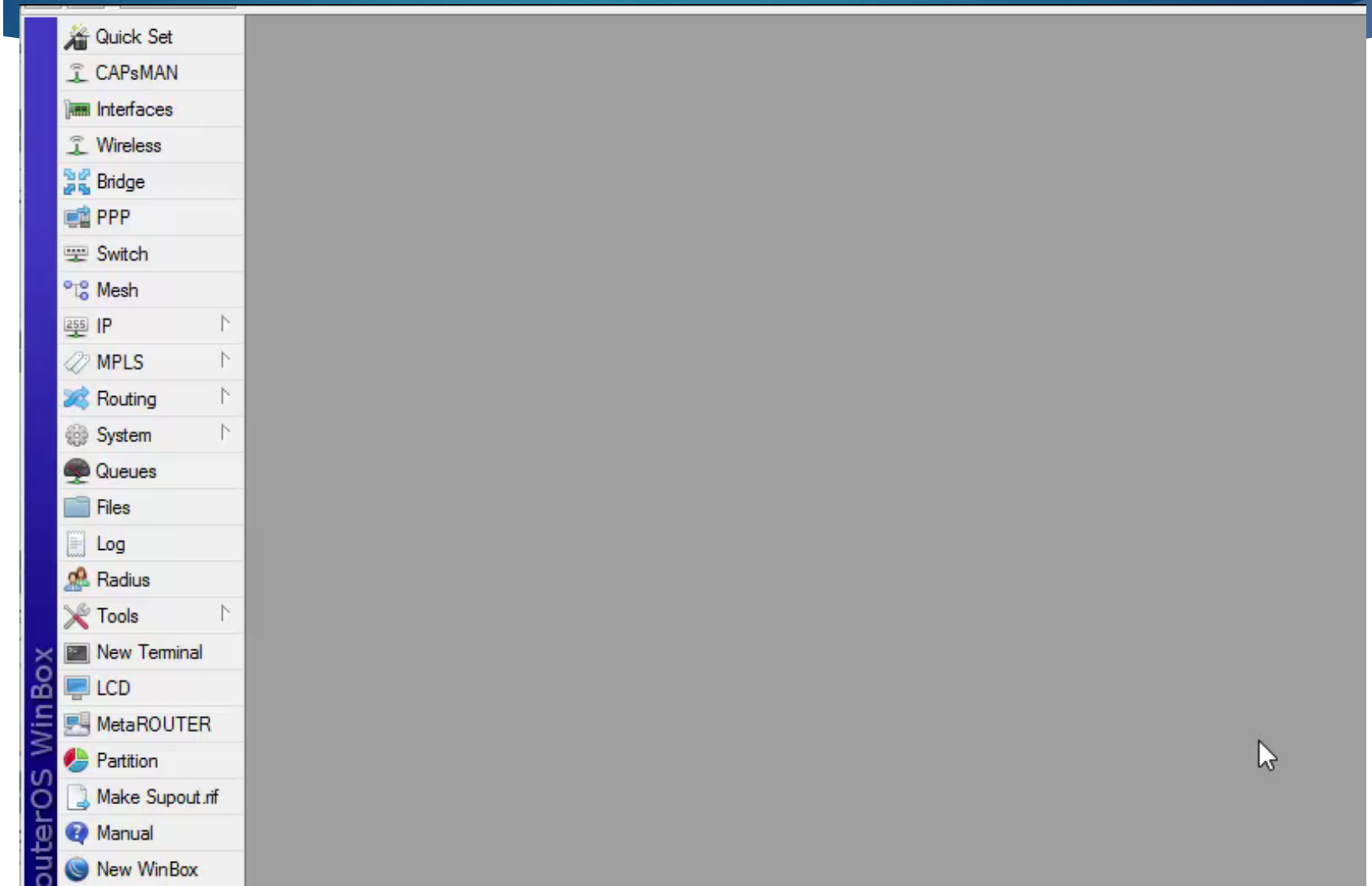


Mikrotik As Serial Console

- Connect Mikrotik serial port to another device
  - Available via CLI or direct access
- Disable serial port in system console
- Connect to system-terminal
- Ctrl-A + q quits
- Ctrl-A + r changes rates

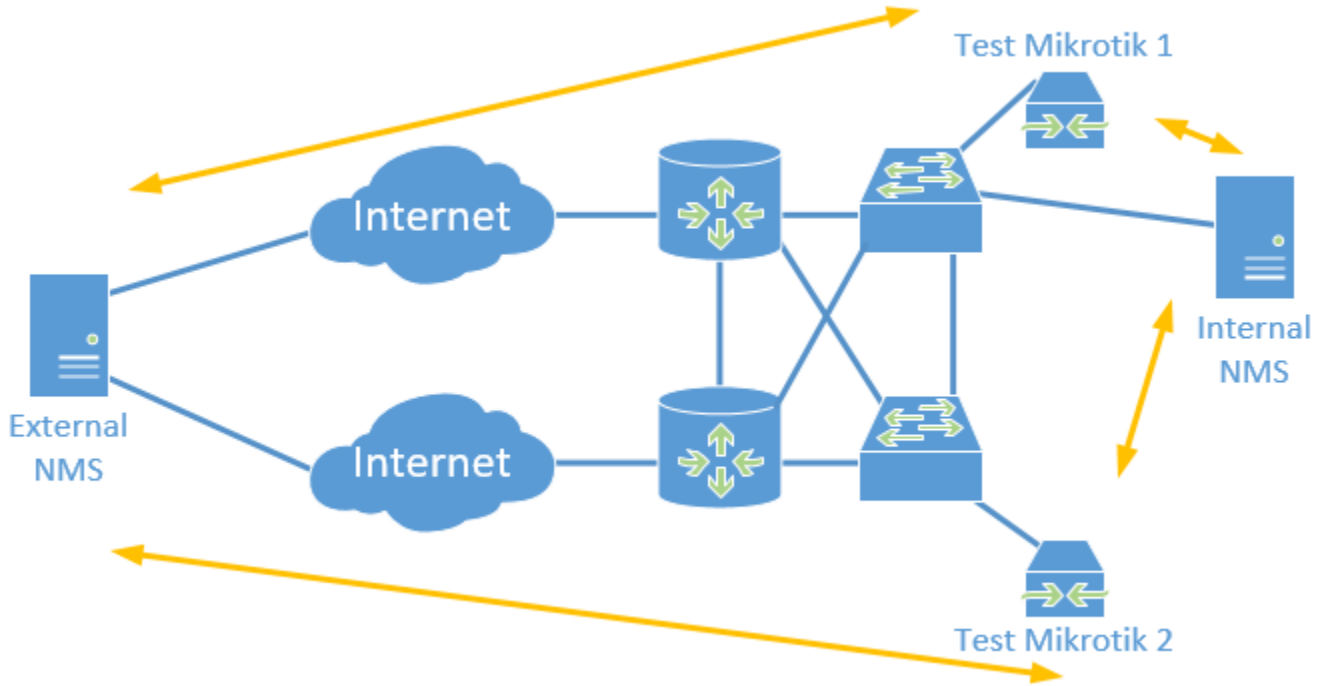


Serial Console Demo



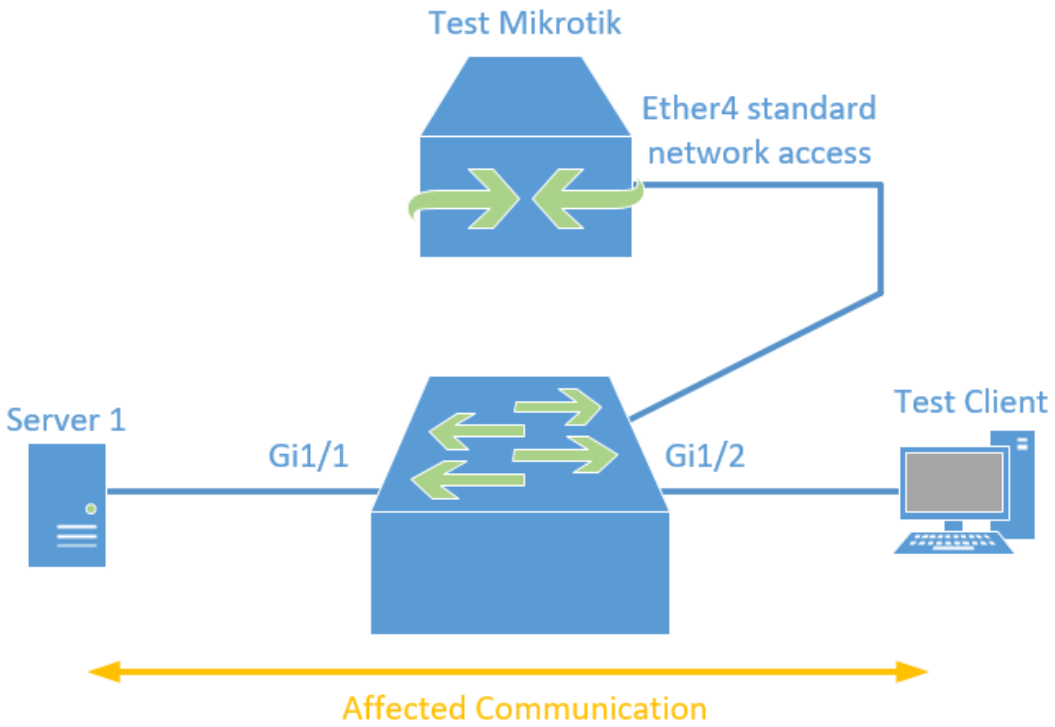
Probe Test Mikrotiks

- Probe test Mikrotiks via internal/external NMS



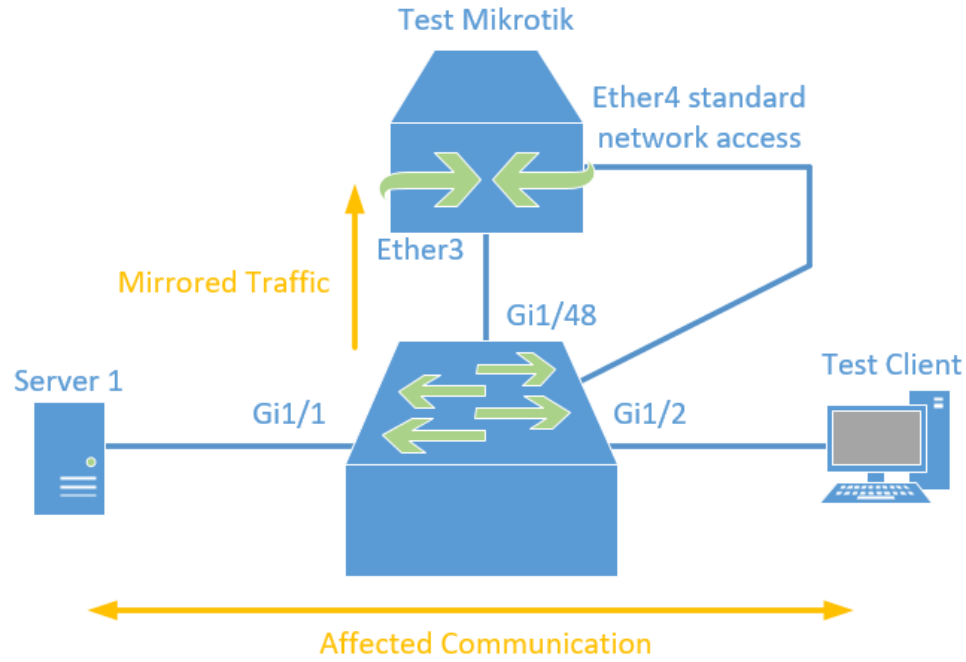
L2 Troubleshooting

- Communications issue on L2 segment
  - Not through router, how to test?

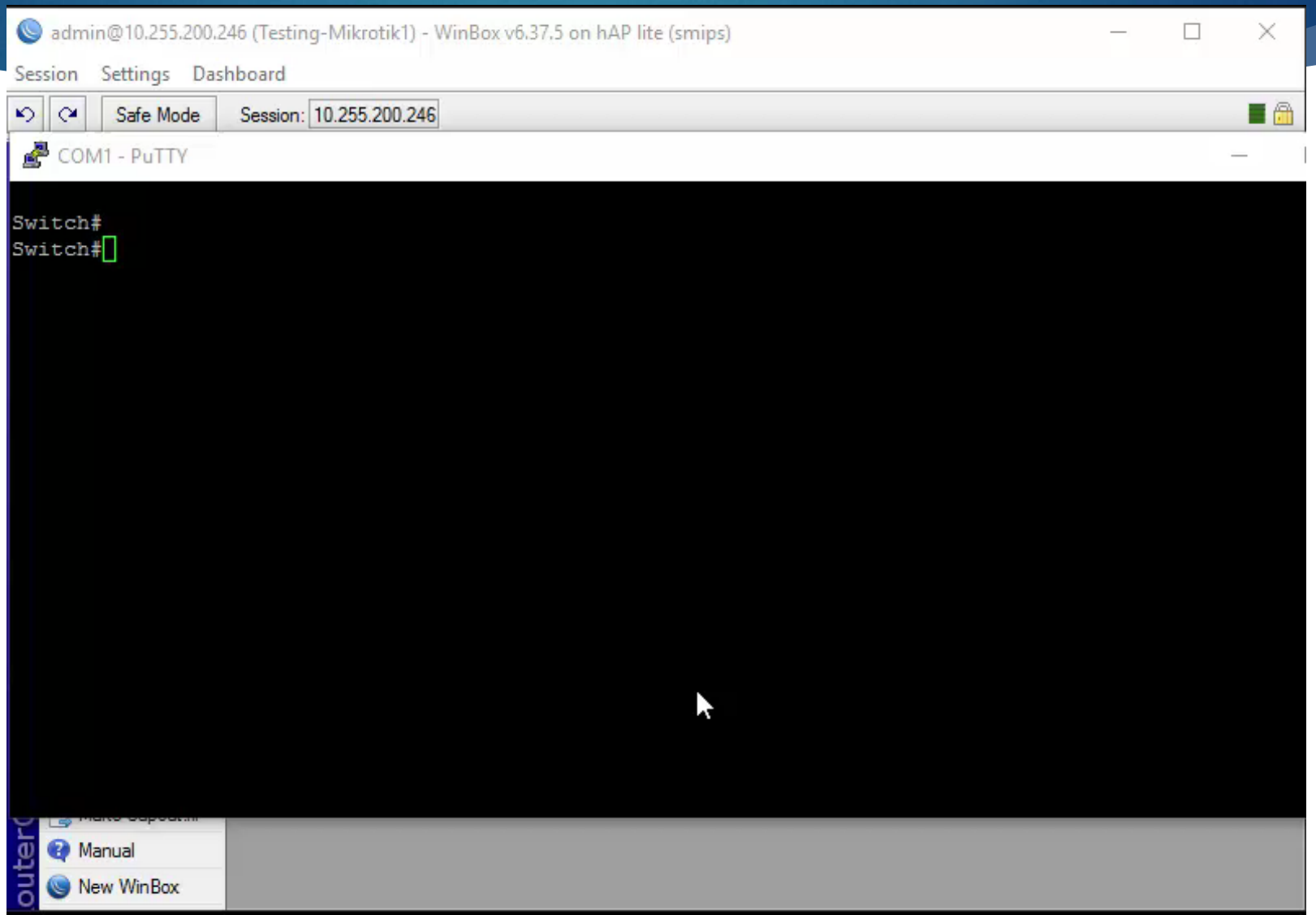


Sniff Mirrored Switch Traffic

- Configure Mirror/SPAN on switch
- Torch on Mikrotik
- Packet Sniff on Mikrotik

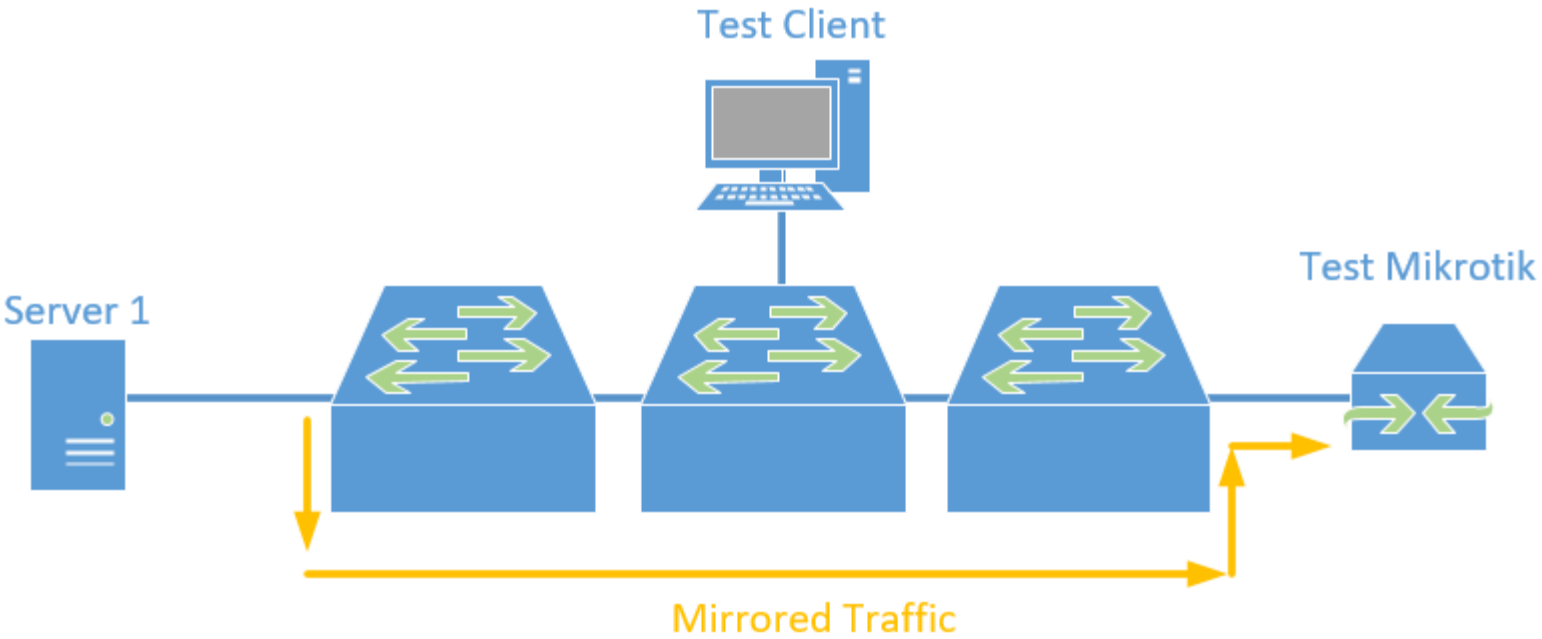


Sniff Mirrored Demo



RSPAN – Remote Mirroring

- Mirror any LAN switchport to the collection port of test Mikrotik



Questions?

One last thing, shake my hand, tell me your story, and buy the brothers a beer!

Thanks and happy routing!

Resources

- Greg's Blog
  - http://GregSowell.com
- TheBrothersWISP
  - http://thebrotherswisp.com/
- Link to script files
  - http://gregsowell.com/files/MUM2016Scripts.zip