Troubleshooting

Known problems

Default G/W for Igor

Igor can't find it's local network:

```
hxd@morgana ~/net> ssh -J igor.lan 192.168.50.159
channel 0: open failed: connect failed: open failed
stdio forwarding failed
kex_exchange_identification: Connection closed by remote host
Connection closed by UNKNOWN port 65535
```

Use web UI to access console and exec as root:

```
ip route add default via 192.168.100.1
```

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Connection closed by UNKNOWN port 65535
```

Use web UI to access console and exec as root:

```
ip route add default via 192.168.100.1
```

TCP dump

Installing on OpenWRT:

```
opkg update
opkg install tcpdump
```

DHCP

```
tcpdump -vvv -i any udp port 67 and port 68
```

Network Issues

Wi-Fi slow

Slow access to HOME from laptop on MGMT wi-fi.

UPDATE: 2023-10-28

Looks like laptop gets very low Rx rate (throughput from haru to Morgana) of ~17Mbit or even 6Mbit:

```
iperf3 -c 192.168.100.20 -p 2345 -R -t 9999
Connecting to host 192.168.100.20, port 2345
Reverse mode, remote host 192.168.100.20 is sending
[  5] local 192.168.100.161 port 42966 connected to 192.168.100.20 port 2345
[ ID] Interval           Transfer     Bitrate
[  5]   0.00-1.00   sec  1.75 MBytes  14.7 Mbits/sec
[  5]   1.00-2.00   sec  1.64 MBytes  13.8 Mbits/sec
[  5]   2.00-3.00   sec  1.64 MBytes  13.8 Mbits/sec
[  5]   3.00-4.00   sec  1.55 MBytes  13.0 Mbits/sec
[  5]   4.00-5.00   sec  1.62 MBytes  13.6 Mbits/sec
[  5]   5.00-6.00   sec  1.63 MBytes  13.6 Mbits/sec
^C[  5]   6.00-6.14   sec   252 KBytes  14.4 Mbits/sec
- - - - - - - - - - - - - - - - - - - - - - - - -
[ ID] Interval           Transfer     Bitrate
[  5]   0.00-6.14   sec  0.00 Bytes  0.00 bits/sec                  sender
[  5]   0.00-6.14   sec  10.1 MBytes  13.8 Mbits/sec                  receiver
```

At the same time I get like 60Mbit sending data out:

```
iperf3 -c 192.168.100.20 -p 2345 -t 9999
Connecting to host 192.168.100.20, port 2345
[  5] local 192.168.100.161 port 45200 connected to 192.168.100.20 port 2345
[ ID] Interval           Transfer     Bitrate         Retr  Cwnd
[  5]   0.00-1.00   sec  10.1 MBytes  85.0 Mbits/sec    0    469 KBytes
[  5]   1.00-2.00   sec  6.71 MBytes  56.3 Mbits/sec    0    469 KBytes
[  5]   2.00-3.00   sec  7.08 MBytes  59.4 Mbits/sec    0    502 KBytes
[  5]   3.00-4.00   sec  6.40 MBytes  53.7 Mbits/sec    0    529 KBytes
[  5]   4.00-5.00   sec  7.77 MBytes  65.2 Mbits/sec    0    529 KBytes
[  5]   5.00-6.00   sec  7.77 MBytes  65.2 Mbits/sec    0    529 KBytes
[  5]   6.00-7.00   sec  7.01 MBytes  58.8 Mbits/sec    0    587 KBytes
[  5]   7.00-8.00   sec  8.47 MBytes  71.0 Mbits/sec    0    621 KBytes
^C[  5]   8.00-8.40   sec  2.41 MBytes  50.4 Mbits/sec    0    621 KBytes
- - - - - - - - - - - - - - - - - - - - - - - - -
[ ID] Interval           Transfer     Bitrate         Retr
[  5]   0.00-8.40   sec  63.8 MBytes  63.7 Mbits/sec    0             sender
[  5]   0.00-8.40   sec  0.00 Bytes  0.00 bits/sec                  receiver
```

Haru reports low MCS values of 10 or lower.

Server	SSID	Channel	Client	Location	Client -> Server Mbit	Server <- Client Mbit	
Justine	Haru Legacy	6	L (android)	living room	25	25	
Justine	Haru Legacy	6	futaba	living room	21	9	
Justine	Haru Legacy	6	futaba	kitchen	25	10	
Justine	Haru Legacy	6	futaba	by Haru	26	11	
Justine	Haru Legacy	11	futaba	living room	26	11	
Justine	Haru MGMT	11	morgana	living room	53	23	
Justine	Haru Legacy	6	morgana	living room	50	11	
Justine	Haru	?	morgana	living room	89	72	
Justine	Haru (IE)	52	morgana	living room	95	95	
Justine	Haru MGMT (IE)	11	morgana	living room	92	92	

Justine	Haru MGMT (IE)	11	morgana	kitchen	95	94	
Justine	Haru (IE/1G)	11	morgana	kitchen	53	321	*1
Justine	Haru MTMT (IE/1G)	52	morgana	kitchen	44	92	*1

*1 - both washing and drying going on

Config changes:

- Set max power to 30dBm
  - channel switched to 5 (was 6): 15-25 on morgana and 13 on futaba
  - channel 11: 10 to 25 on moragna, 16 on futaba
- Setting region to IE(!):
  - 95/95 morgana -> justine over Haru channel 52
  - BINGO!: 92/92 on MGMT channel 11
  - This get me to 100Mbit; but I get much higher rates reported for wifi like 866/780 Mbit on Haru
- eth0 on Speed: 100Mb/s!
  - Looks like faulty cable but I also rebooted Haru so could be that as well, although on secondary port I was getting 1Gbit with laptop before restart.
  - goro reports only lan8 (haru) at 100Mbit/s but others at 1Gbit

```
Mon Oct 30 19:30:27 2023 kern.info kernel: [8584550.111467] RTL8380 Link change: status: 1, ports 8000
Mon Oct 30 19:30:28 2023 kern.info kernel: [8584550.992936] rtl83xx-switch switch@1b000000 lan8: Link is Up - 100Mbps/Full - flow control rx/tx
Mon Oct 30 19:30:28 2023 kern.info kernel: [8584551.003123] switch: port 8(lan8) entered blocking state
Mon Oct 30 19:30:28 2023 kern.info kernel: [8584551.009306] switch: port 8(lan8) entered forwarding state
Mon Oct 30 19:30:28 2023 daemon.notice netifd: Network device 'lan8' link is up
```

  - I have replaced the cable and now have 1Gbps

```
Mon Oct 30 20:32:29 2023 kern.info kernel: [8588272.090512] rtl83xx-switch switch@1b000000 lan8: Link is Up - 1Gbps/Full - flow control rx/tx
```

UPDATE: 2023-11-05

There was a packet drop between Haru and Goro. I have replaced the cable that goes from Goro to power supply (for Haru).

After replacing the cable link dropped to 100Mbps, reconnecting it got me 1Gbit.

I have also switched channels for 5GHz radio to use:

- channel: 104 (5520MHz)
- width: 160MHz

Now everything is very fast. In kitchen I got 356/407 Mbps using Haru!

UPDATE: 2023-11-11

After power issue the network went up in bad state.

I was getting 300Mbit one way and only 46Mbit and high packet loss the other way.

I decided to route another cable to Haru.

Looks like Primary interface is the only one that can take power so I left it connected to the power supply but disconnected it from the swich.

New, longer cable now connects switch to Haru Secondary port which is part of a bridge setup with Primary port so no configuration changes was needed.

Now I am getting up from Morgana in kitchen 657Mbit and down 334Mbit from Justine.

DHCP no responses, no IP assigned

Looks like Graphene OS uses random MAC for every connection attempt to Haru:

```
13:34:45.185659 IP 0.0.0.0.68 > 255.255.255.255.67: BOOTP/DHCP, Request from
b2:7f:5d:03:bf:61, length 288
13:34:46.144502 IP 0.0.0.0.68 > 255.255.255.255.67: BOOTP/DHCP, Request from
b2:7f:5d:03:bf:61, length 288
13:34:48.135488 IP 0.0.0.0.68 > 255.255.255.255.67: BOOTP/DHCP, Request from
b2:7f:5d:03:bf:61, length 288
13:34:52.237864 IP 0.0.0.0.68 > 255.255.255.255.67: BOOTP/DHCP, Request from
b2:7f:5d:03:bf:61, length 288
13:35:00.303513 IP 0.0.0.0.68 > 255.255.255.255.67: BOOTP/DHCP, Request from
b2:7f:5d:03:bf:61, length 288
13:35:10.015298 IP 0.0.0.0.68 > 255.255.255.255.67: BOOTP/DHCP, Request from
8a:ba:ab:74:33:23, length 288
13:35:11.105965 IP 0.0.0.0.68 > 255.255.255.255.67: BOOTP/DHCP, Request from
8a:ba:ab:74:33:23, length 288
13:35:13.292155 IP 0.0.0.0.68 > 255.255.255.255.67: BOOTP/DHCP, Request from
8a:ba:ab:74:33:23, length 288
```

```
13:35:17.375826 IP 0.0.0.0.68 > 255.255.255.255.67: BOOTP/DHCP, Request from
8a:ba:ab:74:33:23, length 288
13:35:24.972812 IP 0.0.0.0.68 > 255.255.255.255.67: BOOTP/DHCP, Request from
8a:ba:ab:74:33:23, length 288
13:43:05.585122 IP 0.0.0.0.68 > 255.255.255.255.67: BOOTP/DHCP, Request from
5a:88:7a:60:55:fd, length 288
13:43:06.607297 IP 0.0.0.0.68 > 255.255.255.255.67: BOOTP/DHCP, Request from
5a:88:7a:60:55:fd, length 288
13:43:08.473318 IP 0.0.0.0.68 > 255.255.255.255.67: BOOTP/DHCP, Request from
5a:88:7a:60:55:fd, length 288
13:43:12.547523 IP 0.0.0.0.68 > 255.255.255.255.67: BOOTP/DHCP, Request from
5a:88:7a:60:55:fd, length 288
13:43:21.310413 IP 0.0.0.0.68 > 255.255.255.255.67: BOOTP/DHCP, Request from
5a:88:7a:60:55:fd, length 288
13:43:27.942393 IP 0.0.0.0.68 > 255.255.255.255.67: BOOTP/DHCP, Request from
ca:9a:d3:13:a3:1c, length 288
13:43:28.860544 IP 0.0.0.0.68 > 255.255.255.255.67: BOOTP/DHCP, Request from
ca:9a:d3:13:a3:1c, length 288
13:43:30.774370 IP 0.0.0.0.68 > 255.255.255.255.67: BOOTP/DHCP, Request from
ca:9a:d3:13:a3:1c, length 288
13:43:34.697002 IP 0.0.0.0.68 > 255.255.255.255.67: BOOTP/DHCP, Request from
ca:9a:d3:13:a3:1c, length 288
13:43:43.292732 IP 0.0.0.0.68 > 255.255.255.255.67: BOOTP/DHCP, Request from
ca:9a:d3:13:a3:1c, length 288
```

This may lead to depletion of IP addresses (pool has up to 150 to allocate).

To clean up the pool SSH to Caroline:

```
service dnsmasq stop
mv /tmp/dhcp.leases /tmp/dhcp.leases.bac
service dnsmasq start
```

To mitigate the issue I have reduced leas time from 30 days to 24 hours.

VPN clients coming from outside are NAT'ed

They will looks like **justine**, not their actual VPN IP, since devices can use **caroline** as their default G/W.

No access to SERVER VLAN from HOME with justine G/W

VPN clients can access justine MGMT interface IP

```
11:06:10.811023 vpn   In  IP 172.17.1.10 > 192.168.100.2: ICMP echo request, id 44951, seq
814, length 64
11:06:10.811041 vpn   Out IP 192.168.100.2 > 172.17.1.10: ICMP echo reply, id 44951, seq 814,
length 64
```

I have set up more strict forwarding rules:

```
Chain FORWARD (policy DROP 52 packets, 4368 bytes)
num   pkts bytes target     prot opt in     out     source               destination
9       35  5441 ACCEPT     all  --  enp1s0 vpn     192.168.0.0/24       0.0.0.0/0
10      32  5244 ACCEPT     all  --  vpn    enp1s0  0.0.0.0/0            192.168.0.0/24
```

but this does not help.

This is because it is not going through FORWARD but through INPUT:

```
iptables -A INPUT -i vpn -d 192.168.100.0/24 -j LOG
```

```
[604557.640819] IN=vpn OUT= MAC= SRC=172.17.1.10 DST=192.168.100.2 LEN=84 TOS=0x00 PREC=0x00
TTL=64 ID=56812 DF PROTO=ICMP TYPE=8 CODE=0 ID=44951 SEQ=1064
```

Adding the above rule will block it. But is this normal that any IP assigned to any interface can be used when routing to a G/W?

> FIXED: I have added the following rule:

```
iptables -A INPUT ! -i mgmt -d 192.168.100.0/24 -j DROP
```

> FOLLOWUP: Is this the same for other devices? Try static route to them and access MGMT IP.

```
ip route add 192.168.100.50 via 192.168.0.50 dev wlan0
```

And it will ping on 192.168.100.50. So services bound only to 192.168.100.50 will be exposed to HOME VLAN devices.

> CONCLUSION: Binding to selected IP address does not protect service from being accessed from another network interface without extra firewall rule to prevent this!

What makes localhost (`lo`) interface special - services bound to it are not accessible from other interfaces? It has `local` routing tables set up by default.

Same problem for caroline

Same with **caroline:**

```
ip route add 192.168.100.1 via 192.168.0.1 dev wlan0
```

I can now access https://192.168.100.1/cgi-bin/luci/ while on HOME VLAN, probably will work form SERVER and any other as well!

> FIXED: DROP all INPUT on all interfaces apart from MGMT. Added ACCEPT rules for LAN, GUEST and SERVER VLANs for DHCP (UDP 67), DNS (TCP/UDP: 53) and ICMP.

> I could not use the negative interface setup as in case of justine. Probably should use default INPUT DROP on justine as well and only allow mgmt interface traffic as well.

Would this be same for goro and haru?

They don't have IP on HOME network but they have interface. Injecting packet for MGMT IP to their HOME interface may be (using MAC/ARP) possible but they would not respond since they have no routing to HOME network?

Access to web services from internal network

Need to manually add static route for devices using default DHCP G/W (justine) when going to local server services like video.hexadust.net.

```
ip route add 46.7.126.16 dev eth0 via 192.168.0.1
ping video.hexadust.net
```

Things to try:

1. Try to push static routes from DHCP - this did not work for some reason

2. Set up static route on justine
3. Set up SNAT on justnie
4. Use bridge layer DNAT: https://ebtables.netfilter.org/br_fw_ia/br_fw_ia.html
5. Set up split DNS
    1. `video.hexadust.net 192.168.50.159`
    2. This would require justine to forward to SERVER VLAN since ann uses 0.2 as default G/W
6. Set up separate DNS for internal access

No more IPs on DHCP

Looks like Horizon box eats up leases: https://www.boards.ie/discussion/2057720465/my-new-virgin-media-stb-issued-two-lan-i-ps

I have removed leases from /var/lib/dhcp.lease file on caroline.

Justine access is laggy; DNS is slow

Happens after OpenWRT updates.

Try disconnecting and connecting network cables for Haru and uplink on goro.

UPDATE: 2023-11-05: I have replaced both cables that connect Haru and Goro. The link tends to drop to 100Mbit if Goro end is disconnected, reconnecting fixes it.

Igor does not set it's default route after boot

While it is configured in web UI it is not taking effect on boot and results in it unable to find local network. VMs stuff will work OK though.

TODO

YunoHost access to internet via default IP instead of VPN

Not good for IRC etc.

1. Clone the VM and put copy in HOME VLAN, remove public web stuff from it, remove web clients from SERVER VLAN one.
2. Better yet. Create DMZ VLAN that has only access to Caroline and will run `www` server. Use SERVER VLAN to only have access to Justine, so out traffic goes out of the VPN, add interface to YunoHost that is in DMZ VLAN so that it can get requests from www server, but have it default G/W to use Justine over DMZ?
3. Create SANDBOX VLAN that only has access to justine as G/W.
4. Create VM that connects to Justinve via WireGuard and pit it in HOME network and in virtual network that it will be G/W for, put other VMs in that sandbox virtual network.
5. Create VM that uses SERVER VLAN to make connection to Mullvad (dedicated key) and act as a G/W for sandbox virtual network for other VMs.

24/09: WWW access very slow

Downloading file from www server (Caddy) is slow.

Phone over 5G with VPN (to justine): ~1-2 MB/s

Phone over Haru with VPN: ~2-3 MB/s

From laptop (VPN + Mullvad): ~3 MB/s [NOTE: Even using local SERVER IP it goes over Mullvad IP!]

```
> curl --insecure -o /dev/null --connect-to 192.168.50.159:443
https://jpastuszek.net/links/data --http1.1
  % Total    % Received % Xferd  Average Speed   Time    Time     Time  Current
                                 Dload  Upload   Total   Spent    Left  Speed
  1  412M    1 5216k    0     0  50859      0  2:21:39  0:01:45  2:19:54 63055
```

From laptop but using port 8080 (darkhttpd) and no TLS: ~38 MB/s [NOTE: NAT'ed by 192.168.0.2 justine]

```
> curl --insecure -o /dev/null http://192.168.50.159:8080/links/data
  % Total    % Received % Xferd  Average Speed   Time    Time     Time  Current
                                 Dload  Upload   Total   Spent    Left  Speed
100  412M  100  412M    0     0  37.9M      0  0:00:10  0:00:10 --:--:-- 38.0M
```

From SDF: ~1 MB/s

```
$ curl -o /dev/null https://jpastuszek.net/links/data --http1.1
  % Total    % Received % Xferd  Average Speed   Time    Time     Time  Current
```

```
                                 Dload  Upload   Total   Spent    Left  Speed
  5  412M    5 22.8M    0     0   884k      0  0:07:57  0:00:26  0:07:31  957k^C

$ curl -o /dev/null https://jpastuszek.net/links/data
  % Total    % Received % Xferd  Average Speed   Time    Time     Time  Current
                                 Dload  Upload   Total   Spent    Left  Speed
  2  412M    2 11.9M    0     0   796k      0  0:08:49  0:00:15  0:08:34 1007k
```

From Igor VM in the same VLAN (SERVER): ~85 MB/s

```
hxd@void ~> curl --insecure -o /dev/null --connect-to 192.168.50.159:443
https://jpastuszek.net/links/data --http1.1
  % Total    % Received % Xferd  Average Speed   Time    Time     Time  Current
                                 Dload  Upload   Total   Spent    Left  Speed
100  412M  100  412M    0     0  84.8M      0  0:00:04  0:00:04 --:--:-- 87.0M
hxd@void ~> curl --insecure -o /dev/null --connect-to 192.168.50.159:443
https://jpastuszek.net/links/data
  % Total    % Received % Xferd  Average Speed   Time    Time     Time  Current
                                 Dload  Upload   Total   Spent    Left  Speed
100  412M  100  412M    0     0  83.7M      0  0:00:04  0:00:04 --:--:-- 85.6M
```

Same but to dakrhttpd (no TLS): ~700 MB/s:

```
> curl --insecure -o /dev/null http://192.168.50.159:8080/links/data
  % Total    % Received % Xferd  Average Speed   Time    Time     Time  Current
                                 Dload  Upload   Total   Spent    Left  Speed
100  412M  100  412M    0     0   691M      0 --:--:-- --:--:-- --:--:--  691M
```

iperf3 between laptop and www: 300 Mbit/s, 37 MB/s [NOTE: it is NAT'ed by 192.168.0.2 justine]

```
hxd@morgana /tmp [1]> iperf3 -c 192.168.50.159 -t 9999 -R
Connecting to host 192.168.50.159, port 5201
Reverse mode, remote host 192.168.50.159 is sending
[  5] local 172.17.1.10 port 42964 connected to 192.168.50.159 port 5201
[ ID] Interval           Transfer     Bitrate
[  5]   0.00-1.00   sec  34.2 MBytes   287 Mbits/sec
[  5]   1.00-2.00   sec  33.1 MBytes   278 Mbits/sec
[  5]   2.00-3.00   sec  35.1 MBytes   295 Mbits/sec
[  5]   3.00-4.00   sec  35.0 MBytes   294 Mbits/sec
^C[  5]   4.00-4.17   sec  5.75 MBytes   289 Mbits/sec
- - - - - - - - - - - - - - - - - - - - - - - - -
```

```
[ ID] Interval           Transfer     Bitrate
[  5]   0.00-4.17   sec  0.00 Bytes  0.00 bits/sec                  sender
[  5]   0.00-4.17   sec   143 MBytes   288 Mbits/sec                  receiver
iperf3: interrupt - the client has terminated
hxd@morgana /tmp [1]> iperf3 -c 192.168.50.159 -t 9999
Connecting to host 192.168.50.159, port 5201
[  5] local 172.17.1.10 port 34608 connected to 192.168.50.159 port 5201
[ ID] Interval           Transfer     Bitrate         Retr  Cwnd
[  5]   0.00-1.00   sec  48.1 MBytes   403 Mbits/sec   35    508 KBytes
[  5]   1.00-2.00   sec  51.8 MBytes   434 Mbits/sec    0    577 KBytes
[  5]   2.00-3.00   sec  55.4 MBytes   465 Mbits/sec    0    643 KBytes
^C[  5]   3.00-3.69   sec  38.0 MBytes   462 Mbits/sec    0    684 KBytes
- - - - - - - - - - - - - - - - - - - - - - - - -
[ ID] Interval           Transfer     Bitrate         Retr
[  5]   0.00-3.69   sec   193 MBytes   439 Mbits/sec   35             sender
[  5]   0.00-3.69   sec  0.00 Bytes  0.00 bits/sec                  receiver
iperf3: interrupt - the client has terminated
```

```
root@www ~# iperf3 -s
-----------------------------------------------------------
Server listening on 5201 (test #1)
-----------------------------------------------------------
^[[1;5CAccepted connection from 192.168.0.2, port 42948
[  5] local 192.168.50.159 port 5201 connected to 192.168.0.2 port 42964
[ ID] Interval           Transfer     Bitrate         Retr  Cwnd
[  5]   0.00-1.00   sec  36.2 MBytes   304 Mbits/sec   99    514 KBytes
[  5]   1.00-2.00   sec  33.4 MBytes   280 Mbits/sec   64    419 KBytes
[  5]   2.00-3.00   sec  34.5 MBytes   289 Mbits/sec    0    477 KBytes
[  5]   3.00-4.00   sec  35.0 MBytes   294 Mbits/sec    0    528 KBytes
[  5]   3.00-4.00   sec  35.0 MBytes   294 Mbits/sec    0    528 KBytes
- - - - - - - - - - - - - - - - - - - - - - - - -
[ ID] Interval           Transfer     Bitrate         Retr
[  5]   0.00-4.00   sec   145 MBytes   304 Mbits/sec  163             sender
iperf3: the client has terminated
-----------------------------------------------------------
Server listening on 5201 (test #2)
-----------------------------------------------------------
Accepted connection from 192.168.0.2, port 34604
[  5] local 192.168.50.159 port 5201 connected to 192.168.0.2 port 34608
[ ID] Interval           Transfer     Bitrate
```

```
[  5]   0.00-1.00   sec  44.8 MBytes   375 Mbits/sec
[  5]   1.00-2.00   sec  52.2 MBytes   438 Mbits/sec
[  5]   2.00-3.00   sec  54.5 MBytes   457 Mbits/sec
[  5]   2.00-3.00   sec  54.5 MBytes   457 Mbits/sec
- - - - - - - - - - - - - - - - - - - - - - - - -
[ ID] Interval           Transfer     Bitrate
[  5]   0.00-3.00   sec   191 MBytes   533 Mbits/sec                  receiver
iperf3: the client has terminated
-----------------------------------------------------------
Server listening on 5201 (test #3)
-----------------------------------------------------------
```

Some requests from Morgana to WWW are very slow, like 45KB/s while most are fast 3MB/s:

```
 146.70.189.27:36190   192.168.50.159:443    ESTABLISHED  0s     82 KB/s

hxd@morgana /tmp> time curl -o /dev/null https://wiki.hexadust.net/attachments/15
  % Total    % Received % Xferd  Average Speed   Time    Time     Time  Current
                                 Dload  Upload   Total   Spent    Left  Speed
100 3460k  100 3460k    0     0  53464      0  0:01:06  0:01:06 --:--:-- 78502


_____________________________________________________
Executed in   66.28 secs      fish           external
   usr time  100.61 millis   56.00 micros  100.55 millis
   sys time   60.88 millis  705.00 micros   60.17 millis

hxd@morgana /tmp> time curl -o /dev/null https://wiki.hexadust.net/attachments/15
  % Total    % Received % Xferd  Average Speed   Time    Time     Time  Current
                                 Dload  Upload   Total   Spent    Left  Speed
100 3460k  100 3460k    0     0  2588k      0  0:00:01  0:00:01 --:--:-- 2590k


_____________________________________________________
Executed in    1.35 secs      fish           external
   usr time   52.86 millis    0.00 micros   52.86 millis
   sys time   29.61 millis  748.00 micros   28.86 millis

hxd@morgana /tmp> time curl -o /dev/null https://wiki.hexadust.net/attachments/15
  % Total    % Received % Xferd  Average Speed   Time    Time     Time  Current
                                 Dload  Upload   Total   Spent    Left  Speed
 75 3460k   75 2598k    0     0  55139      0  0:01:04  0:00:48  0:00:16 28232^C
```

```
_____________________________________________________
Executed in   48.58 secs      fish           external
   usr time   71.12 millis  567.00 micros   70.56 millis
   sys time   54.87 millis  196.00 micros   54.67 millis
```

Requests to kernel.org are fine.

Requests from sanbox-gw are also slow - they go via Mullvad that is deployed on sandbox-gw (not via justine):

```
 146.70.189.27:35562   192.168.50.159:443    ESTABLISHED  0s     48 KB/s
> time curl -o /dev/null https://wiki.hexadust.net/attachments/15
  % Total    % Received % Xferd  Average Speed   Time    Time     Time  Current
                                 Dload  Upload   Total   Spent    Left  Speed
 73 3460k   73 2544k    0     0  59686      0  0:00:59  0:00:43  0:00:16 62609^C
_____________________________________________________
Executed in   44.33 secs      fish           external
   usr time   67.40 millis  676.00 micros   66.72 millis
   sys time   37.12 millis    0.00 micros   37.12 millis
```

Using local route to go directly to caroline does fix the issue, so going through the internet is where the slowdown happens.

```
ip route add 46.7.126.16 dev wlp52s0 via 192.168.0.1
```

Things to try:

1. Change VPN exit node
2. Try access from non-VPN connection

Fast.com (over VPN) shows 300Mbit down and 1.2 Mbit up - this explains slow download from the server (as it is upload to the internet). Without VPN I get 300Mbit / 48Mbit - so the slow down is due to VPN.

Ping with max MTU:

```
ping -4 -M do -c 20 -s 1392 jpastuszek.net
```

Detailed connection info:

```
ss -ntpi
```

Update 2024-10-11:

- MTU looks good and is 1420 with MSS 1368.
- Ping packet loss is 30-40%
- When connections is slow we get 16% bytes re-transmitted; good connection has 0.2%
- Bad ping packet loss is on both IE endpoints

FIX: Changing VPN server did the trick.

Slow Jitsi Meet transmission

Sending out 170KB/s and receiving stream of 64KB/s (512kbit/s).

- Ann is set up to statically route to video.hexadust.net (public IP) to caroline (default G/W is justine)
- I have noticed that UDP 10000 traffic goes directly to SERV VLAN (yunohost/192.168.50.137) so it bypasses the static route and ends up going to justine
  - Added additional static route to forward directly to caroline and confirmed with tcpdump (ether host) that it works
  - This did not improve traffic/quality
  - It would have been going to justine and there to caroline I suppose, so only extra hop; it would be NAT'ed on justine though: `iptables -t nat -A POSTROUTING ! -d 192.168.0.0/24 -o enp1s0 -j MASQUERADE`
  - How did Chrome know about local SERV IP? WebRTC shares the IP?

For morgana UDP video traffic goes:

1. To VPN connection to Justine
2. On exits on justine and is NAT'ed through HOME VLAN with destination IP of younohost
3. It should go to caroline
4. Caroline routes it over SERV VLAN to younohost

With static route I can bypass VPN tunnel to justine and go directly to caroline to be VLAN routed to younohost

No 5GHz WiFi

```
phy0-ap0: DFS-RADAR-DETECTED freq=5520
```

I got radar detection triggered and after 30 minutes it tried to turn it back off but was failing; manually restarting the interface fixed the issue:

```
Mon Nov 11 20:31:03 2024 daemon.notice hostapd: phy0-ap0: DFS-NOP-FINISHED freq=5500
ht_enabled=0 chan_offset=0 chan_width=0 cf1=5500 cf2=0
```

```
Mon Nov 11 20:31:03 2024 daemon.err hostapd: could not get valid channel
Mon Nov 11 20:31:03 2024 daemon.notice hostapd: phy0-ap0: interface state DFS->DFS
Mon Nov 11 20:31:03 2024 daemon.notice hostapd: phy0-ap0: DFS-NOP-FINISHED freq=5520
ht_enabled=0 chan_offset=0 chan_width=0 cf1=5520 cf2=0
Mon Nov 11 20:31:03 2024 daemon.notice hostapd: phy0-ap0: interface state DFS->DFS
Mon Nov 11 20:31:03 2024 daemon.notice hostapd: phy0-ap0: DFS-CAC-START freq=5520 chan=104
sec_chan=-1, width=0, seg0=114, seg1=0, cac_time=60s
Mon Nov 11 20:31:03 2024 daemon.err hostapd: 20/40 MHz: center segment 0 (=114) and center
freq 1 (=5510) not in sync
Mon Nov 11 20:31:03 2024 daemon.err hostapd: Can't set freq params
Mon Nov 11 20:31:03 2024 daemon.err hostapd: DFS start_dfs_cac() failed, -1
Mon Nov 11 20:31:03 2024 daemon.notice hostapd: phy0-ap0: DFS-NOP-FINISHED freq=5540
ht_enabled=0 chan_offset=0 chan_width=0 cf1=5540 cf2=0
Mon Nov 11 20:31:03 2024 daemon.notice hostapd: phy0-ap0: interface state DFS->DFS
Mon Nov 11 20:31:03 2024 daemon.notice hostapd: phy0-ap0: DFS-CAC-START freq=5520 chan=104
sec_chan=-1, width=0, seg0=114, seg1=0, cac_time=60s
Mon Nov 11 20:31:03 2024 daemon.err hostapd: 20/40 MHz: center segment 0 (=114) and center
freq 1 (=5510) not in sync
Mon Nov 11 20:31:03 2024 daemon.err hostapd: Can't set freq params
Mon Nov 11 20:31:03 2024 daemon.err hostapd: DFS start_dfs_cac() failed, -1
```

This is a reported issue:

- https://forum.openwrt.org/t/5ghz-vht160-on-channel-100-breaks-on-radar-dfs-event-and-never-comes-back/165274
- https://forum.openwrt.org/t/center-segment-0-106-and-center-freq-1-5510-not-in-sync/164185

I have changed from channel `104` to `100` which is the start of 160MHz wide channel that I use: https://en.wikipedia.org/wiki/List_of_WLAN_channels. Not sure if this will help, the Wikipedia table suggest the center frequency for 160MHz wide channel is 114 but it cannot be selected. Looks like channel list is made for 20MHz wide channels. So selection 100 puts it as the first 20MHz channel for the 160MHz channel. *Channel Analysis* shows that my radio uses channels 100 through to 128 which matches the table on Wikipedia.

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