r/WireGuard • 3 yr. ago
bobwmcgrath

I don't understand allowed ips.

I want to split tunnel my wireguard so that 2 computers can access eachother through my home router. The home router is a pi running openwrt. The ip range I want to use for wireguard is 10.80.x.x. Below is what my client config looks like. What exactly should I use for the "IP Addresses" field in General Settings on the router? Same question for "Allowed IPs" and "Rout Allower IPs" in the Peers tab? The most frusterating part is that everything worked for a minute until I restarted everything, and now nothing works.

[Interface] PrivateKey = mL7/....

Address = 10.80.0.3/32

[Peer] PublicKey = WRTV....

AllowedIPs = 10.80.0.0/16

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TheMedianPrinter • 3y ago

```
[Interface]
PrivateKey = <...>
Address = 10.0.0.1/16

[Peer]
# Peer A
PublicKey = <...>
AllowedIPs = 10.0.2.0/24

[Peer]
# Peer B
PublicKey = <...>
AllowedIPs = 10.0.3.0/24
```

What the `Address` field tells WireGuard is two things:

- What your computer's IP is on the WireGuard interface. This is just the IP address without the subnet mask.
- What IP addresses WireGuard should handle. This is the entire subnet.

For example, with this configuration, if you try to reach `10.0.0.1`, you will reach yourself. If you try to reach any IP address within the subnet `10.0.0.1/16` (e.g. `10.0.45.167`), then WireGuard decides what to do with it.

But how does WireGuard know what to do with any random IP? This is what the `AllowedIPs` field is for. It specifies what IP addresses WireGuard should route to a peer.

For example, in the above configuration, if you try to reach any IP address in the subnet `10.0.2.0/24`, (e.g. `10.0.2.47`) then WireGuard will route it through the tunnel to peer A. Peer A can decide what to do with it - route the packet, only respond if it matches `10.0.2.71`, whatever. Similarly, if you try to reach any IP address in the subnet `10.0.3.0/24`, then your packet will be sent to peer B.

So how does this apply to you? You want to have a controlling 'router' with two peers connected to it, using the 10.80.0.0/16 subnet. Let's start with the router configuration (I'm leaving out everything except the IP address configurations):

```
[Interface]
Address = 10.80.0.1/16

[Peer]
# Computer A
AllowedIPs = 10.80.0.2/32

[Peer]
# Computer B
```

What does this mean? The `Address` field specifies that your WireGuard network is within the 10.80.0.0/16 subnet, and the router has the IP address of 10.80.0.1. The `AllowedIPs` fields mean that when you send a packet from the router to 10.180.0.2, it will be sent to computer A; and similarly, if you sent a packet from the router to 10.180.0.3, it will be sent to computer B. Those are the only valid IP addresses, since we used the /32 subnet.

Now for the computer configurations. Here's Computer A:

```
[Interface]
Address = 10.80.0.2/16

[Peer]
# Router
AllowedIPs = 10.80.0.1/16
Endpoint = <...>
```

There's a little bit of ambiguity in your question. You ask that you want the two computers to reach each other, but do not specify whether or not you want to tunnel *all* traffic from the computers through the router. What this configuration does is only allows the two computers to reach each other, not tunneling any other traffic. If you understand this explanation, you should hopefully be able to specify this - if you don't know, ask!

Again, what this does is that it specifies the computer has the IP address of `10.80.0.2` on the WireGuard network, and the WireGuard network is within the `10.80.0.0/16` subnet. The peer config specifies that all traffic from computer A to the `10.80.0.0/16` subnet goes to the router, which (if you specified the OpenWRT configuration correctly) should then be routed to anywhere the router can reach, *including* `10.80.0.3` (computer B).

Similarly, here is Computer B's configuration. If you understand so far, you should (hopefully) be able to figure this out without needing to see this:

```
[Interface]
Address = 10.80.0.3/16

[Peer]
# Router
AllowedIPs = 10.80.0.1/16
Endpoint = <...>
```

It follows the same logic as Computer A, but with a different source IP.

To give an example, here is what a packet from computer A addressed to `10.80.0.3` should do:

1. The packet's target IP address is within the WireGuard network (`10.80.0.3` is within `10.80.0.0/16`), so WireGuard checks the `AllowedIPs` fields and finds that the router matches (`10.80.0.3` is within

`10.80.0.2`, which matches computer A's `AllowedIPs` (`10.80.0.2` is within `10.80.0.2/32`), so it allows the packet through. The router then checks the packet's target IP address, `10.80.0.3`, which matches the WireGuard network (`10.80.0.3` is within `10.80.0.0/16`), so it asks WireGuard. WireGuard takes a look at the `AllowedIPs` fields and sees that computer B matches (`10.80.0.3` is within `10.80.0.3/32`). The router then routes the packet through the tunnel to computer B.

3. Computer B receives a packet through the tunnel from the router. It checks the source IP address, `10.80.0.2`, which matches the router's `AllowedIPs` (`10.80.0.2` is within `10.80.0.0/16`), and allows it through. Computer B then does whatever it wants with the packet.

I don't know why I typed this much, but hopefully you get it now.

37 Reply ...

[deleted] • 3y ago

> It specifies what IP addresses WireGuard should route to a peer.

No, "AllowedIPs" specifies what source IP address will be accepted FROM a peer.

The routing table determines what will be sent TO a peer.

3 Reply ...

4 more replies

bobwmcgrath OP • 3y ago

This is very helpful. currently however computers A and B both can ping their own ip, and the router's ip, but not each others ip.

2 Reply ...

1 more reply

monstrosityRose • 9mo ago

explanation is helpful thx!

1 Reply ...

4 more replies

[deleted] • 3y ago

I'm having trouble understanding what you wrote.

Can you draw out your end-goal?: https://app.diagrams.net/

2 Reply ...

bobwmcgrath OP • 3y ago

mrpink57 • 3y ago

Wireguard is just going to be configured by the client, in the `AllowedIPs` is where you set wireguard to go. So if the other computer is `192.168.2.3` then add `192.168.1.3/32` to `AllowedIPs` then it is up to you to work with your firewall to allow this to happen from wireguard.

2 Reply ...

bobwmcgrath OP • 3y ago

ok thanks, what does Allowed IPs do on the server? can I leave it blank?

1 Reply ...

1 more reply

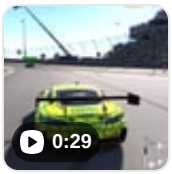
r/HPVictus • 3 mo. ago

Is this normal??

37 upvotes · 57 comments

r/forzamotorsport • 2 mo. ago

did i do something wrong here?



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r/Blackops4 • 6 mo. ago

Do I have a problem?

70 upvotes · 62 comments

r/EndeavourOS • 4 mo. ago

not using all my system

29 upvotes · 25 comments

r/WireGuard • 4 yr. ago

Allow local network access even when wireguard is up

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r/WireGuard • 2 yr. ago

Accessing another service of the wireguard server itself or other LAN machines? IP address Confusion

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r/Lastpass • 26 days ago

The fact that the cpu usage is still ongoing...

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r/WireGuard • 2 yr. ago

Assign ip addresse to peer on my local network

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r/WireGuard • 3 yr. ago

Allowed IP address problem.

1 upvote · 3 comments

r/WireGuard • 3 yr. ago

Range of allowed IPs

2 upvotes · 12 comments

r/HPVictus • 2 mo. ago

Is this normal?

32 upvotes · 38 comments

r/WireGuard • 1 yr. ago

Can anyone give me a run down of how Wireguard works and what it can do?

24 comments

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