

# Dual Stack Lite (DS-Lite) B4 Element on Linux

[RFC6333](#) specifies a so called Basic Bridging BroadBand (B4) element on the CPE side. This is about this B4 element.

What I write here is what I learned by figuring making [this NixOS configuration](#). You can use it as a reference. It is tested against a FTTB connection from [Netcologne](#).

## WAN Interface

I expect that you have a WAN interface with IPv6 working already.

This can be a PPPoE tunnel or anything else.

## Encapsulation

A DS-Lite compatible IPv4-in-IPv6 tunnel implementation under Linux is called `ipip6` in `iproute2`.

You can create such a tunnel with the following Command:

```
ip tunnel add "${TUNNEL_INTERFACE_NAME}" mode ipip6 local  
"${WAN_INTERFACE_ADDRESS}" remote "${AFTR_ADDRESS}"
```

## AFTR Address Discovery

The AFTR address can be retrieved from the AFTR name using the DNS.

Just query the AAAA record for the Aftr name.

```
dig "@${NAME_SERVER}" -b "${WAN_INTERFACE_ADDRESS}" AAAA "${AFTR_NAME}"  
+short
```

In this example we make sure we use the providers DNS server and the wan interface. But it is not specified if that is required.

## AFTR Name Discovery

You can request the AFTR name on the WAN interface with DHCPv6 using the `aft_r_name` option.

With my provider Netcologne the `aft_r_name` option was only answered while requesting a prefix

delegation along it.

I recommend you to request the providers name server entries right away too, so it is easier to fetch the AFTR address.

The AFTR names operated by Netcologne seem to be the following:

- [aftr01.netcologne.de](https://www.netcologne.de/aftr01)
- [aftr02.netcologne.de](https://www.netcologne.de/aftr02)
- [aftr03.netcologne.de](https://www.netcologne.de/aftr03)
- [aftr04.netcologne.de](https://www.netcologne.de/aftr04)
- [aftr05.netcologne.de](https://www.netcologne.de/aftr05)
- [aftr06.netcologne.de](https://www.netcologne.de/aftr06)
- [aftr07.netcologne.de](https://www.netcologne.de/aftr07)
- [aftr08.netcologne.de](https://www.netcologne.de/aftr08)
- [aftr09.netcologne.de](https://www.netcologne.de/aftr09)
- [aftr10.netcologne.de](https://www.netcologne.de/aftr10)

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