

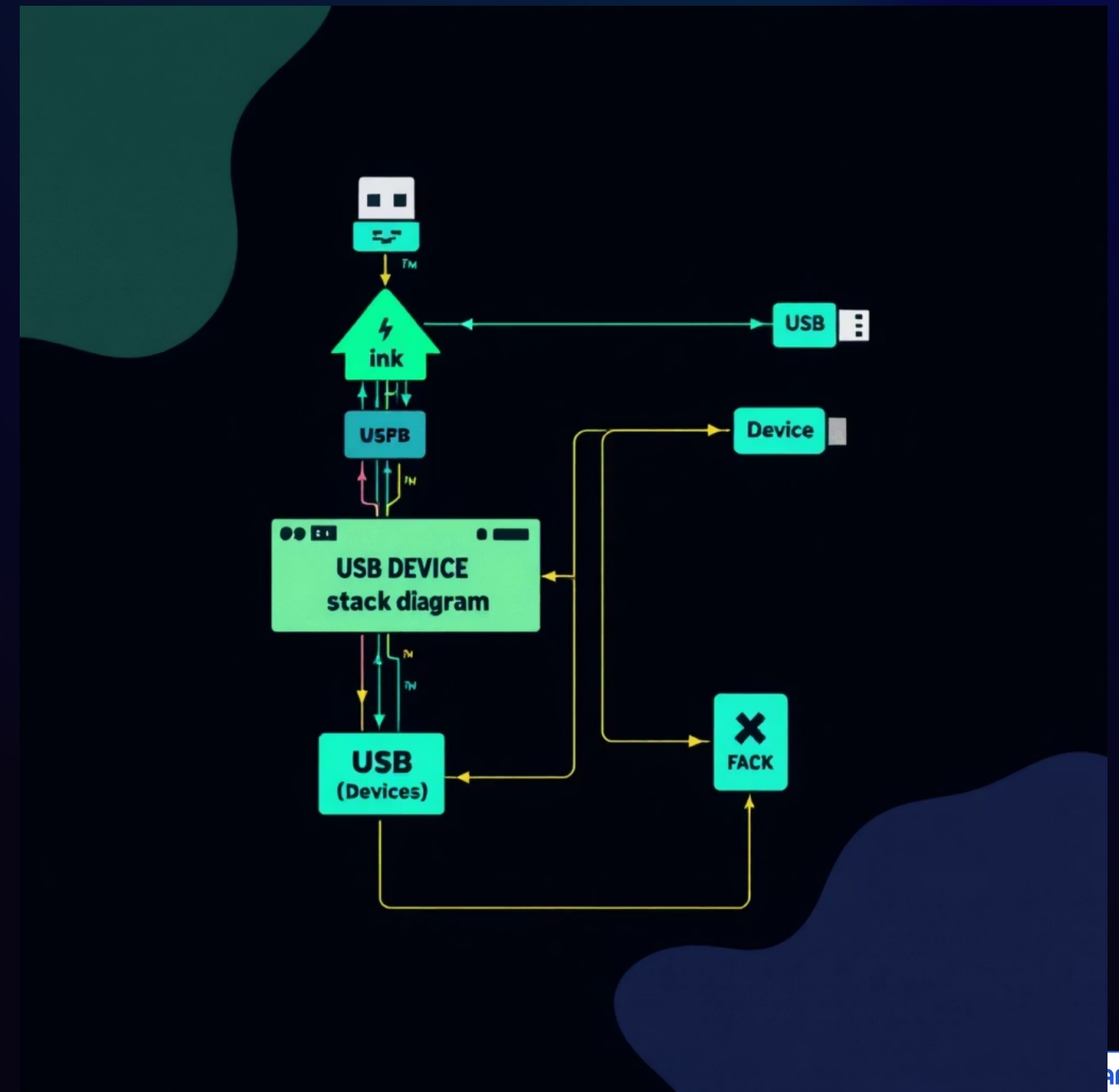
USB Subsystem in Zephyr

For nRF52840 DK

USB in Zephyr

Zephyr provides USB device functionality

- CDC ACM (serial)
- HID (input devices)
- RNDIS (networking)
- Mass Storage



Common USB Use Cases



Serial (CDC ACM)

Virtual COM port for device communication



Input Devices (HID)

Keyboards, mice, custom controllers



Networking

ECM/RNDIS for IP communication



Firmware Updates

DFU for over-USB updates

HID Sample Overview

Human Interface Device

- Path: samples/subsys/usb/hid-mouse
- Simulates mouse movement
- Appears as standard HID device



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Building HID Sample

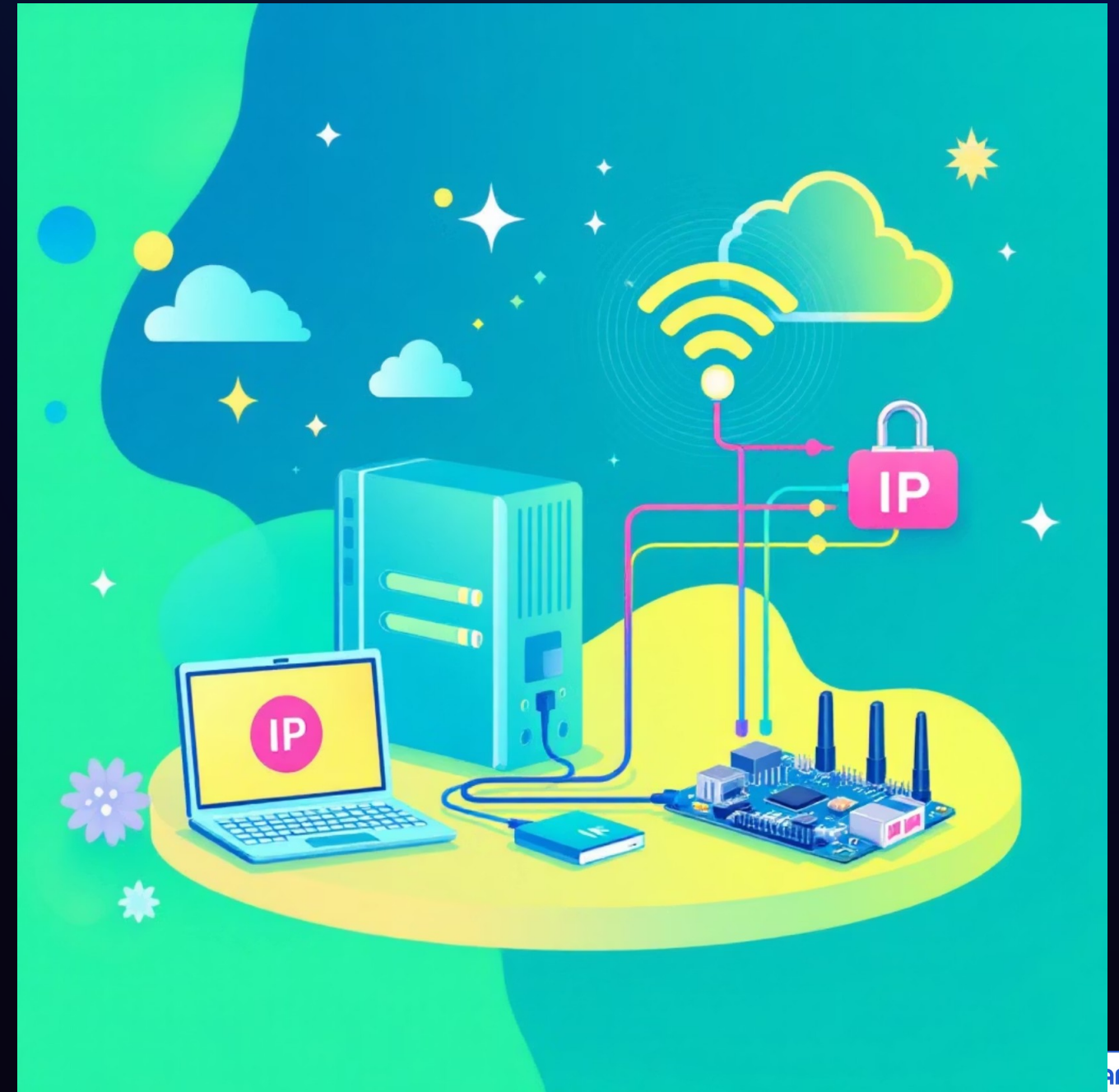
```
west build -b nrf52840dk/nrf52840 \ samples/subsys/usb/hid-mousewest flash
```


RNDIS Overview

Remote Network Driver Interface

Device appears as Ethernet adapter on host

Enables IP networking over USB



Creating RNDIS App

Copy HID sample as starting point

Remove unneeded files

- README
- .yaml file
- usbd_next_prj.conf

Modify project structure

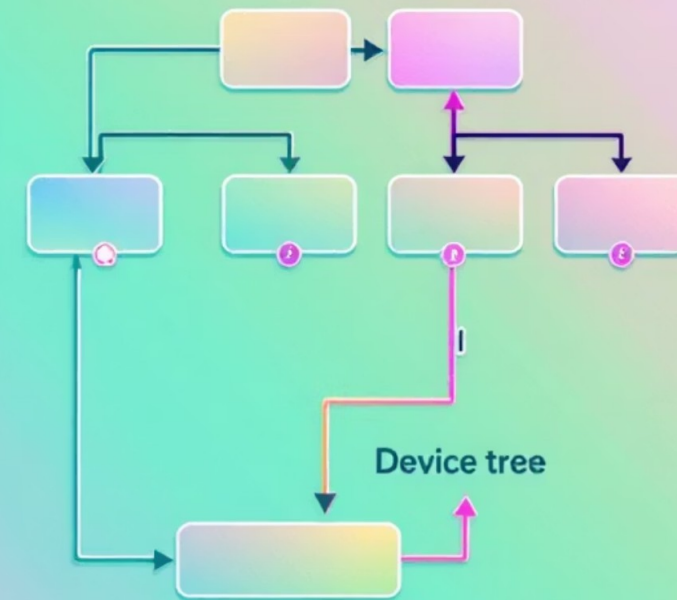
Device Tree Configuration

Update CMakeLists.txt

Change project name to rndis

Create .overlay file

```
&zephyr_udc0 { rndis_func: rndis  
{ compatible = "zephyr,usb-rndis"; };;
```



Implementation Details

- Use the files `main.c` to create network interface
- Use the file `prj.conf` to enable all the relevant configs

Testing the Demo



Build & Flash

Deploy to nRF52840



Verify Connection

Check dmesg and ip addr



Configure IP

Set host to 2.2.2.1/24



Test Connection

Ping in both directions

Telnet

- Add telnet server as backend in prj.conf

CONFIG_SHELL_BACKEND_TELNET=y

CONFIG_SHELL_TELNET_SUPPORT_COMMAND=y

- Connect from the host to telnet and run the shell
 - Telnet 2.2.2.2