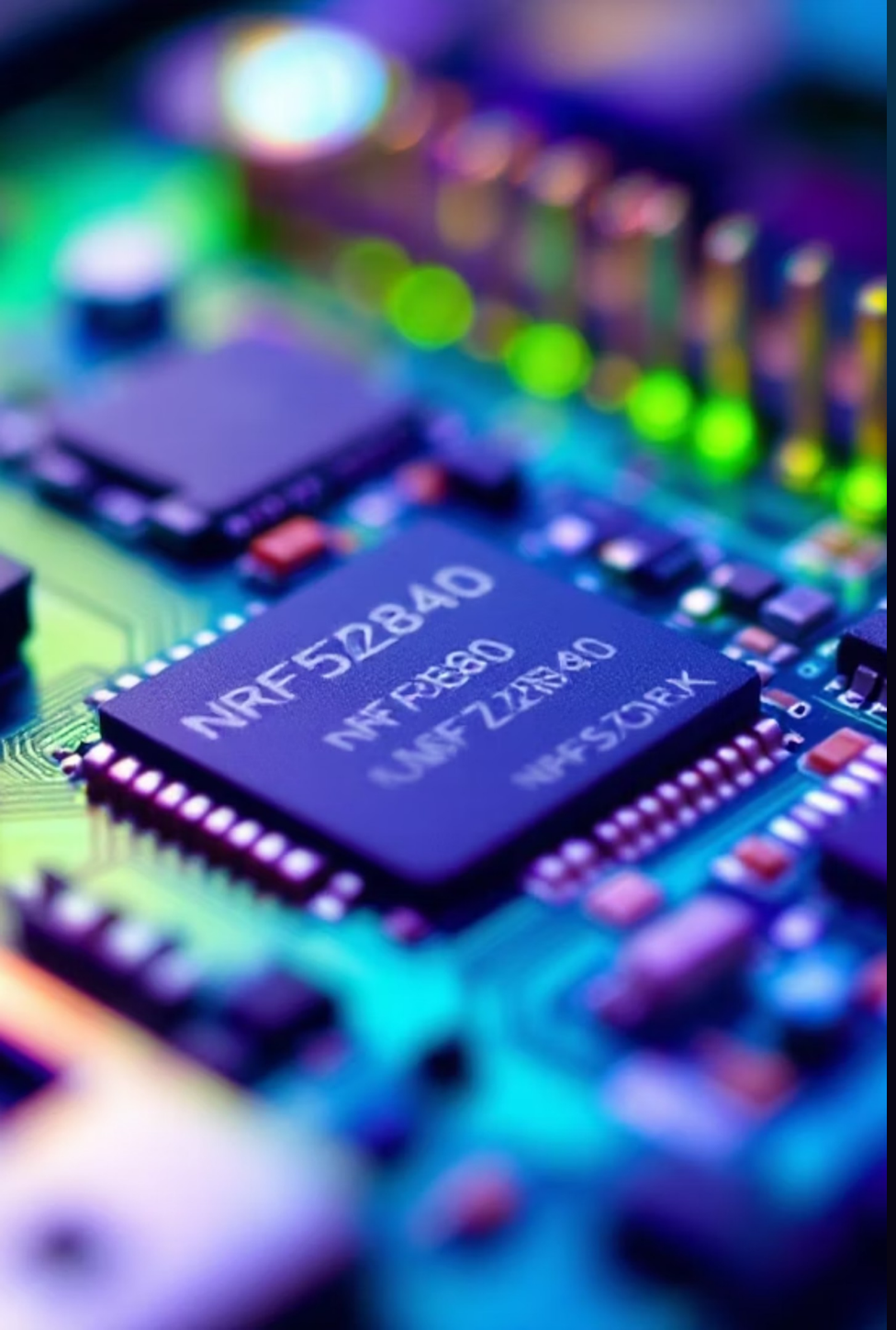


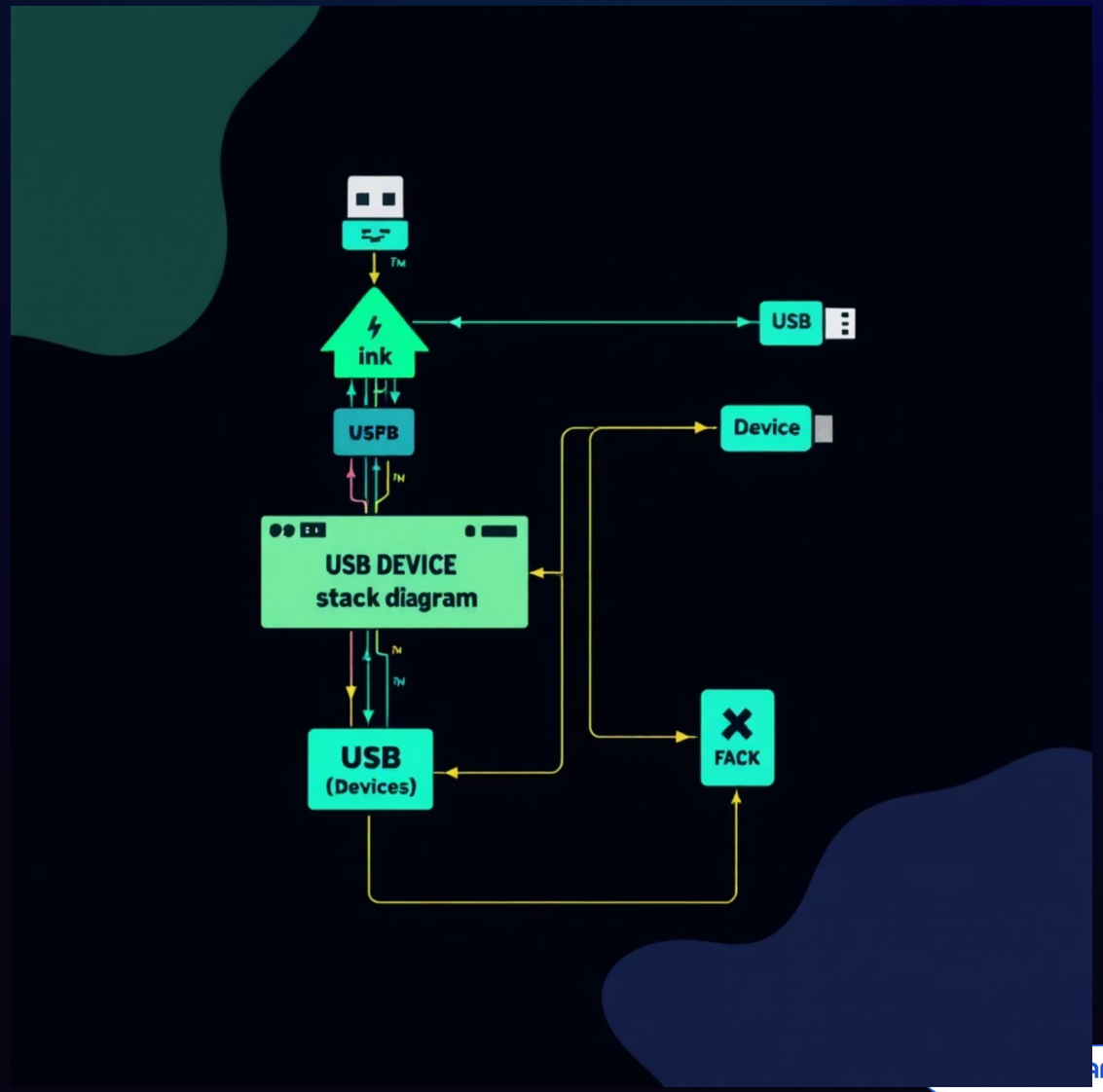
USB Subsystem in Zephyr

For nRF52840 DK

USB in Zephyr

Zephyr provides USB device functionality

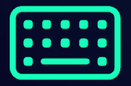
- CDC ACM (serial)
- HID (input devices)
- RNDIS (networking)
- Mass Storage



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

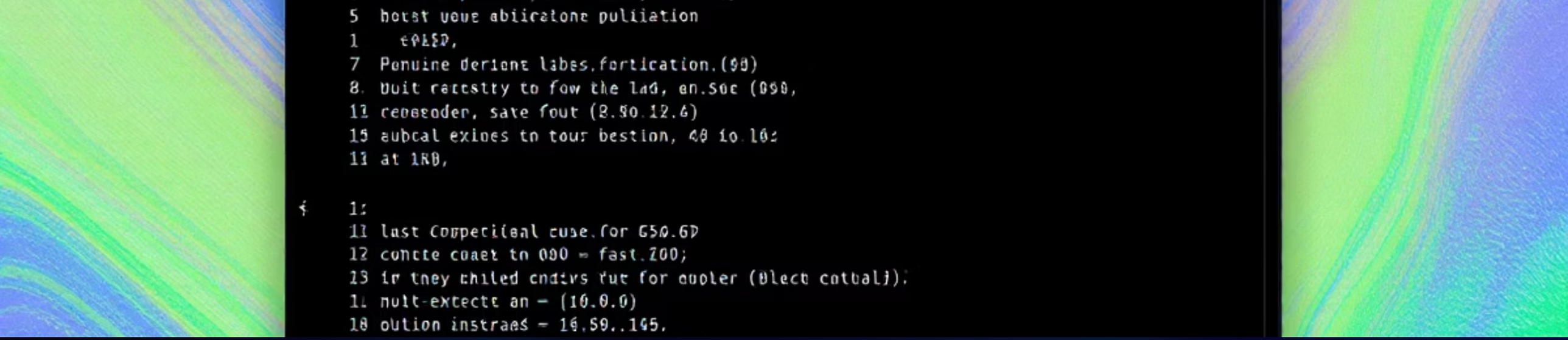
Firmware Updates

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



Building HID Sample

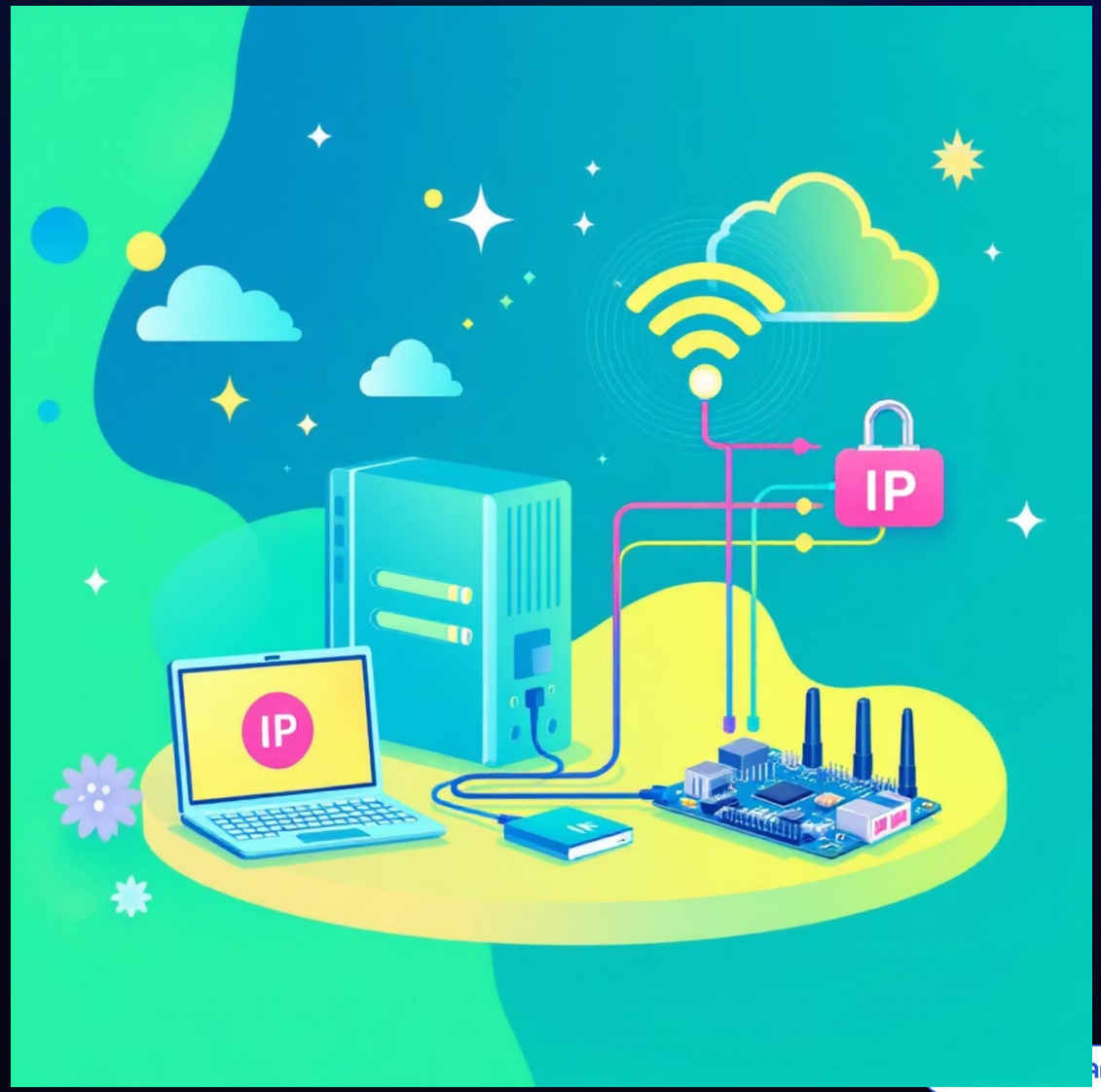
```
west build -b nrf52840dk/nrf52840 \ samples/subsys/usb/hid-mousewest flash
```

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

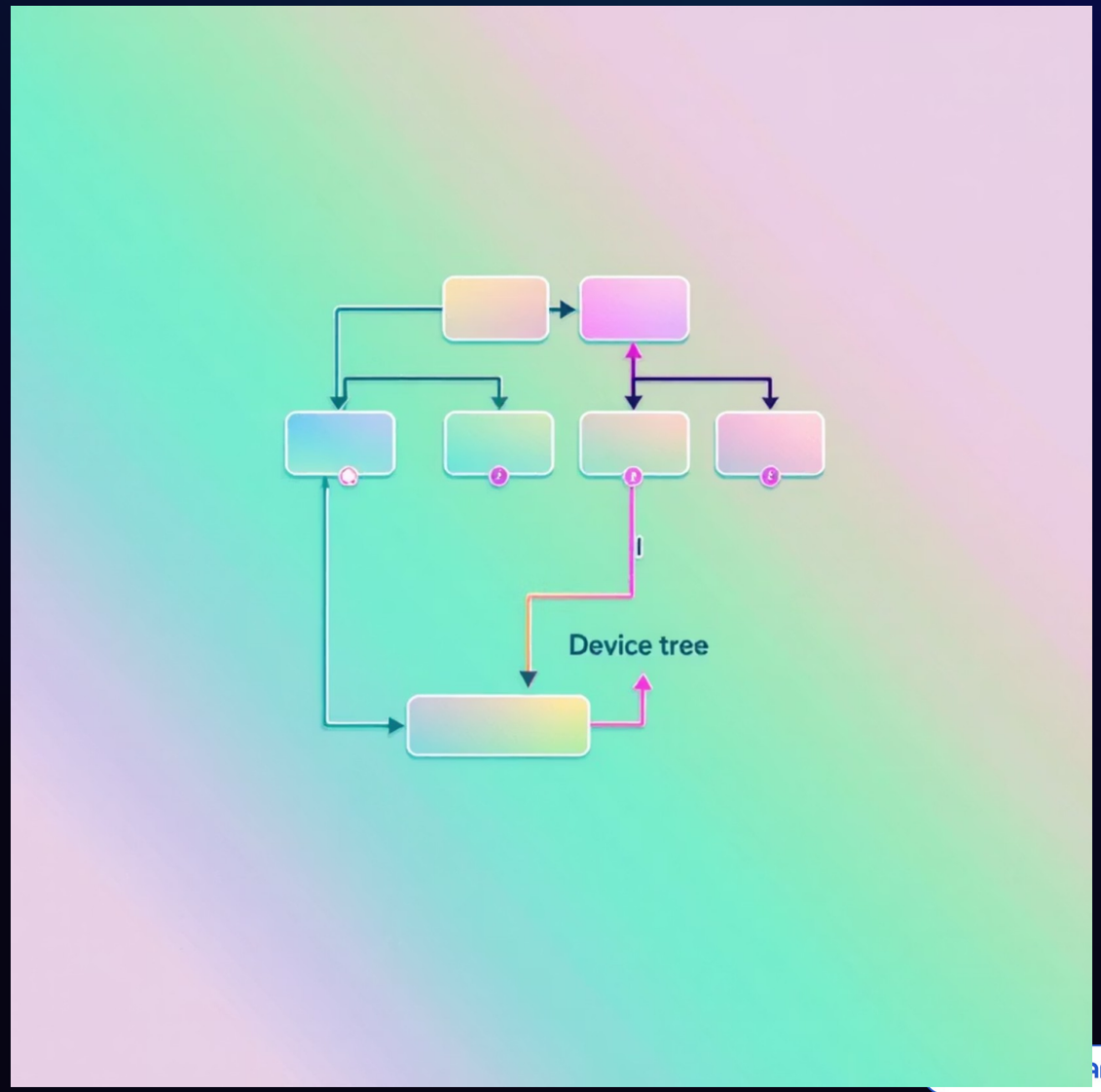
Device Tree Configuration

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