

# Network Setup: Mac + iPhone Hotspot + Pi

## Overview

You can connect your Mac to iPhone hotspot for internet **AND** still access the Pi via Ethernet simultaneously. macOS supports multiple network interfaces (multi-homing).

## Configuration

### *Mac Network Setup*

#### **1. WiFi Interface (iPhone Hotspot):**

- Connect to iPhone hotspot via WiFi
- Gets internet access automatically
- IP assigned by iPhone (typically 172.20.10.x)

#### **2. Ethernet Interface (Pi Connection):**

- Connect Ethernet cable to Pi
- Configure with **\*\*static IP\*\***:
- IP Address: ``192.168.10.1``
- Subnet Mask: ``255.255.255.0`` (or ``/24``)
- **\*\*DO NOT set default gateway\*\*** (keeps internet via WiFi)
- **\*\*DO NOT set DNS\*\*** (uses WiFi DNS)

### *Pi Configuration*

- IP: ``192.168.10.2``
- Gateway: ``192.168.10.1`` (Mac Ethernet)
- Subnet: ``192.168.10.0/24``

## How to Configure Mac Ethernet

### *Via System Settings (macOS Ventura+):*

1. System Settings → Network
2. Select Ethernet interface
3. Configure IPv4: **\*\*Manually\*\***
4. IP Address: ``192.168.10.1``
5. Subnet Mask: ``255.255.255.0``
6. **Leave Router/DNS empty** (or set to 192.168.10.1 if required, but don't use as default route)

### *Via Terminal:*

```
# Set static IP on Ethernet (replace en1 with your Ethernet interface)
sudo ifconfig en1 192.168.10.1 netmask 255.255.255.0

# Verify
ifconfig en1
ping -c 2 192.168.10.2
```

## Verification

```
# Check Mac interfaces
ifconfig | grep -E "^[a-z]|inet "

# Test Pi connectivity
ping -c 2 192.168.10.2

# Test internet (should work via WiFi)
ping -c 2 8.8.8.8

# Check routing
netstat -rn | grep default
```

## Important Notes

1. **\*\*Service Order\*\***: macOS automatically routes internet traffic via WiFi (higher priority) and local traffic via Ethernet
2. **\*\*No Conflicts\*\***: The two networks (iPhone hotspot and Pi Ethernet) are separate and don't interfere
3. **\*\*Pi Internet\*\***: If Pi needs internet, it can route through Mac Ethernet (192.168.10.1), which forwards to WiFi
4. **\*\*SSH Access\*\***: `ssh andre@192.168.10.2` will work normally

## Troubleshooting

**Problem**: Can't reach Pi after connecting to iPhone hotspot

- **\*\*Solution\*\***: Ensure Ethernet has static IP 192.168.10.1 and no default gateway

**Problem**: Mac loses internet when Ethernet is connected

- **\*\*Solution\*\***: Remove default gateway from Ethernet interface (keep WiFi as default route)

**Problem**: Pi can't access internet

- **\*\*Solution\*\***: Enable IP forwarding on Mac (if needed):  
`sudo sysctl -w net.inet.ip.forwarding=1`

## Summary

### ■ This setup works perfectly!

- Mac gets internet via iPhone hotspot
- Mac accesses Pi via Ethernet (192.168.10.2)
- No conflicts or issues
- Standard macOS multi-homing behavior