

Module 02

Preparing Your Laptop



WSL2, Node.js, and Everything You Need

OpenClaw Course

Navigation Chart

By the end of this module, you will be able to:

1. **Verify** your laptop meets the minimum requirements
2. **Explain** why WSL2 is required and what it does
3. **Install** and configure WSL2 with Ubuntu on Windows 10
4. **Enable** systemd inside WSL2 (required for the 🦸 OpenClaw daemon)
5. **Install** Node.js 22+ inside your WSL2 environment
6. **Verify** your entire environment is ready for 🦸 OpenClaw
7. **Configure** your laptop for 24/7 operation
8. **Optionally** set up Tailscale for secure remote access

Ship's Logbook (Part 1)

Term	Definition
WSL2	Windows Subsystem for Linux v2 -- run a full Linux OS inside Windows
Ubuntu	A beginner-friendly Linux distribution we install inside WSL2
Terminal	Text-based interface for typing commands
systemd	Linux service manager -- OpenClaw's daemon needs it to start automatically
Daemon	A program that runs continuously in the background
Node.js	JavaScript runtime that 🦀 OpenClaw is built on (version 22+ required)

Ship's Logbook (Part 2)

Term	Definition
npm	Node Package Manager -- installs JavaScript packages
nvm	Node Version Manager -- install and switch between Node.js versions
PATH	List of directories your computer checks when you type a command
Tailscale	Secure networking tool for private remote access between your devices
Loopback	Network address (127.0.0.1) that only your own computer can reach

Check Your Hardware: RAM

Open **Task Manager** (`Ctrl + Shift + Esc`) > **Performance** tab > **Memory**.

RAM	Verdict
4 GB or less	Not enough -- will struggle
8 GB	Minimum -- works but slow when multitasking
16 GB	Excellent -- plenty for 🦸 OpenClaw
32 GB+	Overkill, but great for local models later

What uses the RAM: WSL2 uses 1-4 GB, Node.js a few hundred MB. The rest is yours.

Check Your Hardware: Disk Space

Open **File Explorer** > **This PC** > Check your C: drive.

Free Space	Verdict
Less than 10 GB	Not enough
10-20 GB	Tight but workable
20-50 GB	Comfortable
50 GB+	Plenty of room

Total footprint: WSL2 + Ubuntu (~5 GB) + Node.js (~200 MB) + 🦗 OpenClaw (~500 MB) + agent data over time (1-10 GB). About **20 GB** covers everything comfortably.

Check Your Hardware: Windows Version

Press `Win + R`, type `winver`, press Enter.

Version	WSL2 Support
Windows 10 v1903+ (Build 18362)	Supported
Windows 10 v2004+	Simplified install (<code>wsl --install</code>)
Windows 10 22H2	Current -- fully supported
Windows 11	Fully supported

*If your version is older than 1903: Update Windows first. Go to **Settings > Update & Security > Windows Update** and install all available updates.*

Why WSL2 Is Required

🦀 **OpenClaw is built for Linux/macOS.** The 🚤 gateway, daemon, 🖱️ shell commands, and file permissions all assume a Unix-like OS.

"OpenClaw on Windows is recommended via WSL2 (Ubuntu recommended)." -- Official docs

What WSL2 Actually Is

- Runs a **real Linux kernel** inside Windows
- Not an emulator, not a traditional VM
- Runs **alongside** Windows, not instead of it
- Access Windows files from Linux, and vice versa

Apartment analogy: Your laptop is a building with two tenants -- Windows and Linux. They share the hardware but have their own separate units.

Step 1: Open PowerShell as Administrator

1. Click the **Start menu**
2. Type `PowerShell`
3. **Right-click** on Windows PowerShell
4. Click **Run as administrator**
5. Click **Yes** when prompted

You should see:

```
PS C:\WINDOWS\system32>
```

The blinking cursor is waiting for your input.

Step 1: Install WSL with Ubuntu

Type this command exactly and press Enter:

```
wsl --install
```

What this does:

- Enables WSL2 and downloads the Linux kernel
- Downloads and installs Ubuntu as the default distribution


You should see messages about installing Virtual Machine Platform, WSL, and Ubuntu.

You MUST restart your computer after this step. Use Restart, not Shut Down.

Step 1: Complete Ubuntu Setup

After restarting, open the **Ubuntu** app from the Start menu.

- Type a **lowercase** username (e.g., `openclaw`)
- Set a password you will remember
- **Nothing appears on screen when typing the password** -- this is normal!

When you see `openclaw@YOURPC:~$` — that is your  **Linux prompt**. You are inside Ubuntu.

Step 2: Enable systemd (Edit Config)

 OpenClaw's daemon needs systemd. It is **not enabled by default** in WSL2.

Edit the WSL config file and add these lines

```
sudo nano /etc/wsl.conf
```

```
[boot]
systemd=true
```

Save and exit: `Ctrl + O`, `Enter`, then `Ctrl + X`

Step 2: Enable systemd (Restart and Verify)

Restart WSL from PowerShell

```
wsl --shutdown
```

Wait 5 seconds, then reopen Ubuntu and verify:

```
systemctl is-system-running
```

Expected: `running` (or `degraded` is OK)

Step 3a: Install nvm

We use **nvm** (Node Version Manager) -- the recommended way.

```
curl -o- https://raw.githubusercontent.com/nvm-sh/nvm/v0.40.1/install.sh | bash
```

Then activate it:

```
source ~/.bashrc  
nvm --version          # Should show: 0.40.1
```

*If you see **nvm: command not found** -- close and reopen your Ubuntu terminal, then try again.*

Step 3b: Install Node.js 22

```
nvm install 22  
nvm alias default 22
```

Verify both

```
node --version      # Should show: v22.x.x  
npm --version       # Should show: 10.x.x
```

As long as `node` starts with **v22**, you're fueled up.

Steps 4 and 5: Update Packages and Install Tools

Update Ubuntu packages (2-5 minutes)

```
sudo apt update && sudo apt upgrade -y
```

Install essential tools

```
sudo apt install -y git curl wget build-essential
```

These provide version control, download utilities, and compilation tools needed by npm.

Step 6a: Power Settings — Disable Sleep

For **24/7 operation**, your laptop must stay awake.

Disable sleep mode

1. **Settings > System > Power & sleep**
2. Set "When plugged in, PC goes to sleep after" → **Never**

Disable hibernate (optional)

```
powercfg /hibernate off
```

Display can turn off — that's fine

- "Turn off screen after" → **5 minutes** (display off, computer still runs)

Step 6b: Power Settings — Verify

Confirm your laptop stays awake

1. Lock screen (Win + L)
2. Wait one minute
3. Unlock and run:

```
uptime
```

You should see **continuous uptime** — not a fresh boot time. If it restarted, your sleep settings did not apply. Recheck the Power & sleep panel.

Step 7: Understand the File System Boundary

There are **two separate file systems**. Knowing which you are in matters.

Location	Path Style	Example
Windows	C:\Users\...	C:\Users\GC\Documents\
Linux (WSL2)	/home/username/...	/home/openclaw/

The Golden Rule



OpenClaw's data should live in the Linux file system, NOT the Windows file system.

Files in `/home/openclaw/` are fast. Files through `/mnt/c/` are **significantly slower** (every operation crosses the WSL2 boundary). Run `pwd` to check which side you're on.

Step 8: Tailscale (Optional)

Tailscale lets you access 🦀 OpenClaw from your phone or another computer. **Skip if** you'll only use this laptop.

Setup

1. Create account at **tailscale.com** (free plan works)
2. Install on **Windows** (download from website) and inside **WSL2**:

```
curl -fsSL https://tailscale.com/install.sh | sh  
sudo tailscale up
```

From your phone via Tailscale: `http://100.x.x.x:18789/` . From everywhere else: **no access** (secure by default).

Step 8.5: Disk Encryption (Recommended)

If your device stores API keys and personal data, encrypt the disk.

Platform	How
Windows Pro/Enterprise	BitLocker
Windows Home	Device Encryption (requires Microsoft account)
Linux (native, not WSL)	LUKS -- enable during OS installation
Mac	FileVault

If that laptop walks off, encrypted data is unreadable without your password.

Step 9: Dedicated User Account (Optional)

A security measure from Module 01's **Principle 2: Least Privilege**.

```
sudo adduser myagent  
su - myagent
```


- Set a password, skip optional fields
- 🦸 OpenClaw installs under this account only
- If something goes wrong, damage is limited to this account
- Type `exit` to return to your regular account

Skip this if you want simplicity or plan to use Docker sandboxing (Module 10).

► Shoals and Sandbars

Problem	Cause	Fix
Error <code>0x80370102</code>	Virtualization disabled in BIOS	Enable "Intel VT" or "AMD-V" in BIOS settings
Error <code>0x80004002</code>	Windows features not enabled	Run <code>dism.exe</code> commands to enable WSL and VM Platform
<code>node: command not found</code>	nvm not loaded	Run <code>source ~/.bashrc</code> or reopen terminal
Password not accepted	Using Windows password	Use the Linux password from Ubuntu setup
WSL2 uses too much RAM	Default is half your RAM	Create <code>.wslconfig</code> with <code>memory=4GB</code>
Ubuntu terminal is slow	Windows Defender scanning	Exclude WSL2 directory from Defender

The Verification Checklist

Run each command in your  Ubuntu terminal:

Check	Command	Expected
WSL2 version	<code>wsl.exe -l -v</code>	Ubuntu, VERSION 2
systemd	<code>systemctl is-system-running</code>	running or degraded
Node.js	<code>node --version</code>	v22.x.x
npm	<code>npm --version</code>	10.x.x
Git	<code>git --version</code>	git version 2.x.x
curl	<code>curl --version</code>	Any version output
File system	<code>pwd</code>	/home/openclaw (not /mnt/c/)

All seven must pass before moving to Module 03.

Hands on Deck

Complete this checklist:

- ☐ **Hardware:** 8+ GB RAM, 20+ GB free disk, Windows 1903+
- ☐ **WSL2:** Running, VERSION 2, Ubuntu username created
- ☐ **systemd:** Enabled and running
- ☐ **Node.js + npm:** v22.x.x and 10.x.x installed
- ☐ **Git:** Installed
- ☐ **Power settings:** Sleep disabled (if running 24/7)
- ☐ **File system:** Working in `/home/username/`, not `/mnt/c/`
- ☐ **Bonus:** Navigate to `\\wsl$\\Ubuntu\\home\\openclaw\\` in File Explorer

Treasure Chest

1. 🦀 **OpenClaw requires WSL2** -- it runs inside Linux, not directly on Windows
2. **systemd must be enabled** -- add `[boot] systemd=true` to `/etc/wsl.conf`
3. **Node.js 22+ is required** -- install with nvm for easy version management
4. **Keep 🦀 OpenClaw files in the Linux file system** -- `/home/username/`, not `/mnt/c/`
5. **Disable sleep** for 24/7 operation -- Windows pauses WSL2 when it sleeps
6. **Tailscale is optional** but useful for remote access
7. **A dedicated user account** adds security isolation
8. **Most errors** come from virtualization disabled in BIOS or nvm not sourced

Next Port of Call

Module 03: Installing OpenClaw

Your laptop is ready. Time to run the installer, walk through the onboarding wizard, and bring your agent to life.