

# Module 02

# Preparing Your Laptop



WSL2, Node.js, and Everything You Need

OpenClaw Course



# Navigation Chart

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

# Check Your Hardware: RAM

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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
<b>16 GB</b>	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
<b>50 GB+</b>	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> )
<b>Windows 10 22H2</b>	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

LOBSTER **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

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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

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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 + 0 , 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

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### 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](https://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 <b>Linux</b> 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

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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.*