

# Step-by-Step Docker Installation Guide

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## Part 1: Installing Docker on Windows 10/11

### Step 1: Check System Requirements

1. Windows 10 Pro/Enterprise/Education (Build 19041+) or Windows 11.
2. 64-bit CPU with virtualization support (Intel VT-x or AMD-V).
3. Minimum 4 GB RAM.

**Tip:** To check virtualization, open Task Manager → Performance → CPU → “Virtualization: Enabled”

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### Step 2: Enable WSL 2

1. Open **PowerShell as Admin**.
2. Run:

```
wsl --install
```

- This installs WSL 2 and sets it as default.
3. Restart your PC if prompted.
  4. Verify installation:

```
wsl --status
```

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### Step 3: Install a Linux Distribution

1. Open Microsoft Store → search for **Ubuntu** → Install.
2. Launch Ubuntu → set username and password.
3. Check WSL version for Ubuntu:

```
wsl -l -v
```

- If version is 1, upgrade to WSL 2:

```
wsl --set-version Ubuntu 2
```

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### Step 4: Install Linux Kernel Update (if required)

- Download the WSL2 kernel update: <https://aka.ms/wsl2kernel>
- Install and restart the system.

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## Step 5: Install Docker Desktop

1. Download Docker Desktop for Windows: <https://www.docker.com/products/docker-desktop>
2. Run installer → Check **Use WSL 2 instead of Hyper-V** → Install.
3. Open Docker Desktop → Settings → Resources → Ensure Ubuntu/WSL distro is enabled.

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## Step 6: Verify Docker Installation

```
docker --version
docker run hello-world
```

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## Step 7: Common WSL Fixes

Issue	Solution
Docker says WSL 2 not installed	<code>wsl --install --no-distribution</code> then reinstall distro
WSL kernel outdated	<code>wsl --update</code>
Docker slow	Store files inside <code>\\wsl\$\Ubuntu\home\user\project</code> instead of Windows drive

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## Part 2: Installing Docker on macOS (Intel & Apple Silicon)

### Step 1: Check System Requirements

1. macOS Monterey 12+
2. 64-bit CPU: Intel or Apple Silicon (M1/M2/M3)
3. Minimum 4 GB RAM
4. Rosetta 2 installed (for Apple Silicon x86 image support)

```
softwareupdate --install-rosetta
```

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### Step 2: Install Docker Desktop

1. Download Docker Desktop for Mac: <https://www.docker.com/products/docker-desktop>
2. Open `.dmg` file → Drag Docker to Applications.
3. Open Docker → Follow setup instructions.
4. Allow privileged access if prompted.

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### Step 3: Verify Docker Installation

```
docker --version
docker run hello-world
```

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### Step 4: Common macOS Fixes

Issue	Solution
“exec format error” on M1/M2	Use <code>--platform linux/amd64</code> when running containers
High CPU usage	Preferences → Resources → Limit CPU/RAM
Networking issues	Use <code>host.docker.internal</code> instead of <code>localhost</code> in containers