Docker Installation Guide

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Introduction

This guide outlines the steps to install Docker on various platforms. Docker simplifies application deployment by using containers, making it essential for modern software development and deployment.

1. Prerequisites

Ensure the following requirements are met before installing Docker:

Operating System

Supported versions include:

- Windows 10/11 (64-bit) Pro, Enterprise, or Education (Home edition requires WSL 2).
- macOS 10.15 or later.
- Linux distributions: Ubuntu, CentOS, Debian, Fedora, etc.

Hardware

- At least 4GB of RAM (8GB recommended).
- Virtualization enabled in BIOS/UEFI.

Administrative Privileges

Installation requires administrator/root access.

2. Installation on Different Platforms

2.1. Windows

1. **Download Docker Desktop:** Visit the official Docker Desktop for Windows page and download the installer.

2. **Install Docker Desktop:** Run the installer and follow the on-screen instructions. During installation, enable **WSL 2** if prompted.

3. **Enable WSL 2:**

   ```
   wsl --install
   ```

   Restart your system if required.

4. **Verify Installation:**

   ```
   docker --version
   ```

2.2. macOS

1. **Download Docker Desktop:** Visit the official Docker Desktop for Mac page and download the installer.

2. **Install Docker Desktop:** Open the downloaded `.dmg` file and drag the Docker icon to your Applications folder.

3. **Launch Docker Desktop:** Open Docker Desktop from Applications and follow the setup instructions.

4. **Verify Installation:**

   ```
   docker --version
   ```

2.3. Linux

1. **Update the System:**

   ```
   sudo apt update
   sudo apt install -y ca-certificates curl gnupg
   ```

2. **Add Docker's GPG Key and Repository:**

```
curl -fsSL https://download.docker.com/linux/
   ubuntu/gpg | sudo gpg --dearmor -o /usr/share
   /keyrings/docker-archive-keyring.gpg
echo "deb [arch=$(dpkg --print-architecture)
   signed-by=/usr/share/keyrings/docker-archive-
   keyring.gpg] https://download.docker.com/
   linux/ubuntu $(lsb_release -cs) stable" |
   sudo tee /etc/apt/sources.list.d/docker.list
   > /dev/null
```

3. **Install Docker Engine:**

```
sudo apt update
sudo apt install -y docker-ce docker-ce-cli
   containerd.io
```

4. **Verify Installation:**

```
docker --version
```

5. **Optional: Add User to Docker Group:**

```
sudo usermod -aG docker $USER
```

   Log out and back in for changes to take effect.

3. Post-Installation Steps

1. **Check Docker Service:**

```
sudo systemctl status docker
```

2. **Run a Test Container:**

```
docker run hello-world
```

   A success message confirms Docker is installed and functioning correctly.

3. **Update Docker Regularly:**

```
sudo apt update
sudo apt upgrade
```

Replace `apt` with your package manager if using a different distribution.

4. Troubleshooting

- **Docker Command Not Found:** Ensure Docker is installed and the binary is in your PATH.
- **Permission Denied Errors:** Use `sudo` or add your user to the Docker group.
- **WSL Errors on Windows:** Ensure WSL 2 is installed and set as the default version. Check WSL integration in Docker Desktop settings.

5. Additional Resources

- Official Docker Documentation: https://docs.docker.com
- Troubleshooting Guide: Docker Support