



六叶树产品教程-ROS 安装教程

类别	内容
关键词	ROS 机器人系统安装教程
摘要	本教程讲解如何在 Ubuntu 系统上安装 ROS 系统

库介绍:

类别	内容
安装环境	Ubuntu20.04

文档记录

版本	日期	说明
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1、环境准备

系统版本	Ubuntu20.04	
系统软件源	清华源	
平台 CPU 架构	X86	
其他	1.主机能够访问互联网 2.主机能访问 github 这些域名 3.所有命令用有 root 权限的账户进行执行 4.建议用虚拟机(出错了可以回退)	

```
root@ubuntu:/home/zhumiao/tmp# lsb_release -a
No LSB modules are available.
Distributor ID: Ubuntu
Description:   Ubuntu 20.04.6 LTS
Release:      20.04
Codename:     focal
```

2、安装步骤

2.1 软件源更换为清华源

1.用以下命令查看版本名。

```
lsb_release -c
```

2.备份原来的源，将以前的源备份一下，以防以后需要用的。

```
sudo cp /etc/apt/sources.list /etc/apt/sources.list1
```

3.打开/etc/apt/sources.list 文件，添加源，并保存。

```
sudo gedit /etc/apt/sources.list
```

4.复制清华源到文件中：

#添加清华源

```
deb https://mirrors.tuna.tsinghua.edu.cn/ubuntu/ focal main restricted universe multiverse
# deb-src https://mirrors.tuna.tsinghua.edu.cn/ubuntu/ focal main restricted universe multiverse
deb https://mirrors.tuna.tsinghua.edu.cn/ubuntu/ focal-updates main restricted universe
multiverse
# deb-src https://mirrors.tuna.tsinghua.edu.cn/ubuntu/ focal-updates main restricted universe
multiverse
deb https://mirrors.tuna.tsinghua.edu.cn/ubuntu/ focal-backports main restricted universe
multiverse
```



```
# deb-src https://mirrors.tuna.tsinghua.edu.cn/ubuntu/ focal-backports main restricted universe multiverse
deb https://mirrors.tuna.tsinghua.edu.cn/ubuntu/ focal-security main restricted universe multiverse
# deb-src https://mirrors.tuna.tsinghua.edu.cn/ubuntu/ focal-security main restricted universe multiverse multiverse
```

```
#添加清华源
deb https://mirrors.tuna.tsinghua.edu.cn/ubuntu/ / focal main restricted universe multiverse
# deb-src https://mirrors.tuna.tsinghua.edu.cn/ubuntu/ focal main restricted universe multiverse
deb https://mirrors.tuna.tsinghua.edu.cn/ubuntu/ focal-updates main restricted universe multiverse
# deb-src https://mirrors.tuna.tsinghua.edu.cn/ubuntu/ focal-updates main restricted universe multiverse
deb https://mirrors.tuna.tsinghua.edu.cn/ubuntu/ focal-backports main restricted universe multiverse
# deb-src https://mirrors.tuna.tsinghua.edu.cn/ubuntu/ focal-backports main restricted universe multiverse
deb https://mirrors.tuna.tsinghua.edu.cn/ubuntu/ focal-security main restricted universe multiverse
# deb-src https://mirrors.tuna.tsinghua.edu.cn/ubuntu/ focal-security main restricted universe multiverse multiverse
```

5.粘贴完之后，直接退出保存。

2.2 执行命令更新系统软件

```
sudo apt-get update
sudo apt-get upgrade
```

2.3 安装方式 1(一键安装)

1.使用 root 权限用户

su

2.下载安装脚本:

```
wget http://www.liuyeshu.cn/wp-content/uploads/2024/12/rosInstall.sh
```

```
root@ubuntu:/home/zhumiao/tmp# wget http://www.liuyeshu.cn/wp-content/uploads/2024/12/rosInstall.sh
--2024-12-23 00:23:06-- http://www.liuyeshu.cn/wp-content/uploads/2024/12/rosInstall.sh
Resolving www.liuyeshu.cn (www.liuyeshu.cn)... 180.76.249.219
Connecting to www.liuyeshu.cn (www.liuyeshu.cn)|180.76.249.219|:80... connected.
HTTP request sent, awaiting response... 200 OK
Length: 939 [application/octet-stream]
Saving to: 'rosInstall.sh.1'
```

```
rosInstall.sh.1 100%[=====] 939 --.-KB/s in 0s
2024-12-23 00:23:17 (187 MB/s) - 'rosInstall.sh.1' saved [939/939]
```

3.加权

```
chmod 777 rosInstall.sh
```

```
root@ubuntu:/home/zhumiao/tmp# chmod 777 rosInstall.sh
```

4.运行

```
./rosInstall.sh
```



```
root@ubuntu:/home/zhumiao/tmp# ./rosinstall.sh
>>>www.liuyeshu.cn 2024
>>>system update...
Executing: /tmp/apt-key-gpghome.UCM3ldDrxF/gpg.l.sh --keyserver hkps://keyserver.ubuntu.com:80 --recv-key C1CF6E31E66ADE8868B172B4F42ED6FBAB
17C654
gpg: key F42ED6FBAB17C654: "Open Robotics <info@osrfoundation.org>" not changed
gpg: Total number processed: 1
gpg: unchanged: 1
6% [Connecting to ubuntu-mirror-1.ps6.canonical.com] [Connecting to security.ubuntu.com] [Connecting to mirrors.tuna.tsinghua.edu.cn]
```

等待安装完毕即可，不同电脑耗时不一样，一般 10 分钟，每台电脑的操作系统环境不一样，该模式安装并不是一定 100%成功的。出错时根据错误提示寻找解决方案，一般是库依赖问题，域名解析问题，所以主机要能访问互联网，并且还要有能访问 github 的能力(可以百度搜索解决方案)。如果无法修复，可以尝试安装方式二。

```
Warning: running 'rosdep update' as root is not recommended.
You should run 'sudo rosdep fix-permissions' and invoke 'rosdep update' again without sudo.
Hit https://raw.githubusercontent.com/ros/rosdistro/master/rosdep/osx-homebrew.yaml
Hit https://raw.githubusercontent.com/ros/rosdistro/master/rosdep/base.yaml
Hit https://raw.githubusercontent.com/ros/rosdistro/master/rosdep/python.yaml
Hit https://raw.githubusercontent.com/ros/rosdistro/master/rosdep/ruby.yaml
Hit https://raw.githubusercontent.com/ros/rosdistro/master/releases/fuerte.yaml
Query rosdistro index https://raw.githubusercontent.com/ros/rosdistro/master/index-v4.yaml
Skip end-of-life distro "ardent"
Skip end-of-life distro "bouncy"
Skip end-of-life distro "crystal"
Skip end-of-life distro "dashing"
Skip end-of-life distro "eloquent"
Skip end-of-life distro "foxy"
Skip end-of-life distro "galactic"
Skip end-of-life distro "groovy"
Add distro "humble"
Skip end-of-life distro "hydro"
Skip end-of-life distro "indigo"
Skip end-of-life distro "iron"
Skip end-of-life distro "jade"
Add distro "jazzy"
Skip end-of-life distro "kinetic"
Skip end-of-life distro "lunar"
Skip end-of-life distro "melodic"
Add distro "noetic"
Add distro "rolling"
updated cache in /root/.ros/rosdep/sources.cache
>>>ros install over!!!
```

执行 roscore,启动成功截图如下:

```
root@ubuntu:/home/zhumiao/tmp# roscore
... logging to /root/.ros/log/9860a4d4-c108-11ef-aad1-ab899ee7814a/roslaunch-ubuntu-512370.log
Checking log directory for disk usage. This may take a while.
Press Ctrl-C to interrupt
Done checking log file disk usage. Usage is <1GB.

started roslaunch server http://ubuntu:43917/
ros_comm version 1.17.0

SUMMARY
=====

PARAMETERS
* /rosdistro: noetic
* /rosversion: 1.17.0

NODES

auto-starting new master
process[master]: started with pid [512378]
ROS_MASTER_URI=http://ubuntu:11311/

setting /run_id to 9860a4d4-c108-11ef-aad1-ab899ee7814a
process[roscout-1]: started with pid [512388]
started core service [/roscout]
```



2.4 安装方式 2(手动安装)

2.4.1 设置 ROS 安装源

```
sudo sh -c '. /etc/lsb-release && echo "deb http://mirrors.tuna.tsinghua.edu.cn/ros/ubuntu/`lsb_release -cs` main" > /etc/apt/sources.list.d/ros-latest.list'
```

2.4.2 设置 KEY

```
sudo apt-key adv --keyserver 'hkp://keyserver.ubuntu.com:80' --recv-key C1CF6E31E6BADE8868B172B4F42ED6FBAB17C654
```

2.4.3 软件更新

```
sudo apt update
```

2.4.4 ROS 安装

```
sudo apt install -y ros-noetic-desktop-full
```

2.4.5 配置环境变量

```
sudo echo "source /opt/ros/noetic/setup.bash" >> ~/.bashrc  
source ~/.bashrc
```

2.4.6 安装 rosdep

```
sudo apt install -y python3-rosdep python3-rosinstall python3-rosinstall-generator  
python3-wstool build-essential
```



2.4.7 rosdep 更新

```
sudo rosdep init
```

```
rosdep update
```

```
root@ubuntu:/home/zhumiao/tmp# rosdep init
Wrote /etc/ros/rosdep/sources.list.d/20-default.list
Recommended: please run

    rosdep update

root@ubuntu:/home/zhumiao/tmp#
```

3.常见问题

主机网络需要能够访问 github 这些外网，否则就会出现如下的这种域名无法解析的问题，导致安装失败。

```
root@ubuntu:/home/zhumiao/tmp# rosdep init
ERROR: cannot download default sources list from:
https://raw.githubusercontent.com/ros/rosdistro/master/rosdep/sources.list.d/20-default.list
Website may be down.
<urlopen error <urlopen error timed out> (https://raw.githubusercontent.com/ros/rosdistro/master/rosdep/sources.list.d/20-default.list)>
root@ubuntu:/home/zhumiao/tmp#
```



联系方式:



电话:15211065817(业务合作咨询)



邮箱:798746621@qq.com(业务咨询+技术支持)



微信:18673379565(技术支持)



官网:www.liuyeshu.cn(资料下载)



网上商城:<https://shop112408209.taobao.com>(产品购买)

淘宝店铺搜索:“六叶树教育科技”