Raspberry PI- Pi-Nut Network

Installing Network UPS Tools (NUT) version 2.8.3 from source on a Raspberry Pi 4 running Raspberry Pi OS (based on Debian) requires compiling the software from the source code, as a pre-built Debian package for this specific version may not be available. Below are the detailed steps to accomplish this, tailored for a Raspberry Pi 4. These instructions assume you're using Raspberry Pi OS 64-bit (based on Debian Bullseye or later), but they should also work for 32-bit with minor adjustments.

Prerequisites
1. **Raspberry Pi OS**: Ensure your Raspberry Pi 4 is running an up-to-date version of Raspberry Pi OS. Update the system before starting:

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

2. **Dependencies**: You'll need tools and libraries to compile NUT and support its functionality (e.g., USB, if your UPS connects via USB).
3. **Internet Connection**: Required to download the source code and dependencies.
4. **UPS Connection**: If using a USB-connected UPS, ensure it's plugged into the Raspberry Pi before configuring NUT.

Step-by-Step Installation Guide

1. Install Required Dependencies
NUT requires several development tools and libraries to build from source. Install them using:

```
sudo apt install -y build-essential autoconf automake libtool pkg-config \
libusb-dev libneon27-dev libsnmp-dev python3-dev python3-pip git
```

- **build-essential**: Provides compilers (gcc, g++) and make.
- **autoconf, automake, libtool**: Needed to generate the configure script.
- **pkg-config**: Helps locate libraries during compilation.
- **libusb-dev**: Required for USB UPS support (common for modern UPS devices).
- **libneon27-dev, libsnmp-dev**: Optional, for network-based UPS protocols like SNMP.
- **python3-dev, python3-pip**: Optional, for Python-based NUT tools.
- **git**: Used to clone the NUT repository if needed.

If you need additional features (e.g., CGI for web interfaces), you can install `apache2` and `nut-cgi` dependencies later, as shown in some guides.[](https://technotim.live/posts/NUT-server-guide/)

2. Download NUT 2.8.3 Source Code
The NUT 2.8.3 source code is available from the official NUT website or GitHub. Download the stable tarball for version 2.8.3:

```
wget https://networkupstools.org/source/2.8/nut-2.8.3.tar.gz
```

Verify the integrity of the downloaded file using the SHA-256 checksum (optional but recommended):

```
sha256sum nut-2.8.3.tar.gz
```

Compare the output with the SHA-256 sum provided on the NUT website (https://networkupstools.org/source/2.8/).[](https://networkupstools.org/historic/v2.8.3/download.html)

Extract the tarball:

```
tar -xzf nut-2.8.3.tar.gz
cd nut-2.8.3
```

Alternatively, if you prefer to clone the Git repository and check out the specific 2.8.3 tag:
```bash
git clone https://github.com/networkupstools/nut.git
cd nut
git checkout v2.8.3
./autogen.sh
```
Note: The Git method requires `autoconf`, `automake`, and `libtool` to generate the configure script, as these are not included in the repository. The tarball already includes a pre-built configure script, making it simpler for most users.[](https://networkupstools.org/historic/v2.8.3/download.html)

3. Configure the Build
Before compiling, configure the source tree for your system. Create a system user and group for NUT (e.g., `ups` and `nut`) to run the services securely:

```
sudo groupadd nut
sudo useradd -r -g nut -s /bin/false ups
```

-r : Creates a system user.
-g nut: Assigns the user to the `nut` group.
-s /bin/false: Prevents the user from logging in.

Now, configure the build with the appropriate user and group:
```bash
```

./configure --with-user=ups --with-group=nut --with-usb
```
- `--with-user=ups` and `--with-group=nut`: Specify the user and group for NUT services.
- `--with-usb`: Enables USB support (common for UPS devices). Add other options like `--with-snmp` or `--with-cgi` if needed (see `./configure --help` for options).[](https://networkupstools.org/docs/user-manual.chunked/ar01s05.html)

If you encounter issues with missing dependencies, install them using `apt` (e.g., `sudo apt install libusb-1.0-0-dev` for USB support).[](https://github.com/networkupstools/nut/issues/2431)

#### 4. Build and Install NUT
Compile the source code:
```bash
make
```
This builds the NUT client, server, and selected drivers. If you encounter errors, check for missing dependencies or consult the NUT user manual.[](https://networkupstools.org/docs/user-manual.chunked/ar01s05.html)

Install the compiled programs:
```bash
sudo make install
```
This installs NUT to the default location (`/usr/local/ups`). Sample configuration files are installed with `.sample` extensions to avoid overwriting existing configurations.[](https://networkupstools.org/docs/user-manual.chunked/ar01s05.html)

Optionally, use `make install-as-root` to handle additional setup tasks like setting permissions and creating directories (see below).[](https://networkupstools.org/docs/user-manual.chunked/ar01s05.html)

5. Set Up the State Path
Create a directory for NUT to store UPS status data and set appropriate permissions:
```bash
sudo mkdir -p /var/state/ups
sudo chmod 0770 /var/state/ups
sudo chown root:nut /var/state/ups
```
This ensures the `ups` user and `nut` group have access to the state path.[](https://networkupstools.org/docs/user-manual.chunked/ar01s05.html)

6. Configure USB Permissions (if using a USB UPS)
If your UPS connects via USB, set permissions for the USB device to allow the `ups` user to access it. USB devices are dynamically created, so use `udev` rules to manage permissions. Create a `udev` rule:
```bash

sudo nano /etc/udev/rules.d/99-nut-ups.rules
```
Add the following (adjust `idVendor` and `idProduct` based on your UPS, which you can find using `lsusb` or `nut-scanner -U`):
```bash
SUBSYSTEM=="usb", ATTR{idVendor}=="051d", ATTR{idProduct}=="0002", MODE="0660", GROUP="nut"
```
Save and reload `udev` rules:
```bash
sudo udevadm control --reload-rules
sudo udevadm trigger
```
Run `nut-scanner` to identify your UPS:
```bash
sudo nut-scanner -U
```
This should output details like `vendorid`, `productid`, and `driver` (e.g., `usbhid-ups`). Use these in the next step.[](https://technotim.live/posts/NUT-server-guide/)[](https://www.jeffgeerling.com/blog/2025/nut-on-my-pi-so-my-servers-dont-die)

7. Configure NUT
NUT configuration files are installed in `/usr/local/ups/etc/`. Copy the sample files to their active versions:
```bash
sudo cp /usr/local/ups/etc/ups.conf.sample /usr/local/ups/etc/ups.conf
sudo cp /usr/local/ups/etc/upsd.conf.sample /usr/local/ups/etc/upsd.conf
sudo cp /usr/local/ups/etc/upsmon.conf.sample /usr/local/ups/etc/upsmon.conf
sudo cp /usr/local/ups/etc/upsd.users.sample /usr/local/ups/etc/upsd.users
sudo cp /usr/local/ups/etc/nut.conf.sample /usr/local/ups/etc/nut.conf
```

Edit `ups.conf` to define your UPS:
```bash
sudo nano /usr/local/ups/etc/ups.conf
```
Example configuration (adjust based on `nut-scanner` output):
```bash
[myups]
    driver = usbhid-ups
    port = auto
    desc = "My UPS"
    vendorid = 051d
    productid = 0002
```
Edit `upsd.conf` to allow network access:
```

```bash
sudo nano /usr/local/ups/etc/upsd.conf
```
Change:
```bash
LISTEN 127.0.0.1 3493
```
to:
```bash
LISTEN 0.0.0.0 3493
```
Edit `upsd.users` to define admin and monitor users:
```bash
sudo nano /usr/local/ups/etc/upsd.users
```
Example:
```bash
[admin]
    password = YOUR_PASSWORD   actions = set
    actions = fsd
    instcmds = all
    upsmon primary

[observer]
    password = YOUR_PASSWORD   upsmon secondary
```
Edit `upsmon.conf` to monitor the UPS:
```bash
sudo nano /usr/local/ups/etc/upsmon.conf
```
Example:
```bash
MONITOR myups@localhost 1 admin YOUR_PASSWORD primary
FINALDELAY 180
```
Set the NUT mode in `nut.conf`:
```bash
sudo nano /usr/local/ups/etc/nut.conf
```
Set:
```bash
MODE=netserver
```

8. Start and Enable NUT Services
Start the NUT driver and server:

```bash
sudo /usr/local/ups/sbin/upsdrvctl start
sudo /usr/local/ups/sbin/upsd
sudo /usr/local/ups/bin/upsmon
```
Enable services to start on boot:
```bash
sudo systemctl enable nut-server
sudo systemctl enable nut-monitor
sudo systemctl start nut-server
sudo systemctl start nut-monitor
```
If `systemctl` commands fail, it may be due to missing systemd service files. Create them manually or use `make install-as-root` to generate them.[](https://www.jeffgeerling.com/blog/2025/nut-on-my-pi-so-my-servers-dont-die)[](https://networkupstools.org/docs/user-manual.chunked/ar01s05.html)

9. Verify Installation
Check if NUT is working:
```bash
upsc myups@localhost
```
This should display UPS status details (e.g., `battery.charge`, `device.model`). If it fails, check logs in `/var/log/syslog` or `/var/log/messages` for errors.[](https://www.jeffgeerling.com/blog/2025/nut-on-my-pi-so-my-servers-dont-die)

10. Troubleshooting
- **Command not found (e.g., `upsdrvctl`)**: Ensure `/usr/local/ups/bin` and `/usr/local/ups/sbin` are in your PATH:
  ```bash
  export PATH=$PATH:/usr/local/ups/bin:/usr/local/ups/sbin
  ```
  Add this to `~/.bashrc` for persistence. This issue was reported in similar installations.[](https://forums.raspberrypi.com/viewtopic.php?t=334804)
- **USB issues**: Verify `libusb-1.0-0-dev` is installed and the `udev` rules are correct.[](https://github.com/networkupstools/nut/issues/2431)
- **Service not starting**: Check permissions on `/var/state/ups` and configuration files. Ensure the `ups` user has access.
- **Driver issues**: If `nut-scanner` doesn’t detect your UPS, consult the NUT hardware compatibility list (https://networkupstools.org/docs/user-manual.chunked/ar01s05.html) or try a different driver (e.g., `nutdrv_qx`).[](https://www.jeffgeerling.com/blog/2025/nut-on-my-pi-so-my-servers-dont-die)

11. Optional: Install NUT CGI for Web Interface
To monitor via a web interface:
```bash
```

sudo apt install apache2 nut-cgi
sudo a2enmod cgi
sudo systemctl restart apache2
```

Configure `/usr/local/ups/etc/hosts.conf`:
```bash
sudo nano /usr/local/ups/etc/hosts.conf
```

Example:
```bash
MONITOR myups@localhost "My UPS"
```

Access the web interface at `http://<your-pi-ip>/cgi-bin/nut/upsstats.cgi`.[](https://technotim.live/posts/NUT-server-guide/)

Notes
- **Why 2.8.3?**: This version includes specific fixes and features not in earlier releases (e.g., improved driver support). Check the release notes for details (https://networkupstools.org/docs/release-notes.chunked/NUT_Release_Notes.html#_release_notes_for_nut_2_8_3).[](https://github.com/networkupstools/nut/releases)
- **Security**: Set strong passwords in `upsd.users` and limit network access in `upsd.conf` if not needed.
- **Upgrading**: If upgrading from NUT 2.7.x, remove the old version first (`sudo apt remove nut nut-client nut-server`) to avoid conflicts.[](https://forums.raspberrypi.com/viewtopic.php?t=334804)
- **Documentation**: Refer to the NUT user manual (https://networkupstools.org/docs/user-manual.chunked/) for advanced configuration.[](https://networkupstools.org/docs/user-manual.pdf)

If you encounter specific errors, let me know the error messages, and I can provide targeted assistance!

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```