

1. After clean install of Ubuntu (32 or 64 bit)

```
sudo apt-get install kernel-package
sudo apt-get install fakeroot build-essential crash kexec-tools
makedumpfile kernel-wedge
sudo apt-get build-dep linux
sudo apt-get install git-core libncurses5 libncurses5-dev libelf-dev
asciidoc binutils-dev
sudo apt-get install qt3-dev-tools libqt3-mt-dev
```

2. Set up convenience variables

Navigate to an empty directory to act as the workspace and set up these environment variables and directories:

```
export linux_version=2.6.32.20
export linux_tree=`pwd`/linux-$linux_version

export xenomai_version=2.5.5.2
export xenomai_root=`pwd`/xenomai-$xenomai_version

export build_root=`pwd`/build
mkdir $build_root
```

3. Download and unpack Xenomai

```
wget http://download.gna.org/xenomai/stable/xenomai-
$xenomai_version.tar.bz2
tar xf xenomai-$xenomai_version.tar.bz2
```

4. Download and unpack Linux Kernel Source

```
wget http://www.kernel.org/pub/linux/kernel/v2.6/linux-
$linux_version.tar.bz2
tar xf linux-$linux_version.tar.bz2
```

5. Copy the kernel config that your machine is already using as the basis for the real-time kernel:

```
cp -vi /boot/config-`uname -r` $linux_tree/.config
```

6. Patch the Kernel

```
$xenomai_root/scripts/prepare-kernel.sh --arch=x86\
--adeos=$xenomai_root/ksrc/arch/x86/patches/adeos-ipipe-2.6.32.20-
x86-2.7-03.patch\
--linux=$linux_tree
```

7. Configure the Kernel

```
cd $linux_tree
make menuconfig
```

The following are a few options to check:

```
Real-time sub-system
  ENABLE Xenomai
  Drivers
    ANALOGY Drivers
      ENABLE ANALOGY interface and NI PCIMIO
Power management and ACPI options
  ACPI (Advanced Configuration and Power Interface) Support
  DISABLE Processor
  CPU Frequency scaling
    DISABLE CPU Frequency scaling
Processor Type and Features
  SET Processor family
  DISABLE -fstack-protector buffer overflow detection
Device Drivers
  Staging Drivers
    DISABLE Data Acquisition Support (COMEDI)
```

8. Build the kernel

```
export CONCURRENCY_LEVEL=7
fakeroot make-kpkg --bzimage --initrd --append-to-version=-xenomai-
$xenomai_version kernel-image kernel-headers modules
cd ..
sudo dpkg -i linux-image-*.deb
sudo dpkg -i linux-headers-*.deb
```

9. After compilation completes, run:

```
sudo update-initramfs -c -k "$linux_version-xenomai-$xenomai_version"
sudo update-grub
```

10. Configure Xenomai User Libraries

```
cd $build_root
$xenomai_root/configure\
  --enable-shared\
  --enable-smp\
  --enable-posix-auto-mlockall\
  --enable-dlopen-skins\
  --enable-x86-sep
make
sudo make install
```

11. Add xenomai Group For Non-root RT

```
sudo addgroup xenomai
sudo adduser `whoami` xenomai
```

13. Then update grub:

```
sudo update-grub
```

14. Restart computer and boot into xenomai kernel

15. Install RTX

open a new terminal and clone the RTX repository

```
git clone https://github.com/RTXI/rtxi.git
```

```
cd rtxi
```

```
./setup
```

16. You will be asked to choose an installation setting

type 3

17. After completion, type the following in the terminal window to start rtxi

```
sudo rtxi
```