

## How to install CETA on Ubuntu 10.04

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### **Introduction**

This document shows how CETA [1] (<http://ziyang.eecs.umich.edu/projects/ceta/>) can be installed on Ubuntu 10.04. A 32 bit version of this Operating System was used but, it should work with 64 bit versions too. I have used GCC version 4.4.3 to compile the CETA module.

### **Prerequisites**

CETA is a Simics module. Hence, first you need to get Simics (<http://www.simics.net>), which is free for academic use. I have used an older version of Simics. More precisely, I used version 3.0.31. Currently, Simics is at version 4.4 but, since it is stated in the CETA paper that Simics 3.0.8 was used, I preferred to use Simics version 3, to avoid any potential API incompatibilities. However, if you can confirm that CETA builds with newer versions of Simics too (starting from version 4), please feel free to inform me at [ciprian.radu@ulbsibiu.ro](mailto:ciprian.radu@ulbsibiu.ro). You may also use this email address to contact me if you encounter any other problems with the installation steps written in this guide.

From Simics, you will also need the [enterprise3-rh73.craff](#) image file. It contains the Operating System used by CETA, which is a RedHat 7.3 with Linux kernel 2.4.18<sup>1</sup>.

CETA also requires:

- [Python](#) (you should have this already installed; you can install it by doing: `sudo apt-get install python`);
- [Graphviz](#) (you can install it by doing: `sudo apt-get install graphviz`);
- [NetworkX](#) (the latest version is not suitable; version [0.33](#) works: simply extract the archive and run `setup.py`).

### **Installation steps**

The following installation steps are based on the README file from CETA. I will simply rewrite these steps and make the necessary modifications were it is required. However, note that this document is not a replacement for the README file. You may still find there how to run an application and trace it with CETA and how to generate the Communication Task Graphs.

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<sup>1</sup> There is a typo in the CETA paper: the version of the Linux kernel is 2.4.18 and not 2.4.8

At this point it is assumed that Simics is installed. I will denote the path to the installation of Simics as: `$$SIMICS`.

## Build the CETA module

1. Copy `ceta_trace.cc`, `lru.cc` and `lru.h` in `$$SIMICS/src/extensions/trace`
2. Edit the Makefile from `$$SIMICS/src/extensions/trace` by changing the `SRC_FILES` to `ceta_trace.cc` instead of `trace.c`.
3. Open a terminal and `cd` to `$$SIMICS/x86-linux`
4. Check whether your Ubuntu uses `dash` or `bash`. We need to use `bash` but, Ubuntu uses `dash` by default. The following command shows you which of the two is used:  
`ls -l /bin/sh`  
In case `dash` is used, we need to switch to `bash`:  
`sudo ln -sf bash /bin/sh`
5. `sudo apt-get install rc libbz2-dev libelf-dev libreadline5-dev`
6. This step is only for 64 bit versions of Ubuntu!  
`sudo apt-get install libc6-dev-i386 g++-multilib`
7. `./configure` (no errors should be encountered)
8. Go to `$$SIMICS/x86-linux/lib` and do  
`make clean`  
`make trace`

## How to deal with a Simics issue: **version `GCC\_4.2.0' not found**

I have encountered this Simics error while trying to enable tracing within Simics (step 2.5 a) from the CETA README file). Initially I have suspected this to be an incompatibility between my Simics version and my GCC version. This was not the case and the solution is straightforward:

```
sudo ln -s $$SIMICS/x86-linux/bin/libsimics-common.so /usr/lib/libsimics-common.so
cd $$SIMICS/x86-linux/sys/lib
sudo mv libgcc_s.so.1 libgcc_s.so.1.bak
```

## References

- [1] A. Liu and R.P. Dick, “Automatic run-time extraction of communication graphs from multithreaded applications,” Proceedings of the 4th international conference on Hardware/software codesign and system synthesis, Seoul, Korea: ACM, 2006, pp. 46-51.