

ParAd Installation Guide

<https://github.com/dazeorgacm/ParAd>

Tested Jan 16, 2019 on Ubuntu 18.04.1 LTS, x86-64 (Dell Inspiron 15, 5000 series).
Most of prerequisite software is installed from source code.

1. Download recent version of ParAd (source code) from <https://github.com/dazeorgacm/ParAd>

For instance: ParAd-1.1.2.1.tar.gz

2. Extract the archive (to you home directory)

```
>tar -zxvf ParAd-1.1.2.1.tar.gz
```

3. Enter ParAd directory and read README.md file

```
>cd ParAd-1.1.2.1  
>cat README.md | more
```

4. Install prerequisite software from the specified locations

Return to you home directory

```
>cd $HOME
```

4.1. *Install compilers etc*

```
>sudo apt install gcc
```

```
>sudo apt install gfortran
```

```
>sudo apt install g++
```

```
>sudo apt install make
```

```
>sudo apt install cmake
```

```
>sudo apt install m4
```

4.2. *MPICH*

4.2.1. Download MPICH source code from www.mpich.org

For instance: mpich-3.3.tar.gz

4.2.2. Extract the archive (to you home directory)

```
>tar -zxvf mpich-3.3.tar.gz
```

4.2.3. Enter MPICH directory

```
>cd mpich-3.3
```

4.2.4. Configure MPICH

```
>./configure
```

4.2.5. Build MPICH

```
>make
```

4.2.6. Install MPICH

```
>sudo make install
```

Installed by default to /usr/local

4.2.7. Return to your home directory

```
>cd $HOME
```

4.3. GraphBLAS – for sparse integer matrix multiplication

4.3.1. Download SuiteSparse from <http://faculty.cse.tamu.edu/davis/suitesparse.html>

For instance: SuiteSparse-5.4.0.tar.gz

4.3.2. Extract the archive (to you home directory)

```
>tar -zxvf SuiteSparse-5.4.0.tar.gz
```

4.3.3. Enter GraphBLAS directory

```
>cd SuiteSparse
```

```
>cd GraphBLAS/build
```

4.3.4. Configure GraphBLAS

```
> cmake ..
```

4.3.5. Build GraphBLAS

```
>make
```

4.3.6. Install GraphBLAS

```
>sudo make install
```

Installed by default to /usr/local

4.3.7. Return to your home directory

```
>cd $HOME
```

4.4. 4ti2 – for solving linear Diophantine system

4.4.1. Download 4ti2 from www.4ti2.de and <https://4ti2.github.io/>

For instance: 4ti2-1.6.7.tar.gz

4.4.2. Extract the archive (to you home directory)

```
>tar -zxvf 4ti2-1.6.7.tar.gz
```

4.4.3. Enter 4ti2 directory

```
>cd 4ti2-1.6.7
```

4.4.4. Configure 4ti2

```
>./configure
```

4.4.5. Build 4ti2

```
>make
```

```
>make check
```

4.4.6. Install 4ti2

```
>sudo make install-exec
```

Installed by default to /usr/local

4.4.7. Return to your home directory

```
>cd $HOME
```

5. Build ParAd

5.1. Enter ParAd directory

```
>cd ParAd-1.1.2.1
```

5.2. Build ParAd

```
>make
```

6. Test ParAd

6.1. Enter test directory

```
>cd test
```

6.2. Run test

```
>mkdir output
```

```
>./test_mpi
```

In case of success you will finally get

```
All the tests completed successfully!
```

Note: copy ParAd to /usr/local/bin to install it for all users
>sudo cp ParAd /usr/local/bin

Dmitry Zaitsev, daze@acm.org