# NDN/DTN: Installation Manual

This manual was prepared for use with Ubuntu Linux, however with few modifications it can be adapted to other related platforms.

## 1. Install IBR-DTN

### i) Download and run the following script that fetches all necessary modules

The provided script is named *ibrdtn-1.0.1.sh*

### ii) Install the required dependencies

sudo apt-get install devscripts build-essential cdbs pkg-config debhelper autotools-dev libnl-3-dev  libnl-genl-3-dev libnl-route-3-dev libnl-nf-3-dev libnl-cli-3-dev libssl-dev libssl-dev zlib1g-dev  libsqlite3-dev libcurl4-openssl-dev libdaemon-dev libvmime-dev libarchive-dev automake autoconf pkg-config libtool libcppunit-dev

### iii) Install the individual components

```
cd ibrcommon-1.0.1

./configure --with-openssl
make
sudo make install
sudo ldconfig

cd ../ibrdtn-1.0.1

./configure
make
sudo make install
sudo ldconfig

cd ../ibrdtnd-1.0.1

./configure --with-curl
make
sudo make install
sudo ldconfig

cd ../ibrdtn-tools-1.0.1

./configure
make
sudo make install
sudo ldconfig
cd ..
```

**iv) Download the dtn configuration file for the demo and set it up accordingly**

Open the file *ibrdtnd_demo.conf* that is provided and make any necessary changes

*(Can also be made on the default file, found on /ibr-dtn/ibrdtnd-1.0.1/etc/ibrdtnd.conf )*

Some important fields are:

a) *local_uri*

By changing the value of *local_uri*, you can change the dtn eid (endpoint ID). This is the name that NFD uses to forward Interests/Data towards the daemon.

b) *storage_path*

This option enables persistent storage for bundles

c) *discovery_announce, discovery_crosslayer*

Discovery is disabled so that static links can be set.

d) *routing*

In the previous demo, we set up static links so the *routing* is set to "*none*". However, different routing algorithms can be enabled.

e) *route1*

Static routing rules are being configured.

In the example, we have the following topology

(umobile1)---------(android-ed428e2d)---------(umobile2)

Our dtn node is *umobile1* and we want to set up a static route to *umobile2* via *android-ed428e2d,* which is the next hop neighbor.

We set the static rule as:

*route1 = ^dtn://umobile2/[[:alpha:]] dtn://android-ed428e2d.dtn*

f) *static1_address, static1_port, static1_uri, static1_proto*

Static routing links are being configured. As discovery was disabled, we have to manually set up the link to *android-ed428e2d*

**v) Test the installation**

You can run the daemon by using the command *" dtnd "* in the command line

Best option is to explicitly define the interface and configuration file to use, e.g.

*dtnd -i wlan0 -c ~/apps/umobile/ibr-dtn/ibrdtnd-1.0.1/etc/ibrdtnd_demo.conf*

A simple test using 2 nodes can be found here:

https://trac.ibr.cs.tu-bs.de/project-cm-2012-ibrdtn/wiki/ibr-dtn-tut

## 2. Install the modified NFD and ndn-cxx libraries

a) Download and extract the relevant files (*ndn-cxx_umobile* and *ndn-dtn*)

b) Install ndn-cxx_umobile

- Prerequisites on Ubuntu:

sudo apt-get install build-essential libcrypto++-dev libsqlite3-dev libboost-all-dev libssl-dev

- Optionally:

sudo apt-get install doxygen graphviz python-sphinx python-pip
```
sudo pip install sphinxcontrib-doxylink sphinxcontrib-googleanalytics
```

- Then

./waf configure
```
./waf
sudo ./waf install
```

- To install on other platforms, see
https://named-data.net/doc/ndn-cxx/current/INSTALL.html

c) Install ndn-dtn

- Prerequisites on Ubuntu:

```
sudo apt-get install pkg-config

sudo apt-get install libpcap-dev

sudo apt-get install doxygen graphviz python-sphinx
```

- Then

```
./waf configure
./waf
sudo ./waf install
```

- To install on other platforms, see
http://named-data.net/doc/NFD/current/INSTALL.html

d) Replace the default *nfd.conf* with the custom file provided

Then, edit the custom file and change the *endpointPrefix* value to the *local_uri* variable that was set earlier in the *ibrdtn.conf* file
(in the example scenario, it is set to *dtn://umobile1)*

This is used by the NFD to communicate with the local IBR-DTN daemon

e) Run NFD

*nfd-start*

- Note: the ibr-dtn daemon must have already been initiated separately

In order to set a FIB entry for some name, we use the next NDN-DTN face

In our example, the topology is the following:

(umobile1)---------(android-ed428e2d)---------(umobile2)

NDN-DTN DTN NDN-DTN

Our local NFD runs in *umobile1*. To register *umobile2* as the next hop FIB entry for */umobile/dtntest* , we use the following command:

*nfdc register /umobile/dtntest dtn://umobile2/nfd*