Snappy Ubuntu Core

The following instructions explain how to build a Kaa endpoint SDK and integrate it with snappy Ubuntu Core.

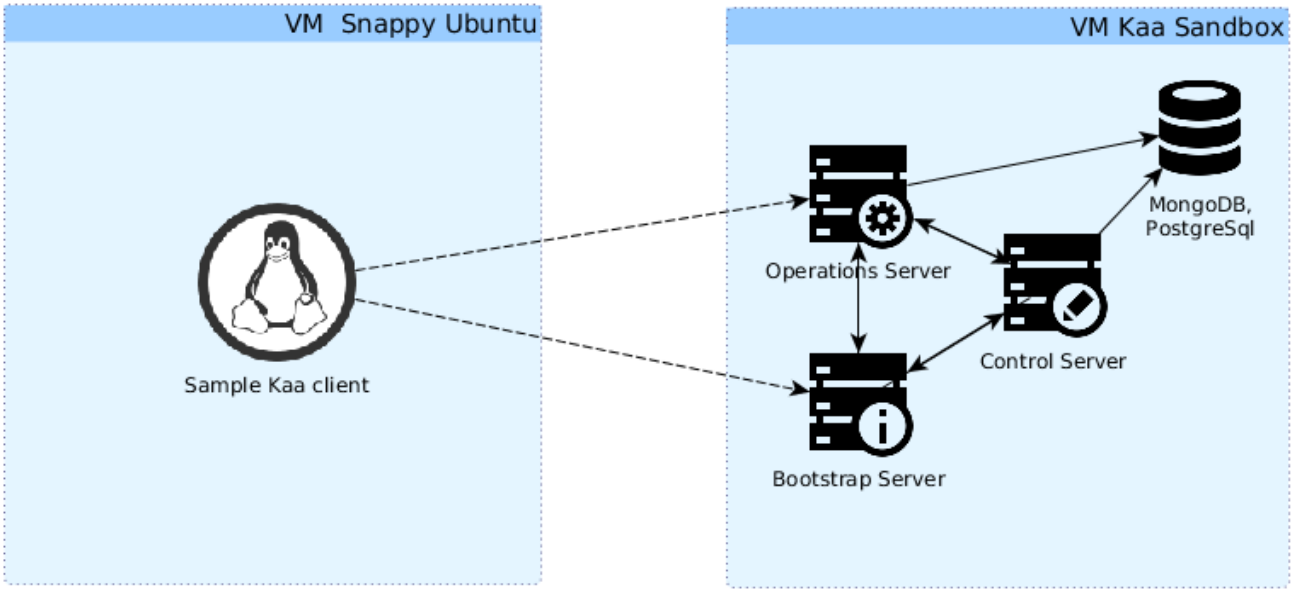
Required software components

Ensure the following components are installed on your machine.

- VirtualBox
- Vagrant
- Latest Kaa sandbox

Topology

To integrate Kaa with snappy Ubuntu Core, you need to use two virtual boxes: one to deploy snappy Ubuntu and a Kaa client and the other to deploy the Kaa sandbox.



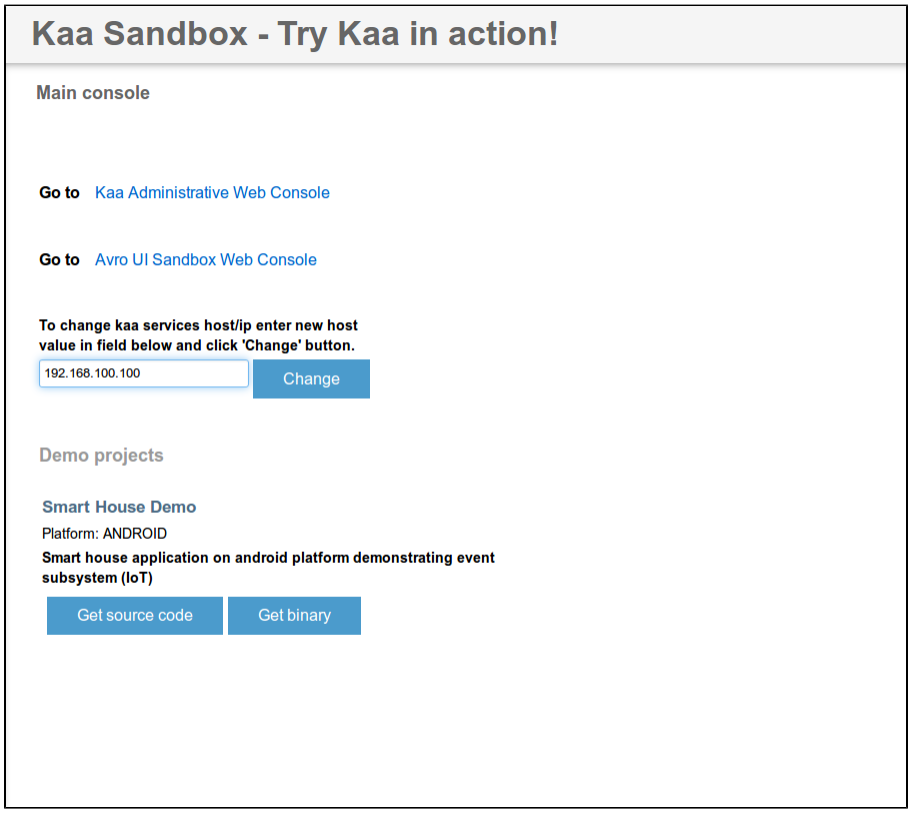
Configuring and building sample Kaa client

We assume that the Kaa sandbox is already started.

NOTE: Make sure that the Kaa client is able to connect to Bootstrap and Operations servers deployed on the Kaa sandbox.

To configure and build a sample Kaa client, proceed as follows:

1. Go to http://localhost:8080/sandbox/.
2. Enter the IP address of your Kaa sanbox VM into the text field and then click **Change** (in the following screenshot, the IP address is 192.168.100.100).



3. Wait till the service restarts.
4. Get the latest Kaa code from github.

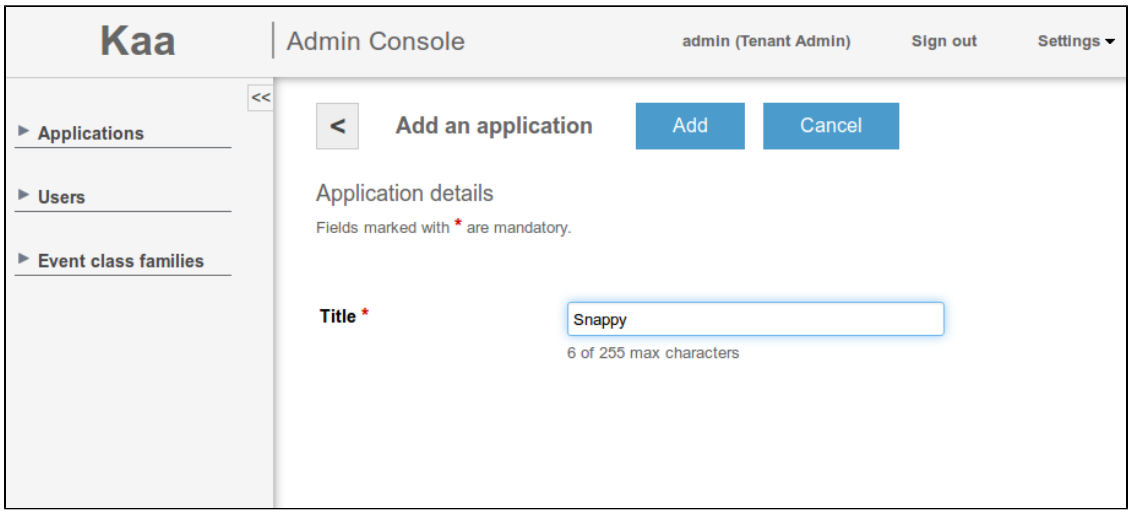
```
$ git clone git@github.com:kaaproject/kaa.git
$ cd kaa/examples/
```

5. Configure and generate C SDK for your Kaa client.
   NOTE: You can find sample Avro schemas in c-sdk-sample/avro/path.

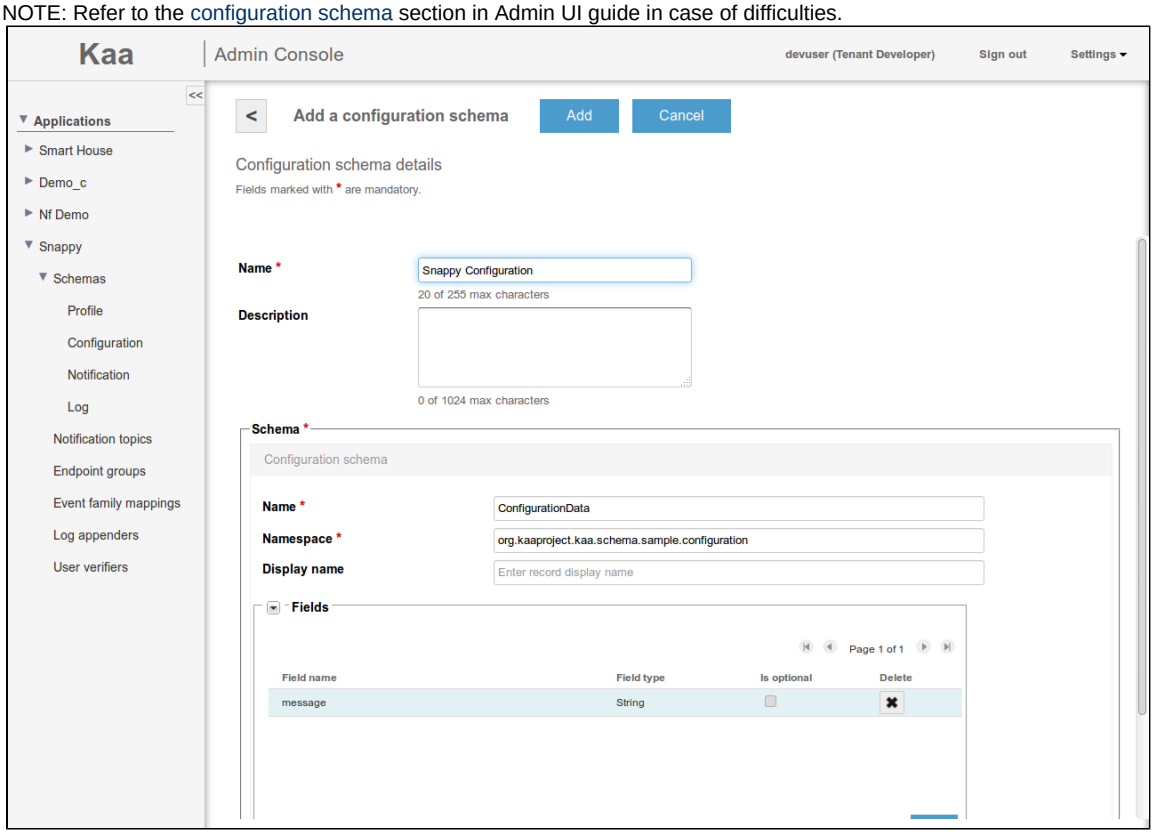
Avro schemas

```
$ ls c-sdk-sample/avro/
configuration.avsc  log.avsc  profile.avsc
```

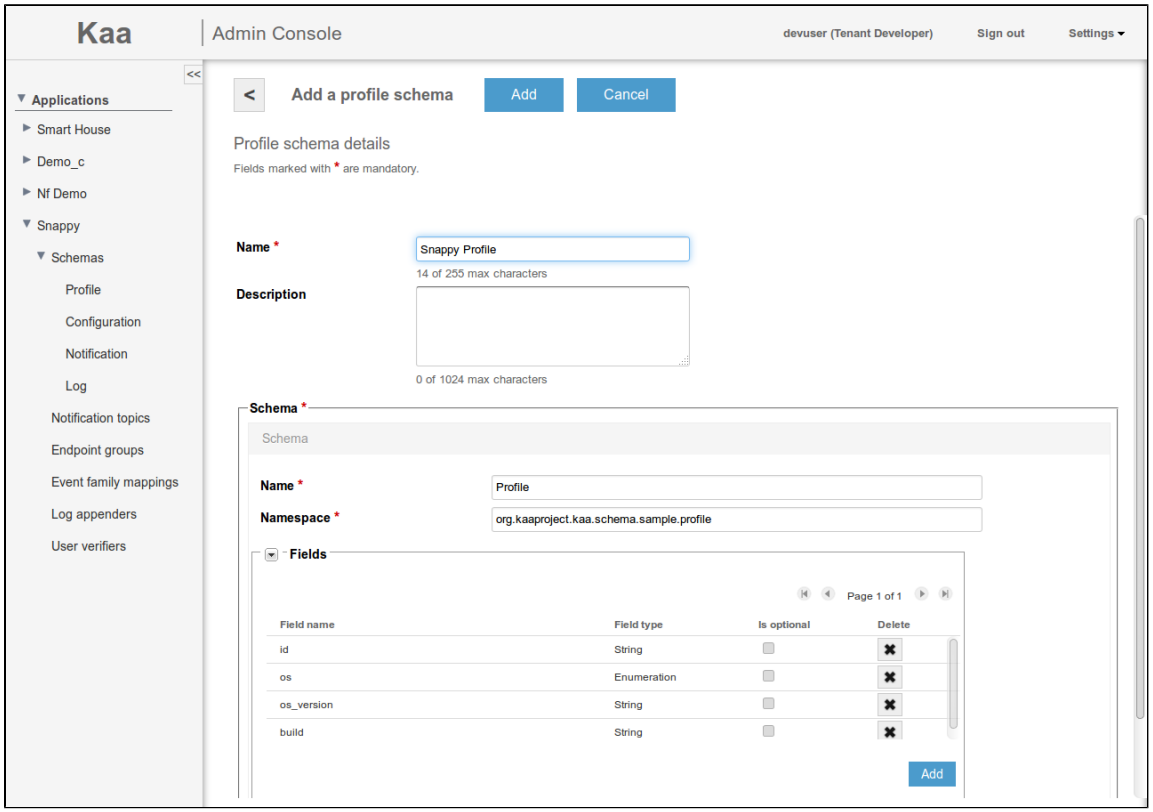
6. Create a snappy application in web UI.
   NOTE: Refer to managing applications in case of difficulties.



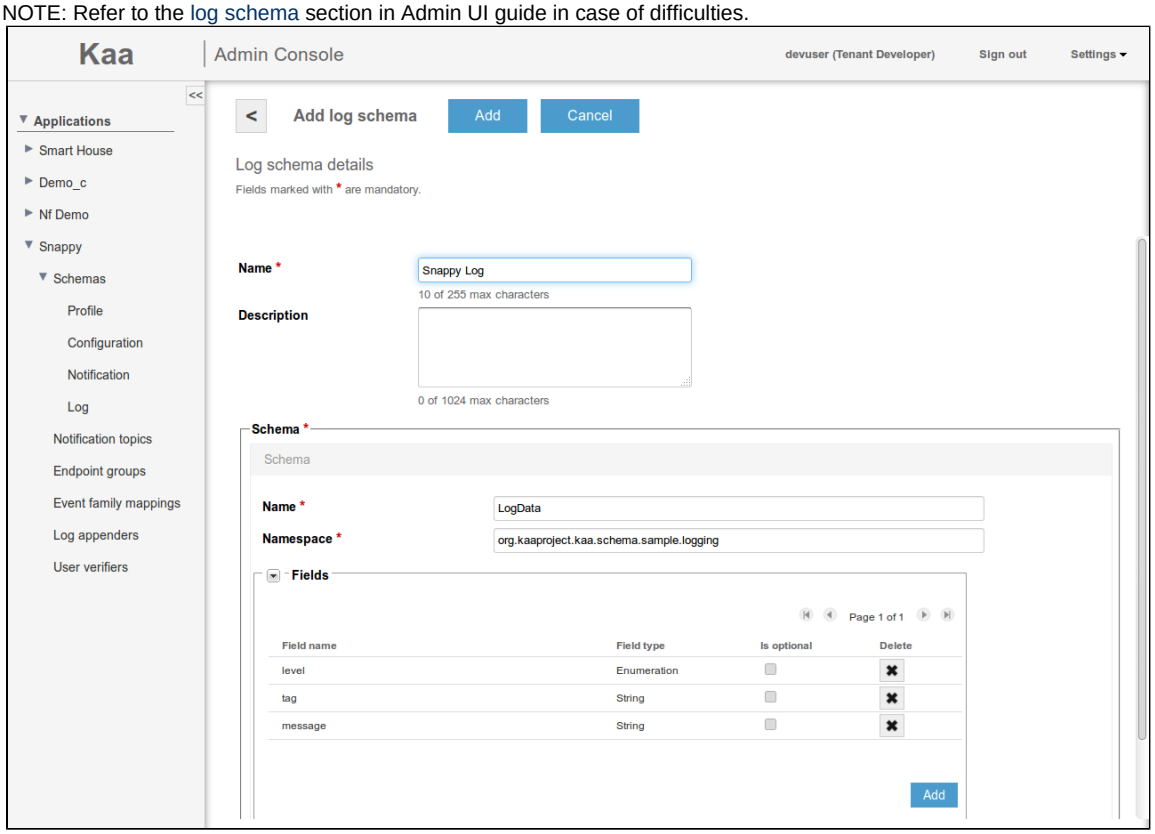
7. Add a new configuration schema for your application (look at configuration.avsc).
   NOTE: Refer to the configuration schema section in Admin UI guide in case of difficulties.



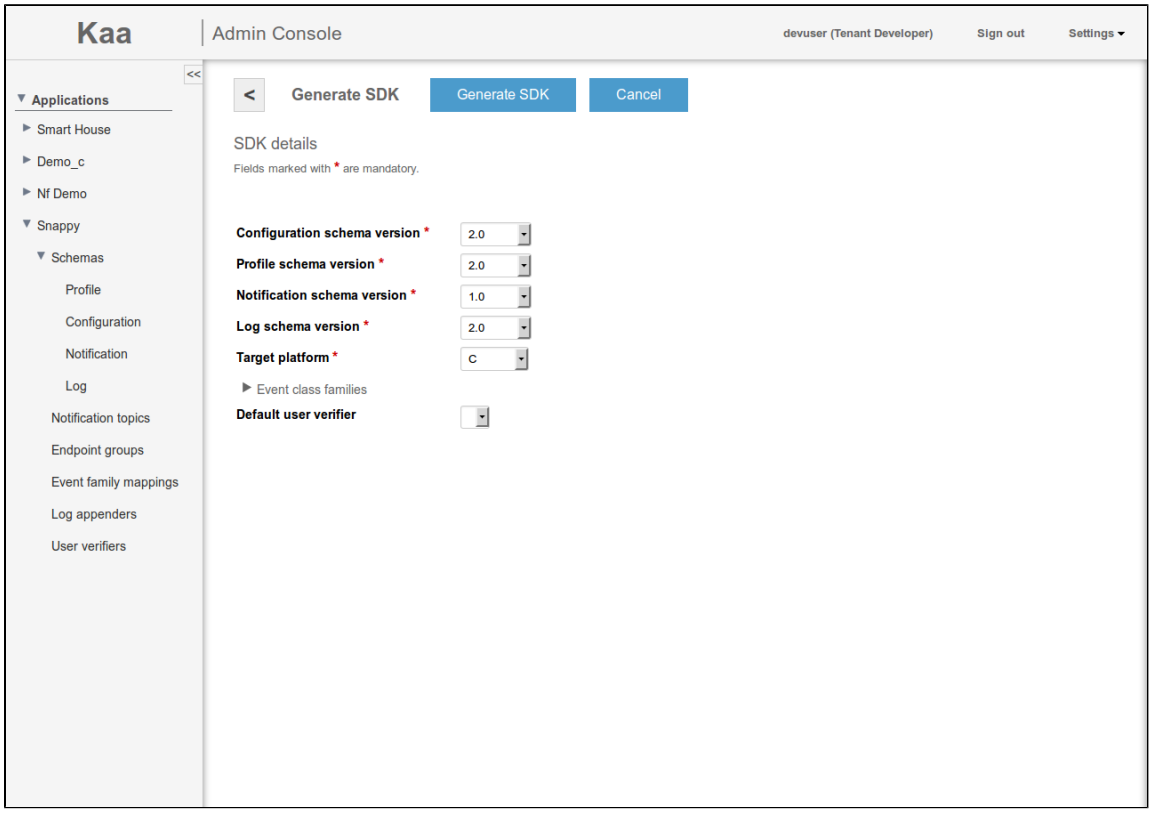
8. Add a new profile schema for your application (look at profile.avsc).
   NOTE: Refer to the profile schema section in Admin UI guide in case of difficulties.



9. Add a new log schema for your application (look at log.avsc).
   NOTE: Refer to the log schema section in Admin UI guide in case of difficulties.



10. Generate the C SDK for your application.
    NOTE: Refer to the generating SDK section in Admin UI guide in case of difficulties.



11. Build a Kaa client with the generated C SDK. Remove everything in the c-sdk-sample/libs/kaa folder and unzip the generated SDK to that folder.

Build C Kaa client

```
$ rm -rf kaa/examples/c-sdk-sample/libs/kaa/* # remove existing files
$ tar -cvzf kaa-client-sdk-p2-c2-n1-l2.tar.gz
kaa/examples/c-sdk-sample/libs/kaa/ # untar Kaa sdk
$ ./build.sh clean build #build client
```

If the build is successful, you will get the result on your screen as follows:

Build result

```
[100%] Built target kaac_s
-- The C compiler identification is GNU 4.8.2
-- The CXX compiler identification is GNU 4.8.2
-- Check for working C compiler: /usr/bin/cc
-- Check for working C compiler: /usr/bin/cc -- works
-- Detecting C compiler ABI info
-- Detecting C compiler ABI info - done
-- Check for working CXX compiler: /usr/bin/c++
-- Check for working CXX compiler: /usr/bin/c++ -- works
-- Detecting CXX compiler ABI info
-- Detecting CXX compiler ABI info - done
-- Found OpenSSL:
/usr/lib/x86_64-linux-gnu/libssl.so;/usr/lib/x86_64-linux-gnu/libcrypto.so
(found version "1.0.1f")
-- Configuring done
-- Generating done
-- Build files have been written to:
/home/igor/code/github/kaa/examples/c-sdk-sample/build
Scanning dependencies of target sample_c_client
[100%] Building C object CMakeFiles/sample_c_client.dir/src/kaa_demo.c.o
Linking C executable sample_c_client
[100%] Built target sample_c_client
```

Building snappy package

To build a snap package, proceed as follows:

1. Install snappy Ubuntu tools by executing the following commands either from Ubuntu or from the Kaa sandbox (in case you are using another OS). Building inside Kaa sandbox is preferable, because system upgrade step may harm your system.

   Install Snappy tools

   ```
   $ sudo add-apt-repository ppa:snappy-dev/beta
   $ sudo apt-get update
   $ sudo apt-get upgrade  #do it for your own risk, you better to use virtual
   machine
   $ sudo apt-get install snappy-tools
   ```

2. Create the correct folder structure. Refer to the official snappy Ubuntu Core documentation for details.

   ```
   $ mkdir snappy-kaa
   $ mkdir snappy-kaa/meta
   $ mkdir snappy-kaa/bin
   ```

3. Copy the previously built Kaa client to the snappy-kaa/bin directory.

```
$ cp kaa/examples/c-sdk-sample/build/sample_c_client snappy-kaa/bin/client #
Copy with rename sample client to bin directory
```

4. Create the package.yaml file in the snappy-kaa/meta directory with the following context.

package.yaml

```
name: kaa
vendor: Vendor Name <info@kaaproject.org>
icon: meta/kaa.png
version: 0.0.1
binaries:
 - name: bin/client
   description: "snappy example: kaa c client"
```

5. Create the readme.md file in the snappy-kaa/meta directory with the following context.

readme.md

```
Minimal C Kaa client for snappy

Any other info about your application.
```

6. Build a snap package from the snappy-kaa directory.

Build snappy package

```
$ snappy build snappy-kaa
```

As a result, you should get the kaa_0.0.1_all.snap file.

```
$ ls snappy-kaa
bin  kaa_0.0.1_all.snap  meta
```

Known issue: your readme.md should contain at least two lines of text or package build will silently fail. this is some kind of undocumented behavior.

Installing snappy Ubuntu

To locally deploy snappy Ubuntu, run the following commands.

Deploy Snappy ubuntu

```
$ vagrant init ubuntu/ubuntu-core-devel-amd64
$ vagrant up
$ vagrant ssh
```

As a result, you should be connected to your snappy Ubuntu box.

```
Welcome to Ubuntu Vivid Vervet (development branch) (GNU/Linux 3.18.0-9-generic
x86_64)

 * Documentation:  https://help.ubuntu.com/
Welcome to the Ubuntu Core rolling development release.

 * See https://ubuntu.com/snappy

It's a brave new world here in snappy Ubuntu Core! This machine
does not use apt-get or deb packages. Please see 'snappy --help'
for app installation and transactional updates.

Last login: Tue Feb 24 15:32:09 2015 from 10.0.2.2
ubuntu@localhost:~$
```

Installing sample Kaa client on snappy Ubuntu

To install the previously built sample Kaa client on snappy Ubuntu, proceed as follows:

1. From the snappy Ubuntu shell, copy kaa_0.0.1_all.snap from your host machine.

   Get and install snap package

   ```
   $ scp username@remote_machine_ip:path/to/your/remote/snapp/file . # Copy
   kaa_0.0.1_all.snap from your host machine or Kaa sandbox.
   $ snappy install ./path/to/your/local/snapp/file  --allow-unauthenticated #
   Install kaa_0.0.1_all.snap
   ```

2. Start the Kaa client on the snappy Ubuntu box.

   Start Kaa client

   ```
   $ kaa.client
   ```

   As a result, you should get the logs similar to the following:

```
Initializing Kaa driver...Initializing Kaa SDK...
2015/02/25 14:14:40 [INFO] [kaa.c:200] (0) - Kaa SDK version 0.7.0-SNAPSHOT,
commit hash
2015/02/25 14:14:40 [DEBUG] [kaa_logging.c:110] (0) - Initialized log
collector with log storage {0x7f1134000c70}, log upload strategy
{0x7f1134000fd0}
2015/02/25 14:14:40 [TRACE] [kaa_demo.c:170] (0) - Creating endpoint profile
2015/02/25 14:14:40 [TRACE] [kaa_demo.c:178] (0) - Setting profile
2015/02/25 14:14:40 [INFO] [kaa_profile.c:406] (0) - Endpoint profile is
updated
2015/02/25 14:14:40 [WARNING] [kaa_channel_manager.c:357] (-6) - Failed to
find transport channel for service 1
2015/02/25 14:14:40 [TRACE] [kaa_demo.c:181] (0) - Adding transport channels
2015/02/25 14:14:40 [TRACE] [kaa_tcp_channel.c:166] (0) - Kaa TCP channel
creating....
2015/02/25 14:14:40 [TRACE] [kaa_tcp_channel.c:247] (0) - Kaa TCP channel
keepalive is 300
2015/02/25 14:14:40 [TRACE] [kaa_tcp_channel.c:256] (0) - Kaa TCP channel
(protocol: id=0x56C8FF92, version=1)
2015/02/25 14:14:40 [TRACE] [kaa_tcp_channel.c:294] (0) - Kaa TCP channel
created
2015/02/25 14:14:40 [TRACE] [kaa_tcp_channel.c:166] (0) - Kaa TCP channel
creating....
2015/02/25 14:14:40 [TRACE] [kaa_tcp_channel.c:247] (0) - Kaa TCP channel
keepalive is 300
2015/02/25 14:14:40 [TRACE] [kaa_tcp_channel.c:256] (0) - Kaa TCP channel
(protocol: id=0x56C8FF92, version=1)
2015/02/25 14:14:40 [TRACE] [kaa_tcp_channel.c:294] (0) - Kaa TCP channel
created
2015/02/25 14:14:40 [INFO] [kaa_channel_manager.c:229] (0) - Bootstrap
transport channel [0x1F2082EE] added (protocol: id=0x56C8FF92, version=1)
...
```

Further reading

To learn more about snappy Ubuntu Core, visit the official Ubuntu web site.

To learn more about Kaa, look at the following guides and references.

Guide	What it is for
Getting started	Use it to quickly create your first Kaa application.
Design reference	Use this reference to learn about features and capabilities of Kaa (Endpoint profiling, Events, Notifications, Logging, and other features).
Programming guide	Use this guide to create your own Kaa applications.