**Testing with ION**

This document describes how to confiure ION to forward bundles from the HDTN bpgen tool to the HDTN bpsink tool. This will ensure that both sending and receiving bundles with a specific convergence layer is compatible with ION.

The simple network configuration is shown in Figure 1.

A picture containing text

Description automatically generated

Figure 1. Basic test set up

The ION configurations in this folder are based on the demos that distributed with ION found in ion-open-source-3.7.2/demos.

1. You will first need to download ION from <https://sourceforge.net/projects/ion-dtn/>

and follow the installation instructions.

1. To verify ION is installed correctly run one of the demo scripts:
   1. cd ./ion-open-source-3.7.2/demos/bench-stcp
   2. ./dotest

**Test HDTN STCP with ION**

In one terminal:

* cd ./hdtn/build/common/bpcodec/apps
* ./bpsink-async --use-stcp --tcpcl-eid="ipn:3.1"

In another terminal:

* cd ./hdtn/tests/compatibility\_tests/ion\_stcpcl
* ./stcp-hdtn
* you will see the following output and ION will now run its processes in the background

Text, letter

Description automatically generated

In another terminal:

* cd ./hdtn/build/common/bpcodec/apps
* ./bpgen-async --use-stcp --bundle-rate=1 --tcpcl-eid="ipn:1.1" --bundle-size=1000

Now ION will forward bundles from bpgen-async to bpsink-async. Press control-c in the terminal running bpgen-async when you are finished. Next, press control-c in the terminal running bpsink-async. Both programs will output the number of bundles received and other statistics.

To view the status of ION:

* cd ./hdtn/tests/compatibility\_tests/ion\_stcpcl/2.bench.stcp
* cat ion.log

Graphical user interface, text, application

Description automatically generated

To stop ION:

* cd /hdtn/tests/compatibility\_tests/ion\_stcpcl/
* ./cleanup

This will stop all ION processes and delete the Spacecraft Data Recorder (SDR), the shared memory that ION uses to store bundles, and its working memory.

**Test HDTN TCPCL with ION**

The process is very similar to stcp.

In one terminal:

* cd ./hdtn/build/common/bpcodec/apps
* ./bpsink-async --use-tcpcl --tcpcl-eid="ipn:3.1"

In another terminal:

* cd ./hdtn/tests/compatibility\_tests/ion\_tcpcl
* ./tcp-hdtn

In another terminal:

* cd ./hdtn/build/common/bpcodec/apps
* ./bpgen-async --use-tcpcl --bundle-rate=1 --tcpcl-eid="ipn:1.1" --bundle-size=1000

You can also change the bundle rate and bundle size parameters