TUTORIAL - “This is INSANE! Kernel-Bypass Networking Finally Made Easy”

ACM Middleware 2025 – December 15th, 2025 – Nashville, TN, USA

Tutorial instructions

Tutorial website: http://insane-tutorial.ing.unibo.it

Once connected to the VMs, you will find an `insane-tutorial` directory, with the starter kit for the tutorial. You can `cd` into the insane-tutorial repository, you will find two directories:

- `nats`: contains the NATS server binaries and the NATS-based ping-pong application
- `insane`: contains the INSANE binaries, configs and libs for the INSANE-based app.

NATS

```
cd nats
```

1. Activate the python virtual env, where the NATS client library is installed:
   ```
   source venv/bin/activate
   ```
1. On **VM1**, start the NATS server:
   ```
   ./nats-server --addr=<local_ip> --port=4222
   ```
2. On **VM2**, start the *echo server*:
   ```
   python3 pong.py --server-ip <ip> --port 4222
   ```
3. On **VM1**, start the *client*:
   ```
   python3 ping.py --server-ip <ip> --port 4222 --size 64
   ```

   The client will start printing RTT values (in microseconds)

INSANE

```
cd insane
```

1. Modify the `ping.py` (on VM1) and `pong.py` (on VM2) to use INSANE
2. On VM2, start the INSANE daemon:
   ```
   sudo ./nsnd
   ```
3. On VM2, start the echo server:
   ```
   sudo python3 pong.py --qos [fast|default]
   ```
4. On VM1, start the INSANE daemon:
   ```
   sudo ./nsnd
   ```
5. On VM1, start the client:
   ```
   sudo python3 ping.py --qos [fast|default] --size <size>
   ```

   The client will start printing RTT values (in microseconds)