Linc OE Guide

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Disclaimer:
This document provides some instructions to getting started with LINC-OE. Please note that both documentation and code have not been tested much at this time.

Requirements

1. Erlang R15B, R16B, R17 - if possible please use R17
2. libpcap-dev package if eth interfaces will be used

Building and running

1. Obtaining LINC-OE

   ```
   git clone https://github.com/shivarammysore/LINC-Switch.git linc-oe
   cd linc-oe
   git checkout tags/oe-0.4
   ```
2. Upgrading LINE-OE

   ```
   cd ..../linc-oe
   git pull
   git checkout tags/oe-0.4
   ```
3. **sys.config** file to be copied into **rel/files/sys.config** (for now use **sys.config** attached in the email. Corresponding **json_example.json** network topology file is also attached)
4. Building

   ```
   make rel
   ```
4. Running LINC-oe. Start linc-oe in console mode:

   ```
   ./rel/linc/bin/linc console
   ```
   - when using tap interfaces root privileges may need to start LINC-OE so that taps are created (on ubuntu-like systems they are created automatically)
   - after LINC-OE start tap interfaces need to be brought up using:

     ```
     ip link set dev tap0 up
     ```
     OR
     ```
     ifconfig tap0 up
     ```
5. stop linc-oe by with ctrl-C twice

LINC console utilities

1. checking running config:

   ```
   rp(application:get_all_key(linc)).
   ```
2. getting datapath_id of logical switch 0

   ```
   linc_logic:get_datapath_id(0).
   ```
3. Stopping a logical switch

   ```
   linc:stop_switch(SwitchId).
   ```

4. Starting a logical switch
```
linc:start_switch(SwitchId).
```
5. Disabling a port
```
linc:port_down(SwitchId, PortId).
```
6. Enabling a port
```
linc:port_up(SwitchId, PortId).
```
7. listing ports on a logical switch
```
linc:ports(SwitchId).
```

Changing interfaces in the sys.config file

The ports interfaces may be changed in the sys.config file in the **capable_switch_ports** tuple. By default all the WPorts have a type set to optical:
```
... {port,2,[{interface,"dummy"}, {type, optical}]} ...
```
While TPorts have no `type` set. The interface for these ports can be changed by the `interface` tuple like this:
```
... {port,2,[{interface,"eth0"}]} ...
```
or
```
... {port,2,[{interface,"tap0"}]} ...
```
If the interface is a TAP interface and its name does not start from a "tap" you may specify the name using as follows:
```
... {port,2,[{interface,"funnyTap0"}, {type, tap}]} ...
```
The same is for a strangely named eth:
```
{port,2,[{interface,"strangeEth0"}, {type, eth}]},
```

Changes since oe-0.3

1. Bug fixes related to sending port status.

Changes since oe-0.2

1. The tuple describing a logical switch port has changed format. The new format allows you to assign a different port number for the port in the logical switch so it is no longer required to use the capable switch port number. You may also assign a port name.
   a. OLD format: {port,3,{queues, []}}
   b. NEW format: {port,3,**[{queues, []}, {port_no, 1}, {port_name, "Port1"}]}**
2. Experimental match and match actions are now encoded and decoded according to *OpenFlow Protocol Extensions for LINC-OE*