Linc OE

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

2. Generating sys.config file into the line-oe/rel/files/sys.config (see Config Generator)
3. Building

cd linc-oe && 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

Useful utilities from LINC console:

1. checking running config:

rp(application:get_all_key(linc)).

2. getting datapath_id of logical switch 0

linc_logic:get_datapath_id(0).

Changing interfaces in the topology 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}]},

Config Generator

Requirements

1. Erlang R17

Building and running

1. Obtaining LOOM

git clone https://github.com/ruanpienaar/LINC-Config-generator.git

2. Building

cd LINC-Config-generator && make

3. Running the config generator:

./config_generator topology.json sys.config.template localhost 6653
topology.json is the json topology file.
sys.config.template is the template sys.config file
localhost is the controller hostname
6653 is the controller's listener port number

4. Copy the sys.config file into linc-oe/rel/files/sys.config and generate a new linc-oe, or for a temporary runtime change, stop linc-oe, copy sys.config into linc-oe/rel/files/releases/1.0/sys.config and start linc-oe.

LOOM

Requirements

1. Erlang R15B, R16B, R17 - if possible please use R17

Building and running

1. Obtaining LOOM

git clone https://github.com/shivarammysore/LOOM.git

2. Building

cd loom && make

3. Running LOOM. Start LOOM in console mode:

cd loom
./rel/loom/bin/loom console

iControl Commands

The readme file provides a list of the commands available from the iControl command prompt. There are some additional commands that were added for the OE work which are not yet included in the readme:

i**of:get_features(), iof:get_features(Key)** - gets the features reply from the switch.
iof:get_description(), iof:get_description(Key) - gets the description reply from the switch.
iof:ports(), iof:ports(Key) - gets the ports description reply.
iof:oe_ports(), iof:oe_ports(Key) - gets the experimental optical transport ports description reply.
iof:oe_flow_tw(Key, Priority, In, Out, Channel) - creates a flow in table 0 with Priority forwarding all traffic on the In TPort to the Out WPort using lambda Channel.
iof:oe_flow_ww(Key, Priority, In, InChannel, Out, OutChannel) - creates a flow in table 0 with Priority forwarding traffic on In WPort on lambda InChannel to the Out WPort on lambda OutChannel.
iof:oe_flow_wt(Key, Priority, In, Channel, Out) - creates a flow in table 0 with Priority forwarding traffic on In WPort on lambda Channel to the Out TPort.

Known Issues

1. You can set the datapath id in the sys.config for the logical switches, but the switch is not reporting the user configured datapath id properly.
2. Port numbers must be unique to the capable switch. That is, you cannot use the same port number in two logical switches.
3. Documentation could be better
4. The config generator needs to move to shivarammysore