The Emulation settings on EstiNet simulator module MIFX
MIFX module

The MIFX module is to send and receive packets between simulator and physical network card. This is a communication way for EstiNet simulator and physical network.

The setting steps of MIFX module

1. Select a Router Interface which will send and receive packets to physical network.

2. Make sure the subnet of physical network card.

   ```
   [anton@localhost ~]$ ifconfig ens33
   ens33: flags=4163<UP,BROADCAST,RUNNING,MULTICAST>  mtu 1500
           inet 192.168.206.129 netmask 255.255.255.0 broadcast 192.168.206.255
           inet6 fe80::1eeb:cc:cb2d:3e5b%ens33 prefixlen 64 scopeid 0x20<link>
           ether 00:6c:29:62:c0:4b  txqueuelen 1000 (Ethernet)
           RX packets 544142  bytes 41338281 (39.4 MiB)
           RX errors 0  dropped 0  overruns 0  frame 0
           TX packets 527195  bytes 1344091553 (1.2 GiB)
           TX errors 0  dropped 0  overruns 0  carrier 0  collisions 0
   ```

3. Make sure the Gateway IP of physical network.

   ```
   [anton@localhost ~]$ ls /etc/route
   default via 192.168.206.2 dev ens33 proto static metric 100
   172.17.0.0/16 dev docker0 proto kernel scope link src 172.17.0.1 linkdown
   192.168.206.0/24 dev ens33 proto kernel scope link src 192.168.206.129 metric 100
   ```
4. Switch to Edit Parameters state.

5. Double click the Node which will send and receive packets between simulator and physical network.

6. Click the button “Module Editor”.

![Module Editor screenshot]

**Physical Gateway IP**

**ID: 2 Router**

**Physical Network**
7. Add a MIFX module from Module Group.

Remove the connection between module “Interface” and “MAC8023”.
Connect the module “Interface”<>”MIFX” and “MAC8023”.

Double click module MIFX to set the physical network interface card.

**Parameters Setting**

**Information for sending packets to the physical network interface:**

- **Interface Name**: `ens33`  

**Action when receiving packets from the physical network interface:**

- Sending packets up to module stack
- Sending packets down to module stack

**Action when receiving packets from the neighbor module:**

- Drop the packets from the lower module stack
- Drop the packets from the upper module stack
8. From tool bar “E-Tools”=> Reassign Subnets’ IP Address, to reset the interface IP. To make the same subnet between simulation environment and physical network interface IP. In this sample, the Gateway IP of physical network is “192.168.206.2”.

![Network Subnet List]

9. 

![Network Subnet List]
Network Subnet Setting

Subnet Configuration
This subnet has at least one gateway interface, and the interface with ID 1 equipped on node 2 is taken as the default gateway interface of this subnet. To change this subnet's IP address and netmask, one has to change the default gateway interface's IP address and netmask first and then press the "Apply" button.

Subnet Interfaces

<table>
<thead>
<tr>
<th>Node ID</th>
<th>Node Type</th>
<th>Interface ID</th>
<th>Interface Name</th>
<th>IPv4</th>
<th>Netmask</th>
<th>Operation</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Router</td>
<td>1</td>
<td>eth0</td>
<td>1.0.1.1</td>
<td>24</td>
<td>Configure</td>
</tr>
<tr>
<td>1</td>
<td>Host</td>
<td>1</td>
<td>eth0</td>
<td>1.0.1.2</td>
<td>24</td>
<td>Configure</td>
</tr>
</tbody>
</table>

Configure Interface

Node ID: 2
Interface ID: 1
Interface Name: eth0

IPv4

Addressing

- Apply the Following IP Address Configuration
- Address Assignment
  - Method: Static

Address Setting

- IP: 192.168.296.2
- Netmask: 24

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10. To make the same subnet between simulation Node and a physical network interface card.

11. Configure other Node Interface IP which could not be duplicated to physical network IP.
12. Switch to “G” state “Generate Configuration File”.

13. To execute simulation from tool bar “Run-Panel”=> “Start Simulation”.
14. Click mouse right button to “Open Command Console”.

15. Use command “ping” to test the network connection status.
   PS. IP 8.8.8.8 is Google DNS server.

```
[root@localhost node1]# ping 8.8.8.8
PING 8.8.8.8 (8.8.8.8) 56(84) bytes of data.
64 bytes from 8.8.8.8: icmp_seq=1 ttl=128 time=100 ms
64 bytes from 8.8.8.8: icmp_seq=2 ttl=128 time=8.08 ms
64 bytes from 8.8.8.8: icmp_seq=3 ttl=128 time=8.08 ms
64 bytes from 8.8.8.8: icmp_seq=4 ttl=128 time=7.08 ms
64 bytes from 8.8.8.8: icmp_seq=5 ttl=128 time=8.08 ms
```