Hackathon
Team - Weekend Warrior

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Problem Statement – Needle in the Haystack

- Different Roles & Perspectives
  - Developer
  - Network Admin
  - Architects

- Debugging at different layers
  - RedisDB, Orch agents, SyncD, SAI
Problem Statement –

```
#drivshell> phy control ce28
phy control ce28
Current PHY control settings of ce28 ->
Preemphasis     = 0x115f00
DriverCurrent   = 0x1
DFF ENable      = True
LP DFF ENable   = False
BR DFF ENable   = False
Link/Training ENable = False
Interface       = 0xe
```

ASIC SHELL

BAREFOOT NETWORKS  BROADCOM  Mellanox Technologies  nephos

CAVIUM  centec networks  MARVELL  Innovium
Problem Statement (Contd)

User have to understand SAI

ASIC dependent SHELL

NPU Commands & Output differ

No Common framework to script NPU commands – I need to prototype!
What and How?

**SAI**
**SAI> help vlan**

`vlan <operation> <key-value-pairs> <attribute-value-pairs> | <meta-op> <string>`

Valid operations - create remove set get show show-all stat-show stat-clear

Keys - Object ID(oid)

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Type</th>
<th>Mandatory</th>
<th>Valid(create)</th>
<th>Valid(set)</th>
</tr>
</thead>
<tbody>
<tr>
<td>vlanid</td>
<td>u16</td>
<td>yes</td>
<td>yes</td>
<td>no</td>
</tr>
<tr>
<td>member-list</td>
<td>objlist</td>
<td>no</td>
<td>no</td>
<td>no</td>
</tr>
<tr>
<td>learn-limit</td>
<td>u32</td>
<td>no</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>stp</td>
<td>oid</td>
<td>no</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>learn-disable</td>
<td>bool</td>
<td>no</td>
<td>yes</td>
<td>yes</td>
</tr>
</tbody>
</table>

**SAI>**
What and How?

Enhanced SAI Shell

SAI>
SAI>
SAI> vlan create vlanid=10
Object 0x2600000000000a created
SAI>
SAI> vlan show all
obj=0x2600000000000001 vlanid=1 stp=0x10000000000001 learn-disable=false
obj=0x2600000000000000a vlanid=10 stp=0x10000000000001 learn-disable=false
SAI> vlan set obj=0x2600000000000a learn-disable=true
SAI> vlan show all | search vlanid=10
obj=0x2600000000000000a vlanid=10 stp=0x10000000000001 learn-disable=true
SAI>
SAI> vlan-member create port=0x100000000001 vlan=0x260000000000000a
Mandatory attr tagging-mode not present
SAI> vlan-member create port=0x100000000001 vlan=0x260000000000000a tagging-mode=tagged
Object 0x2700000000000a created
SAI>
SAI>
SAI> vlan get obj=0x2600000000000a member-list
0x27000000000035
SAI> vlan-member show obj=0x27000000000035
obj=0x27000000000035 vlan=0x260000000000000a port=0x10000000000001 tagging-mode=tagged
SAI>
What and How?

```python
import os
import sys
import time
import datetime

child = pexpect.spawn ('telnet 10.11.193.156 30001')
child.logfile_read = sys.stdout
child.sendline('

')
child.expect ('.*#')
start = datetime.datetime.now()
child.sendline('saishell')
child.expect ('.*$')
end = datetime.datetime.now()
print "Time taken for NPU init is "
print (end - start)
print '\n
'
child.sendline('debug port enable')
child.expect ('.*$')
child.sendline('port set obj=0x10000048 admin=enable')
child.expect ('.*$')
child.sendline('port set obj=0x10000049 admin=enable')
child.expect ('.*$')
child.sendline('port show-all')
child.sendline('

')
time.sleep(2)
child.sendline('

')
child.sendline('port show-all | search oper-up')
child.expect ('.*$')
```

Enhanced SAI Shell
Enhanced SAI Shell

What and How?

Device IP: 192.168.0.1
SRC MAC: 00:11:22:33:44:55
DEST MAC: 00:22:22:33:44:66
SRC IP: 10.0.0.1
DEST IP: 20.0.0.1
DEST PORT: 9000

Deep Search

Tracking your packet... Installing Ingress ACL...
Installing Egress ACL...
Collecting the ACL stats.
Egress ACL not hitting. Packet dropped in Ingress. Analyzing the Ingress Tables...
No forwarding port available. All ports are in Blocking.
Drilling down further...
All the forwarding ports are down...
Check the link status.
What and How?

Enhanced SAI Shell

Device IP: 192.168.0.1
SRC MAC: 00:11:22:33:44:55
DEST MAC: 00:22:22:33:44:66
SRC IP: 10.0.0.1
DEST IP: 20.0.0.1
DEST PORT: 9000

Results for Deep Query

- Tracking your packet... Installing Ingress ACL...
- Installing Egress ACL...
- Collecting the ACL stats...
- Egress ACL not found... Packet dropped in Ingress... Analyzing the Ingress tables...
- No forwarding port available... All ports are in blocking...
- Drilling down further...
- All the forwarding ports are down...
- Check the link status...

Enhanced SAI Shell

- Barefoot Networks
- Broadcom
- Mellanox Technologies
- Nephos
- Cisco
- Cavium
- Centec Networks
- Marvell
DEMO TIME