

Hackathon  
Team - Weekend Warrior

3/13/2019 @LinkedIn

Kannan KVS  
Senthil kumar Ganesan  
Sudharsan Gopalarathnam  
Sandeep Madhavan





# Problem Statement – Needle in the Haystack

- Different Roles & Perspectives

Developer

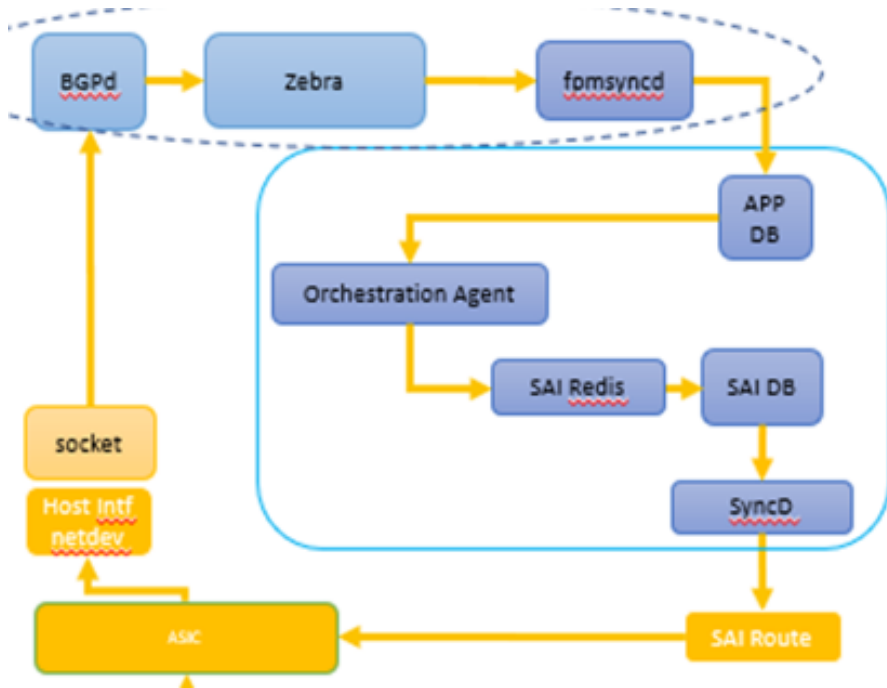
Network Admin

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
DFE ENable           = True
LP DFE ENable        = False
BR DFE ENable        = False
LinkTraining Enable  = False
Interface            = 0xe
```

ASIC SHELL

BAREFOOT  
NETWORKS

BROADCOM

Mellanox  
TECHNOLOGIES

nephos

CISCO

CAVIUM

centec  
networks

MARVELL

Innovium

# Problem Statement (Contd)

User have to understand SAI

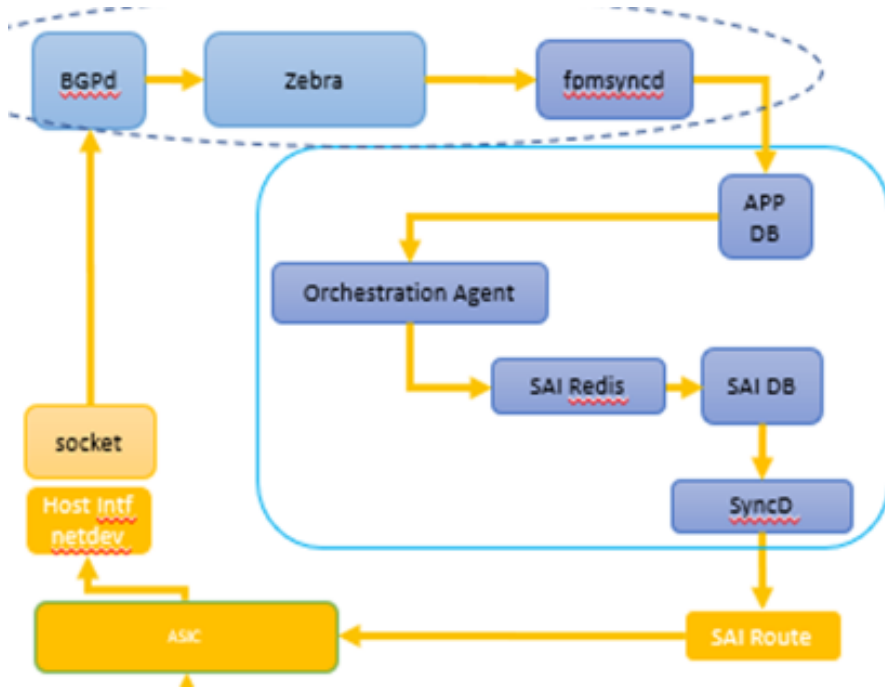
ASIC dependent SHELL

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)

Attribute	Type	Mandatory	Valid(create)	Valid(set)
vlanid	u16	yes	yes	no
member-list	objlist	no	no	no
learn-limit	u32	no	yes	yes
stp	oid	no	yes	yes
learn-disable	bool	no	yes	yes

```
SAI>
```

Enhanced  
SAI Shell

**BAREFOOT**  
NETWORKS

**BROADCOM**

**Mellanox**  
TECHNOLOGIES

**nephos**

**CISCO**

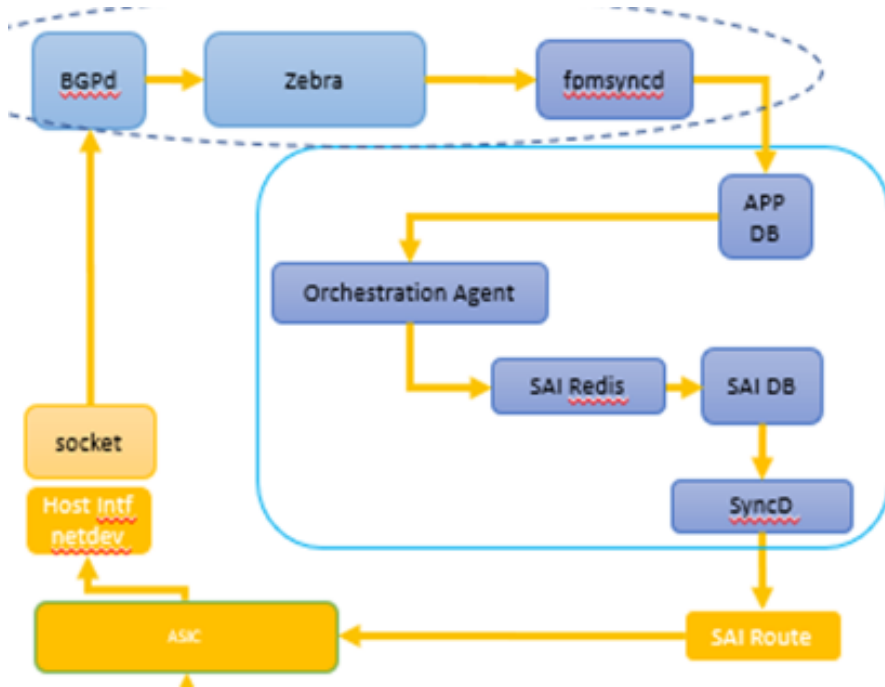
**CAVIUM**

**centec**  
networks

**MARVELL**

**Innovium**

# What and How?



```
SAI>
SAI>
SAI>vlan create vlanid=10
Object 0x26000000000000a created
SAI>
SAI>vlan show-all
obj=0x2600000000000001 vlanid=1 stp=0x1000000000000001 learn-disable=false
obj=0x260000000000000a vlanid=10 stp=0x1000000000000001 learn-disable=false
SAI>vlan set obj=0x260000000000000a learn-disable=true
SAI>vlan show-all | search vlanid=10
obj=0x260000000000000a vlanid=10 stp=0x1000000000000001 learn-disable=true
SAI>
SAI>vlan-member create port=0x1000000000000001 vlan=0x260000000000000a
Mandatory attr tagging-mode not present
SAI>vlan-member create port=0x1000000000000001 vlan=0x260000000000000a tagging-mode=tagged
Object 0x2700000000000035 created
SAI>
SAI>
SAI>vlan get obj=0x260000000000000a member-list
0x2700000000000035
SAI>vlan-member show obj=0x2700000000000035
obj=0x2700000000000035 vlan=0x260000000000000a port=0x1000000000000001 tagging-mode=tagged
SAI>
```

Enhanced  
SAI Shell

BAREFOOT  
NETWORKS

BROADCOM

Mellanox  
TECHNOLOGIES

nephos

CISCO

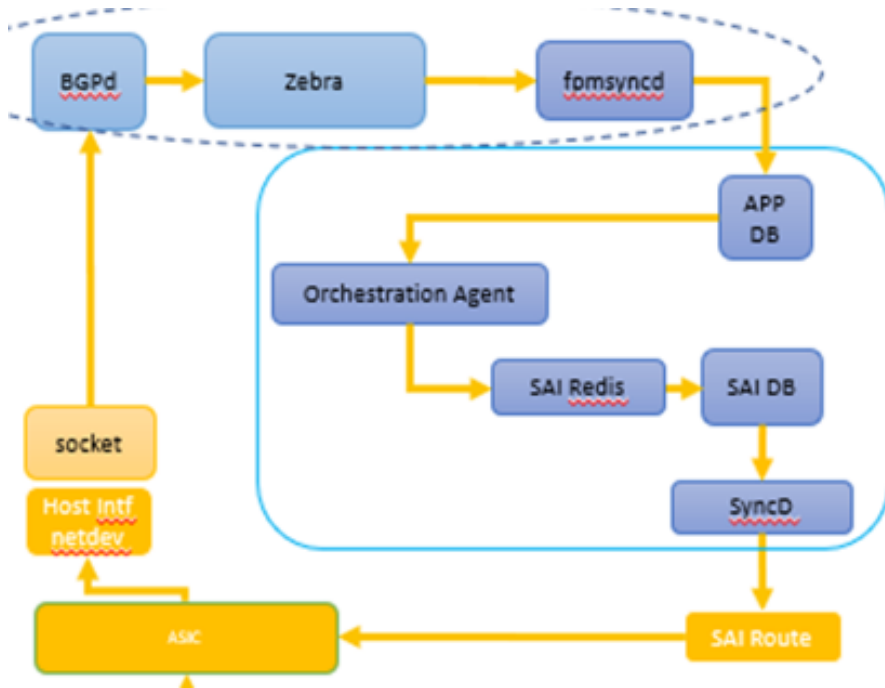
CAVIUM

centec  
networks

MARVELL

Innovium

# What and How?



```

import os
import sys
import time
import datetime
child = pexpect.spawn('telnet 10.11.193.156 30001')
child.logfile_read = sys.stdout
child.sendline('\n\n')
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 "\r\n"
child.sendline('debug port enable')
child.expect('.*>')
child.sendline('port set obj=0x100000048 admin=enable')
child.expect('.*>')
child.sendline('port set obj=0x100000049 admin=enable')
child.expect('.*>')
child.sendline('port show-all')
child.sendline('\n\n')
child.expect('.*>')
time.sleep(2)
child.sendline('\n\n')
child.sendline('port show-all | search oper=up')
child.expect('.*>')
  
```

Enhanced  
SAI Shell

BAREFOOT  
NETWORKS

BROADCOM

Mellanox  
TECHNOLOGIES

nephos

CISCO

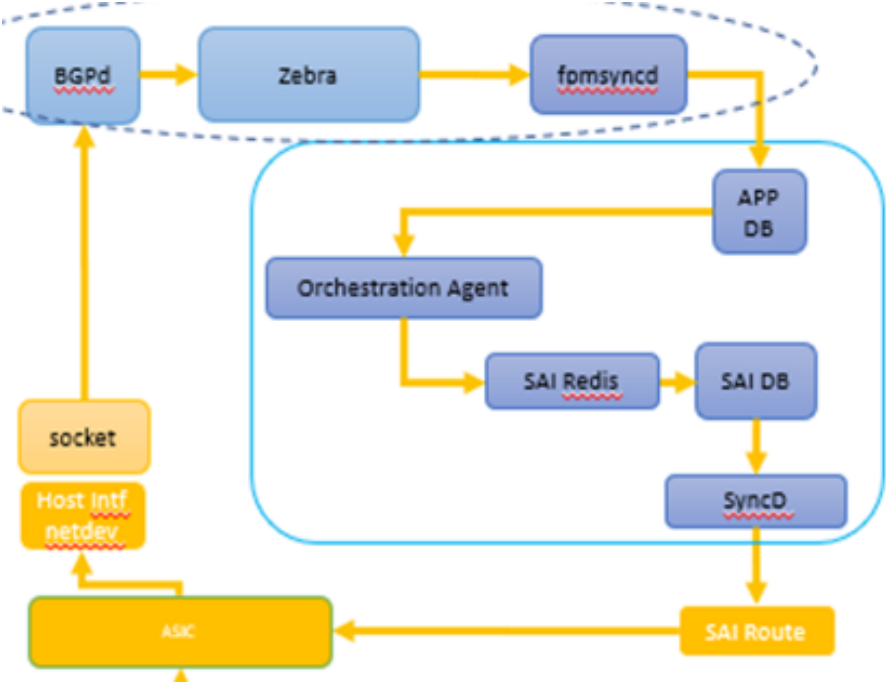
CAVIUM

centec  
networks

MARVELL

Innovium

# What and How?



where is my packet

Search

show me the drops

Search

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

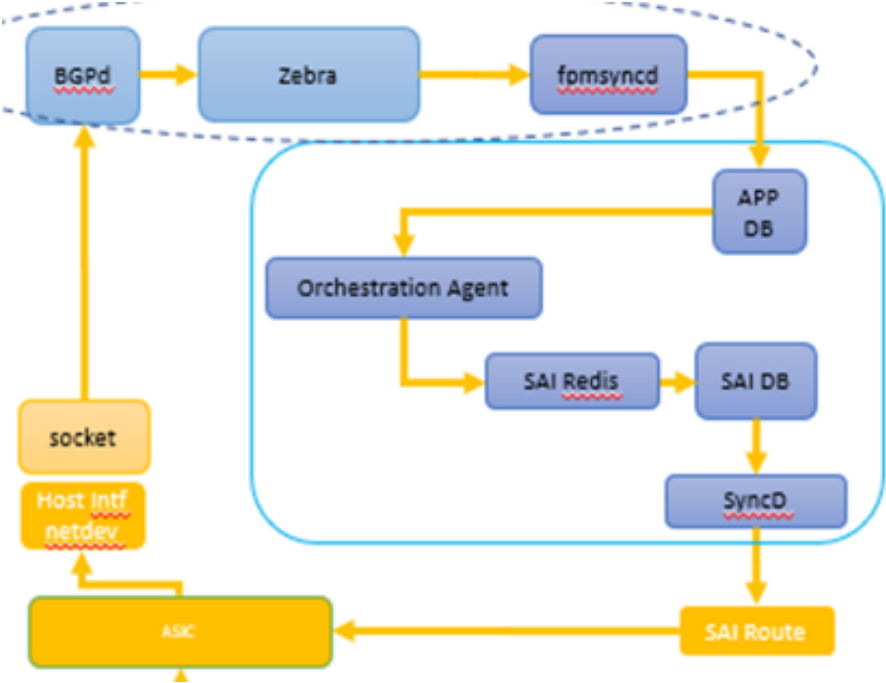
Deep Search

Search
Results for Deep Query
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..

Enhanced  
SAI Shell



# What and How?



where is my packet

Search

show me the drops

Search

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

Search
Results for Deep Query
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..

Enhanced  
SAI Shell



**DEMO TIME**



