

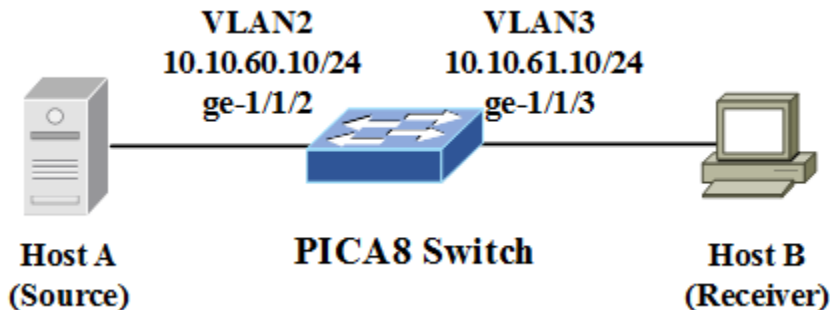
Example for Configuring Basic PIM-SM

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Networking Requirements

As shown in **Figure 1**, Host B wants to receive multicast data from Host A (Source) through the Pica8 Switch.

Figure1. User Configuration Topology of PIM-SM



Follow the configuration roadmap below to complete the configuration on PICA8 Switch.

1. Create the L3 VLAN interfaces.
2. Enable IGMP on the L3 VLAN interfaces.
3. Enable PIM-SM on L3 VLAN interfaces.

Procedure

Host A (Source)

- Add route on Host A to reach Host B.

For example, use the following command on Linux system,

```
sudo route add default gw 10.10.60.10 eth1
```

- Run iPerf on Host A.

Host B (Receiver)

- Add route on Host B to reach Host A.

For example, use the following command on Linux system,

```
sudo route add default gw 10.10.61.10 eth1
```

- Run iPerf on Host B.

PICA8 Switch

Step1 Create the L3 VLAN interfaces and assign VLAN to ports.

```
admin@Xorplus# set vlans vlan-id 2 l3-interface vlan2
admin@Xorplus# set l3-interface vlan-interface vlan2 address 10.10.60.10 prefix-length 24
admin@Xorplus# set interface gigabit-ethernet ge-1/1/2 family ethernet-switching native-vlan-id 2
admin@Xorplus# set interface gigabit-ethernet ge-1/1/2 family ethernet-switching port-mode trunk
admin@Xorplus# set interface gigabit-ethernet ge-1/1/2 family ethernet-switching vlan members 3
admin@Xorplus# set vlans vlan-id 3 l3-interface vlan3
admin@Xorplus# set l3-interface vlan-interface vlan3 address 10.10.61.10 prefix-length 24
admin@Xorplus# set interface gigabit-ethernet ge-1/1/3 family ethernet-switching native-vlan-id 3
admin@Xorplus# set interface gigabit-ethernet ge-1/1/3 family ethernet-switching port-mode trunk
admin@Xorplus# set interface gigabit-ethernet ge-1/1/3 family ethernet-switching vlan members 2
```

Step2 Enable IP routing.

```
admin@Xorplus# set ip routing enable true
```

Step3 Enable IGMP on the L3 VLAN interfaces.

```
admin@Xorplus# set protocols igmp interface vlan2
admin@Xorplus# set protocols igmp interface vlan3
```

Step4 Enable PIM on the L3 VLAN interfaces and assign the group ID.

```
admin@Xorplus# set protocols pim interface vlan2
admin@Xorplus# set protocols pim interface vlan3
admin@Xorplus# set protocols pim rp 10.10.60.10 group 226.0.0.0/8
admin@Xorplus# set protocols pim rp 10.10.61.10 group 226.0.0.0/8
```

Step5 Configure the log level.

```
admin@Xorplus# set protocols pim traceoption trace
admin@Xorplus# set protocols igmp traceoption trace
admin@Xorplus# set system log-level trace
```

Step6 Commit the configurations.

```
admin@Xorplus# commit
```

Verify the Configuration

- Run the **run show igmp interface** command to check the IGMP interface configuration.

```
admin@Xorplus# run show igmp interface
Interface      State      Address    V  Querier  Query Timer  Uptime
vlan2          up         10.10.60.10 2  local    00:00:40    02:13:12
vlan3          up         10.10.61.10 2  other    ---:--:--   00:36:29
```

- Run the **run show pim interface** command to check the PIM configuration and status.

```
admin@Xorplus# run show pim interface
Interface      State      Address    PIM Nbrs      PIM DR  FHR IfChannels
vlan2          up         10.10.60.10 0              local   0           1
vlan3          up         10.10.61.10 1              local   0           0
```

- Run the **run show l3-interface brief** command to check the VLAN interface configuration.

```
admin@XorPlus# run show l3-interface brief
Interface      Vlan ID      Status      Addr
-----
vlan2          2            UP          10.10.60.10/24
                fe80::4a6e:73ff:202:49a/64
vlan3          3            UP          10.10.61.10/24
                fe80::e207:1b20:8c9:209b/64
```

- Run the **run show igmp group** command to show information about multicast group member ports.

```
admin@XorPlus# run show igmp groups
Interface      Address      Group      Mode Timer      Srcs V Uptime
vlan2          10.10.60.10 224.0.0.2  INCL ---:---:--- 1 2 01:33:28
vlan2          10.10.60.10 224.0.0.13 INCL ---:---:--- 1 2 01:33:28
vlan2          10.10.60.10 224.0.0.22 INCL ---:---:--- 1 2 01:33:25
vlan3          10.10.61.10 224.0.0.2  INCL ---:---:--- 1 2 00:33:12
vlan3          10.10.61.10 224.0.0.13 INCL ---:---:--- 1 2 00:33:12
vlan3          10.10.61.10 224.0.0.22 INCL ---:---:--- 1 2 00:33:09
```

Verify End to End Connectivity between Host A and Host B

- Connectivity between Host A and Host B.

```
[sharad@upc-0:~$ ifconfig eth1
eth1      Link encap:Ethernet  HWaddr 00:1b:21:1e:f2:19
          inet addr:10.10.61.11  Bcast:10.10.61.255  Mask:255.255.255.0
          inet6 addr: fe80::21b:21ff:fe1e:f219/64  Scope:Link
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
          RX packets:42118105113  errors:682531  dropped:2810721675  overruns:0  fra
me:682530
          TX packets:1454157371  errors:0  dropped:0  overruns:0  carrier:0
          collisions:0  txqueuelen:1000
          RX bytes:7144773688786 (7.1 TB)  TX bytes:545967719341 (545.9 GB)
          Interrupt:16  Memory:f0200000-f0220000

[sharad@upc-0:~$ ping 10.10.60.11
PING 10.10.60.11 (10.10.60.11) 56(84) bytes of data.
64 bytes from 10.10.60.11: icmp_seq=3 ttl=63 time=0.159 ms
64 bytes from 10.10.60.11: icmp_seq=6 ttl=63 time=0.172 ms
64 bytes from 10.10.60.11: icmp_seq=7 ttl=63 time=0.125 ms
64 bytes from 10.10.60.11: icmp_seq=8 ttl=63 time=0.174 ms
64 bytes from 10.10.60.11: icmp_seq=9 ttl=63 time=0.188 ms
```

```
[sharad@upc-2:~$ ifconfig eth1
eth1      Link encap:Ethernet  HWaddr 00:1b:21:35:62:ec
          inet addr:10.10.60.11  Bcast:10.10.60.255  Mask:255.255.255.0
          inet6 addr: fe80::21b:21ff:fe35:62ec/64  Scope:Link
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
          RX packets:33414837036  errors:334625  dropped:37361719983  overruns:0
ame:334623
          TX packets:16368886920  errors:0  dropped:0  overruns:0  carrier:0
          collisions:0  txqueuelen:1000
          RX bytes:2411294716327 (2.4 TB)  TX bytes:211726677840 (211.7 GB)
          Interrupt:16  Memory:f0680000-f06a0000

[sharad@upc-2:~$ ping 10.10.61.11
PING 10.10.61.11 (10.10.61.11) 56(84) bytes of data.
64 bytes from 10.10.61.11: icmp_seq=2 ttl=63 time=0.181 ms
64 bytes from 10.10.61.11: icmp_seq=6 ttl=63 time=0.199 ms
64 bytes from 10.10.61.11: icmp_seq=7 ttl=63 time=0.189 ms
64 bytes from 10.10.61.11: icmp_seq=8 ttl=63 time=0.198 ms
```

- IPerf result from Host A to Host B.

```
sharad@upc-0:~$
sharad@upc-0:~$
sharad@upc-0:~$ sudo iperf -c 226.94.1.1 -u -T 32 -t 15 -i 1

Client connecting to 226.94.1.1, UDP port 5001
Sending 1470 byte datagrams
Setting multicast TTL to 32
JDP buffer size: 208 KByte (default)

-----
[ 3] local 10.10.61.11 port 48751 connected with 226.94.1.1 port 5001
[ ID] Interval      Transfer      Bandwidth
[ 3] 0.0- 1.0 sec  129 KBytes   1.06 Mbits/sec
[ 3] 1.0- 2.0 sec  128 KBytes   1.05 Mbits/sec
[ 3] 2.0- 3.0 sec  128 KBytes   1.05 Mbits/sec
[ 3] 3.0- 4.0 sec  128 KBytes   1.05 Mbits/sec
[ 3] 4.0- 5.0 sec  128 KBytes   1.05 Mbits/sec
^C[ 3] 0.0- 5.5 sec  709 KBytes   1.05 Mbits/sec
[ 3] Sent 494 datagrams
sharad@upc-0:~$
```

```
sharad@upc-2:~$
sharad@upc-2:~$ sudo iperf -s -u -B 226.94.1.1 -i 1
[sudo] password for sharad:
-----
Server listening on UDP port 5001
Binding to local address 226.94.1.1
Joining multicast group 226.94.1.1
Receiving 1470 byte datagrams
UDP buffer size: 208 KByte (default)

-----
[ 3] local 226.94.1.1 port 5001 connected with 10.10.61.11 port 48751
[ ID] Interval      Transfer      Bandwidth      Jitter  Lost/Total Datagra
[ 3] 0.0- 1.0 sec  128 KBytes   1.05 Mbits/sec  0.007 ms  0/ 89 (0%)
[ 3] 1.0- 2.0 sec  128 KBytes   1.05 Mbits/sec  0.007 ms  0/ 89 (0%)
[ 3] 2.0- 3.0 sec  129 KBytes   1.06 Mbits/sec  0.008 ms  0/ 90 (0%)
[ 3] 3.0- 4.0 sec  128 KBytes   1.05 Mbits/sec  0.007 ms  0/ 89 (0%)
[ 3] 4.0- 5.0 sec  128 KBytes   1.05 Mbits/sec  0.008 ms  0/ 89 (0%)
[ 3] 0.0- 5.5 sec  709 KBytes   1.05 Mbits/sec  0.009 ms  0/ 494 (0%)
```

- IPerf result from Host B to Host A.

```

sharad@upc-0:~$
sharad@upc-0:~$
sharad@upc-0:~$ sudo iperf -s -u -B 226.94.1.1 -i 1
-----
Server listening on UDP port 5001
Binding to local address 226.94.1.1
Joining multicast group 226.94.1.1
Receiving 1470 byte datagrams
UDP buffer size: 208 KByte (default)
-----
[ 3] local 226.94.1.1 port 5001 connected with 172.16.0.96 port 44677
[ ID] Interval      Transfer    Bandwidth   Jitter    Lost/Total Datagrams
[ 3] 0.0- 1.0 sec   128 KBytes  1.05 Mbits/sec  0.002 ms  0/ 89 (0%)
[ 3] 1.0- 2.0 sec   128 KBytes  1.05 Mbits/sec  0.002 ms  0/ 89 (0%)
[ 3] 2.0- 3.0 sec   128 KBytes  1.05 Mbits/sec  0.002 ms  0/ 89 (0%)
[ 3] 3.0- 4.0 sec   128 KBytes  1.05 Mbits/sec  0.002 ms  0/ 89 (0%)
[ 3] 4.0- 5.0 sec   128 KBytes  1.05 Mbits/sec  0.002 ms  0/ 89 (0%)
[ 3] 5.0- 6.0 sec   129 KBytes  1.06 Mbits/sec  0.001 ms  0/ 90 (0%)
[ 3] 6.0- 7.0 sec   128 KBytes  1.05 Mbits/sec  0.001 ms  0/ 89 (0%)
[ 3] 8.0- 8.0 sec  1024 KBytes 1.05 Mbits/sec  0.002 ms  0/ 713 (0%)
^Csharad@upc-0:~$

```

```

sharad@upc-2:~$
sharad@upc-2:~$ sudo iperf -c 226.94.1.1 -u -T 32 -t 15 -i 1
-----
Client connecting to 226.94.1.1, UDP port 5001
Sending 1470 byte datagrams
Setting multicast TTL to 32
UDP buffer size: 208 KByte (default)
-----
[ 3] local 172.16.0.96 port 44677 connected with 226.94.1.1 port 5001
[ ID] Interval      Transfer    Bandwidth
[ 3] 0.0- 1.0 sec   129 KBytes  1.06 Mbits/sec
[ 3] 1.0- 2.0 sec   128 KBytes  1.05 Mbits/sec
[ 3] 2.0- 3.0 sec   128 KBytes  1.05 Mbits/sec
[ 3] 3.0- 4.0 sec   128 KBytes  1.05 Mbits/sec
[ 3] 4.0- 5.0 sec   128 KBytes  1.05 Mbits/sec
[ 3] 5.0- 6.0 sec   128 KBytes  1.05 Mbits/sec
[ 3] 6.0- 7.0 sec   129 KBytes  1.06 Mbits/sec
^C[ 3] 0.0- 8.0 sec  1024 KBytes 1.05 Mbits/sec
[ 3] Sent 713 datagrams
sharad@upc-2:~$

```