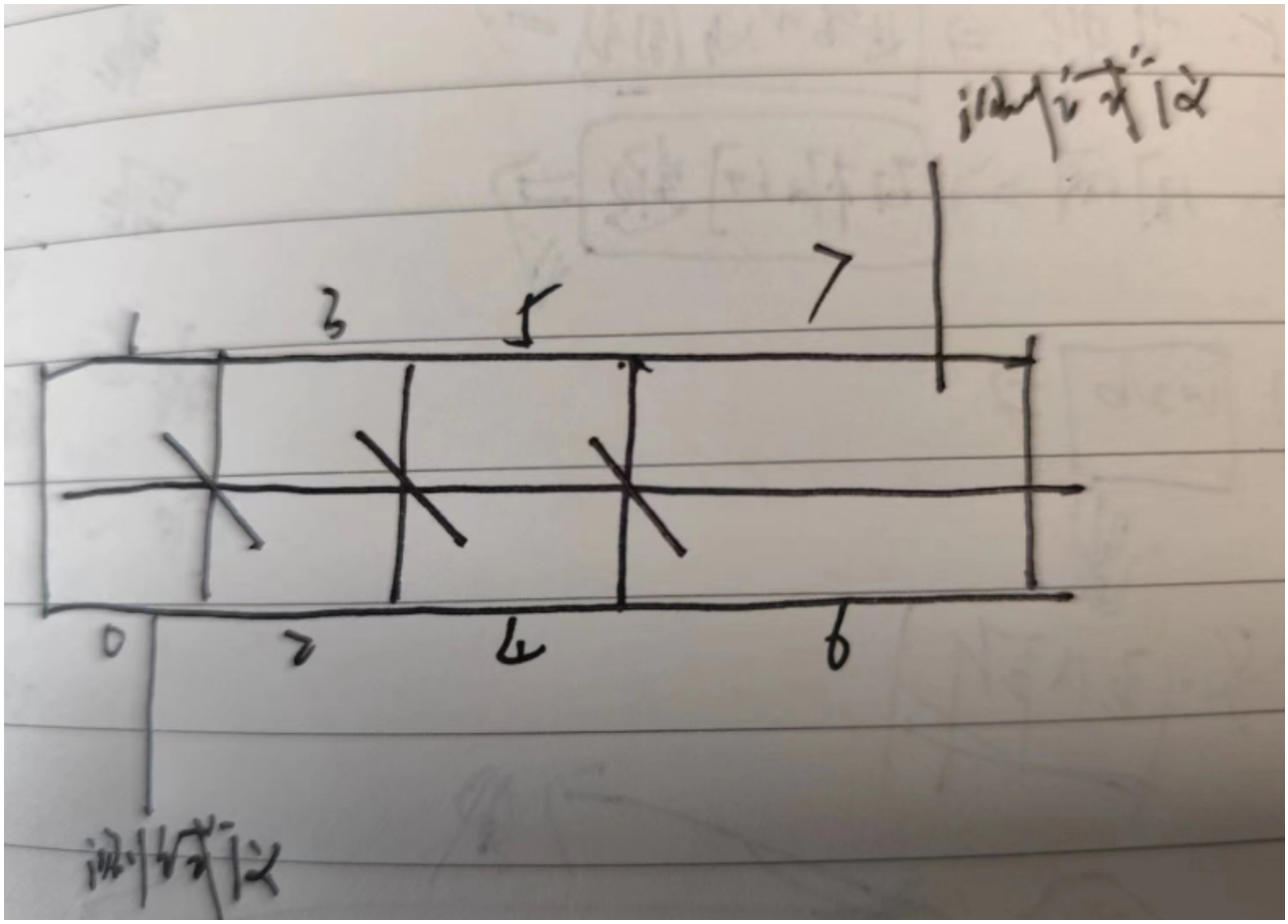
丢包测试

测试方式

sdk丢包测试一般采用蛇形方式，测试步骤如下：

1. 如下图所示对板子进行蛇形连接，1与2、3与4、5与6分别用网线直连。



2. 打开sdk，切换到exec_node模式，执行snake脚本 `CDL_CLI# load config file ./config/bridge_snake.cfg`
3. 0口打流7口接收，也可双向打流，流格式默认即可。
4. 观察测试仪包统计情况，是否存在丢包。

丢包调试方式

1. 包进mac情况调试 包进mac调试主要看包是否可进入mac，进入mac的数量是否对，以及包是rx出问题还是tx出问题了。

   若是能稳定复现的丢包，建议打burst流来统计流情况。 建议打流测试之前，使用清空命令对info进行清理，防止其他的一些干扰。

```
a. 包统计情况

CDL_CLI(tsn_v5-internal)# show mib all Gmac0 info
```

```
---------------------------------Gmac0-------------------------------------
|ItemName                |EMac Frames Counter     |EMac Bytes Counter      |PMac
Frames Counter     |PMac Bytes Counter      |
-------------------------------------------------------------------------------
|ReceivedGoodUCast       |10                      |1280                    |0
|0                       |
|ReceivedGoodMCast       |0                       |0                       |0
|0                       |
|ReceivedGoodBCast       |0                       |0                       |0
|0                       |
|ReceivedGoodPause       |0                       |0                       |0
|0                       |
|ReceivedGoodControl     |0                       |0                       |0
|0                       |
|ReceivedJabber          |0                       |0                       |0
|0                       |
|ReceivedCollisionFrag   |0                       |0                       |0
|0                       |
|ReceivedFcsError        |0                       |0                       |0
|0                       |
|Reserve                 |0                       |0                       |0
|0                       |
|Reserve                 |0                       |0                       |0
|0                       |
|ReceivedGoodOversize    |9                       |13680                   |0
|0                       |
|ReceivedGoodUndersize   |9                       |522                     |0
|0                       |
|ReceivedGood63B         |9                       |522                     |0
|0                       |
|ReceivedBad63B          |0                       |0                       |0
|0                       |
|ReceivedGood1519B       |9                       |13680                   |0
|0                       |
|ReceivedBad1519B        |0                       |0                       |0
|0                       |
|ReceivedGoodJumbo       |0                       |0                       |0
|0                       |
|ReceivedBadJumbo        |0                       |0                       |0
|0                       |
|Received64B             |0                       |0                       |0
|0                       |
|Received65to127B        |0                       |0                       |0
|0                       |
|Received128to255B       |10                      |1280                    |0
|0                       |
|Received256to511B       |0                       |0                       |0
|0                       |
|Received512to1023B      |0                       |0                       |0
|0                       |
|Received1024to1518B     |0                       |0                       |0
|0                       |
|TransmittedUCast        |0                       |0                       |0
|0                       |
```

```
|TransmittedMCast        |0                      |0                      |0
|0                       |
|TransmittedBCast        |0                      |0                      |0
|0                       |
|TransmittedPause        |0                      |0                      |0
|0                       |
|TransmittedControl      |0                      |0                      |0
|0                       |
|TransmittedLessThan64B  |0                      |0                      |0
|0                       |
|Transmitted64B          |0                      |0                      |0
|0                       |
|Transmitted65to127B     |0                      |0                      |0
|0                       |
|Transmitted128to255B    |0                      |0                      |0
|0                       |
|Transmitted256to511B    |0                      |0                      |0
|0                       |
|Transmitted512to1023B   |0                      |0                      |0
|0                       |
|Transmitted1024to1518B  |0                      |0                      |0
|0                       |
|Transmitted1519BtoMTU   |0                      |0                      |0
|0                       |
|TransmittedJumbo        |0                      |0                      |0
|0                       |
|TransmittedMacUnderrun  |0                      |0                      |0
|0                       |
|TransmittedFcsError     |0                      |0                      |0
|0                       |
|TxExcessiveDeferral     |0                      |0                      |0
|0                       |
|TxLateCollision         |0                      |0                      |0
|0                       |
|TxExcessiveCollision    |0                      |0                      |0
|0                       |
|TxOneCollision          |0                      |0                      |0
|0                       |
|TxMultipleCollision     |0                      |0                      |0
|0                       |
|TransmittedDeferral     |0                      |0                      |0
|0                       |
--------------------------------------------------------------------------------

参数解释：
RxSum //rx统计情况
ReceivedGoodPause 收到pause帧的统计
ReceivedJabber 收到超时传输帧统计情况
ReceivedCollisionFrag 端口半双工出现冲突帧的统计
ReceivedFcsError 检验出错的帧统计情况
ReceivedGoodOversize 小于64长度的帧统计
ReceivedGoodUndersize 大于1518长度的帧统计

RxRange //rx基于包长的详细统计
```

```
ReceivedGood63B 收到小于64长度正确帧的统计
ReceivedBad63B 收到小于64长度错误帧的统计
ReceivedGood1519B 收到大于1518长度正确帧的统计
ReceivedBad1519B 收到大于1518长度错误帧的统计
ReceivedGoodJumbo 收到好的巨型帧统计
ReceivedBadJumbo  收到坏的巨型帧统计
Received64B
Received65to127B
Received128to255B
Received256to511B
Received512to1023B
Received1024to1518B


TxSum //tx统计情况
TransmittedUCast
TransmittedMCast
TransmittedBCast
TransmittedPause
TransmittedControl

TxRange //tx基于包长的详细统计
TransmittedLessThan64B
Transmitted64B
Transmitted65to127B
Transmitted128to255B
Transmitted256to511B
Transmitted512to1023B
Transmitted1024to1518B
Transmitted1519BtoMTU
TransmittedJumbo

TxError //tx错误情况统计
TransmittedMacUnderrun 主机无法以足够快的速度提供发送数据
TransmittedFcsError    发送校验出错的帧统计
TxExcessiveDeferral    发送MAC在超过两个最大以太帧的时间内仍无发送机会
TxLateCollision        发送完512bit后才检测冲突
TxExcessiveCollision   检测到冲突超过15次
TxOneCollision
TxMultipleCollision
TransmittedDeferral

b. 清包方式
CDL_CLI(tsn_v5-internal)# clear Gmac0 mibinfo
```

2. 包在mac内部转发调试

a. 包转发情况查看

```
CDL_CLI(tsn_v5-internal)# show packet fwd info
Forward: = {
```

```
                          InPort : 13,       //入端口
                       PktLen(B) : 4a,        //包长
                          FwdBmp : 2000000,   //转发端口情况
                         FwdType : Ucast,    //转发类型
                        ProcType : Bridging,
                          VlanID : b,
                        Priority : 0,
                          L2Type : EthII,
                          L3Type : Nop,
                          L4Type : Nop,
                     UDP-Payload : Nop,
                         VlanBmp : 0,
                         BrgProc : 0,
                       RouteProc : 0,
                         AclProc : 0,
                      Ipv6AclLkp : 0,
                      Ipv4AclLkp : 0,
                         AclHit : 0,
                       AclHitIdx : 0,
                           SFlow : 0,
                        FlowSpan : 0,
                      BrgHitLeft : 0,
                     BrgHitRight : 0,
                       BrgHitIdx : 0,
                     HostHitLeft : 0,
                    HostHitRight : 0,
                      HostHitIdx : 0,
                         LpmLkp : 0,
                         LpmIdx : 0,
                       NatHitIdx : 0,
}

CDL_CLI(tsn_v5-internal)# show packet discard info
该命令只能在完全丢包情况下有效，部分丢包，大部分情况看不到丢包情况。

CDL_CLI(tsn_v5-internal)# show inout port Gmac0 info
-----------------------------------------------Interface Frames Statistic---------
-------------------------------------
Gmac0:  |RxESop  |RxEEop  |RxEByte |RxEErro |        |RxPSop  |RxPEop  |RxPByte
|RxPErro |        |TxESop  |TxEEop  |TxEByte |TxEErro |        |TxPSop  |TxPEop
|TxPByte |TxPErro |        |sync
  |Spd     |CErr    |Merg    |
0       |60      |60      |eb      |70      |        |0       |0       |0       |0
|        |de      |de      |0       |0       |        |0       |0       |0
|0       |        |
1       |1       |a7d9    |0       |
-------------------------------------------------------------------------------
-------------------------------------
该命令可以用来查看当前状态下mac的进包情况，一般用来debug包是否进mac，由于不可清除，不建议用RxPErro|RxEErro|TxPErro|TxEErro作为帧出错的标志，需要看是否有错帧建议使用上面说的mibinfo.
```

b. 包转发寄存器情况查看

```
//用于调试当前包的入队列情况
CDL_CLI(tsn_v5-internal)# inspectentry TmAdmInOutCnt 0
TmAdmInOutCnt : {
"tmWriteInCnt" : "0x8250",
"igrInCnt" : "0x8250",
"tmRepOutCnt" : "0x8250",
"tmSchOutCnt" : "0x8250",
"tmAdmAllDropCnt" : "0x0",
"tmAdmIgrDropCnt" : "0x0", //入队列丢包情况
"tmAdmEgrDropCnt" : "0x0", //出队列
"tmAdmInCntPri0" : "0x50", //代表包进入队列0
"tmAdmInCntPri1" : "0x0",
"tmAdmInCntPri2" : "0x0",
"tmAdmInCntPri3" : "0x0",
"tmAdmInCntPri4" : "0x0",
"tmAdmInCntPri5" : "0x0",
"tmAdmInCntPri6" : "0x0",
"tmAdmInCntPri7" : "0x0"
}

//用于调试当前包的出队列情况
CDL_CLI(tsn_v5-internal)# inspectentry TmSchDebug 0
TmSchDebug : {
"tmSchInCnt" : "0x8251",
"tmSchOutCnt" : "0xeed1",
"tmSchFreeListCnt" : "0x1000",
"tmSchEnqPri0" : "0x51",  //代表包进入队列0
"tmSchEnqPri1" : "0x0",
"tmSchEnqPri2" : "0x0",
"tmSchEnqPri3" : "0x0",
"tmSchEnqPri4" : "0x0",
"tmSchEnqPri5" : "0x0",
"tmSchEnqPri6" : "0x0",
"tmSchEnqPri7" : "0x0",
"tmSchDeqPri0" : "0xd1", //代表包从队列0出去
"tmSchDeqPri1" : "0x0",
"tmSchDeqPri2" : "0x0",
"tmSchDeqPri3" : "0x0",
"tmSchDeqPri4" : "0x0",
"tmSchDeqPri5" : "0x0",
"tmSchDeqPri6" : "0x0",
"tmSchDeqPri7" : "0x0",
"tmSchEnqBmp" : "0x2000000",
"admEgrDropLeftCnt" : "0x0"
}

//代表包转发log
CDL_CLI(tsn_v5-internal)# inspectentry CtlFwdLog 0
CtlFwdLog : {
"fwdBitmap" : "0x2000000", //转发到端口
"fwdBitmapHi" : "0x0",
"vlanDiscard" : "0x0",
```

```
"mcastFlood" : "0x0",
"destMap" : "0x0",
"opCode" : "0x0",
"ucastFlood" : "0x0",
"criticalPacket" : "0x1",
"forbidEdit" : "0x0",
"redirPtp" : "0x0",
"egrPortFilted" : "0x0",
"egrVlanFilted" : "0x0",
"lagFilted" : "0x0",
"isPtp" : "0x0",
"ptp2Cpu" : "0x0",
"addRtag" : "0x0",
"tsnGateId" : "0x0",
"tsnCycle" : "0x0",
"cpuPktType" : "0x0",
"destLostInCfg" : "0x0"
}
```


增加sgmii外环设置用于在mac收包直接转到phy，屏蔽mac影响 CDL_CLI(tsn_v5-sdk)# port 8 loopback-sgmii-out enable