

# Cisco ONS 15454 ML卡故障排除

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## 简介

本文使用一简单测试拓扑描述如何排除故障在Cisco ONS 15454的多层(ML)卡。[附录](#)部分提供一些基本配置命令和详细的拓扑信息。

测验使用一经验主义的方法了解网络故障关联与ML卡。测验注入已知故障或配置为了捕获和分析预期结果。故障隔离案例研究提交这些发现。

本文跟随典型的故障排除方法。本文提交一症状，并且讨论相关故障隔离步骤，并且提供通用的故障排除程序。

## 先决条件

### 要求

Cisco 建议您了解以下主题：

- Cisco ONS 15454

- Cisco ONS 15454 ML-Series以太网卡
- Cisco IOS
- 桥接和IP路由

## [使用的组件](#)

本文档中的信息基于以下软件和硬件版本：

- 运行Cisco IOS软件版本12.1(13)E13的Cisco路由器7603
- 运行Cisco ONS版本4.1.3的Cisco ONS 15454
- ML (被捆绑作为ONS 4.1.3版本一部分)该运行Cisco IOS软件版本12.1(19)EO1

本文档中的信息都是基于特定实验室环境中的设备编写的。本文档中使用的所有设备最初均采用原始（默认）配置。如果您使用的是真实网络，请确保您已经了解所有命令的潜在影响。

## [规则](#)

有关文档规则的详细信息，请参阅 [Cisco 技术提示规则](#)。

## [基本ML体系结构](#)

ONS15454平台的Cisco ML-series卡提供在SONET/SDH的10/100/1000 Mbps以太网连接在第2层和第3层。在机箱的每个ML卡运行一个独立IOS镜像。交叉连接电路的创建Cisco传输控制器在ML端口之间创建虚拟后端SONET上的分组(POS)端口。在软件版本4.6和以上中，POS端口的创建总是发生，但是端口出现，只有当交叉连接电路创建在CTC时发生。

ML1000-2卡有两个POS端口(0和1)。每个端口有至同步传输信号(STS)-24c带宽和总共STS-48c每个卡。每个POS端口支持子接口允许VLAN中继。在电路创建相位期间，在光学间距更改期间，一个POS端口的物理映射光端口的发生，并且能更改。因此，电路的二末端两个POS端口是对等体，并且他们的配置需要配比。

以太网端口和POS端口之间的映射取决于结构需求。第二层交换拓扑与同一个网桥组号码一起附加端口的这两种类型。第3层拓扑路由在这些接口之间的数据包。

## [基本测试拓扑](#)

[图1](#)代表测试拓扑：

### **图1 –测试拓扑**

为了设置测试拓扑：

1. 联络两Cisco 7603路由器对在千兆以太网的ONS节点，并且保证两路由器的两个端口在同样IP子网。这里，每个ONS节点有一个ML1000-2卡在slot 12。
2. 配置Gig0和POS0的一网桥群组100在两ONS节点。**注意：**您在此测验不需要使用POS1。在两个ML POS0端口之间的电路是STS-12c。
3. 在ML卡的禁用IP路由。
4. 设置OC12在两ONS节点之间的1+1保护。请参阅[图1](#)关于相关信息。**注意：**两个ONS Run节点Cisco ONS版本4.1.3。

# 故障插入案例研究

此部分检查多种已知故障和一些普通的操作结果。每案例研究描述操作和结果在ML和ONS。

## 一般信息

### 一些相关命令排除故障在ML IOS的问题

```
show ons alarm show ip interface brief clear counters show interface summary show interface
<gig/pos> show controller pos show cdp neighbor show bridge verbose show vlans <vlan-id> show
sdm l2-switching forwarding show ons provisioning-agent message ports show running show log show
tech-support
```

保证正确时间时间标记的使用情况缓冲区记录日志的，并且证实定时通信和控制(TCC)是否设置与正确日期和时间。这是在ML输出的配置示例：

```
service timestamps debug uptime
service timestamps log datetime msec localtime
logging buffered 4096 debugging
```

这些报警自动地触发POS链接状态更改：

```
PAIS
PLOP
PTIM
PUNEQ
PRDI
PPLM
PPDI
BER_SF_B3
```

**注意：**ONS15454平台使用两个格式报告报警。例如，而AIS-P在CTC，出现PAIS在IOS (ML)出现。PAIS和AIS-P代表同一种报警。

### 在CTC的普通的验证

```
Alarms
Conditions
History
Circuit
Inventory
Port PM counters
Diagnostics file
Audit trail
```

- 在ML卡：维护/性能以太网端口：检查错误。维护/性能POS端口：检查错误。
- 在OC12工作卡：在Provisioning/SONET STS的Enable (event) IPPM。性能：检查错误。

## 案例分析

此部分描述多种潜在的故障点，并且说明如何获取问题解决方法的正确信息。

### 以太网断开

当您拔了以太网电缆，此报警出现在.225：

```
.225ML12#show ons alarm Equipment Alarms Active: None Port Alarms POS0 Active: None POS1 Active: None GigabitEthernet0 Active: CARLOSS GigabitEthernet1 Active: None POS0 Active Alarms : None Demoted Alarms: None POS1 Interface not provisioned
```

**注意：** 如果强制ML GigE接口，ML不注意链路发生故障。

同一报警在CTC出现.225 (请参见图2)。

## 图2 –在CTC的报警

思科设备发现协议(CDP)邻居损耗7603a的确认问题。

**注意：** 状态GigE 0不影响POS 0接口(接口Up/Up)。

## OC12保护交换机

OC12保护交换机不创建任何报警或错误。

## 两个OC12服务中断(OOS)

当.252节点更改的两个OC12端口对OOS，.225报告AIS-P，促成POS 0接口断开和导致TPTFAIL。

```
.225ML12#show ons alarm Equipment Alarms Active: RUNCFG-SAVENEED Port Alarms POS0 Active: TPTFAIL POS1 Active: None GigabitEthernet0 Active: None GigabitEthernet1 Active: None POS0 Active Alarms : PAIS Demoted Alarms: None POS1 Interface not provisioned
```

## XC侧键

此日志条目出现在节点的ML XC交换。注意XCON B是slot 10 XC。

```
May 24 09:55:27.402: %CARDWARE-5-XCON_SWITCH: Switched XCON to B May 24 09:55:27.406: %CARDWARE-6-BTC_DRV: Init BTC, BTC Rev = 2, Backplane = 0, Port = 0
```

## TCC侧键

图3显示已注册报警。

## 图3 – TCC侧键报警

**注意：** 如果使用CTC或倒转telnet连接到ML卡，您丢失对ML卡的连接。

在几分钟之后，报警必须清除。这些日志条目以ML出现：

```
May 24 10:29:09.258: %CARDWARE-5-SOCKET_INFO: closed socket to TCC: changed active TCC
May 24 10:29:09.766: %ONS-6-VTY: All Vty lines cleared
May 24 10:29:14.762: %CARDWARE-5-SOCKET_INFO: cannot connect socket to TCC: B
May 24 10:29:20.270: %CARDWARE-5-SOCKET_INFO: cannot connect socket to TCC: B
May 24 10:29:25.770: %CARDWARE-5-SOCKET_INFO: cannot connect socket to TCC: B
May 24 10:29:31.270: %CARDWARE-5-SOCKET_INFO: cannot connect socket to TCC: B
May 24 10:29:36.370: %CARDWARE-5-SOCKET_INFO: open socket to TCC: B
May 24 10:29:41.166: %CARDWARE-6-BTC_DRV: Init BTC, BTC Rev = 2, Backplane = 0, Port = 0.
```

当前活动TCC在此输出中也出现。而slot 7是TCC A.，SLOT 11 TCC是TCC B。

```
.252ML12#show ons equipment-agent status EQA ---- phySlot: 12, eqptType: EQPT_L2SC, eqptID: 0x2403 ---- curTCC: Tcc B linkStatus: Full dbReq/Recv: 7 / 7 msgVerToEQM: 2 socketFd: 0 pipeMsgAct: No hdrSizeToEQM: 28 connTries: 0 connTimerFast: No hdrSizeFromEQM: 28 timingProv: No clock auto 1
```

## 电路删除和创建

交叉连接电路的删除创建这些日志条目：

```
May 27 17:40:48.459: %VIRTUAL_PA-6-PAREMOVED:
POS interface [0] has been removed due to circuit deletion
May 27 17:40:48.511: %CARDWARE-6-BTC_DRV: Init BTC, BTC Rev = 2,
Backplane = 0, Port = 0.
```

当您从ML，查看它端口配置更改。

```
.225ML12#show ons provisioning-agent m ports all ----- Backend Port (00) Data ----- prov: no
sts: xx vt: xx type: xxx name: xxxxx ----- Backend Port (01) Data ----- prov: no sts: xx vt: xx
type: xxx name: xxxxx
```

STS3c电路的创建更新关于ML的端口信息。电路大小在POS 0控制装置输出中也出现。

```
.225ML12#show ons provisioning-agent m ports all ----- Backend Port (00) Data ----- prov: yes
sts: 00 vt: 255 type: DOS name: ----- STS (00) Term Strip ----- Admin State: IS Direction:
TX_RX_EQPT Type: 3 Sf: 1E-4 Sd: 1E-7 C2 tx/exp: 0x01 / 0x01 PathTrace Format: 64Byte Mode: OFF
expected: (not valid) send: valid: "\000\000\000\000" ----- VT (255) Term Strip not provisioned
----- STS (00) Xc Strip ----- rate: 3 Admin: IS Src Port/STS: 0x09/0x00 STS Eqpt: 0x01
Dest Port/STS: 0x06/0x00 UPSR STS Cont Dest: 0x00 Prev STS Stich Dest Port/STS: 0xFF/0x00 Next
STS Stich Dest Port/STS: 0xFF/0x00 ----- Backend Port (01) Data ----- prov: no sts: xx vt: xx
type: xxx name: xxxxx
```

这些日志条目出现：

```
May 27 17:47:08.711: %VIRTUAL_PA-6-PAPLUGGEDIN:
POS interface [0] has been created due to circuit creation
May 27 17:47:08.715: %CARDWARE-6-BTC_DRV: Init BTC, BTC Rev = 2,
Backplane = 0, Port = 0.
May 27 17:47:08.915: %LINK-3-UPDOWN:
Interface POS0, changed state to up
May 27 17:47:09.927: %LINEPROTO-5-UPDOWN:
Line protocol on Interface POS0, changed state to up
```

## 环回

一条设备环路的应用程序对激活OC12端口的.225的造成.225ML报告TPTFAIL报警。此报警也出现在ML报警列表。

**注意：** 如果启用在活动路径的环回，数据流损失发生。

```
.225ML12#show ons alarm Equipment Alarms Active: None Port Alarms POS0 Active: TPTFAIL POS1
Active: None GigabitEthernet0 Active: None GigabitEthernet1 Active: None POS0 Active Alarms :
PAIS Demoted Alarms: None POS1 Interface not provisioned
```

**注意：** 当您使用Resilient Packet Ring (RPR)而不是1+1 OC-12正如在此测验时，请关闭POS接口，在您启用环回前。因为保护路径不重路由流量，在RPR的这样一环回导致数据流损失。

## 日期和时间崔凡吉莱

在TCC的不正确日期和时间设置创建在日志的此条目：

```
2d23h: %CARDWARE-5-CLOCK_ERR: cannot set time-of-day,
(invalid IOS time set on TCC)
```

当您更改日期和时间时，此条目在ML日志出现。

```
2d23h: %CARDWARE-5-CLOCK_INFO: system clock, timezone,
and summertime configured
```

一次自动更新在根据从TCC的时钟的IOS时钟出现。您能通过**show clock**命令验证此更新。

**注意：** 您能使用**service timestamps**命令配置调试和记录时间戳使用新的时钟信息。

## 被关闭的一个POS接口

当在.225ML的POS 0接口被关闭时，一些报警和情况发生(请参见图4)。

### 图4 –发生的报警和情况，当POS 0接口被关闭

AIS-P为.252的两个OC12端口发生。然后TPTFAIL为在.252的ML发生。在返回路径，.225报告路径有效载荷缺陷指示(PPDI上，也呼叫PDI-P)，两个OC-12端口和RFI-P的工作的OC-12端口的。

在.225ML，这些报警出现：

```
.225ML12#show ons alarm Equipment Alarms Active: RUNCFG-SAVENEED Port Alarms POS0 Active: None  
POS1 Active: None GigabitEthernet0 Active: None GigabitEthernet1 Active: None POS0 Active Alarms  
: PRDI PPDI Demoted Alarms: None POS1 Interface not provisioned
```

这些日志条目也出现在.225：

```
May 24 10:52:01.802: %LINK-5-CHANGED: Interface POS0,  
changed state to administratively down  
May 24 10:52:02.801: %LINEPROTO-5-UPDOWN: Line protocol on Interface POS0,  
changed state to down  
May 24 10:52:04.021: %SONET-4-ALARM: POS0: PRDI  
May 24 10:52:04.269: %SONET-4-ALARM: POS0: PPDI
```

在.252，这些报警发生：

```
.252ML12#show ons alarm Equipment Alarms Active: None Port Alarms POS0 Active: TPTFAIL POS1  
Active: None GigabitEthernet0 Active: None GigabitEthernet1 Active: None POS0 Active Alarms :  
PAIS Demoted Alarms: None POS1 Interface not provisioned
```

同样地，在.252的日志条目指示POS 0事件的原因发生故障PAIS。这用报警是一致或调节CTC报道。

```
May 24 10:51:48.969: %VIRTUAL_PA-6-UPDOWN:  
POS0 changed to down due to PAIS defect trigger changing state  
May 24 10:51:49.169: %LINK-3-UPDOWN:  
Interface POS0, changed state to down  
May 24 10:51:50.169: %LINEPROTO-5-UPDOWN:  
Line protocol on Interface POS0, changed state to down  
May 24 10:51:51.169: %SONET-4-ALARM: POS0: PAIS
```

您能通过此输出确认此事实：

```
.252ML12#show contro pos 0 | inc Active Active Alarms : PAIS Active Defects: PAIS
```

当您启动POS 0接口时，这些日志条目出现在.252 ML：

```
May 24 11:16:17.509: %VIRTUAL_PA-6-UPDOWN:  
POS0 changed to up due to PAIS defect trigger changing state  
May 24 11:16:17.709: %LINK-3-UPDOWN:  
Interface POS0, changed state to up  
May 24 11:16:18.709: %LINEPROTO-5-UPDOWN:  
Line protocol on Interface POS0, changed state to up  
May 24 11:16:27.309: %SONET-4-ALARM:  
POS0: PAIS cleared
```

这些是在.225ML的日志条目：

```
May 24 11:16:30.607: %VIRTUAL_PA-6-UPDOWN:  
POS0 changed to up due to PPDI defect trigger changing state
```

```

May 24 11:16:30.807: %LINK-3-UPDOWN:
Interface POS0, changed state to up
May 24 11:16:31.555: %SYS-5-CONFIG-I:
Configured from console by vty0 (127.0.0.100)
May 24 11:16:31.807: %LINEPROTO-5-UPDOWN:
Line protocol on Interface POS0, changed state to up
May 24 11:16:40.175: %SONET-4-ALARM: POS0: PRDI cleared
May 24 11:16:40.415: %SONET-4-ALARM: POS0: PPDI cleared
现在流量恢复正常。

```

## [POS CRC不匹配](#)

当CRC在同一个电路的两个POS端口不配比(例如，一端16位，当其他侧32位)时，报警不发生在TCC，亦不在ML。两个POS端口仍然是，但是流量不流。这是一些症状：

1. 两个POS接口输入错误计数器随100%增加由于CRC。在这种情况下，当.252 ML仍然有默认32个位CRC时，CRC变成.225ML的16个位。在.252 ML的POS0接口显示相似的输入和CRC错误计数。  

```

.225ML12#show int pos 0 POS0 is up, line protocol is up Hardware is
Packet/Ethernet over Sonet, address is 000f.2475.8c00 (bia 000f.2475.8c00) MTU 1500 bytes,
BW 622080 Kbit, DLY 100 usec, reliability 149/255, txload 1/255, rxload 1/255 Encapsulation
ONS15454-G1000, crc 16, loopback not set Keepalive set (10 sec) Scramble enabled ARP type:
ARPA, ARP Timeout 04:00:00 Last input 00:06:57, output never, output hang never Last
clearing of "show interface" counters 00:04:28 Input queue: 0/75/0/0
(size/max/drops/flushes); Total output drops: 0 Queueing strategy: fifo Output queue: 0/40
(size/max) 5 minute input rate 0 bits/sec, 0 packets/sec 5 minute output rate 0 bits/sec, 0
packets/sec 0 packets input, 11190 bytes Received 0 broadcasts (0 IP multicast) 0 runts, 0
giants, 0 throttles 0 parity 138 input errors, 138 CRC, 0 frame, 0 overrun, 0 ignored 0
input packets with dribble condition detected 178 packets output, 15001 bytes, 0 underruns
0 output errors, 0 applique, 0 interface resets 0 babbles, 0 late collision, 0 deferred 0
lost carrier, 0 no carrier 0 output buffer failures, 0 output buffers swapped out 0 carrier
transitions

```
2. POS控制器输入CRC错误计数增量。  

```

.225ML12#show contro pos 0 | inc input 8841 total input
packets, 46840204 post-HDLC bytes 0 input short packets, 46840993 pre-HDLC bytes 0 input
long packets , 3893 input runt packets 2165 input CRCerror packets , 0 input drop packets 0
input abort packets 0 input packets dropped by ucode

```
3. 在光学路径丢包间的CDP邻居。即使POS0是上和CDP工作，在POS0间的邻居没出现。  

```

225ML12#show cdp neighbor Capability Codes: R - Router, T - Trans Bridge, B - Source Route
Bridge S - Switch, H - Host, I - IGMP, r - Repeater, P - Phone Device ID Local Intrfce
Holdtme Capability Platform Port ID 7603a Gig 0 170 R S I Cat 6000 Gig 1/1 .225ML12#show
cdp int | be POS0 POS0 is up, line protocol is up Encapsulation Sending CDP packets every
60 seconds Holdtime is 180 seconds

```

## [加扰不匹配的POS](#)

使用PPP封装，您能启用SPE加扰(默认情况下，SPE加扰禁用)。在本例中，当.252ML POS0有默认设置时，.225ML POS0有启用的争夺。

```

.225ML12#show int pos 0 | in Scramble
Scramble enabled

```

不匹配加扰更改C2值。如果启用加扰，POS接口使用一个C2值0x16。如果禁用加扰，POS接口使用一个C2值0xCF。当您启用加扰在.252 POS 0端口时，这是结果(.225 POS 0配置不更改)：

```

.252ML12#show contr pos 0 | in C2 C2 (tx / rx) : 0x16 / 0xCF

```

在.252节点，PLM-P发生CTC的激活OC12端口，然后POS0端口。这触发POS0端口断开，发出TPTFAIL报警。

```

.252ML12#show ons alarm Equipment Alarms Active: RUNCFG-SAVENEED Port Alarms POS0 Active:

```

```
TPTFAIL POS1 Active: None GigabitEthernet0 Active: None GigabitEthernet1 Active: None POS0
Active Alarms : PPLM Demoted Alarms: None POS1 Interface not provisioned
```

在.225节点，PDI-P为CTC的两个OC12端口发生。在.252此报警是POS0结果下来。同一报警(呼叫Path在IOS的有效载荷缺陷指示[PPDI])为POS0发生，是，因为接口收到C2值0xFC (关于此的更多信息跟随以后在本文)。

```
.225ML12#show control pos 0 | inc C2 C2 (tx / rx) : 0xCF / 0xFC
PPDI报警建立下来POS0接口。下来POS0接口然后培养TPTFAIL。
```

```
.225ML12#show ons alarm Equipment Alarms Active: RUNCFG-SAVENEED Port Alarms POS0 Active:
TPTFAIL POS1 Active: None GigabitEthernet0 Active: None GigabitEthernet1 Active: None POS0
Active Alarms : PPDI Demoted Alarms: None POS1 Interface not provisioned
```

## [POS C2字节崔凡吉莱](#)

默认C2值是LEX封装(默认封装POS的)和0xCF的0x01 PPP/HDLC封装的。如果更改此值不一致对其他值，PLM-P和TPTFAIL报警能发生，影响服务。同一个电路的两个POS端口能使用同一个C2值。例外是0xFC。值0xFC指示一个路径有效负载缺陷。因此，即使C2值配比(0xFC/0xFC)，PDI-P发生。

您能更改POS C2值用此命令：

```
pos c2 flag <value in decimal>
```

您能表示实际C2值作为显示此处(他们在十六进制格式)：

```
.225ML12#show contro pos 0 | inc C2 C2 (tx / rx) : 0x16 / 0x16
在这种情况下，两个C2值匹配。所以，报警不发生。
```

## [OOS的崔凡吉莱电路状态](#)

当您更换OC-12电路对OOS时，报警可能不发生立即在TCC或在ML。电路状态显示在电路窗口的OOS在CTC。日志条目插入到ML：

```
.225ML12#show log ... May 27 14:22:15.114: %CARDWARE-6-CIRCUIT_STATE: Circuit state on POS 0
change from IS to OOS_AS May 27 14:22:15.114: %CARDWARE-6-BTC_DRV: Init BTC, BTC Rev = 2,
Backplane = 0, Port = 0.
```

POS端口能变成上下状态。结果，TPTFAIL报警在两端发生。流量不流，您能预计。

## [卡住的PDI-P报警](#)

有时报警获得卡住，并且自动地没有清楚，在引起报警清除的情况以后。PPDI (或PDI-P)示例显示此处：

```
May 27 18:41:15.339: %CARDWARE-6-CIRCUIT_STATE:
Circuit state on POS 0 change from IS to OOS_AS
May 27 18:42:11.871: %LINEPROTO-5-UPDOWN:
Line protocol on Interface POS0, changed state to down
May 27 19:17:48.507: %SYS-5-CONFIG_I:
Configured from console by vty2 (127.0.0.100)
May 28 11:57:33.387: %CARDWARE-6-CIRCUIT_STATE:
Circuit state on POS 0 change from OOS_AS to IS
May 28 11:57:33.391: %CARDWARE-6-BTC_DRV:
Init BTC, BTC Rev = 2, Backplane = 0, Port = 0.
May 28 11:57:35.879: %VIRTUAL_PA-6-UPDOWN:
POS0 changed to down due to PPDI defect trigger changing state
May 28 11:57:36.079: %LINK-3-UPDOWN:
```



Interface POS0, changed state to down

May 28 11:57:36.279: %SONET-4-ALARM:

POS0: PPDI

当上一个电路状态变成OOS，.225 POS报告PPDI，在电路回到服务中(IS)状态以后。POS0接口所以坚持下来。CTC也报告在.225节点的PDI-P。OC12接口的PM计数器在.225的不显示错误，并且表明OC-12路径是干净的。

此输出报告PPDI如被滞留：

```
.225ML12#show contro pos 0 Interface POS0 Hardware is Packet/Ethernet over Sonet PATH PAIS = 0
PLOP = 0 PRDI = 0 PTIM = 0 PPLM = 0 PUNEQ = 0 PPDI = 0 BER_SF_B3 = 0 BER_SD_B3 = 0 BIP(B3) = 0
REI = 0 NEWPTR = 0 PSE = 0 NSE = 0 Active Alarms : PPDI Demoted Alarms: None Active Defects:
PPDI Alarms reportable to CLI: PAIS PRDI PLOP PUNEQ PPLM PTIM PPDI BER_SF_B3 BER_SD_B3 Link
state change defects: PAIS PLOP PTIM PUNEQ PRDI PPLM PPDI BER_SF_B3 Link state change time : 200
(msec) DOS FPGA channel number : 0 Starting STS (0 based) : 0 VT ID (if any) (0 based) : 255
Circuit size : STS-3c RDI Mode : 1 bit C2 (tx / rx) : 0xCF / 0xFC Framing : SONET
```

从及早本文的收回，C2值0xFC造成POS报告PPDI。

**注意：**当.252节点免于报警和错误，并且有匹配的C2值POS0的时0xCF/0xFC，您必须考虑一卡住的报警问题。如果重置在.225节点的POS0接口，报警清除，在CTC包括报告的PDI-P。此异常情况在一最新版本将修复。

May 28 14:34:16.967: %LINK-5-CHANGED:

Interface POS0, changed state to administratively down

May 28 14:34:18.675: %LINK-3-UPDOWN:

Interface POS0, changed state to down

May 28 14:34:18.939: %VIRTUAL\_PA-6-UPDOWN:

POS0 changed to up due to PPDI defect trigger changing state

May 28 14:34:19.139: %LINK-3-UPDOWN:

Interface POS0, changed state to up

May 28 14:34:20.127: %SYS-5-CONFIG\_I:

Configured from console by vty2 (127.0.0.100)

May 28 14:34:20.147: %LINEPROTO-5-UPDOWN:

Line protocol on Interface POS0, changed state to up

May 28 14:34:28.739: %SONET-4-ALARM:

POS0: PPDI cleared

现在C2值配比，并且节点无报警的。

```
.225ML12#show control pos 0 Interface POS0 Hardware is Packet/Ethernet over Sonet PATH PAIS = 0
PLOP = 0 PRDI = 1 PTIM = 0 PPLM = 0 PUNEQ = 0 PPDI = 0 BER_SF_B3 = 0 BER_SD_B3 = 0 BIP(B3) = 0
REI = 16 NEWPTR = 0 PSE = 0 NSE = 0 Active Alarms : None Demoted Alarms: None Active Defects:
None Alarms reportable to CLI: PAIS PRDI PLOP PUNEQ PPLM PTIM PPDI BER_SF_B3 BER_SD_B3 Link
state change defects: PAIS PLOP PTIM PUNEQ PRDI PPLM PPDI BER_SF_B3 Link state change time: 200
(msec) DOS FPGA channel number : 0 Starting STS (0 based) : 0 VT ID (if any) (0 based) : 255
Circuit size : STS-3c RDI Mode : 1 bit C2 (tx / rx) : 0xCF / 0xFC Framing : SONET
```

**注意：**有时，一个或更多报警在光卡可能也被滞留。您需要重置活动TCC为了清除这些卡住的报警。结果，备用TCC变得激活，并且操作是一打不到一个(即没有流量影响)，虽然您能几分钟丢失管理数据流(例如CTC会话)。

## 网桥组号码不匹配

此测验使用两个ONS ML卡的同一100网桥群组。然而，网桥群组不必须是同样，只要POS 0和GigE 0在同一ML，或者在同一网桥群组中。例如，对网桥群组101的一更改.252 ML的不影响流量。

。

```
.252ML12#show bridge ver Total of 300 station blocks, 298 free Codes: P - permanent, S - self
Maximum dynamic entries allowed: 1000 Current dynamic entry count: 0 Flood ports Maximum dynamic
entries allowed: 1000 Current dynamic entry count: 2 BG Hash Address Action Interface VC Age RX
```

count TX count 101 02/0 000b.45b0.484a forward Gi0 - 101 BC/0 0009.b7f4.76ca forward POS0 - Flood ports GigabitEthernet0 POS0

## 未清ML Bug部分列表

这是适用于在本文的配置Bug的部分列表：

**注意：** 作为关于cisco.com的版本注释一部分这些Bug被记录。

DDTS ID	状态	找到的版本	修复的版本	***** Release*Notes *****
CSCeb56287	v	4.1	4.6	当您设置一个ML-series电路的状态从服务中(IS)的到在服务范围外(OOS)时，然后回到是，数据流不恢复。为了避免此问题，在您更改状态从前，设置POS端口关闭在CLI。在您更改后状态回到是从OOS，设置POS端口为 <b>未关闭</b> 。
CSCeb24757	v	4.1	4.6	如果断开在ML1000端口的一个传输光纤，只有相邻端口中断链路。理论上讲，两个端口必须识别链路断开了，以便上层协议能重路由流量到一个不同的端口。为了在此情况附近工作，请发出 <b>关闭</b> 和 <b>未关闭</b> 到有断开或有故障传输光纤的端口。
CSCdy31775	v	4	4.6	丢弃计数不包括丢弃的归结于输出队列拥塞的数据包。此问题出现在这些情况之一下： <ul style="list-style-type: none"> <li>在ML-series卡的流量在以太网和SONET端口之间，有配置的可用的电路带宽的超额预订的，导致输出队列拥塞。</li> <li>流量从SONET到以太网，与可用的以太网带宽的超额预订。</li> </ul>
CSCdz49700	C	4	--	在连接的设备之间的ML-series卡总是向前动态中继协议(DTP)数据包。如果DTP在启用可以是默认设置)的连接的设备(DTP也许协商参数，例如， ISL， ML-series卡不支持。在链路的所有信息包协商使用ISL作为组播信息包的ML-series卡计数，并且STP和CDP数据包桥接在使用ISL，不用处理的连接的设备之间。为了避免此问题、禁用DTP和ISL在连接的设备。此功能是如设计。

CSCdz 68649	C	4	--	在一定条件下，flow-control状态能表明流量控制作用，当flow-control不工作时。当您配置一端口级策略器，在ML-series卡的Flow-control只作用。一端口级策略器是在输入策略映射的仅默认和类的一策略器。Flow-control也作用对已配置的策略器丢弃速率只限制来源速率。Flow-control不防止信息包丢弃由于输出队列拥塞。所以，如果没有一端口级策略器，或者，如果输出队列拥塞出现，修正不作用。在这些条件下仍然然而，修正能错误地出现如启用。为了避免此问题，请配置一端口级策略器并且防止输出队列拥塞。
CSCdz 69700	C	4	--	如果发出在ML1000端口的一个shutdown/no shutdown命令顺序，计数器清除。这是启动过程的一个正常部分，并且此功能不会更改。
CSCea 11742	v	4	4.6	当您设置在两个ML POS端口之间的一个电路作为OOS时，其中一个端口能不正确报告TPTFAIL。此问题为ML100T-12和ML1000-2卡存在。如果此问题出现，请打开控制台窗口对每个ML卡并且配置POS端口关闭。
CSCea 20962	v	4	5	当您适用于OOS ML电路设置窗口的，丢弃端口警告没出现。
CSCdy 47284	C	4	--	ML-100快速以太网MTU没有被强制执行。然而，帧大于9050个字节可以丢弃和原因Rx和Tx错误。
<p>状态码</p> <ul style="list-style-type: none"> <li>• v - 已验证(修正在实验室里验证)</li> <li>• C - 已关闭(将没有bug的修正由于多种原因)</li> <li>• 找到的版本：软件版本bug首先报告</li> <li>• 修复的版本：软件版本bug修复</li> </ul>				

## 排除故障并且隔离故障

到目前为止有被提交的信息，此部分打算建立故障隔离盒。基于系统报告的症状，此部分提供逐步提示排除故障问题。这些案例研究与一些常见的症状关连关联与在ONS15454的ML卡。

一般，您必须遵从这些步骤排除故障问题：

- 收集的一般信息和故障症状。
- 分析信息。
- 隔离问题。

- 识别问题。
- 解决问题。

一些论文步骤多次被重复。

## [一般信息](#)

### [基本信息信息收集](#)

收集信息，在您重新加载或重置ML卡由于错误前。手动重新载入潜在丢弃重要信息。手动重新载入重置所有计数器，并且您丢失在内存存储的所有日志。Cisco建议您发出**show tech-support命令**，并且其他数据收集发出命令恢复日志信息，在您发出在路由器前的所有故障排除命令。如果重新启动或重置ML卡，您能丢失控制台/Telnet访问，并且相关信息。

导致对事件的控制台日志能提供什么的图片导致了错误或失败。当错误出现时，您必须尝试保存所有消息被记录对控制台或缓冲区。这些最后控制台信息能证明重要发现问题。根据问题类型，不是所有的消息写入到系统日志服务器。

请使用**show tech-support命令**收集多样化的数据。此命令经常是到路由器的状态的最好的工具，在错误以后在给的此刻。

这是**show tech-support命令**执行命令的一基本列表。什么您捕获变化，根据IOS版本、硬件和选项您选择。

```
show version show running-config show stacks show interfaces show controllers show file systems
dir nvram: show flash: all show process memory show process cpu show context show sdm internal
all-regions show sdm ip-adjacency all show sdm ip-mcast all show sdm ip-prefix all show sdm l2-
switching forwarding show sdm l2-switching interface-macs show sdm qos all show ons alarm defect
show ons alarm failure show ons hwp defects show ons hwp reframe show ons hwp tci show ons hwp
xcon show ons equipment-agent status show ons provisioning-agent message ports all show ons
provisioning-agent message node-element test mda conn dump connections test mda ppe global reg
dump 0 test mda ppe global reg dump 1 Mempool statistics show region show buffers
```

除这些命令之外，请获取有与ML卡的特殊相关性正如本文所描述前面部分的其他命令输出。例如，**show log**，显示**ons报警**等等。从CTC，捕获和出口相关信息如以前描述，例如，报警、情况、电路、库存和PM计数器。

### [排除故障问题的一些有用的IOS工具](#)

在您收集必填信息后，您需要解密错误的信息。此任务可以是困难与输出**show-tech命令**。这些是能解密输出**show-tech命令**的工具和许多其他命令。

- [Output Interpreter Tool \(仅限注册用户\)](#)：粘贴从**show tech-support命令**的输出到此工具。此工具将提供找到的所有问题快速总结。这是提供更加直接的问题快速总结您遇到的一个极大的工具。此工具解释各种各样的输入。您能使用技术menu下拉框浏览。然而，工具不完善和仍然要求解释验证信息。
- [命令查找工具](#)：选择任何一个对查找的这些参考指南命令和语法：ios命令参考资料IOS配置指南catalyst命令参考资料pix firewall命令参考资料
- [错误消息解码器](#)：此工具帮助您研究和解决Cisco IOS软件、Catalyst交换机软件和Cisco Secure PIX防火墙软件的错误消息。粘贴错误消息从日志文件，并且保证您检查在结果复选框内的[建议涉及的文档](#)。
- [Bug Toolkit](#)：搜索根据一个或很多的结果这些选项：IOS版本。功能或组件。关键字。烦扰严

重性(您能选择一特定严重性，或者请指定范围)。

- [TAC案例收集](#)：您能交互式地诊断介入硬件、配置和性能问题与解决方案TAC工程师提供的常见问题。

**注意：**一些工具不是100%兼容为ML卡。

## [案例分析](#)

此部分描述您能采取隔离条件的一些普通的故障状况和可能的步骤。参考的[Cisco ONS 15454故障排除指南，版本4.1.x和4.5](#)详细的告警信息的。

### [在ML以太网端口报告的CARLOSS报警](#)

梅杰(MJ)和影响服务的(SA)，在ML-series以太网(流量)卡的载波损失报警是“LOS (OC-N)”报警的数据等同。以太网端口丢失链路和不收到一个有效信号。

CARLOSS报警发生，当以太网端口从IOS CLI配置作为**未关闭端口**时，并且这些情况之一也符合：

- 电缆没有适当地连接到最近或更端口。
- 自动协商发生故障。
- 速度(10/100仅端口)不正确设置。

如在7603b和.252节点ML卡之间的此测验中看到，启动端口的禁用自动协商。

### [为POS报告的TPTFAIL报警](#)

这是重要警报(MJ)，并且是服务影响(SA)。TPT层故障告警指示在ML-series POS卡的端到端POS链路完整性功能的一工间休息时间。TPTFAIL指示POS端口的一个远端的情况或不正确的配置。

TPTFAIL报警指示在SONET路径、远程POS端口或者防止完整端到端POS路径工作POS端口的误配置的一问题。

如果任何SONET路径报警，例如，“AIS-P”，“LOP-P”，“PDI-P”或者“UNEQ-P”在POS端口用途，受影响的端口能报告TPTFAIL报警的电路存在。

如果远端的ML-series POS端口管理性已禁用，端口插入近端的端口检测的“AIS-P”情况。近端的端口能报告在此事件的TPTFAIL。远端的POS端口报告PRDI和PPDI。您能查看所有这些报警用**show ons alarm**命令。如果POS端口不正确地配置在级的IOS CLI，误配置将引起端口断开，并且报告TPTFAIL。

完成这些步骤为了清除TPTFAIL (ML-series)报警：

1. 如果SONET警报不发生POS端口电路，请验证您是否适当地配置两个POS端口。
2. 如果仅“PLM-P”报警发生POS端口电路，请验证您是否适当地配置两个POS端口。
3. 如果仅“PDI-P”情况发生POS端口电路，并且电路由G系列卡终止，验证“CARLOSS (G系列以太网)”报警是否发生G系列卡。如果那样，请完成“**结算CARLOSS (G系列以太网)报警**”步骤。
4. 如果“AIS-P”报警、“LOP-P”报警或者“UNEQ-P”报警是存在，请排除故障SONET路径(两个POS接口之间的路径在同一个电路)清除那些报警。

## [千兆以太网接口坚持下来](#)

请参阅[在ML以太网端口报告的CARLOSS报警](#)。

## [POS接口报告CRC错误](#)

此问题典型地归结于在POS配置的CRC不匹配。

## [POS报告PPDI](#)

PDI-P是在ONS节点生成的STS路径开销(POH)包含的一套专用代码。报警表明到下行设备有在该STS同步有效载荷包包含的一个或很多的一个缺陷直接地被映射的有效载荷

在支持ML-series卡电路OC-N卡的端口的PDI-P条件能起因于ML-series卡的端到端以太网链路完整性功能。如果问题归结于链路完整性，“TPTFAIL (G系列以太网)”报警或者报警报告终止电路的一个或两个POS端口也发生。如果TPTFAIL发生其中一个或两个POS端口，请排除故障随附于TPTFAIL的报警，清除PDI-P情况。PDI-P报警可以也是一卡住的报警的症状。

这是发生由于POS0在.225的管理性关闭报警的示例：

.225 POS 0 (关闭)	.252 POS 0
PPDI, PRDI	PAIS, TPTFAIL

在本例中，PAIS表明问题的根本是.225节点。如果也清除PAIS、TPTFAIL、清楚PPDI和的PRDI。

## [POS报告PRDI](#)

PRDI表明问题在远端。因为远端接收AIS告警，此问题能出现。欲知更多信息，请参阅[POS报告PPDI](#)。

## [POS报告PAIS](#)

AIS路径情况意味着此节点在流入路径检测AIS。

通常，所有AIS是告诉接收方节点的一个特殊SONET信号发送方节点没有发送有效信号的联机。AIS不是错误。接收方节点培养在节点看到信号AIS而不是一个实时信号的每输入的故障状况AIS。在大多数情况下，当此情况发生时，上行节点发出报警指示信号故障;所有下行节点只培养某种AIS。当您解决在上行节点的问题此情况清除。

## [POS报告PPLM](#)

此问题关键(CR)和影响服务的(SA)

在节点的路径有效负载标签不匹配警报表明流入的信号不匹配本地设置的标签。情况发生由于在SONET路径开销的一个无效C2字节值。加扰和封装能更改C2值。

## [POS接口坚持下来](#)

各种各样的报警能建立下来POS接口。默认情况下，这些报警原因断开的POS链路：PAIS，PLOP，PTIM，PUNEQ，PRDI，PPLM，PPDI，BER\_SF\_B3。为了修改列表，请使用interface命令pos触发的缺陷。当POS接口增长或下降时，原因被记录(show log)。您能获取所有激

活告警或缺陷用**show ons alarm**命令。排除故障原因启动POS接口。当POS接口断开时，TPTFAIL报警发生。

当您连接给其他供应商POS接口时，请保证这些项目在两端配比：

1. 加扰
2. C2值
3. CRC

## POS接口报告输入错误

在POS接口累计的输入错误(**show interface POS**和CTC PM计数器)表明入站数据包是畸形的。各种各样的原因可能导致输入错误数据包。

如果他们存在，请排除故障报警。

如果CRC错误沿输入错误增加，CRC错误可以是输入错误的原因。排除故障CRC配置。

验证POS接口配置。

排除故障在两个POS端口之间的路径组件。如果输入错误增加，不用在任何其他组分错误的一个对应的增量，请考虑硬件问题。在硬件替换前，请执行这些步骤在电路的两边(一次一个)发现问题是否持续：

- TCC侧键
- XC侧键
- 在SONET端口的保护交换机，如果保护存在
- ML卡软重置
- ML卡重新安装

## CDP邻居没出现

验证您是否启用在两个接口的CDP。

如果他们存在，请排除故障报警和接口错误。

## 没有端到端数据流运输流量

验证在两端设备的配置。

如果他们存在，请排除故障报警和错误。

## 附录：基本测试配置和命令信息

此部分获取所有设备的基本配置信息在此测验，用于作为基准排除故障问题。

### 7603a

```
7603a#show run Building configuration... Current configuration : 3136 bytes ! version 12.1
```

```

service timestamps debug uptime service timestamps log uptime no service password-encryption !
hostname 7603a ! ! ip subnet-zero ! ! ! mls flow ip destination mls flow ipx destination
spanning-tree extend system-id ! redundancy mode rpr-plus main-cpu auto-sync running-config
auto-sync standard ! ! ! interface GigabitEthernet1/1 ip address 10.0.0.1 255.0.0.0 ! router
ospf 1 log-adjacency-changes network 10.0.0.1 0.0.0.0 area 0 ! ip classless no ip http server !
! ! ! line con 0 line vty 0 4 ! end 7603a#show ip int bri Interface IP-Address OK? Method Status
Protocol Vlan1 unassigned YES unset administratively down down GigabitEthernet1/1 10.0.0.1 YES
manual up up 7603a#show ip route Codes: C - connected, S - static, I - IGRP, R - RIP, M -
mobile, B - BGP D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area N1 - OSPF NSSA
external type 1, N2 - OSPF NSSA external type 2 E1 - OSPF external type 1, E2 - OSPF external
type 2, E - EGP i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area * -
candidate default, U - per-user static route, o - ODR P - periodic downloaded static route
Gateway of last resort is not set 7603a#show int gigabitEthernet 1/1 GigabitEthernet1/1 is up,
line protocol is up (connected) Hardware is C6k 1000Mb 802.3, address is 0009.b7f4.76ca (bia
0009.b7f4.76ca) Internet address is 10.0.0.1/8 MTU 1500 bytes, BW 1000000 Kbit, DLY 10 usec,
reliability 255/255, txload 1/255, rxload 1/255 Encapsulation ARPA, loopback not set Keepalive
set (10 sec) Full-duplex mode, link type is autonegotiation, media type is SX output flow-
control is unsupported, input flow-control is unsupported, 1000Mb/s Clock mode is auto input
flow-control is off, output flow-control is off ARP type: ARPA, ARP Timeout 04:00:00 Last input
00:00:01, output 00:00:45, output hang never Last clearing of "show interface" counters never
Input queue: 0/75/0/0 (size/max/drops/flushes); Total output drops: 0 Queueing strategy: fifo
Output queue :0/40 (size/max) 5 minute input rate 0 bits/sec, 0 packets/sec 5 minute output rate
0 bits/sec, 0 packets/sec L2 Switched: ucast: 5482 pkt, 516472 bytes - mcast: 1 pkt, 64 bytes L3
in Switched: ucast: 0 pkt, 0 bytes - mcast: 0 pkt, 0 bytes mcast L3 out Switched: ucast: 0 pkt,
0 bytes 5145 packets input, 405866 bytes, 0 no buffer Received 5107 broadcasts, 0 runts, 0
giants, 0 throttles 0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored 0 input packets with
dribble condition detected 332 packets output, 111641 bytes, 0 underruns 0 output errors, 0
collisions, 2 interface resets 0 babbles, 0 late collision, 0 deferred 0 lost carrier, 0 no
carrier 0 output buffer failures, 0 output buffers swapped out 7603a#show ip ospf neig Neighbor
ID Pri State Dead Time Address Interface 10.0.0.2 1 FULL/DR 00:00:38 10.0.0.2 GigabitEtherne
t1/1

```

## 7603b

```

7603b#show run Building configuration... Current configuration : 1102 bytes ! version 12.1
service timestamps debug uptime service timestamps log uptime no service password-encryption !
hostname 7603b ! enable password cisco ! ip subnet-zero ! ! ! mls flow ip destination mls flow
ipx destination spanning-tree extend system-id ! redundancy mode rpr-plus main-cpu auto-sync
running-config auto-sync standard ! ! ! interface GigabitEthernet1/1 ip address 10.0.0.2
255.0.0.0 speed nonegotiate ! router ospf 1 log-adjacency-changes network 10.0.0.2 0.0.0.0 area
0 ! ip classless no ip http server ! ! ! ! line con 0 line vty 0 4 no login ! end Note that if
GigE link does not come up, auto-negotiation may not be working. Auto-negotiation can be turned
off to force the link to come up. Ensure both sides of the link are matching. 7603b#show ip int
bri Interface IP-Address OK? Method Status Protocol Vlan1 unassigned YES NVRAM administratively
down down GigabitEthernet1/1 10.0.0.2 YES manual up up 7603b#show int gig 1/1 GigabitEthernet1/1
is up, line protocol is up (connected) Hardware is C6k 1000Mb 802.3, address is 000b.45b0.484a
(bia 000b.45b0.484a) Internet address is 10.0.0.2/8 MTU 1500 bytes, BW 1000000 Kbit, DLY 10
usec, reliability 255/255, txload 1/255, rxload 1/255 Encapsulation ARPA, loopback not set
Keepalive set (10 sec) Full-duplex mode, link type is force-up, media type is SX output flow-
control is unsupported, input flow-control is unsupported, 1000Mb/s Clock mode is auto input
flow-control is off, output flow-control is off ARP type: ARPA, ARP Timeout 04:00:00 Last input
00:00:01, output 00:00:04, output hang never Last clearing of "show interface" counters never
Input queue: 0/75/0/0 (size/max/drops/flushes); Total output drops: 0 Queueing strategy: fifo
Output queue :0/40 (size/max) 5 minute input rate 0 bits/sec, 0 packets/sec 5 minute output rate
0 bits/sec, 0 packets/sec L2 Switched: ucast: 5695 pkt, 534143 bytes - mcast: 3 pkt, 192 bytes
L3 in Switched: ucast: 0 pkt, 0 bytes - mcast: 0 pkt, 0 bytes mcast L3 out Switched: ucast: 0
pkt, 0 bytes 5319 packets input, 395772 bytes, 0 no buffer Received 5172 broadcasts, 4 runts, 0
giants, 0 throttles 4 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored 0 input packets with
dribble condition detected 413 packets output, 139651 bytes, 0 underruns 0 output errors, 0
collisions, 2 interface resets 0 babbles, 0 late collision, 0 deferred 0 lost carrier, 0 no
carrier 0 output buffer failures, 0 output buffers swapped out 7603b#show ip route Codes: C -
connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP D - EIGRP, EX - EIGRP external, O
- OSPF, IA - OSPF inter area N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2 E1 -
OSPF external type 1, E2 - OSPF external type 2, E - EGP i - IS-IS, L1 - IS-IS level-1, L2 - IS-

```



IS level-2, ia - IS-IS inter area \* - candidate default, U - per-user static route, o - ODR P - periodic downloaded static route Gateway of last resort is not set C 10.0.0.0/8 is directly connected, GigabitEthernet1/1 7603b#ping 10.0.0.1 Type escape sequence to abort. Sending 5, 100-byte ICMP Echos to 10.0.0.1, timeout is 2 seconds: !!!!! Success rate is 100 percent (5/5), round-trip min/avg/max = 1/1/1 ms

## .225ML

```
.225ML12#show run Building configuration... Current configuration : 580 bytes ! version 12.1 no
service pad service timestamps debug uptime service timestamps log uptime no service password-
encryption ! hostname .225ML12 ! logging buffered 4096 debugging enable password cisco ! ip
subnet-zero no ip routing no ip domain-lookup ! ! bridge 100 protocol ieee ! ! interface
GigabitEthernet0 no ip address no ip route-cache bridge-group 100 ! interface GigabitEthernet1
no ip address no ip route-cache shutdown ! interface POS0 no ip address no ip route-cache crc 32
bridge-group 100 ! ip classless no ip http server ! ! ! line con 0 line vty 0 4 exec-timeout 0
0 no login ! end .225ML12#show ip int bri Interface IP-Address OK? Method Status Protocol
GigabitEthernet0 unassigned YES unset up up GigabitEthernet1 unassigned YES unset
administratively down down POS0 unassigned YES unset up up .225ML12#show int gig 0
GigabitEthernet0 is up, line protocol is up Hardware is xpif_port, address is 000f.2475.8c04
(bia 000f.2475.8c04) MTU 1500 bytes, BW 1000000 Kbit, DLY 10 usec, reliability 255/255, txload
1/255, rxload 1/255 Encapsulation ARPA, loopback not set Keepalive set (10 sec) Full-duplex,
1000Mb/s, 1000BaseSX, Auto-negotiation output flow-control is off, input flow-control is on ARP
type: ARPA, ARP Timeout 04:00:00 Last input 00:00:53, output 00:00:01, output hang never Last
clearing of "show interface" counters never Input queue: 0/75/0/0 (size/max/drops/flushes);
Total output drops: 0 Queueing strategy: fifo Output queue: 0/40 (size/max) 5 minute input rate
0 bits/sec, 0 packets/sec 5 minute output rate 0 bits/sec, 0 packets/sec 336 packets input,
111810 bytes Received 1 broadcasts (0 IP multicast) 1 runts, 0 giants, 0 throttles 1 input
errors, 0 CRC, 0 frame, 0 overrun, 0 ignored 0 watchdog, 244 multicast 0 input packets with
dribble condition detected 5369 packets output, 422097 bytes, 0 underruns 0 output errors, 0
collisions, 0 interface resets 0 babbles, 0 late collision, 0 deferred 0 lost carrier, 0 no
carrier 0 output buffer failures, 0 output buffers swapped out .225ML12#show int pos 0 POS0 is
up, line protocol is up Hardware is Packet/Ethernet over Sonet, address is 000f.2475.8c00 (bia
000f.2475.8c00) MTU 1500 bytes, BW 622080 Kbit, DLY 100 usec, reliability 255/255, txload 1/255,
rxload 1/255 Encapsulation ONS15454-G1000, crc 32, loopback not set Keepalive set (10 sec)
Scramble enabled ARP type: ARPA, ARP Timeout 04:00:00 Last input 00:00:32, output never, output
hang never Last clearing of "show interface" counters 02:16:40 Input queue: 0/75/0/0
(size/max/drops/flushes); Total output drops: 0 Queueing strategy: fifo Output queue: 0/40
(size/max) 5 minute input rate 0 bits/sec, 0 packets/sec 5 minute output rate 0 bits/sec, 0
packets/sec 152 packets input, 26266640 bytes Received 0 broadcasts (0 IP multicast) 0 runts, 0
giants, 0 throttles 0 parity 1 input errors, 1 CRC, 0 frame, 0 overrun, 0 ignored 0 input
packets with dribble condition detected 4250 packets output, 351305 bytes, 0 underruns 0 output
errors, 0 applique, 0 interface resets 0 babbles, 0 late collision, 0 deferred 0 lost carrier, 0
no carrier 0 output buffer failures, 0 output buffers swapped out 0 carrier transitions
.225ML12#show ons alarm Equipment Alarms Active: None Port Alarms POS0 Active: None POS1 Active:
None GigabitEthernet0 Active: None GigabitEthernet1 Active: None POS0 Active Alarms : None
Demoted Alarms: None POS1 Interface not provisioned This command shows all the defects that can
be reported to CLI and TCC (via CTC). .225ML12#show ons alarm defect Equipment Defects Active:
None Reportable to TCC/CLI: CONTBUS-IO-A CONTBUS-IO-B CTNEQPT-PBWORK CTNEQPT-PBPROT EQPT RUNCFG-
SAVENEED ERROR-CONFIG Port Defects POS0 Active: None Reportable to TCC: CARLOSS TPTFAIL POS1
Active: None Reportable to TCC: CARLOSS TPTFAIL GigabitEthernet0 Active: None Reportable to TCC:
CARLOSS TPTFAIL GigabitEthernet1 Active: None Reportable to TCC: CARLOSS TPTFAIL POS0 Active
Defects: None Alarms reportable to CLI: PAIS PRDI PLOP PUNEQ PPLM PTIM PPDI BER_SF_B3 BER_SD_B3
POS1 Interface not provisioned This command shows all the active alarms. .225ML12#show ons alarm
failure Equipment Alarms Active: None Port Alarms POS0 Active: None POS1 Active: None
GigabitEthernet0 Active: None GigabitEthernet1 Active: None POS0 Active Alarms : None Demoted
Alarms: None POS1 Interface not provisioned .225ML12#show control pos 0 Interface POS0 Hardware
is Packet/Ethernet over Sonet PATH PAIS = 0 PLOP = 0 PRDI = 0 PTIM = 0 PPLM = 0 PUNEQ = 0 PPDI =
0 BER_SF_B3 = 0 BER_SD_B3 = 0 BIP(B3) = 0 REI = 0 NEWPTR = 0 PSE = 0 NSE = 0 Active Alarms :
None Demoted Alarms: None Active Defects: None Alarms reportable to CLI: PAIS PRDI PLOP PUNEQ
PPLM PTIM PPDI BER_SF_B3 BER_SD_B3 Link state change defects: PAIS PLOP PTIM PUNEQ PRDI PPLM
PPDI BER_SF_B3 Link state change time : 200 (msec) DOS FPGA channel number : 0 Starting STS (0
based) : 0 VT ID (if any) (0 based) : 255 Circuit size : STS-12c RDI Mode : 1 bit C2 (tx / rx) :
0x01 / 0x01 Framing : SONET Path Trace Mode : off Transmit String : Expected String : Received
String : Buffer : Unstable Remote hostname : Remote interface: Remote IP addr : B3 BER
```

```

thresholds: SFBER = 1e-4, SDBER = 1e-7 231 total input packets, 26294392 post-HDLC bytes 0 input
short packets, 26294465 pre-HDLC bytes 0 input long packets , 0 input runt packets 1 input
CRCError packets , 0 input drop packets 0 input abort packets 0 input packets dropped by ucode
6392 total output packets, 527660 output pre-HDLC bytes 527812 output post-HDLC bytes Carrier
delay is 200 msec .225ML12#show cdp nei Capability Codes: R - Router, T - Trans Bridge, B -
Source Route Bridge S - Switch, H - Host, I - IGMP, r - Repeater, P - Phone Device ID Local
Intrfce Holdtme Capability Platform Port ID .252ML12 POS0 148 T ONS-ML1000POS0 7603a Gig 0 121 R
S I Cat 6000 Gig 1/1 The following command shows the detail bridge table. Note that
000b.45b0.484a is the address of Gig0 on 7603b. .225ML12#show bridge ver Total of 300 station
blocks, 298 free Codes: P - permanent, S - self Maximum dynamic entries allowed: 1000 Current
dynamic entry count: 2 BG Hash Address Action Interface VC Age RX count TX count 100 02/0
000b.45b0.484a forward POS0 - 100 BC/0 0009.b7f4.76ca forward Gi0 - Flood ports GigabitEthernet0
POS0 This command shows the same type of info as the above. .225ML12#show sdm l2-switching
forwarding bridge-group 100 MAC-Address B-Group l3_int punt_da Out-int SPR-NodeId CAM-ADDR STATE
-----
0009B7F476CA 100 0 0 Gi0
*** 11 Used 000B45B0484A 100 0 0 PO0 *** 12 Used .225ML12#show interface summary *: interface is
up IHQ: pkts in input hold queue IQD: pkts dropped from input queue OHQ: pkts in output hold
queue OQD: pkts dropped from output queue RXBS: rx rate (bits/sec) RXPS: rx rate (pkts/sec)
TXBS: tx rate (bits/sec) TXPS: tx rate (pkts/sec) TRTL: throttle count Interface IHQ IQD OHQ OQD
RXBS RXPS TXBS TXPS TRTL ----- *
GigabitEthernet0 0 0 0 0 0 0 0 0 0 GigabitEthernet1 0 0 0 0 0 0 0 0 0 * POS0 0 0 0 0 0 0 0 0 0
NOTE:No separate counters are maintained for subinterfaces Hence Details of subinterface are not
shown .225ML12#show ons equipment-agent status EQA ---- phySlot: 12, eqptType: EQPT_L2SC,
eqptID: 0x2403 ---- curTCC: Tcc B linkStatus: Full dbReq/Recv: 1 / 4 msgVerToEQM: 2 socketFd: 0
pipeMsgAct: No hdrSizeToEQM: 28 connTries: 0 connTimerFast: No hdrSizeFromEQM: 28 timingProv: No
clock auto 1 .225ML12#show ons provisioning-agent message ports all ----- Backend Port (00) Data
----- prov: yes sts: 00 vt: 255 type: DOS name: ----- STS (00) Term Strip ----- Admin State: IS
Direction: TX_RX_EQPT Type: 12 Sf: 1E-4 Sd: 1E-7 C2 tx/exp: 0x01 / 0x01 PathTrace Format: 64Byte
Mode: OFF expected: (not valid) send: valid: "\000\000\000\000" ----- VT (255) Term Strip not
provisioned ----- STS (00) Xc Strip ----- rate: 12 Admin: IS Src Port/STS: 0x09/0x00 STS
Eqpt: 0x01 Dest Port/STS: 0x06/0x00 UPSR STS Cont Dest: 0x00 Prev STS Stich Dest Port/STS:
0xFF/0x00 Next STS Stich Dest Port/STS: 0xFF/0x00 ----- Backend Port (01) Data ----- prov: no
sts: xx vt: xx type: xxx name: xxxxx The following command retrieves the ONS provisioning
information that is done via CTC. .225ML12#show ons provisioning-agent message node-element ----
- NE Data ----- Node Name: R27-15454c MAC Addr : 00 10 CF D2 70 92 IP Addr : 10.89.244.225 Sub
Net Mask : 255.255.255.192 Dflt Router : 10.89.244.193 Lan IP Addr : 10.89.244.225 Lan Sub Mask
: 255.255.255.192 Day Savings : 0x01 Min from UTC : 480 Node ID : 0xFF Sync Msg Ver : 0x01 Sync
Msg Res Delta : -1 Sync Msg Res Quality : 0x06 XConA Eqpt ID : 0x00000201 XConB Eqpt ID :
0x00000201 OSPF Node ID : 0xCFD27092 SDH Mode : SONET

```

## .252ML12

The auto negotiation was turned off on Gig0 (see later).

```

.252ML12#show run Building configuration... Current configuration : 643 bytes ! version 12.1 no
service pad service timestamps debug uptime service timestamps log uptime no service password-
encryption ! hostname .252ML12 ! logging buffered 4096 debugging enable password cisco ! ip
subnet-zero no ip routing no ip domain-lookup ! ! bridge 100 protocol ieee ! ! interface
GigabitEthernet0 no ip address no ip route-cache no speed no negotiation auto bridge-group 100 !
interface GigabitEthernet1 no ip address no ip route-cache shutdown ! interface POS0 no ip
address no ip route-cache crc 32 bridge-group 100 ! ip classless no ip http server ! ! ! line
con 0 line vty 0 4 exec-timeout 0 0 no login ! end .252ML12#show ip int brie Interface IP-
Address OK? Method Status Protocol GigabitEthernet0 unassigned YES manual up up GigabitEthernet1
unassigned YES NVRAM administratively down down POS0 unassigned YES unset up up The Gig0
interface showed carrier loss until it was forced up by turning off auto negotiation.
.252ML12#show int gig 0 GigabitEthernet0 is up, line protocol is up Hardware is xpif_port,
address is 000f.2475.8c4c (bia 000f.2475.8c4c) MTU 1500 bytes, BW 1000000 Kbit, DLY 10 usec,
reliability 255/255, txload 1/255, rxload 1/255 Encapsulation ARPA, loopback not set Keepalive
set (10 sec) Full-duplex, 1000Mb/s, 1000BaseSX, Force link-up output flow-control is off, input
flow-control is on ARP type: ARPA, ARP Timeout 04:00:00 Last input 00:00:06, output 00:00:01,
output hang never Last clearing of "show interface" counters never Input queue: 0/75/0/0
(size/max/drops/flushes); Total output drops: 0 Queueing strategy: fifo Output queue: 0/40
(size/max) 5 minute input rate 0 bits/sec, 0 packets/sec 5 minute output rate 0 bits/sec, 0
packets/sec 391 packets input, 125375 bytes Received 1 broadcasts (0 IP multicast) 0 runts, 0

```

giants, 0 throttles 0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored 0 watchdog, 282  
multicast 0 input packets with dribble condition detected 8489 packets output, 637084 bytes, 0  
underruns 0 output errors, 0 collisions, 0 interface resets 0 babbles, 0 late collision, 0  
deferred 0 lost carrier, 0 no carrier 0 output buffer failures, 0 output buffers swapped out  
.252ML12#show int pos 0 POS0 is up, line protocol is up Hardware is Packet/Ethernet over Sonet,  
address is 000f.2475.8c48 (bia 000f.2475.8c48) MTU 1500 bytes, BW 622080 Kbit, DLY 100 usec,  
reliability 255/255, txload 1/255, rxload 1/255 Encapsulation ONS15454-G1000, crc 32, loopback  
not set Keepalive set (10 sec) Scramble enabled ARP type: ARPA, ARP Timeout 04:00:00 Last input  
00:00:00, output never, output hang never Last clearing of "show interface" counters 03:58:02  
Input queue: 0/75/0/0 (size/max/drops/flushes); Total output drops: 0 Queueing strategy: fifo  
Output queue: 0/40 (size/max) 5 minute input rate 0 bits/sec, 0 packets/sec 5 minute output rate  
0 bits/sec, 0 packets/sec 7396 packets input, 608413 bytes Received 0 broadcasts (0 IP  
multicast) 0 runts, 0 giants, 0 throttles 0 parity 1 input errors, 1 CRC, 0 frame, 0 overrun, 0  
ignored 0 input packets with dribble condition detected 267 packets output, 96676 bytes, 0  
underruns 0 output errors, 0 applique, 0 interface resets 0 babbles, 0 late collision, 0  
deferred 0 lost carrier, 0 no carrier 0 output buffer failures, 0 output buffers swapped out 0  
carrier transitions .252ML12#show ons alarm Equipment Alarms Active: None Port Alarms POS0  
Active: None POS1 Active: None GigabitEthernet0 Active: None GigabitEthernet1 Active: None POS0  
Active Alarms : None Demoted Alarms: None POS1 Interface not provisioned .252ML12#show ons alarm  
defect Equipment Defects Active: None Reportable to TCC/CLI: CONTBUS-IO-A CONTBUS-IO-B CTNEQPT-  
PBWORK CTNEQPT-PBPROT EQPT RUNCFG-SAVENEED ERROR-CONFIG Port Defects POS0 Active: None  
Reportable to TCC: CARLOSS TPTFAIL POS1 Active: None Reportable to TCC: CARLOSS TPTFAIL  
GigabitEthernet0 Active: None Reportable to TCC: CARLOSS TPTFAIL GigabitEthernet1 Active: None  
Reportable to TCC: CARLOSS TPTFAIL POS0 Active Defects: None Alarms reportable to CLI: PAIS PRDI  
PLOP PUNEQ PPLM PTIM PPDI BER\_SF\_B3 BER\_SD\_B3 POS1 Interface not provisioned .252ML12#show ons  
alarm failure Equipment Alarms Active: None Port Alarms POS0 Active: None POS1 Active: None  
GigabitEthernet0 Active: None GigabitEthernet1 Active: None POS0 Active Alarms : None Demoted  
Alarms: None POS1 Interface not provisioned .252ML12#show contro pos 0 Interface POS0 Hardware  
is Packet/Ethernet over Sonet PATH PAIS = 0 PLOP = 0 PRDI = 0 PTIM = 0 PPLM = 0 PUNEQ = 0 PPDI =  
0 BER\_SF\_B3 = 0 BER\_SD\_B3 = 0 BIP(B3) = 0 REI = 0 NEWPTR = 0 PSE = 0 NSE = 0 Active Alarms :  
None Demoted Alarms: None Active Defects: None Alarms reportable to CLI: PAIS PRDI PLOP PUNEQ  
PPLM PTIM PPDI BER\_SF\_B3 BER\_SD\_B3 Link state change defects: PAIS PLOP PTIM PUNEQ PRDI PPLM  
PPDI BER\_SF\_B3 Link state change time : 200 (msec) DOS FPGA channel number : 0 Starting STS (0  
based) : 0 VT ID (if any) (0 based) : 255 Circuit size : STS-12c RDI Mode : 1 bit C2 (tx / rx) :  
0x01 / 0x01 Framing : SONET Path Trace Mode : off Transmit String : Expected String : Received  
String : Buffer : Unstable Remote hostname : Remote interface: Remote IP addr : B3 BER  
thresholds: SFBER = 1e-4, SDBER = 1e-7 7425 total input packets, 610493 post-HDLC bytes 0 input  
short packets, 610501 pre-HDLC bytes 0 input long packets , 0 input runt packets 1 input  
CRCError packets , 0 input drop packets 0 input abort packets 0 input packets dropped by ucode  
268 total output packets, 97061 output pre-HDLC bytes 97061 output post-HDLC bytes Carrier delay  
is 200 msec .252ML12#show cdp neigh Capability Codes: R - Router, T - Trans Bridge, B - Source  
Route Bridge S - Switch, H - Host, I - IGMP, r - Repeater, P - Phone Device ID Local Infrfce  
Holdtme Capability Platform Port ID .225ML12 POS0 168 T ONS-ML1000POS0 7603b Gig 0 158 R S I Cat  
6000 Gig 1/1 .252ML12#show bridge verbose Total of 300 station blocks, 300 free Codes: P -  
permanent, S - self Total of 300 station blocks, 298 free Codes: P - permanent, S - self Maximum  
dynamic entries allowed: 1000 Current dynamic entry count: 2 BG Hash Address Action Interface VC  
Age RX count TX count 100 02/0 000b.45b0.484a forward Gi0 - 100 BC/0 0009.b7f4.76ca forward POS0  
- Flood ports GigabitEthernet0 POS0 .252ML12#show sdm l2-switching forwarding bridge-group 100  
MAC-Address B-Group l3\_int punt\_da Out-int SPR-NodeId CAM-ADDR STATE -----  
-----  
----- 000B45B0484A 100 0 0 Gi0 \*\*\* 11 Used 0009B7F476CA 100  
0 0 P00 \*\*\* 16 Used .252ML12#show int summ \*: interface is up IHQ: pkts in input hold queue IQD:  
pkts dropped from input queue OHQ: pkts in output hold queue OQD: pkts dropped from output queue  
RXBS: rx rate (bits/sec) RXPS: rx rate (pkts/sec) TXBS: tx rate (bits/sec) TXPS: tx rate  
(pkts/sec) TRTL: throttle count Interface IHQ IQD OHQ OQD RXBS RXPS TXBS TXPS TRTL -----  
----- \* GigabitEthernet0 0 0 0 0 0 0 0 0 0  
GigabitEthernet1 0 0 0 0 0 0 0 0 0 \* POS0 0 0 0 0 0 0 0 0 0 NOTE:No separate counters are  
maintained for subinterfaces Hence Details of subinterface are not shown .252ML12#show ons  
equipment-agent status EQA ---- phySlot: 12, eqptType: EQPT\_L2SC, eqptID: 0x2403 ---- curTCC:  
Tcc A linkStatus: Full dbReq/Recv: 1 / 5 msgVerToEQM: 2 socketFd: 0 pipeMsgAct: No hdrSizeToEQM:  
28 connTries: 0 connTimerFast: No hdrSizeFromEQM: 28 timingProv: No clock auto 1 .252ML12#show  
ons provisioning-agent message ports all ----- Backend Port (00) Data ----- prov: yes sts: 00  
vt: 255 type: DOS name: ----- STS (00) Term Strip ----- Admin State: IS Direction: TX\_RX\_EQPT  
Type: 12 Sf: 1E-4 Sd: 1E-7 C2 tx/exp: 0x01 / 0x01 PathTrace Format: 64Byte Mode: OFF expected:  
(not valid) send: valid: "\000\000\000\000" ----- VT (255) Term Strip not provisioned -----

```
- STS (00) Xc Strip ----- rate: 12 Admin: IS Src Port/STS: 0x09/0x00 STS Eqpt: 0x01 Dest
Port/STS: 0x06/0x00 UPSR STS Cont Dest: 0x00 Prev STS Stich Dest Port/STS: 0xFF/0x00 Next STS
Stich Dest Port/STS: 0xFF/0x00 ----- Backend Port (01) Data ----- prov: no sts: xx vt: xx type:
xxx name: xxxxx .252ML12#show ons provisioning-agent message node-element ----- NE Data -----
Node Name: r26-15454a MAC Addr : 00 10 CF D2 40 52 IP Addr : 10.89.244.252 Sub Net Mask :
255.255.255.192 Dflt Router : 10.89.244.193 Lan IP Addr : 10.89.244.252 Lan Sub Mask :
255.255.255.192 Day Savings : 0x01 Min from UTC : 480 Node ID : 0xFF Sync Msg Ver : 0x01 Sync
Msg Res Delta : 0 Sync Msg Res Quality : 0x00 XConA Eqpt ID : 0x00000201 XConB Eqpt ID :
0x00000201 OSPF Node ID : 0xCFD24052 SDH Mode : SONET
```

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