E1和E1-F基础知识

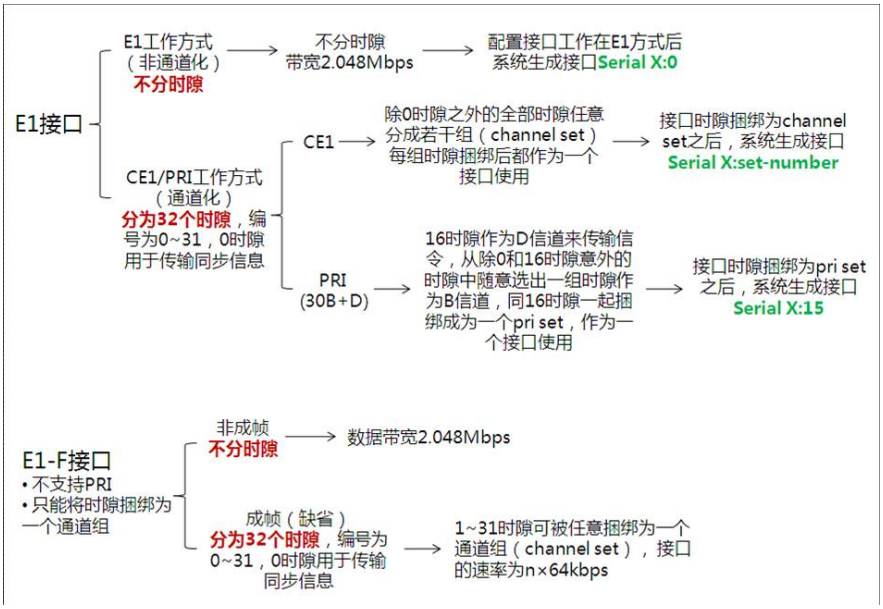
广域网接口 zhiliao_5ilsv 2019-10-30 发表

问题描述

E1和E1-F基础知识

解决方法

1、 接口的工作方式



2、接口基础知识

配置前E1-F和E1口

```
#
controller E1 2/0/0   //E1口
 using e1
#
controller E1 2/0/1   //E1口
 using e1
#
interface Serial1/0/0  //E1-F口
 link-protocol ppp
 fe1 unframed
#
interface Serial2/0/0:0
 link-protocol ppp
 ip address dhcp-alloc
#
interface Serial2/0/1:0
 link-protocol ppp
 ip address dhcp-alloc
```

①E1-F接口

```
//配置E1-F接口工作在E1(非成帧)
[Quidway]int s1/0/0
[Quidway-Serial1/0/0]fe1 unframed
[Quidway-Serial1/0/0]ip address 1.1.1.1 24
//配置E1-F接口工作在成帧(缺省)
[Quidway]int s1/0/0
[Quidway-Serial1/0/0]undo fe1 unframed
[Quidway-Serial1/0/0]fe1 timeslot-list ?
  INTEGER<1-31>  Timeslots in range, separated by ',' or '-'
[Quidway-Serial1/0/0]fe1 timeslot-list 1-10
[Quidway-Serial1/0/0]ip add 1.1.1.1 24
```

②E1接口

```
//配置E1接口工作在非通道化
```

```
[Quidway]controller E1  2/0/0
[Quidway-E1 2/0/0]using e1
生成一个接口：interface Serial2/0/0:0
//配置E1接口工作在CE1通道化(缺省)
[Quidway]controller E1  2/0/0
[Quidway-E1 2/0/0]using ce1
[Quidway-E1 2/0/0]channel-set 20 timeslot-list ?
  INTEGER<1-31>  Timeslots in range, separated by ',' or '-'
[Quidway-E1 2/0/0]channel-set 20 timeslot-list 1,2
[Quidway-E1 2/0/0]
%Jun  4 06:45:52:085 2004 Quidway PHY/2/PHY:    Serial2/0/0:20: change status to up
[Quidway-E1 2/0/0]channel-set 10 timeslot-list 3-7
[Quidway-E1 2/0/0]
%Jun  4 06:48:55:928 2004 Quidway PHY/2/PHY:    Serial2/0/0:10: change status to up
[Quidway]int Serial2/0/0:20
[Quidway-Serial2/0/0:20]ip address 1.1.1.2 24
//配置E1接口工作在PRI通道化
[Quidway]controller E1  2/0/1
[Quidway-E1 2/0/1]using ce1
[Quidway-E1 2/0/1]pri-set ?
  timeslot-list  Lists of the timeslots of the PRI set
  <cr>
[Quidway-E1 2/0/1]pri-set timeslot-list ?
  INTEGER<1-31>  Timeslots in range, separated by ',' or '-'
[Quidway-E1 2/0/1]pri-set timeslot-list 1-15 ?
  <cr>
[Quidway-E1 2/0/1]pri-set timeslot-list 1-15
[Quidway-E1 2/0/1]
[Quidway-E1 2/0/1]pri-set timeslot-list ?
  INTEGER<1-31>  Timeslots in range, separated by ',' or '-'
[Quidway-E1 2/0/1]pri-set timeslot-list 17,18
 Another pri-set exists.//在一个CE1/PRI接口上同时只能捆绑出一个pri set。
[Quidway-E1 2/0/1]dis cur
#
controller E1 2/0/0
 channel-set 20 timeslot-list 1-2
 channel-set 10 timeslot-list 3-7
#
controller E1 2/0/1
 pri-set timeslot-list 1-16
#
interface Aux0
 async mode flow
#
interface Ethernet0/0/0
 ip address dhcp-alloc
#
interface Ethernet0/0/1
 ip address dhcp-alloc
#
interface Serial1/0/0
 link-protocol ppp
 fe1 timeslot-list 1-10
 ip address 1.1.1.1 255.255.255.0
#
interface Serial2/0/0:10
 link-protocol ppp
#
interface Serial2/0/0:20
 link-protocol ppp
#
interface Serial2/0/1:15
 link-protocol ppp
#
```

return

通信两端配置要保持一致（display fe1 serial x/x 或display controller e1 x/x查看）工作模式（成帧或非成帧）、帧格式、CRC校验方式、编码格式、线路空闲码、帧间填充符。

CISCO E1接口默认帧格式为CRC4，我司E1接口默认帧格式为NO-CRC4，两者互联时请使之保持一致。

案例解析：AIS告警误检问题

如果线路上正常传输的数据为全1码流，这种情况通常出现在E1工作在非通道化模式下，而且空闲码为FF，这时当没有业务数据传输时，则线路上传输的是全1的空闲码，表现为AIS告警。

解决该问题的办法是：在路由器上配置undo detect-ais 命令，即不检测AIS命令，或把帧间填充改为7E。

[Quidway]dis fe1 s1/0/0

Serial1/0/0
Basic Configuration:
 Work mode is E1 framed, Cable type is 75 Ohm unbalanced.
 Frame-format is no-crc4.
 Line code is hdb3, Source clock is slave.
 Idle code is 7e, Itf type is 7e, Itf number is 4.
 Loopback is not set.
Alarm State:
 Receiver alarm state is Loss-of-Signal.
 Transmitter is sending remote alarm.
Historical Statistics:
Last clearing of counters: Never
 Data in current interval (94 seconds elapsed):
  94 Loss Frame Alignment Secs, 0 Framing Error Secs,
  0 CRC Error Secs, 0 Alarm Indication Secs, 94 Loss-of-signals Secs,
  0 Code Violations Secs, 14 Slip Secs, 0 E-Bit error Secs.

[Quidway]dis controller e1 2/0/0

E1 2/0/0 current state :DOWN
Description : E1 2/0/0 Interface
Basic Configuration:
 Work mode is E1 unframed, Cable type is 75 Ohm unbalanced.
 Line code is hdb3, Source clock is slave.
 Idle code is 7e, Itf type is 7e, Itf number is 4.
 Loop back is not set.
Alarm State:
 Receiver alarm state is Loss-of-Signal.
 Transmitter is sending remote alarm.
Historical Statistics:
Last clearing of counters: Never
 Data in current interval (158 seconds elapsed):
  12 Loss Frame Alignment Secs, 0 Framing Error Secs,
  0 CRC Error Secs, 0 Alarm Indication Secs, 158 Loss-of-signals Secs,
  0 Code Violations Secs, 1 Slip Secs, 0 E-Bit error Secs.

3、指示灯解释

指示灯	含义
LINK (Green)	灯亮表示收到载波信号，并且没有告警，灯灭表示没有收到载波信号或有以下五种告警之一：AIS、LFA、LMFA、RAI
ACT (Yellow)	灯灭表示没有数据收发，灯闪烁表示数据收发

指示灯	含义
LINK/ACT (Green)	灯亮表示收到载波信号，灯灭没有收到载波信号。灯闪烁表示有数据收发。
LP/AL（Yellow)	灯亮表示接口处于环回状态（loopback），灯闪烁表示有以下四种告警之一：AIS、LFA、LMFA、RAI，灯灭表示既无环回又无告警。

如果LP/AL指示灯闪烁：表示四种告警之一：AIS,LFA,LMFA,RAI
其含义如下：

Loss-of-Signal：载波丢失；
Alarm Indication Signal：告警指示
Loss of Frame Alignment：帧同步丢失
Remote Alarm：远端告警
Loss of Multiframe Alignment：复帧同步丢失

如果E1-F接口没有插线缆，LP/AL 灯闪烁则代表载波丢失是正常情况。

BNC头是75欧的，RJ45的是120欧的，两者可以通过转换盒转换