

第十三章拨号备份

13.1. 自动拨号备份

提问 当广域网链路中断 得时候自动拨号恢复备份链路

回答

```
Router1#configure terminal
```

Enter configuration commands, one per line. End with CNTL/Z.

```
Router1(config)#interface BRI0/0
```

```
Router1(config-if)#ip address 10.1.99.55 255.255.255.0
```

```
Router1(config-if)#encapsulation ppp
```

```
Router1(config-if)#dialer idle-timeout 300
```

```
Router1(config-if)#dialer map ip 10.1.99.1 name dialhost broadcast 95551212
```

```
Router1(config-if)#dialer load-threshold 50 either
```

```
Router1(config-if)#dialer-group 1
```

```
Router1(config-if)#isdn switch-type basic-ni
```

```
Router1(config-if)#isdn spid1 800555123400 5551234
```

```
Router1(config-if)#isdn spid2 800555123500 5551235
```

```
Router1(config-if)#ppp authentication chap
```

```
Router1(config-if)#ppp multilink
```

```
Router1(config-if)#exit
```

```
Router1(config)#username dialhost password dialpassword
```

```
Router1(config)#ip route 0.0.0.0 0.0.0.0 10.1.99.1 180
```

```
Router1(config)#dialer-list 1 protocol ip list 101
```

```
Router1(config)#access-list 101 deny eigrp any any
```

```
Router1(config)#access-list 101 permit ip any any
```

```
Router1(config)#router eigrp 55
```

```
Router1(config-router)#network 10.0.0.0
```

```
Router1(config-router)#end
```

```
Router1#
```

注释 isdn switch-type 定义对端 ISDN 交换机类型，中国用 basic-net3。通过 Router1#show isdn status 来查看当前状态

```
Router1#show isdn status
```

```
Global ISDN Switchtype = basic-ni
```

```
ISDN BRI1/0 interface
```

```
    dsl 8, interface ISDN Switchtype = basic-ni
```

```
Layer 1 Status:
```

```
ACTIVE
```

```
Layer 2 Status:
```

```
TEI = 85, Ces = 1, SAPI = 0, State = MULTIPLE_FRAME_ESTABLISHED
```

```
TEI = 86, Ces = 2, SAPI = 0, State = MULTIPLE_FRAME_ESTABLISHED
```

```
TEI 85, ces = 1, state = 8(established)
```

```
    spid1 configured, spid1 sent, spid1 valid
```

```
TEI 86, ces = 2, state = 8(established)
```

```
    spid2 configured, spid2 sent, spid2 valid
```

```
Layer 3 Status:
```

```
0 Active Layer 3 Call(s)
```

```
Activated dsl 8 CCBs = 0
```

```
The Free Channel Mask: 0x80000003
```

```
Total Allocated ISDN CCBs = 2
```

Router1#

说明得是关注流量触发了拨号接通以后所有得数据都可以传输，不仅仅是关注流量

13.2. 使用拨号接口

提问 捆绑多个物理接口为一个拨号接口

回答

捆绑两个 ISDN BRI 接口

Router1#configure terminal

Enter configuration commands, one per line. End with CNTL/Z.

Router1(config)#interface BRI0/0

Router1(config-if)#encapsulation ppp

Router1(config-if)#dialer pool-member 1

Router1(config-if)#isdn switch-type basic-ni

Router1(config-if)#isdn spid1 800555123400 5551234

Router1(config-if)#isdn spid2 800555123500 5551235

Router1(config-if)#ppp authentication chap

Router1(config-if)#exit

Router1(config)#interface BRI0/1

Router1(config-if)#encapsulation ppp

Router1(config-if)#dialer pool-member 1

Router1(config-if)#isdn switch-type basic-ni

Router1(config-if)#isdn spid1 800555123600 5551236

Router1(config-if)#isdn spid2 800555123700 5551237

Router1(config-if)#ppp authentication chap

Router1(config-if)#exit

```
Router1(config)#interface Dialer1

Router1(config-if)#ip address 10.1.99.55 255.255.255.0

Router1(config-if)#encapsulation ppp

Router1(config-if)#dialer remote-name dialhost

Router1(config-if)#dialer pool 1

Router1(config-if)#dialer idle-timeout 300

Router1(config-if)#dialer string 95551212

Router1(config-if)#dialer load-threshold 50 either

Router1(config-if)#dialer-group 1

Router1(config-if)#ppp authentication chap

Router1(config-if)#ppp multilink

Router1(config-if)#exit

Router1(config)#username dialhost password dialpassword

Router1(config)#ip route 0.0.0.0 0.0.0.0 10.1.99.1 180

Router1(config)#dialer-list 1 protocol ip list 101

Router1(config)#access-list 101 deny eigrp any any

Router1(config)#access-list 101 permit ip any any

Router1(config)#router eigrp 55

Router1(config-router)#network 10.0.0.0

Router1(config-router)#end

Router1#

主机端

dialhost#configure terminal

Enter configuration commands, one per line. End with CNTL/Z.
```

```
dialhost(config)#username Router1 password dialpassword
```

```
dialhost(config)#controller T1 0
```

```
dialhost(config-controller)#framing esf
```

```
dialhost(config-controller)#clock source line primary
```

```
dialhost(config-controller)#linecode b8zs
```

```
dialhost(config-controller)#pri-group timeslots 1-24
```

```
dialhost(config-controller)#exit
```

```
dialhost(config)#interface Serial0:23
```

```
dialhost(config-if)#encapsulation ppp
```

```
dialhost(config-if)#dialer rotary-group 1
```

```
dialhost(config-if)#dialer-group 1
```

```
dialhost(config-if)#isdn switch-type primary-dms100
```

```
dialhost(config-if)#isdn not-end-to-end 56
```

```
dialhost(config-if)#exit
```

```
dialhost(config)#interface Dialer1
```

```
dialhost(config-if)#ip address 10.1.99.1 255.255.255.0
```

```
dialhost(config-if)#encapsulation ppp
```

```
dialhost(config-if)#dialer in-band
```

```
dialhost(config-if)#dialer idle-timeout 300
```

```
dialhost(config-if)#dialer-group 1
```

```
dialhost(config-if)#no peer default ip address
```

```
dialhost(config-if)#ppp authentication chap
```

```
dialhost(config-if)#ppp multilink
```

```
dialhost(config-if)#exit
```

```
dialhost(config)#access-list 101 deny eigrp any any
```

```
dialhost(config)#access-list 101 permit ip any any
```

```
dialhost(config)#dialer-list 1 protocol ip list 101
```

```
dialhost(config)#router eigrp 55
```

```
dialhost(config-router)#network 10.0.0.0
```

```
dialhost(config-router)#exit
```

```
dialhost(config)#end
```

```
dialhost#
```

注释 本节实现得结果和 13.1 相同，配置也基本相同，不同得是这里没有使用 dialer map 命令，在物理接口上也没有配置 IP 地址，相关配置都在定义得逻辑拨号接口 Dialer1 上。在 Server 端使用了

PRI

13.3. 在 AUX 端口使用异步 Modem

提问 在路由器得 AUX 端口连接异步 Modem，用其作为拨号备份

回答

```
Router2#configure terminal
```

Enter configuration commands, one per line. End with CNTL/Z.

```
Router2(config)#interface Async65
```

```
Router2(config-if)#encapsulation ppp
```

```
Router2(config-if)#dialer in-band
```

```
Router2(config-if)#dialer pool-member 1
```

```
Router2(config-if)#ppp authentication chap
```

```
Router2(config-if)#async default routing
```

```
Router2(config-if)#exit
```

```
Router2(config)#interface Dialer1
```

```
Router2(config-if)#ip address 10.1.99.56 255.255.255.0
```

```
Router2(config-if)#encapsulation ppp
```

```
Router2(config-if)#dialer remote-name dialhost
```

```
Router2(config-if)#dialer pool 1
```

```
Router2(config-if)#dialer idle-timeout 300
```

```
Router2(config-if)#dialer string 95551212
```

```
Router2(config-if)#dialer-group 1
```

```
Router2(config-if)#ppp authentication chap
```

```
pan lang="EN-US">Router2(config-if)#exit
```

```
Router2(config)#line aux 0
```

```
Router2(config-line)#modem inout
```

```
Router2(config-line)#transport input all
```

```
Router2(config-line)#no exec
```

```
Router2(config-line)#speed 115200
```

```
Router2(config-line)#exit
```

```
Router2(config)#username dialhost password dialpassword
```

```
Router2(config)#ip route 0.0.0.0 0.0.0.0 10.1.99.1 180
```

```
Router2(config)#dialer-list 1 protocol ip list 101
```

```
Router2(config)#access-list 101 deny eigrp any any
```

```
Router2(config)#access-list 101 permit ip any any
```

```
Router2(config)#router eigrp 55
```

```
Router2(config-router)#network 10.0.0.0
```

```
Router2(config-router)#exit
```

```
Router2(config)#end
```

Router2#

注释 开始要先通过 show line 查找出 AUX 口得 vty 号码，也就是 interface Async65，然后使用前面提到得拨号接口得方法进行配置，多了一个 async default routing 命令，因为缺省情况下异步口是禁止启用路由协议得。在对 AUX 端口配置时，首先一定要使用 no exec 来避免出现 Modem 不能响应得问题，同时建议调整速率，否则会缺省 9.6 Kbps。

13.4. 使用备份接口

提问 在广域网物理接口断掉得情况下拨号

回答

```
Router1#configure terminal
```

```
Enter configuration commands, one per line. End with CNTL/Z.
```

```
Router1(config)#interface Serial0/0
```

```
Router1(config-if)#backup delay 0 300
```

```
Router1(config-if)#backup interface BRI0/0
```

```
Router1(config-if)#encapsulation frame-relay
```

```
Router1(config-if)#down-when-looped
```

```
Router1(config-if)#exit
```

```
Router1(config)#interface Serial0/0.1 point-to-point
```

```
Router1(config-subif)#ip address 10.1.1.10 255.255.255.252
```

```
Router1(config-subif)#frame-relay interface-dlci 50
```

```
Router1(config-subif)#exit
```

```
Router1(config)#interface BRI0/0
```

```
Router1(config-if)#ip address 10.1.99.55 255.255.255.0
```

```
Router1(config-if)#encapsulation ppp
```

```
Router1(config-if)#dialer idle-timeout 300
```

```
Router1(config-if)#dialer map ip 10.1.99.1 name dialhost broadcast 95551212
```



```
Router1(config-if)#dialer load-threshold 50 either
```

```
Router1(config-if)#dialer-group 1
```

```
Router1(config-if)#isdn switch-type basic-ni
```

```
Router1(config-if)#isdn spid1 800555123400 5551234
```

```
Router1(config-if)#isdn spid2 800555123500 5551235
```

```
Router1(config-if)#ppp authentication chap
```

```
Router1(config-if)#ppp multilink
```

```
Router1(config-if)#exit
```

```
Router1(config)#dialer-list 1 protocol ip permit
```

```
Router1(config)#end
```

```
Router1#
```

注释 备份接口得配置要放在物理接口上而不是子接口上。一般不推荐使用此方法进行备份，因为很多广域网链路得问题不能体现在物理接口 down 掉上，并且在正常情 况下会使备份接口处于禁用状态，这样会需要重新拨号，不能使用 show isdn status 等命令进行查看状态等问题。

13.5. 使用 Dialer Watch

提问 使用思科得 Dialer Watch 特性来触发拨号备份

回答

```
Router1#configure terminal
```

Enter configuration commands, one per line. End with CNTL/Z.

```
Router1(config)#interface BRI0/0
```

```
Router1(config-if)#ip address 10.1.99.55 255.255.255.0
```

```
Router1(config-if)#encapsulation ppp
```

```
Router1(config-if)#dialer map ip 10.1.1.0 name dialhost broadcast 95551212
```

```
Router1(config-if)#dialer map ip 10.2.0.0 name dialhost broadcast 95551212
```

```
Router1(config-if)#dialer map ip 10.1.99.1 name dialhost broadcast 95551212
```

```
Router1(config-if)#dialer load-threshold 50 either

Router1(config-if)#dialer watch-group 1

Router1(config-if)#dialer-group 1

Router1(config-if)#isdn switch-type basic-ni

Router1(config-if)#isdn spid1 800555123400 5551234

Router1(config-if)#isdn spid 2 800555123500 5551235

Router1(config-if)#ppp authentication chap

Router1(config-if)#ppp multilink

Router1(config-if)#exit

Router1(config)#router eigrp 55

Router1(config-router)#network 10.0.0.0

Router1(config-router)#exit

Router1(config)#username dialhost password cisco

Router1(config)#access-list 101 deny eigrp any any

Router1(config)#access-list 101 permit ip any any

Router1(config)#dialer-list 1 protocol ip list 101

Router1(config)#dialer watch-list 1 ip 10.2.0.0 255.255.0.0

Router1(config)#dialer watch-list 1 ip 10.1.1.0 255.255.255.0

Router1(config)#dialer watch-list 1 delay route-check initial 300

Router1(config)#dialer watch-list 1 delay disconnect 15

Router1(config)#end

Router1#
```

注释 Dialer Watch 通过跟踪路由表中特定路由前缀得存在情况来判断是否需要触发拨号，这里要特别注意得是例子中监控了两个路由前缀，必须两个路由前缀都消失才会触发拨号。还是建议使用 13.1 中得浮动路由方式来进行拨号备份

13.6. 使用 Virtual Templates

提问 使用 Virtual Templates 的方式来配置拨号备份

回答

```
dialhost#configure terminal
```

Enter configuration commands, one per line. End with CNTL/Z.

```
dialhost(config)#username Router1 password dialpassword
```

```
dialhost(config)#interface BRI0/0
```

```
dialhost(config-if)#no ip address
```

```
dialhost(config-if)#encapsulation ppp
```

```
dialhost(config-if)#dialer pool-member 1
```

```
dialhost(config-if)#isdn switch-type basic-ni
```

```
dialhost(config-if)#isdn point-to-point-setup
```

```
dialhost(config-if)#isdn spid1 800555123400 5551234
```

```
dialhost(config-if)#isdn spid2 800555123500 5551235
```

```
dialhost(config-if)#ppp authentication chap
```

```
dialhost(config-if)#ppp multilink
```

```
dialhost(config-if)#exit
```

```
dialhost(config)#interface Dialer1
```

```
dialhost(config-if)#no ip address
```

```
dialhost(config-if)#encapsulation ppp
```

```
dialhost(config-if)#dialer idle-timeout 300
```

```
dialhost(config-if)#dialer-group 1
```

```
dialhost(config-if)#no peer default ip address
```

```
dialhost(config-if)#ppp authentication chap
```

```

dialhost(config-if)#ppp multilink

dialhost(config-if)#exit

dialhost(config)#access-list 101 deny   eigrp any any

dialhost(config)#access-list 101 permit ip any any

dialhost(config)#dialer-list 1 protocol ip list 101

dialhost(config)#router eigrp 55

dialhost(config-router)#network 10.0.0.0

dialhost(config-router)#exit

dialhost(config)#interface Loopback1

dialhost(config-if)#ip address 10.1.99.1 255.255.255.0

dialhost(config-if)#exit

dialhost(config)#interface Virtual-Templat1

dialhost(config-if)#ip unnumbered Loopback1

dialhost(config-if)#encapsulation ppp

dialhost(config-if)#ppp authentication chap

dialhost(config-if)#ppp multilink

dialhost(config-if)#ppp multilink load-threshold 50 either

dialhost(config-if)#exit

dialhost(config)#virtual-profile virtual-template 1

dialhost(config)#end

dialhost#

```

注释 一般用于中心得拨号服务器，类似于 13.2 但是在 Dialer 接口下也没有配置 IP 地址，而是配置在 Virtual Template 上

13.7. 确保断线正常

提问 当主链路恢复以后确保备份链路断线正常

回答

```
Router1#configure terminal
```

Enter configuration commands, one per line. End with CNTL/Z.

```
Router1(config)#interface Serial0/0.1 point-to-point
```

```
Router1(config-subif)#bandwidth 56
```

```
Router1(config-subif)#exit
```

```
Router1(config)#interface BRI0/0
```

```
Router1(config-subif)#bandwidth 54
```

```
Router1(config-subif)#end
```

```
Router1#
```

注释 通过配置带宽的方式来调整主接口得 metric 值，从而避免在路由计算时选用备份接口

13.8. 查看拨号备份状态

提问 查看拨号备份状态

回答

```
Router1#show dialer
```

```
Router1#show backup
```

```
Router1#show isdn status
```

```
Router1#show isdn active
```

```
Router1#show isdn history
```

注释 show dialer 里面比较有意思得信息是 Dial reason: ip (s=10.1.99.55, d=224.0.0.10)，从而确定是什么数据触发得拨号

<!--[if !supportLists]-->13.9. <!--[endif]-->拨号备份排错

提问 查找拨号备份失败原因

回答

```
Router1#debug ppp authentication
```

```
Router1#debug dialer
```