示例配置：使用浮動靜態路由和按需撥號路由

目錄

簡介

本文檔的目標是配置ISDN基本速率介面(BRI)，以便在幀中繼電路發生邏輯故障時向遠端站點撥號並傳輸流量。

增強型內部網關路由協定(EIGRP)未在BRI上運行。相反，本文檔中的示例使用浮動靜態路由，僅在幀中繼電路上通過EIGRP獲知的正常路由丟失時，才通過BRI重定向流量。

在所有路由器中，確保**ip classless**已啟用。

必要條件

需求

本文件沒有特定需求。

採用元件

本文件所述內容不限於特定軟體和硬體版本。

本文中的資訊是根據特定實驗室環境內的裝置所建立。文中使用到的所有裝置皆從已清除（預設）的組態來啟動。如果您的網路正在作用，請確保您已瞭解任何指令可能造成的影響。

慣例

如需文件慣例的詳細資訊，請參閱思科技術提示慣例。

設定

這些配置是完整配置的片段。

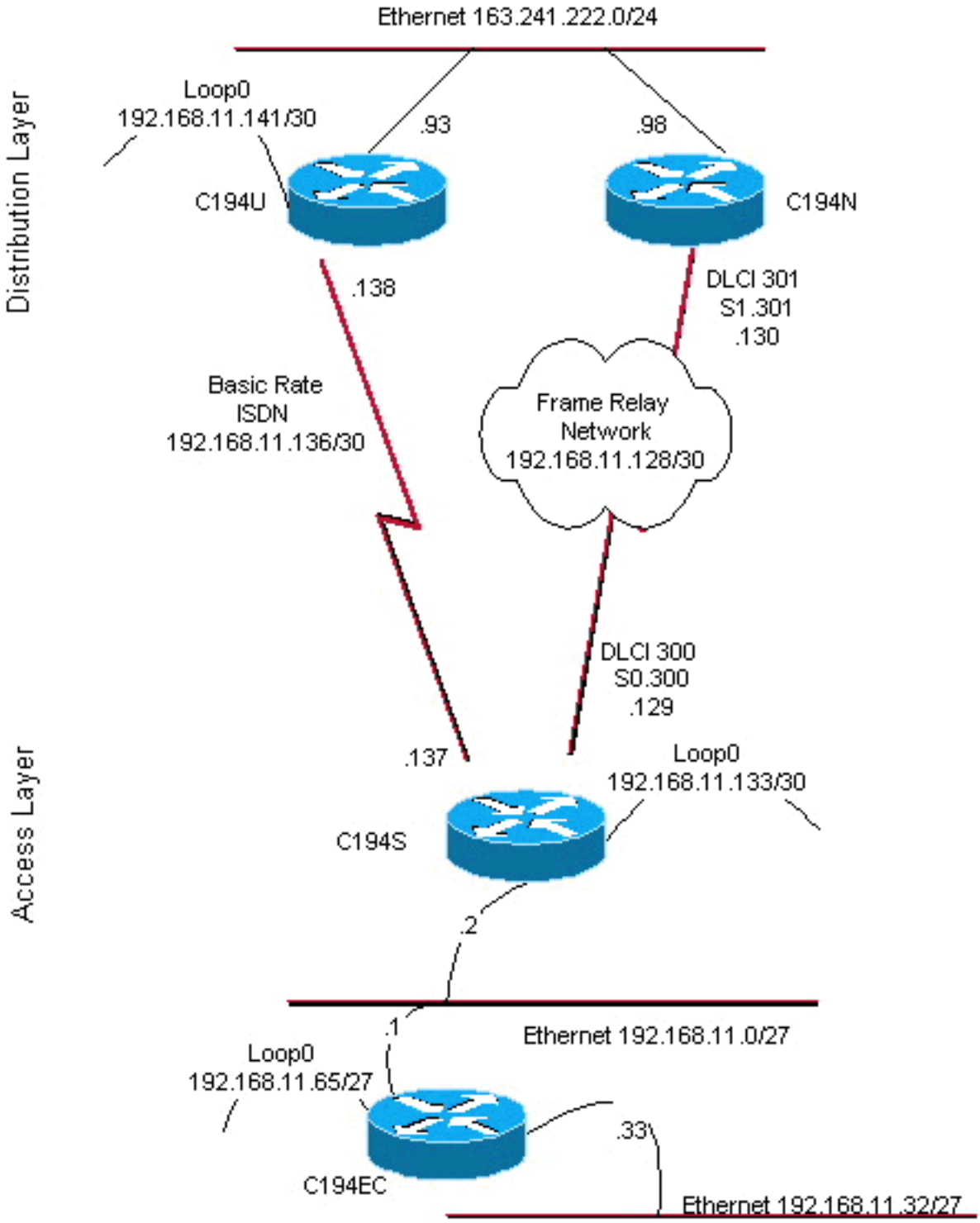
本節提供用於設定本文件中所述功能的資訊。

注意：要查詢有關本文檔中使用的命令的其他資訊，請使用命令查詢工具(僅限註冊客戶)。

網路圖表

本檔案會使用以下網路設定：

圖1 — 網路圖



組態

本檔案會使用以下設定：

- 分佈層路由器#1
- 分佈層路由器#2
- 存取層路由器
- 遠端站點路由器

路由器C194u是兩個分佈層路由器之一。在本示例中，路由器C194u具有到遠端站點的BRI。另一個分佈層路由器C194n具有到遠端站點的輔助串列介面。

分佈層路由器#1

```
hostname c194u
!
!--- Create a username for the router at the remote
site. username c194s password 7 XXXXXXXX ! ip subnet-
zero isdn switch-type basic-dms100 ! interface Loopback0
ip address 192.168.11.141 255.255.255.252 ! interface
Ethernet0 ip address 163.241.222.93 255.255.255.0 media-
type 10BaseT ! interface BRI0 description to Remote Site
c194s, (this end 08358662 08358664) ip address
192.168.11.138 255.255.255.252 no ip mroute-cache
encapsulation ppp no ip route-cache isdn spid1
0835866201 isdn spid2 0835866401 dialer idle-timeout 600
dialer wait-for-carrier-time 10 dialer map ip
192.168.11.137 name c194s broadcast 8358661 dialer map
ip 192.168.11.137 name c194s broadcast 8358663 dialer
hold-queue 5 dialer load-threshold 128 outbound dialer-
group 1 no fair-queue ppp authentication chap ppp
multilink ! router eigrp 65535 !--- We redistribute the
static routes listed below, so if the Frame Relay !---
network fails, the other routers in this autonomous
system (AS) will !--- begin to see the remote networks
advertised from this router. !--- Normally these routes
are learned through EIGRP across the Frame Relay link.
!--- Make the BRI interfaces passive. An alternative is
to use a dialer-list !--- to identify EIGRP packets as
"uninteresting" packets. redistribute static
 passive-interface BRI0
 network 192.168.11.0
 network 163.241.0.0
 default-metric 64 200 255 1 1500
 no auto-summary
 eigrp log-neighbor-changes
!
ip classless
!--- Both distribution layer routers have a default
route to their Null !--- interfaces so that they
advertise the 0/0 network to all other routers !--- in
the AS. ip route 0.0.0.0 0.0.0.0 Null0
!--- There must be a static route for each network
behind the C194s !--- router at the remote site. Use the
IP address of the BRI interface !--- of router C194s,
and ensure that the administrative distance is 240. !---
Note: Summarize these routes if your addressing scheme
lends itself !--- to summarization. If the Frame Relay
network fails, this will force !--- packets destined to
the remote site out the BRI interface, and will cause !-
-- it to dial and restore connectivity.

ip route 192.168.11.0 255.255.255.224 192.168.11.137 240
ip route 192.168.11.32 255.255.255.224 192.168.11.137
240
ip route 192.168.11.64 255.255.255.224 192.168.11.137
240
ip route 192.168.11.132 255.255.255.252 192.168.11.137
240
!
access-list 100 deny   icmp any any
access-list 100 permit ip any any
dialer-list 1 protocol ip list 100
!
end
```

以下是路由器C194u的**show dialer**命令輸出示例：

分佈層路由器#1

```
c194u#show dialer

BRI0 - dialer type = ISDN

Dial String      Successes   Failures    Last called
Last status
8358663                  4       1311    01:32:08
failed
8358661               1874       1315    00:02:07
successful
0 incoming call(s) have been screened.

BRI0:1 - dialer type = ISDN
Idle timer (600 secs), Fast idle timer (20 secs)
Wait for carrier (5 secs), Re-enable (15 secs)
Dialer state is physical layer up
Dial reason: ip (s=192.168.11.138, d=192.168.11.137)
```

下一個路由器C194n是第二個分佈層路由器，因為。在本圖中，它是幀鏈路路由器。它沒有任何特殊配置。它只將預設路由重分發到EIGRP。

分佈層路由器#2

```
hostname c194n
!
!
interface Ethernet0
 ip address 163.241.222.98 255.255.255.0
!
interface Serial1
 no ip address
 bandwidth 1544
 no ip mroute-cache
 encapsulation frame-relay
 no fair-queue
!
interface Serial1.301 point-to-point
 ip address 192.168.11.130 255.255.255.252
 bandwidth 32
 frame-relay interface-dlci 301
!
router eigrp 65535
 redistribute static
 network 192.168.11.0
 network 163.241.0.0
 default-metric 64 200 255 1 1500
 no auto-summary
 eigrp log-neighbor-changes
!
ip classless
ip route 0.0.0.0 0.0.0.0 Null0
!
```

下一個路由器C194是遠端站點路由器，即接入層路由器。它通過分佈層路由器將遠端網路連線到主幹。

存取層路由器

```
!
hostname c194s
!
!--- Create a username for the distribution layer
router. username c194u password 7 XXXXXXXXX ! isdn
switch-type basic-dms100 ! interface Loopback0 ip
address 192.168.11.133 255.255.255.252 ! interface
Ethernet0 ip address 192.168.11.2 255.255.255.224 !
interface Serial0 no ip address bandwidth 64
encapsulation frame-relay ! interface Serial0.300 point-
to-point ip address 192.168.11.129 255.255.255.252
bandwidth 32 frame-relay interface-dlci 300 ! interface
BRI0 description to Hub Site c194u, (this end 08358661
08358663) ip address 192.168.11.137 255.255.255.252 no
ip mroute-cache encapsulation ppp no ip route-cache isdn
spid1 0835866101 isdn spid2 0835866301 dialer idle-
timeout 600 dialer wait-for-carrier-time 10 dialer map
ip 192.168.11.138 name c194u broadcast 8358662 dialer
map ip 192.168.11.138 name c194u broadcast 8358664
dialer hold-queue 5 dialer load-threshold 128 dialer-
group 1 no fair-queue ppp multilink ppp authentication
chap ! router eigrp 65535 !--- Redistribute the static
route, so any routers which you could have attached !---
to the Ethernet network 192.168.11.0/27 will see this
router as their way !--- out to the remainder of the
network. However, do not allow this default !--- route
back into your distribution layer routers. Use a
distribute list !--- to block the advertisement.
redistribute static
 passive-interface BRI0
 network 192.168.11.0
 default-metric 64 200 255 1 1500
 distribute-list 2 out Serial0.300
 no auto-summary
 eigrp log-neighbor-changes
!
ip classless
!--- Use the IP address of the BRI interface of the
distribution layer router to !--- Add a default route.
When the frame network goes down, this will !--- push
your traffic out the BRI interface, and cause it to dial
and !--- restore connectivity. ip route 0.0.0.0 0.0.0.0
192.168.11.138 240
!
access-list 1 permit any
!
access-list 2 deny   0.0.0.0
access-list 2 permit any
!
dialer-list 1 protocol ip list 1
!
end
!
```

下一個路由器代表*遠端站點*網路。除了參與接入層路由器的IGP動態路由協定EIGRP之外，此處不需要執行任何特殊操作。

遠端站點路由器

```

```

```
hostname c194ec
!
!
interface Loopback0
 ip address 192.168.11.65 255.255.255.224
!
interface Ethernet0
 ip address 192.168.11.1 255.255.255.224
!
interface Ethernet1
 ip address 192.168.11.33 255.255.255.224
!
!
router eigrp 65535
 network 192.168.11.0
 default-metric 64 200 255 1 1500
 no auto-summary
 eigrp log-neighbor-changes
!
ip classless
!
end
```

驗證

本節提供的資訊可用於確認您的組態是否正常運作。

輸出直譯器工具(僅供註冊客戶使用)支援某些**show**命令，此工具可讓您檢視show命令輸出的分析。

在幀中繼網路關閉的情況下，嘗試從遠端站點的網路發出traceroute。根據網路圖(請參見圖1)，目標IP地址是中心站點路由器的環回介面。

```
c194ec#trace
Target IP address: 192.168.11.141
Source address: 192.168.11.65
Tracing the route to 192.168.11.141

  1 192.168.11.2 4 msec 4 msec 4 msec
  2  *  *  *
  3  *  *
    192.168.11.138 24 msec
```

請注意它如何要求多個資料包才能啟用BRI介面。在BRI變為非活動狀態且資料包丟失之前，再次發出**traceroute**命令：

```
c194ec#traceroute 192.168.11.141

Tracing the route to 192.168.11.141

  1 192.168.11.2 4 msec 4 msec 4 msec
  2 192.168.11.138 20 msec *  20 msec
```

重新開啟幀開關。現在幀中繼網路運行後，不使用ISDN:

```
c194ec#traceroute 192.168.11.141
Tracing the route to 192.168.11.141
```

```
  1 192.168.11.2 4 msec 4 msec 4 msec
  2 192.168.11.130 36 msec 36 msec 32 msec
  3 163.241.222.93 36 msec *  32 msec
```

幀中繼網路的路由表如下所示。請注意在中心站點如何通過EIGRP獲取網路的各個路由。還有一個通過EIGRP獲知的預設路由。

```
c194ec#show ip route

Gateway of last resort is 192.168.11.2 to network 0.0.0.0

     163.241.0.0 255.255.255.0 is subnetted, 1 subnets
D       163.241.222.0 [90/2221056] via 192.168.11.2, 00:02:09, Ethernet0
     192.168.11.0 is variably subnetted, 7 subnets, 2 masks
C       192.168.11.64 255.255.255.224 is directly connected, Loopback0
C       192.168.11.32 255.255.255.224 is directly connected, Ethernet1
C       192.168.11.0 255.255.255.224 is directly connected, Ethernet0
D       192.168.11.128 255.255.255.252
           [90/2195456] via 192.168.11.2, 00:02:13, Ethernet0
D       192.168.11.132 255.255.255.252
           [90/409600] via 192.168.11.2, 01:23:14, Ethernet0
D       192.168.11.136 255.255.255.252
           [90/40537600] via 192.168.11.2, 01:23:14, Ethernet0
D       192.168.11.140 255.255.255.252
           [90/2349056] via 192.168.11.2, 00:02:10, Ethernet0
D*EX 0.0.0.0 0.0.0.0 [170/40614400] via 192.168.11.2, 00:02:10, Ethernet
```

幀中繼網路關閉時的路由表如下所示。仍有預設路由，但位於中心站點的一些單獨網路路由會丟失。但是，由於**ip classless**已啟用，而且您有預設路由，因此您仍然可以訪問網路中的任何位置。

```
c194ec#show ip route

Gateway of last resort is 192.168.11.2 to network 0.0.0.0

     192.168.11.0 is variably subnetted, 5 subnets, 2 masks
C       192.168.11.64 255.255.255.224 is directly connected, Loopback0
C       192.168.11.32 255.255.255.224 is directly connected, Ethernet1
C       192.168.11.0 255.255.255.224 is directly connected, Ethernet0
D       192.168.11.132 255.255.255.252
           [90/409600] via 192.168.11.2, 01:25:27, Ethernet0
D       192.168.11.136 255.255.255.252
           [90/40537600] via 192.168.11.2, 01:25:27, Ethernet0
D*EX 0.0.0.0 0.0.0.0 [170/40076800] via 192.168.11.2, 00:00:15, Ethernet
```

疑難排解

目前尚無適用於此組態的具體疑難排解資訊。

相關資訊

- 技術支援 - Cisco Systems