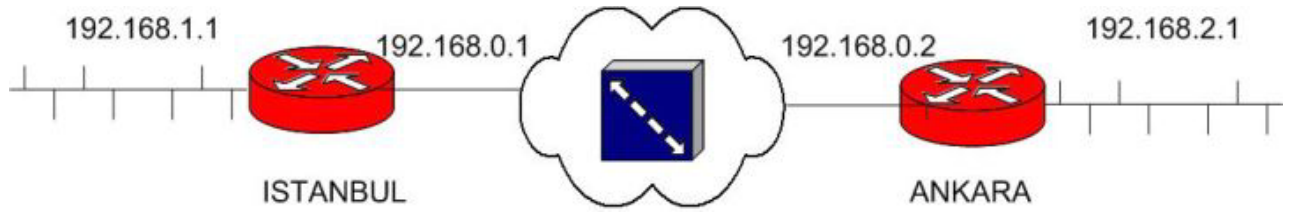


# CISCO ROUTERLAR İLE ISDN BRI DATA HABERLEŞMESİ UYGULAMASI

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## TOPOLOJİ:



## İSTENENLER:

1. Topolojiyi **Legacy DDR** tekniği ile kurunuz.
2. Aynı Topolojiyi **Dialer Profile** tekniğini kullanarak kurunuz.

### SANTRAL TELEFON NUMARALARI:

PORT NO:	TELEFON NOLARI:
1	130 - 131 -132
2	133 - 134 -135
3	136 - 137 -138
4	139 - 140 -141
5	142 - 143 -144
6	145 - 146 -147
7	148 - 149 -150
8	151 - 152 -153
9	154 - 155 -156
10	157 - 158 -159
11	160 - 161 -162
12	163 - 164 -165

## ÇÖZÜMLER: 1- LEGACY DDR İLE

### İSTANBUL

```
interface Loopback0
ip address 192.168.1.1 255.255.255.0
!
interface BRI0
ip address 192.168.0.1 255.255.255.0
dialer map ip 192.168.0.2 133
encapsulation ppp
dialer-group 1
isdn switch-type basic-net3
!
!
ip route 192.168.2.0 255.255.255.0 192.168.0.2
!
dialer-list 1 protocol ip permit
```

### ANKARA

```
interface Loopback0
ip address 192.168.2.1 255.255.255.0
!
interface BRI0
ip address 192.168.0.2 255.255.255.0
dialer map ip 192.168.0.1 130
encapsulation ppp
dialer-group 1
isdn switch-type basic-net3
!
!
ip route 192.168.1.0 255.255.255.0 192.168.0.1
!
dialer-list 1 protocol ip permit
```

## KONTROL KOMUTLARI

```
ANKARA#sh ip route
```

```
Codes: C - connected, S - static, 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  
i - IS-IS, su - IS-IS summary, 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 192.168.0.0/24 is directly connected, BRI0  
S 192.168.1.0/24 [1/0] via 192.168.0.1  
C 192.168.2.0/24 is directly connected, Loopback0
```

```
ANKARA#debug isdn q921
```

```
debug isdn q921 is ON.
```

```
ANKARA#ping 192.168.1.1
```

```
Type escape sequence to abort.
```

```
Sending 5, 100-byte ICMP Echos to 192.168.1.1, timeout is 2 seconds:
```

```
Dec 28 16:17:25.563: ISDN BR0 Q921: User TX -> IDREQ ri=1463 ai=127  
Dec 28 16:17:25.643: ISDN BR0 Q921: User RX <- IDASSN ri=1463 ai=65  
Dec 28 16:17:25.647: ISDN BR0 Q921: User TX -> SABMEp sapi=0 tei=65  
Dec 28 16:17:25.683: ISDN BR0 Q921: User RX <- UAf sapi=0 tei=65  
Dec 28 16:17:25.683: %ISDN-6-LAYER2UP: Layer 2 for Interface BR0, TEI 65  
changed  
to up  
Dec 28 16:17:25.687: ISDN BR0 Q921: User TX -> INFO sapi=0 tei=65, ns=0  
nr=0  
Dec 28 16:17:25.731: ISDN BR0 Q921: User RX <- RR sapi=0 tei=65 nr=1  
Dec 28 16:17:25.843: ISDN BR0 Q921: User RX <- INFO sapi=0 tei=65, ns=0  
nr=1  
Dec 28 16:17:25.847: ISDN BR0 Q921: User TX -> RR sapi=0 tei=65 nr=1  
Dec 28 16:17:26.255: ISDN BR0 Q921: User RX <- INFO sapi=0 tei=65, ns=1  
nr=1  
Dec 28 16:17:26.255: ISDN BR0 Q921: User TX -> RR sapi=0 tei=65 nr=2  
Dec 28 16:17:26.351: ISDN BR0 Q921: User RX <- INFO sapi=0 tei=65, ns=2  
nr=1  
Dec 28 16:17:26.355: ISDN BR0 Q921: User TX -> RR sapi=0 tei=65 nr=3  
Dec 28 16:17:26.355: %LINK-3-UPDOWN: Interface BRI0:1, changed state to  
up!!!!  
Success rate is 80 percent (4/5), round-trip min/avg/max = 28/30/32 ms  
  
Dec 28 16:17:26.359: ISDN BR0 Q921: User TX -> INFO sapi=0 tei=65, ns=1  
nr=3
```

```
Dec 28 16:17:26.439: ISDN BR0 Q921: User RX <- RR sapi=0 tei=65 nr=2
Dec 28 16:17:27.359: %LINEPROTO-5-UPDOWN: Line protocol on Interface
BRI0:1, cha
nged state to up
```

```
ANKARA#sh dialer
```

```
BRI0 - dialer type = ISDN
```

```
Dial String Successes Failures Last DNIS Last status
130 1 0 00:00:25 successful
0 incoming call(s) have been screened.
0 incoming call(s) rejected for callback.
```

```
BRI0:1 - dialer type = ISDN
Idle timer (120 secs), Fast idle timer (20 secs)
Wait for carrier (30 secs), Re-enable (15 secs)
Dialer state is data link layer up
Dial reason: ip (s=192.168.0.2, d=192.168.1.1)
Time until disconnect 115 secs
Connected to 130 (MERKEZ)
```

```
BRI0:2 - dialer type = ISDN
Idle timer (120 secs), Fast idle timer (20 secs)
Wait for carrier (30 secs), Re-enable (15 secs)
```

```
ANKARA#sh interfaces bri 0
```

```
BRI0 is up, line protocol is up (spoofing)
Hardware is PQUICC BRI
Internet address is 192.168.0.2/24
MTU 1500 bytes, BW 64 Kbit, DLY 20000 usec,
reliability 255/255, txload 1/255, rxload 1/255
Encapsulation PPP, loopback not set
Last input 00:00:07, output never, output hang never
Last clearing of "show interface" counters 00:01:13
Input queue: 0/75/0/0 (size/max/drops/flushes); Total output drops: 0
Queueing strategy: weighted fair
Output queue: 0/1000/64/0 (size/max total/threshold/drops)
Conversations 0/1/16 (active/max active/max total)
Reserved Conversations 0/0 (allocated/max allocated)
Available Bandwidth 48 kilobits/sec
5 minute input rate 0 bits/sec, 0 packets/sec
5 minute output rate 0 bits/sec, 0 packets/sec
15 packets input, 92 bytes, 0 no buffer
Received 0 broadcasts, 0 runts, 0 giants, 0 throttles
0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort
15 packets output, 84 bytes, 0 underruns
0 output errors, 0 collisions, 0 interface resets
0 output buffer failures, 0 output buffers swapped out
1 carrier transitions
```

ANKARA#

ANKARA#**sh interfaces bri 0:1**

BRI0:1 is up, line protocol is up

Hardware is PQUICC BRI

MTU 1500 bytes, BW 64 Kbit, DLY 20000 usec,  
reliability 255/255, txload 1/255, rxload 1/255

Encapsulation PPP, LCP Open

Open: CDPCP, IPCP, loopback not set idle 00:01:26

Last input 00:00:33, output 00:00:03, 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: weighted fair

Output queue: 0/1000/64/0 (size/max total/threshold/drops)

Conversations 0/1/16 (active/max active/max total)

Reserved Conversations 0/0 (allocated/max allocated)

Available Bandwidth 48 kilobits/sec

5 minute input rate 0 bits/sec, 0 packets/sec

5 minute output rate 0 bits/sec, 0 packets/sec

181 packets input, 14097 bytes, 0 no buffer

Received 41 broadcasts, 0 runts, 0 giants, 0 throttles

0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort

185 packets output, 14253 bytes, 0 underruns

0 output errors, 0 collisions, 0 interface resets

0 output buffer failures, 0 output buffers swapped out

8 carrier transitions

## ÇÖZÜMLER: 1- DIALER PROFILE İLE

### İSTANBUL

```
interface Loopback0
ip address 192.168.1.1 255.255.255.0
!
interface BRI0
no ip address
dialer pool-member 1
isdn switch-type basic-net3
!
interface Dialer0
ip address 192.168.0.1 255.255.255.0
encapsulation ppp
dialer pool 1
dialer string 133
dialer-group 1
!
ip route 192.168.2.0 255.255.255.0 Dialer0
!
dialer-list 1 protocol ip permit
```

### ANKARA

```
interface Loopback0
ip address 192.168.2.1 255.255.255.0
!
interface BRI0
no ip address
dialer pool-member 1
isdn switch-type basic-net3
!
interface Dialer0
ip address 192.168.0.2 255.255.255.0
encapsulation ppp
dialer pool 1
dialer string 130
dialer-group 1
!
ip route 192.168.1.0 255.255.255.0 Dialer0
dialer-list 1 protocol ip permit
```

## KONTROL KOMUTLARI

```
ISTANBUL#ping 192.168.2.1
```

```
Type escape sequence to abort.
```

```
Sending 5, 100-byte ICMP Echos to 192.168.2.1, timeout is 2 seconds:
```

```
Dec 29 04:43:12.355: %ISDN-6-LAYER2UP: Layer 2 for Interface BR0, TEI 76  
changed
```

```
to up
```

```
Dec 29 04:43:12.963: %LINK-3-UPDOWN: Interface BRI0:1, changed state to  
up!!!!
```

```
Success rate is 80 percent (4/5), round-trip min/avg/max = 28/30/32 ms
```

```
Dec 29 04:43:12.967: %DIALER-6-BIND: Interface BR0:1 bound to profile Di0
```

```
Dec 29 04:43:13.979: %LINEPROTO-5-UPDOWN: Line protocol on Interface  
BRI0:1, cha  
nged state to up
```

```
ISTANBUL#sh interfaces dialer 0
```

```
Dialer0 is up, line protocol is up (spoofing)
```

```
Hardware is Unknown
```

```
Internet address is 192.168.0.1/24
```

```
MTU 1500 bytes, BW 56 Kbit, DLY 20000 usec,  
reliability 255/255, txload 1/255, rxload 1/255
```

```
Encapsulation PPP, loopback not set
```

```
DTR is pulsed for 1 seconds on reset
```

```
Interface is bound to BR0:1
```

```
Last input never, output never, output hang never
```

```
Last clearing of "show interface" counters 00:53:44
```

```
Input queue: 0/75/0/0 (size/max/drops/flushes); Total output drops: 0
```

```
Queueing strategy: weighted fair
```

```
Output queue: 0/1000/64/0 (size/max total/threshold/drops)
```

```
Conversations 0/1/16 (active/max active/max total)
```

```
Reserved Conversations 0/0 (allocated/max allocated)
```

```
Available Bandwidth 42 kilobits/sec
```

```
5 minute input rate 0 bits/sec, 0 packets/sec
```

```
5 minute output rate 0 bits/sec, 0 packets/sec
```

```
265 packets input, 20741 bytes
```

```
265 packets output, 20767 bytes
```

```
Bound to:
```

```
BRI0:1 is up, line protocol is up
```

```
Hardware is PQUICC BRI
```

```
MTU 1500 bytes, BW 64 Kbit, DLY 20000 usec,  
reliability 255/255, txload 1/255, rxload 1/255
```

```
Encapsulation PPP, LCP Open
```

```
Open: CDPCP, IPCP, loopback not set idle 00:01:41
```

```
Interface is bound to Di0 (Encapsulation PPP)
```

```
Last input 00:00:02, output 00:00:18, 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
289 packets input, 21029 bytes, 0 no buffer
Received 0 broadcasts, 0 runts, 0 giants, 0 throttles
0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort
289 packets output, 21055 bytes, 0 underruns
0 output errors, 0 collisions, 0 interface resets
0 output buffer failures, 0 output buffers swapped out
10 carrier transitions
ISTANBUL#
```