

BGP IPv6 tesztelési jegyzőkönyv

BGP router hiba (IPv6)

Dátum: 2026. 02. 10.

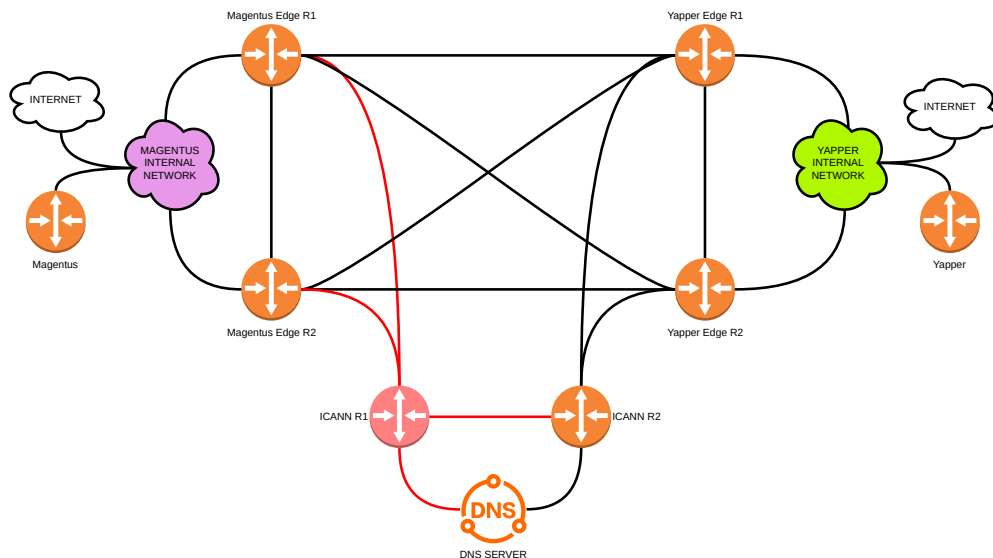
A dokumentum célja: A Yapper, Magentus és ICANN közötti BGP Peering kapcsolatok stabilitásának és redundanciájának tesztelése. A dokumentáció bemutatja, hogy specifikus hibaesetekben hogyan biztosított az internet és másik AS elérése a tartalék útvonalakon keresztül.

A tesztelés a `traceroute` parancs segítségével történt, a célcímek a következők:

- Yapper és Magentus közötti kapcsolat tesztelése: Management hálózatok
 - Magentus esetén: `2001:470:2171:BBBB:BBBB::14`
 - Yapper esetén: `2001:470:216F:AAAA::66`
- Internet kapcsolat teszteléséhez: `2001:4860:4860::8888`
- ICANN kapcsolat teszteléséhez a 'távolabbi' cím:
 - Magentus esetén: `172:30:30::30`
 - Yapper esetén: `172:29:29::30`

Jelmagyarázat: A tesztábrákon a szimulált hiba helyét vagy a megszakadt kapcsolatot **piros vonal**, míg a hibatűrés miatt létrejött alternatív útvonalat **sárga szaggatott vonal** jelöli.

Hiba szimuláció: ICANN-R1 - IPv6 Ping



MAGENTUS-Customer1

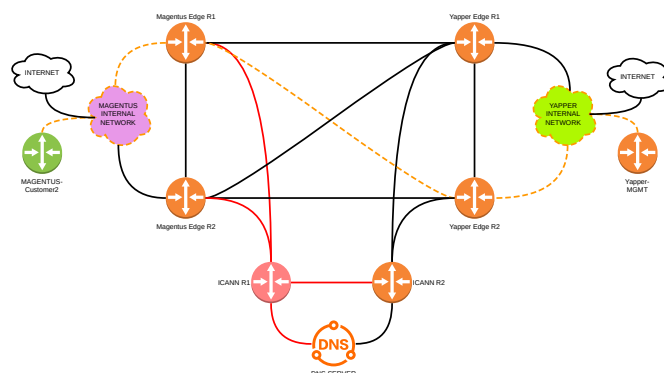
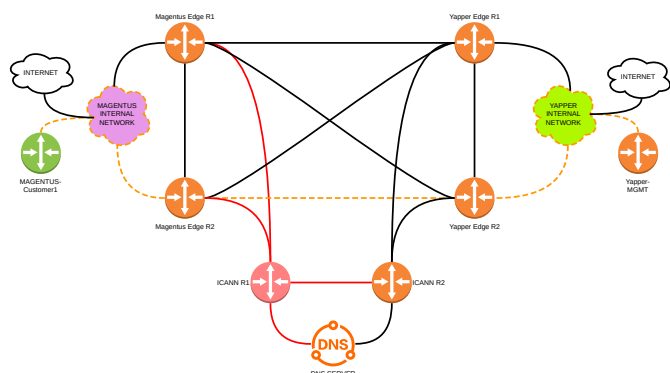
Sikeres ping! 4

2001:470:2171:AAAA:AAAA:1:0:4 28ms 48ms
20ms

MAGENTUS-Customer2

Sikeres ping! 5

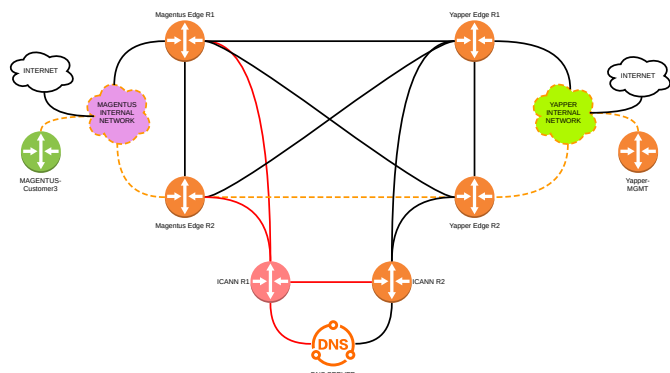
2001:470:2171:AAAA:AAAA:1:0:4 40ms 44ms
16ms



MAGENTUS-Customer3

Sikeres ping! 4

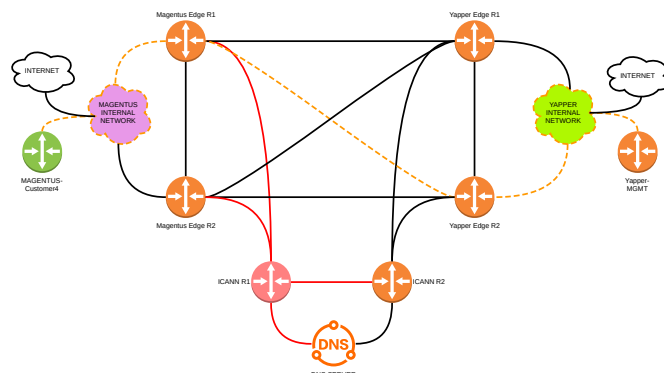
2001:470:2171:AAAA:AAAA:2:0:4 40ms 24ms
32ms



MAGENTUS-Customer4

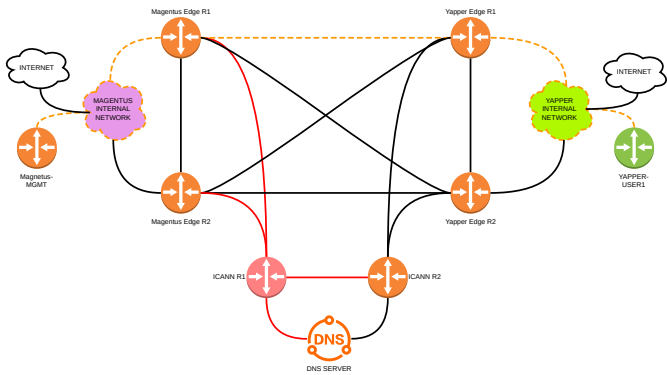
Sikeres ping! 5

2001:470:2171:AAAA:AAAA:2:0:4 32ms 32ms
56ms



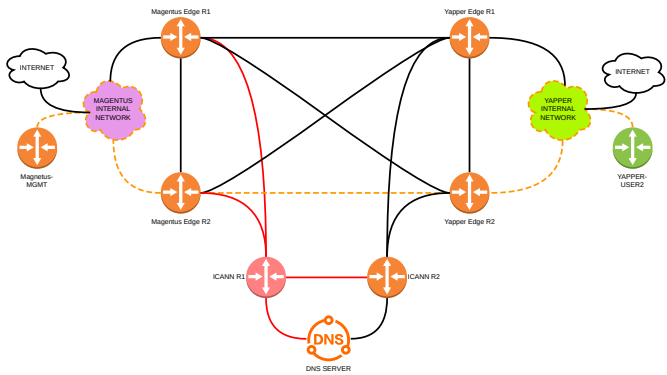
YAPPER-USER1 ✓

Sikeres ping! 6 2001:470:216F:AAAA::62
52ms 44ms 48ms



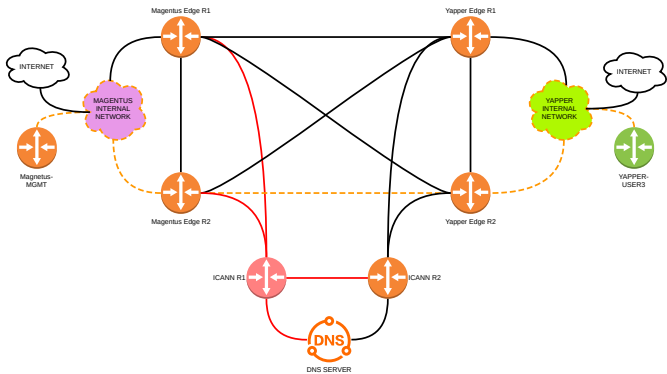
YAPPER-USER2 ✓

Sikeres ping! 6 2001:470:216F:AAAA::62
40ms 60ms 68ms



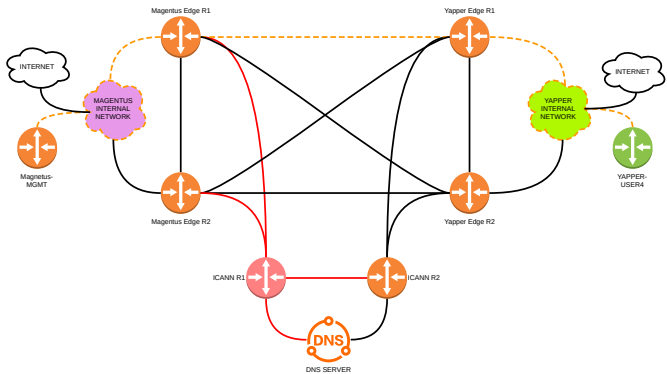
YAPPER-USER3 ✓

Sikeres ping! 6 2001:470:216F:AAAA::62
44ms 52ms 40ms

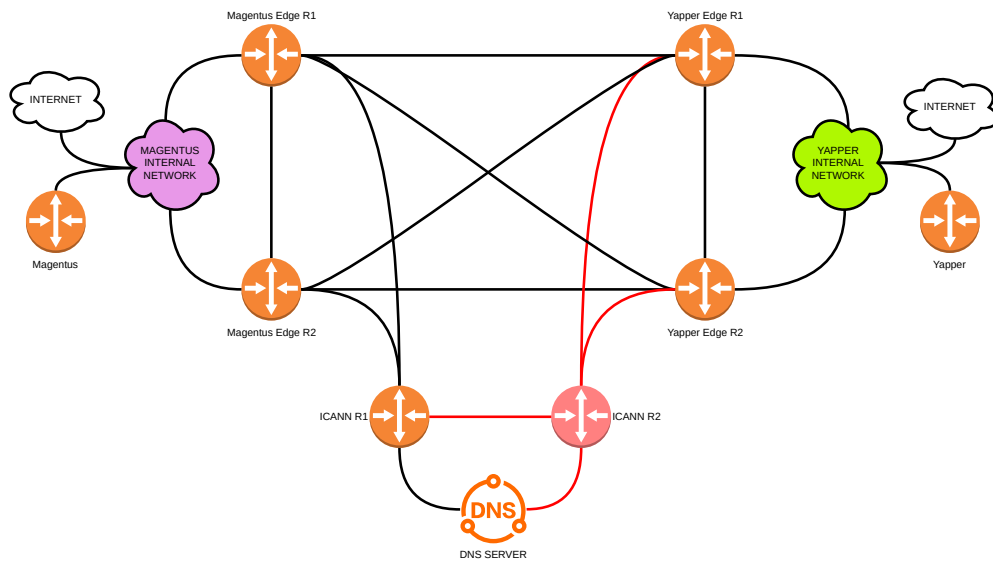


YAPPER-USER4 ✓

Sikeres ping! 6 2001:470:216F:AAAA::62
52ms 48ms 56ms



Hiba szimuláció: ICANN-R2 - IPv6 Ping



MAGENTUS-Customer1 ✓

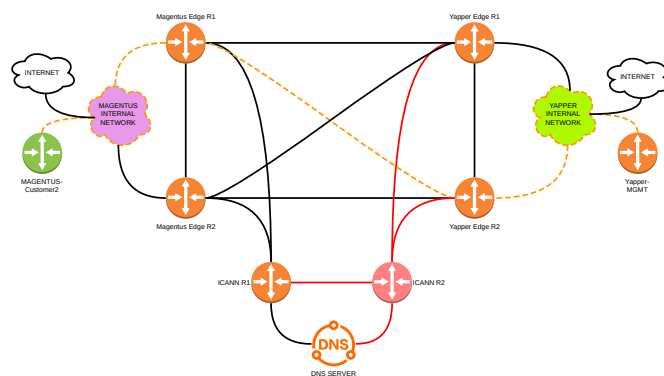
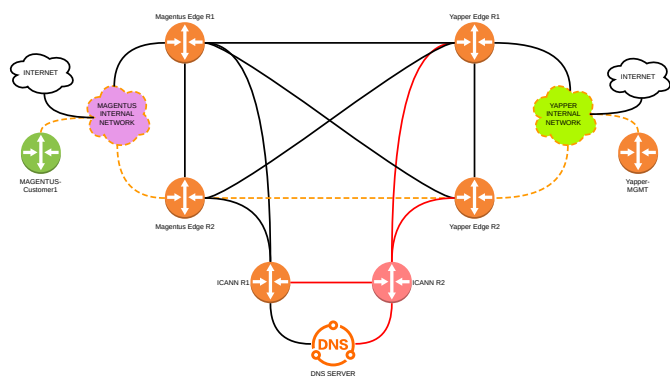
Sikeres ping! 4

2001:470:2171:AAAA:AAAA:1:0:4 8ms 36ms
32ms

MAGENTUS-Customer2 ✓

Sikeres ping! 5

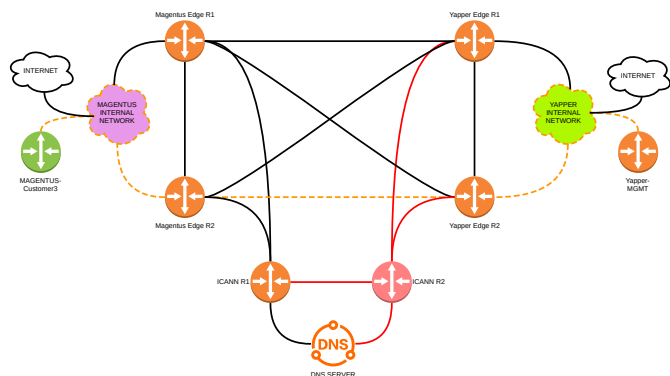
2001:470:2171:AAAA:AAAA:1:0:4 32ms 40ms
28ms



MAGENTUS-Customer3 ✓

Sikeres ping! 4

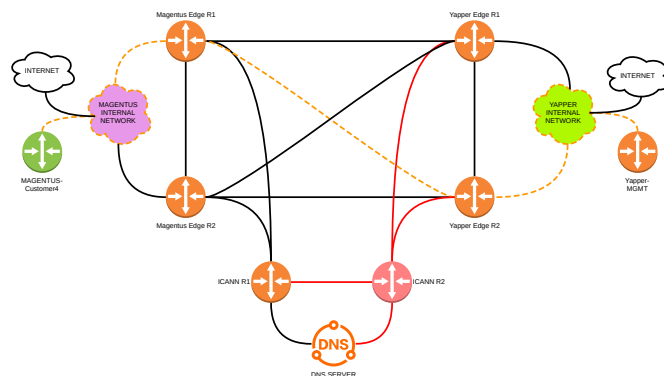
2001:470:2171:AAAA:AAAA:2:0:4 36ms 20ms
20ms



MAGENTUS-Customer4 ✓

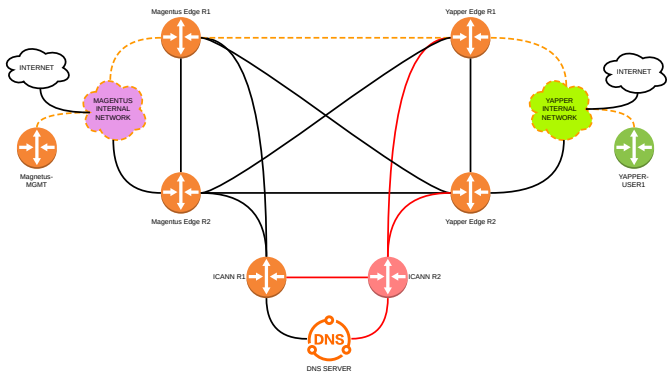
Sikeres ping! 5

2001:470:2171:AAAA:AAAA:2:0:4 24ms 28ms
32ms



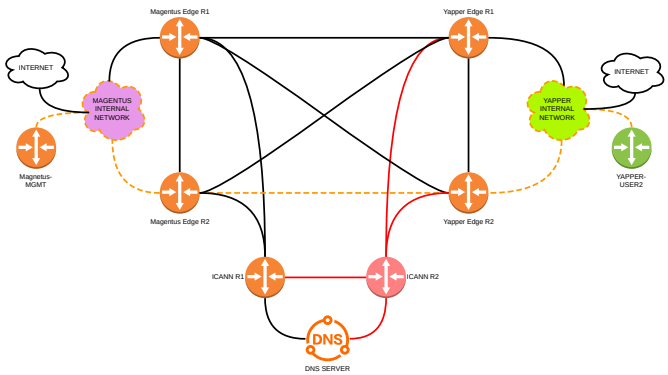
YAPPER-USER1 ✓

Sikeres ping! 6 2001:470:216F:AAAA::62
44ms 44ms 48ms



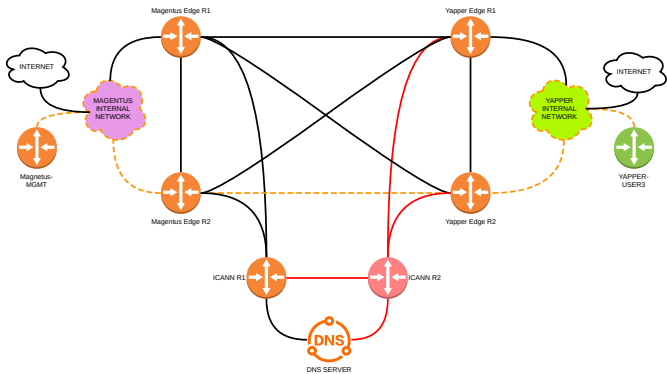
YAPPER-USER2 ✓

Sikeres ping! 6 2001:470:216F:AAAA::62
36ms 40ms 20ms



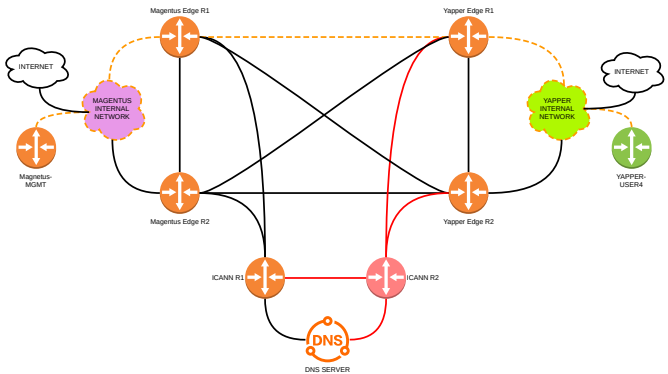
YAPPER-USER3 ✓

Sikeres ping! 6 2001:470:216F:AAAA::62
44ms 60ms 56ms

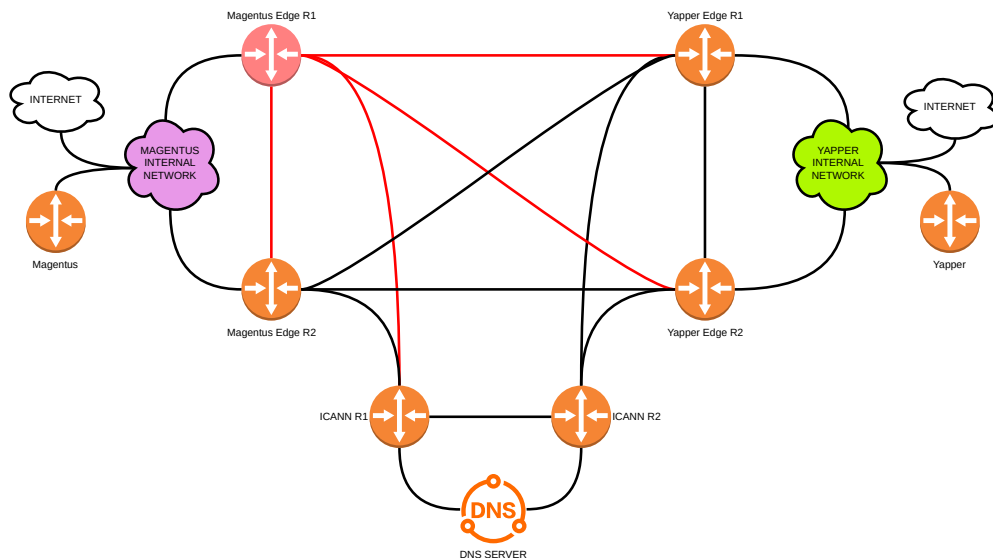


YAPPER-USER4 ✓

Sikeres ping! 6 2001:470:216F:AAAA::62
44ms 32ms 36ms



Hiba szimuláció: MAGENTUS-EDGE-R1 - IPv6 Ping



MAGENTUS-Customer1

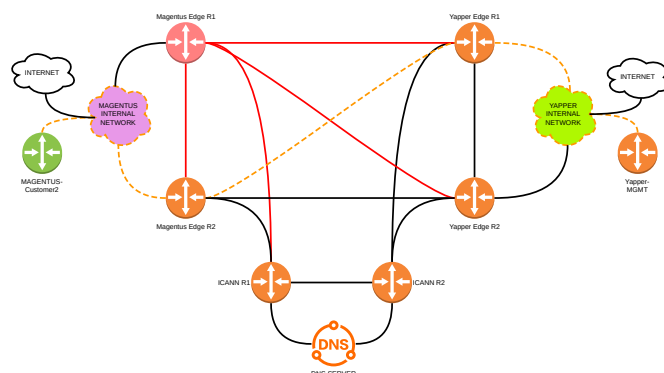
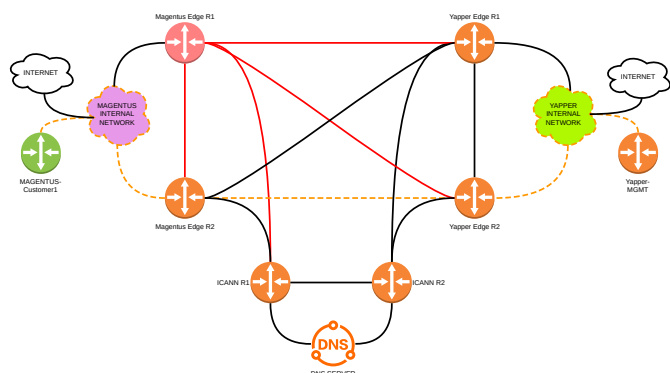
Sikeres ping! 4

2001:470:2171:AAAA:AAAA:1:0:4 36ms 24ms
24ms

MAGENTUS-Customer2

Sikeres ping! 5

2001:470:2171:AAAA:AAAA:1:0:4 32ms 48ms
48ms



MAGENTUS-Customer3

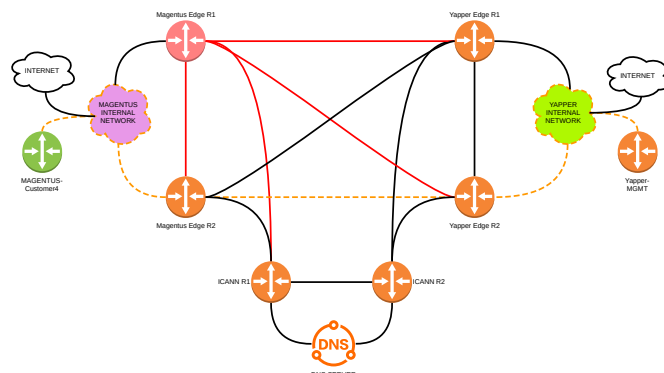
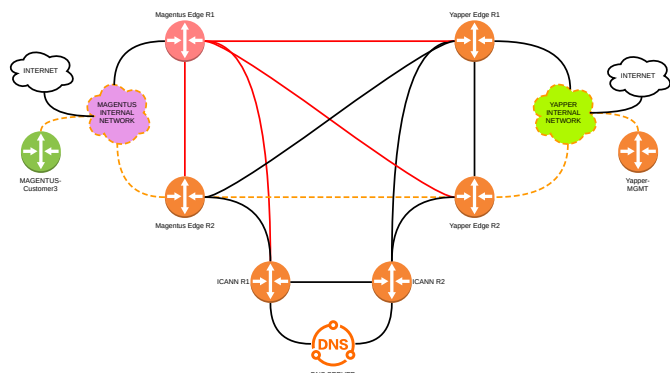
Sikeres ping! 4

2001:470:2171:AAAA:AAAA:2:0:4 36ms 24ms
20ms

MAGENTUS-Customer4

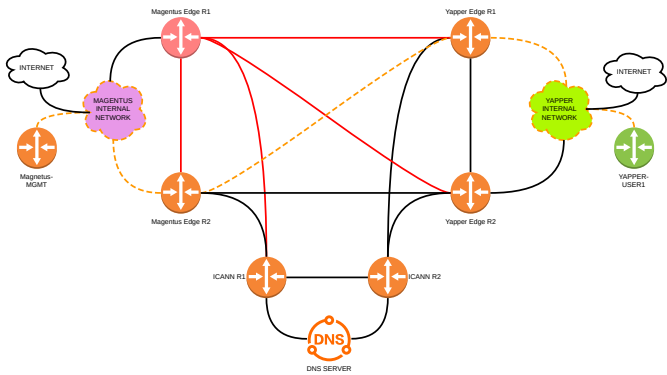
Sikeres ping! 5

2001:470:2171:AAAA:AAAA:2:0:4 56ms 48ms
24ms



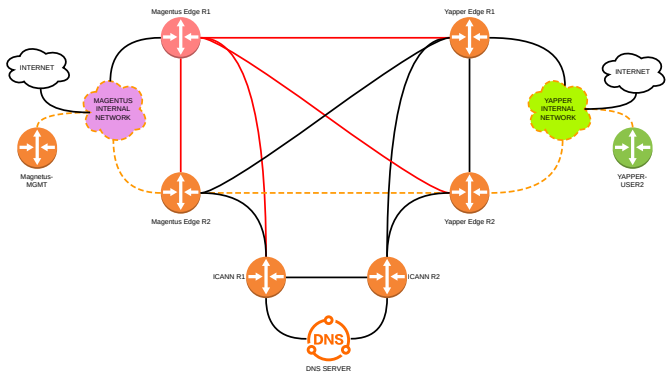
YAPPER-USER1 ✓

Sikeres ping! 6 2001:470:216F:AAAA::62
32ms 48ms 44ms



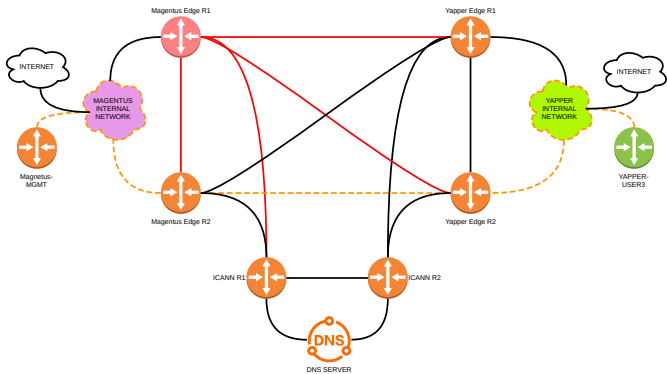
YAPPER-USER2 ✓

Sikeres ping! 6 2001:470:216F:AAAA::62
40ms 40ms 48ms



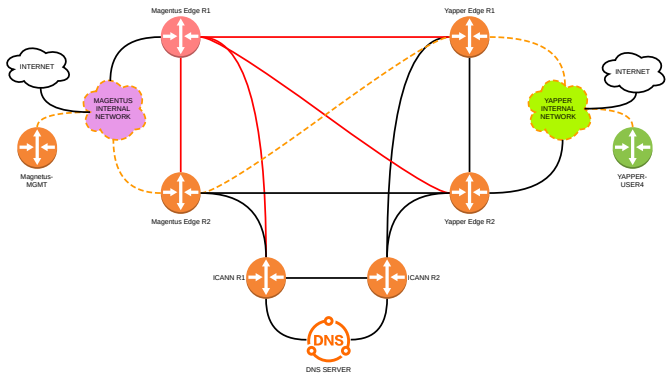
YAPPER-USER3 ✓

Sikeres ping! 6 2001:470:216F:AAAA::62
32ms 28ms 56ms

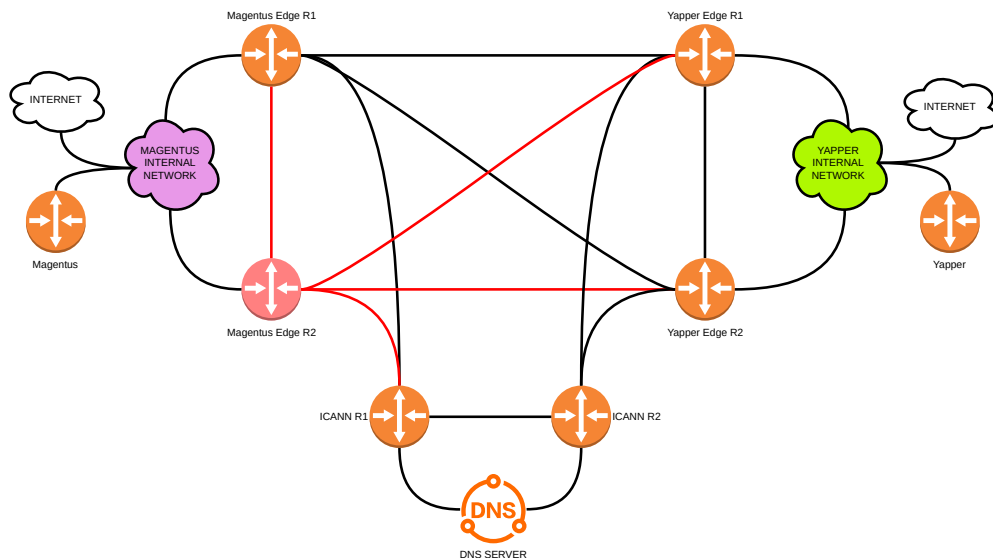


YAPPER-USER4 ✓

Sikeres ping! 6 2001:470:216F:AAAA::62
32ms 44ms 32ms



Hiba szimuláció: MAGENTUS-EDGE-R2 - IPv6 Ping



MAGENTUS-Customer1 ✓

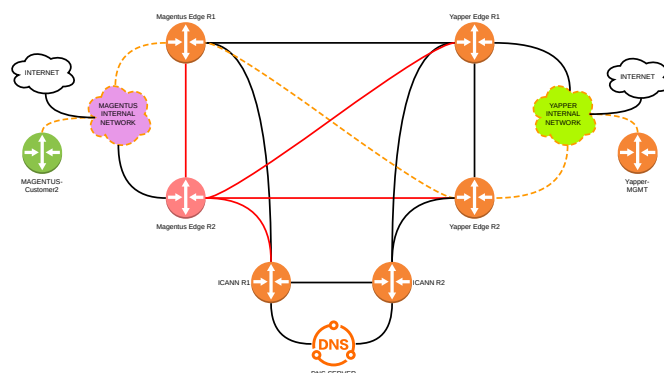
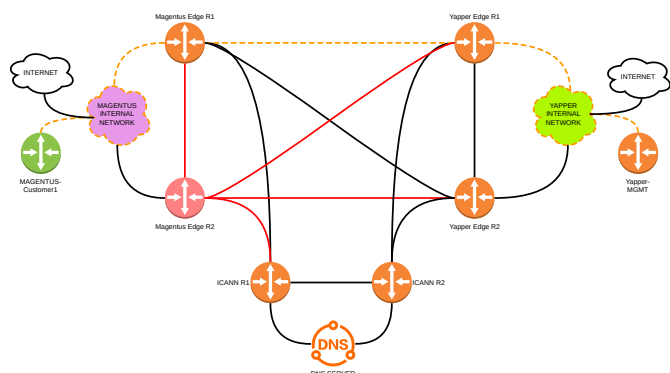
Sikeres ping! 4

2001:470:2171:AAAA:AAAA:2:0:4 16ms 28ms
28ms

MAGENTUS-Customer2 ✓

Sikeres ping! 5

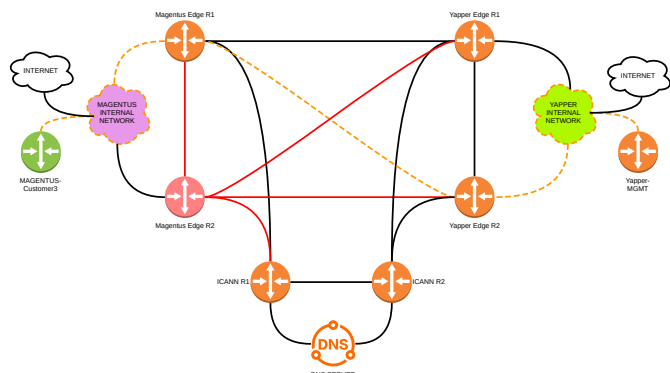
2001:470:2171:AAAA:AAAA:1:0:4 48ms 28ms
56ms



MAGENTUS-Customer3 ✓

Sikeres ping! 4

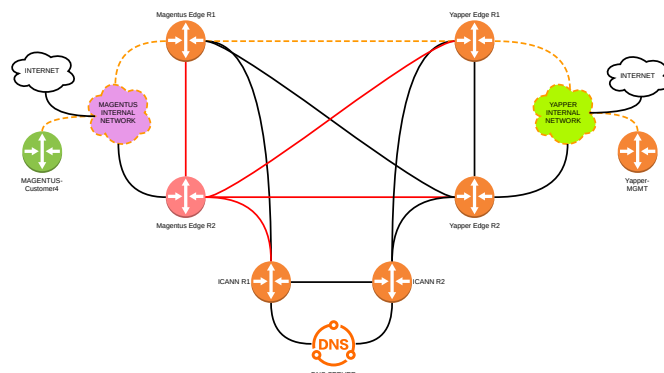
2001:470:2171:AAAA:AAAA:2:0:4 36ms 32ms
44ms



MAGENTUS-Customer4 ✓

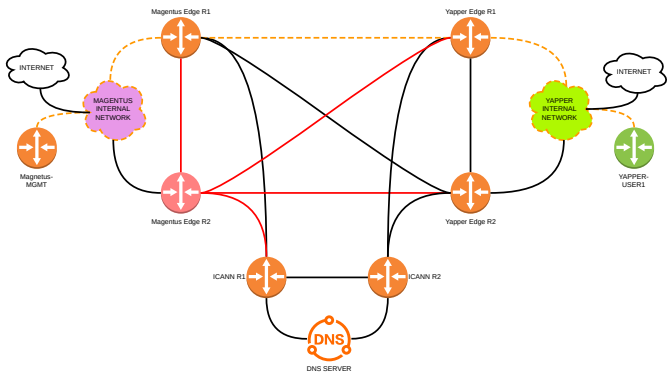
Sikeres ping! 5

2001:470:2171:AAAA:AAAA:2:0:4 32ms 12ms
56ms



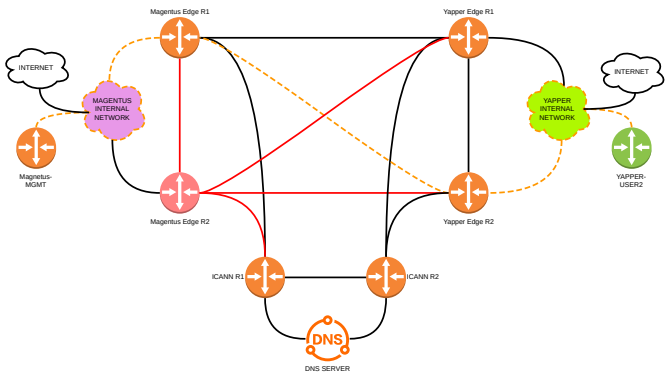
YAPPER-USER1 ✓

Sikeres ping! 6 2001:470:216F:AAAA::62
44ms 44ms 32ms



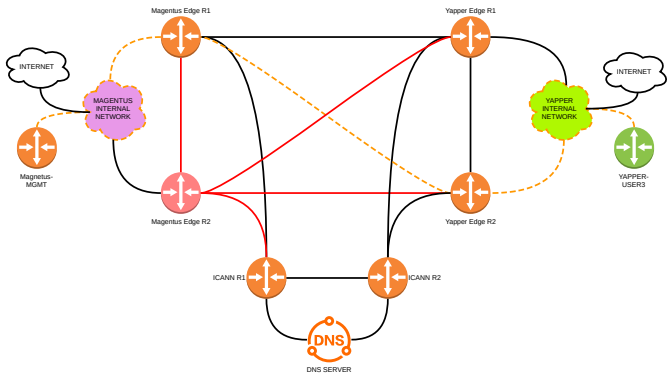
YAPPER-USER2 ✓

Sikeres ping! 6 2001:470:216F:AAAA::62
44ms 44ms 52ms



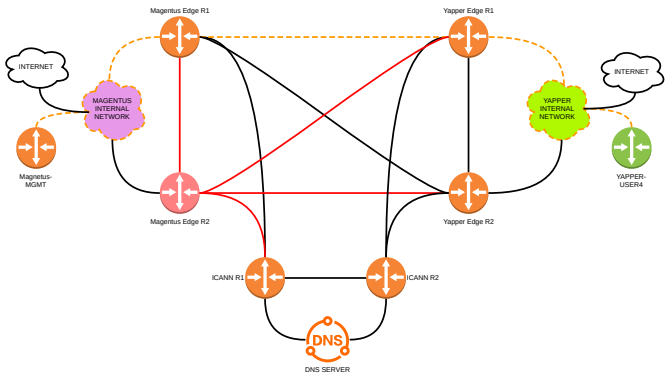
YAPPER-USER3 ✓

Sikeres ping! 6 2001:470:216F:AAAA::62
36ms 60ms 36ms

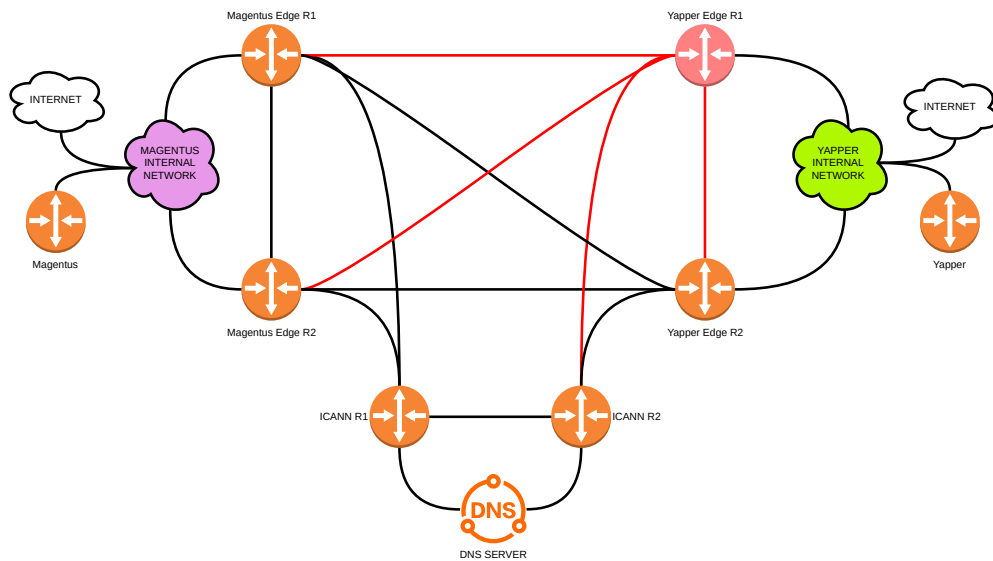


YAPPER-USER4 ✓

Sikeres ping! 6 2001:470:216F:AAAA::62
48ms 48ms



Hiba szimuláció: YAPPER-EDGE-R1 - IPv6 Ping



MAGENTUS-Customer1 ✓

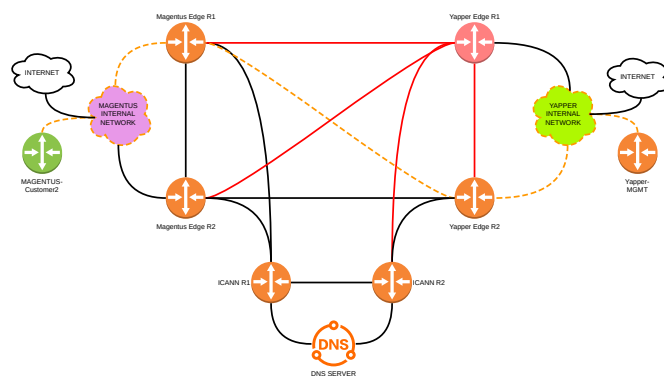
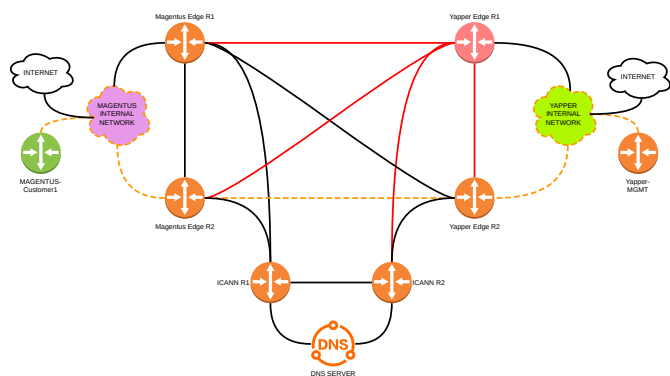
Sikeres ping! 4

2001:470:2171:AAAA:AAAA:1:0:4 12ms 24ms
24ms

MAGENTUS-Customer2 ✓

Sikeres ping! 5

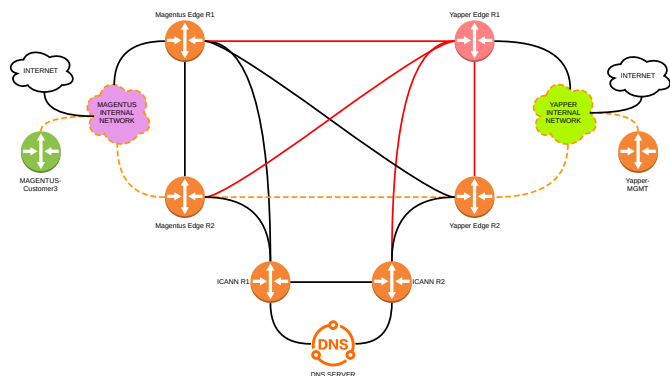
2001:470:2171:AAAA:AAAA:1:0:4 44ms 32ms
56ms



MAGENTUS-Customer3 ✓

Sikeres ping! 4

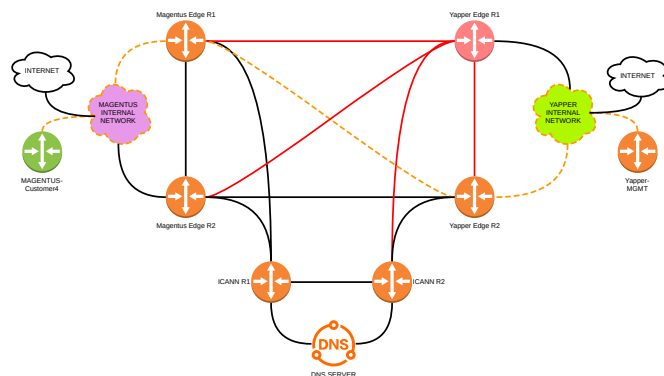
2001:470:2171:AAAA:AAAA:2:0:4 4ms 44ms
4ms



MAGENTUS-Customer4 ✓

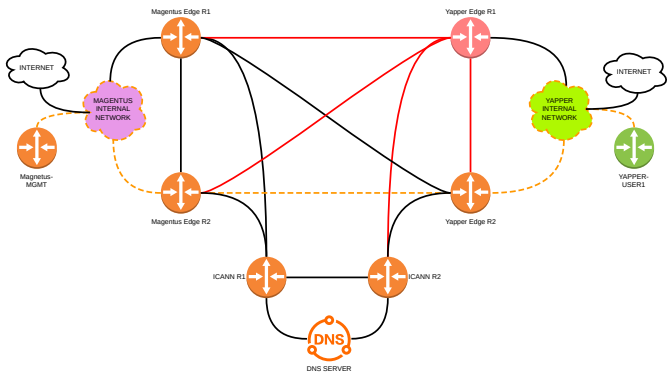
Sikeres ping! 5

2001:470:2171:AAAA:AAAA:2:0:4 40ms 44ms
40ms



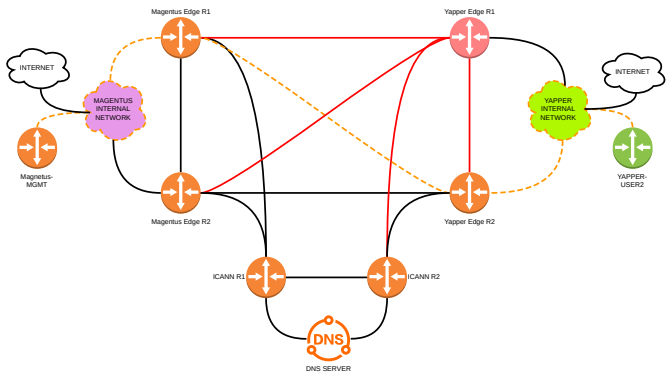
YAPPER-USER1 ✓

Sikeres ping! 6 2001:470:216F:AAAA::62
44ms 48ms



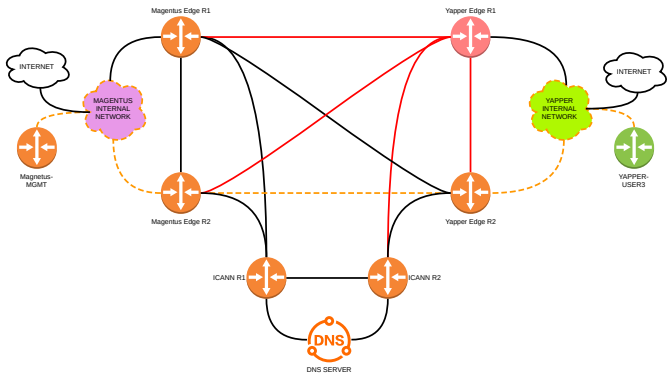
YAPPER-USER2 ✓

Sikeres ping! 6 2001:470:216F:AAAA::62
36ms 40ms 32ms



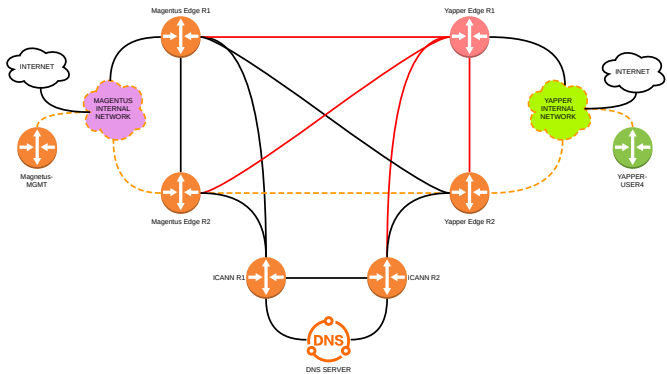
YAPPER-USER3 ✓

Sikeres ping! 6 2001:470:216F:AAAA::62
56ms 72ms 32ms

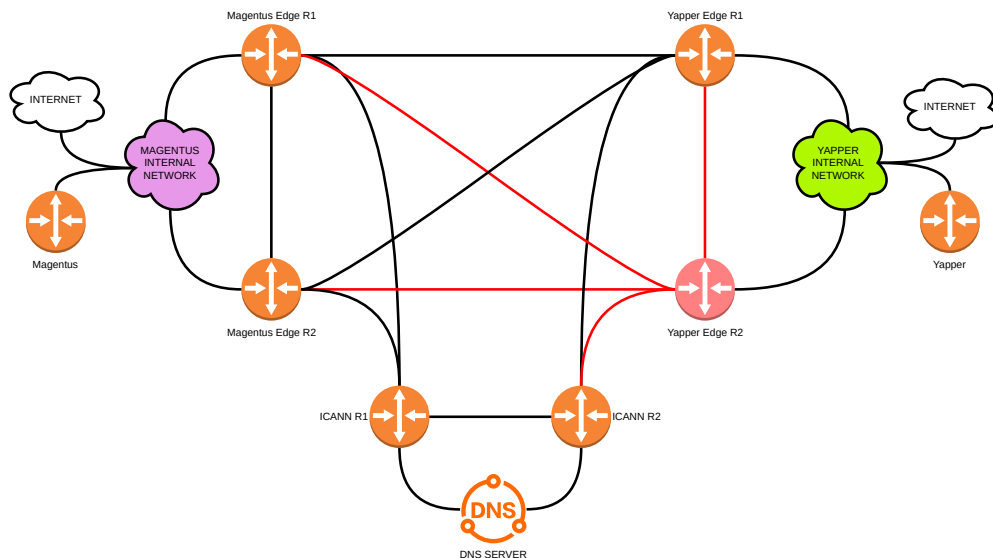


YAPPER-USER4 ✓

Sikeres ping! 6 2001:470:216F:AAAA::62
44ms 48ms 44ms



Hiba szimuláció: YAPPER-EDGE-R2 - IPv6 Ping



MAGENTUS-Customer1

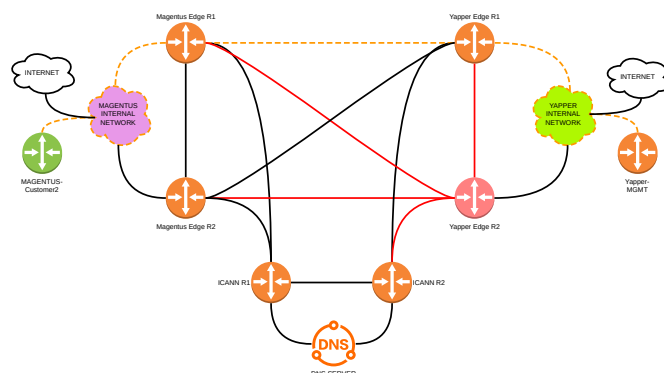
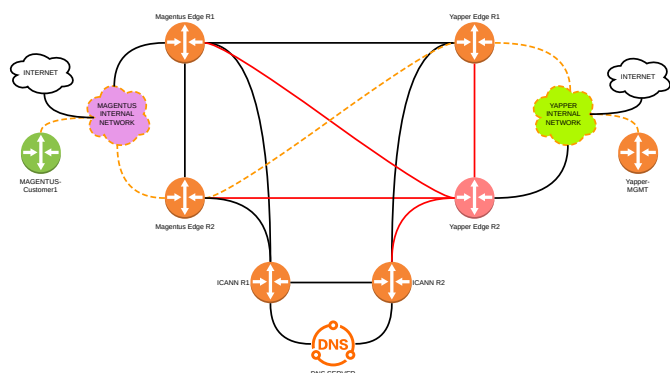
Sikeres ping! 4

2001:470:2171:AAAA:AAAA:1:0:4 24ms 16ms
20ms

MAGENTUS-Customer2

Sikeres ping! 5

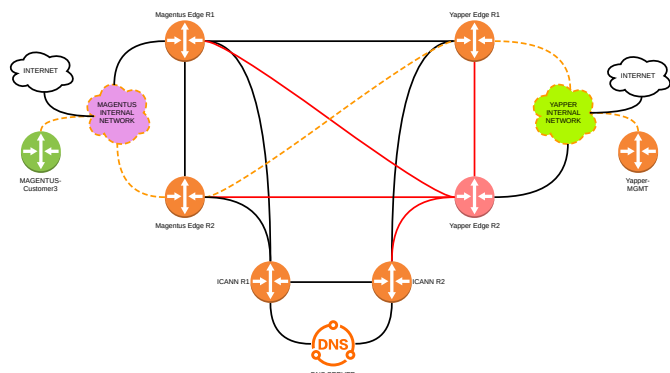
2001:470:2171:AAAA:AAAA:2:0:4 36ms 56ms
36ms



MAGENTUS-Customer3

Sikeres ping! 4

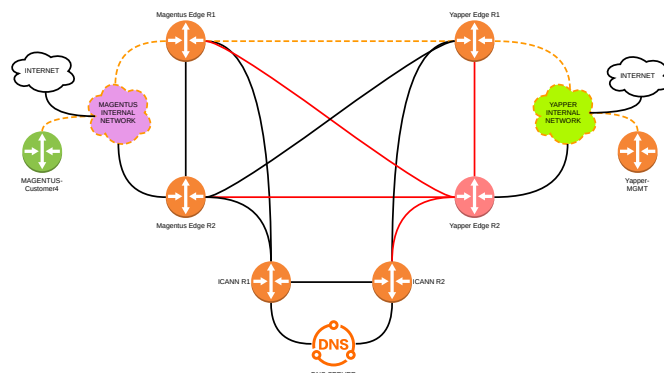
2001:470:2171:AAAA:AAAA:2:0:4 28ms 52ms
16ms



MAGENTUS-Customer4

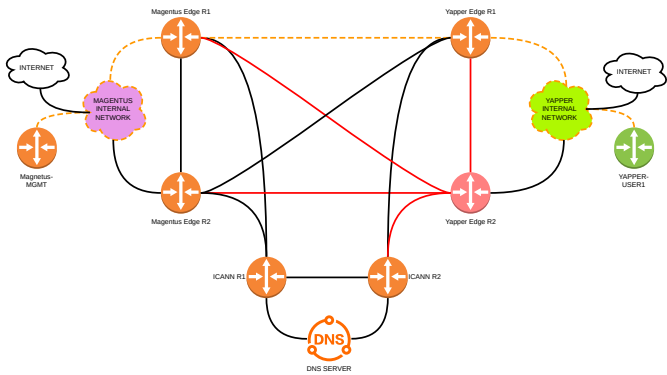
Sikeres ping! 5

2001:470:2171:AAAA:AAAA:2:0:4 56ms 40ms
52ms



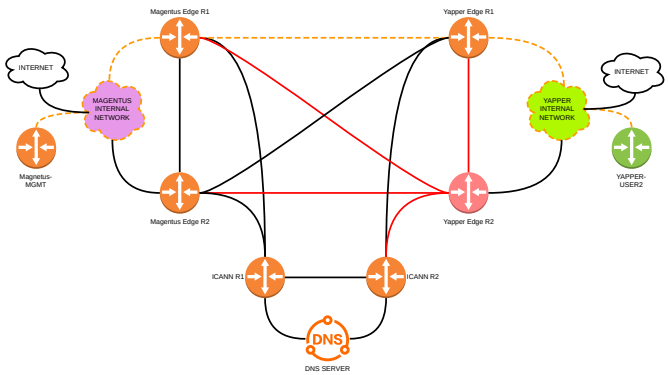
YAPPER-USER1 ✓

Sikeres ping! 6 2001:470:216F:AAAA::62
40ms 36ms 24ms



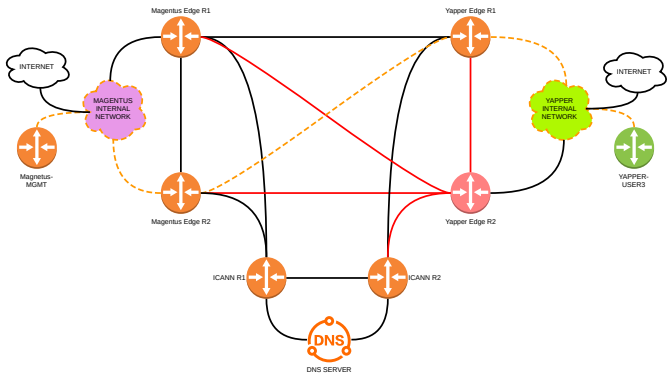
YAPPER-USER2 ✓

Sikeres ping! 6 2001:470:216F:AAAA::62
52ms 48ms 44ms



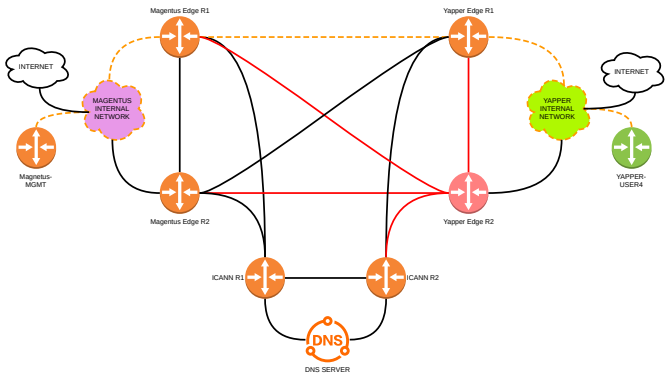
YAPPER-USER3 ✓

Sikeres ping! 6 2001:470:216F:AAAA::62
40ms 44ms 44ms



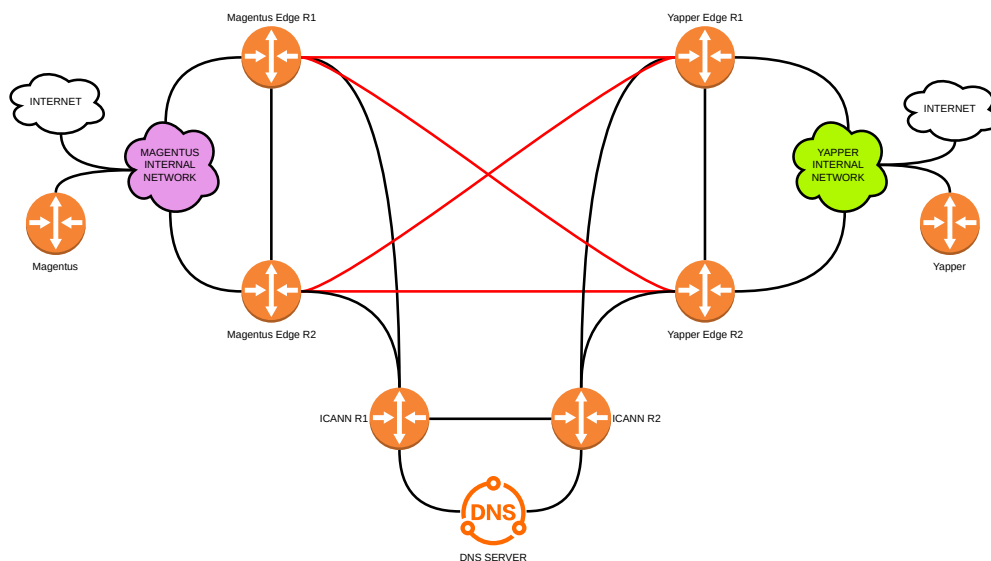
YAPPER-USER4 ✓

Sikeres ping! 6 2001:470:216F:AAAA::62
44ms 60ms 60ms



Magentus-Yapper interconnect hiba (IPv6)

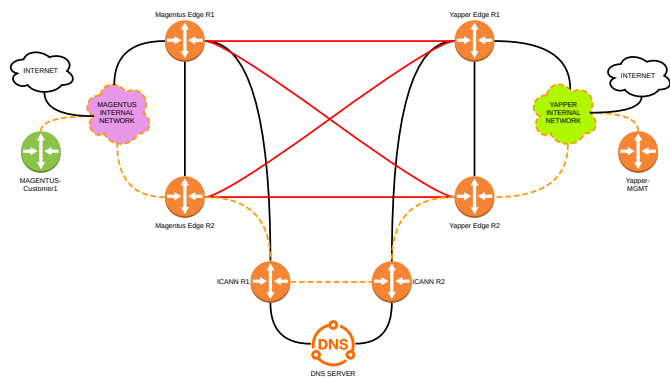
Yapper és Magentus BGP peer linkjei nem működik, kapcsolat ICANN-en keresztül



MAGENTUS-Customer1

Sikeres ping! 6

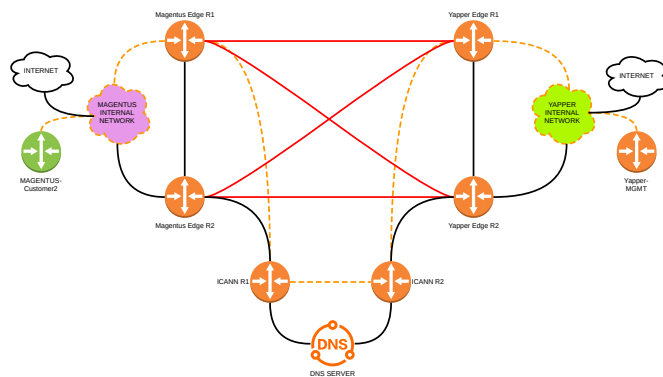
2001:470:2171:AAAA:AAAA:2:0:4 76ms 48ms
56ms



MAGENTUS-Customer2

Sikeres ping! 7

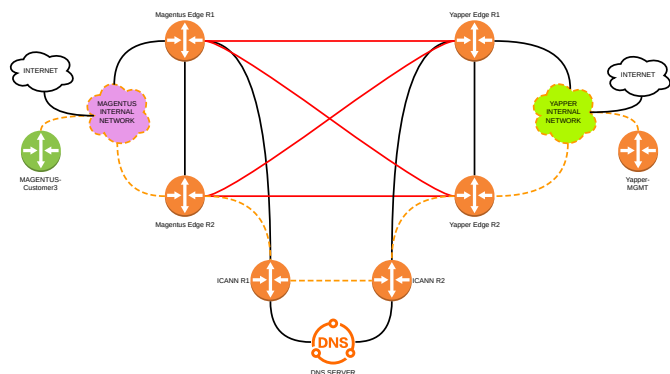
2001:470:2171:AAAA:AAAA:2:0:4 52ms 56ms
64ms



MAGENTUS-Customer3

Sikeres ping! 6

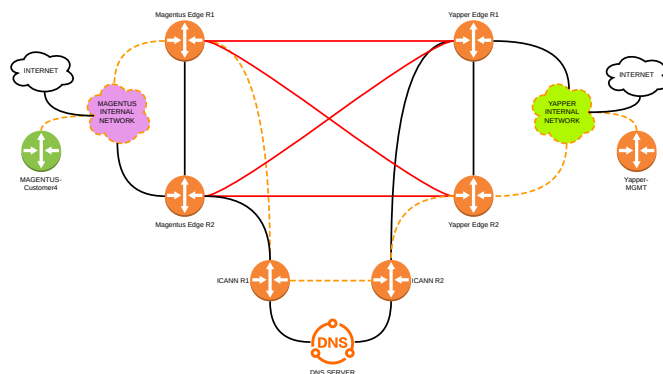
2001:470:2171:AAAA:AAAA:2:0:4 44ms 64ms
60ms



MAGENTUS-Customer4

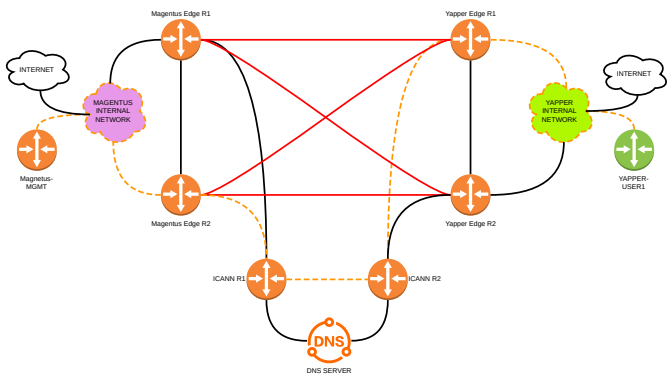
Sikeres ping! 7

2001:470:2171:AAAA:AAAA:1:0:4 56ms 52ms
60ms



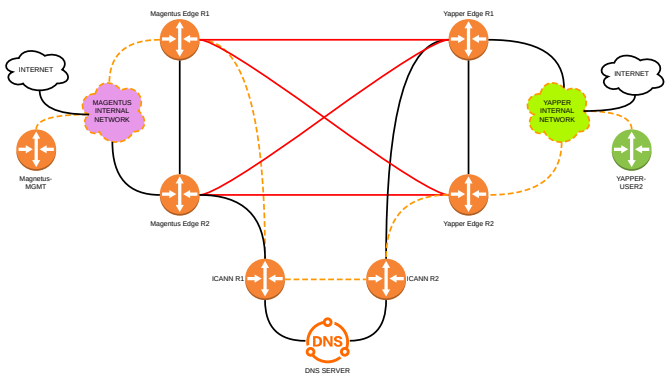
YAPPER-USER1 ✓

Sikeres ping! 8 2001:470:216F:AAAA::62
80ms 68ms 60ms



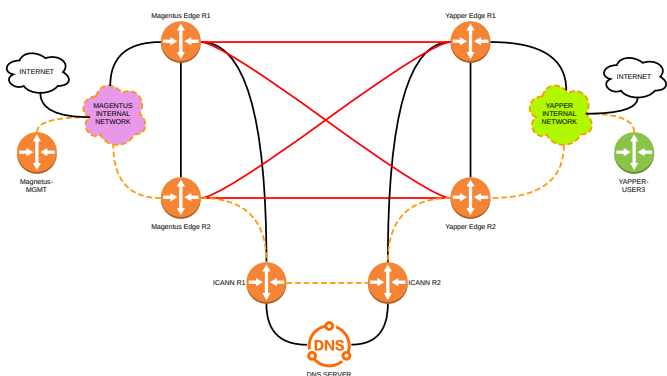
YAPPER-USER2 ✓

Sikeres ping! 8 2001:470:216F:AAAA::62
60ms 60ms 44ms



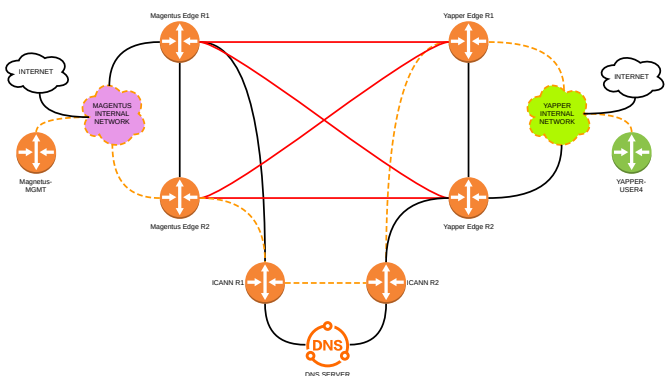
YAPPER-USER3 ✓

Sikeres ping! 8 2001:470:216F:AAAA::62
88ms 56ms 60ms



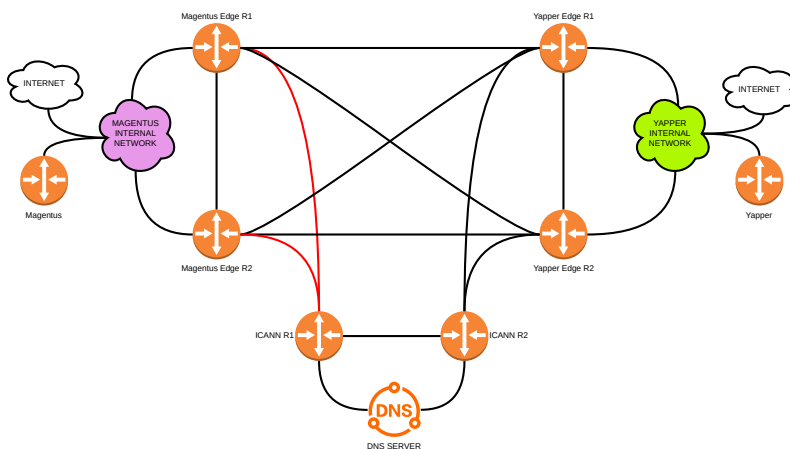
YAPPER-USER4 ✓

Sikeres ping! 8 2001:470:216F:AAAA::62
76ms 60ms 84ms



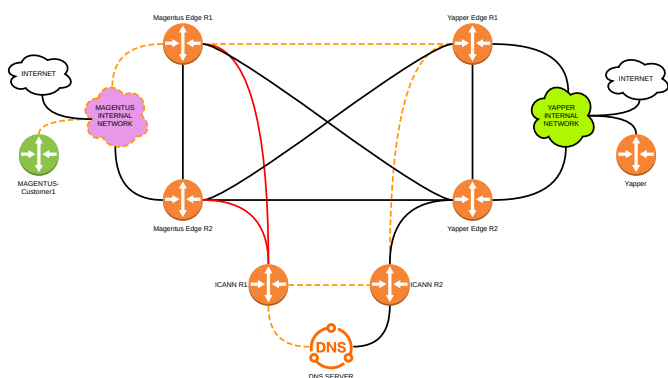
ICANN R1 közvetlen kapcsolat hiba (IPv6)

ICANN R1 közvetlen összekötése Magentus részéről megszakítva, kapcsolat Yapper-en keresztül



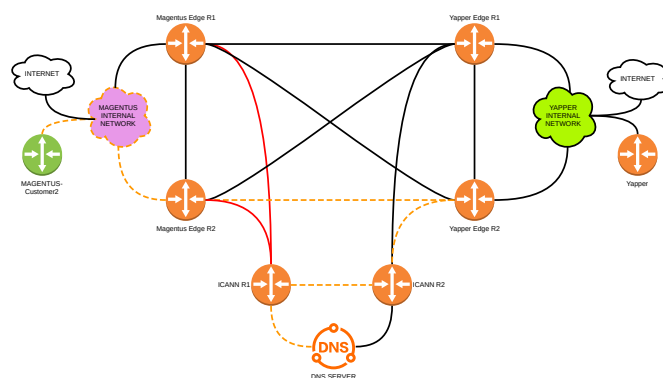
MAGENTUS-Customer1 ✓

Sikeres ping! 6 172:29:29::30 44ms 56ms 36ms



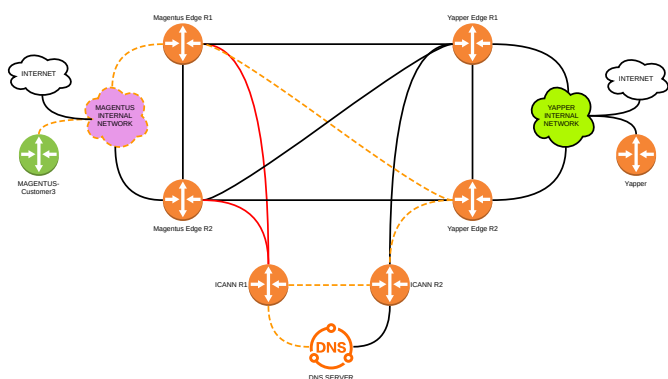
MAGENTUS-Customer2 ✓

Sikeres ping! 7 172:29:29::30 48ms 56ms 56ms



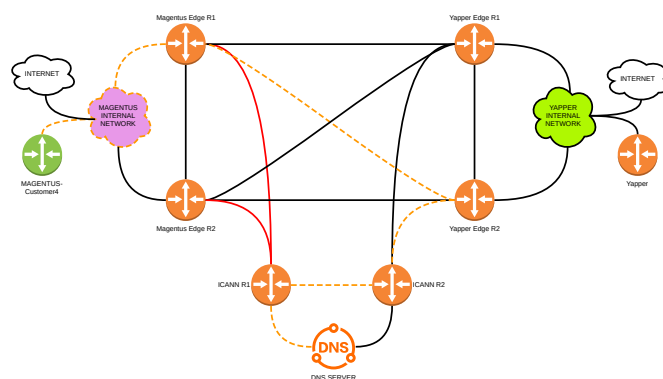
MAGENTUS-Customer3 ✓

Sikeres ping! 6 172:29:29::30 36ms 44ms 44ms



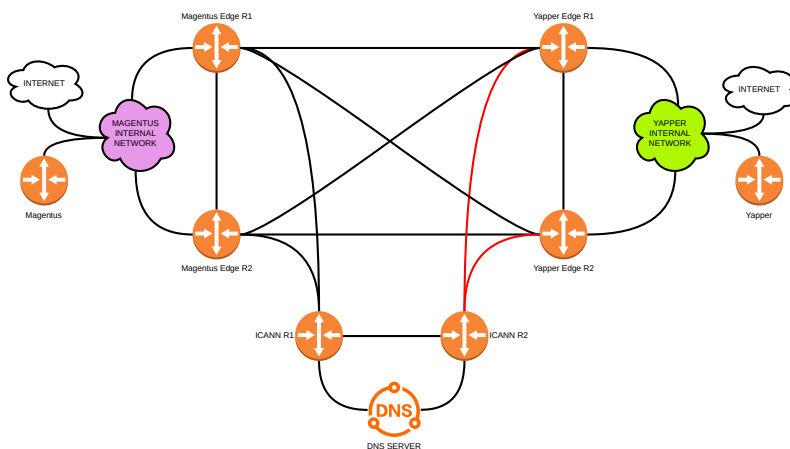
MAGENTUS-Customer4 ✓

Sikeres ping! 7 172:29:29::30 48ms 48ms 68ms



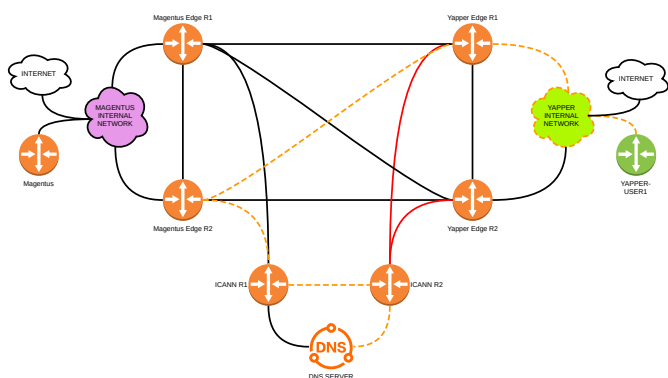
ICANN R2 közvetlen kapcsolat hiba (IPv6)

ICANN R2 közvetlen összekötése Yapper részéről megszakítva, kapcsolat Magentus-on keresztül



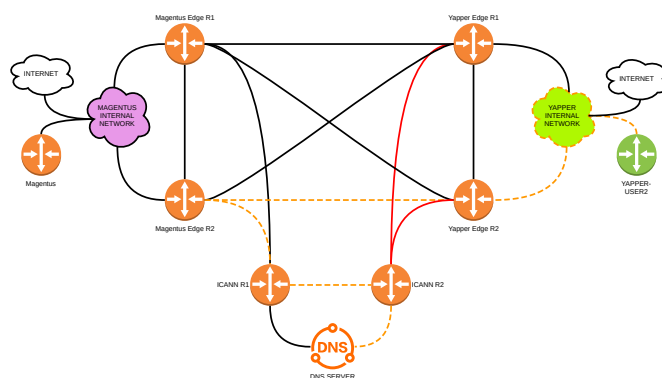
YAPPER-USER1 ✓

Sikeres ping! 7 172:30:30::30 36ms 80ms
76ms



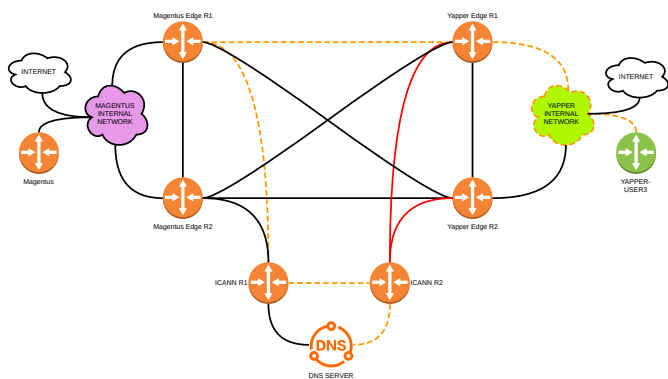
YAPPER-USER2 ✓

Sikeres ping! 7 172:30:30::30 60ms 60ms
56ms



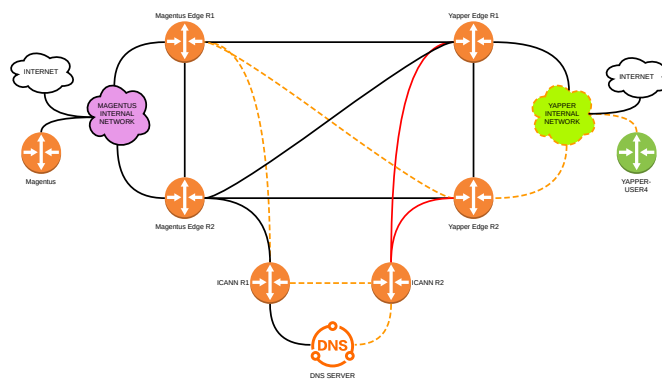
YAPPER-USER3 ✓

Sikeres ping! 7 172:30:30::30 52ms 40ms
60ms



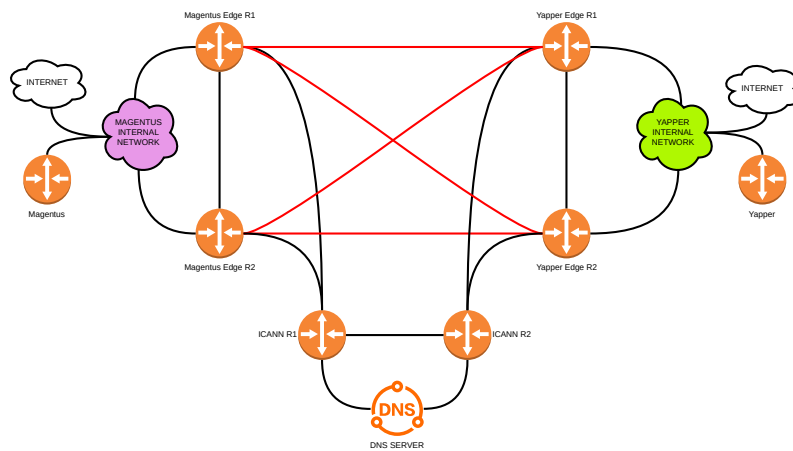
YAPPER-USER4 ✓

Sikeres ping! 7 172:30:30::30 24ms 60ms
52ms



Egyetlen útvonal ICANN-en keresztül (IPv6)

Minden közvetlen kapcsolat megszakítva, ICANN kapcsolatok redundanciája megszüntetve (1-1 link aktív)



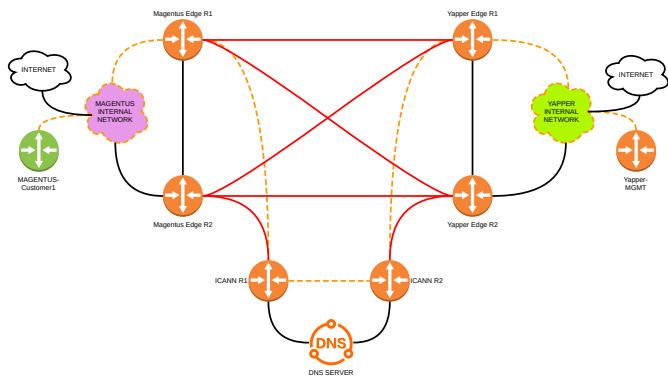
Ezen tesztnek a célja, hogy ellenőrizze, hogy megfelelően választódik ki az egyetlen lehetséges útvonal, nem jön létre routing loop az eBGP, iBGP és OSPF útvonalak között.

Útvonal: Mag-R1 - ICANN - Yap-R1

MAGENTUS-Customer1

Sikeres ping! 6

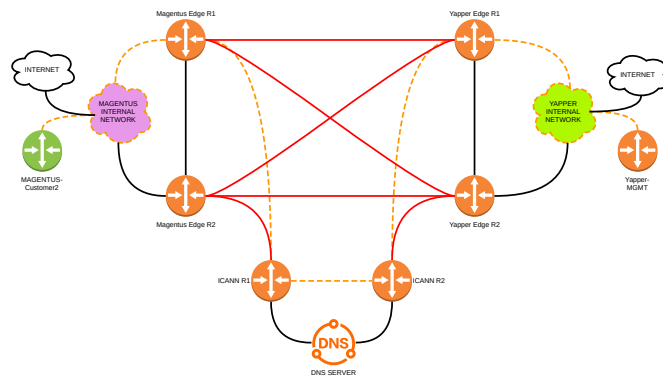
2001:470:2171:AAAA:AAAA:1:0:4 48ms 48ms
44ms



MAGENTUS-Customer2

Sikeres ping! 7

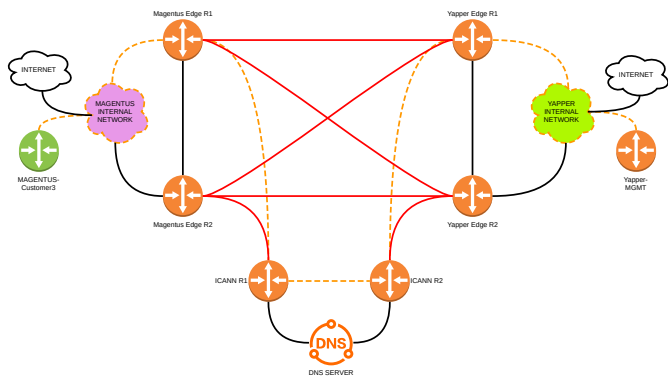
2001:470:2171:AAAA:AAAA:2:0:4 52ms 56ms
76ms



MAGENTUS-Customer3

Sikeres ping! 6

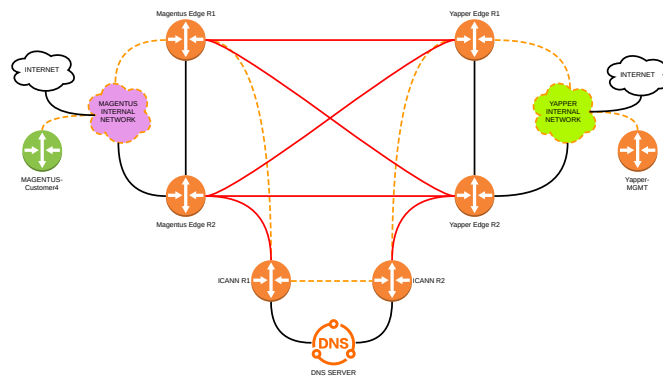
2001:470:2171:AAAA:AAAA:2:0:4 52ms 56ms
60ms



MAGENTUS-Customer4

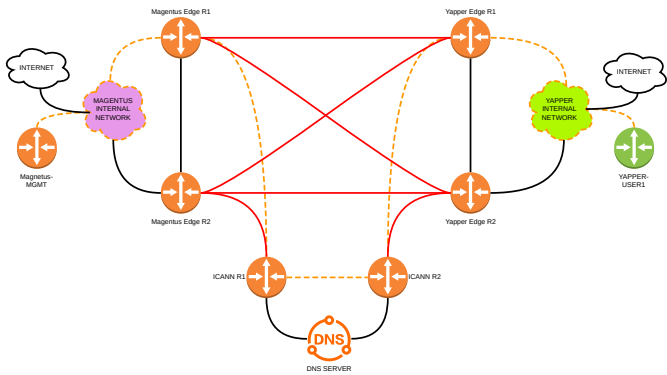
Sikeres ping! 7

2001:470:2171:AAAA:AAAA:2:0:4 76ms 80ms
76ms



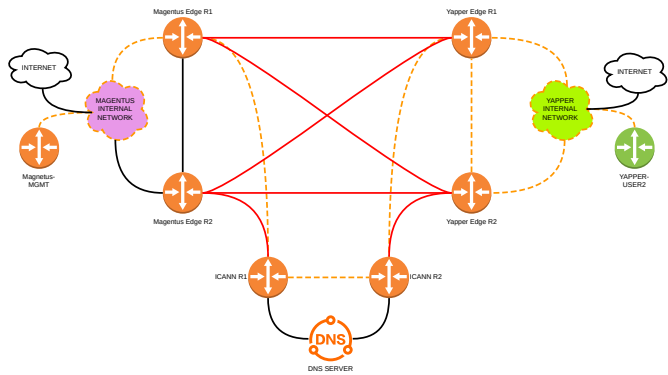
YAPPER-USER1 ✓

Sikeres ping! 8 2001:470:216F:AAAA::62
76ms 72ms 60ms



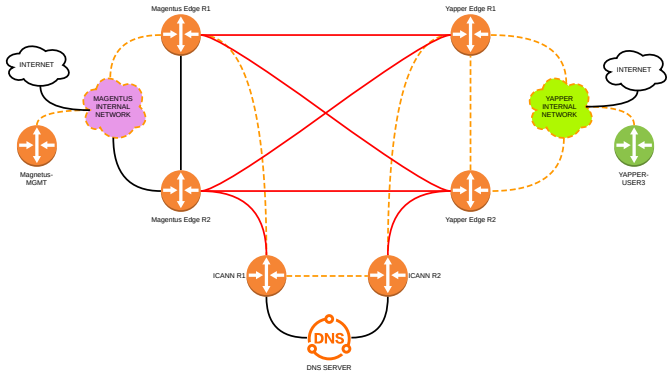
YAPPER-USER2 ✓

Sikeres ping! 9 2001:470:216F:AAAA::62
84ms 72ms 60ms



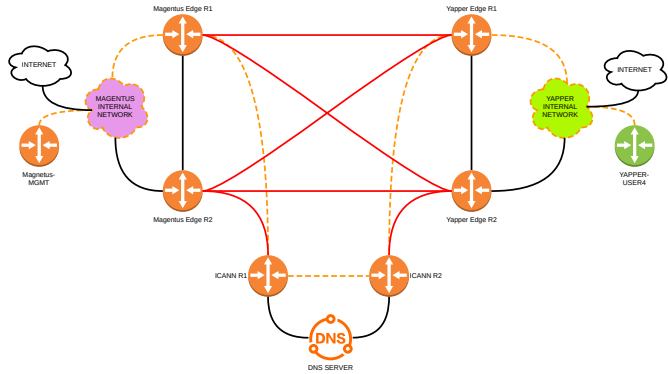
YAPPER-USER3 ✓

Sikeres ping! 9 2001:470:216F:AAAA::62
72ms 76ms 60ms



YAPPER-USER4 ✓

Sikeres ping! 8 2001:470:216F:AAAA::62
56ms 56ms 76ms

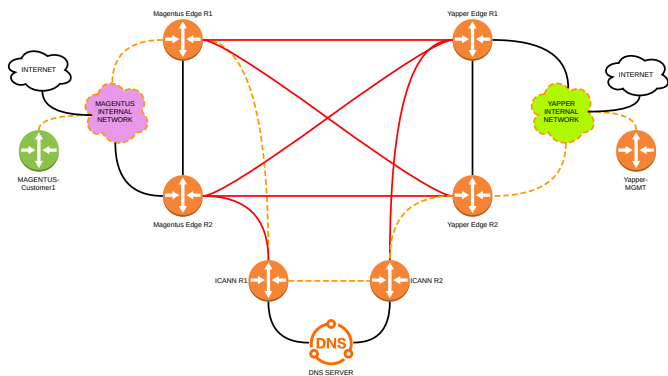


Útvonal: Mag-R1 - ICANN - Yap-R2

MAGENTUS-Customer1

Sikeres ping! 6

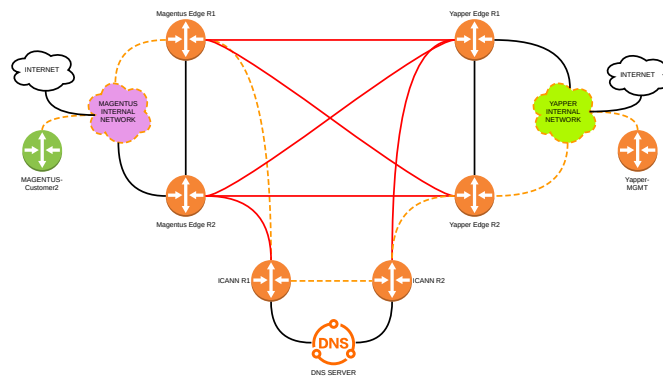
2001:470:2171:AAAA:AAAA:2:0:4 68ms 56ms
64ms



MAGENTUS-Customer2

Sikeres ping! 7

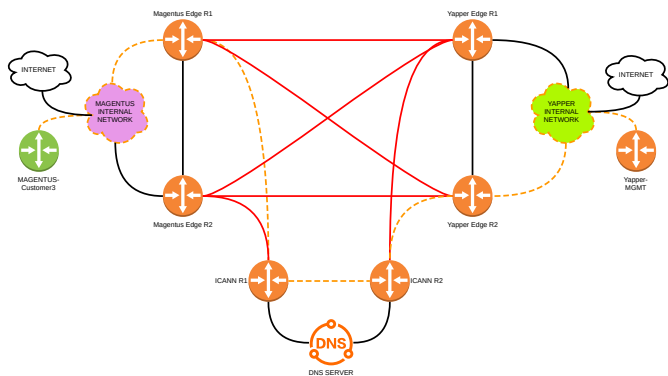
2001:470:2171:AAAA:AAAA:1:0:4 84ms 52ms
56ms



MAGENTUS-Customer3

Sikeres ping! 6

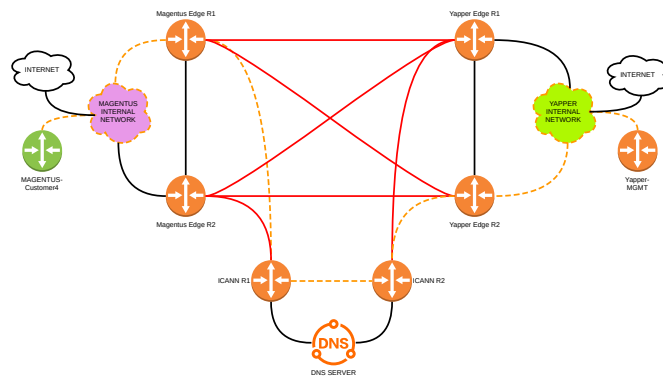
2001:470:2171:AAAA:AAAA:2:0:4 44ms 52ms
60ms



MAGENTUS-Customer4

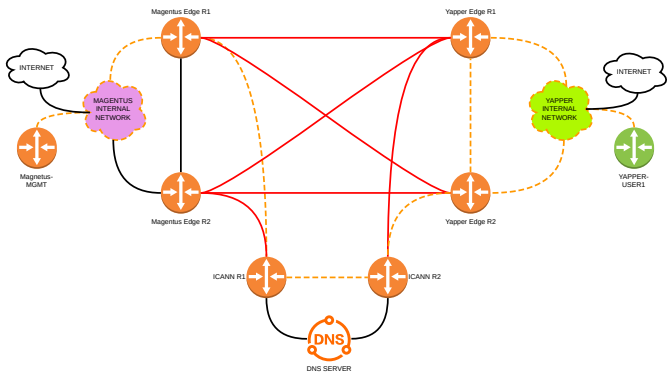
Sikeres ping! 7

2001:470:2171:AAAA:AAAA:1:0:4 60ms 60ms
72ms



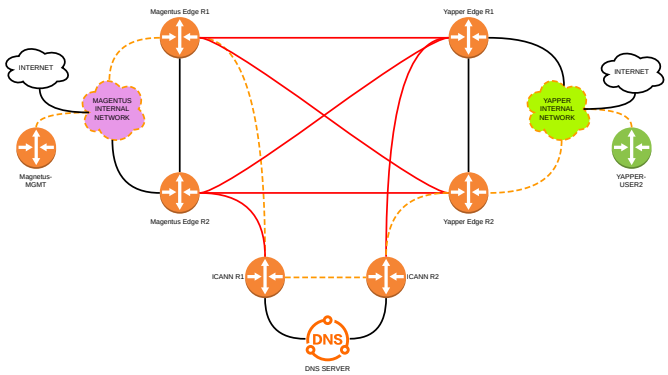
YAPPER-USER1

Sikeres ping! 9 2001:470:216F:AAAA::62
40ms 64ms 80ms



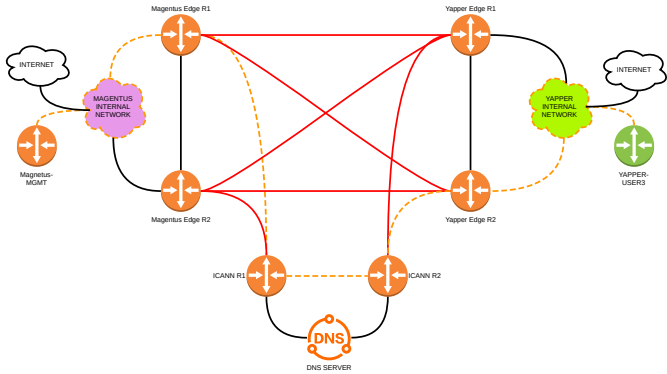
YAPPER-USER2

Sikeres ping! 8 2001:470:216F:AAAA::62
56ms 76ms 64ms



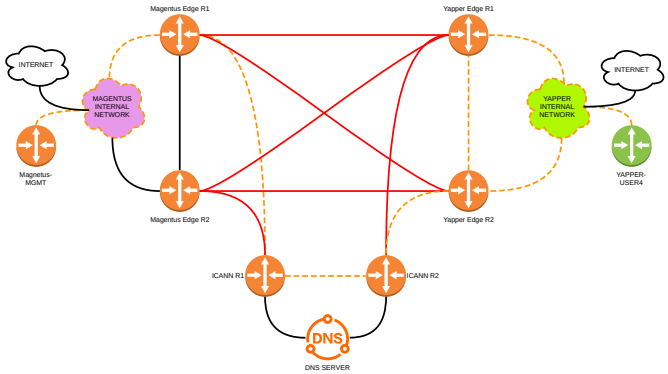
YAPPER-USER3

Sikeres ping! 8 2001:470:216F:AAAA::62
60ms 56ms 84ms



YAPPER-USER4

Sikeres ping! 9 2001:470:216F:AAAA::62
48ms 76ms 56ms

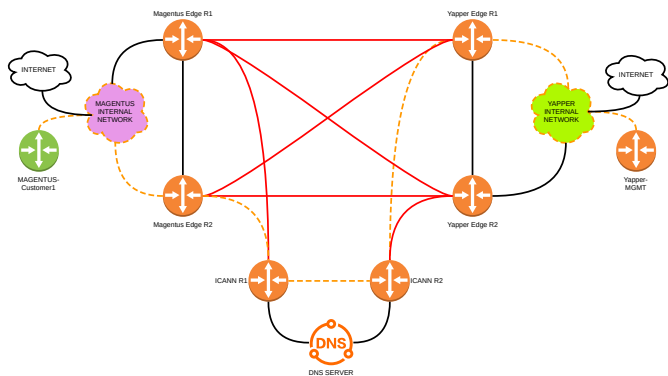


Útvonal: Mag-R2 - ICANN - Yap-R1

MAGENTUS-Customer1

Sikeres ping! 6

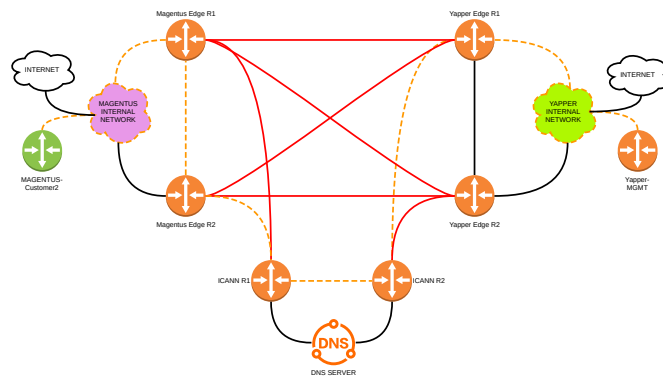
2001:470:2171:AAAA:AAAA:1:0:4 64ms 64ms
40ms



MAGENTUS-Customer2

Sikeres ping! 8

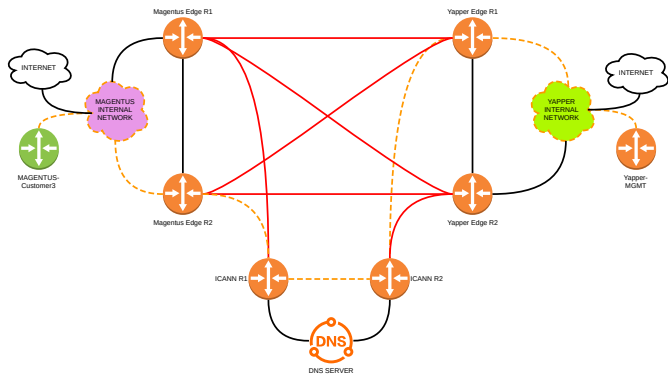
2001:470:2171:AAAA:AAAA:2:0:4 52ms 56ms
56ms



MAGENTUS-Customer3

Sikeres ping! 6

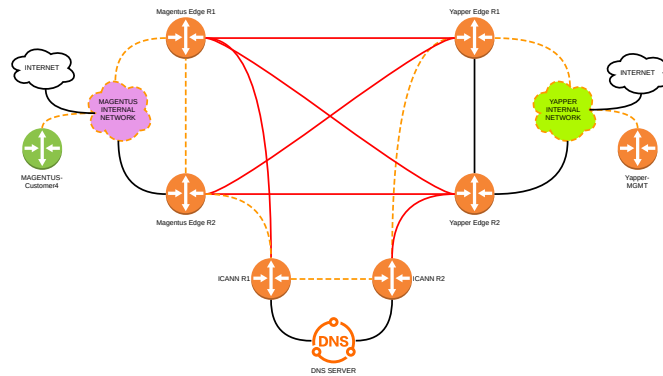
2001:470:2171:AAAA:AAAA:2:0:4 60ms 88ms
36ms



MAGENTUS-Customer4

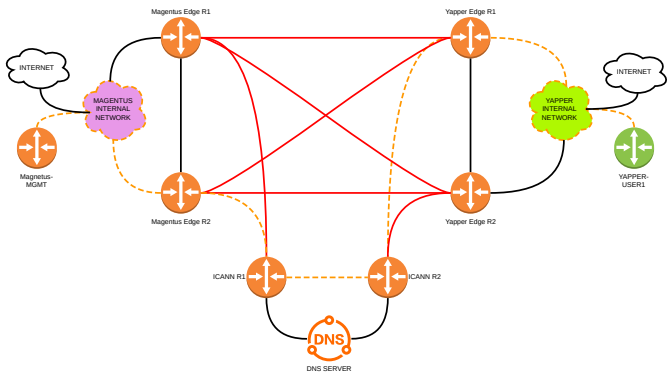
Sikeres ping! 8

2001:470:2171:AAAA:AAAA:2:0:4 48ms 56ms
52ms



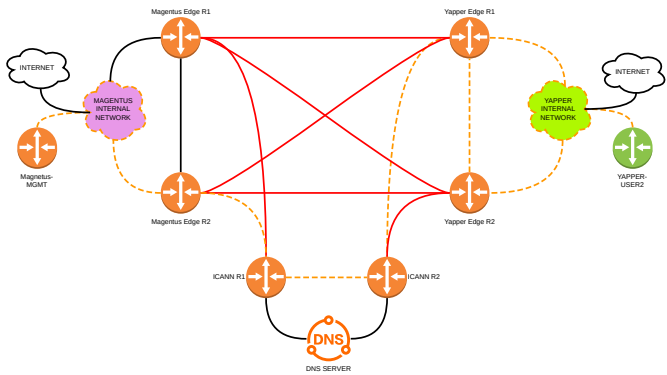
YAPPER-USER1 ✓

Sikeres ping! 8 2001:470:216F:AAAA::62
104ms 76ms 84ms



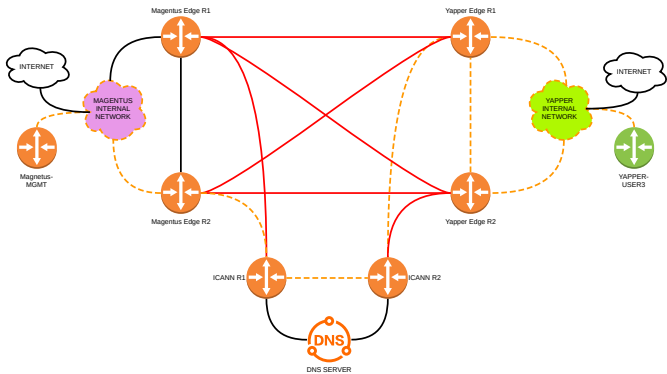
YAPPER-USER2 ✓

Sikeres ping! 9 2001:470:216F:AAAA::62
60ms 56ms 44ms



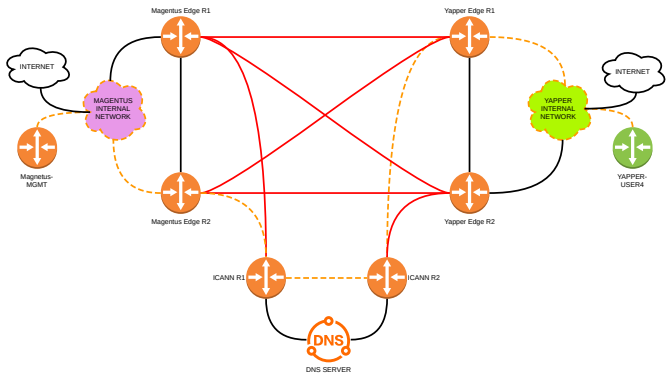
YAPPER-USER3 ✓

Sikeres ping! 9 2001:470:216F:AAAA::62
52ms 72ms 56ms



YAPPER-USER4 ✓

Sikeres ping! 8 2001:470:216F:AAAA::62
76ms 84ms 72ms

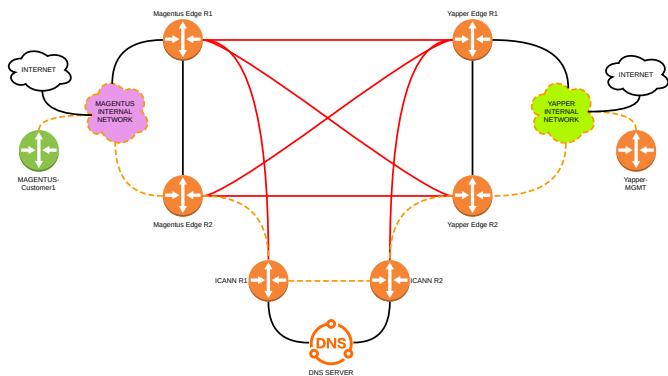


Útvonal: Mag-R2 - ICANN - Yap-R2

MAGENTUS-Customer1

Sikeres ping! 6

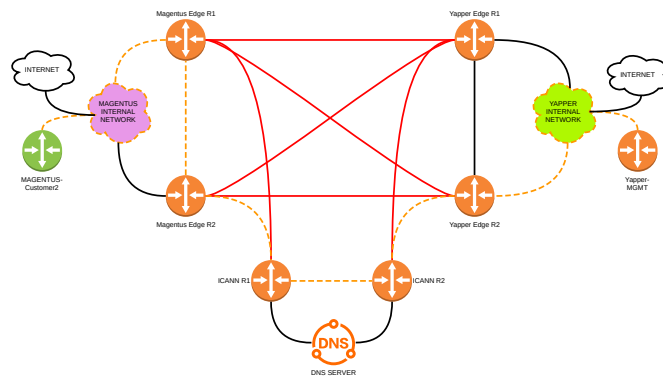
2001:470:2171:AAAA:AAAA:2:0:4 24ms 56ms
76ms



MAGENTUS-Customer2

Sikeres ping! 8

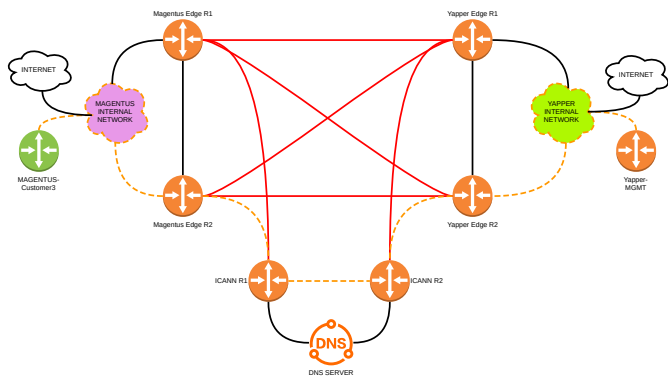
2001:470:2171:AAAA:AAAA:1:0:4 60ms 64ms
80ms



MAGENTUS-Customer3

Sikeres ping! 6

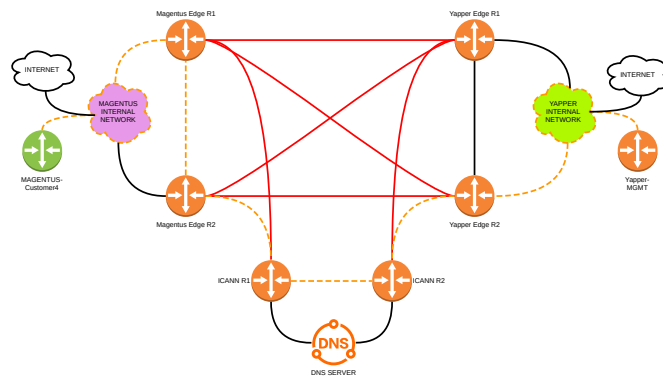
2001:470:2171:AAAA:AAAA:2:0:4 44ms 60ms
56ms



MAGENTUS-Customer4

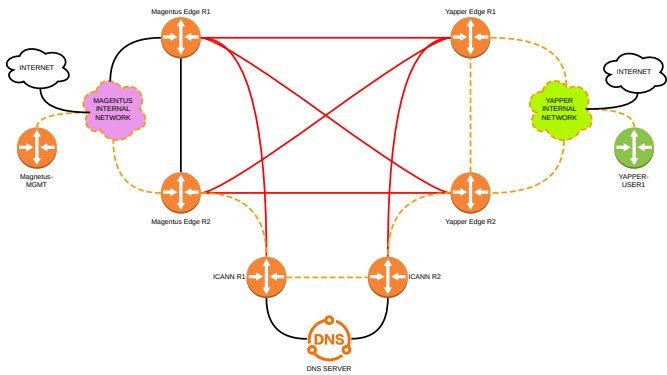
Sikeres ping! 8

2001:470:2171:AAAA:AAAA:1:0:4 76ms 72ms
48ms



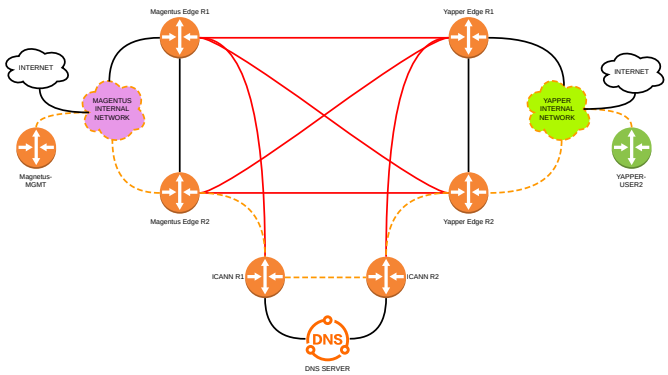
YAPPER-USER1

Sikeres ping! 9 2001:470:216F:AAAA::62
72ms 72ms 80ms



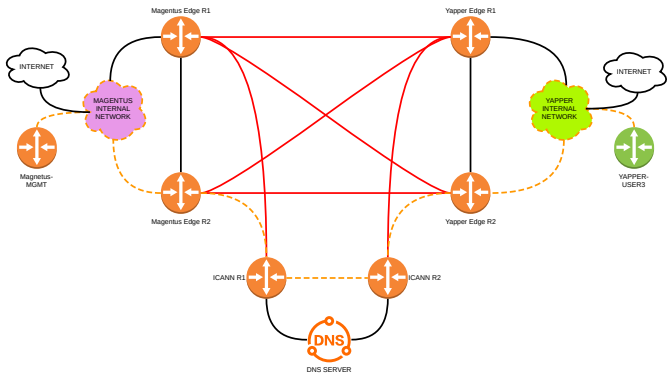
YAPPER-USER2

Sikeres ping! 8 2001:470:216F:AAAA::62
76ms 76ms 56ms



YAPPER-USER3

Sikeres ping! 8 2001:470:216F:AAAA::62
76ms 76ms 60ms



YAPPER-USER4

Sikeres ping! 9 2001:470:216F:AAAA::62
72ms 52ms 72ms

