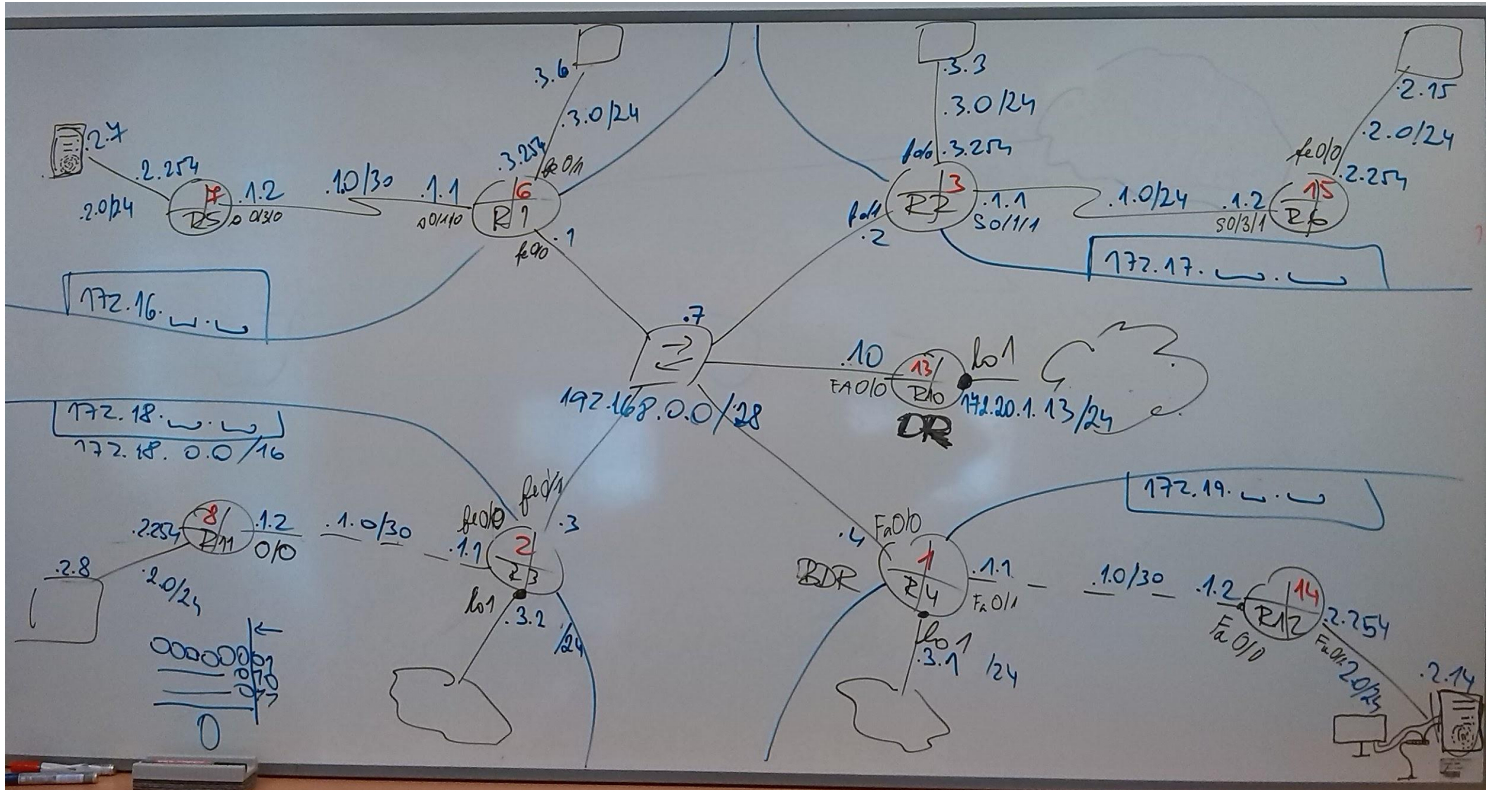


Schéma + zapojení



Následují výpisy z routerů směrovacích tabulek před a po aplikaci bandwidth, sousedů, ping a tracer ...

Sledovat lze ověření volby DR a BDR, výpočet hodnot cost z bandwidth a také metriky - před/po změně ...

R1

```
172.16.0.0/16 is variably subnetted, 5 subnets, 3 masks
C    172.16.1.0/30 is directly connected, Serial0/1/0
L    172.16.1.1/32 is directly connected, Serial0/1/0
O    172.16.2.0/24 [110/782] via 172.16.1.2, 00:05:14, Serial0/1/0
C    172.16.3.0/24 is directly connected, FastEthernet0/1
L    172.16.3.254/32 is directly connected, FastEthernet0/1
172.17.0.0/24 is subnetted, 3 subnets
O    172.17.1.0 [110/782] via 192.168.0.2, 00:05:04, FastEthernet0/0
O    172.17.2.0 [110/783] via 192.168.0.2, 00:05:04, FastEthernet0/0
O    172.17.3.0 [110/2] via 192.168.0.2, 00:05:04, FastEthernet0/0
172.18.0.0/16 is variably subnetted, 3 subnets, 3 masks
O    172.18.1.0/30 [110/2] via 192.168.0.3, 00:04:25, FastEthernet0/0
O    172.18.2.0/24 [110/3] via 192.168.0.3, 00:04:25, FastEthernet0/0
O    172.18.3.2/32 [110/2] via 192.168.0.3, 00:04:25, FastEthernet0/0
172.19.0.0/16 is variably subnetted, 3 subnets, 3 masks
O    172.19.1.0/30 [110/2] via 192.168.0.4, 00:05:04, FastEthernet0/0
O    172.19.2.0/24 [110/3] via 192.168.0.4, 00:05:04, FastEthernet0/0
O    172.19.3.1/32 [110/2] via 192.168.0.4, 00:05:04, FastEthernet0/0
172.20.0.0/32 is subnetted, 1 subnets
O    172.20.1.13 [110/2] via 192.168.0.10, 00:05:04, FastEthernet0/0
192.168.0.0/24 is variably subnetted, 2 subnets, 2 masks
C    192.168.0.0/28 is directly connected, FastEthernet0/0
L    192.168.0.1/32 is directly connected, FastEthernet0/0
Router(config)#
```

Neighbor ID	Pri	State	Dead Time	Address	Interface
2.2.2.2	1	2WAY/DROTHER	00:00:37	192.168.0.2	FastEthernet0/0
3.3.3.3	1	2WAY/DROTHER	00:00:34	192.168.0.3	FastEthernet0/0
4.4.4.4	1	FULL/BDR	00:00:36	192.168.0.4	FastEthernet0/0
10.10.10.10	1	FULL/DR	00:00:30	192.168.0.10	FastEthernet0/0
5.5.5.5	0	FULL/ -	00:00:32	172.16.1.2	Serial0/1/0

```
Router(config)#
```

```
C:\Users\admin>tracert 172.19.2.14
```

```
Úýpis trasy k TEST-43EF525371 [172.19.2.14]  
s nejvýše 30 směrováními:
```

```
 1      1 ms      < 1 ms      1 ms  172.16.3.254  
 2      1 ms      < 1 ms      < 1 ms 192.168.0.4  
 3      1 ms      1 ms      1 ms  172.19.1.2  
 4      1 ms      < 1 ms      < 1 ms TEST-43EF525371 [172.19.2.14]
```

```
172.16.0.0/16 is variably subnetted, 5 subnets, 3 masks  
C    172.16.1.0/30 is directly connected, Serial0/1/0  
L    172.16.1.1/32 is directly connected, Serial0/1/0  
O    172.16.2.0/24 [110/98] via 172.16.1.2, 00:00:29, Serial0/1/0  
C    172.16.3.0/24 is directly connected, FastEthernet0/1  
L    172.16.3.254/32 is directly connected, FastEthernet0/1  
172.17.0.0/24 is subnetted, 3 subnets  
O    172.17.1.0 [110/10] via 192.168.0.2, 00:00:29, FastEthernet0/0  
O    172.17.2.0 [110/11] via 192.168.0.2, 00:00:29, FastEthernet0/0  
O    172.17.3.0 [110/2] via 192.168.0.2, 00:13:01, FastEthernet0/0  
172.18.0.0/16 is variably subnetted, 3 subnets, 3 masks  
O    172.18.1.0/30 [110/2] via 192.168.0.3, 00:12:22, FastEthernet0/0  
O    172.18.2.0/24 [110/3] via 192.168.0.3, 00:12:22, FastEthernet0/0  
O    172.18.3.2/32 [110/2] via 192.168.0.3, 00:12:22, FastEthernet0/0  
172.19.0.0/16 is variably subnetted, 3 subnets, 3 masks  
O    172.19.1.0/30 [110/25] via 192.168.0.4, 00:00:13, FastEthernet0/0  
O    172.19.2.0/24 [110/26] via 192.168.0.4, 00:00:13, FastEthernet0/0  
O    172.19.3.1/32 [110/2] via 192.168.0.4, 00:13:01, FastEthernet0/0  
172.20.0.0/32 is subnetted, 1 subnets  
O    172.20.1.13 [110/2] via 192.168.0.10, 00:13:01, FastEthernet0/0  
192.168.0.0/24 is variably subnetted, 2 subnets, 2 masks  
C    192.168.0.0/28 is directly connected, FastEthernet0/0  
L    192.168.0.1/32 is directly connected, FastEthernet0/0  
Router(config-if)#do sh ip ospf int
```

R2

```
172.16.0.0/16 is variably subnetted, 3 subnets, 2 masks
O   172.16.1.0/30 [110/782] via 192.168.0.1, 00:05:26, FastEthernet0/1
O   172.16.2.0/24 [110/783] via 192.168.0.1, 00:05:26, FastEthernet0/1
O   172.16.3.0/24 [110/2] via 192.168.0.1, 00:05:26, FastEthernet0/1
172.17.0.0/16 is variably subnetted, 5 subnets, 2 masks
C   172.17.1.0/24 is directly connected, Serial0/1/1
L   172.17.1.1/32 is directly connected, Serial0/1/1
O   172.17.2.0/24 [110/782] via 172.17.1.2, 00:05:26, Serial0/1/1
C   172.17.3.0/24 is directly connected, FastEthernet0/0
L   172.17.3.254/32 is directly connected, FastEthernet0/0
172.18.0.0/16 is variably subnetted, 3 subnets, 3 masks
O   172.18.1.0/30 [110/2] via 192.168.0.3, 00:04:31, FastEthernet0/1
O   172.18.2.0/24 [110/3] via 192.168.0.3, 00:04:31, FastEthernet0/1
O   172.18.3.2/32 [110/2] via 192.168.0.3, 00:04:31, FastEthernet0/1
172.19.0.0/16 is variably subnetted, 3 subnets, 3 masks
O   172.19.1.0/30 [110/2] via 192.168.0.4, 00:05:26, FastEthernet0/1
O   172.19.2.0/24 [110/3] via 192.168.0.4, 00:05:26, FastEthernet0/1
O   172.19.3.1/32 [110/2] via 192.168.0.4, 00:05:26, FastEthernet0/1
172.20.0.0/32 is subnetted, 1 subnets
O   172.20.1.13 [110/2] via 192.168.0.10, 00:05:26, FastEthernet0/1
192.168.0.0/24 is variably subnetted, 2 subnets, 2 masks
C   192.168.0.0/28 is directly connected, FastEthernet0/1
L   192.168.0.2/32 is directly connected, FastEthernet0/1
Router#
```

Neighbor ID	Pri	State	Dead Time	Address	Interface
1.1.1.1	1	2WAY/DROTHER	00:00:36	192.168.0.1	FastEthernet0/1
3.3.3.3	1	2WAY/DROTHER	00:00:39	192.168.0.3	FastEthernet0/1
4.4.4.4	1	FULL/BDR	00:00:32	192.168.0.4	FastEthernet0/1
10.10.10.10	1	FULL/DR	00:00:36	192.168.0.10	FastEthernet0/1
6.6.6.6	0	FULL/ -	00:00:32	172.17.1.2	Serial0/1/1

```
Router#
```

```
C:\Users\admin>tracert 172.16.2.7
```

```
Úpís trasy k WIN-44M1AETAQ27 [172.16.2.7]  
s nejvýše 30 směrováními:
```

1	1 ms	< 1 ms	< 1 ms	172.17.3.254
2	1 ms	< 1 ms	< 1 ms	192.168.0.1
3	12 ms	11 ms	11 ms	172.16.1.2
4	14 ms	13 ms	13 ms	WIN-44M1AETAQ27 [172.16.2.7]

```
Trasování bylo dokončeno.
```

```
C:\Users\admin>
```

```
172.16.0.0/16 is variably subnetted, 3 subnets, 2 masks
O    172.16.1.0/30 [110/98] via 192.168.0.1, 00:02:19, FastEthernet0/1
O    172.16.2.0/24 [110/99] via 192.168.0.1, 00:02:19, FastEthernet0/1
O    172.16.3.0/24 [110/2] via 192.168.0.1, 00:15:07, FastEthernet0/1
172.17.0.0/16 is variably subnetted, 5 subnets, 2 masks
C    172.17.1.0/24 is directly connected, Serial0/1/1
L    172.17.1.1/32 is directly connected, Serial0/1/1
O    172.17.2.0/24 [110/10] via 172.17.1.2, 00:02:19, Serial0/1/1
C    172.17.3.0/24 is directly connected, FastEthernet0/0
L    172.17.3.254/32 is directly connected, FastEthernet0/0
172.18.0.0/16 is variably subnetted, 3 subnets, 3 masks
O    172.18.1.0/30 [110/49] via 192.168.0.3, 00:01:26, FastEthernet0/1
O    172.18.2.0/24 [110/50] via 192.168.0.3, 00:01:26, FastEthernet0/1
O    172.18.3.2/32 [110/2] via 192.168.0.3, 00:14:12, FastEthernet0/1
172.19.0.0/16 is variably subnetted, 3 subnets, 3 masks
O    172.19.1.0/30 [110/25] via 192.168.0.4, 00:02:03, FastEthernet0/1
O    172.19.2.0/24 [110/26] via 192.168.0.4, 00:02:03, FastEthernet0/1
O    172.19.3.1/32 [110/2] via 192.168.0.4, 00:15:07, FastEthernet0/1
172.20.0.0/32 is subnetted, 1 subnets
O    172.20.1.13 [110/2] via 192.168.0.10, 00:15:07, FastEthernet0/1
192.168.0.0/24 is variably subnetted, 2 subnets, 2 masks
C    192.168.0.0/28 is directly connected, FastEthernet0/1
L    192.168.0.2/32 is directly connected, FastEthernet0/1
Router#
```

R3

```
Gateway of last resort is not set
```

```
    172.16.0.0/16 is variably subnetted, 3 subnets, 2 masks
O    172.16.1.0/30 [110/782] via 192.168.0.1, 00:00:19, FastEthernet0/1
O    172.16.2.0/24 [110/783] via 192.168.0.1, 00:00:19, FastEthernet0/1
O    172.16.3.0/24 [110/2] via 192.168.0.1, 00:00:19, FastEthernet0/1
    172.17.0.0/24 is subnetted, 3 subnets
O    172.17.1.0 [110/782] via 192.168.0.2, 00:00:19, FastEthernet0/1
O    172.17.2.0 [110/783] via 192.168.0.2, 00:00:19, FastEthernet0/1
O    172.17.3.0 [110/2] via 192.168.0.2, 00:00:19, FastEthernet0/1
    172.18.0.0/16 is variably subnetted, 5 subnets, 3 masks
C    172.18.1.0/30 is directly connected, FastEthernet0/0
L    172.18.1.1/32 is directly connected, FastEthernet0/0
O    172.18.2.0/24 [110/2] via 172.18.1.2, 00:00:19, FastEthernet0/0
C    172.18.3.0/24 is directly connected, Loopback1
L    172.18.3.2/32 is directly connected, Loopback1
    172.19.0.0/16 is variably subnetted, 3 subnets, 3 masks
O    172.19.1.0/30 [110/2] via 192.168.0.4, 00:00:19, FastEthernet0/1
O    172.19.2.0/24 [110/3] via 192.168.0.4, 00:00:19, FastEthernet0/1
O    172.19.3.1/32 [110/2] via 192.168.0.4, 00:00:19, FastEthernet0/1
    172.20.0.0/32 is subnetted, 1 subnets
O    172.20.1.13 [110/2] via 192.168.0.10, 00:00:19, FastEthernet0/1
    192.168.0.0/24 is variably subnetted, 2 subnets, 2 masks
C    192.168.0.0/28 is directly connected, FastEthernet0/1
L    192.168.0.3/32 is directly connected, FastEthernet0/1
```

```
Router#traceroute 172.16.2.7
Type escape sequence to abort.
Tracing the route to 172.16.2.7
VRF info: (vrf in name/id, vrf out name/id)
  1 192.168.0.1 0 msec 0 msec 0 msec
  2 172.16.1.2 8 msec 8 msec 8 msec
  3 172.16.2.7 8 msec 8 msec 8 msec
```

```
Router#sh ip ospf neighbor
```

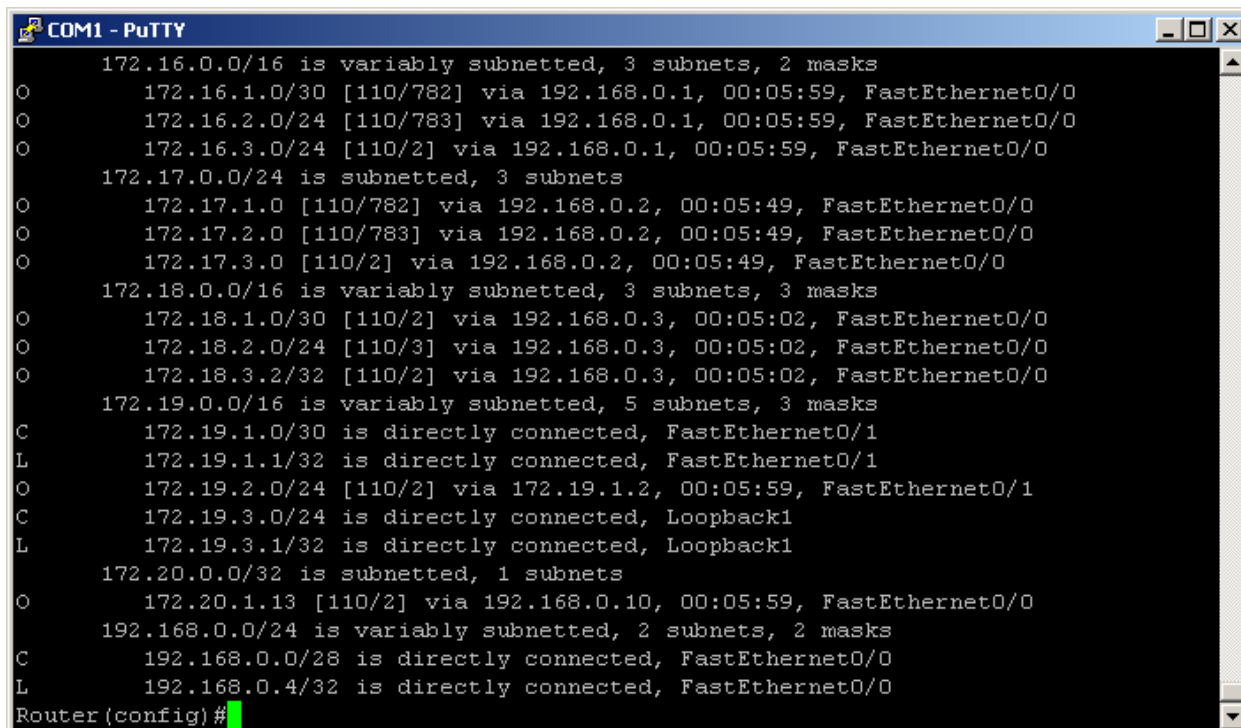
Neighbor ID	Pri	State	Dead Time	Address	Interface
1.1.1.1	1	2WAY/DROTHER	00:00:36	192.168.0.1	FastEthernet0/1
2.2.2.2	1	2WAY/DROTHER	00:00:33	192.168.0.2	FastEthernet0/1
4.4.4.4	1	FULL/BDR	00:00:39	192.168.0.4	FastEthernet0/1
10.10.10.10	1	FULL/DR	00:00:37	192.168.0.10	FastEthernet0/1
11.11.11.11	1	FULL/DR	00:00:39	172.18.1.2	FastEthernet0/0

Gateway of last resort is not set

```
172.16.0.0/16 is variably subnetted, 3 subnets, 2 masks
O    172.16.1.0/30 [110/98] via 192.168.0.1, 00:02:24, FastEthernet0/1
O    172.16.2.0/24 [110/99] via 192.168.0.1, 00:02:24, FastEthernet0/1
O    172.16.3.0/24 [110/2] via 192.168.0.1, 00:14:26, FastEthernet0/1
172.17.0.0/24 is subnetted, 3 subnets
O    172.17.1.0 [110/10] via 192.168.0.2, 00:02:24, FastEthernet0/1
O    172.17.2.0 [110/11] via 192.168.0.2, 00:02:24, FastEthernet0/1
O    172.17.3.0 [110/2] via 192.168.0.2, 00:14:26, FastEthernet0/1
172.18.0.0/16 is variably subnetted, 5 subnets, 3 masks
C    172.18.1.0/30 is directly connected, FastEthernet0/0
L    172.18.1.1/32 is directly connected, FastEthernet0/0
O    172.18.2.0/24 [110/49] via 172.18.1.2, 00:01:31, FastEthernet0/0
C    172.18.3.0/24 is directly connected, Loopback1
L    172.18.3.2/32 is directly connected, Loopback1
172.19.0.0/16 is variably subnetted, 3 subnets, 3 masks
O    172.19.1.0/30 [110/25] via 192.168.0.4, 00:02:07, FastEthernet0/1
O    172.19.2.0/24 [110/26] via 192.168.0.4, 00:02:07, FastEthernet0/1
O    172.19.3.1/32 [110/2] via 192.168.0.4, 00:14:26, FastEthernet0/1
172.20.0.0/32 is subnetted, 1 subnets
O    172.20.1.13 [110/2] via 192.168.0.10, 00:14:26, FastEthernet0/1
192.168.0.0/24 is variably subnetted, 2 subnets, 2 masks
C    192.168.0.0/28 is directly connected, FastEthernet0/1
L    192.168.0.3/32 is directly connected, FastEthernet0/1
```

Router(config)#

R4



```
COM1 - PuTTY
172.16.0.0/16 is variably subnetted, 3 subnets, 2 masks
O    172.16.1.0/30 [110/782] via 192.168.0.1, 00:05:59, FastEthernet0/0
O    172.16.2.0/24 [110/783] via 192.168.0.1, 00:05:59, FastEthernet0/0
O    172.16.3.0/24 [110/2] via 192.168.0.1, 00:05:59, FastEthernet0/0
172.17.0.0/24 is subnetted, 3 subnets
O    172.17.1.0 [110/782] via 192.168.0.2, 00:05:49, FastEthernet0/0
O    172.17.2.0 [110/783] via 192.168.0.2, 00:05:49, FastEthernet0/0
O    172.17.3.0 [110/2] via 192.168.0.2, 00:05:49, FastEthernet0/0
172.18.0.0/16 is variably subnetted, 3 subnets, 3 masks
O    172.18.1.0/30 [110/2] via 192.168.0.3, 00:05:02, FastEthernet0/0
O    172.18.2.0/24 [110/3] via 192.168.0.3, 00:05:02, FastEthernet0/0
O    172.18.3.2/32 [110/2] via 192.168.0.3, 00:05:02, FastEthernet0/0
172.19.0.0/16 is variably subnetted, 5 subnets, 3 masks
C    172.19.1.0/30 is directly connected, FastEthernet0/1
L    172.19.1.1/32 is directly connected, FastEthernet0/1
O    172.19.2.0/24 [110/2] via 172.19.1.2, 00:05:59, FastEthernet0/1
C    172.19.3.0/24 is directly connected, Loopback1
L    172.19.3.1/32 is directly connected, Loopback1
172.20.0.0/32 is subnetted, 1 subnets
O    172.20.1.13 [110/2] via 192.168.0.10, 00:05:59, FastEthernet0/0
192.168.0.0/24 is variably subnetted, 2 subnets, 2 masks
C    192.168.0.0/28 is directly connected, FastEthernet0/0
L    192.168.0.4/32 is directly connected, FastEthernet0/0
Router(config)#
```

```
COM1 - PuTTY
172.16.0.0/16 is variably subnetted, 3 subnets, 2 masks
O   172.16.1.0/30 [110/98] via 192.168.0.1, 00:02:18, FastEthernet0/0
O   172.16.2.0/24 [110/99] via 192.168.0.1, 00:02:18, FastEthernet0/0
O   172.16.3.0/24 [110/2] via 192.168.0.1, 00:15:08, FastEthernet0/0
172.17.0.0/24 is subnetted, 3 subnets
O   172.17.1.0 [110/10] via 192.168.0.2, 00:02:18, FastEthernet0/0
O   172.17.2.0 [110/11] via 192.168.0.2, 00:02:18, FastEthernet0/0
O   172.17.3.0 [110/2] via 192.168.0.2, 00:14:58, FastEthernet0/0
172.18.0.0/16 is variably subnetted, 3 subnets, 3 masks
O   172.18.1.0/30 [110/49] via 192.168.0.3, 00:01:25, FastEthernet0/0
O   172.18.2.0/24 [110/50] via 192.168.0.3, 00:01:25, FastEthernet0/0
O   172.18.3.2/32 [110/2] via 192.168.0.3, 00:14:11, FastEthernet0/0
172.19.0.0/16 is variably subnetted, 5 subnets, 3 masks
C   172.19.1.0/30 is directly connected, FastEthernet0/1
L   172.19.1.1/32 is directly connected, FastEthernet0/1
O   172.19.2.0/24 [110/25] via 172.19.1.2, 00:02:02, FastEthernet0/1
C   172.19.3.0/24 is directly connected, Loopback1
L   172.19.3.1/32 is directly connected, Loopback1
172.20.0.0/32 is subnetted, 1 subnets
O   172.20.1.13 [110/2] via 192.168.0.10, 00:15:08, FastEthernet0/0
192.168.0.0/24 is variably subnetted, 2 subnets, 2 masks
C   192.168.0.0/28 is directly connected, FastEthernet0/0
L   192.168.0.4/32 is directly connected, FastEthernet0/0
kappachino(config)#
```

R5

```
COM1 - PuTTY
Gateway of last resort is not set

    172.16.0.0/16 is variably subnetted, 5 subnets, 3 masks
C     172.16.1.0/30 is directly connected, Serial0/3/0
L     172.16.1.2/32 is directly connected, Serial0/3/0
C     172.16.2.0/24 is directly connected, FastEthernet0/1
L     172.16.2.254/32 is directly connected, FastEthernet0/1
O     172.16.3.0/24 [110/782] via 172.16.1.1, 00:27:24, Serial0/3/0
    172.17.0.0/24 is subnetted, 3 subnets
O     172.17.1.0 [110/1563] via 172.16.1.1, 00:05:21, Serial0/3/0
O     172.17.2.0 [110/1564] via 172.16.1.1, 00:05:21, Serial0/3/0
O     172.17.3.0 [110/783] via 172.16.1.1, 00:05:21, Serial0/3/0
    172.18.0.0/16 is variably subnetted, 3 subnets, 3 masks
O     172.18.1.0/30 [110/783] via 172.16.1.1, 00:04:33, Serial0/3/0
O     172.18.2.0/24 [110/784] via 172.16.1.1, 00:04:33, Serial0/3/0
O     172.18.3.2/32 [110/783] via 172.16.1.1, 00:04:33, Serial0/3/0
    172.19.0.0/16 is variably subnetted, 3 subnets, 3 masks
O     172.19.1.0/30 [110/783] via 172.16.1.1, 00:05:21, Serial0/3/0
O     172.19.2.0/24 [110/784] via 172.16.1.1, 00:05:21, Serial0/3/0
O     172.19.3.1/32 [110/783] via 172.16.1.1, 00:05:21, Serial0/3/0
    172.20.0.0/32 is subnetted, 1 subnets
O     172.20.1.13 [110/783] via 172.16.1.1, 00:26:50, Serial0/3/0
    192.168.0.0/28 is subnetted, 1 subnets
O     192.168.0.0 [110/782] via 172.16.1.1, 00:26:50, Serial0/3/0
```

```
Router#sh ip ospf nei

Neighbor ID      Pri   State           Dead Time   Address        Interface
1.1.1.1          0     FULL/  -        00:00:33    172.16.1.1    Serial0/3/0
Router#
```

```
Příkaz PING na 172.19.3.1 - 32 bajtů dat:
Odpověď od 172.19.3.1: bajty=32 čas=12ms TTL=253
Odpověď od 172.19.3.1: bajty=32 čas=10ms TTL=253
Odpověď od 172.19.3.1: bajty=32 čas=10ms TTL=253
Odpověď od 172.19.3.1: bajty=32 čas=10ms TTL=253

Statistika ping pro 172.19.3.1:
Pakety: Odeslané = 4, Přijaté = 4, Ztracené = 0 (ztráta 0%).
Přibližná doba do přijetí odezvy v milisekundách:
Minimum = 10ms, Maximum = 12ms, Průměr = 10ms

C:\Users\admin>tracert 172.19.2.14

Úypis trasy k TEST-43EF525371 [172.19.2.14]
s nejvýše 30 směrováními:

 1    3 ms    < 1 ms    < 1 ms    172.16.2.254
 2   12 ms   11 ms     11 ms    172.16.1.1
 3   12 ms   12 ms     12 ms    192.168.0.4
 4   12 ms   12 ms     11 ms    172.19.1.2
 5   15 ms   14 ms     14 ms    TEST-43EF525371 [172.19.2.14]

Trasování bylo dokončeno.

C:\Users\admin>
```

```
COM1 - PuTTY
172.16.0.0/16 is variably subnetted, 5 subnets, 3 masks
C    172.16.1.0/30 is directly connected, Serial0/3/0
L    172.16.1.2/32 is directly connected, Serial0/3/0
C    172.16.2.0/24 is directly connected, FastEthernet0/1
L    172.16.2.254/32 is directly connected, FastEthernet0/1
O    172.16.3.0/24 [110/98] via 172.16.1.1, 00:02:52, Serial0/3/0
172.17.0.0/24 is subnetted, 3 subnets
O    172.17.1.0 [110/107] via 172.16.1.1, 00:02:17, Serial0/3/0
O    172.17.2.0 [110/108] via 172.16.1.1, 00:02:17, Serial0/3/0
O    172.17.3.0 [110/99] via 172.16.1.1, 00:02:52, Serial0/3/0
172.18.0.0/16 is variably subnetted, 3 subnets, 3 masks
O    172.18.1.0/30 [110/146] via 172.16.1.1, 00:01:24, Serial0/3/0
O    172.18.2.0/24 [110/147] via 172.16.1.1, 00:01:24, Serial0/3/0
O    172.18.3.2/32 [110/99] via 172.16.1.1, 00:02:52, Serial0/3/0
172.19.0.0/16 is variably subnetted, 3 subnets, 3 masks
O    172.19.1.0/30 [110/122] via 172.16.1.1, 00:02:01, Serial0/3/0
O    172.19.2.0/24 [110/123] via 172.16.1.1, 00:02:01, Serial0/3/0
O    172.19.3.1/32 [110/99] via 172.16.1.1, 00:02:52, Serial0/3/0
172.20.0.0/32 is subnetted, 1 subnets
O    172.20.1.13 [110/99] via 172.16.1.1, 00:02:52, Serial0/3/0
192.168.0.0/28 is subnetted, 1 subnets
O    192.168.0.0 [110/98] via 172.16.1.1, 00:02:52, Serial0/3/0
Router#
```

R6

```
COM1 - PuTTY
172.16.0.0/16 is variably subnetted, 3 subnets, 2 masks
O   172.16.1.0/30 [110/1563] via 172.17.1.1, 00:04:58, Serial0/3/1
O   172.16.2.0/24 [110/1564] via 172.17.1.1, 00:04:58, Serial0/3/1
O   172.16.3.0/24 [110/783] via 172.17.1.1, 00:04:58, Serial0/3/1
172.17.0.0/16 is variably subnetted, 5 subnets, 2 masks
C   172.17.1.0/24 is directly connected, Serial0/3/1
L   172.17.1.2/32 is directly connected, Serial0/3/1
C   172.17.2.0/24 is directly connected, FastEthernet0/0
L   172.17.2.254/32 is directly connected, FastEthernet0/0
O   172.17.3.0/24 [110/782] via 172.17.1.1, 00:04:58, Serial0/3/1
172.18.0.0/16 is variably subnetted, 3 subnets, 3 masks
O   172.18.1.0/30 [110/783] via 172.17.1.1, 00:04:10, Serial0/3/1
O   172.18.2.0/24 [110/784] via 172.17.1.1, 00:04:10, Serial0/3/1
O   172.18.3.2/32 [110/783] via 172.17.1.1, 00:04:10, Serial0/3/1
172.19.0.0/16 is variably subnetted, 3 subnets, 3 masks
O   172.19.1.0/30 [110/783] via 172.17.1.1, 00:04:58, Serial0/3/1
O   172.19.2.0/24 [110/784] via 172.17.1.1, 00:04:58, Serial0/3/1
O   172.19.3.1/32 [110/783] via 172.17.1.1, 00:04:58, Serial0/3/1
172.20.0.0/32 is subnetted, 1 subnets
O   172.20.1.13 [110/783] via 172.17.1.1, 00:04:58, Serial0/3/1
192.168.0.0/28 is subnetted, 1 subnets
O   192.168.0.0 [110/782] via 172.17.1.1, 00:04:58, Serial0/3/1
R6#
```

```
COM1 - PuTTY
R6#traceroute 172.18.2.8
Type escape sequence to abort.
Tracing the route to 172.18.2.8
VRF info: (vrf in name/id, vrf out name/id)
 1 172.17.1.1 8 msec 8 msec 8 msec
 2 192.168.0.3 8 msec 8 msec 8 msec
 3 172.18.1.2 8 msec 8 msec 8 msec
 4 172.18.2.8 20 msec 8 msec 8 msec
R6#
```

```
COM1 - PuTTY
R6#sh ip ospf neighbor

Neighbor ID    Pri   State           Dead Time   Address        Interface
2.2.2.2        0     FULL/ -         00:00:31    172.17.1.1     Serial0/3/1
R6#
```

```
COM1 - PuTTY
172.16.0.0/16 is variably subnetted, 3 subnets, 2 masks
O   172.16.1.0/30 [110/107] via 172.17.1.1, 00:02:20, Serial0/3/1
O   172.16.2.0/24 [110/108] via 172.17.1.1, 00:02:20, Serial0/3/1
O   172.16.3.0/24 [110/11] via 172.17.1.1, 00:02:35, Serial0/3/1
172.17.0.0/16 is variably subnetted, 5 subnets, 2 masks
C   172.17.1.0/24 is directly connected, Serial0/3/1
L   172.17.1.2/32 is directly connected, Serial0/3/1
C   172.17.2.0/24 is directly connected, FastEthernet0/0
L   172.17.2.254/32 is directly connected, FastEthernet0/0
O   172.17.3.0/24 [110/10] via 172.17.1.1, 00:02:35, Serial0/3/1
172.18.0.0/16 is variably subnetted, 3 subnets, 3 masks
O   172.18.1.0/30 [110/58] via 172.17.1.1, 00:01:30, Serial0/3/1
O   172.18.2.0/24 [110/59] via 172.17.1.1, 00:01:30, Serial0/3/1
O   172.18.3.2/32 [110/11] via 172.17.1.1, 00:02:35, Serial0/3/1
172.19.0.0/16 is variably subnetted, 3 subnets, 3 masks
O   172.19.1.0/30 [110/34] via 172.17.1.1, 00:02:07, Serial0/3/1
O   172.19.2.0/24 [110/35] via 172.17.1.1, 00:02:07, Serial0/3/1
O   172.19.3.1/32 [110/11] via 172.17.1.1, 00:02:35, Serial0/3/1
172.20.0.0/32 is subnetted, 1 subnets
O   172.20.1.13 [110/11] via 172.17.1.1, 00:02:35, Serial0/3/1
192.168.0.0/28 is subnetted, 1 subnets
O   192.168.0.0 [110/10] via 172.17.1.1, 00:02:35, Serial0/3/1
R6#
```

R10

```
172.17.0.0/24 is subnetted, 3 subnets
O   172.17.1.0 [110/782] via 192.168.0.2, 00:04:26, FastEthernet0/0
O   172.17.3.0 [110/2] via 192.168.0.2, 00:04:26, FastEthernet0/0
O   172.17.2.0 [110/783] via 192.168.0.2, 00:04:26, FastEthernet0/0
172.16.0.0/16 is variably subnetted, 3 subnets, 2 masks
O   172.16.1.0/30 [110/782] via 192.168.0.1, 00:04:26, FastEthernet0/0
O   172.16.2.0/24 [110/783] via 192.168.0.1, 00:04:26, FastEthernet0/0
O   172.16.3.0/24 [110/2] via 192.168.0.1, 00:04:28, FastEthernet0/0
172.19.0.0/16 is variably subnetted, 3 subnets, 3 masks
O   172.19.3.1/32 [110/2] via 192.168.0.4, 00:04:28, FastEthernet0/0
O   172.19.2.0/24 [110/3] via 192.168.0.4, 00:04:28, FastEthernet0/0
O   172.19.1.0/30 [110/2] via 192.168.0.4, 00:04:28, FastEthernet0/0
172.18.0.0/16 is variably subnetted, 3 subnets, 3 masks
O   172.18.2.0/24 [110/3] via 192.168.0.3, 00:04:33, FastEthernet0/0
O   172.18.3.2/32 [110/2] via 192.168.0.3, 00:04:33, FastEthernet0/0
O   172.18.1.0/30 [110/2] via 192.168.0.3, 00:04:33, FastEthernet0/0
172.20.0.0/24 is subnetted, 1 subnets
C   172.20.1.0 is directly connected, Loopback1
192.168.0.0/28 is subnetted, 1 subnets
C   192.168.0.0 is directly connected, FastEthernet0/0
```

```
1.1.1.1      1 FULL/DROTHER  00:00:32  192.168.0.1  FastEthernet0/0
2.2.2.2      1 FULL/DROTHER  00:00:38  192.168.0.2  FastEthernet0/0
3.3.3.3      1 FULL/DROTHER  00:00:35  192.168.0.3  FastEthernet0/0
4.4.4.4      1 FULL/BDR      00:00:38  192.168.0.4  FastEthernet0/0
```

Tracing the route to 172.16.2.7

```
1 192.168.0.1 0 msec 0 msec 0 msec
2 172.16.1.2 12 msec 8 msec 8 msec
3 172.16.2.7 16 msec 8 msec 8 msec
```

R11

172.17.0.0/24 is subnetted, 3 subnets

- O 172.17.1.0 [110/783] via 172.18.1.1, 00:05:25, FastEthernet0/0
- O 172.17.3.0 [110/3] via 172.18.1.1, 00:05:25, FastEthernet0/0
- O 172.17.2.0 [110/784] via 172.18.1.1, 00:05:25, FastEthernet0/0

172.16.0.0/16 is variably subnetted, 3 subnets, 2 masks

- O 172.16.1.0/30 [110/783] via 172.18.1.1, 00:05:25, FastEthernet0/0
- O 172.16.2.0/24 [110/784] via 172.18.1.1, 00:05:25, FastEthernet0/0
- O 172.16.3.0/24 [110/3] via 172.18.1.1, 00:05:26, FastEthernet0/0

172.19.0.0/16 is variably subnetted, 3 subnets, 3 masks

- O 172.19.3.1/32 [110/3] via 172.18.1.1, 00:05:26, FastEthernet0/0
- O 172.19.2.0/24 [110/4] via 172.18.1.1, 00:05:26, FastEthernet0/0
- O 172.19.1.0/30 [110/3] via 172.18.1.1, 00:05:26, FastEthernet0/0

172.18.0.0/16 is variably subnetted, 3 subnets, 3 masks

- C 172.18.2.0/24 is directly connected, FastEthernet0/1
- O 172.18.3.2/32 [110/2] via 172.18.1.1, 00:05:28, FastEthernet0/0
- C 172.18.1.0/30 is directly connected, FastEthernet0/0

172.20.0.0/32 is subnetted, 1 subnets

- O 172.20.1.13 [110/3] via 172.18.1.1, 00:05:28, FastEthernet0/0

192.168.0.0/28 is subnetted, 1 subnets

- O 192.168.0.0 [110/2] via 172.18.1.1, 00:05:28, FastEthernet0/0

1	3 ms	1 ms	1 ms	172.18.2.254
2	1 ms	1 ms	1 ms	172.18.1.1
3	1 ms	1 ms	1 ms	192.168.0.2
4	12 ms	11 ms	11 ms	172.17.1.2
5	14 ms	14 ms	13 ms	WIN-44M1AETAQ27 [172.17.2.15]

R12

Gateway of last resort is not set

172.17.0.0/24 is subnetted, 3 subnets

- O 172.17.1.0 [110/783] via 172.19.1.1, 00:04:33, FastEthernet0/0
- O 172.17.3.0 [110/3] via 172.19.1.1, 00:04:33, FastEthernet0/0
- O 172.17.2.0 [110/784] via 172.19.1.1, 00:04:33, FastEthernet0/0

172.16.0.0/16 is variably subnetted, 3 subnets, 2 masks

- O 172.16.1.0/30 [110/783] via 172.19.1.1, 00:04:33, FastEthernet0/0
- O 172.16.2.0/24 [110/784] via 172.19.1.1, 00:04:33, FastEthernet0/0
- O 172.16.3.0/24 [110/3] via 172.19.1.1, 00:04:34, FastEthernet0/0

172.19.0.0/16 is variably subnetted, 3 subnets, 3 masks

- O 172.19.3.1/32 [110/2] via 172.19.1.1, 00:04:34, FastEthernet0/0
- C 172.19.2.0/24 is directly connected, FastEthernet0/1
- C 172.19.1.0/30 is directly connected, FastEthernet0/0

172.18.0.0/16 is variably subnetted, 3 subnets, 3 masks

- O 172.18.2.0/24 [110/4] via 172.19.1.1, 00:04:36, FastEthernet0/0
- O 172.18.3.2/32 [110/3] via 172.19.1.1, 00:04:36, FastEthernet0/0
- O 172.18.1.0/30 [110/3] via 172.19.1.1, 00:04:36, FastEthernet0/0

172.20.0.0/32 is subnetted, 1 subnets

- O 172.20.1.13 [110/3] via 172.19.1.1, 00:04:36, FastEthernet0/0

192.168.0.0/28 is subnetted, 1 subnets

- O 192.168.0.0 [110/2] via 172.19.1.1, 00:04:36, FastEthernet0/0

C:\Documents and Settings\Administrator>tracert 172.16.2.7

Výpis trasy k 172.16.2.7 s nejvýše 30 směrováními

1	2 ms	< 1 ms	1 ms	172.19.2.254
2	1 ms	1 ms	< 1 ms	172.19.1.1
3	1 ms	1 ms	1 ms	192.168.0.1
4	12 ms	11 ms	13 ms	172.16.1.2
5	14 ms	3 ms	3 ms	172.16.2.7

Trasování bylo dokončeno.
