**1г)**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Название устройства** | **Тип и номер интерфейса** | **IP-адрес интерфейса** | **Маска подсети** | **Название устройства, с которым соединен интерфейс** |
| Router0 | Se0/0 | 199.1.1.1 | 255.255.255.252 | Router1 |
|  | Se1/0 | 199.2.1.1 | 255.255.255.252 | Router2 |
|  | Se2/0 | 199.3.1.1 | 255.255.255.252 | Router3 |
|  |  |  |  |  |
| Router1 | Se0/0 | 199.1.1.2 | 255.255.255.252 | Router0 |
|  | Se1/0 | 199.4.1.2 | 255.255.255.252 | Router4 |
|  |  |  |  |  |
| Router2 | Se0/0 | 199.2.1.2 | 255.255.255.252 | Router0 |
|  | Se1/0 | 199.5.1.2 | 255.255.255.252 | Router4 |
|  |  |  |  |  |
| Router3 | Se0/0 | 199.3.1.2 | 255.255.255.252 | Router0 |
|  | Se1/0 | 199.6.1.2 | 255.255.255.252 | Router4 |
|  |  |  |  |  |
| Router4 | Se0/0 | 199.4.1.1 | 255.255.255.252 | Router1 |
|  | Se1/0 | 199.5.1.1 | 255.255.255.252 | Router2 |
|  | Se2/0 | 199.6.1.1 | 255.255.255.252 | Router3 |

**2в)**

**Router0**

Routing Protocol is "eigrp 100 "

Outgoing update filter list for all interfaces is not set

Incoming update filter list for all interfaces is not set

Default networks flagged in outgoing updates

Default networks accepted from incoming updates

EIGRP metric weight K1=1, K2=0, K3=1, K4=0, K5=0

EIGRP maximum hopcount 100

EIGRP maximum metric variance 1

Redistributing: eigrp 100

Automatic network summarization is not in effect

Maximum path: 4

Routing for Networks:

199.1.1.0/30

199.2.1.0/30

199.3.1.0/30

192.168.1.0

Routing Information Sources:

Gateway Distance Last Update

199.1.1.2 90 8864

199.3.1.2 90 9100

199.2.1.2 90 9188

Distance: internal 90 external 170

**Router1**

Routing Protocol is "eigrp 100 "

Outgoing update filter list for all interfaces is not set

Incoming update filter list for all interfaces is not set

Default networks flagged in outgoing updates

Default networks accepted from incoming updates

EIGRP metric weight K1=1, K2=0, K3=1, K4=0, K5=0

EIGRP maximum hopcount 100

EIGRP maximum metric variance 1

Redistributing: eigrp 100

Automatic network summarization is not in effect

Maximum path: 4

Routing for Networks:

199.1.1.0/30

199.4.1.0/30

Routing Information Sources:

Gateway Distance Last Update

199.4.1.1 90 6311

199.1.1.1 90 8865

Distance: internal 90 external 170

**Router2**

Routing Protocol is "eigrp 100 "

Outgoing update filter list for all interfaces is not set

Incoming update filter list for all interfaces is not set

Default networks flagged in outgoing updates

Default networks accepted from incoming updates

EIGRP metric weight K1=1, K2=0, K3=1, K4=0, K5=0

EIGRP maximum hopcount 100

EIGRP maximum metric variance 1

Redistributing: eigrp 100

Automatic network summarization is not in effect

Maximum path: 4

Routing for Networks:

199.2.1.0/30

199.5.1.0/30

Routing Information Sources:

Gateway Distance Last Update

199.5.1.1 90 8270

199.2.1.1 90 9188

Distance: internal 90 external 170

**Router3**

Routing Protocol is "eigrp 100 "

Outgoing update filter list for all interfaces is not set

Incoming update filter list for all interfaces is not set

Default networks flagged in outgoing updates

Default networks accepted from incoming updates

EIGRP metric weight K1=1, K2=0, K3=1, K4=0, K5=0

EIGRP maximum hopcount 100

EIGRP maximum metric variance 1

Redistributing: eigrp 100

Automatic network summarization is not in effect

Maximum path: 4

Routing for Networks:

199.3.1.0/30

199.6.1.0/30

Routing Information Sources:

Gateway Distance Last Update

199.6.1.1 90 7785

199.3.1.1 90 9101

Distance: internal 90 external 170

**Router4**

Routing Protocol is "eigrp 100 "

Outgoing update filter list for all interfaces is not set

Incoming update filter list for all interfaces is not set

Default networks flagged in outgoing updates

Default networks accepted from incoming updates

EIGRP metric weight K1=1, K2=0, K3=1, K4=0, K5=0

EIGRP maximum hopcount 100

EIGRP maximum metric variance 1

Redistributing: eigrp 100

Automatic network summarization is not in effect

Maximum path: 4

Routing for Networks:

199.4.1.0/30

199.5.1.0/30

199.6.1.0/30

192.168.2.0

Routing Information Sources:

Gateway Distance Last Update

199.4.1.2 90 7094

199.6.1.2 90 7785

199.5.1.2 90 8270

Distance: internal 90 external 170

**2г)**

**Router0**

IP-EIGRP neighbors for process 100

H Address Interface Hold Uptime SRTT RTO Q Seq

(sec) (ms) Cnt Num

0 199.1.1.2 Se0/0 12 00:18:45 40 1000 0 15

1 199.3.1.2 Se2/0 11 00:18:45 40 1000 0 21

2 199.2.1.2 Se1/0 10 00:18:45 40 1000 0 23

**Router1**

IP-EIGRP neighbors for process 100

H Address Interface Hold Uptime SRTT RTO Q Seq

(sec) (ms) Cnt Num

0 199.4.1.1 Se1/0 10 00:19:22 40 1000 0 20

1 199.1.1.1 Se0/0 12 00:19:19 40 1000 0 16

**Router2**

IP-EIGRP neighbors for process 100

H Address Interface Hold Uptime SRTT RTO Q Seq

(sec) (ms) Cnt Num

0 199.5.1.1 Se1/0 12 00:19:56 40 1000 0 20

1 199.2.1.1 Se0/0 14 00:19:55 40 1000 0 16

**Router3**

IP-EIGRP neighbors for process 100

H Address Interface Hold Uptime SRTT RTO Q Seq

(sec) (ms) Cnt Num

0 199.6.1.1 Se1/0 12 00:20:53 40 1000 0 20

1 199.3.1.1 Se0/0 12 00:20:51 40 1000 0 17

**Router4**

IP-EIGRP neighbors for process 100

H Address Interface Hold Uptime SRTT RTO Q Seq

(sec) (ms) Cnt Num

0 199.4.1.2 Se0/0 11 00:21:31 40 1000 0 16

1 199.6.1.2 Se2/0 12 00:21:30 40 1000 0 22

2 199.5.1.2 Se1/0 12 00:21:30 40 1000 0 24

**2д)**

**Router0**

IP-EIGRP Topology Table for AS 100/ID(192.168.1.1)

Codes: P - Passive, A - Active, U - Update, Q - Query, R - Reply,

r - Reply status

P 192.168.1.0/24, 1 successors, FD is 128256

via Connected, Loopback1

P 192.168.2.0/24, 3 successors, FD is 2809856

via 199.3.1.2 (2809856/2297856), Serial2/0

via 199.2.1.2 (2809856/2297856), Serial1/0

via 199.1.1.2 (2809856/2297856), Serial0/0

P 199.1.1.0/30, 1 successors, FD is 2169856

via Connected, Serial0/0

P 199.2.1.0/30, 1 successors, FD is 2169856

via Connected, Serial1/0

P 199.3.1.0/30, 1 successors, FD is 2169856

via Connected, Serial2/0

P 199.4.1.0/30, 1 successors, FD is 2681856

via 199.1.1.2 (2681856/2169856), Serial0/0

P 199.5.1.0/30, 1 successors, FD is 2681856

via 199.2.1.2 (2681856/2169856), Serial1/0

P 199.6.1.0/30, 1 successors, FD is 2681856

via 199.3.1.2 (2681856/2169856), Serial2/0

**Router1**

IP-EIGRP Topology Table for AS 100/ID(199.4.1.2)

Codes: P - Passive, A - Active, U - Update, Q - Query, R - Reply,

r - Reply status

P 192.168.1.0/24, 1 successors, FD is 2297856

via 199.1.1.1 (2297856/128256), Serial0/0

P 192.168.2.0/24, 1 successors, FD is 2297856

via 199.4.1.1 (2297856/128256), Serial1/0

P 199.1.1.0/30, 1 successors, FD is 2169856

via Connected, Serial0/0

P 199.2.1.0/30, 1 successors, FD is 2681856

via 199.1.1.1 (2681856/2169856), Serial0/0

P 199.3.1.0/30, 1 successors, FD is 2681856

via 199.1.1.1 (2681856/2169856), Serial0/0

P 199.4.1.0/30, 1 successors, FD is 2169856

via Connected, Serial1/0

P 199.5.1.0/30, 1 successors, FD is 2681856

via 199.4.1.1 (2681856/2169856), Serial1/0

P 199.6.1.0/30, 1 successors, FD is 2681856

via 199.4.1.1 (2681856/2169856), Serial1/0

**Router2**

IP-EIGRP Topology Table for AS 100/ID(199.5.1.2)

Codes: P - Passive, A - Active, U - Update, Q - Query, R - Reply,

r - Reply status

P 192.168.1.0/24, 1 successors, FD is 2297856

via 199.2.1.1 (2297856/128256), Serial0/0

P 192.168.2.0/24, 1 successors, FD is 2297856

via 199.5.1.1 (2297856/128256), Serial1/0

P 199.1.1.0/30, 1 successors, FD is 2681856

via 199.2.1.1 (2681856/2169856), Serial0/0

P 199.2.1.0/30, 1 successors, FD is 2169856

via Connected, Serial0/0

P 199.3.1.0/30, 1 successors, FD is 2681856

via 199.2.1.1 (2681856/2169856), Serial0/0

P 199.4.1.0/30, 1 successors, FD is 2681856

via 199.5.1.1 (2681856/2169856), Serial1/0

P 199.5.1.0/30, 1 successors, FD is 2169856

via Connected, Serial1/0

P 199.6.1.0/30, 1 successors, FD is 2681856

via 199.5.1.1 (2681856/2169856), Serial1/0

**Router3**

IP-EIGRP Topology Table for AS 100/ID(199.6.1.2)

Codes: P - Passive, A - Active, U - Update, Q - Query, R - Reply,

r - Reply status

P 192.168.1.0/24, 1 successors, FD is 2297856

via 199.3.1.1 (2297856/128256), Serial0/0

P 192.168.2.0/24, 1 successors, FD is 2297856

via 199.6.1.1 (2297856/128256), Serial1/0

P 199.1.1.0/30, 1 successors, FD is 2681856

via 199.3.1.1 (2681856/2169856), Serial0/0

P 199.2.1.0/30, 1 successors, FD is 2681856

via 199.3.1.1 (2681856/2169856), Serial0/0

P 199.3.1.0/30, 1 successors, FD is 2169856

via Connected, Serial0/0

P 199.4.1.0/30, 1 successors, FD is 2681856

via 199.6.1.1 (2681856/2169856), Serial1/0

P 199.5.1.0/30, 1 successors, FD is 2681856

via 199.6.1.1 (2681856/2169856), Serial1/0

P 199.6.1.0/30, 1 successors, FD is 2169856

via Connected, Serial1/0

**Router4**

IP-EIGRP Topology Table for AS 100/ID(192.168.2.1)

Codes: P - Passive, A - Active, U - Update, Q - Query, R - Reply,

r - Reply status

P 192.168.1.0/24, 3 successors, FD is 2809856

via 199.4.1.2 (2809856/2297856), Serial0/0

via 199.6.1.2 (2809856/2297856), Serial2/0

via 199.5.1.2 (2809856/2297856), Serial1/0

P 192.168.2.0/24, 1 successors, FD is 128256

via Connected, Loopback2

P 199.1.1.0/30, 1 successors, FD is 2681856

via 199.4.1.2 (2681856/2169856), Serial0/0

P 199.2.1.0/30, 1 successors, FD is 2681856

via 199.5.1.2 (2681856/2169856), Serial1/0

P 199.3.1.0/30, 1 successors, FD is 2681856

via 199.6.1.2 (2681856/2169856), Serial2/0

P 199.4.1.0/30, 1 successors, FD is 2169856

via Connected, Serial0/0

P 199.5.1.0/30, 1 successors, FD is 2169856

via Connected, Serial1/0

P 199.6.1.0/30, 1 successors, FD is 2169856

via Connected, Serial2/0

**2е)**

**Router0**

Codes: C - connected, S - static, I - IGRP, 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, E - EGP

i - IS-IS, 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 192.168.1.0/24 is directly connected, Loopback1

D 192.168.2.0/24 [90/2809856] via 199.3.1.2, 00:26:57, Serial2/0

[90/2809856] via 199.2.1.2, 00:26:57, Serial1/0

[90/2809856] via 199.1.1.2, 00:26:57, Serial0/0

199.1.1.0/30 is subnetted, 1 subnets

C 199.1.1.0 is directly connected, Serial0/0

199.2.1.0/30 is subnetted, 1 subnets

C 199.2.1.0 is directly connected, Serial1/0

199.3.1.0/30 is subnetted, 1 subnets

C 199.3.1.0 is directly connected, Serial2/0

199.4.1.0/30 is subnetted, 1 subnets

D 199.4.1.0 [90/2681856] via 199.1.1.2, 00:31:05, Serial0/0

199.5.1.0/30 is subnetted, 1 subnets

D 199.5.1.0 [90/2681856] via 199.2.1.2, 00:31:04, Serial1/0

199.6.1.0/30 is subnetted, 1 subnets

D 199.6.1.0 [90/2681856] via 199.3.1.2, 00:31:04, Serial2/0

**Router1**

Codes: C - connected, S - static, I - IGRP, 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, E - EGP

i - IS-IS, 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

D 192.168.1.0/24 [90/2297856] via 199.1.1.1, 00:28:17, Serial0/0

D 192.168.2.0/24 [90/2297856] via 199.4.1.1, 00:27:36, Serial1/0

199.1.1.0/30 is subnetted, 1 subnets

C 199.1.1.0 is directly connected, Serial0/0

199.2.1.0/30 is subnetted, 1 subnets

D 199.2.1.0 [90/2681856] via 199.1.1.1, 00:31:43, Serial0/0

199.3.1.0/30 is subnetted, 1 subnets

D 199.3.1.0 [90/2681856] via 199.1.1.1, 00:31:43, Serial0/0

199.4.1.0/30 is subnetted, 1 subnets

C 199.4.1.0 is directly connected, Serial1/0

199.5.1.0/30 is subnetted, 1 subnets

D 199.5.1.0 [90/2681856] via 199.4.1.1, 00:31:44, Serial1/0

199.6.1.0/30 is subnetted, 1 subnets

D 199.6.1.0 [90/2681856] via 199.4.1.1, 00:31:44, Serial1/0

**Router2**

Codes: C - connected, S - static, I - IGRP, 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, E - EGP

i - IS-IS, 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

D 192.168.1.0/24 [90/2297856] via 199.2.1.1, 00:28:44, Serial0/0

D 192.168.2.0/24 [90/2297856] via 199.5.1.1, 00:28:02, Serial1/0

199.1.1.0/30 is subnetted, 1 subnets

D 199.1.1.0 [90/2681856] via 199.2.1.1, 00:32:10, Serial0/0

199.2.1.0/30 is subnetted, 1 subnets

C 199.2.1.0 is directly connected, Serial0/0

199.3.1.0/30 is subnetted, 1 subnets

D 199.3.1.0 [90/2681856] via 199.2.1.1, 00:32:10, Serial0/0

199.4.1.0/30 is subnetted, 1 subnets

D 199.4.1.0 [90/2681856] via 199.5.1.1, 00:32:11, Serial1/0

199.5.1.0/30 is subnetted, 1 subnets

C 199.5.1.0 is directly connected, Serial1/0

199.6.1.0/30 is subnetted, 1 subnets

D 199.6.1.0 [90/2681856] via 199.5.1.1, 00:32:11, Serial1/0

**Router3**

Codes: C - connected, S - static, I - IGRP, 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, E - EGP

i - IS-IS, 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

D 192.168.1.0/24 [90/2297856] via 199.3.1.1, 00:29:11, Serial0/0

D 192.168.2.0/24 [90/2297856] via 199.6.1.1, 00:28:30, Serial1/0

199.1.1.0/30 is subnetted, 1 subnets

D 199.1.1.0 [90/2681856] via 199.3.1.1, 00:32:37, Serial0/0

199.2.1.0/30 is subnetted, 1 subnets

D 199.2.1.0 [90/2681856] via 199.3.1.1, 00:32:37, Serial0/0

199.3.1.0/30 is subnetted, 1 subnets

C 199.3.1.0 is directly connected, Serial0/0

199.4.1.0/30 is subnetted, 1 subnets

D 199.4.1.0 [90/2681856] via 199.6.1.1, 00:32:39, Serial1/0

199.5.1.0/30 is subnetted, 1 subnets

D 199.5.1.0 [90/2681856] via 199.6.1.1, 00:32:38, Serial1/0

199.6.1.0/30 is subnetted, 1 subnets

C 199.6.1.0 is directly connected, Serial1/0

**Router4**

Codes: C - connected, S - static, I - IGRP, 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, E - EGP

i - IS-IS, 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

D 192.168.1.0/24 [90/2809856] via 199.4.1.2, 00:30:12, Serial0/0

[90/2809856] via 199.6.1.2, 00:30:12, Serial2/0

[90/2809856] via 199.5.1.2, 00:30:12, Serial1/0

C 192.168.2.0/24 is directly connected, Loopback2

199.1.1.0/30 is subnetted, 1 subnets

D 199.1.1.0 [90/2681856] via 199.4.1.2, 00:33:39, Serial0/0

199.2.1.0/30 is subnetted, 1 subnets

D 199.2.1.0 [90/2681856] via 199.5.1.2, 00:33:39, Serial1/0

199.3.1.0/30 is subnetted, 1 subnets

D 199.3.1.0 [90/2681856] via 199.6.1.2, 00:33:39, Serial2/0

199.4.1.0/30 is subnetted, 1 subnets

C 199.4.1.0 is directly connected, Serial0/0

199.5.1.0/30 is subnetted, 1 subnets

C 199.5.1.0 is directly connected, Serial1/0

199.6.1.0/30 is subnetted, 1 subnets

C 199.6.1.0 is directly connected, Serial2/0

**3а)**

|  |  |  |  |
| --- | --- | --- | --- |
| **Название устройства** | **Тип и номер интерфейса** | **Пропускная способность** | **Задержка** |
| Router0 | Se0/0 | 1544 Kbit | 20000 usec |
|  | Se1/0 | 1544 Kbit | 20000 usec |
|  | Se2/0 | 1544 Kbit | 20000 usec |
|  | Loopback1 | 8000000 Kbit | 5000 usec |
|  |  |  |  |
| Router1 | Se0/0 | 1544 Kbit | 20000 usec |
|  | Se1/0 | 1544 Kbit | 20000 usec |
|  |  |  |  |
| Router2 | Se0/0 | 1544 Kbit | 20000 usec |
|  | Se1/0 | 1544 Kbit | 20000 usec |
|  |  |  |  |
| Router3 | Se0/0 | 1544 Kbit | 20000 usec |
|  | Se1/0 | 1544 Kbit | 20000 usec |
|  |  |  |  |
| Router4 | Se0/0 | 1544 Kbit | 20000 usec |
|  | Se1/0 | 1544 Kbit | 20000 usec |
|  | Se2/0 | 1544 Kbit | 20000 usec |
|  | Loopback2 | 8000000 Kbit | 5000 usec |

Feasible Distance = (10 000 000 / BW + ∑ DLY / 10) \* 256

FD до 199.1.1.0/30: (10000000 / 1544 + 2000) \* 256 = 2170031

FD до 199.2.1.0/30: (10000000 / 1544 + 2000) \* 256 = 2170031

FD до 199.3.1.0/30: (10000000 / 1544 + 2000) \* 256 = 2170031

FD до 199.4.1.0/30: (10000000 / 1544 + 4000) \* 256 = 2682031

FD до 199.5.1.0/30: (10000000 / 1544 + 4000) \* 256 = 2682031

FD до 199.6.1.0/30: (10000000 / 1544 + 4000) \* 256 = 2682031

FD до 192.168.1.0/24: (10000000 / 8 000 000 + 500) \* 256 = 128 320

FD до 192.168.2.0/24: (10000000 / 1544 + 4500) \* 256 = 2810031

**3в)**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Названия устройств, через которые проходит маршрут** | **Объявленное расстояние (Advertised Distance)** | **Возможное расстояние (Feasible Distance)** | **Выполнение критерия возможного состояния (Feasible Condition)** | **Статус маршрута** | **Статус соседнего устройства** |
| Router1 | 2298031 | 2810031 | Выполняется AD < FD | Не выбран | Не выбран |
| Router2 | 2298031 | 2810031 | Выполняется AD < FD | Не выбран | Не выбран |
| Router3 | 2298031 | 2810031 | Выполняется AD < FD | Не выбран | Не выбран |

**3г)**

**Router0**

Tracing the route to 192.168.2.1

1 199.1.1.2 3 msec 0 msec 3 msec

2 199.4.1.1 9 msec 7 msec 1 msec

**Router4**

Tracing the route to 192.168.1.1

1 199.4.1.2 4 msec 3 msec 1 msec

2 199.1.1.1 3 msec 2 msec 2 msec

**3д)**

|  |  |  |  |
| --- | --- | --- | --- |
| **Название устройства** | **Тип и номер интерфейса** | **Пропускная способность** | **Задержка** |
| Router0 | Se0/0 | 1200 Kbit | 25000 usec |
|  | Se1/0 | 1544 Kbit | 30000 usec |
|  | Se2/0 | 1600 Kbit | 20000 usec |
|  | Loopback1 | 8000000 Kbit | 5000 usec |
|  |  |  |  |
| Router1 | Se0/0 | 1400 Kbit | 20000 usec |
|  | Se1/0 | 1300 Kbit | 50000 usec |
|  |  |  |  |
| Router2 | Se0/0 | 1300 Kbit | 45000 usec |
|  | Se1/0 | 1544 Kbit | 23000 usec |
|  |  |  |  |
| Router3 | Se0/0 | 1450 Kbit | 25000 usec |
|  | Se1/0 | 1650 Kbit | 35000 usec |
|  |  |  |  |
| Router4 | Se0/0 | 1000 Kbit | 15000 usec |
|  | Se1/0 | 1100 Kbit | 20000 usec |
|  | Se2/0 | 1480 Kbit | 30000 usec |
|  | Loopback2 | 8000000 Kbit | 5000 usec |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Названия устройств, через которые проходит маршрут** | **Объявленное расстояние (Advertised Distance)** | **Возможное расстояние (Feasible Distance)** | **Выполнение критерия возможного состояния (Feasible Condition)** | **Статус маршрута** | **Статус соседнего устройства** |
| Router1 | 3377231 | 4181333 | Не выполняется | Не выбран | Не выбран |
| Router2 | 2374831 | 3142831 | Выполняется | Резервный | Feasible successor |
| Router3 | 2575515 | 3136000 | - | Основной | Successor |

**3з)**

**Router0**

Tracing the route to 192.168.2.1

1 199.3.1.2 4 msec 0 msec 1 msec

2 199.6.1.1 2 msec 4 msec 4 msec

**Router4**

Tracing the route to 192.168.1.1

1 199.6.1.2 3 msec 0 msec 1 msec

2 199.3.1.1 2 msec 1 msec 2 msec

**3и)**

**Router0**

IP-EIGRP Topology Table for AS 100/ID(192.168.1.1)

Codes: P - Passive, A - Active, U - Update, Q - Query, R - Reply,

r - Reply status

P 192.168.1.0/24, 1 successors, FD is 128256

via Connected, Loopback1

P 192.168.2.0/24, 1 successors, FD is 3136000

via 199.3.1.2 (3136000/2575360), Serial2/0

via 199.2.1.2 (3142656/2374656), Serial1/0

P 199.1.1.0/30, 1 successors, FD is 2773248

via Connected, Serial0/0

P 199.2.1.0/30, 1 successors, FD is 2425856

via Connected, Serial1/0

P 199.3.1.0/30, 1 successors, FD is 2112000

via Connected, Serial2/0

P 199.4.1.0/30, 1 successors, FD is 4053248

via 199.1.1.2 (4053248/3249152), Serial0/0

via 199.2.1.2 (4300800/3532800), Serial1/0

via 199.3.1.2 (4352000/3840000), Serial2/0

P 199.5.1.0/30, 1 successors, FD is 3014656

via 199.2.1.2 (3014656/2246656), Serial1/0

P 199.6.1.0/30, 1 successors, FD is 3008000

via 199.3.1.2 (3008000/2447360), Serial2/0

**Router1**

IP-EIGRP Topology Table for AS 100/ID(199.4.1.2)

Codes: P - Passive, A - Active, U - Update, Q - Query, R - Reply,

r - Reply status

P 192.168.1.0/24, 1 successors, FD is 2468352

via 199.1.1.1 (2468352/128256), Serial0/0

P 192.168.2.0/24, 1 successors, FD is 3377152

via 199.4.1.1 (3377152/128256), Serial1/0

via 199.1.1.1 (3876352/3136000), Serial0/0

P 199.1.1.0/30, 1 successors, FD is 2340352

via Connected, Serial0/0

P 199.2.1.0/30, 1 successors, FD is 3108352

via 199.1.1.1 (3108352/2425856), Serial0/0

P 199.3.1.0/30, 1 successors, FD is 2852352

via 199.1.1.1 (2852352/2112000), Serial0/0

P 199.4.1.0/30, 1 successors, FD is 3249152

via Connected, Serial1/0

P 199.5.1.0/30, 1 successors, FD is 3697152

via 199.1.1.1 (3697152/3014656), Serial0/0

via 199.4.1.1 (4119040/2839040), Serial1/0

P 199.6.1.0/30, 1 successors, FD is 3748352

via 199.1.1.1 (3748352/3008000), Serial0/0

via 199.4.1.1 (4017152/2497536), Serial1/0

**Router2**

IP-EIGRP Topology Table for AS 100/ID(199.5.1.2)

Codes: P - Passive, A - Active, U - Update, Q - Query, R - Reply,

r - Reply status

P 192.168.1.0/24, 1 successors, FD is 3249152

via 199.2.1.1 (3249152/128256), Serial0/0

P 192.168.2.0/24, 1 successors, FD is 2374656

via 199.5.1.1 (2374656/128256), Serial1/0

P 199.1.1.0/30, 1 successors, FD is 3925248

via 199.2.1.1 (3925248/2773248), Serial0/0

via 199.5.1.1 (4044800/3456000), Serial1/0

P 199.2.1.0/30, 1 successors, FD is 3121152

via Connected, Serial0/0

P 199.3.1.0/30, 1 successors, FD is 3633152

via 199.2.1.1 (3633152/2112000), Serial0/0

via 199.5.1.1 (3762176/3173376), Serial1/0

P 199.4.1.0/30, 1 successors, FD is 3532800

via 199.5.1.1 (3532800/2944000), Serial1/0

P 199.5.1.0/30, 1 successors, FD is 2246656

via Connected, Serial1/0

P 199.6.1.0/30, 1 successors, FD is 3086336

via 199.5.1.1 (3086336/2497536), Serial1/0

via 199.2.1.1 (4529152/3008000), Serial0/0

**Router3**

IP-EIGRP Topology Table for AS 100/ID(199.6.1.2)

Codes: P - Passive, A - Active, U - Update, Q - Query, R - Reply,

r - Reply status

P 192.168.1.0/24, 1 successors, FD is 2533376

via 199.3.1.1 (2533376/128256), Serial0/0

P 192.168.2.0/24, 1 successors, FD is 2575360

via 199.6.1.1 (2575360/128256), Serial1/0

P 199.1.1.0/30, 1 successors, FD is 3413248

via 199.3.1.1 (3413248/2773248), Serial0/0

P 199.2.1.0/30, 1 successors, FD is 3173376

via 199.3.1.1 (3173376/2425856), Serial0/0

P 199.3.1.0/30, 1 successors, FD is 2405376

via Connected, Serial0/0

P 199.4.1.0/30, 1 successors, FD is 3840000

via 199.6.1.1 (3840000/2944000), Serial1/0

P 199.5.1.0/30, 1 successors, FD is 3735040

via 199.6.1.1 (3735040/2839040), Serial1/0

via 199.3.1.1 (3762176/3014656), Serial0/0

P 199.6.1.0/30, 1 successors, FD is 2447360

via Connected, Serial1/0

**Router4**

IP-EIGRP Topology Table for AS 100/ID(192.168.2.1)

Codes: P - Passive, A - Active, U - Update, Q - Query, R - Reply,

r - Reply status

P 192.168.1.0/24, 1 successors, FD is 3301376

via 199.6.1.2 (3301376/2533376), Serial2/0

via 199.4.1.2 (3584000/2468352), Serial0/0

via 199.5.1.2 (4119040/3249152), Serial1/0

P 192.168.2.0/24, 1 successors, FD is 128256

via Connected, Loopback2

P 199.1.1.0/30, 1 successors, FD is 3456000

via 199.4.1.2 (3456000/2340352), Serial0/0

via 199.6.1.2 (4181248/3413248), Serial2/0

P 199.2.1.0/30, 1 successors, FD is 3941376

via 199.6.1.2 (3941376/3173376), Serial2/0

via 199.5.1.2 (3991040/3121152), Serial1/0

via 199.4.1.2 (4224000/3108352), Serial0/0

P 199.3.1.0/30, 1 successors, FD is 3173376

via 199.6.1.2 (3173376/2405376), Serial2/0

via 199.4.1.2 (3968000/2852352), Serial0/0

P 199.4.1.0/30, 1 successors, FD is 2944000

via Connected, Serial0/0

P 199.5.1.0/30, 1 successors, FD is 2839040

via Connected, Serial1/0

P 199.6.1.0/30, 1 successors, FD is 2497536

via Connected, Serial2/0

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**Router0**

IP-EIGRP Topology Table for AS 100/ID(192.168.1.1)

Codes: P - Passive, A - Active, U - Update, Q - Query, R - Reply,

r - Reply status

P 192.168.1.0/24, 1 successors, FD is 128256

via Connected, Loopback1

P 192.168.2.0/24, 1 successors, FD is 3136000

via 199.3.1.2 (3136000/2575360), Serial2/0

via 199.2.1.2 (3142656/2374656), Serial1/0

P 199.1.1.0/30, 1 successors, FD is 2773248

via Connected, Serial0/0

P 199.2.1.0/30, 1 successors, FD is 2425856

via Connected, Serial1/0

P 199.3.1.0/30, 1 successors, FD is 2112000

via Connected, Serial2/0

P 199.4.1.0/30, 1 successors, FD is 4053248

via 199.1.1.2 (4053248/3249152), Serial0/0

via 199.2.1.2 (4300800/3532800), Serial1/0

via 199.3.1.2 (4352000/3840000), Serial2/0

P 199.5.1.0/30, 1 successors, FD is 3014656

via 199.2.1.2 (3014656/2246656), Serial1/0

P 199.6.1.0/30, 1 successors, FD is 3008000

via 199.3.1.2 (3008000/2447360), Serial2/0

**Router1**

IP-EIGRP Topology Table for AS 100/ID(199.4.1.2)

Codes: P - Passive, A - Active, U - Update, Q - Query, R - Reply,

r - Reply status

P 192.168.1.0/24, 1 successors, FD is 2468352

via 199.1.1.1 (2468352/128256), Serial0/0

P 192.168.2.0/24, 1 successors, FD is 3377152

via 199.4.1.1 (3377152/128256), Serial1/0

via 199.1.1.1 (3876352/3136000), Serial0/0

P 199.1.1.0/30, 1 successors, FD is 2340352

via Connected, Serial0/0

P 199.2.1.0/30, 1 successors, FD is 3108352

via 199.1.1.1 (3108352/2425856), Serial0/0

P 199.3.1.0/30, 1 successors, FD is 2852352

via 199.1.1.1 (2852352/2112000), Serial0/0

P 199.4.1.0/30, 1 successors, FD is 3249152

via Connected, Serial1/0

P 199.5.1.0/30, 1 successors, FD is 3697152

via 199.1.1.1 (3697152/3014656), Serial0/0

via 199.4.1.1 (4119040/2839040), Serial1/0

P 199.6.1.0/30, 1 successors, FD is 3748352

via 199.1.1.1 (3748352/3008000), Serial0/0

via 199.4.1.1 (4017152/2497536), Serial1/0

**Router2**

IP-EIGRP Topology Table for AS 100/ID(199.5.1.2)

Codes: P - Passive, A - Active, U - Update, Q - Query, R - Reply,

r - Reply status

P 192.168.1.0/24, 1 successors, FD is 3249152

via 199.2.1.1 (3249152/128256), Serial0/0

P 192.168.2.0/24, 1 successors, FD is 2374656

via 199.5.1.1 (2374656/128256), Serial1/0

P 199.1.1.0/30, 1 successors, FD is 3925248

via 199.2.1.1 (3925248/2773248), Serial0/0

via 199.5.1.1 (4044800/3456000), Serial1/0

P 199.2.1.0/30, 1 successors, FD is 3121152

via Connected, Serial0/0

P 199.3.1.0/30, 1 successors, FD is 3633152

via 199.2.1.1 (3633152/2112000), Serial0/0

via 199.5.1.1 (3762176/3173376), Serial1/0

P 199.4.1.0/30, 1 successors, FD is 3532800

via 199.5.1.1 (3532800/2944000), Serial1/0

P 199.5.1.0/30, 1 successors, FD is 2246656

via Connected, Serial1/0

P 199.6.1.0/30, 1 successors, FD is 3086336

via 199.5.1.1 (3086336/2497536), Serial1/0

via 199.2.1.1 (4529152/3008000), Serial0/0

**Router3**

IP-EIGRP Topology Table for AS 100/ID(199.6.1.2)

Codes: P - Passive, A - Active, U - Update, Q - Query, R - Reply,

r - Reply status

P 192.168.1.0/24, 1 successors, FD is 2533376

via 199.3.1.1 (2533376/128256), Serial0/0

P 192.168.2.0/24, 1 successors, FD is 2575360

via 199.6.1.1 (2575360/128256), Serial1/0

P 199.1.1.0/30, 1 successors, FD is 3413248

via 199.3.1.1 (3413248/2773248), Serial0/0

P 199.2.1.0/30, 1 successors, FD is 3173376

via 199.3.1.1 (3173376/2425856), Serial0/0

P 199.3.1.0/30, 1 successors, FD is 2405376

via Connected, Serial0/0

P 199.4.1.0/30, 1 successors, FD is 3840000

via 199.6.1.1 (3840000/2944000), Serial1/0

P 199.5.1.0/30, 1 successors, FD is 3735040

via 199.6.1.1 (3735040/2839040), Serial1/0

via 199.3.1.1 (3762176/3014656), Serial0/0

P 199.6.1.0/30, 1 successors, FD is 2447360

via Connected, Serial1/0

**Router4**

IP-EIGRP Topology Table for AS 100/ID(192.168.2.1)

Codes: P - Passive, A - Active, U - Update, Q - Query, R - Reply,

r - Reply status

P 192.168.1.0/24, 1 successors, FD is 3301376

via 199.6.1.2 (3301376/2533376), Serial2/0

via 199.4.1.2 (3584000/2468352), Serial0/0

via 199.5.1.2 (4119040/3249152), Serial1/0

P 192.168.2.0/24, 1 successors, FD is 128256

via Connected, Loopback2

P 199.1.1.0/30, 1 successors, FD is 3456000

via 199.4.1.2 (3456000/2340352), Serial0/0

via 199.6.1.2 (4181248/3413248), Serial2/0

P 199.2.1.0/30, 1 successors, FD is 3941376

via 199.6.1.2 (3941376/3173376), Serial2/0

via 199.5.1.2 (3991040/3121152), Serial1/0

via 199.4.1.2 (4224000/3108352), Serial0/0

P 199.3.1.0/30, 1 successors, FD is 3173376

via 199.6.1.2 (3173376/2405376), Serial2/0

via 199.4.1.2 (3968000/2852352), Serial0/0

P 199.4.1.0/30, 1 successors, FD is 2944000

via Connected, Serial0/0

P 199.5.1.0/30, 1 successors, FD is 2839040

via Connected, Serial1/0

P 199.6.1.0/30, 1 successors, FD is 2497536

via Connected, Serial2/0

**3л)**

**Router0**

Codes: C - connected, S - static, I - IGRP, 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, E - EGP

i - IS-IS, 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 192.168.1.0/24 is directly connected, Loopback1

D 192.168.2.0/24 [90/3136000] via 199.3.1.2, 00:21:09, Serial2/0

199.1.1.0/30 is subnetted, 1 subnets

C 199.1.1.0 is directly connected, Serial0/0

199.2.1.0/30 is subnetted, 1 subnets

C 199.2.1.0 is directly connected, Serial1/0

199.3.1.0/30 is subnetted, 1 subnets

C 199.3.1.0 is directly connected, Serial2/0

199.4.1.0/30 is subnetted, 1 subnets

D 199.4.1.0 [90/4053248] via 199.1.1.2, 00:23:38, Serial0/0

199.5.1.0/30 is subnetted, 1 subnets

D 199.5.1.0 [90/3014656] via 199.2.1.2, 00:22:24, Serial1/0

199.6.1.0/30 is subnetted, 1 subnets

D 199.6.1.0 [90/3008000] via 199.3.1.2, 00:21:11, Serial2/0

**Router1**

Codes: C - connected, S - static, I - IGRP, 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, E - EGP

i - IS-IS, 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

D 192.168.1.0/24 [90/2468352] via 199.1.1.1, 00:36:11, Serial0/0

D 192.168.2.0/24 [90/3377152] via 199.4.1.1, 00:24:29, Serial1/0

199.1.1.0/30 is subnetted, 1 subnets

C 199.1.1.0 is directly connected, Serial0/0

199.2.1.0/30 is subnetted, 1 subnets

D 199.2.1.0 [90/3108352] via 199.1.1.1, 00:26:58, Serial0/0

199.3.1.0/30 is subnetted, 1 subnets

D 199.3.1.0 [90/2852352] via 199.1.1.1, 00:36:11, Serial0/0

199.4.1.0/30 is subnetted, 1 subnets

C 199.4.1.0 is directly connected, Serial1/0

199.5.1.0/30 is subnetted, 1 subnets

D 199.5.1.0 [90/3697152] via 199.1.1.1, 00:23:18, Serial0/0

199.6.1.0/30 is subnetted, 1 subnets

D 199.6.1.0 [90/3748352] via 199.1.1.1, 00:22:04, Serial0/0

**Router2**

Codes: C - connected, S - static, I - IGRP, 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, E - EGP

i - IS-IS, 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

D 192.168.1.0/24 [90/3249152] via 199.2.1.1, 00:23:54, Serial0/0

D 192.168.2.0/24 [90/2374656] via 199.5.1.1, 00:23:30, Serial1/0

199.1.1.0/30 is subnetted, 1 subnets

D 199.1.1.0 [90/3925248] via 199.2.1.1, 00:23:54, Serial0/0

199.2.1.0/30 is subnetted, 1 subnets

C 199.2.1.0 is directly connected, Serial0/0

199.3.1.0/30 is subnetted, 1 subnets

D 199.3.1.0 [90/3633152] via 199.2.1.1, 00:23:54, Serial0/0

199.4.1.0/30 is subnetted, 1 subnets

D 199.4.1.0 [90/3532800] via 199.5.1.1, 00:21:38, Serial1/0

199.5.1.0/30 is subnetted, 1 subnets

C 199.5.1.0 is directly connected, Serial1/0

199.6.1.0/30 is subnetted, 1 subnets

D 199.6.1.0 [90/3086336] via 199.5.1.1, 00:21:21, Serial1/0

**Router3**

Codes: C - connected, S - static, I - IGRP, 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, E - EGP

i - IS-IS, 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

D 192.168.1.0/24 [90/2533376] via 199.3.1.1, 00:22:56, Serial0/0

D 192.168.2.0/24 [90/2575360] via 199.6.1.1, 00:22:35, Serial1/0

199.1.1.0/30 is subnetted, 1 subnets

D 199.1.1.0 [90/3413248] via 199.3.1.1, 00:22:56, Serial0/0

199.2.1.0/30 is subnetted, 1 subnets

D 199.2.1.0 [90/3173376] via 199.3.1.1, 00:22:56, Serial0/0

199.3.1.0/30 is subnetted, 1 subnets

C 199.3.1.0 is directly connected, Serial0/0

199.4.1.0/30 is subnetted, 1 subnets

D 199.4.1.0 [90/3840000] via 199.6.1.1, 00:21:54, Serial1/0

199.5.1.0/30 is subnetted, 1 subnets

D 199.5.1.0 [90/3735040] via 199.6.1.1, 00:22:35, Serial1/0

199.6.1.0/30 is subnetted, 1 subnets

C 199.6.1.0 is directly connected, Serial1/0

**Router4**

Codes: C - connected, S - static, I - IGRP, 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, E - EGP

i - IS-IS, 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

D 192.168.1.0/24 [90/3301376] via 199.6.1.2, 00:21:50, Serial2/0

C 192.168.2.0/24 is directly connected, Loopback2

199.1.1.0/30 is subnetted, 1 subnets

D 199.1.1.0 [90/3456000] via 199.4.1.2, 00:22:07, Serial0/0

199.2.1.0/30 is subnetted, 1 subnets

D 199.2.1.0 [90/3941376] via 199.6.1.2, 00:21:50, Serial2/0

199.3.1.0/30 is subnetted, 1 subnets

D 199.3.1.0 [90/3173376] via 199.6.1.2, 00:21:50, Serial2/0

199.4.1.0/30 is subnetted, 1 subnets

C 199.4.1.0 is directly connected, Serial0/0

199.5.1.0/30 is subnetted, 1 subnets

C 199.5.1.0 is directly connected, Serial1/0

199.6.1.0/30 is subnetted, 1 subnets

C 199.6.1.0 is directly connected, Serial2/0

**4в)**

Router0

Router#sh ip eigrp nei

IP-EIGRP neighbors for process 100

H Address Interface Hold Uptime SRTT RTO Q Seq

(sec) (ms) Cnt Num

0 199.2.1.2 Se1/0 14 00:34:33 40 1000 0 245

1 199.1.1.2 Se0/0 11 00:34:33 40 1000 0 183

2 199.3.1.2 Se2/0 14 00:34:33 40 1000 0 260

Router1

Router#sh ip eigrp nei

IP-EIGRP neighbors for process 100

H Address Interface Hold Uptime SRTT RTO Q Seq

(sec) (ms) Cnt Num

0 199.1.1.1 Se0/0 11 00:37:01 40 1000 0 216

1 199.4.1.1 Se1/0 11 00:37:01 40 1000 0 209

**4e)**

Router0

Router#sh ip eigrp nei

IP-EIGRP neighbors for process 100

H Address Interface Hold Uptime SRTT RTO Q Seq

(sec) (ms) Cnt Num

0 199.2.1.2 Se1/0 10 00:41:14 40 1000 0 245

1 199.1.1.2 Se0/0 14 00:41:14 40 1000 0 183

2 199.3.1.2 Se2/0 12 00:41:14 40 1000 0 260

Router1

Router(config)#do sh ip eigrp nei

IP-EIGRP neighbors for process 100

H Address Interface Hold Uptime SRTT RTO Q Seq

(sec) (ms) Cnt Num

0 199.1.1.1 Se0/0 10 00:40:42 40 1000 0 216

1 199.4.1.1 Se1/0 13 00:40:42 40 1000 0 209