**1.**

|  |  |
| --- | --- |
| Prefix | Link Interface |
| 11100000 00\* | 0 |
| 11100000 01000000 \* | 1 |
| 11100000 01\* | 2 |
| 11100000 10000000 \* | 3 |
| otherwise | 4 |

a)

11001000 10010001 01010001 01010101

below range of 0 -> Link Interface 4

11100000 01000000 11000011 00111100

first 10 bits do NOT match 0

first 16 bits match 1 -> Link Interface 1

11100000 10000000 00010001 01110111

first 10 bits do NOT match 0

first 16 bits do NOT match 1

first 10 bits do NOT match 2

first 16 bits match 3 -> Link Interface 3

11100000 01000010 00010001 01110111

first 10 bits do NOT match 0

first 16 bits do NOT match 1

first 10 bits match 2 -> Link Interface 2

**2.**

223.1.17.0/24

11011111 00000001 00010001 00000000

Subnet 1 – 120 interfaces -> 7 bits

223.1.17.0/25

Subnet 2 - 60 interfaces -> 6 bits

223.1.17.128/26

Subnet 3 – 28 interfaces -> 5 bits

223.1.17.192/27

**3.**

WAN: 24.34.112.235

LAN: 192.168.1.0/24

a)

endpoints:

192.168.1.1

192.168.1.2

192.168.1.3

router:

192.168.1.4

b)

|  |  |
| --- | --- |
| WAN | LAN |
| 24.34.112.235, 5001 | 192.168.1.1, 3345 |
| 24.34.112.235, 5002 | 192.168.1.1, 3346 |
| 24.34.112.235, 5003 | 192.168.1.2, 3345 |
| 24.34.112.235, 5004 | 192.168.1.2, 3346 |
| 24.34.112.235, 5005 | 192.168.1.3, 3345 |
| 24.34.112.235, 5006 | 192.168.1.3, 3346 |

**4.**

S2 flow

|  |  |
| --- | --- |
| ingress port = 1  src = 10.3.\*.\*, dest = 10.1.\*.\* | forward(2) |
| ingress port = 2  src = 10.1.\*.\*, dest = 10.3.\*.\* | forward(1) |
| ingress port = 1  src = \*.\*.\*.\*, dest = 10.2.0.3 | forward(3) |
| ingress port = 1  src = \*.\*.\*.\*, dest = 10.2.0.4 | forward(4) |
| ingress port = 2  src = \*.\*.\*.\*, dest = 10.2.0.3 | forward(3) |
| ingress port = 2  src = \*.\*.\*.\*, dest = 10.2.0.4 | forward(4) |
| ingress port = 3  src = 10.2.0.3, dest = 10.2.0.4 | forward(4) |
| ingress port = 4  src = 10.2.0.4, dest = 10.2.0.3 | forward(3) |