



Network Layer

Part 4

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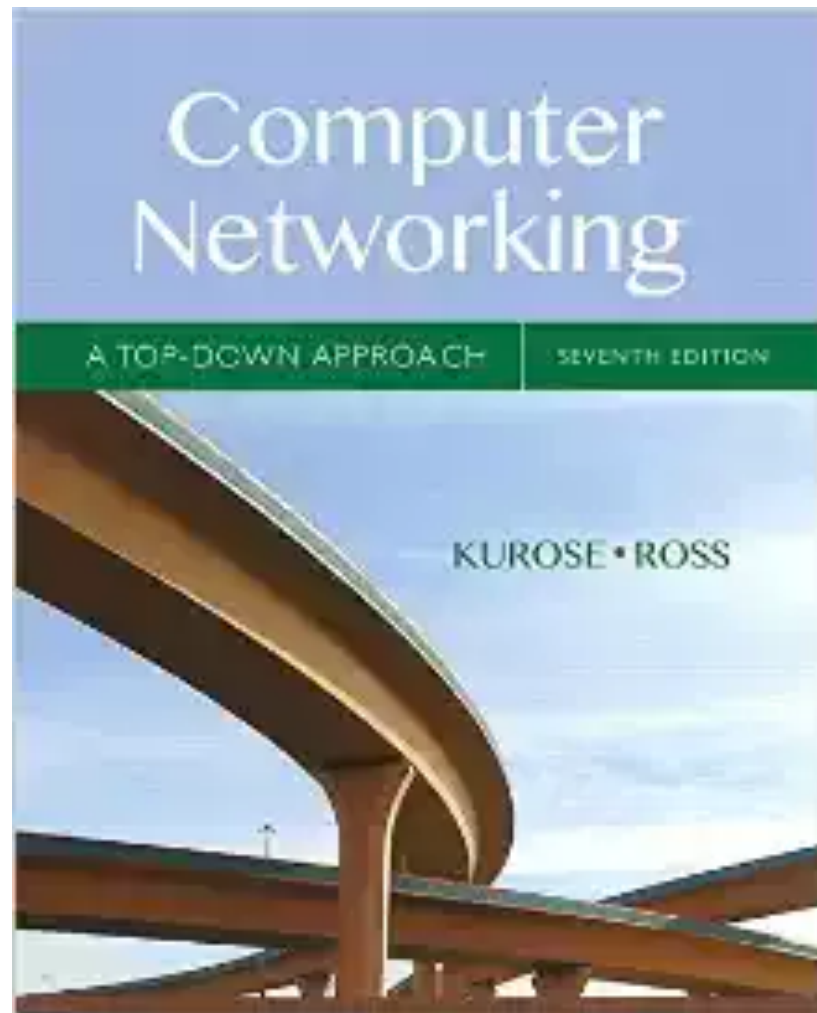
*“You work nine to five ...
And, somehow you survive ...
...’til the NIGHT”*

These slides are more-or-less directly from the slide set developed by Jim Kurose and Keith Ross for their book “Computer Networking: A Top Down Approach, 5th edition”.

The slides have been lightly adapted for Mark Allman’s EECS 325/425 Computer Networks class at Case Western Reserve University.

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Reading Along ...



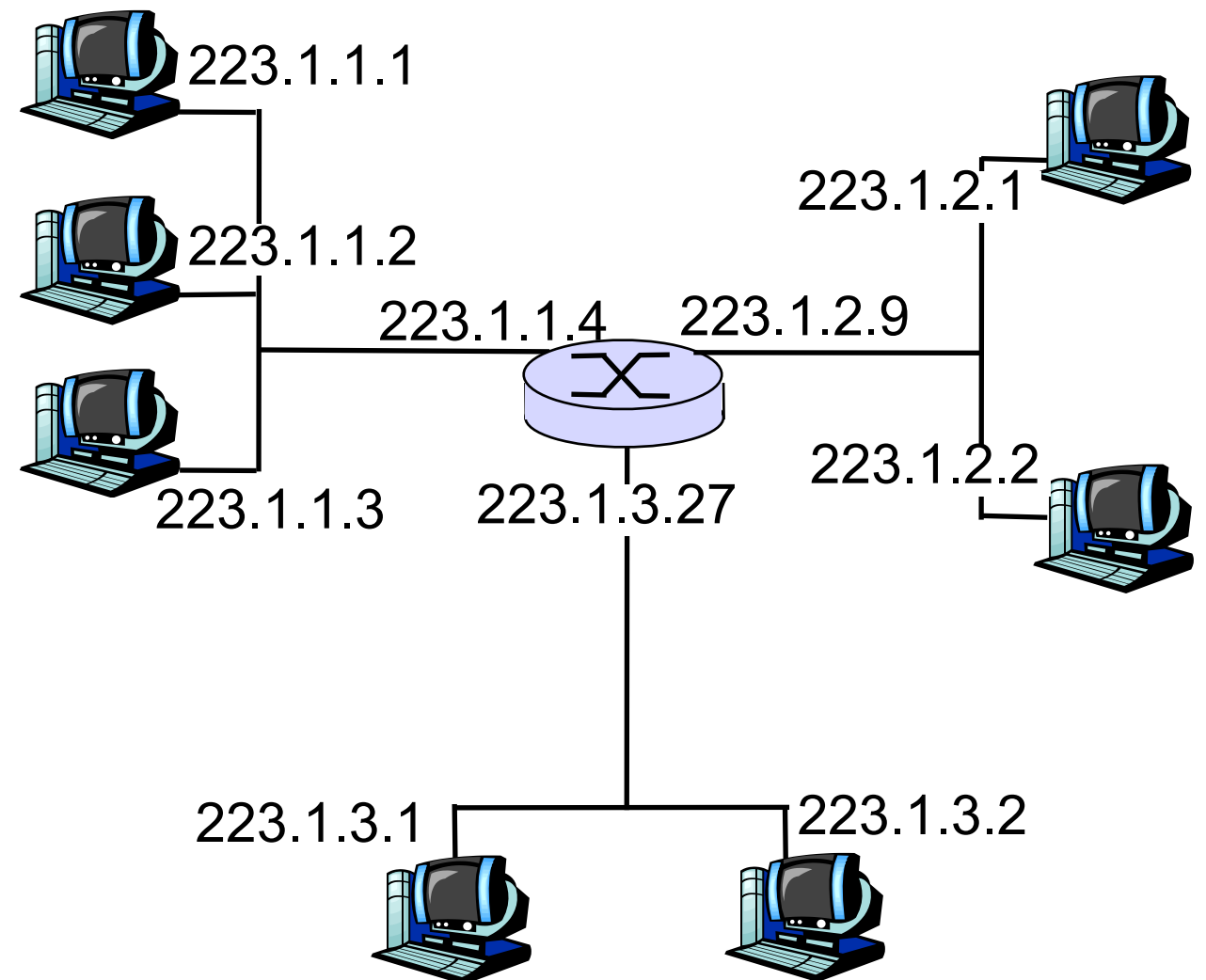
- Network layer is chapters 4 & 5
- IPv4 addressing

IP Addressing: introduction

- ❖ IP address: 32-bit identifier for host, router interface
- ❖ interface:
 - connection between host/router and physical link
 - router's typically have multiple interfaces
 - host typically has one interface
 - IP addresses associated with each interface

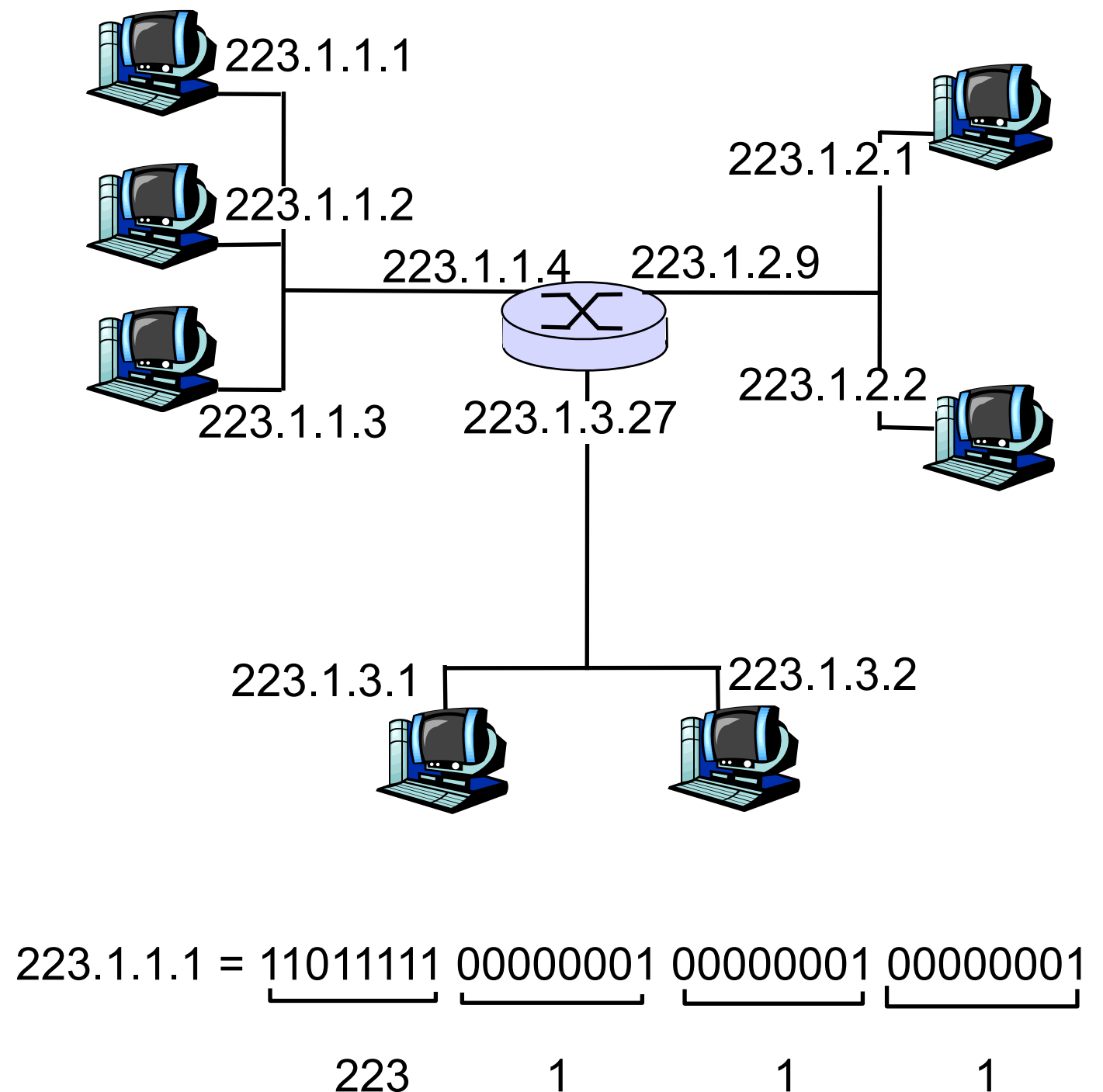
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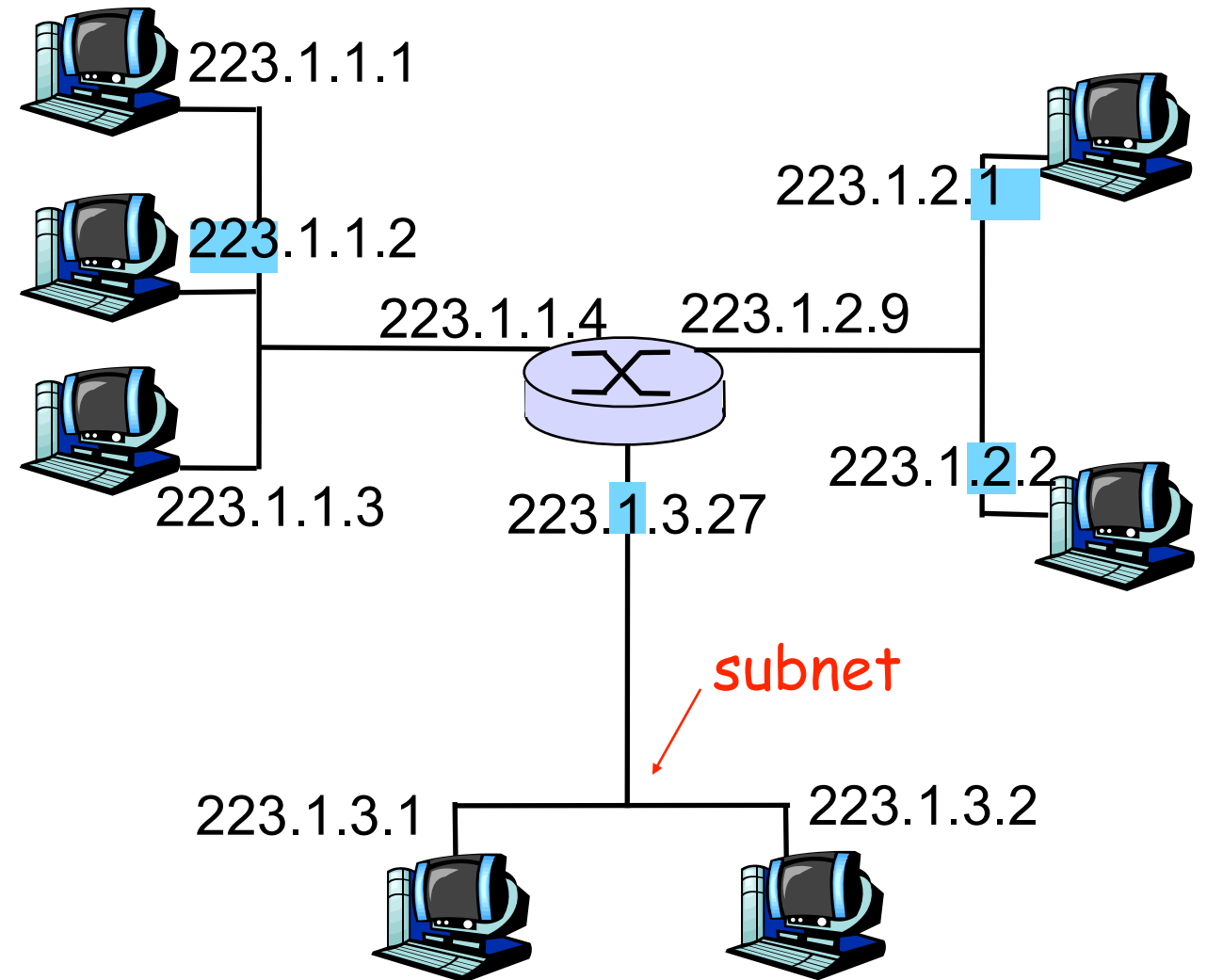


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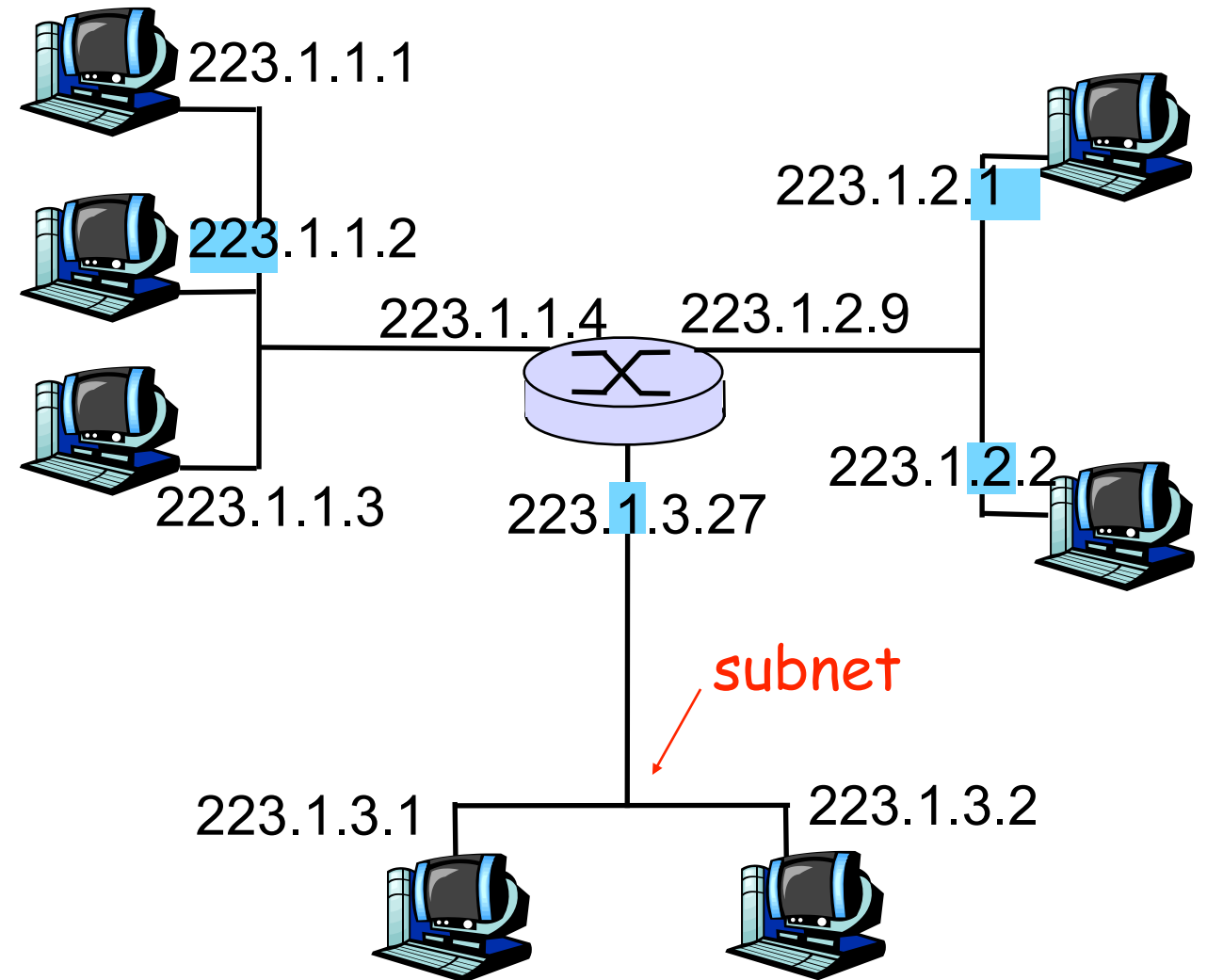
Subnets



Subnets

❖ IP address:

- network part (high order bits)
- subnet part (middle bits)
- host part (low order bits)



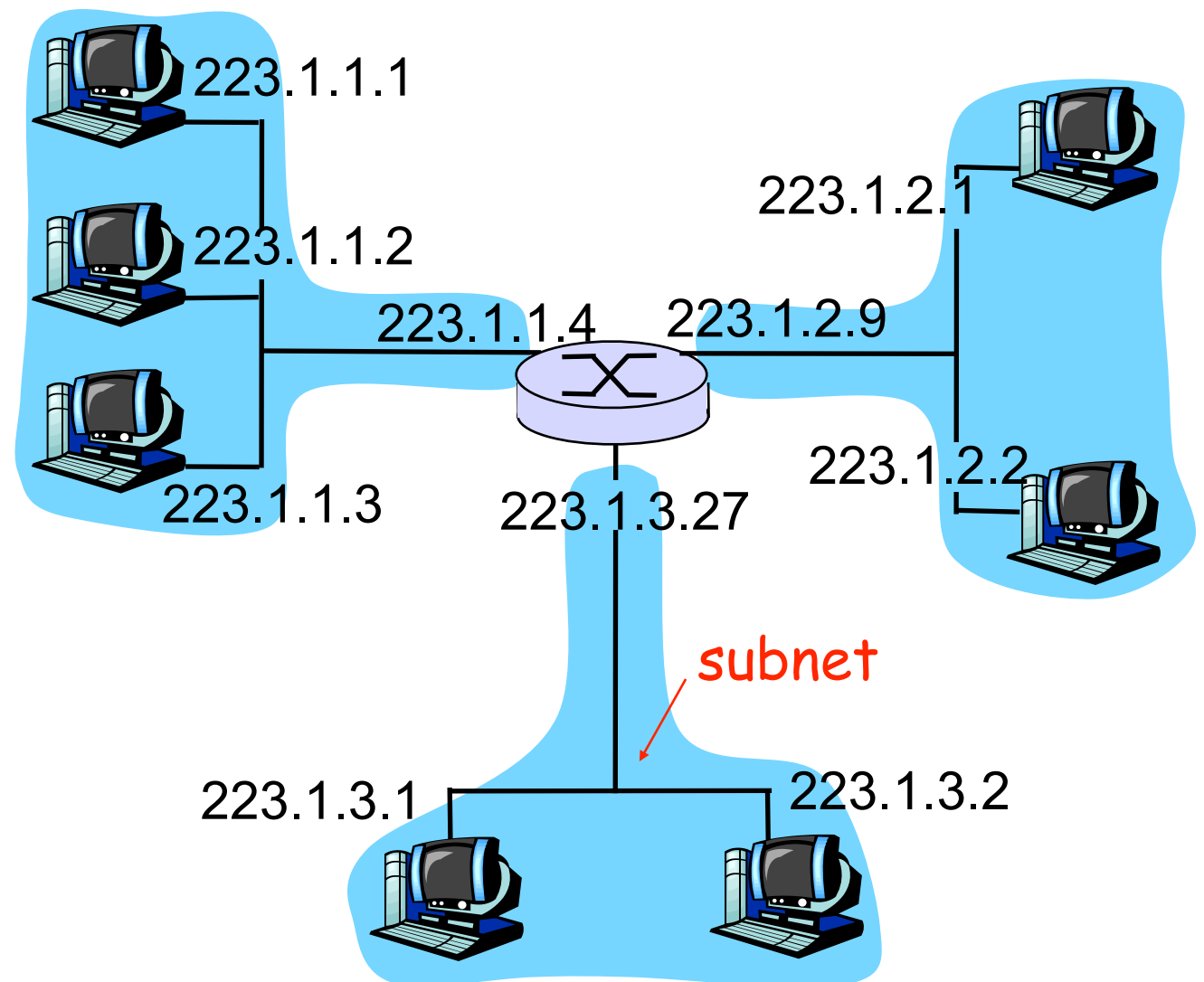
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❖ What's a subnet ?

- device interfaces with same subnet part of IP address
- can physically reach each other without intervening router

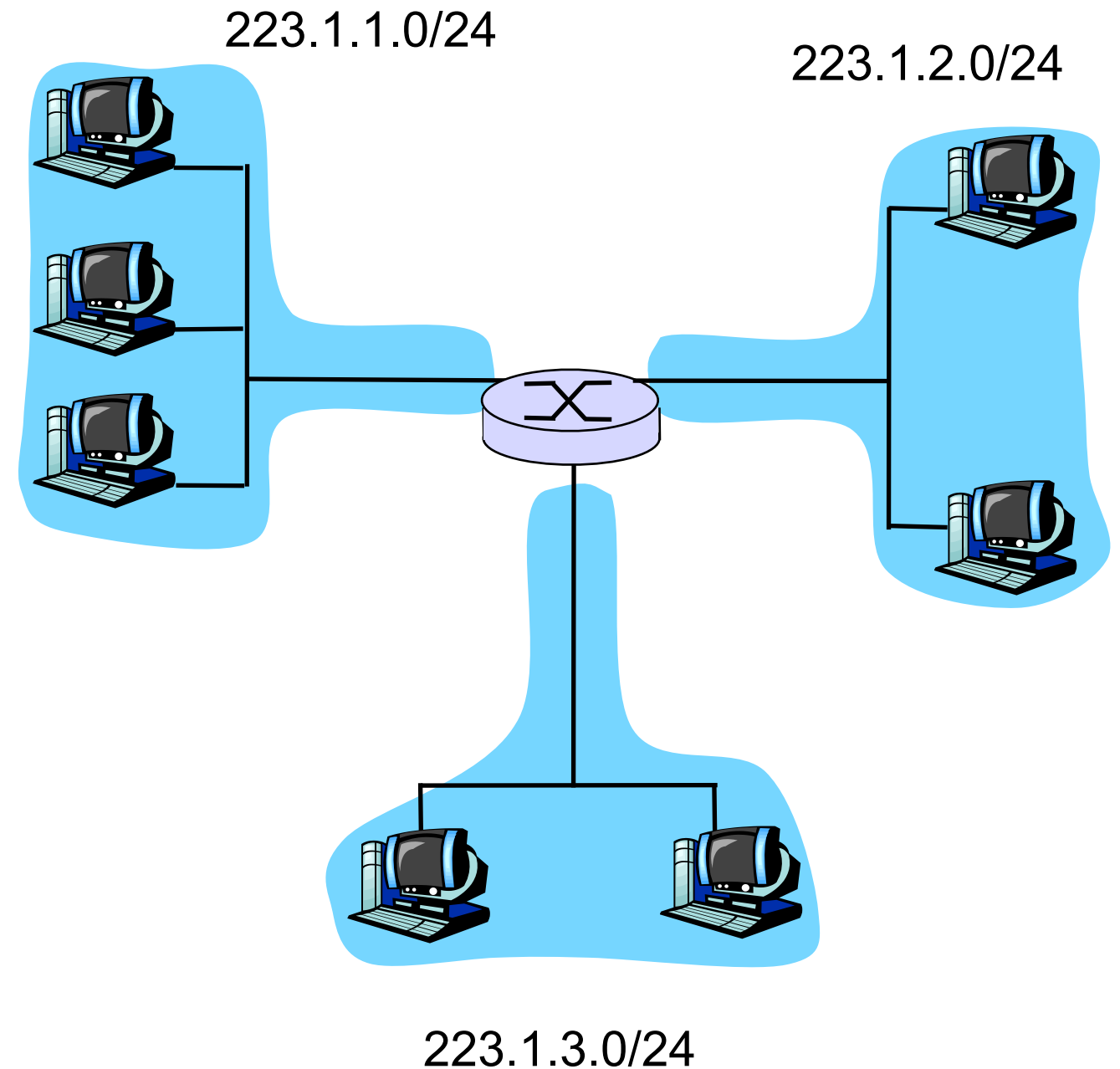


network consisting of 3 subnets

Subnets

Recipe

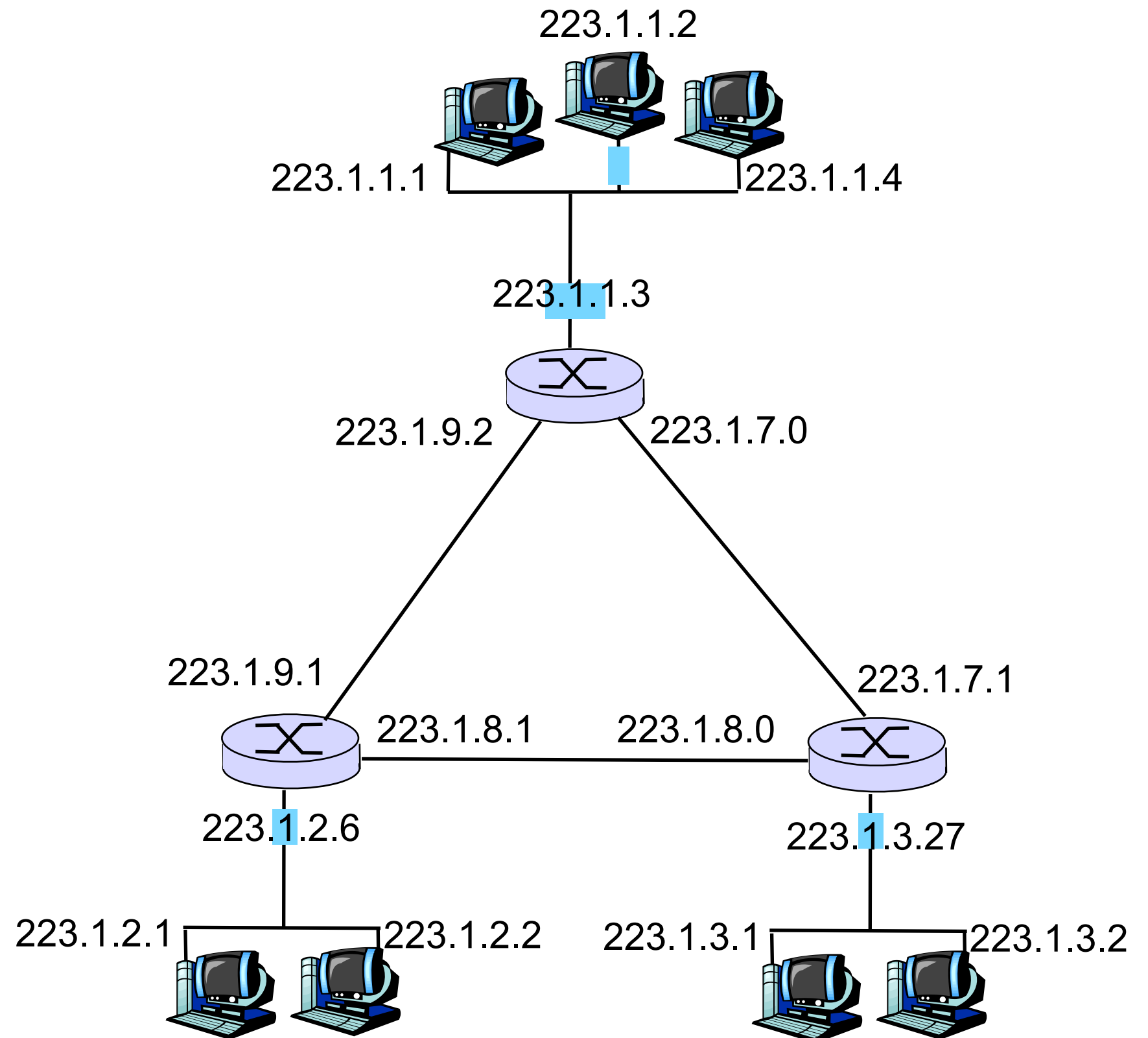
- ❖ to determine the subnets, detach each interface from its host or router, creating islands of isolated networks
- ❖ each isolated network is called a **subnet**.



Subnet mask: /24

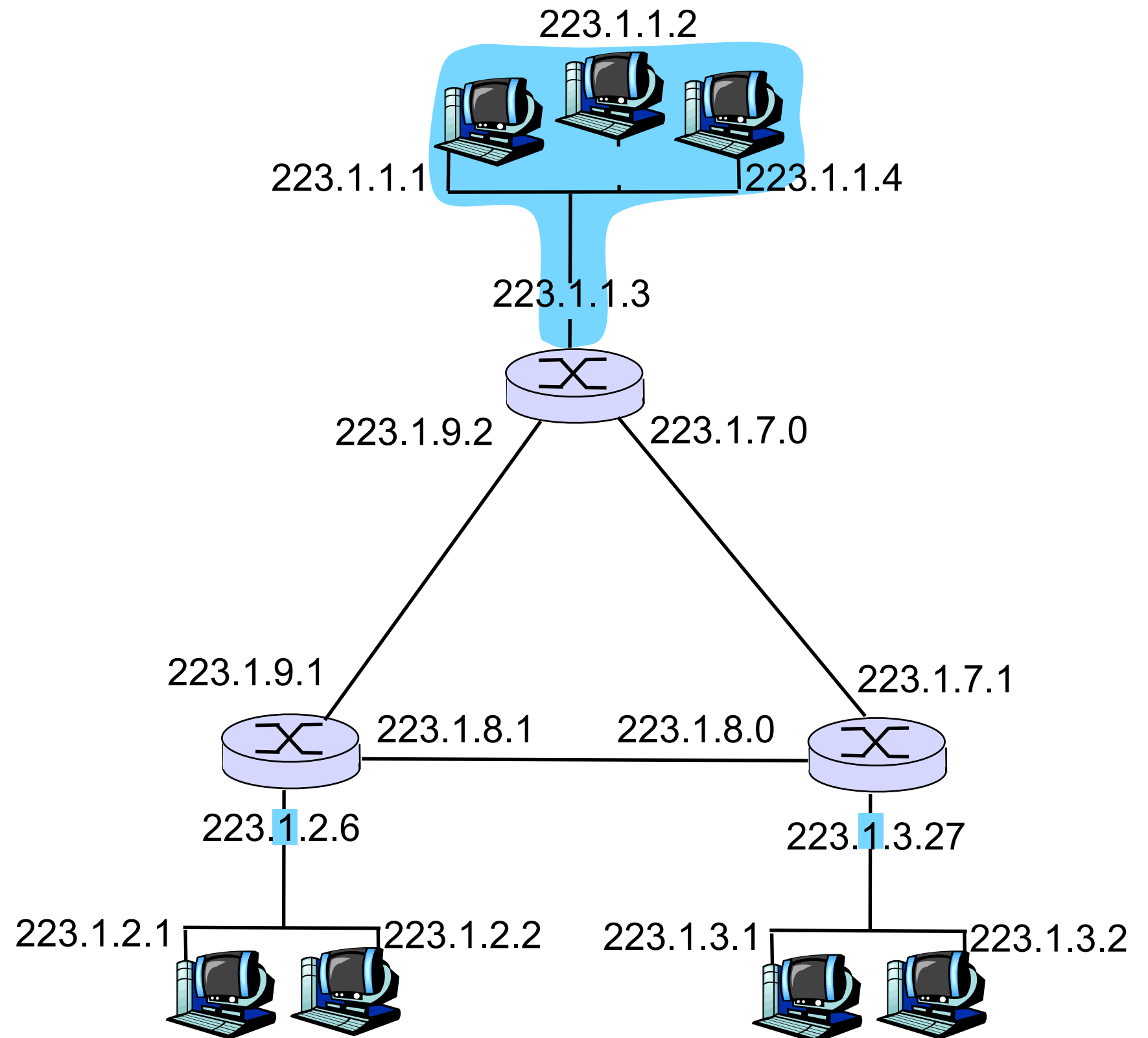
Subnets

How many?



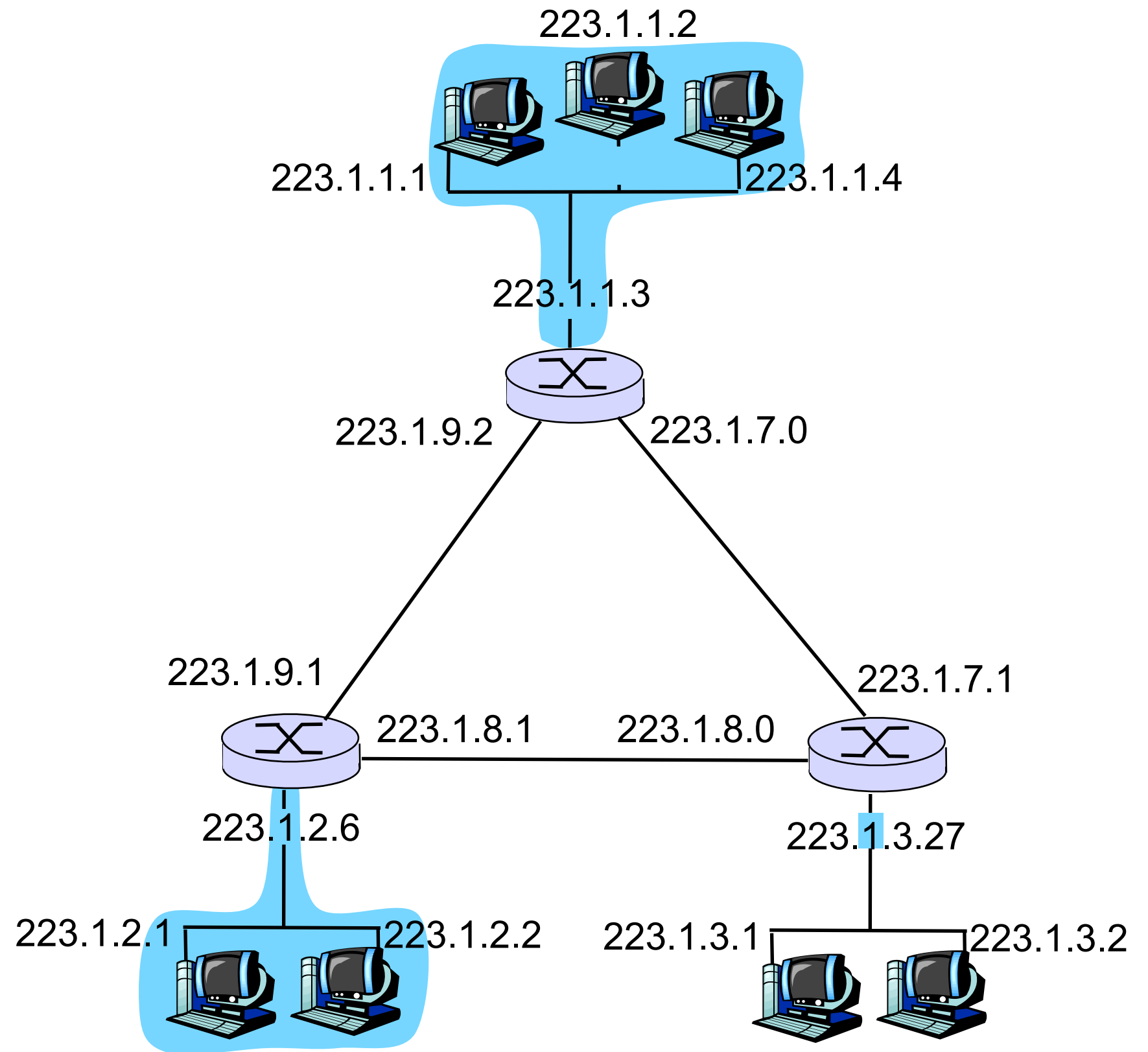
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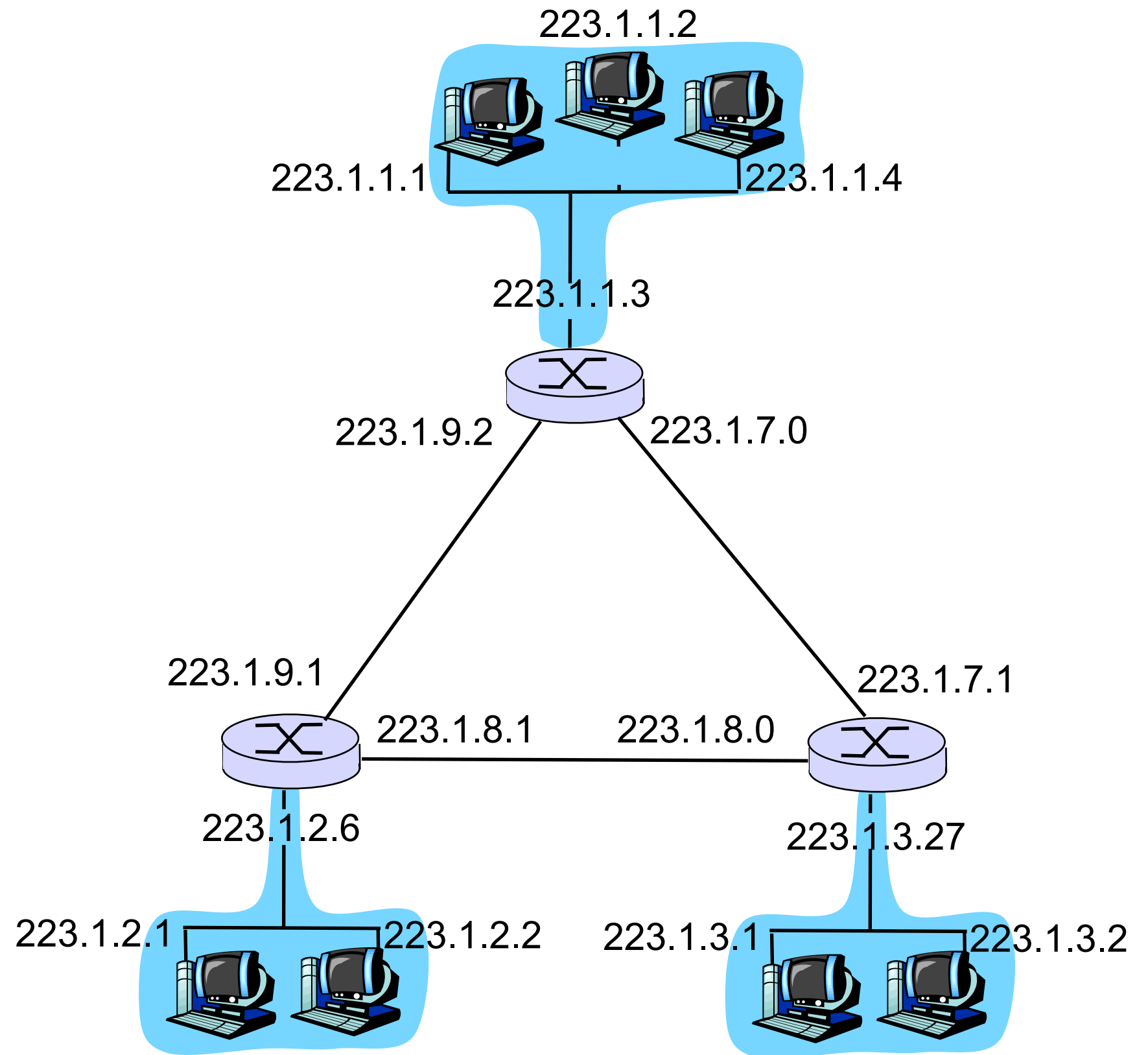
Subnets

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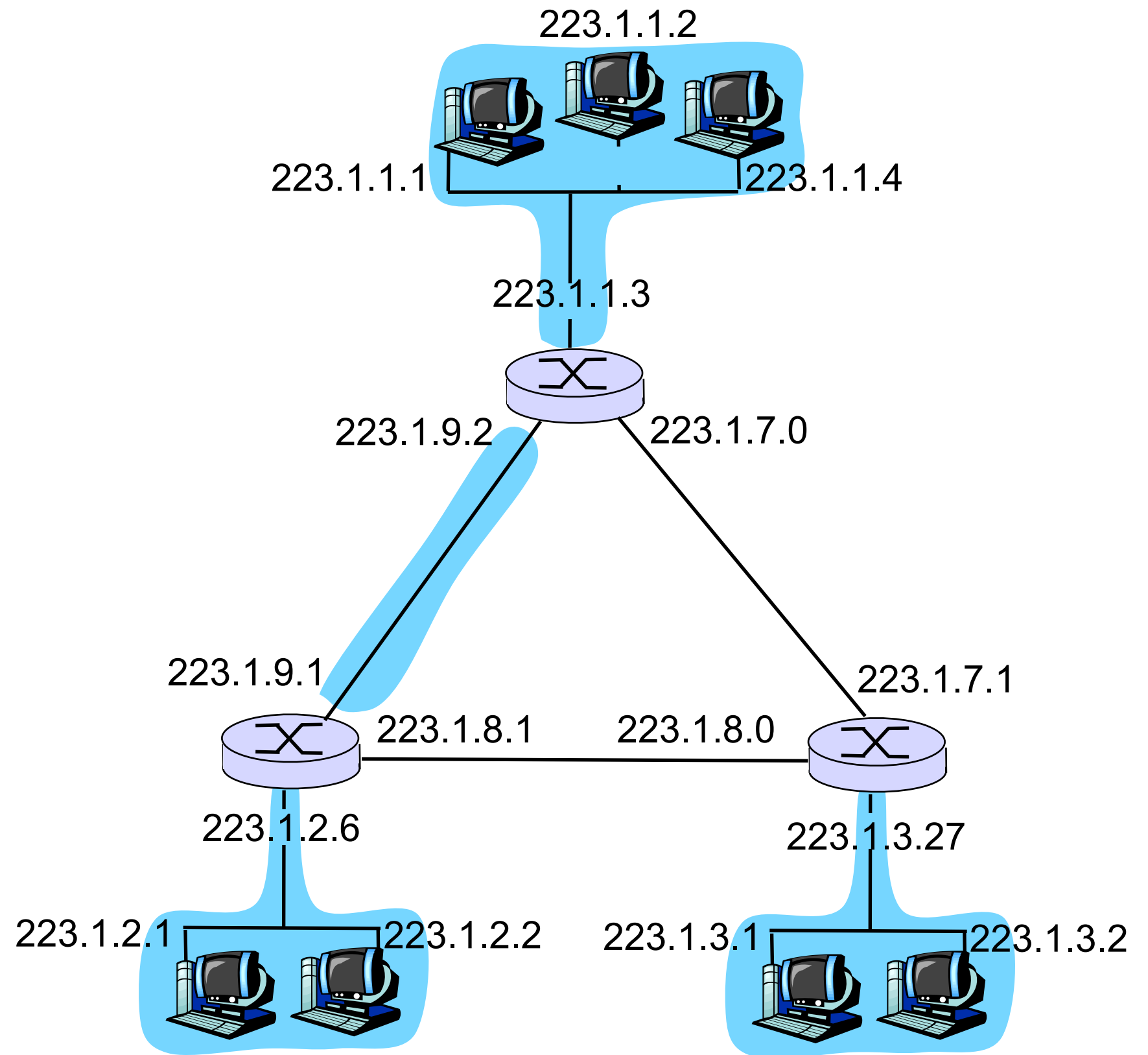
Subnets

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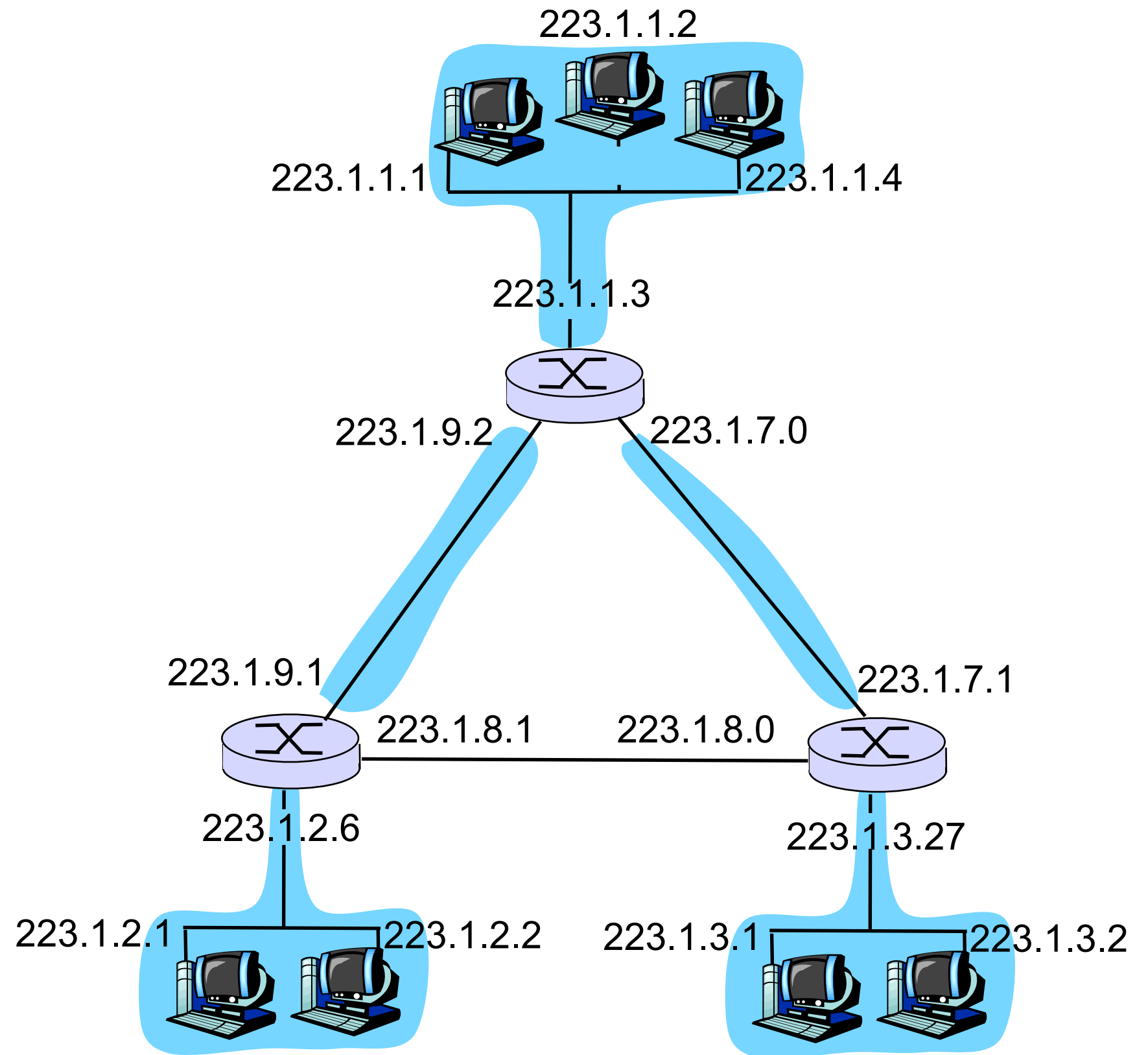
Subnets

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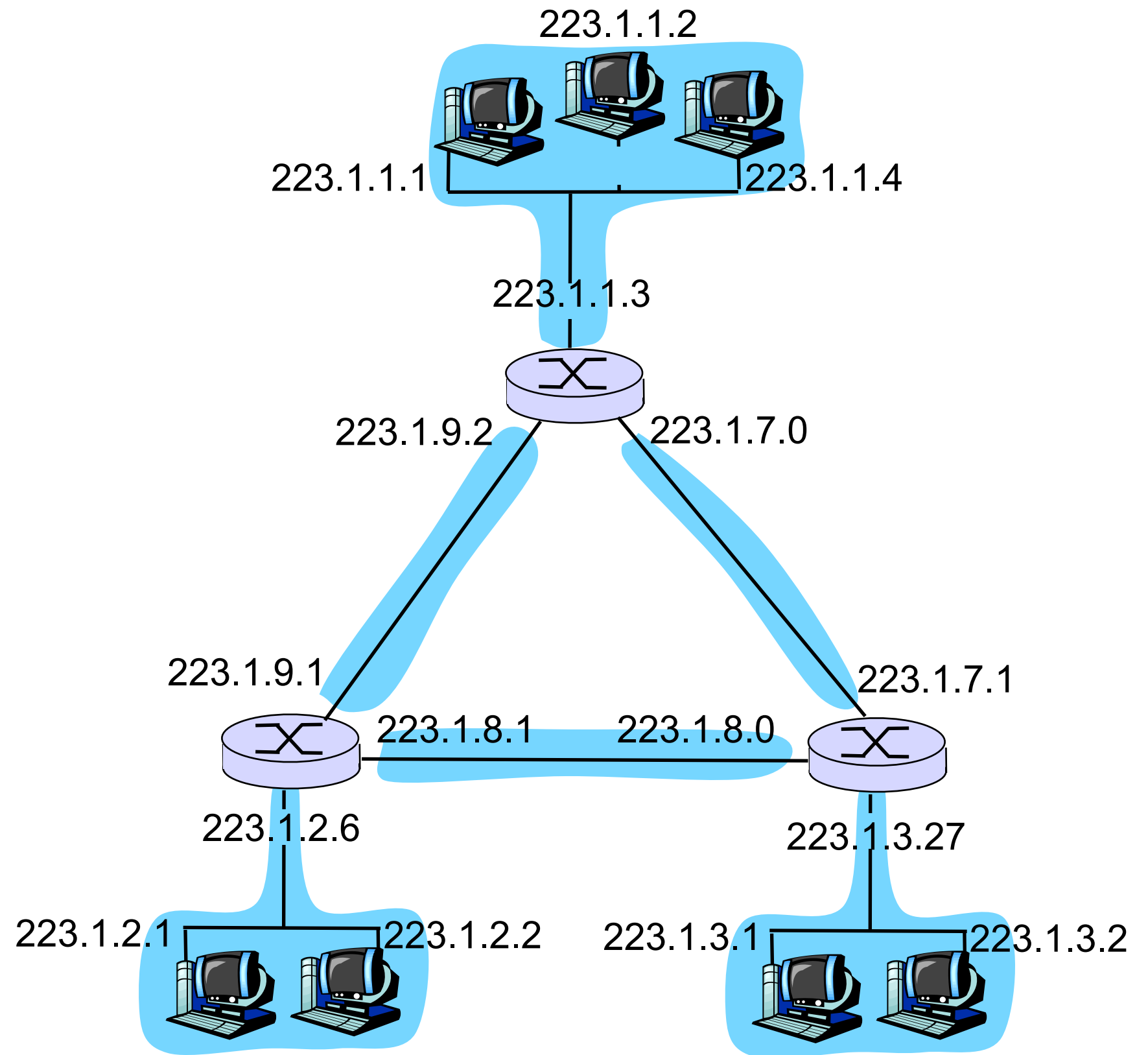
Subnets

How many?



Subnets

How many?



Classful Address Allocation

Class A: /8

0	netid	subnet / hostid
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16.7M addrs

Class B: /16

10	netid	subnet / hostid
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64K addrs

Class C: /24

110	netid	subnet/hostid
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256 addrs