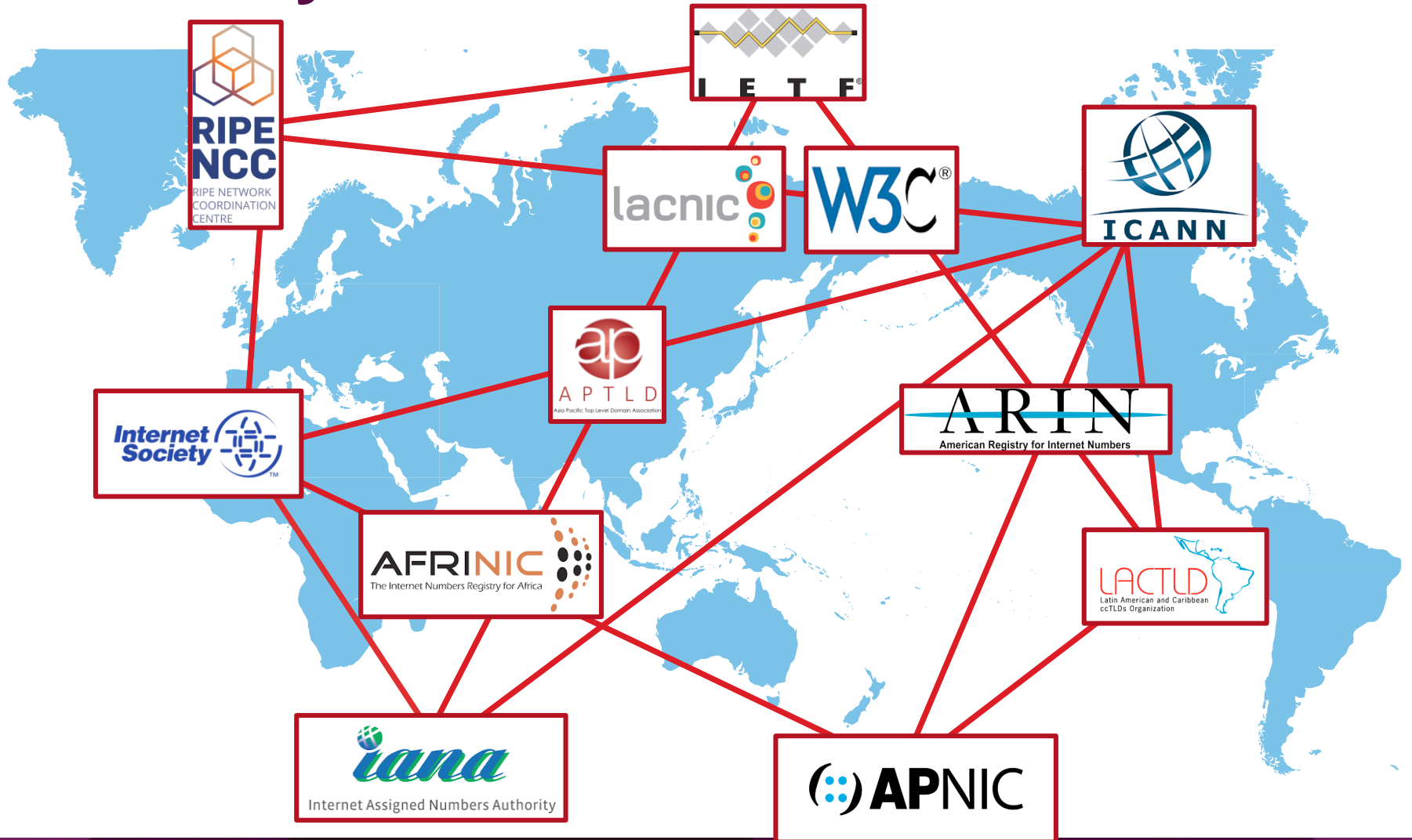


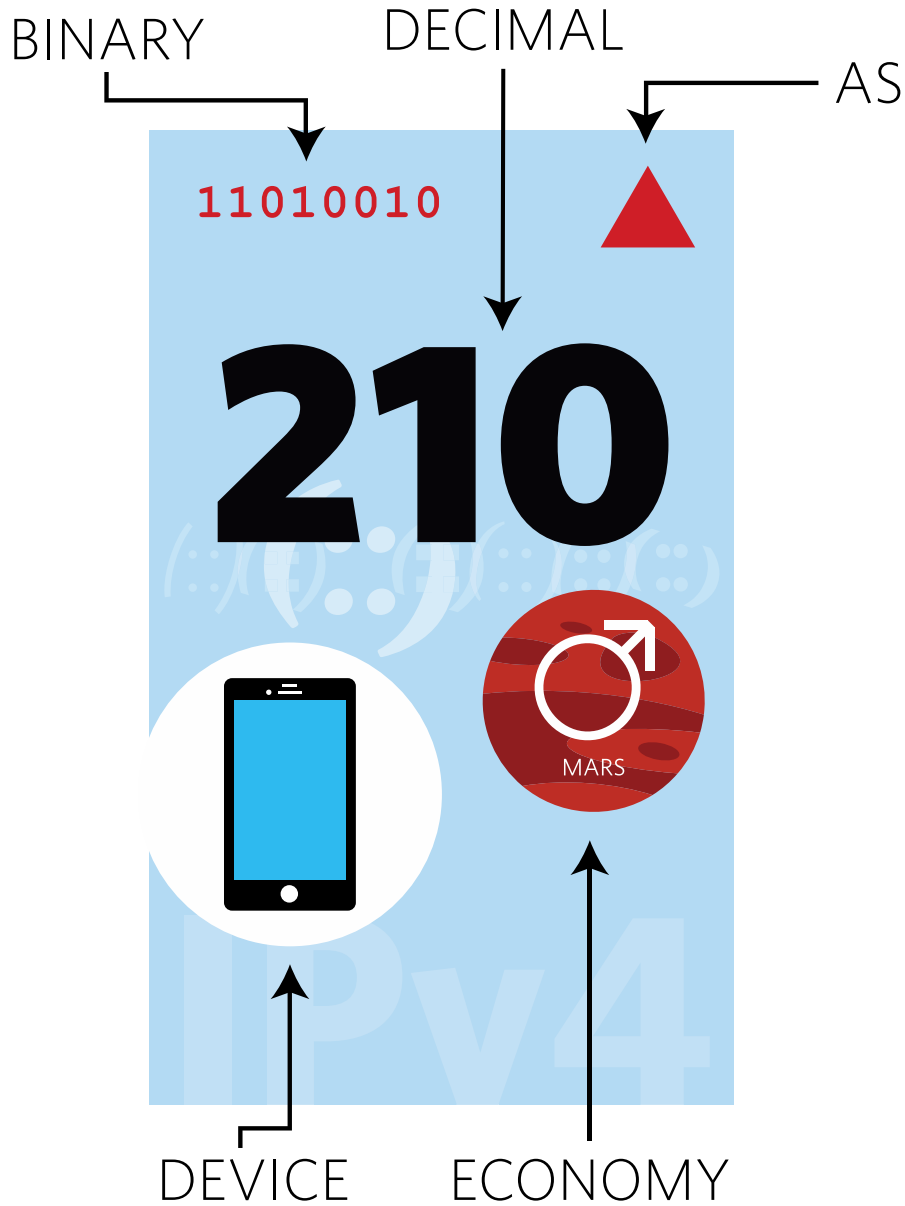
Internet Fundamentals

Pablo Hinojosa

@lphinojosa

I* Ecosystem







```

00000000  00000000
00000001  00000001
00000010  00000010
00000011  00000011
00000100  00000100
00000101  00000101
00000110  00000110
00000111  00000111
  
```

Class	Leading bits	Size
A	0	0.0
B	10	12
C	110	19
D	1110	22
E	1111	24

An IPv4 address (dotted-decimal notation)

172 . 16 . 254 . 1

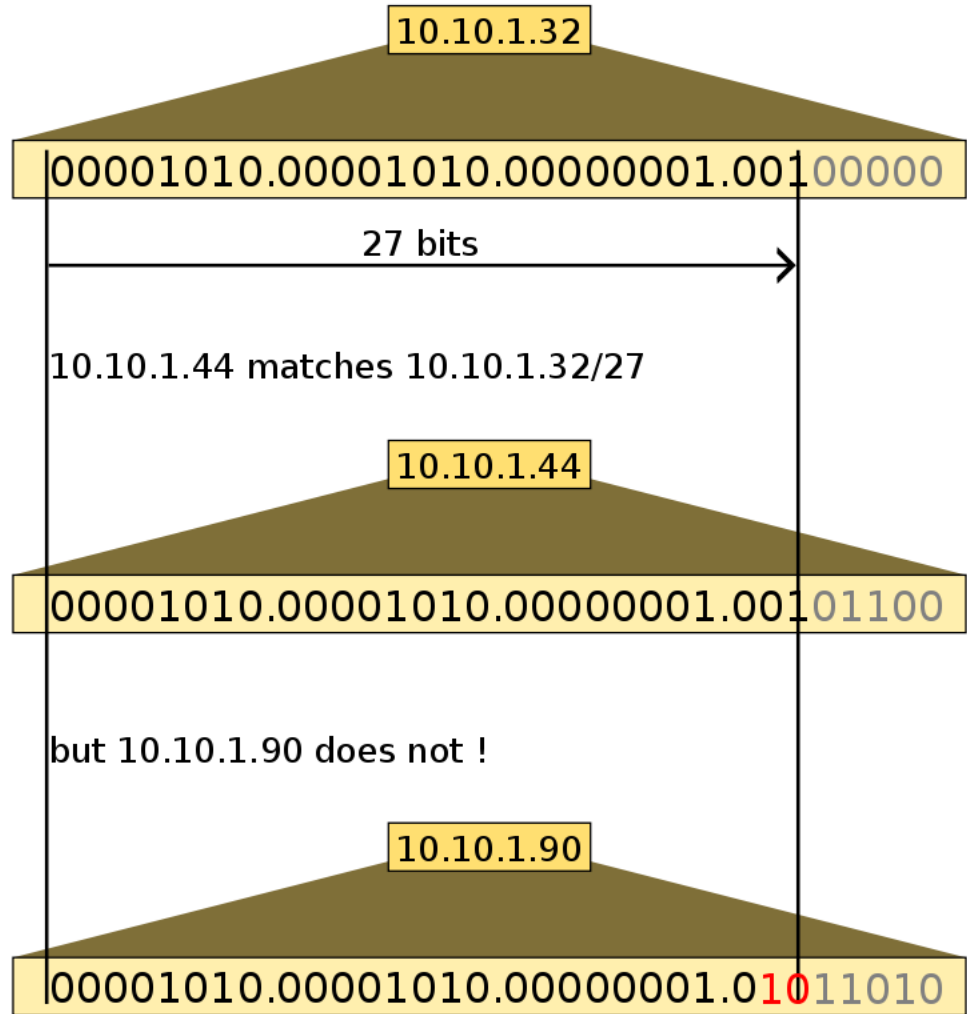
↓ ↓ ↓ ↓

10101100 . 00010000 . 11111110 . 00000001

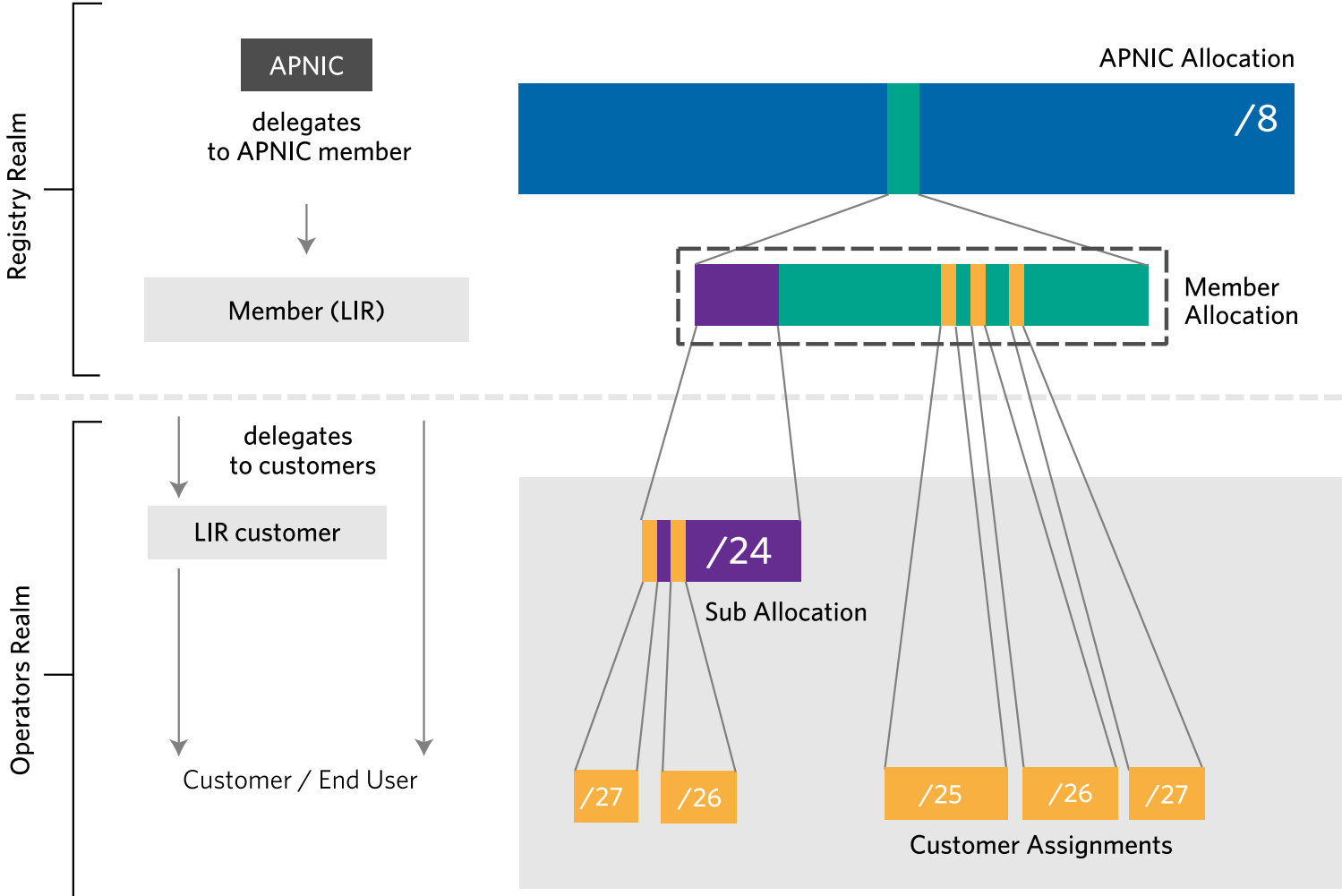
┌──────────┐ ┌──────────┐
 One byte = Eight bits

┌──┐
 Thirty-two bits (4 x 8), or 4 bytes

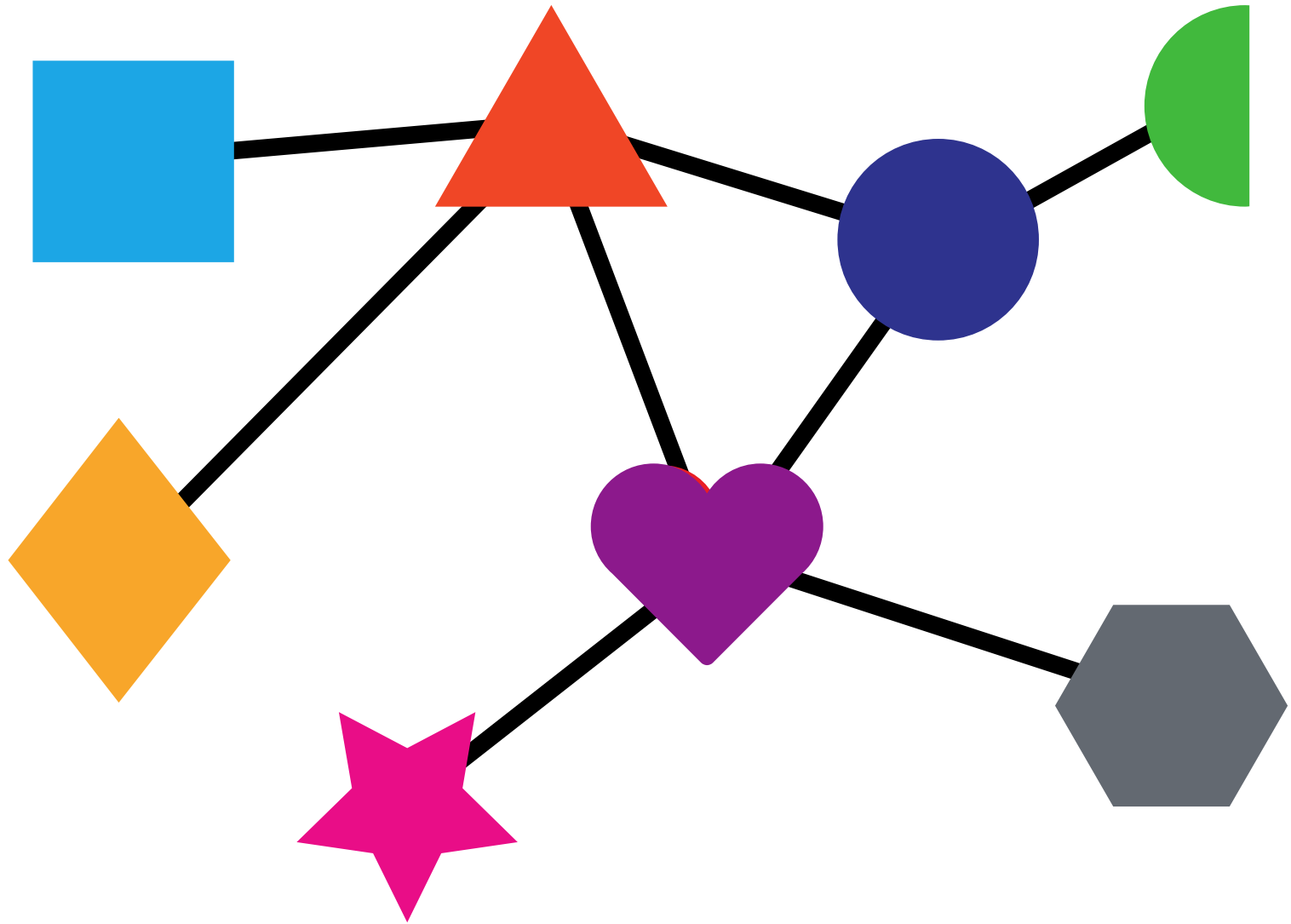
cimal notation	CIDR notation
	/8
	/16
	/24
	not defined
	not defined

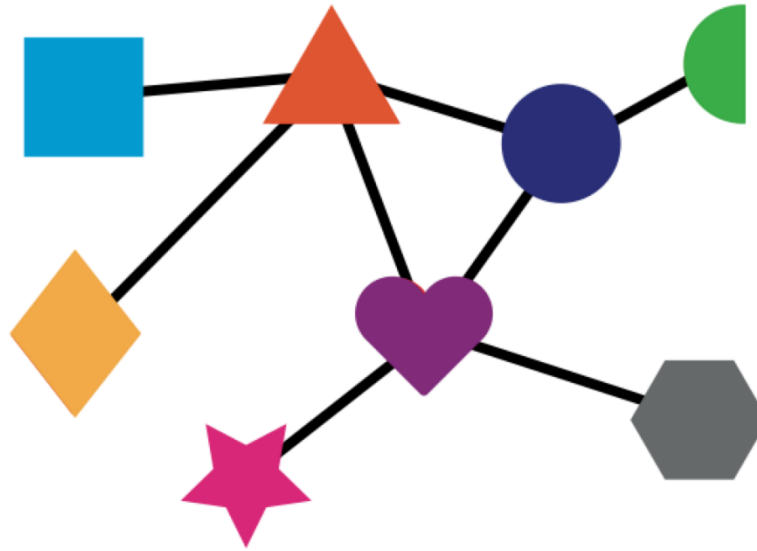














































How IP Addresses are Delegated

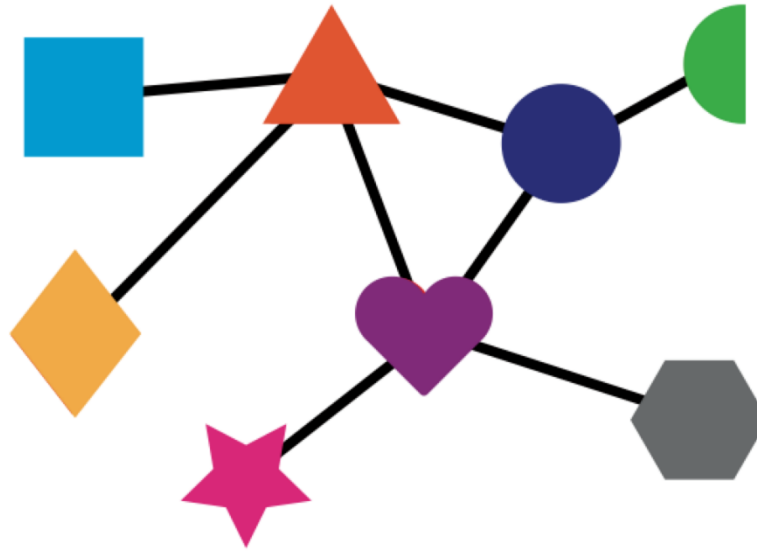



















































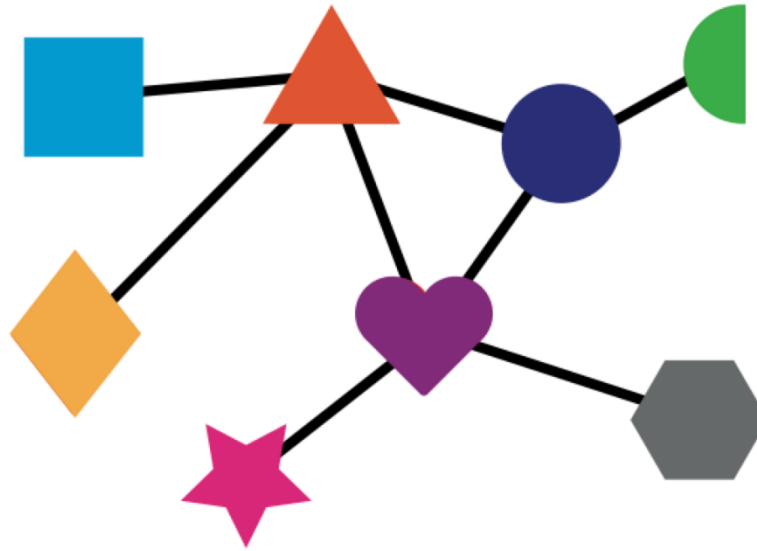





















































Diamond's Routing Table							
							
							
		 	 		 		 
		 	 		 		 
			 		 		 


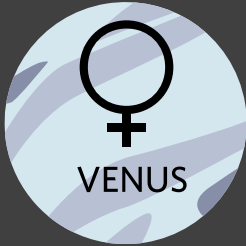

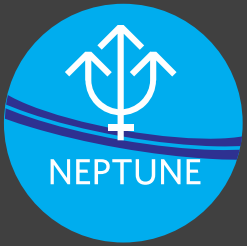
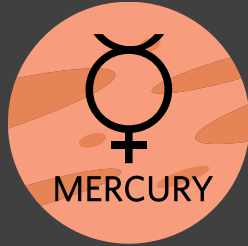



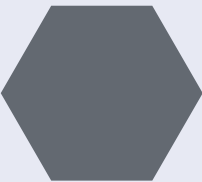

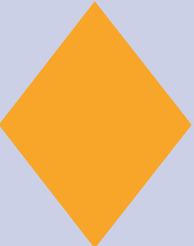

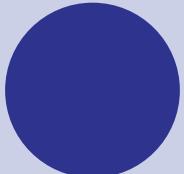

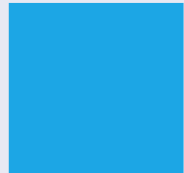



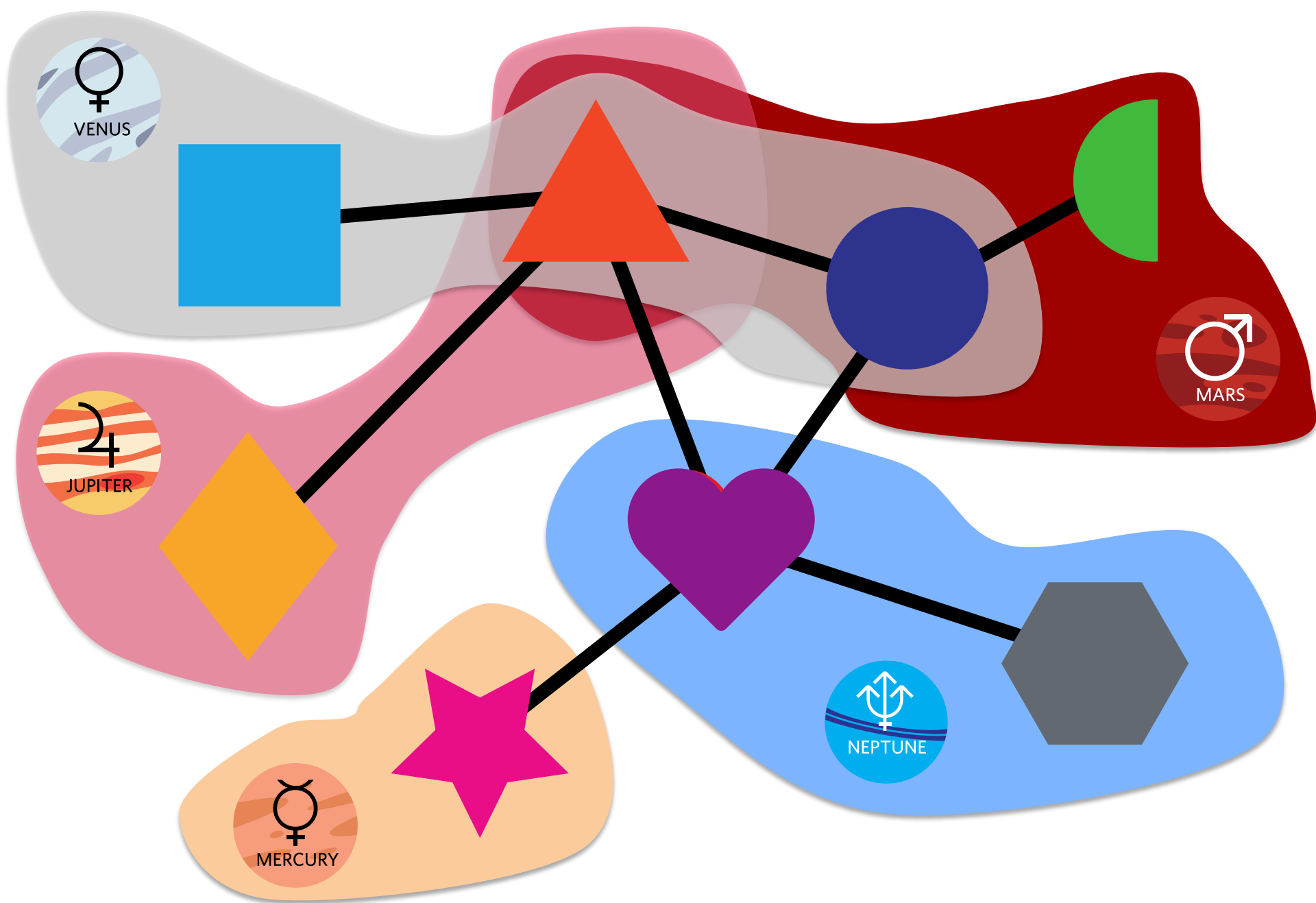
Square's Routing Table							
							
							
			 		 	 	 
			 		 	 	 
			 		 		 
							



Hexagon's Routing Table							
							
							
 	 	 	 	 			
 	 	 	 	 			
 	 	 	 	 			

Market Presence

 <p>JUPITER</p>	 <p>VENUS</p>	 <p>MARS</p>	 <p>NEPTUNE</p>	 <p>MERCURY</p>
				
				
				



APNIC

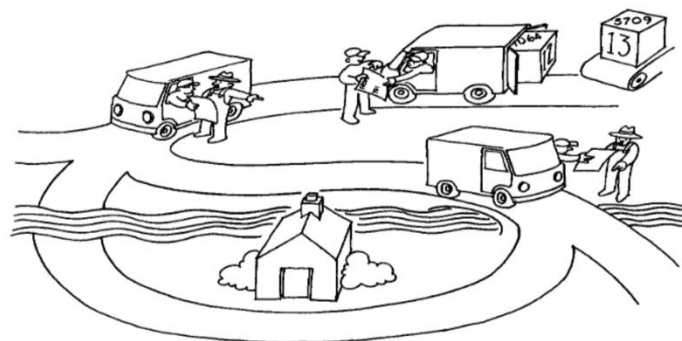


Sending data over the Internet

Data is sent over the Internet in discrete packets



Packets are sent from 'source' to 'destination'

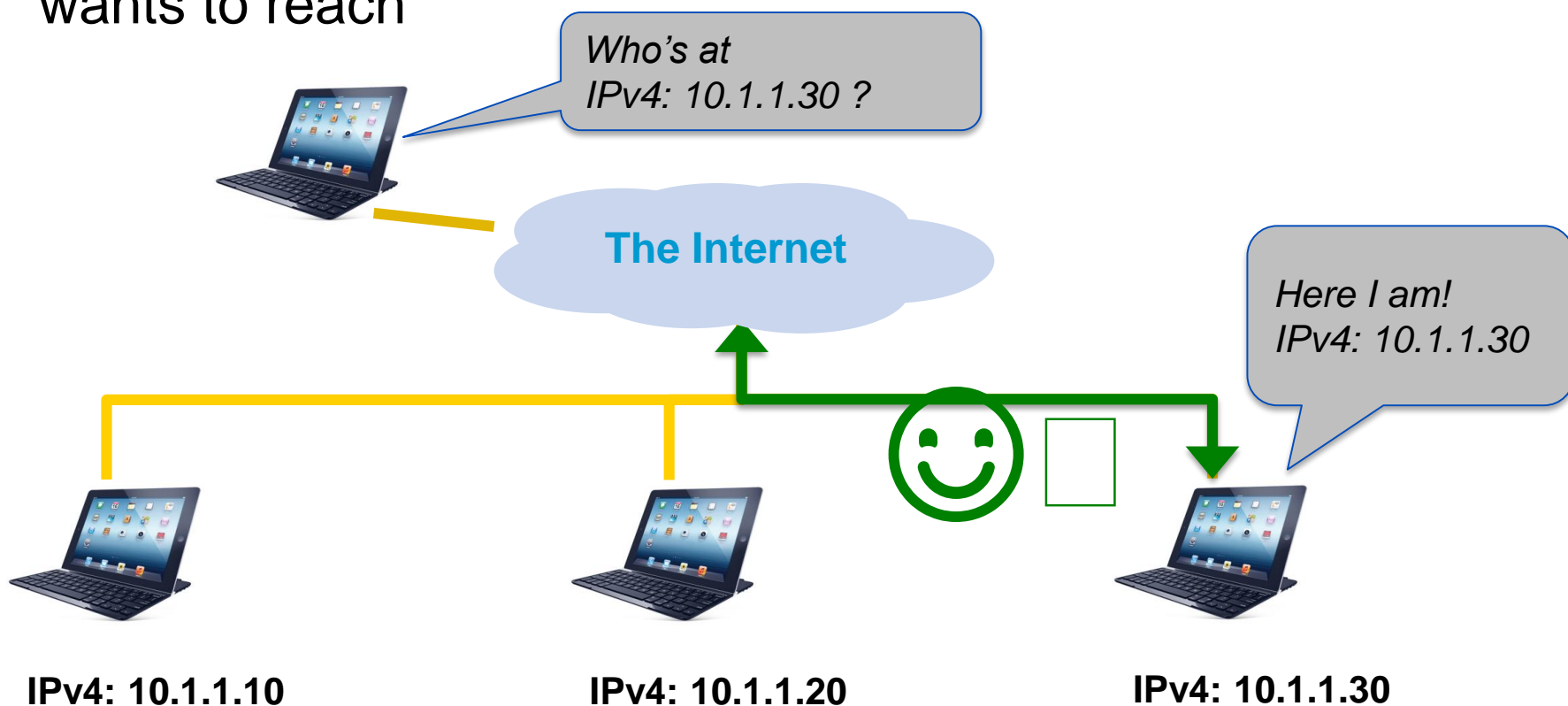


Every source and destination in the Internet must have an IP address

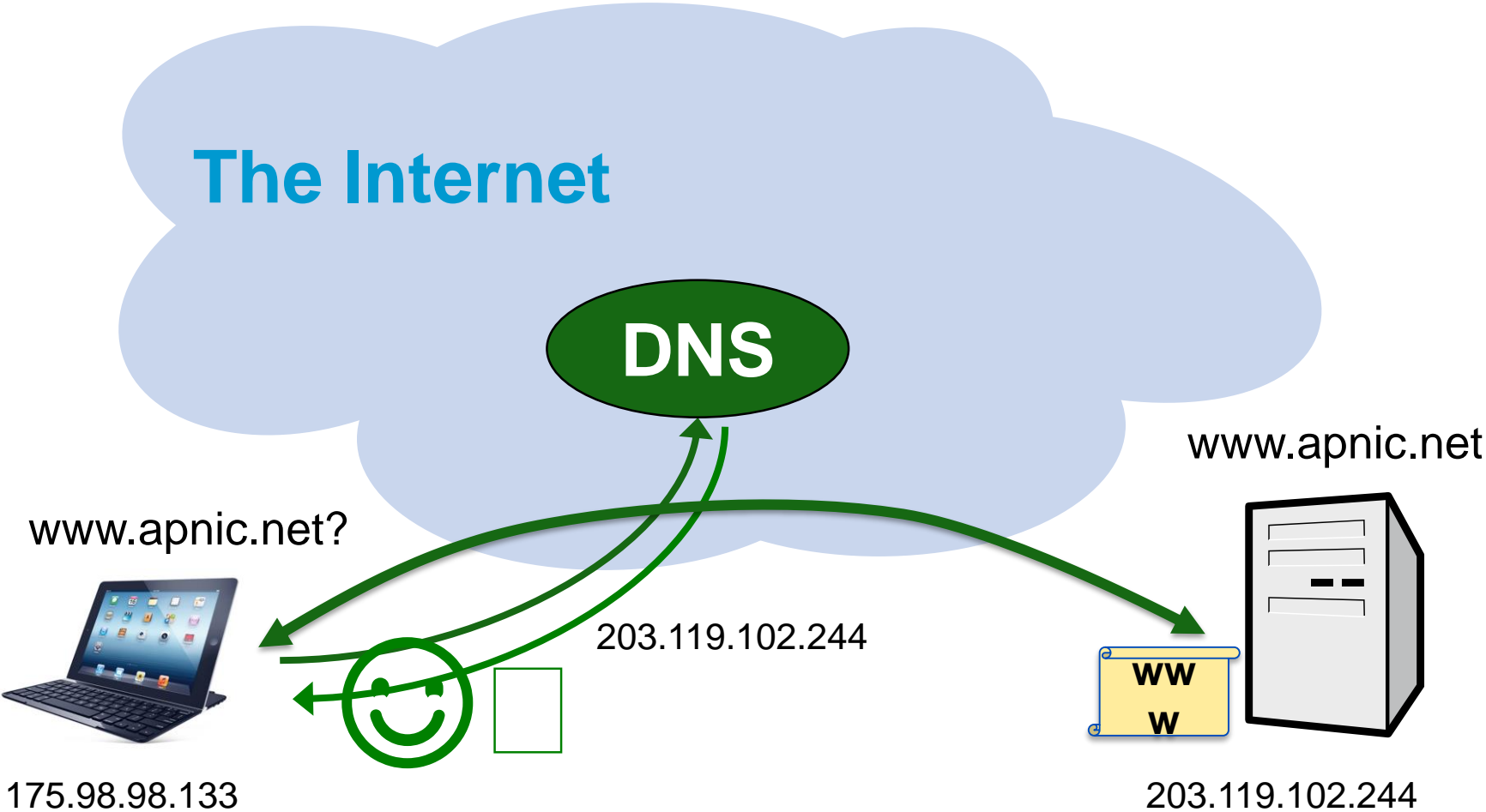


IPv4 Address Resolution

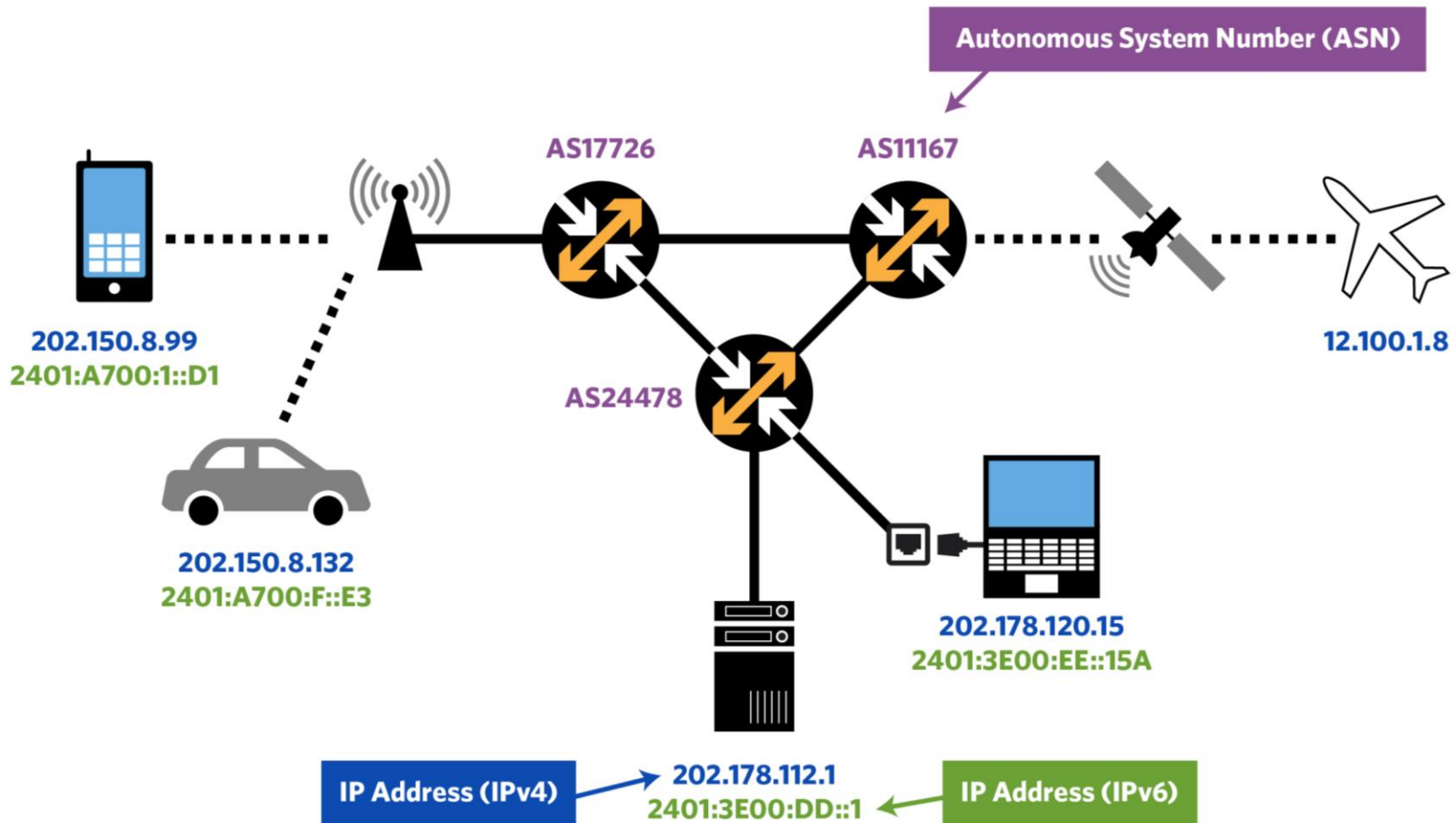
- Using any TCP/IP device to discover an IPv4 address that it wants to reach



Domain Name Resolution



IP addresses and ASNs



Resource Management

Conservation

- Efficient use of resources
- Based on demonstrated need

Aggregation

- Limit routing table growth
- Support provider-based routing

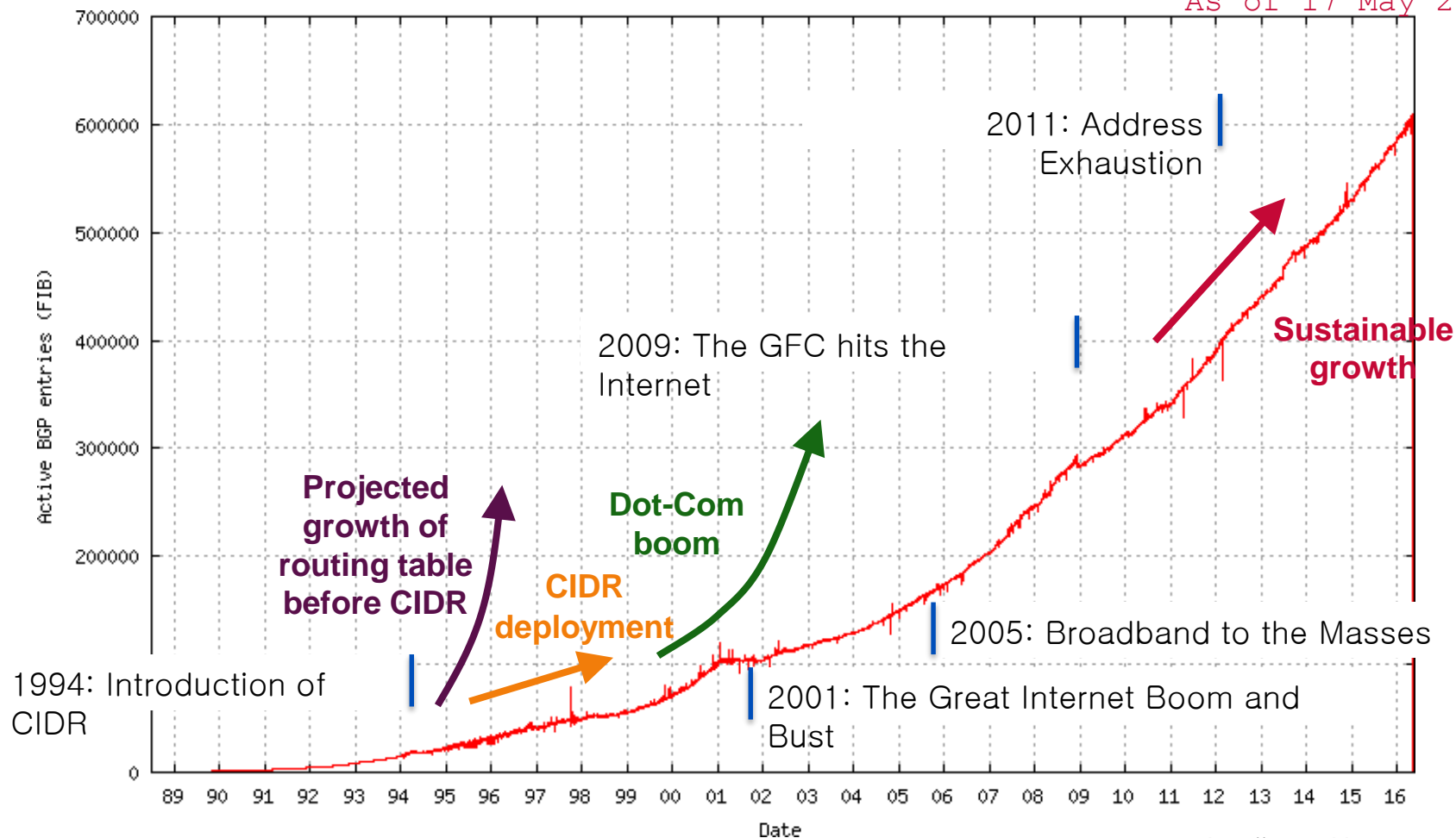
Registration

- Ensure uniqueness
- Facilitate trouble shooting

Uniqueness, fairness and consistency

Growth of the Global Routing Table

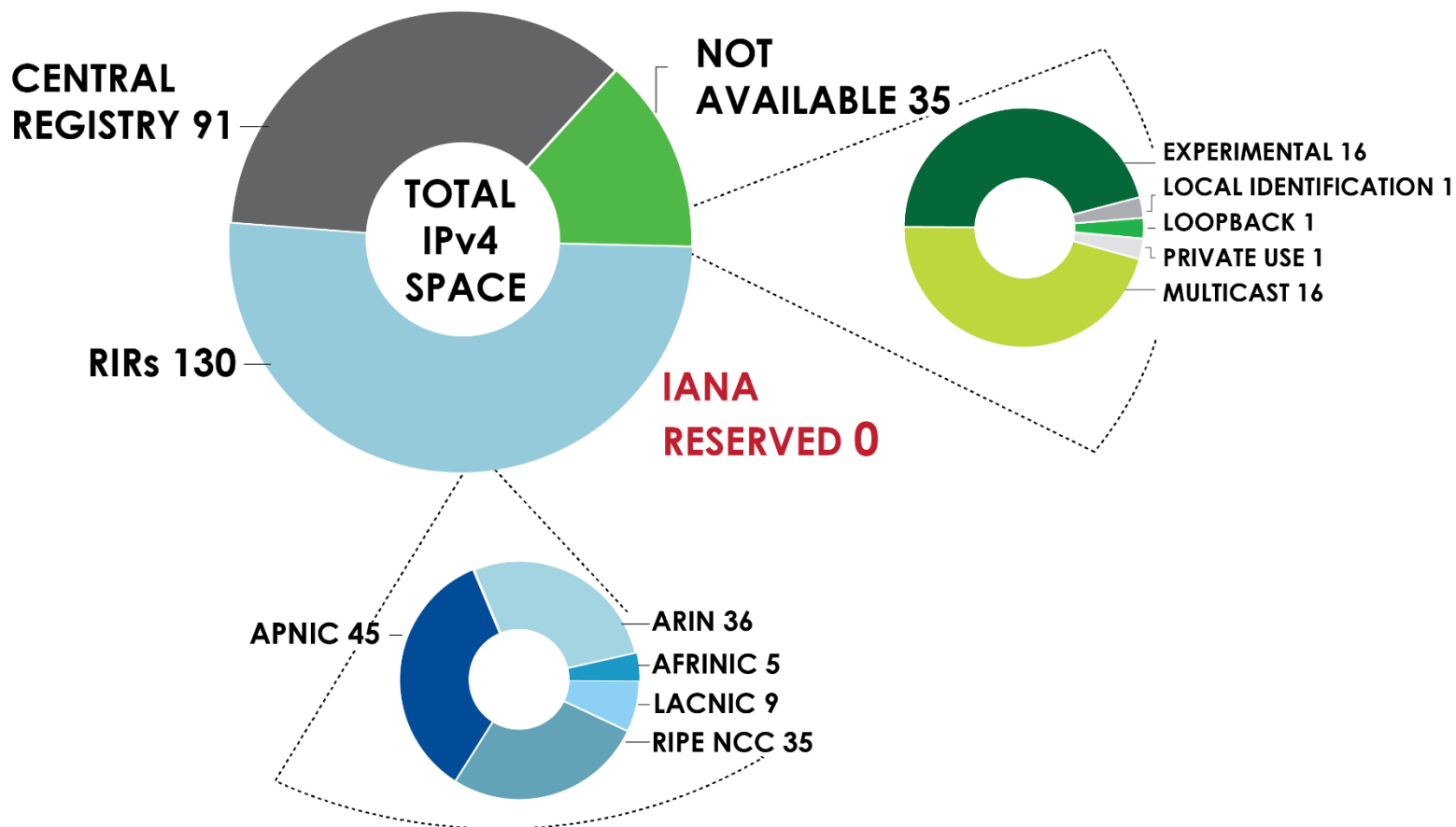
609615 prefixes
As of 17 May 2016



<http://www.cidr-report.org/as2.0/>

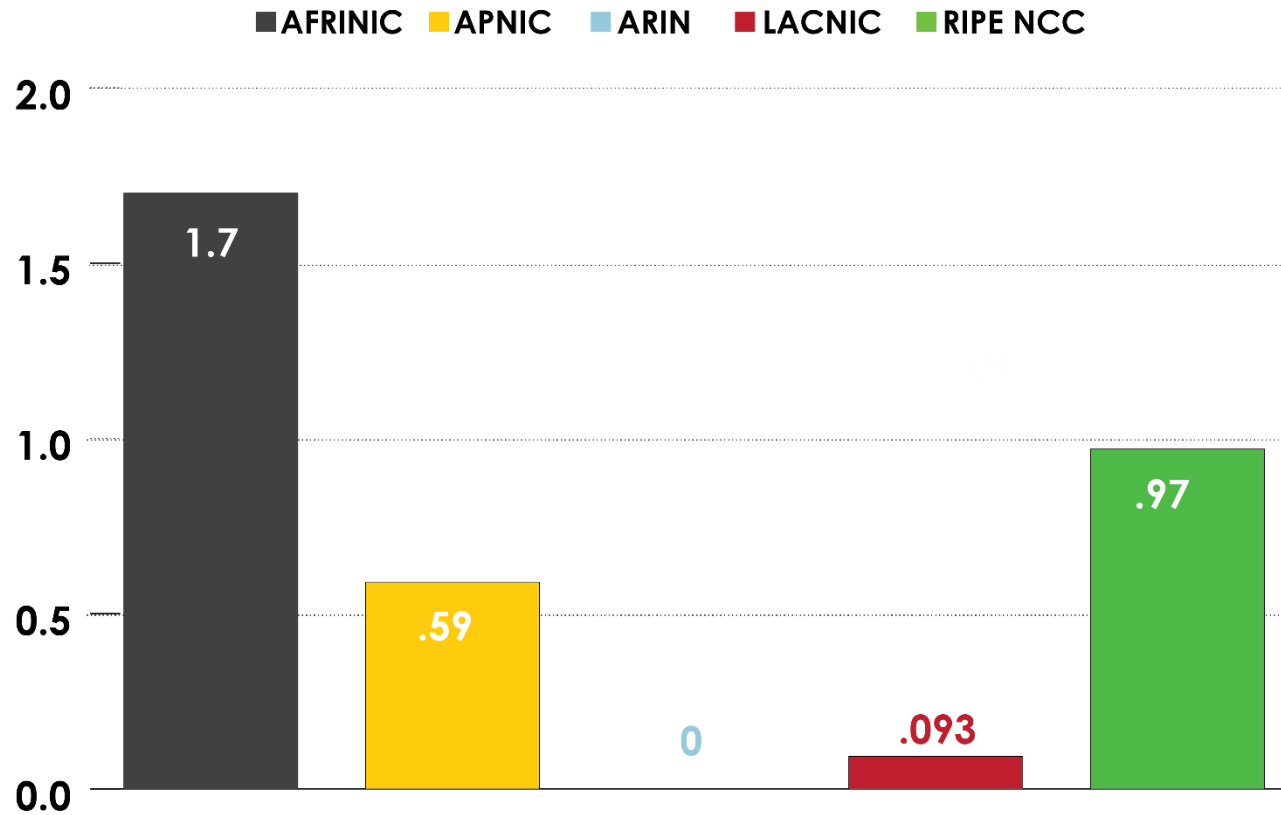
IPv4 Address Space

STATUS OF 256 /8s IPv4 ADDRESS SPACE



NRQ Q1 2016

Available IPv4 /8s in Each RIR











APNIC



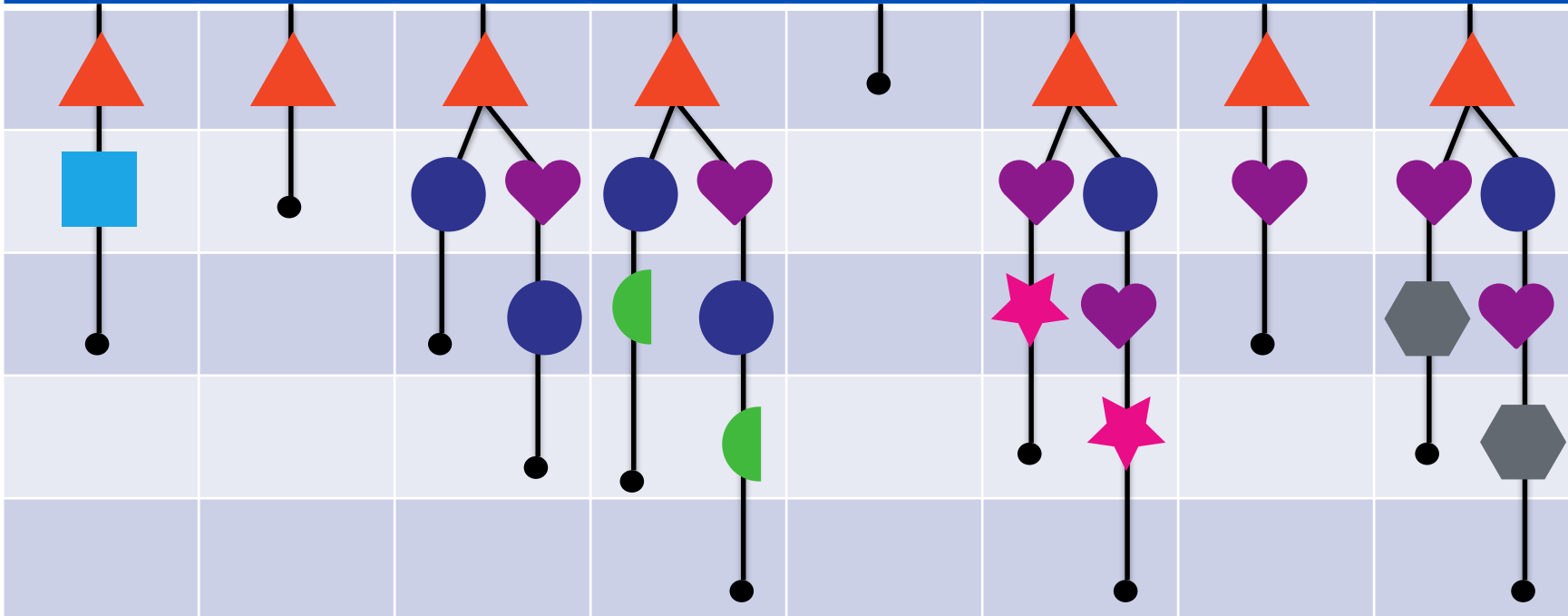


Diamond's Routing Table

Announcements

									
•128	•0 •8 •16 •136 •144	•152 •168 •192 •208 •248	•40 •48 •56 •80 •96	•104 •112 •160 •176 •224	•64 •72	•120 •184	•216	•200 •240	•24 •32 •88 •232









Pathways



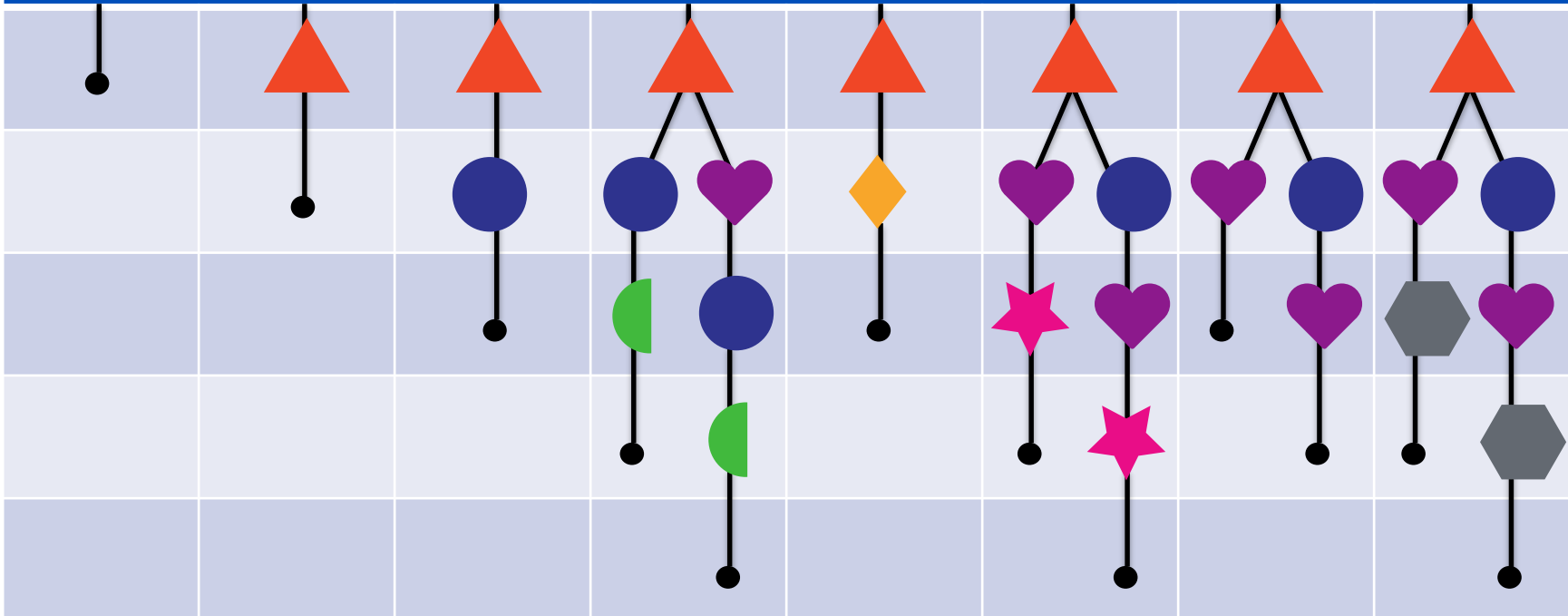


Square's Routing Table

Announcements

									
•128	•0 •8 •16 •136 •144	•152 •168 •192 •208 •248	•40 •48 •56 •80 •96	•104 •112 •160 •176 •224	•64 •72	•120 •184	•216	•200 •240	•24 •32 •88 •232









Pathways



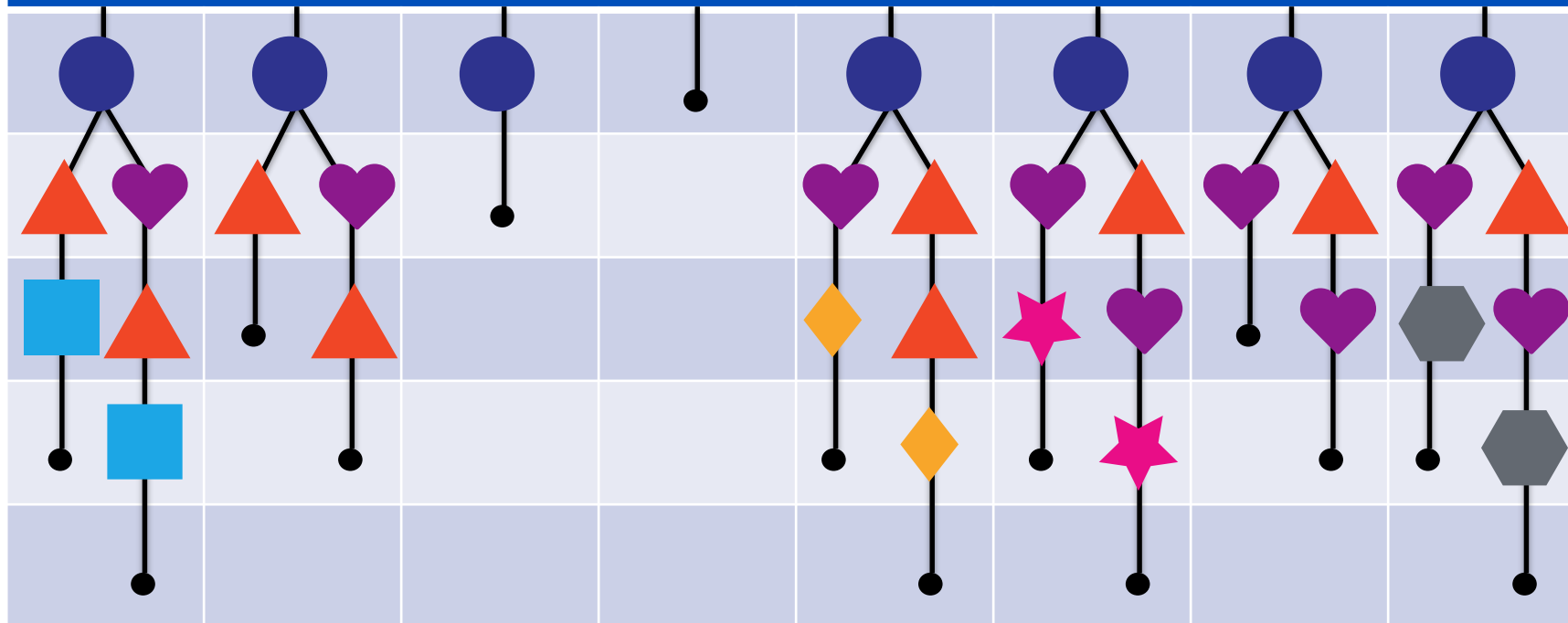


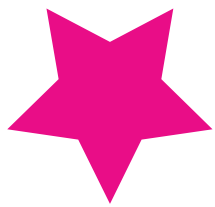
Semicircle's Routing Table

Announcements

									
•128	•0 •8 •16 •136 •144	•152 •168 •192 •208 •248	•40 •48 •56 •80 •96	•104 •112 •160 •176 •224	•64 •72	•120 •184	•216	•200 •240	•24 •32 •88 •232









Pathways



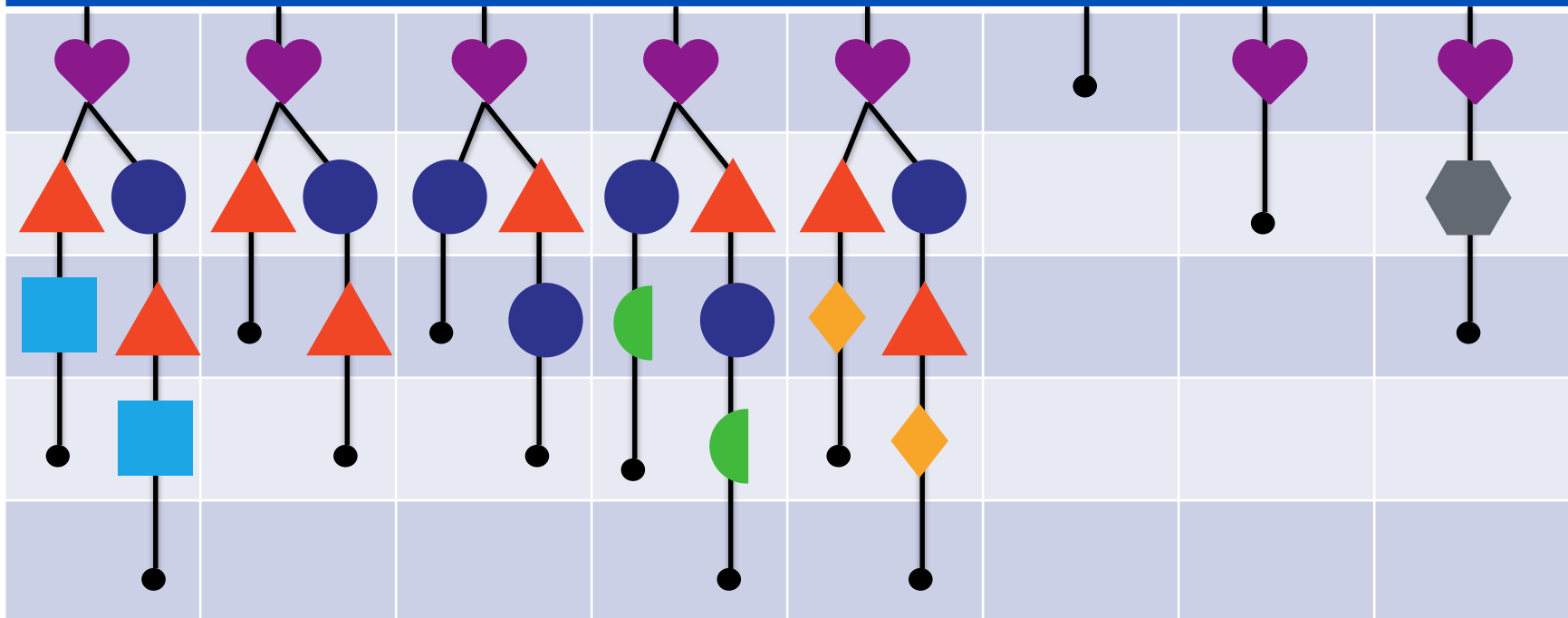


Star's Routing Table

Announcements

									
•128	•0 •8 •16 •136 •144	•152 •168 •192 •208 •248	•40 •48 •56 •80 •96	•104 •112 •160 •176 •224	•64 •72	•120 •184	•216	•200 •240	•24 •32 •88 •232









Pathways



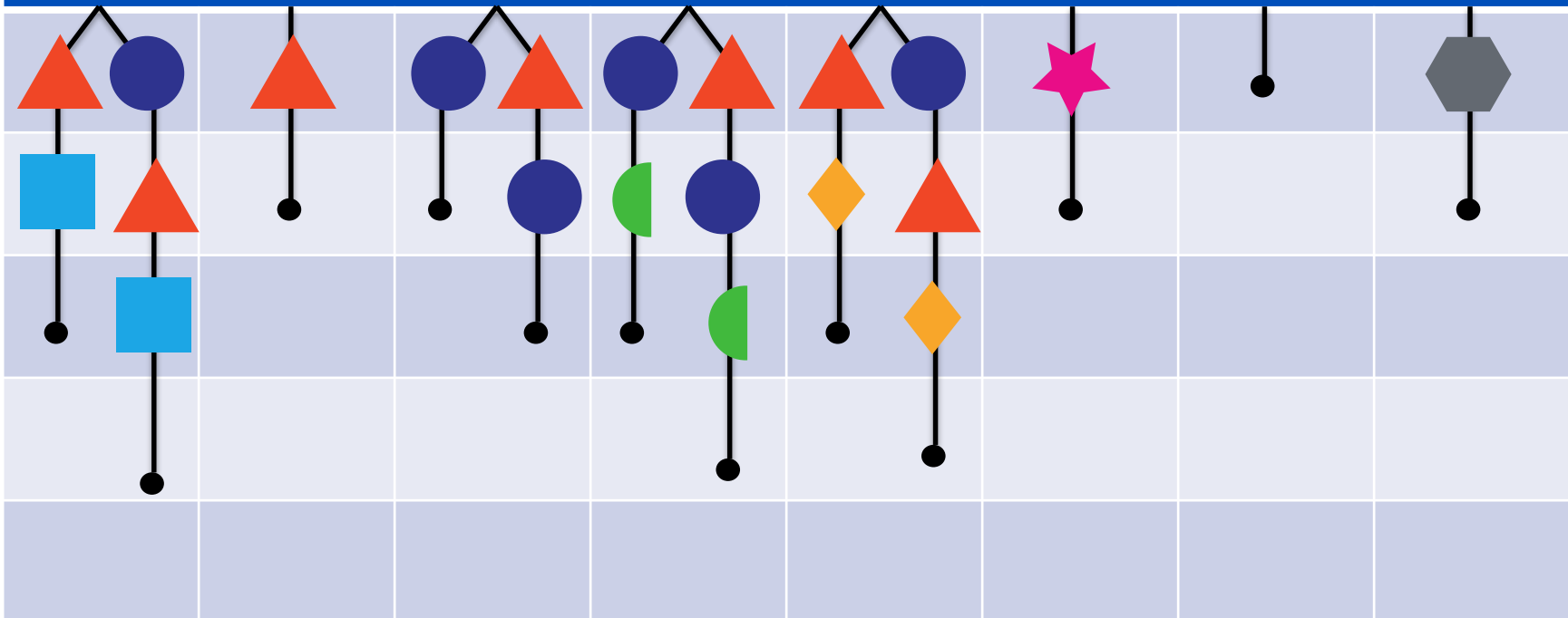


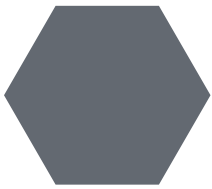
Heart's Routing Table

Announcements

									
•128	•0 •8 •16 •136 •144	•152 •168 •192 •208 •248	•40 •48 •56 •80 •96	•104 •112 •160 •176 •224	•64 •72	•120 •184	•216	•200 •240	•24 •32 •88 •232









Pathways





Hexagon's Routing Table

Announcements

									
•128	•0 •8 •16 •136 •144	•152 •168 •192 •208 •248	•40 •48 •56 •80 •96	•104 •112 •160 •176 •224	•64 •72	•120 •184	•216	•200 •240	•24 •32 •88 •232

Pathways

