

Addressing Networks

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APIGA 2017, 8 August, Seoul

APNIC

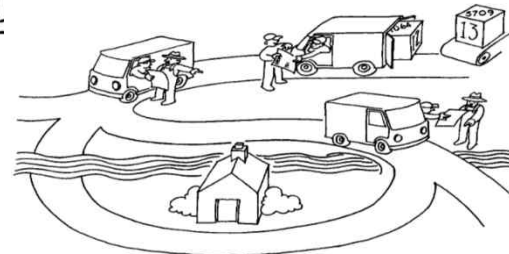


Sending data over the Internet

Data is sent over the Internet in discrete packets



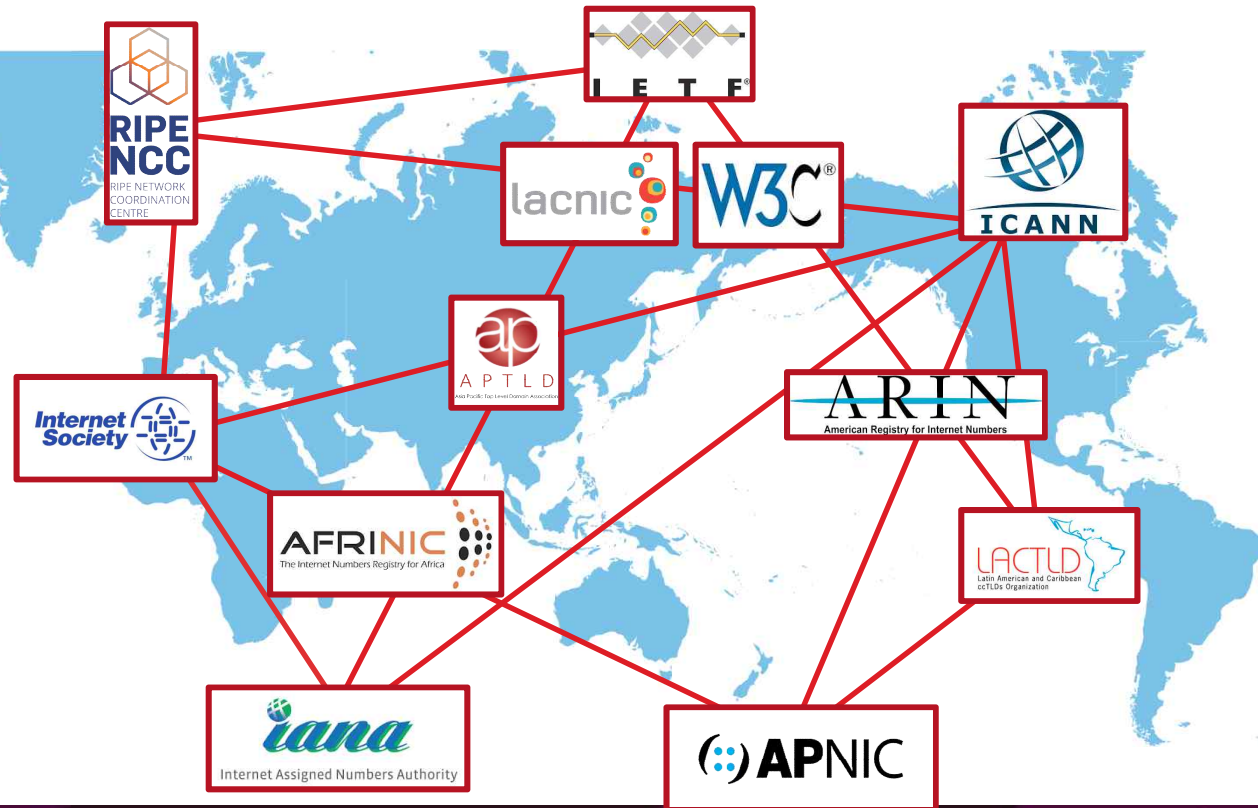
Packets are sent from 'source' to 'destination'



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



I* Ecosystem



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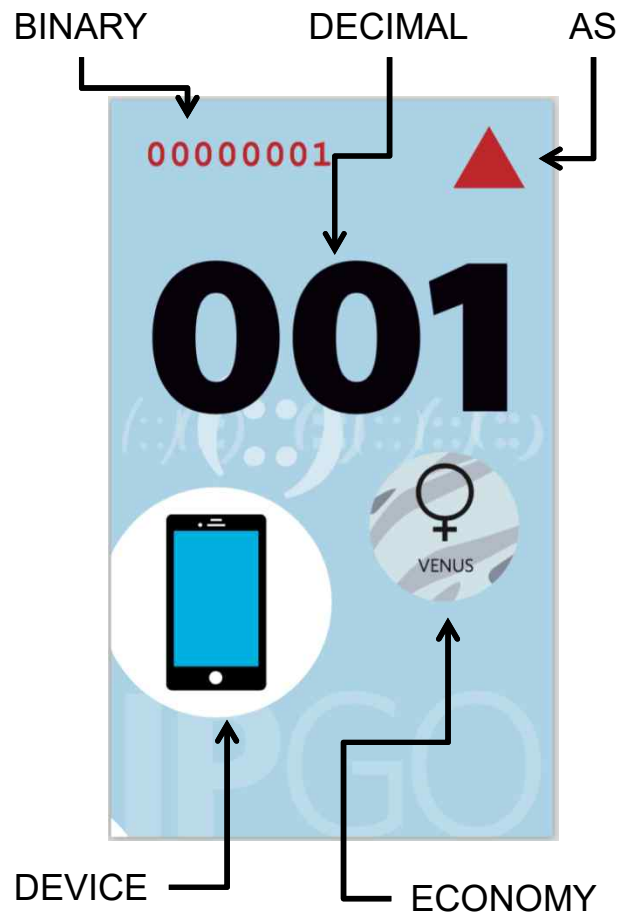
IPGO

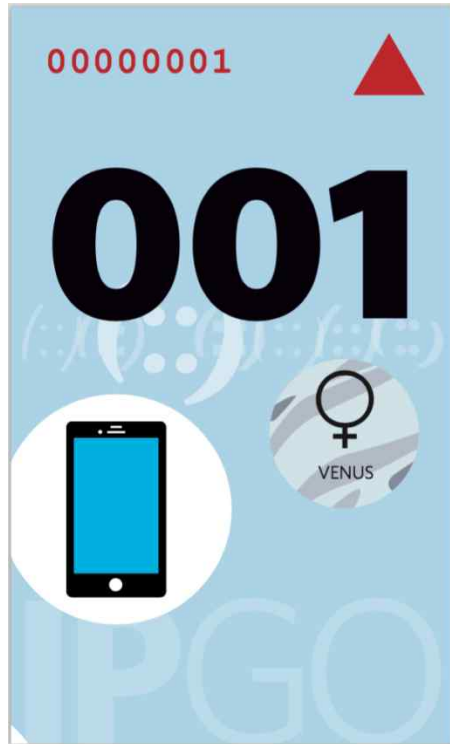
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1. Magic Box: critical Internet resources





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

An IPv4 address (dotted-decimal notation)

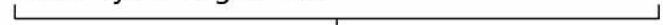
172 . 16 . 254 . 1



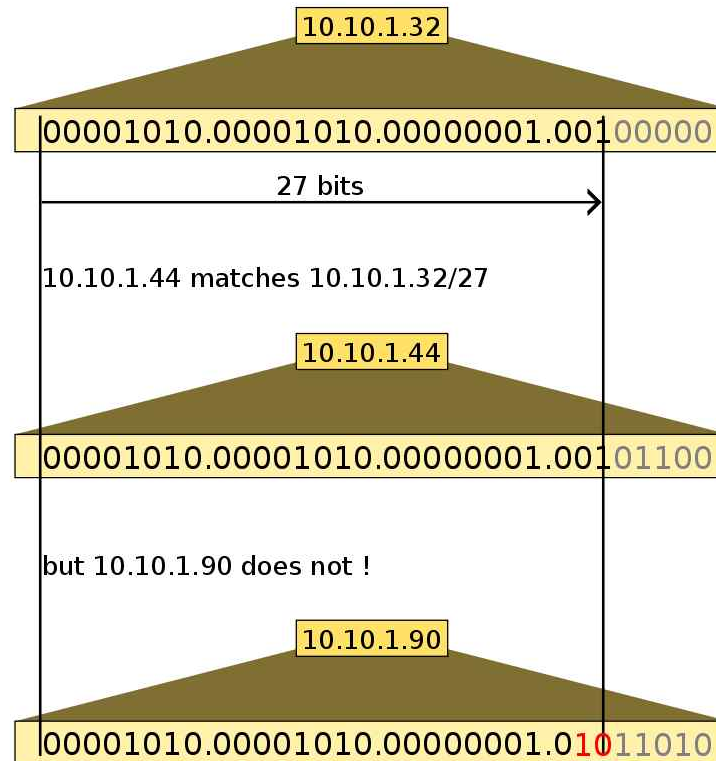
10101100 . 00010000 . 11111110 . 00000001



One byte = Eight bits

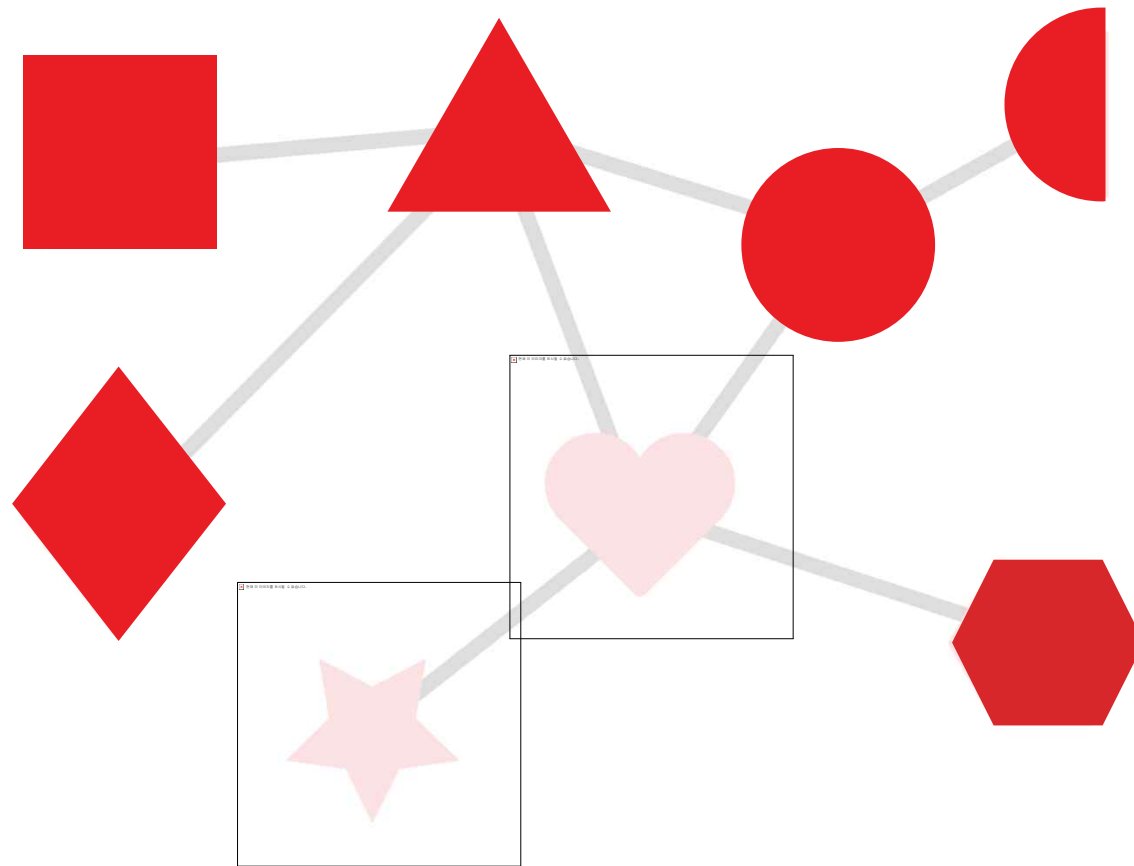


Thirty-two bits (4 x 8), or 4 bytes



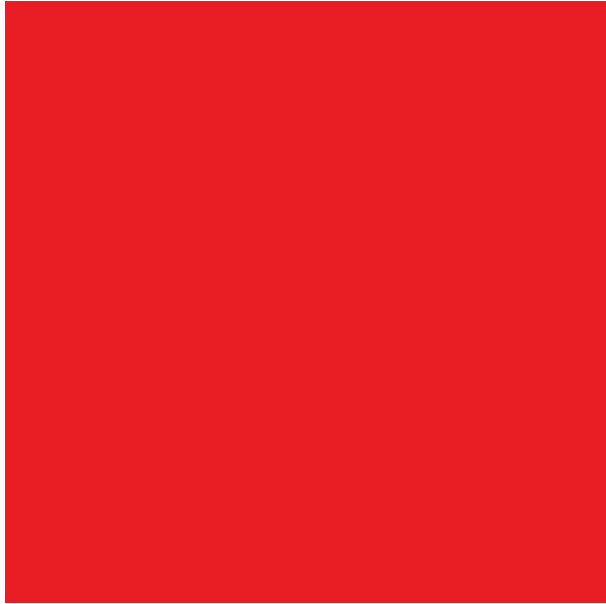


2. Autonomous Systems

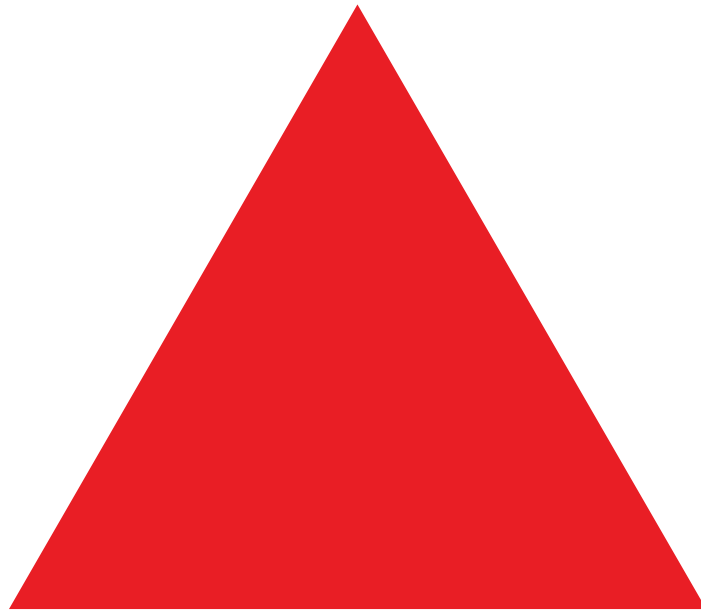


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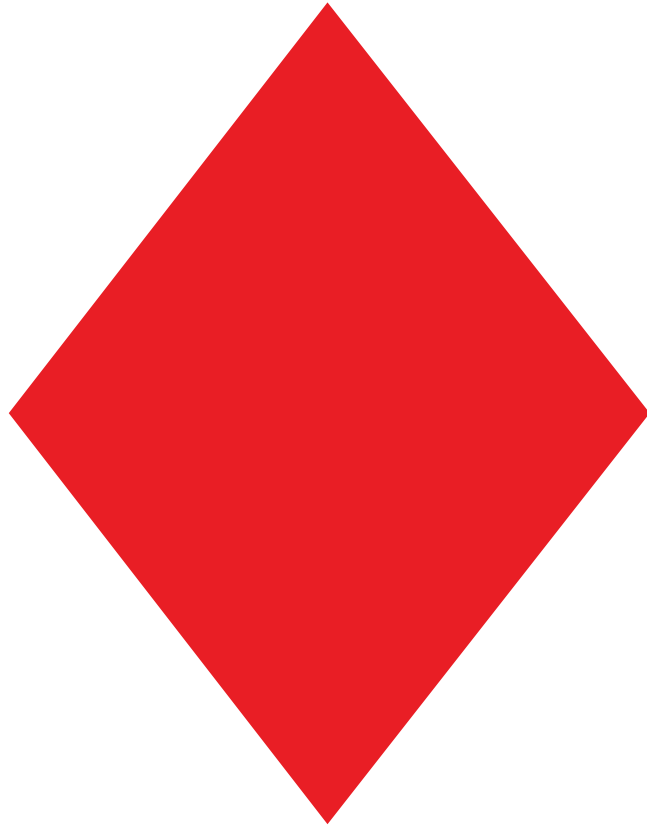




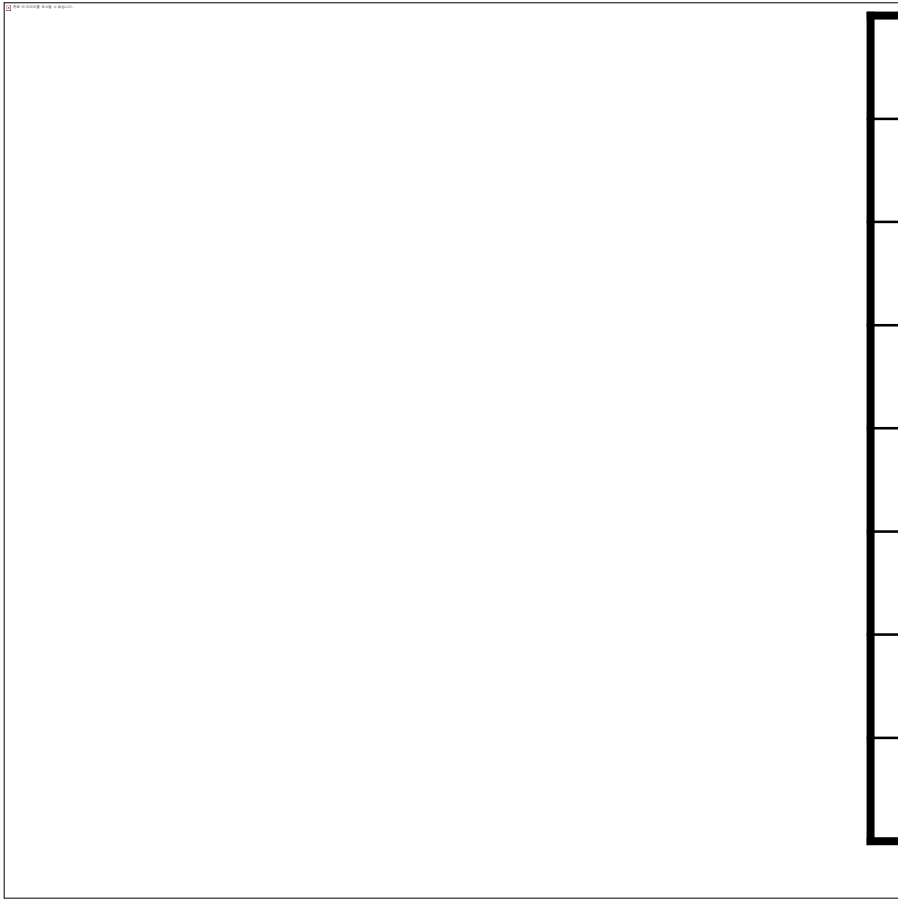
128



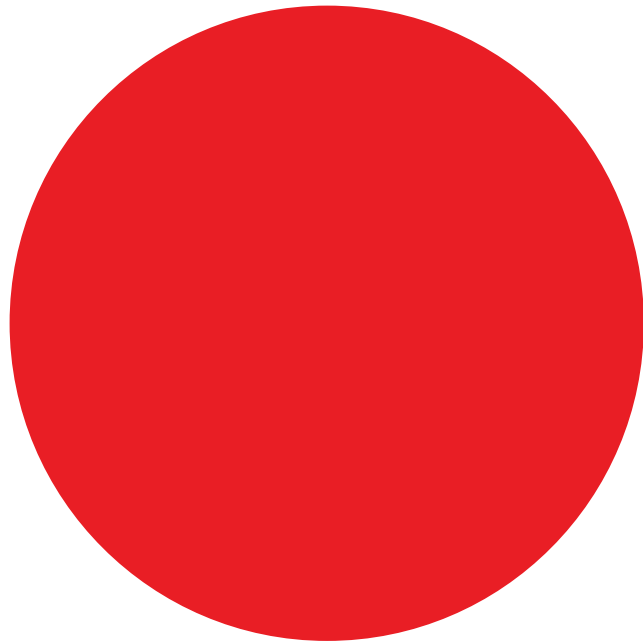
0
8
16
136
144
152
168,192
208, 248



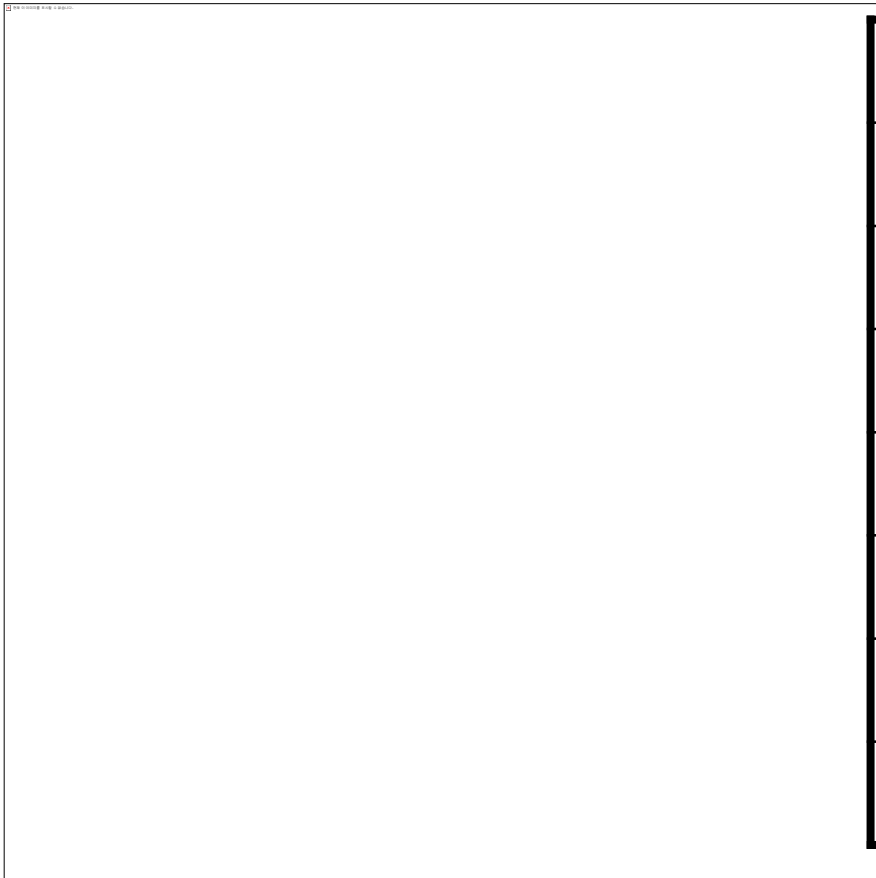
120
184



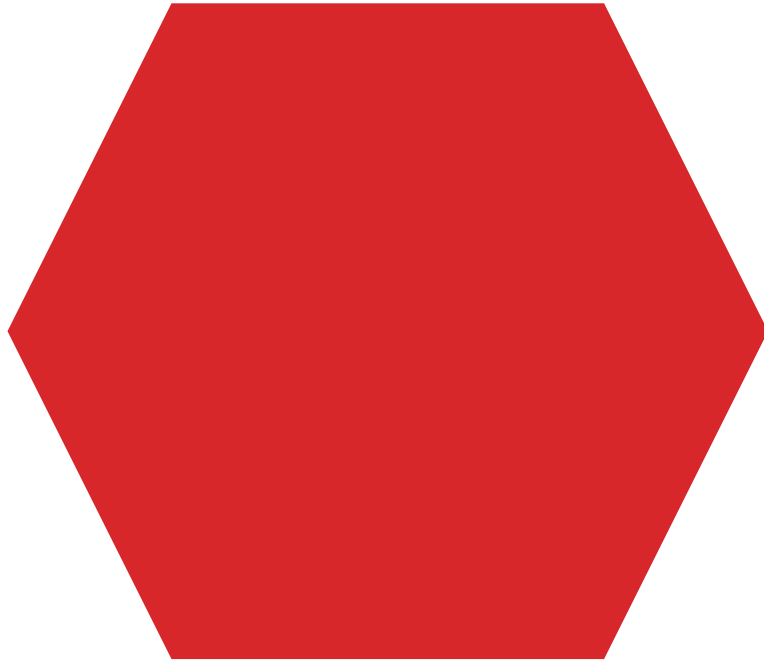
216



40
48
56
80
96
104, 112
160, 176
224



200
240



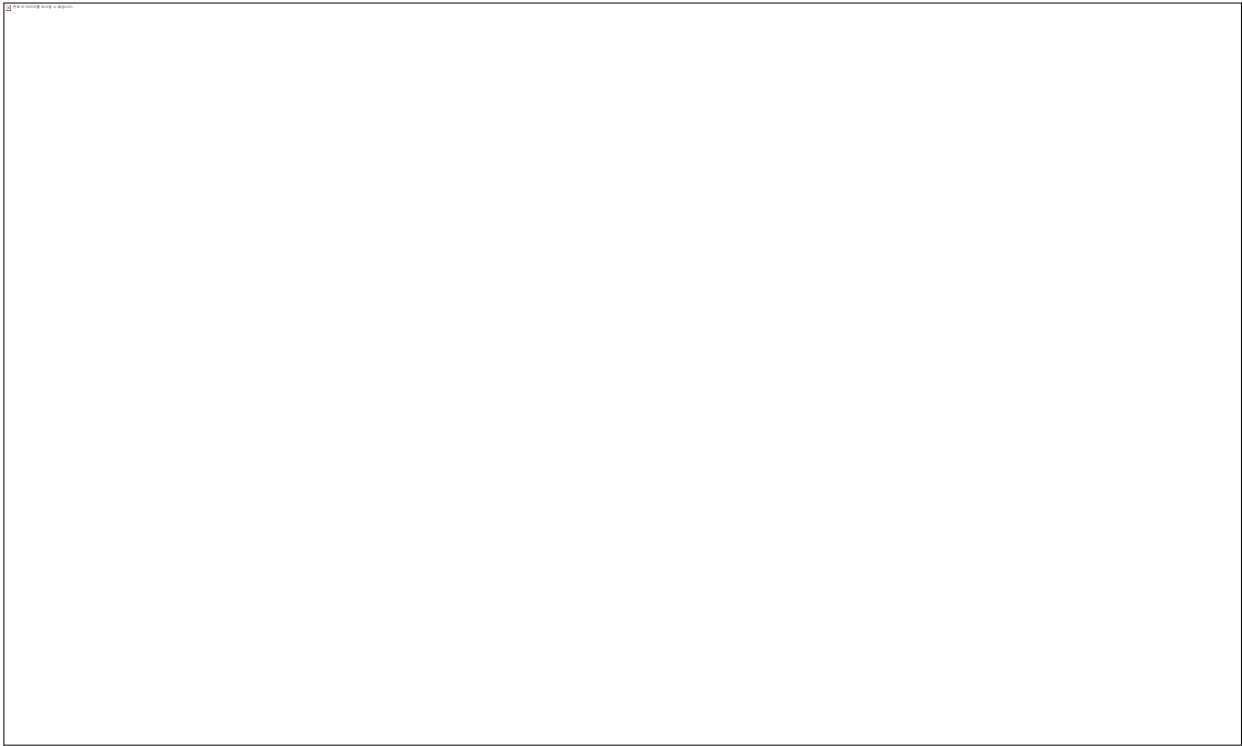
24
32
88
232



3. Routers



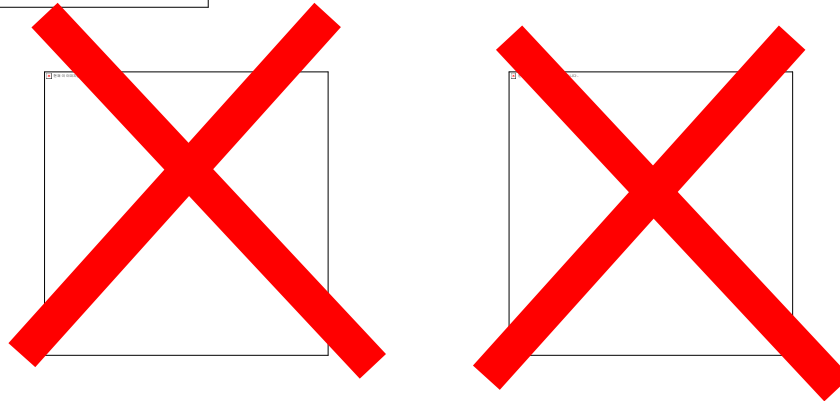
Routing





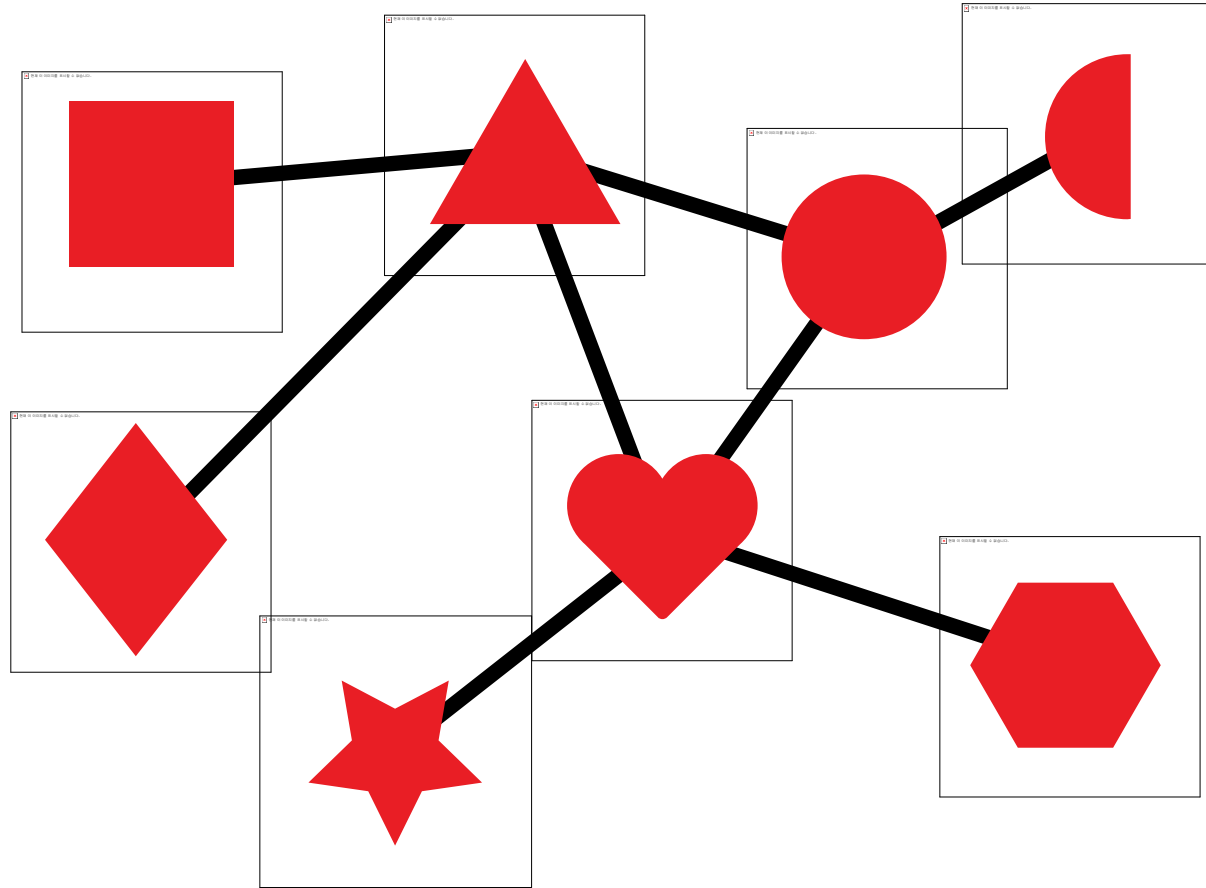
4. Establishing Communication

Computers: Turn ON





5. Building a Network

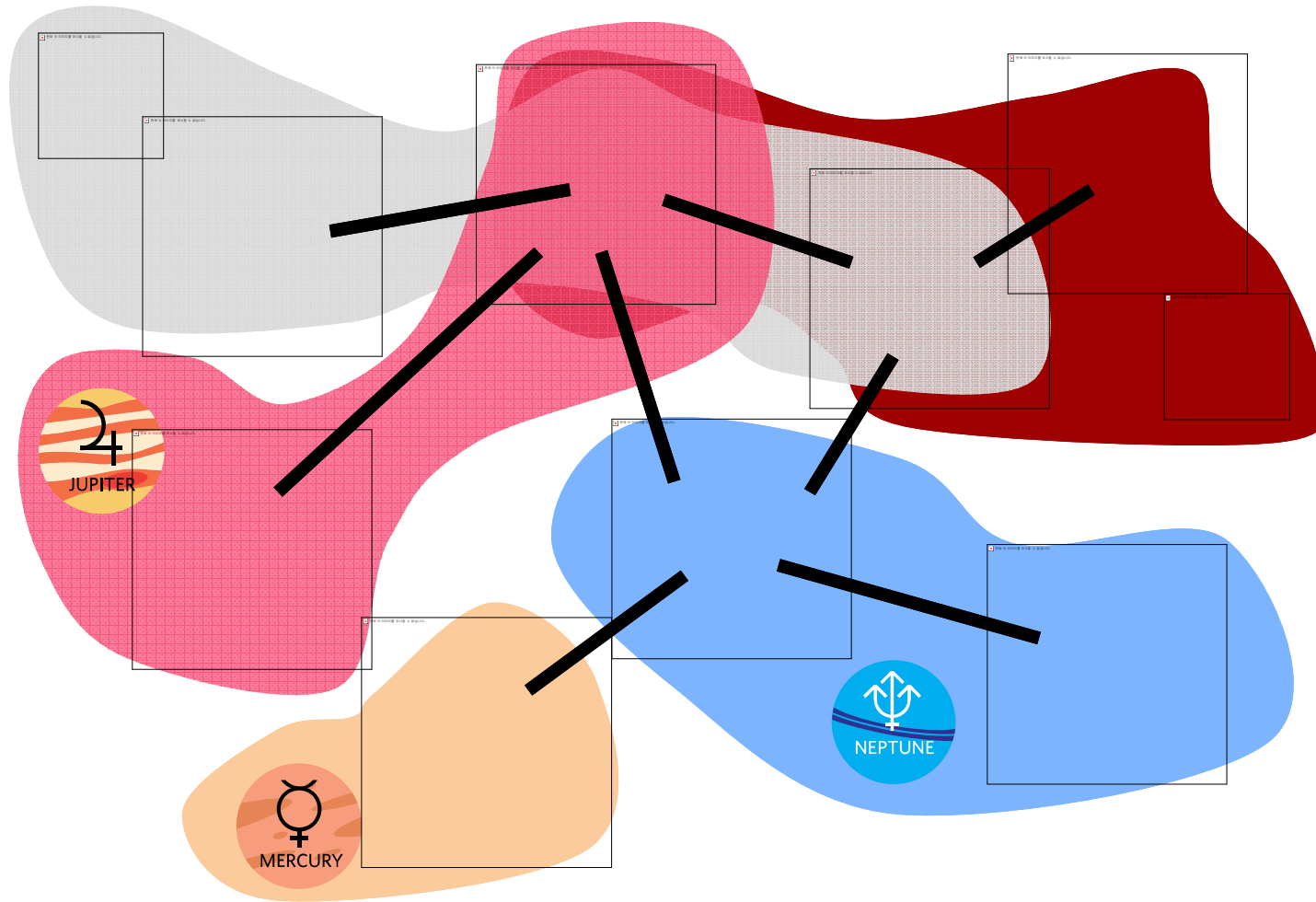


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6. Economics and Jurisdiction

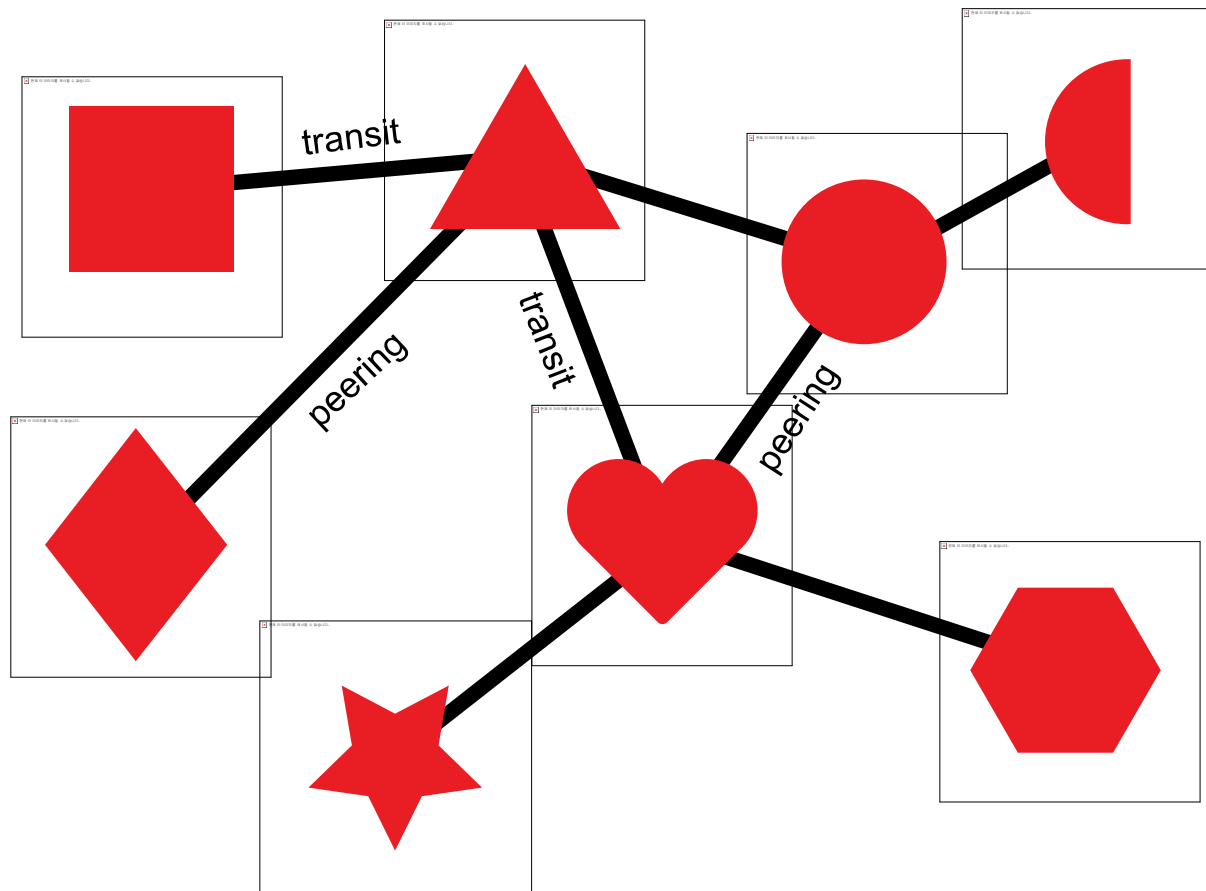


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Market Presence

 JUPITER			 NEPTUNE	 MERCURY

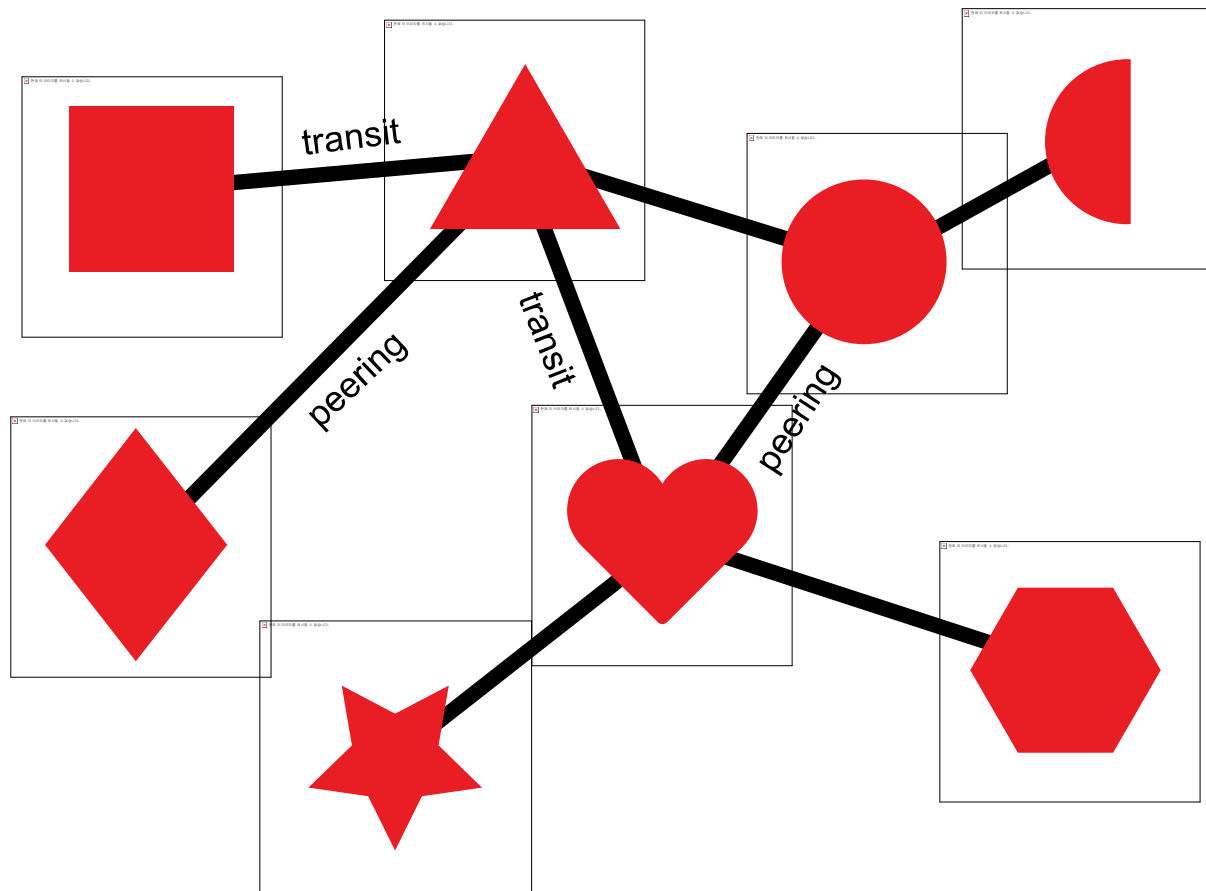


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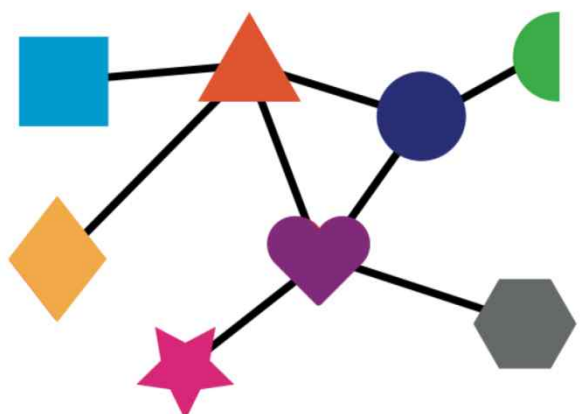


7. Sending Packets



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Square's Routing Table							
□	△	●	◐	◇	★	♥	⬡
●	△	△	△	△	△	△	△
	●	●	●	◇	♥	●	♥
		●	◐		★	♥	⬡
			●		★		⬡
			●				⬡

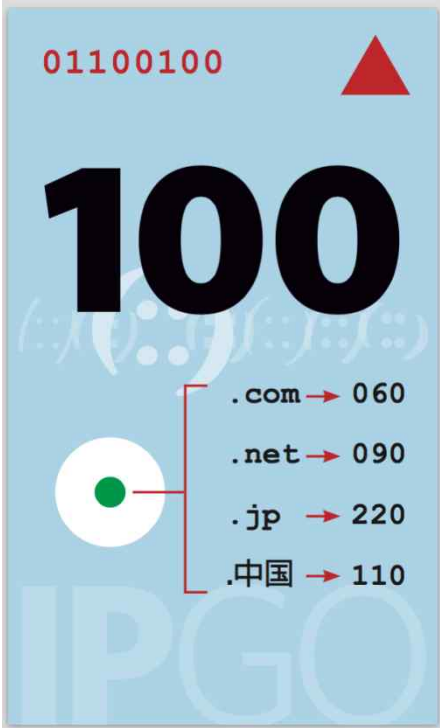
Hexagon's Routing Table

Destination	Next Hop	Administrative Distance	Metric
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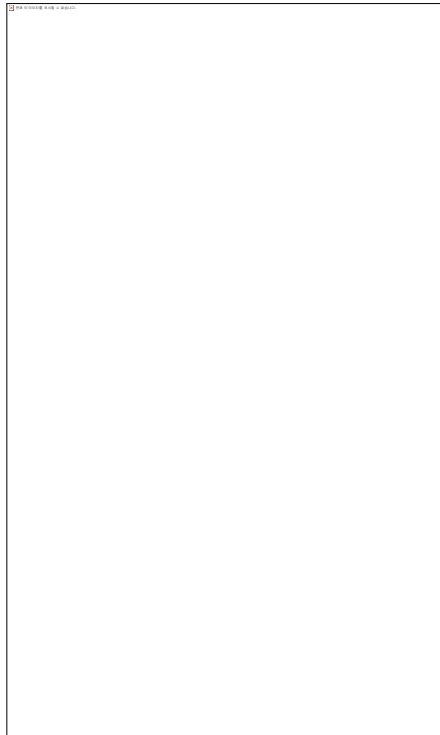


8. Domain Name System

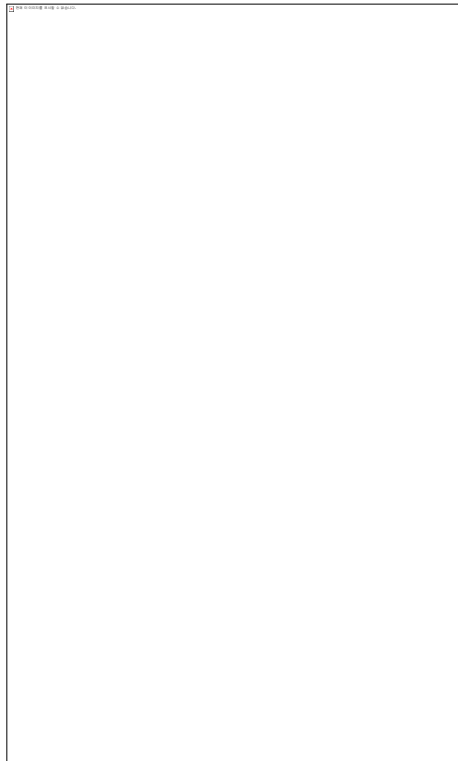
Root Server



.net Registry



apnic.net Website





9. IPv4 exhaustion



Thank you!

... Oh... And visit:
blog.apnic.net

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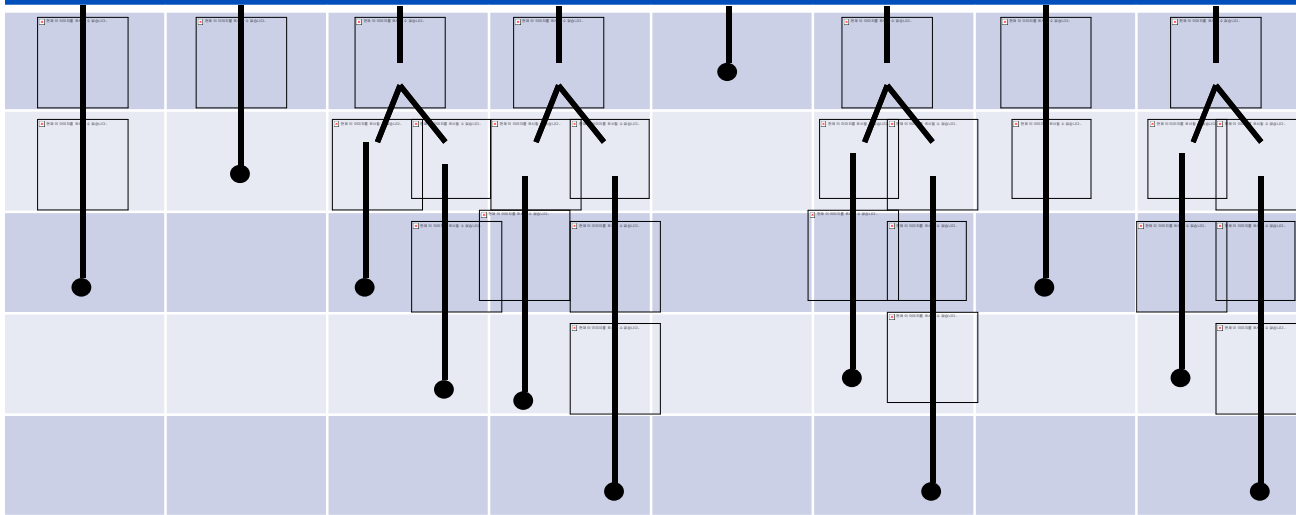


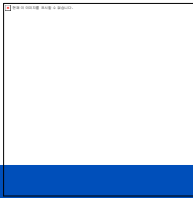
Diamond's Routing Table

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



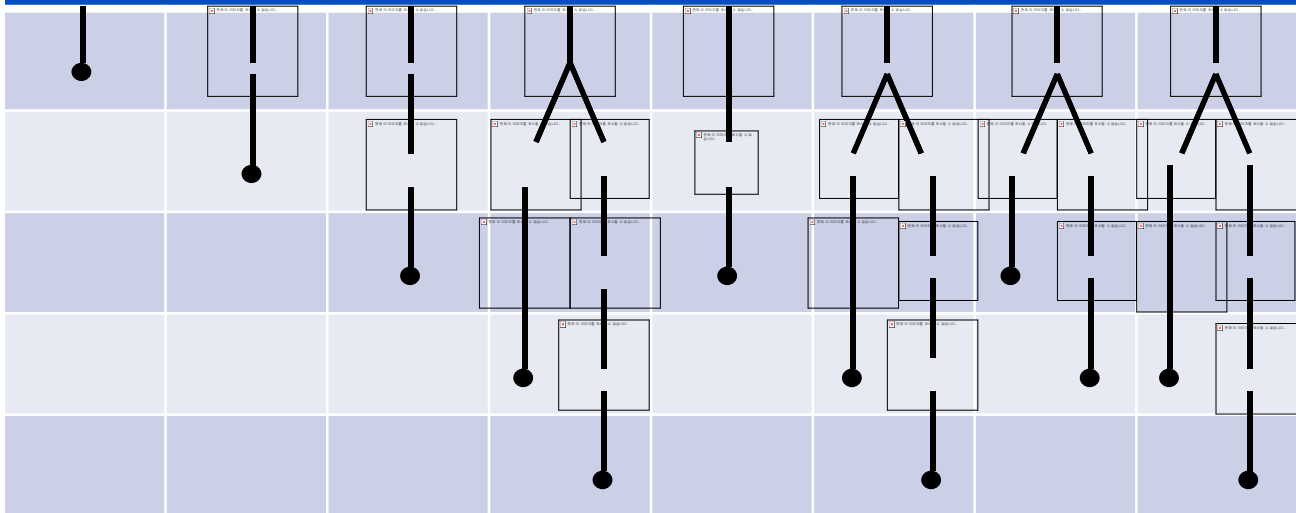


Square's Routing Table

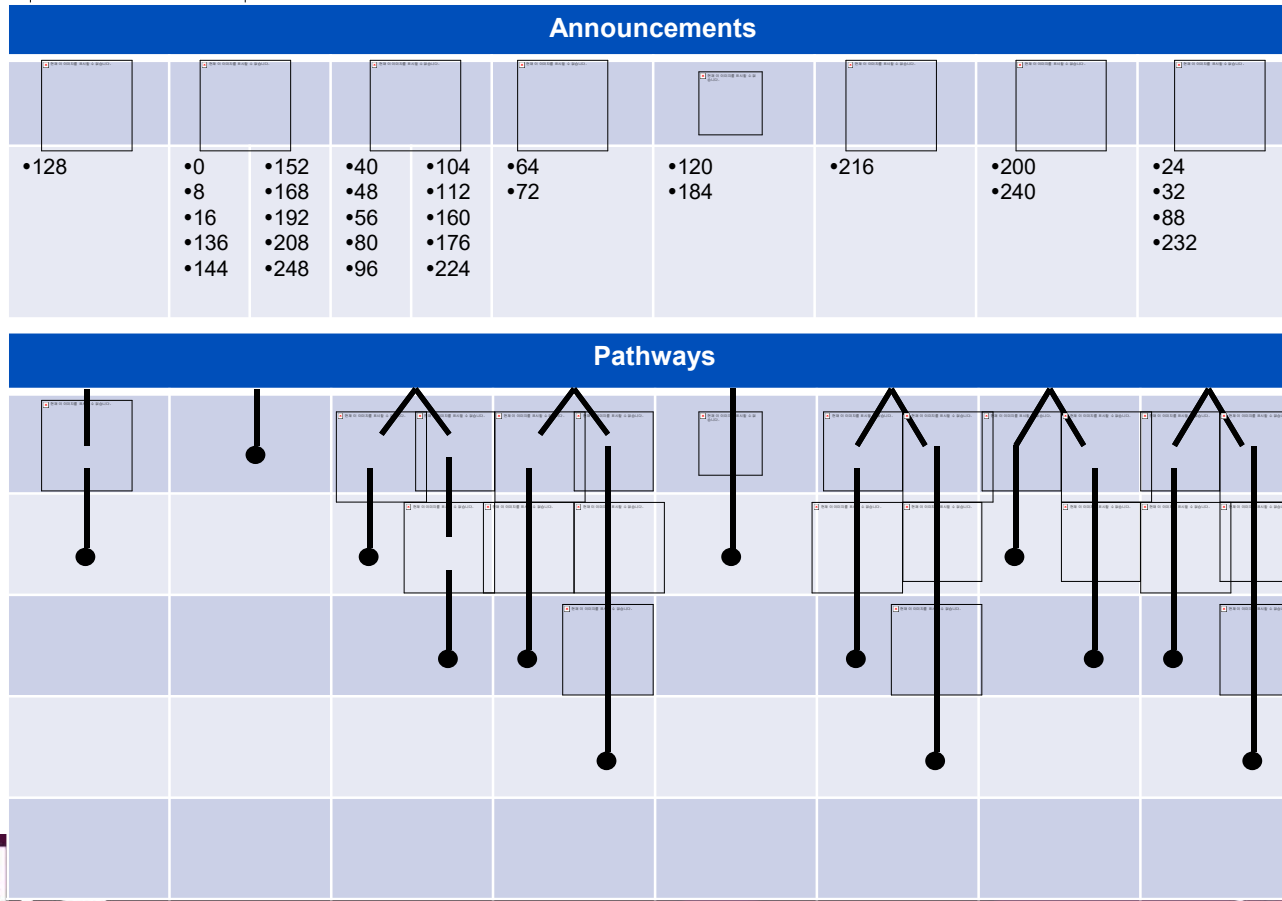
Announcements

•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

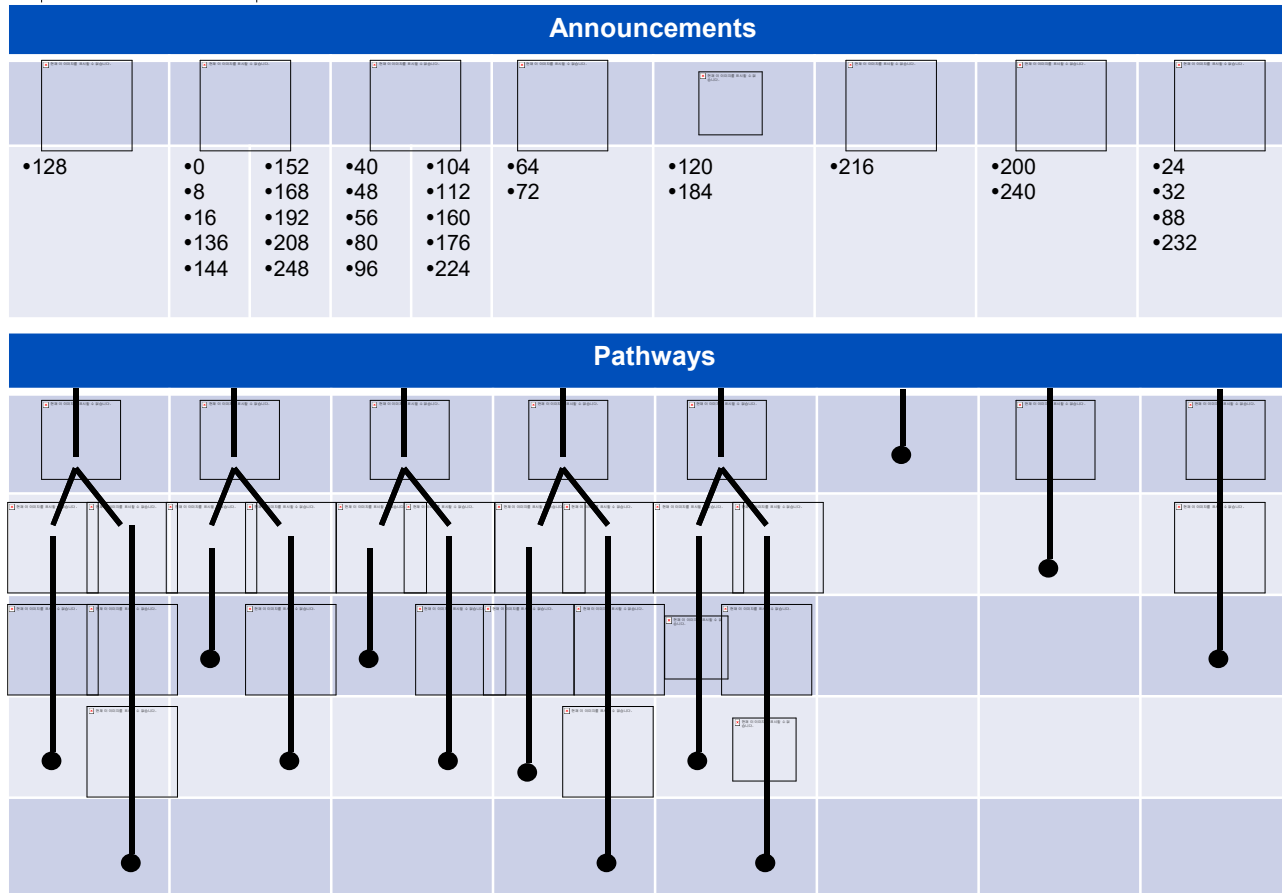
Pathways



Triangle's Routing Table



Star's Routing Table

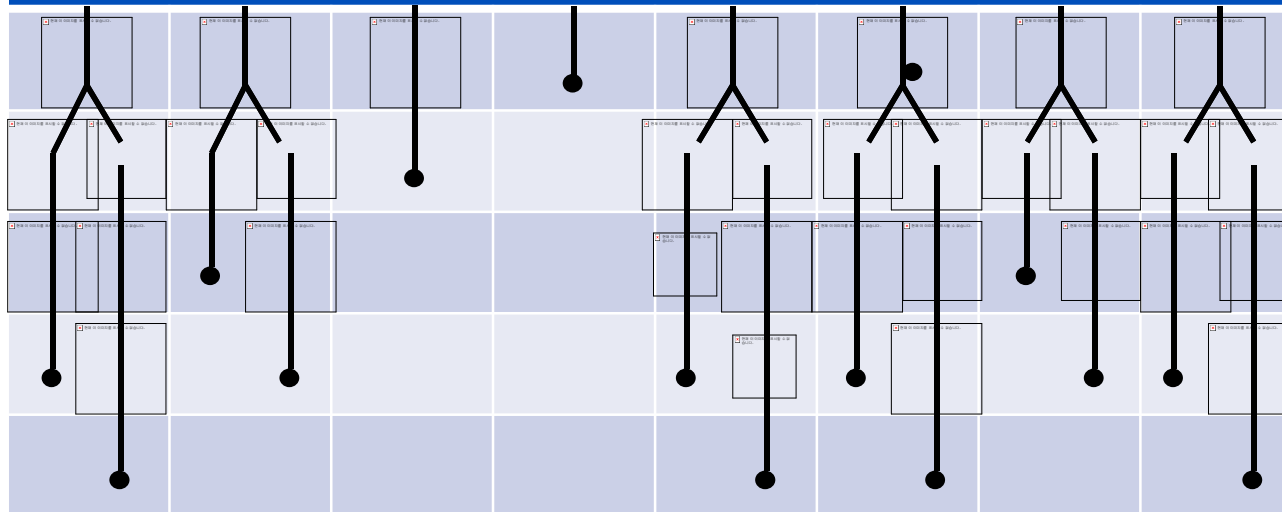


Semicircle's Routing Table

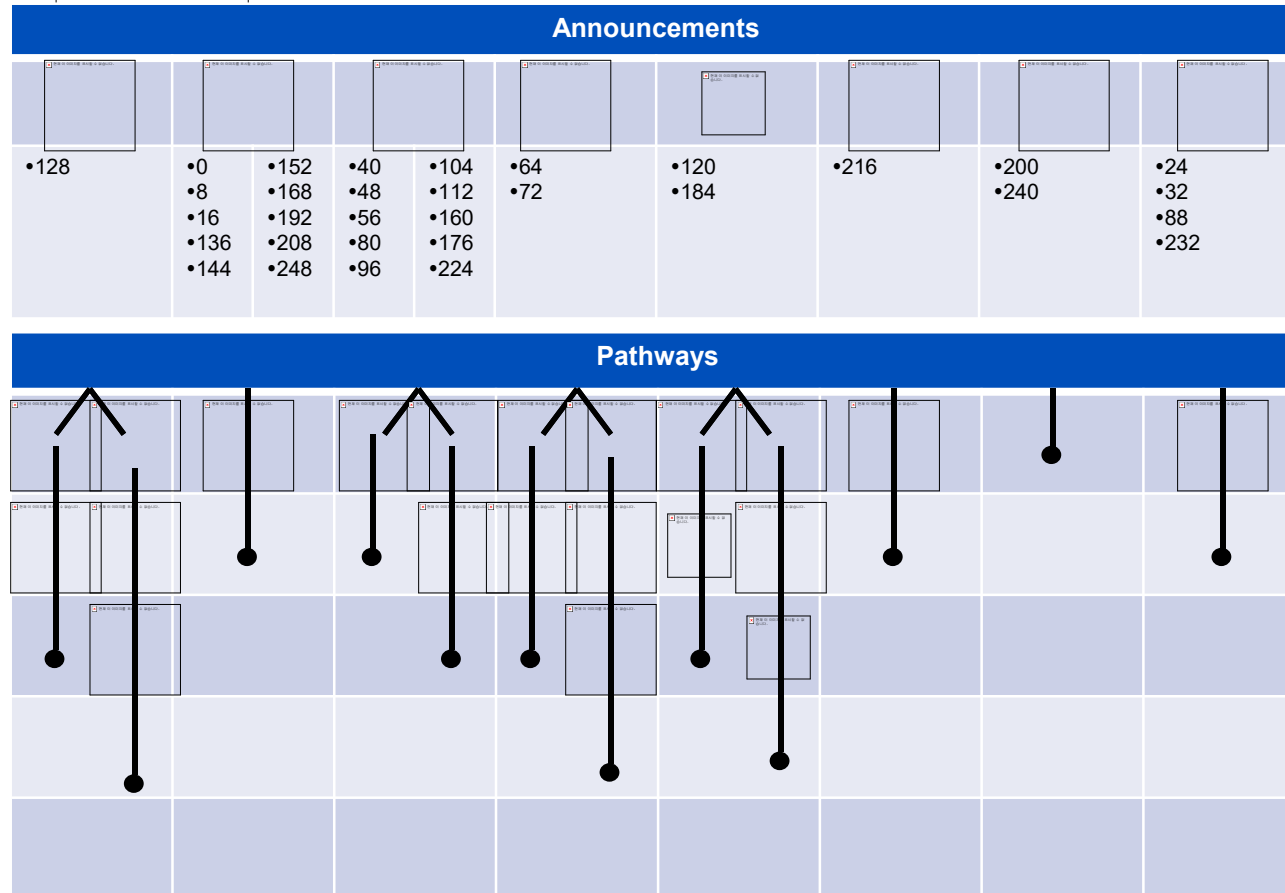
Announcements

•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



Heart's Routing Table



Hexagon's Routing Table

