UDP/TCP

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IPv4

- IPv4 (Internet Protocol) provides 32bit addresses for addressing computing devices that span the globe.
- These 32bit addresses are usually partitioned into four bytes and shown as decimal.(iwaki is 150.203.24.2)
- The IANA (Internet Assigned Numbers Authority) are in control of assigning these numbers.
- There are also some special addresses, these include:

0.0.0.0 - This host (only source).

127.X.X.X - loopback.

10.X.X.X - private network

192.168.X.X - private network

255.255.255.255 - Broadcast on the local network.

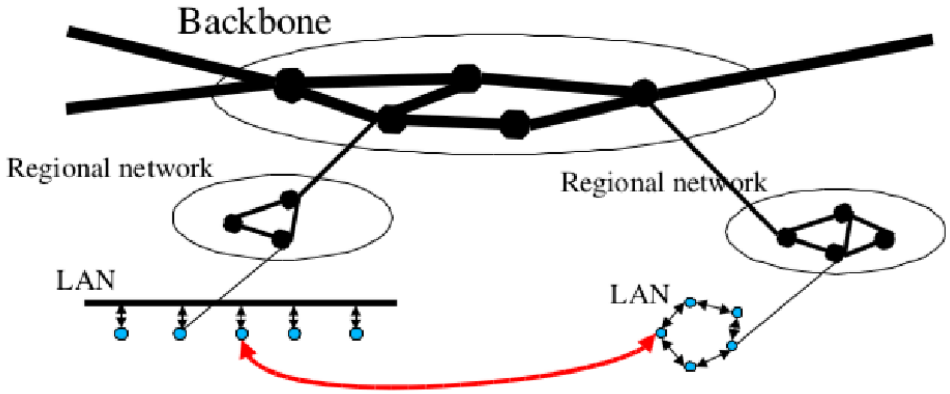
IPv4

bit offset	0-3	4-7	8-13	14-15	16-18	19-31
0	Version	Internet Header Length	Differentiated Services Code Point	Explicit Congestion Notification	Total Length	
32	Identification				Flags	Fragment Offset
64	Time to Live		Protocol		Header checksum	
96	Source IP Address					
128	Destination IP Address					
160	Options (if Header Length > 5)					
160 or 192+	Data					

http://en.wikipedia.org/wiki/IPv4

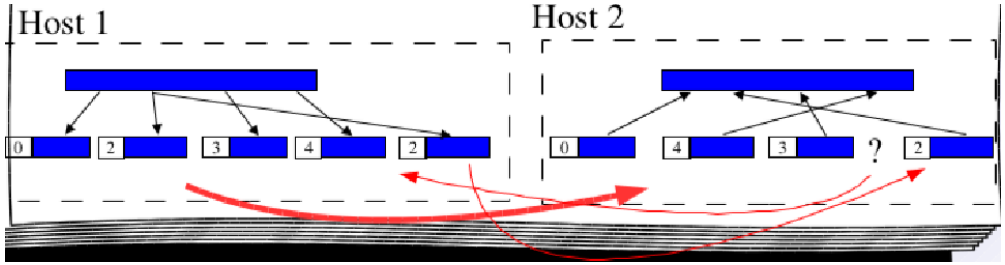
Routing

IPv4 is used to move datagrams between hosts. Each host makes some routing decision based on the IP address. Basically the host looks at the IP address and uses a table to work out the best places to send the packet to.



TCP

- TCP(Transmission Control Protocol) provides a way of sending larger amounts of data to particular 'ports' on a host.
- TCP works by partitioning the data and sending it through the IP layer.
- TCP will resend missing packets and check that packets arrive in the correct order.



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TCP

TCP Header

Offsets	Octet	0								1								2								3							
Octet	Bit	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
0	0	Source port																Destination port														
4	32	Sequence number																														
8	64	Acknowledgment number (if ACK set)																														
12	96	Data offset				Reserved 0 0 0				NS	CWR	ECE	URG	ACK	PSH	RST	SYN	FIN	Window Size													
16	128	Checksum																								Urgent pointer (if URG set)						
20 ...	160 ...	Options (if Data Offset > 5, padded at the end with "0" bytes if necessary) ...																														

http://en.wikipedia.org/wiki/Transmission_Control_Protocol

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UDP

UDP (User Datagram Protocol) provides an unreliable way of sending datagrams from a process on one host to a process on another host without requiring a connection to be set up (datagrams may be dropped, duplicated, or arrive out of order).

offset (bits)	0 - 15	16 - 31
0	Source Port Number	Destination Port Number
32	Length	Checksum
64+	Data	

http://en.wikipedia.org/wiki/User_Datagram_Protocol