Network+

Cheat Sheet N10-005

Ethernet Standard	Maximum Transmission Speed (Mbps)	Maximum Distance per Segment (m)	Physical Media
10Base-T	10	100	Cat 3 or better UTP
100Base-TX	100	100	Cat 5 or better UTP
1000Base-T	1000	100	Cat5e or better UTP preferred (Cat 5 OK)
10Gbase-T	10,000	100	Cat 6 or Cat 7 (preferred)
100Base-FX	100	2000	Multimode Fiber
1000Base-SX	1000	Up to 500*	Multimode Fiber
1000Base-LX	1000	Up to 5000*	Single-mode or
		Up to 550*	Multimode fiber
10GBase-SR 10GBase-SW	10,000	Up to 300*	Multimode fiber
10GBase-LR 10GBase-LW	10,000	10,000	Single-mode fiber
10GBase-ER 10GBase-EW	10,000	40,000	Single-mode fiber

*depends on signaling wavelength and fiber core diameter

Wireless LAN Standard	Frequency range (GHz)	Theoretical maximum throughput (Mbps)	Approximate effective throughput (Mbps)	Average geographic range (m)
802.11b	2.4	11	5	100
802.11a	5	54	11-18	20
802.11g	2.4	54	20-25	100
802.11n	2.4 or 5	65 to 600	65-600	Up to 400 if MIMO used

Routing protocol	Type	Location
RIP	Distance-vector	Interior
RIPv2	Distance-vector	Interior
BGP	Distance-vector	Exterior
OSPF	Link-state	Interior / Exterior
IS-IS	Link-state	Interior
EIGRP	Hybrid	Interior / Exterior

Binary Conversion:

Bit position:	7	6	5	4	3	2	1	0
Exponential:	2^7	2^6	2^5	2^4	2^3	2^2	2^1	2^0
Value if "1":	128	64	32	16	8	4	2	1

Examples:

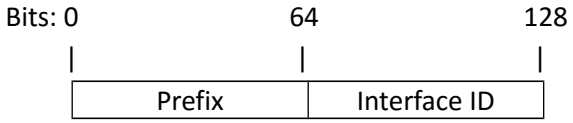
00000111 = 0 + 0 + 0 + 0 + 0 + 4 + 2 + 1, or 7
01011010 = 0 + 64 + 0 + 16 + 8 + 0 + 2 + 0, or 90
11111111 = 128 + 64 + 32 + 16 + 8 + 4 + 2 + 1, or 255

Wireless Wan Technology	Voice Switching	Data Switching	Maximum Theoretical Downlink Throughput (Mbps)	Maximum Theoretical Uplink Throughput (Mbps)
3G – HSPA+	Circuit	Packet	84 (with promises of 336)	11
(N/A) WiMAx (802.16e)	Packet	Packet	70	70
4G – WiMAX 2 (802.16m)	Packet	Packet	120 (with promises of 1000 for fixed clients)	60
4G - LTE	Packet	Packet	1000	500

IPv4 Network Class	Beginning Octet	Default Subnet Mask	Number of Networks	Maximum Hosts per Network
A	-126	255.0.0.0	126	16,777,214
B	128-191	255.255.0.0	>16,000	65,534
C	192-223	255.255.255.0	>2,000,000	254

IPv4 Special Address(es)	Function
127.0.0.1	Loopback
10.0.0.0 through 10.255.255.255	Private
172.16.0.0 through 172.31.255.255	Private
192.168.0.0 through 192.168.255.255	Private
169.254.1.0 through 169.254.254.255	Link local
Addresses whose host information = 255 (for example, 199.34.85.255)	Broadcast
Addresses whose host information = 0 (for example, 199.34.89.0)	Network ID

IPv6 address format:



Example: 2608:FE10:1:A: 002:50FF:FE2B:E708

IPv6 Special Address(es)	Function
::1	Lookback
Addresses beginning with FC00:	Private
Addresses beginning with FE80:	Link-local unicast
Addresses beginning with FEC0:	Site-local unicast
Addresses beginning with FF0x:, where x corresponds to a group scope ID	Multicast

OSI Model Layers	Function	Hardware		Protocols and Standards	TCP/IP Model
7. Application	Provides interface between software applications and network for interpreting application requests and requirements	Gateways, Proxy servers, Application switches, Content filtering firewalls		DHCP, DNS, FTP, HTTP, HTTPS, IMAP, PING, POP3, NSLOOKUP, NTP, RTP, SFTP, SIP, SMTP, SNMP, Telnet, TFTP	Application
6. Presentation	Allows hosts and applications to use a common language; performs data formatting, encryption, and compression				
5. Session	Establishes, maintains, and terminates user connections				
4. Transport	Ensures accurate delivery of data through flow control, segmentation and reassembly, error correction, and acknowledgment			TCP, UDP	Transport
3. Network	Establishes network connections; translates network addresses into their physical counterparts and determines routing	Routers, Layer 3 Switches Firewalls	 Includes	ARP, ICMP, IGMP, IP, IPSec	Internet
2. Data Link	Packages data in frames appropriate to network transmission method	Bridges, Switches	NICs	L2TP, PPP, PPTP, SLIP	Network Interface
1. Physical	Manages signaling to and from physical network connections	Hubs, Repeaters		802.3 (Ethernet) 802.11 (Wi-Fi) 802.16 (WiMAX)	