To be submitted via OmniVox Portal

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Team submission:

Team member names:

1. What are the benefits of networks?

- Sharing a high-speed Internet connection

- Sharing printers and peripheral devices

- Sharing files

- Common cummunications

2. How fast does data move through networks?

The factors to be considered with these kinds of question are

Speed of the line(bandwidth) available between the two points

Maximum amount of data the customer thinks he would need to move/copy

Acceptable period of time this might be allowed to take(ie. Overnight, or every 4 hours)

In theory, the following line speeds hould provide a max possible throughput as follows

|  |  |  |  |
| --- | --- | --- | --- |
| Line Speed | Per second | Per minute | Per hour |
| 1Mbit(old-school ADSL) | 100K/sec | 6MB/min | 360MB/hour |
| 2Mbit(slower ADSL) | 200K/sec | 12MB/min | 720MB/hour |
| 4Mbit(faster ADSL) | 400K/sec | 24MB/min | 1.1GB/hour |
| 10Mbit(ADSL/Cable) | 1MB/sec | 60MB/minute | 2.8GB/hour |
| 100Mbit(Fast Ethernet LAN) | 10MB/sec | 600MB/min | 28GB/hour |
| 1000Mbit(Gigabit Ethernet LAN) | 100MB | 6GB/min | 280GB/hour |

However, has anyone paying attention and using 100Mbit ethernet will find, when they copy a file from a server the maximum speed they’ll get will be around 8MB/sec and not 10 as the theory states above. There are lots of factors that mean that these speeds will not be achieved in a real-world implementation. Some examples below.

Network latency (time taken for packet to travel through all the routers between A and B)

Network protocol overhead

Overhead for calculating what has changed

Number of files to be copied

Other network traffic on same connection

The ‘real’ speed of the provided network connection

3. How does the distance between nodes define a network?

Networks can be classified by distance as below.

PAN : Personal area network

LAN : Local area network

HAN : Home area network

MAN : Metropolitan area network

WAN : Wide area network

4. How does the level of administration define a network?

Networks can be classified by levels of administration as below.

Client/Server Network

Peer-to Peer(P2P) Network

5. Ethernet Protocols: What network standard is used in your home network?

Wireless Networks

6. Are there different standards for wired Ethernet?

Institute of Electrical and Electronis Engineers(IEEE)

|  |  |  |
| --- | --- | --- |
| 802 | Overview | Basics of physical and logical networking concepts. |
| 802.1 | Bridging | LAN/MAN bridging and management. Covers management and the lower sub-layers of OSI Layer 2, including MAC-based bridging (Media Access Control), virtual LANs and port-based access control. |
| 802.2 | Logical Link | Commonly referred to as the LLC or Logical Link Control specification. The LLC is the top sub-layer in the data-link layer, OSI Layer 2. Interfaces with the network Layer3. |
| 802.3 | Ethernet | “Grandaddy” of the 802 specifications. Provides asynchronous networking using “carrier sense, multiple access with collision detect” (CSMA/CD) over coax, twisted-pair copper, and fiber media. Current speeds range from 10 Mbps to 10 Gbps. |
| 802.4 | Token Bus | Disbanded |
| 802.5 | Token Ring | The original token-passing standard for twisted-pair, shielded copper cables. Supports copper and fiber cabling from 4Mbps to 100Mbps. Often called “IBM Token-Ring”. |
| 802.6 | Distributed queue dual bus(DQDB) | “Superseded \*\*Revision of 802.1D-1990 edition(ISO/IEC10038).802.1D incorporates P802.1p and P802.12e. It also incorporates and supersedes published standards 802.1j and 802.6k. Superseded by 802.1D-2004.” |
| 802.7 | Broadband LAN Practices | Withdrawn Standard. No longer endorsed by the IEEE. |
| 802.8 | Fiber Optic Practices | Withdrawn PAR. Standards project no longer endorsed by the IEEE. |
| 802.9 | Integrated Services LAN | Withdrawn PAR. Standards project no longer endorsed by the IEEE. |
| 802.10 | Interoperable LAN security |  |
| 802.11 | Wi-Fi | Wireless LAN Media Access Control and Physical Layer specification. 802.11a, b, g, etc. are amendments to the original 802.11 standard. Products that implement 802.11 standards must pass tests and are referred to as “Wi-Fi certified.” |
| 802.12 | Demand Priority | Increases Ethernet data rate to 100 Mbps by controlling media utilization. |
| 802.13 | Not used | Not used |
| 802.14 | Cable modems | Withdrawn PAR. Standards project no longer endorsed by the IEEE. |
| 802.15 | Wireless Personal Area Networks | Communications specification that was approved in early 2002 by the personal area networks(WPANs) |
| 802.16 | Wireless Metropolitan Area Networks | This family of standards covers Fixed and Mobile Broadband Wireless Access methods used to create Wireless Metropolitan Area Networks(WMANs). |
| 802.17 | Resilient Packet Ring | IEEE working group description |
| 802.18 | Radio Regulatory TAG |  |
| 802.19 | Coexistence |  |
| 802.20 | Mobile Broadband Wireless Access |  |
| 802.21 | Media Independent Handoff |  |
| 802.22 | Wireless Regional Area Network |  |

7. Transmission Media: What transmission media is used on a wired network?

1) Copper cable - Types of cable include unshielded twisted-pair(UTP), shielded twisted-pair(STP), and coaxial cable. Copper-based cables are inexpensive and easy to work with compared to fiber-optic cables, but as you'll learn when we get into the specifics, a major disadvantage of cable is that it offers a rather limited spectrum that cannot handle the advanced applications of the future, such as teleimmersion and virtual reality.

3) There are a few disadvantages associated with wireless, however. Historically, wireless solutions support much lower data rates than do wired solutions, although with new developments in wireless broadband, that is becoming less of an issue. Wireless is also greatly affected by external impairments, such as the impact of adverse weather, so reliability can be difficult to guarantee. However, new developments in laser-based communications-such as virtual fiber-can improve this situation. Of course, one of the biggest concerns with wireless is security:Data must be secured in order to ensure privacy.

4) Fiber optics - Fiber offers enormous bandwidth, immunity to many types of interference and noise, and improved security. Therefore, fiber provides very clear communications and a relatively noise-free environment. The downside of fiber is that it is costly to purchase and deploy because it requires specialized equipment and techniques.

8. What type of cable is used in most wired home network?

9. Do all wired Thernet networks use the same kind of unshielded twisted pair (UTP) cable?

10. What transmission media is used to connect nodes on a wireless network?

11. Can you have both wired and wireless nodes on the same network?

12. What equipment do you need in order to hook up to broadband?

13. What hardware is needed for different nodes on the network to communicate?

14. what hardware is necessary to transmit data through a network?

15. What network software do home networks require?

16. What exactly is braodband Internet Access?

17. What types of braodband are available?

18. How does cable Internet work?

19. How does DSL work?

20. How does fiber-optic service work?