NETWORK/ STARTER

ESP FOR INFORMATICS ENGINEERING

WHAT CAN BE UNDERSTOOD FROM THE BELOW FIGURE?

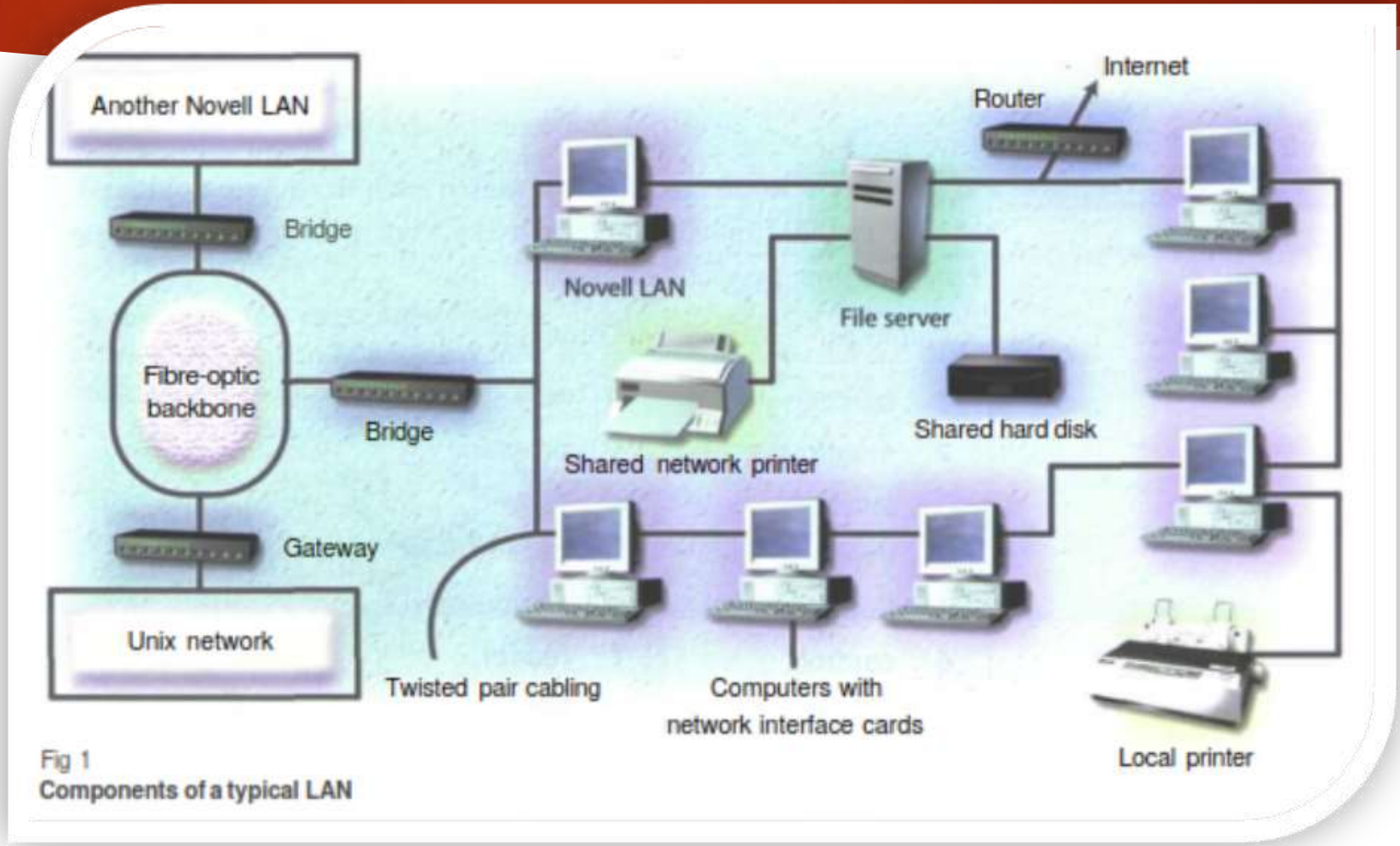

Fig 1
Components of a typical LAN

With the help of this diagram, try to describe the function of these components of a typical network system:

1. a file server
2. a bridge
3. a router
4. a backbone
5. a LAN
6. a gateway
7. a modem

Try to Read and Understand the Passage

The application layer is the only part of a communications process that a user sees, and even then, the user doesn't see most of the work that the application does to prepare a message for sending over a network. The layer converts a message's data from human-readable form into bits and attaches a header identifying the sending and receiving computers.

The presentation layer ensures that the message is transmitted in a language that the receiving computer can interpret (often ASCII). This layer translates the language, if necessary, and then compresses and perhaps encrypts the data. It adds another header specifying the language as well as the compression and encryption schemes.

The session layer opens communications and has the job of keeping straight the communications among all nodes on the network. It sets boundaries (called bracketing) for the beginning and end of the message, and establishes whether the messages will be sent half duplex, with each computer taking turns sending and receiving, or full-duplex, with both computers sending and receiving at the same time. The details of these decisions are placed into a session header.

Continued:

The transport layer protects the data being sent. It subdivides the data into segments, creates checksum tests - mathematical sums based on the contents of data - that can be used later to determine if the data was scrambled. It can also make backup copies of the data. The transport header identifies each segment's checksum and its position in the message.

The network layer selects a route for the message. It forms data into packets, counts them, and adds a header containing the sequence of packets and the address of the receiving computer.

The data-link layer supervises the transmission. It confirms the checksum, then addresses and duplicates the packets. This layer keeps a copy of each packet until it receives confirmation from the next point along the route that the packet has arrived undamaged.

Work in pairs, A and B. Explain to your partner how one mode of transmission between computers operates.

Find the answers to these questions from the above text.

- 1. Into what units is data subdivided by the following layers?
- a. transport layer
- b. network layer
- 2. What is the purpose of a transmission checksum test?
- 3. How long does the data-link layer keep a copy of each packet?
- 4. What processes can be carried out at intermediate nodes?
- 5. Which network communications layer is described by each of the following statements?
- a. Makes sure that the message is transmitted in a language that the receiving computer
- can understand
- b. Protects the data being sent
- c. Encodes and sends the packets
- d. Supervises the transmission
- e. The part of a communications process that a user sees

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