# Worksheet 2 Network topology

A “bus” is simply a long wire. At its simplest, a bus network is just two computers linked together by a wire. You join more computers to the bus network, but only one computer can use the bus at any one time.

In an Ethernet network, computers use a collision detection algorithm called CSMA/CD (Carrier Sense Multiple Access/Collision avoidance) to deal with this problem.

If the wire is too long, the signal degrades, so in the early days of networks, **hubs** were inserted to act as repeaters at various points. This allowed many **physical** buses to act like one **logical** bus.

This did not solve the problem of collisions, in fact it made the problem worse because it was easy to add more computers to the network.

If the **hub** is replaced by an intelligent **switch**, the switch knows which of the physical buses is attached to it, so a signal is sent only to the buses that the destination computer is attached to.

So what you now have is a number of computers connected to a switch – which, hey presto, is a physical star network! But it is still using a bus protocol, so it is a logical bus network.

**Task 1**

(a) What sort of network do you have in the classroom?

(b) How can you tell?

(c) Why is this topology used?

(d) What will happen if one computer is switched off?

(e) Can you add a new computer to the network without disrupting the network?

(f) Is the network slow when everyone is using it?

(g) Any other interesting or puzzling facts about the network?

**Task 2**

Write down some advantages and disadvantages of star and bus topologies. [4]

**BUS TOPOLOGY:**

|  |  |
| --- | --- |
| Advantages | Disadvantages |
|  |  |
|  |  |
|  |  |

**STAR TOPOLOGY:**  [4]

|  |  |
| --- | --- |
| Advantages | Disadvantages |
|  |  |
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