# Worksheet 2 Network topology Answers

**Task 1**

A “bus” is simply a long wire. At its simplest, a bus network is just two computers linked together by a wire. You can add more computers and 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 **hubs** were inserted to act as repeaters at various points. This allowed many **physical** buses to act like one **logical** bus.

It 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 busses 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.

(No answers here! These are discussion points)

**Task 2**

**Advantages and disadvantages of each topology**

**BUS TOPOLOGY:**

|  |  |
| --- | --- |
| Advantages | Disadvantages |
| Easy to connect a computer or peripheral to a linear bus | Entire network shuts down if there is a break in the cable |
| Requires less cable than a star topology | Difficult to identify the problem if the network shuts down |
|  | Heavy traffic degrades performance |

**STAR TOPOLOGY:**

|  |  |
| --- | --- |
| Advantages | Disadvantages |
| Easy to install and wire | Requires more cable length than a linear bus topology |
| No disruptions to the network when connecting or removing devices | If the network switch fails, all nodes attached to the switch are disabled and cannot communicate |
| Easy to detect faults | More expensive than linear bus topology because of the cost of the network switches |