**6/10/19**

**Network Topology**

**Network Topology:** how computers are physically connected to each other

**TCP**: Transmission Control Protocol

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**Bus:** all computers connected to a central transmission line. Advantage of bus topology include:

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| **Bus** | |
| **Advantages** | **Disadvantages** |
| Lower installation cost | Slower because all computers use the same bus line, collisions between data packets can occur |
| Easier to set up | Network will be affected if the bus breaks down |
| Communication can still take place even if one computer breaks down |  |

**Ring Topology:** all computers are connected with each other to form a ring

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| **Ring** | |
| **Advantages** | **Disadvantages** |
| If one computer breaks down, other computers will not be affected | Communication delay is directly proportional to the number of nodes in the network |
| Easier to set up than a bus line | Moving, adding, or changing devices can affect the network |
| Cheaper than a bus line | More difficult to configure than a Star |

**Mesh Topology:** a network structure where every node is connected to at least one node

When every single computer has a connection with each other computer, it is called a ***full mesh topology.*** To find the number of computers, you can use: ***n(n-1)/2.***

In a ***partially connected mesh topology***, at least two of the computers in the network have connections to multiple other computers.

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| **Mesh** | |
| **Advantages** | **Disadvantages** |
| Can manage high amounts of data as many devices can transmit data simultaneously | High cost compared to other types of networks |
| Unlike ring networks, adding or removing devices in mesh networks does not disrupt the transmission between other devices | Building and maintaining it is time-consuming |
| A failure in one device does not break the whole network – reliable | The chance of redundant connections is high, which adds to the high costs and potential for reduced efficiency. |

**Star Topology:** every computer is connected to a central hub

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| Star | |
| **Advantages** | **Disadvantages** |
| If one node or its connection breaks, it does not affect the other computers nor their connections | Expensive due to the number and length of cables needed to wire each host to the central hub |
| Works well under heavy load | The central hub is a [single point of failure](https://wikipedia.firstpartyapps.oaspapps.com/wikipedia/wikipedia_dev.html?et=%2BADwAZAA%2BAGcAegBVAFEANQBKAEUAOABQAEcANgArAGQAawB0AHIANgA0ADUANQBEADYARwBhAEYASwAyAFgARgBrAGYAUQBqAHkAcwBIAGEAMABTADIASQA3AE0APQA8AC8AZAA%2BADwALwByAD4A&_host_Info=Word$Win32$16.01$en-US$$$$0" \o "Single point of failure) for the whole network – unreliable |
| Can easily be expanded |  |

**Transmission medium/media:**

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| **Wired** | **Wireless** |
| Ethernet cable (RJ45) | WIFI |
| Fibre Optic Cable | Bluetooth |
| Telephone line | Cellular / gsm |