

# SCHOOL OF JOURNALISM AND DIGITAL COMMUNICATIONS

## TE1070 CONNECTIONS – SEMESTER 2 – EXERCISE 3

### TECHNICAL SUPPORT – NETWORK TERMINOLOGY

Topic/term	Star Topology
<b>Information Sources</b> (at least 3 per topic/term)	<a href="http://en.wikipedia.org/wiki/Star_network">http://en.wikipedia.org/wiki/Star_network</a> <a href="http://www.axis.com/products/video/about_networkvideo/ip_networks.htm">http://www.axis.com/products/video/about_networkvideo/ip_networks.htm</a> <a href="http://fallsconnect.com/topology.htm">http://fallsconnect.com/topology.htm</a> <a href="http://members.tripod.com/barhoush_2/cabling.htm">http://members.tripod.com/barhoush_2/cabling.htm</a>
Detailed Explanation	
<p>There are various types of network topology; the main ones are the 'Bus' 'Ring' 'Star' and 'Mesh' ; each has its own advantages and disadvantages.</p> <p>The Bus network for instance sends data down the line stopping at each workstation along the bus route until it gets to its destination. In a Ring network each workstation is connected to the one either side of it like children playing a game of 'ring a ring of roses' and data has to travel around the ring until it gets to its destination but it can only travel in one direction. Both of these network types are very slow and if one connection is lost the whole network fails, however they are relatively cheap and easy to set up.</p> <p>In a Mesh network each workstation is connected to all the other work stations and is probably the best network to set up because if one node or connection fails the rest keep operating. However it is very expensive and difficult to set up thus is normally only used for a wireless networks where physical connections are not required.</p> <p>The most popular when it comes to networks for small offices is the Star Topology which runs from a central node; this can be a switch, hub or router. Each workstation is connected via its own cable to the node and when data comes in the node acts as a sorting office to make sure it is sent to the relevant workstation. One advantage of this topology is that data can be sent more securely and faster.</p> <p>Each workstation within a Star network can see the other workstations via the central node and can communicate and pass data to each other via the node.</p> <p>Star networks are relatively easy to configure as there is only one input and output port and fault finding is simplified because the workstations can be isolated in turn without disrupting the network.</p> <p>Furthermore so long as there is a port on the node extra workstations can be added without needing to shut the network down.</p> <p>Conversely this can put a lot of pressure on the central node and therefore it needs to be quite robust; if the central node fails the whole network fails.</p> <p>Another disadvantage is the problem of distance between workstations and the central node. Most Star topologies use unshielded twisted pair copper cabling which has a maximum length of 100 meters before data is compromised.</p> <p>These cables are called Ethernet cables and use four pairs of twisted wires and an RJ-45 plug for connection. A thicker coaxial cable can be used which would allow a distance of up to 500meters however it is difficult to bend and hard to install over these long distances.</p> <p>A more modern option for networks is the fiber optic cable which can run up to 2000 meters before data is compromised. It also uses light signals rather than electric signals so is immune to electrical interference from other equipment and the fibers are moisture proof so they can be laid underground and hidden.</p> <p>Larger office complexes use a Tree Topology; this is where you have several star topologies connected to a main router. The advantage of this is that if one of the branches (Stars) goes down the others will still be able to function.</p>	

Topic/term	Router
<b>Information Sources</b> (at least 3 per topic/term)	<a href="http://compnetworking.about.com/od/homenetworkhardware/f/routervsswitch.htm">http://compnetworking.about.com/od/homenetworkhardware/f/routervsswitch.htm</a> <a href="http://www.pcadvisor.co.uk/news/network-wifi/3337758/how-choose-router-for-your-business/">http://www.pcadvisor.co.uk/news/network-wifi/3337758/how-choose-router-for-your-business/</a> <a href="http://wiki.answers.com/Q/What_is_the_difference_between_a_Wireless_Access_Point_and_a_Wireless_Router">http://wiki.answers.com/Q/What_is_the_difference_between_a_Wireless_Access_Point_and_a_Wireless_Router</a>
<b>Detailed Explanation</b>	
<p>So what is the difference between a hub, switch and router; first in appearance very little they all have ports for connecting multiple workstations but in regards to how they function plenty.</p> <p>A network switch is used to connect multiple computers together into a local area network (LAN) for connection to a wide area network (WAN).</p> <p>A hub is even simpler it is used to connect multiple computers or even printers together for adding to say a tree topology.</p> <p>A network router however is designed to connect several local area networks (LANs) to the wider area network (WAN).</p> <p>A LAN could be a single department within a company where a WAN would be the company's internal network which in turn would possibly be connected to the global internet or the corporation's networks in other countries.</p> <p>Routers are also designed to act as traffic cops; they receive data packets coming in from the WAN then check for source and destination codes before forwarding them to the correct LAN which in turn would route the data packet to the relevant workstation or stations.</p> <p>Routers as any other piece of equipment have different specifications however for an editing team within a larger company a basic office router which would support up to a dozen connected devices and provide wireless coverage over 2000 square feet would be sufficient.</p> <p>Another consideration when choosing a router would be performance and future proofing. In a busy office network where there is a lot of wireless traffic a dual band router which doubles the band frequency it can work within to 5GHZ would be essential. You might want to consider purchasing the new 802.11ac router which can perform at speeds of 1Gbps if connected to compatible technology and operate within band widths up to 160MHZ. However in the mean time the 802.11ac is backwards compatible with older systems.</p>	
Topic/term	Wireless Access Point
<b>Information Sources</b> (at least 3 per topic/term)	<a href="http://www.wifihowto.net/wireless-router-or-access-point-whats-the-difference">http://www.wifihowto.net/wireless-router-or-access-point-whats-the-difference</a> <a href="http://en.wikipedia.org/wiki/Wireless_access_point">http://en.wikipedia.org/wiki/Wireless_access_point</a> <a href="http://en.wikipedia.org/wiki/Subnetwork">http://en.wikipedia.org/wiki/Subnetwork</a> <a href="http://www.youtube.com/watch?v=oKG6PhzxqsE&amp;list=PLq5tBHePRIXnrnqoATuCp19l97diuhgkU">http://www.youtube.com/watch?v=oKG6PhzxqsE&amp;list=PLq5tBHePRIXnrnqoATuCp19l97diuhgkU</a>
<b>Detailed Explanation</b>	
<p>A Wireless router is used to connect multiple wireless enabled devices within the same subnet of a local area network (home or office)to the wider area network (internet or intranet)</p> <p>A Wireless Access point is used to connect multiple devices to a local area network regardless of whether they are wireless or wired but more importantly it enables devices on different subnets to communicate with each other.</p> <p>What is a subnet you ask? Computers connected in a local area network (LAN) would have consecutive IP address's or IP address's within a defined range. A subnet or subnet mask is a separate set of numbers that can be used to divide the computers within a LAN into smaller workgroups with different security protocols.</p> <p>One of the limitations of a wireless access point is the number of clients it can support at any one time. This is depended on the bandwidth a standard 802.11 AP would support 30 clients before its speed becomes compromised.</p> <p>However with a new 802.11ac access point with its wider bandwidth and higher 256QAM modulation you can connect significantly more clients through a single AP channel. Its 'beamforming' technology also means you can connect to clients over much greater distances without loss of speed.</p>	