**P1 - Tools and Techniques used for Technical Support**

Technical support staff have multiple tools and methods to diagnose and resolve technical issues. Here, I will discuss them and how they are used.

**Ticketing**  
When a user has a technical issue, they can raise a ‘ticket’, which informs the support team of the problem, and assists them in remotely diagnosing the issue, as well as logging faults and resolutions.

**VoIP**Voice over IP works much like a phone call, except over the internet. This allows technical support staff to diagnose an issue remotely (by asking questions), and give the user instructions to resolve the issue.  
Using VoIP instead of a phone reduces phone bills for the user and organisation. If a call is made over a LAN or high-speed WAN, the call can be extremely high quality and have low latency.  
A popular consumer VoIP client is Microsoft Skype, which supports rich messaging (links, files, formatted text, etc), hybrid VoIP/video calls (so that one user can have video while the other doesn’t), and conference calling.  
While Skype is well suited to VoIP for technical support, it is heavily integrated with other Microsoft products, which businesses have to pay for. It is also quite resource intensive.  
An alternative to Skype is TeamSpeak, which only supports VoIP and plain text messaging, is better suited to technical support than skype as the server software is free, so the business can run its own TeamSpeak server. Additionally, if the client installations are configured for the user, no further maintenance is needed - it can start automatically, and will always connect to the correct server. It also has support for rooms (also called channels), to allow multiple users to have a private discussion. Additionally, users and rooms can be given permissions and roles, to allow only certain users to enter or talk in certain rooms.  
Being able to use rooms to organise calls by topic, in addition with permissions, is extremely useful for creating a structured and efficient VoIP support solution. For example, there may be a ‘lobby’ room, for people waiting for support, groups of identical rooms for certain types of issue (ranked by urgency or type of problem), and private rooms for staff to work with colleagues.  
While TeamSpeak is an ideal solution from a technical perspective, it is primarily aimed at confident users, and its interface is not particularly novice-friendly. In addition, it requires a lot of setup, both information and technically-oriented. To mitigate this, the organisation will either use bespoke software, or provide training.

**Virtual Network Computing**VNC allows one computer to access and control another over the internet, through mouse and keyboard input.  
This allows technical support staff to remotely diagnose and fix software issues, as they can do it the same way as being physically present in front of the machine.  
Furthermore, some VNC clients can be configured to have higher access than the user, allowing the support staff to make changes to the system the user cannot, such as registry edits.

**Hardware Diagnostics**  
This is the process of finding physical faults with the components of the user’s computer. It cannot be done remotely, and requires the technician to travel to the computer, which may be elsewhere in the building, or on a different site.  
Most hardware diagnosis is done by visual inspection. Physical damage to components is usually obvious to the trained eye.  
For more rigorous testing, swapping out components for identical ones that are known to work can reveal which part is faulty, although this generally works if only one component has failed.  
To identify precisely which circuit has failed, a multimeter probe can be used to measure voltage, current and resistance in components. This is generally used when a part has been sent out for repair - on-site repairs will usually just replace the faulty component if no simple fix is possible.  
Another way to do hardware diagnostics is to use the BIOS - the software that runs when the computer is first turns on. Its purpose is to control hardware. If a component fails but the computer can still turn on, an error message will be accessible in the BIOS. For example, if no CMOS battery is in the motherboard, the BIOS will detect this and report it when the computer boots.