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Appendix 1: Internet Standards

Most protocols used by computers and network technology now follow a standard framework known in short as the OSI Model, invented in the 1970's. Further overview of the model can be found at https://en.wikipedia.org/wiki/OSI_model

The use of standardized protocols means that equipment from different manufacturers will inter-operate. It is this standardization that made the Internet possible. Human nature being what it is, there is always someone re-inventing the wheel, along with people and companies seeing an advantage in having a unique product they can monetize. So not all Internet protocols fit the OSI model and not all products are completely interoperable. As electronics and computers advance technically, they are getting smaller and much more complex and unfortunately less interoperable.

Internet Protocol

Internet Standards are created and published by the Internet engineering Task Force (IETF) . Internet Standards create interoperability of systems on the Internet by defining protocols, message formats, data schemas and display and data handling languages. The most fundamental of the Internet Standards are the ones defining the Internet Protocol. This family of protocol standards are commonly known as TCP/IP after the 2 protocols that form the basic functional layers historically. Increasingly, all the complexity of the Internet is completely hidden from our view or knowledge. One last vestige of that is the https: *that precedes all browser addressing, though increasingly that is not actually displayed by programs. ===== IP Address Space Exhaustion ===== The main address space of the Internet, maintained by IANA, was exhausted on 3 February 2011, when the last five address blocks were allocated. Since 1983, when IP address allocation started, the 4.29 Billion addresses in IP V4 have now been used up. The increasing acceleration of Internet technology adoption was recognized in the 1990's and a new address scheme, called IP V6, was published in 1998. IP V6 has a much larger address range but is not compatible with IP V4. Adoption of IP V6 has been very slow, with nearly all tech products still using an IP V4 technique called Network Address Translation to bypass the restrictions of the lack of addresses. NAT allocates addresses at a single location with non-routable address blocks that are translated into legal addresses for communication across the Internet. Since IP V6 is not interoperable with the older address scheme, this global issue will take a long time to resolve.*