The paper, “The Brief History of The Internet” describes the origins of the internet, various people and organizations that are influential in developing it, several design principles that shaped the growth of the internet and the need, and justification behind those design principles. In the early 1960s, Leonard Kleinrock published a paper on packet switching, which was a major step in computer networking. He demonstrated and convinced the need for packet switching to MIT’s Lawrence G. Roberts. Roberts later joined DARPA and developed ARPANET. ARPANET was a computer network of four host computers as of 1969 and marked the birth of the internet. ARPANET was designed to support a line speed of 50 kbps and employ some kind of networking protocol called Interface Message Processors or IMP’s.

As the years went by, ARPANET morphed into the Internet. The Internet’s key important idea was the existence of several independent networks in what is called “open architecture networking.” Introduced by Bob Kahn at DARPA, open-architecture networking opens the possibility of individual networks that can be separately designed and adhere to different protocols to accommodate different use cases but still be linked together in a single bigger network. Prior to open-architecture networking, ARPANET employed Network Control Protocol or NCP as a host to host networking protocol. However, the NCP was not up to the needs of the open architecture network. As a result, A new protocol that eventually became TCP/IP was developed. TCP/IP acts as a communication protocol and is, therefore, more versatile. On the other hand, NCP was more like a device driver and was constrained within the bounds of a specific OS.

The success of ARPANET primarily within the research community and now the feasibility of open-architecture networking led different communities to pursue their customized network technologies. In 1985 NSFNET program took off, serving the entire high education community. NSF and several other federal agencies put in place several policies that governed the NSFNET program. For example, the TCP/IP protocol was the obligatory protocol, and regional networks within NSFNET were encouraged to not necessarily be limited to academic non-commercial customers as a means to drive revenue, expansion and low subscription cost from the economies of scale. For its eight and a half years of the operation time, NSFNET grew “from six nodes with 56 kbps links to 21 nodes with multiple 45 Mbps links.”

As the years went by, the scale of the internet grew significantly large due to the advent of PCs, workstations, and LANs. Such prolific growth often came with management issues and
rethinking some design approaches. When there were a few numbers of hosts, a table that mapped hostnames to their associated numeric address was maintained and a new host would join the network by simply being added to the table. With a much bigger internet, the concept of the table was not feasible anymore, therefore, Paul Mockapetris of USC/IS invented DNS. DNS provides a scalable distributed system to map names to internet addresses.

Overall I enjoyed the reading. I loved learning about the origins of probably the most pervasive technology in my daily life without having to go into too many details. I like how the internet community cooperated and allowed room for creativity within individual networks with minimal protocols and regulations in place. I think it is very important to know how the internet came to be and how its design changed overtime going into the future as we seek to make it even more accessible to everyone in the world at reasonably good performance and low cost.