Chapter 15
VoIP vs GSM Technology:
The Way of the Future for Communication

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ABSTRACT

This chapter presents VoIP as a disruptive technology to GSM technology as well as the issues, controversies, and problems surrounding its deployment. It gives a general introduction of the evolution of communication systems from the POTS, to GSM, and now VoIP. Several issues that surround the deployment of VoIP such as provision of PSTN equivalent services by VoIP service providers, regulation of the service, introduction of latency and other counter measures by some operators, threat posed to PSTN providers due to emergence of VoIP, the need for technical standardization of VoIP, security issues, different cost structure, and quality of service provided were also discussed in details. Solutions and recommendations were suggested to overcome the challenges outlined. VoIP is presented as the way of the future for communication. When this finally happens depends on how fast the challenges outlined in this chapter are addressed. Future and emerging research trends in the deployment of VoIP such as locating users in a secure and reliable way, monitoring VoIP networks, as well as intrusion detection and prevention on SIP were also considered, after which, conclusion was made. This chapter is both informative and interesting.

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INTRODUCTION

A new invention, a new product and a new technology are applauded for only as long as it takes a newer and better invention, product and technology to be developed. Year in and year out, new technologies emerge to replace old ones which join the queue as history. The plain old Telephone system (*POTS*) or the landline was the main communication system used for *communication* for many years despite its attendant problems, which include: slow growth (especially in underdeveloped countries like Nigeria) very long period required to design and roll out the Networks, very high capital requirements to build Public Switching Telephone Networks (*PSTNs*) and the long time required to get meaningful returns on investment which is of great concern to investors. Due to little or no competition, *POTS* continued to dominate the *communication* industry until the development of GSM technology. The rate at which the mobile phone technology overtook the POTS was far more than what the key players in the *communication* industry would have anticipated. This marked the beginning of a new era that many players in the communication industry thought would last for a very long time (Oruame, 2010). The very fast growth of *GSM technology* has been both phenomenal and unpredictable for equipment vendors and investors alike. Unlike what was the case for landlines, GSM technology showed so fast a growth that it was certain that the influence of landline telephony would continue to decline and that the mobile phone would take over the communication industry. In Nigeria it took just months for this to happen.

Today, it is interesting to note that Internet telephony is already a *disruptive technology* to *GSM technology* and the *POTS* variants including the landline, in the same way that the mobile was a disruptive technology to the landline. The rate at which this is happening may not be as fast as how it happened between GSM technology and the POTS variants. It is no longer news that the circuit switch used in GSM technology is presently being replaced by the packet switch where there is no difference between data and voice or voice and video but everything is simply a packet of data to be decoded into its original form at the point of termination. There is no international or local traffic. Traffic is traffic. Soft switch (packet switch) is presently being deployed and voice over internet protocol (VoIP) is no longer limited to the croaking device being used with a phone jack into a Personal Computer (PC). It is now available in the same mobile phone being carried around and in the stationary phone box in the home or office desk with very high voice clarity. Due to the emergence of *VoIP* and the strides being taken to improve on the technology that supports it, so as to overcome the challenges that are presently limiting its use, it is now glaring that the reign of *GSM technology* based phones would end unceremoniously in the not distant *future*.

Although there is no classified definition of VoIP, it is a technology that allows you to carry voice traffic on a data network. The modem technology allows voice networks to carry data traffic hence what we have today is a reversal of technology that allows data networks to carry voice traffic. Voice, while still a dominant application is gradually being supplanted by data. When developing countries like Nigeria are building their national technology infrastructure today, the dominant consideration will not be to use it to carry voice traffic but to make it data ready as this is the way of the *future*. Voice will only ride on this data infrastructure just like e-mail, SMS, video etc.

VoIP despite its numerous advantages has a number of challenges which has greatly reduced its deployment and use by several potential subscribers. These problems include: security *issues*, geo-location deficiency, poor reliability (poor quality of service), deficiency of handling emergency call services, difficulty of Numbering and number portability, little or no *regulation* on tariffs, Cross-border *issues* etc. Huge invest-