The Capital Wireless 4G LTE Technology

Abstract

Wireless technology has evolved to greater heights over the past few decades. With the increased sharing of information and online business 4G, LTE technology has emerged as the most preferred choice since it has all the elements required to give a business competitive advantages. At Capital Wireless firm, we install 4G LTE technology for businesses that use Internet to facilitate business operations. Capital wireless is a business that has been in operation for over 20 years and acknowledges the needs of businesses and how they can adapt the technology to acquire a competitive advantage. 4G LTE Technology is the most efficient in the market, and Capital Wireless is committed to introducing the network into the small and large businesses within the country.

Introduction

The white paper discusses how business can choose a wireless 4G LTE Technologies that suits their business needs. The Long Term Evolution is a wireless technology pioneered by the Capital Wireless fourth-generation broadband network. The white paper will provide information about the network and why it can transform businesses and make them acquire a competitive advantage over their competitors. The data will help a business understand Capital Wireless new Long Term Evolution network. The reason for this is because it is the most effective in the market and its ability to transform mobility (Simon, Ahuja & Priyanka, 2014). The primary audiences of this paper are businesses that most of their operations depend on the internet.

Background

The wireless technology is the most significant in the field of networks enables devices to have a communication without a wired connection. The data in wireless technology is transmitted by the Radio Frequency. It is significant to understand that the

evolution of wireless technology is due to the complexities that are emerging in the field of communication. The wireless communication technologies are classified based on their coverage, for instance, the wireless wide area networks [WWAN], wireless local area network [WLAN] and personal area networks [WPAN]. The difference that exists between the above networks is the distance they cover from the transmission point. This background section discusses the above networks and categorizes the 4G LTE Technology based on its coverage, in addition to giving a brief history of the evolution of the technology.

Personal area networks

It is designed to offer connection to devices within a close range. In this case, the best example is Bluetooth network, which offers connection to devices at a close range and consists of wireless audio, wireless synchronization, dial-up networking, and file and image transfer. The connections do not have to connect to any infrastructure in order to operate; as a result, they are commonly referred to as ad hoc. As such, they do not need base stations or access points to perform necessary communications.

Wireless local area network

The designing of the above network is that, which allows devices to connect to wire networks. It is wireless in that it does not require a cable to connect a device to a router. Devices connect to a local network via access points wirelessly. The access points are the ones that have Ethernet connection. An access point within a local area serves devices in an area close to hundred meters. As a result, users can be at any position within the hundred meters with their devices in order to have a clear connection. In this case, a good example is the WI-FI network commonly at public institutions (Alkhansa, Artail & Gutierrez-Estevez, 2014).

Wireless wide area networks

As the name suggests, the network offers connection to a far greater range. The network uses the cellular network, for instance, GPRS, LTE, and HSPA (Alkhansa, Artail & Gutierrez-Estevez, 2014). Devices that use this network are connected to its wireless broadband network via a data network from the commercial carrier. It does not require a cable for it to function and provide greater mobility. Base station controllers coordinate cell sites, which allow users to have the flexibility of handing off between base stations. WWAN has evolved over the years based on increased demands of the internet and new needs from users to increase efficiency. I will highlight the evolution of Wireless wide area networks to the current LTE.

Wireless wide area networks Evolution from CDMA to LTE

1G

It was the first generation radio network and was analog-based. A single channel offered support to one device only at a time. The difference between the first generation networks to today's network is the capability to handle more than one device at a time and the coverage (Akyildiz et al., 2014).

CdmaOne or 2G

The network was known to offer high-quality voice traffic to users. The network changed analog signals in that they had new capabilities that included data services, unlike first generation networks that only included voice. The cdmaOne technology made possible services such as emailing and text messaging.

Cdma2000 or 3G wireless

The network was due to the increased need for data services due to the growth of subscribers. The 3G wireless technology was engineered to support a lot of data transferred among subscribers (Akyildiz et al., 2014). The technology supported diverse and improved broadband data applications, which consisted of multimedia downloads and broadband

internet access. In addition, the technology increased the capacity of the user over the previous 2G networks. The introduction of 1xRTT made it possible for the existence of packet data in the history of networks. In comparison to 2G technology, the 3G networks offered support to a higher number of data and voice subscribers at the same time and a very low cost (Abdeljebbar & Kouch, 2014).

CDMA2000 1xEV-DO

The network introduced a number of techniques that includes the packet-switched technique that made it possible for the high-speed transmission of data (Akyildiz et al., 2014). It enables the rates of data transmission to go beyond 2 megabytes per second. 1xEV-DO allowed users to have experience new services and provided applications to customize the network. Moreover, it allowed subscribers to enjoy wireless speeds using their devices and broadcast a large number of media-rich content.

CDMA2000 1xEV-DO Rel. 0

The introduction of Rel. 0 to the previous network allowed the network of this generation to have a peak speed of 2.4 megabyte per second. In addition, the network had an average of 400 to 700 kilobytes per seconds for a user. Moreover, the data rate for an average uplink was 60 to 80 kilobytes per second. The Rel. 0 was a significant addition that allowed aspects such as improved internet protocols and gave the network the capabilities of supporting IP-based connectivity (Akyildiz et al., 2010).

CDMA2000 1xEV-DO Rev. A

According to Akyildiz et al. (2010), the Rev. A aspect introduced new speeds and reduced latency. The new speeds were 3.1 megabyte per second, which was only allocated for downloads and an additional 1.8 megabytes per second for uploads. The Rev. A technology was the core aspect of this wireless technology and improved the ability of the user to email attachments, send large files and diverse video contents from wireless devices.

The average speed for downloads for Rev. A technology was 400 to 700 kilobytes per second and 500 to 800 kilobytes per second for uploads (Abdeljebbar & Kouch, 2014).

LTE

Now, this is our point of concern; it is a 4G wireless technology that Capital Wireless prefers as its strategic upgrade path after the 3G technology (Abdeljebbar & Kouch, 2014). It is a significant network and offers a great advantage to the end users. Under a normal network condition, the throughput of this network will be between 6 megabytes to 15 megabytes per second from the access point to a device. Conversely, the throughput from the device to the network will be 3 megabytes to 6 megabytes per second.

Analysis

Why consider 4G LTE network

The LTE is a strategic and the most effective 4G wireless broadband network. LTE offers a business diverse technological advantage over other wireless technologies currently in the market (Akyildiz et al., 2014). First, it is a superior 4G wireless networking standard. In the current business environment, a business that acquires a strategic advantage such as considering the 4G network will have an advanced communications system and immersive experience on the wired networks. The advantage will come from different frontier whether it is the uploading of files, social networking or teleconferencing or downloading vital files. Moreover, a business will enjoy the advantage of communicating in an innovative way.

The 4G LTE is very significant in that it sets the standards for the variety of networks in the market. Consequently, the standards set will be the most preferred as a path of choice for other wireless technologies. Initially, the company had Capital EV-DO REV. A, but the 4G LTE offered improvements to the network, especially on its rate of transmission and packet latency (Abdeljebbar & Kouch, 2014).

The Consistency of LTE wireless network

According to Wang & Chuang (2015), when an institution deploys 4G LTE network in its operations, it will allow users of the network within the organization to have a better coverage. It will allow them to roam within the organization providing the mobility that is much needed. The Company has invested a lot in the network to offer the much-needed experience. The vital aspect added that other wireless networks lack the securing of the C-Block MHz frequency (Rinne & Tirkkonen, 2010). The frequency offers a significant advantage compared to other frequencies. One of the advantages is its capability to defy attenuation, especially when the signal passes via building materials and foliage.

Why should a business adopt LTE NETWORKS?

LTE is a very strong network in that it has a widespread support from diverse players in the wireless industry; it is because LTE is the most recent networks in the 4G line of networks. In addition, more than 300 hundred mobile operators have adopted the LTE 4G services globally. In addition, there are other primary players in the market have considered incorporating the technology at some future point of their operation (Rinne & Tirkkonen, 2010).

What are the benefits?

As a business, you might consider the above questions and want to know the advantage of deploying Capital wireless 4G network. In fact, the LTE technology has diverse advantages that a business will enjoy, especially a business that conducts its services online. First, the network has a high peak speed: 86 megabytes per second downlink and 28 megabyte per second uplink (Song, 2014; Keeley, 2012). Moreover, the network has a low latency. As well, it has improved spectrum efficiency. The spectrum efficiency entails how the access layer in a wireless network uses limited bandwidth. As a result, improved spectrum efficiency will allow a business to transmit more data in a bandwidth. Consequently, the move increases the number of end users the LTE network can support.

In addition, a business will enjoy a seamless performance, which will reduce the handover latency. The reduced handover latency then results to packet loss, which is significant for the deliverance of service. In this case, a business will enjoy an Evolved Packet Core used by the 4G LTE, which facilitates quality voice and data communications (Song, 2014).

What else?

Of course, not to forget security, Capital Wireless acknowledges the importance of data to a business. In this case, the company's 4G LTE networks are considered the most secure in the wireless industry (Alkhansa, Artail & Gutierrez-Estevez, 2014). The company has incorporated a number of security enhancements to the network to make the network more secure compared to others in the industry and the previous 3G technology. The table below provides a summary of security enhancements, which the company knows that it will offer better and overall protection to businesses and their personal data.

Security enhancements found in Capital LTE network

Secure Storage	It secures devices that have secret and credentials data during the access of the networks
Mutual Authentication	When using LTE, the network, and the device authenticate one another
Root Key Length	The network has a key length of about 128, which offers security to signaling information and user plane
Encryption	It allow subscriber and signaling data encryption
Integrity Protection	The network has an additional algorithm, which makes sure that the translated data is secure and genuine
Security Context	For each session, the network offers keys that encrypt subscriber and encrypt data

(Keeley, 2012)

What about secure storage of data?

The significant concern for every subscriber is the security of his or her personal data. Capital Wireless via its Subscriber Identity Module Cards, which are a basis of offering the 4G networks acknowledges this concern and has designed significant measures. The cards offered by the company are the most secure to ever introduced in the market; in addition, for organizations company has introduced tamper-resistant devices, which apart from storing they use both credentials and secret data. Consequently, the cards store subscription information in a secure manner and are portable. As such, it allows users to carry them whenever they go, especially for business conferences just in case (Drubin, 2014; Xiang & Xiao-min, 2014).

The significant concern when using a network is of course security. As a business, cyber security has become a critical concern whereby an entity might lose strategic data to its fierce competitors. As a result, there are high chances of it being driven out of business. A business should not panic anymore because, with the arrival of LTE 4G network into the wireless market, the problem has already been solved. When a company has adopted the network, each employee will have a 4G SIM Card that will have a personal Identification Number; as a result, it will limit access to personal data. In case another person tries to access personal or company data, the Universal Subscriber Identity Module will be blocked because it is the logical identity of the SIM cards (Drubin, 2014).

A new era for Businesses

The 4G LTE network offers a lot of mobilities and an untethered experience (Alkhansa, Artail & Gutierrez-Estevez, 2014). Employees in an organization can communicate and work whenever they prefer since they can teleconference. The improved speed of LTE is crucial because it allows wireless carriers to have a number of business-related applications, for instance, video conferencing, wireless applications, and in-office connectivity,which offers desktop experience to employees' wireless devices.

Specifically, the 4G LTE network provides businesses with different needs, for instance, a global ecosystem, which has an inherent mobility, greater privacy and security, improved speed, and overall network latency. Apart from the highlighted benefits, the network decreases cost per bit via improved spectral efficiency, provides real-time video experience, the low latency supports real-time applications and displays a high-performance mobile computing (Hassan et al., 2012).

Businesses that consider 4G LTE are looking for a new approach to becoming competitive and efficient in addition to the resources the business possesses. Accessing a stable network for businesses has become a difficult affair for most businesses considering the increased significance of the internet to businesses. 4G LTE is a unified technology that offers the ability for users to communicate with its customers and business partners, conduct businesses online and maneuver across the globe seamlessly and easily (Keeley, 2012).

Conclusion

Profit is what any business is looking for in the market. Attracting a large market for its products and services is the dream of any business, which in turn will increase its levels of profit. The competitive nature of business is changing very first, and businesses that have considered upgrading their networks are the ones surviving in the competitive fields. It is evident for the above analysis that 4G LTE is the latest network in the market and offers diverse advantages for a business. Choosing the network will be the best over option, especially for small businesses that are trying to take over the market whereby the network will give them a competitive advantage. Businesses that seek to retain their relevance have no option than to turn to 4G LTE due to the increased cyber security concern.