Chapter 7 Wireless and Mobile Networks

In the telephony world, the past 25 years have been the golden years of cellular telephony. The number of worldwide mobile cellular subscribers increased from 34 million in 1993 to 8.3 billion subscribers in 2019. There are now a larger number of mobile phone subscriptions than there are people on our planet. The many advantages of cell phones are evident to all—anywhere, anytime, untethered access to the global telephone network via a highly portable lightweight device. More recently, smartphones, tables, and laptops have become wirelessly connected to the Internet via a cellular or WIFI network. And increasingly, devices such as gaming consoles, thermostats, home security systems, home appliances, watches, eye glasses, cars, traffic control systems and more are being wirelessly connected to the Internet.

From a networking standpoint, the challenges posed by networking these wireless and mobile devices, particularly at the link layer and the network layer, are so different from traditional wired computer networks that an individual chapter devoted to the study of wireless and mobile networks is appropriate.

We will begin this chapter with a discussion of mobile users, wireless links, and networks and their relationship to the larger(typically wired) networks to which they connect. We will draw a distinction between the challenges posed by the wireless nature of the communication links in such networks, and by the mobility that these wireless links enable. Making this important distinction--between wireless and mobility-- z