Reducing The Power Consumption of Your WiFi Infrastructure

In the era of climate change and the various international crises affecting the price of electric power, everyone agrees that we must reduce the consumption of the various energies we use for all purposes.

Digital economy represents an increasingly important part of global energy consumption

Everything we use is converted into digital representation with signals carrying zeros and ones and transporting them between different places (from phones and computers, to servers and clouds).

For this digital data transport, our devices use mostly WiFi networks that we find everywhere. WiFi networks are represented by access points offering small coverage that we call hotspots.

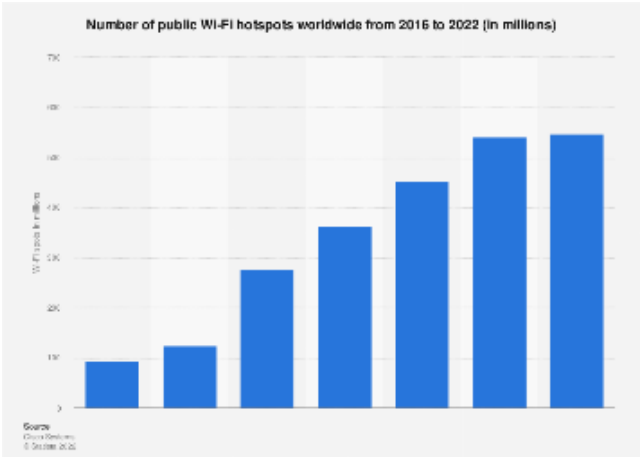

Figure 1. Number of free hotspots in the world (VPNMentor)

The number of hotspots in the world is estimated in the billions

The VPNMentor site estimates at 549 million the number of free WiFi hotspots worldwide in 2022 (Figure 1). Cisco mentions 628 million in its 2018-2023 report (Figure 2). To this, we must add the home Internet boxes and all the access points installed in companies, administrations, campuses, hospitals, small SMEs, factories…

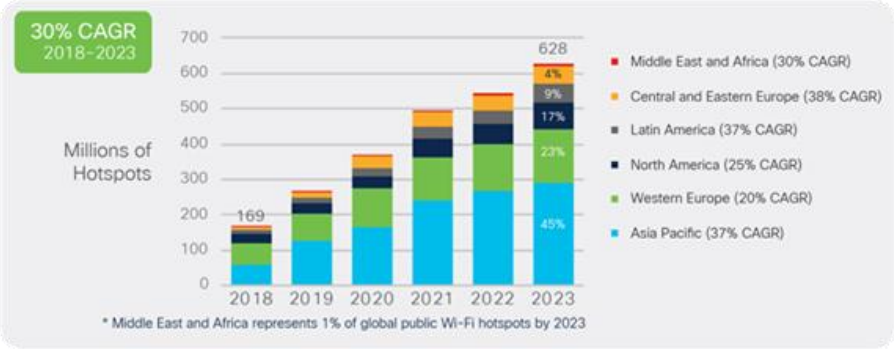

Figure 2. Number of free hotspots worldwide (Cisco)

The power consumption of a WiFi access point can vary from 10W (quite rare case) to several tens of W, most access points consuming between 15 and 20W.

Let's make a simple calculation on the consumption of these WiFi access points

We use an optimistic scenario considering an average consumption of 15W per access point. The consumption per day is

15W*24h = 360 Wh and per year 131.4KWh

For the 549 million free hotspots in the world, the total consumption per year is

549 000 000 * 131.4 =72.1386 GWh =0.072TWh

According to EDF (French National Electricity provider), the average monthly production of a nuclear reactor (900MW) is 500 GWh per month or 6 TWh per year. These WiFi hotspots require 12% of the production of a 900MW nuclear reactor. This figure can easily be multiplied by 8 if we want to consider all WiFi access points (and not only the free hotspots) in the world. In this case, a nuclear reactor is needed to power our WiFi hotspots.

Considering the average price per KWh in the world is $0.136, the cost of electricity to power these 549 million hotspots reaches nearly $10 billion per year. The price of electricity is expected to increase by 100% in 2023, rising this bill to $20 billion.

Green Communications has been working since 2010 on producing energy efficient connectivity solutions

Green Communications has developed a set of innovations over the years to reduce the carbon footprint of digital consumption. Among these innovations, we can point out optimizations that allow a WiFi access point to operate with a consumption of 3.5W only. This represents by default 65% energy saving compared to best solutions and up to 83% compared to 20W access points.