The Last Byte

Our Gated Community

Scott Davidson

Many cities in Europe still have walls left over from an earlier era. I have been to the walls in Tallinn, Estonia, and Valetta, Malta, which is particularly impressive as you approach the harbor from the sea. These walls were built to keep out invading armies, but they also kept out bandits and small bands of marauders. Inside the walls, the residents were relatively safe.

Our computers also have walls, as mention of security in several articles in this issue of *IEEE Design&Test* should remind us. We talk of firewalls protecting our networks from the hostile world outside. We worry about Trojans, a reference to the trick the Greeks used to get inside the walls of Troy. We have gateways, which examine traffic into our networks like the guardians of city gates examine visitors to screen out dangerous ones.

For both ancient cities and modern computers, the more valuable the target, the stronger the walls must be. A few huts together in the middle of nowhere could be protected by the inhabitants banding together when required. A private computer with little value on it can be protected by basic antivirus software and firewalls. A big city full of valuables needed a big wall, and computer networks with banking and national security information need stronger protection. An army marching could easily overwhelm the small village, and our personal computers would not stand up to a dedicated attack by a hostile government. In both cases, traitors on the inside can make any protection ineffective.

Why do we not surround modern cities with walls? It is because advances in military technology made walls ineffective. French attackers in Italy with more powerful cannons smashed an impregnable wall, expected to stand for months, within a day. Today, invading armies must be stopped before they get to a city, or else a virtual wall must be built using armies and natural features like rivers. There is one case where a modern wall was built, Berlin, but that wall was meant to keep people in, not keep enemies out.

Our computers still have walls. Why? First, firewalls and other security features work reasonably well, if not perfectly. Second, weaknesses can be exploited more rapidly than weaknesses in city walls could be. Perhaps, another reason is that there is no more or less universally observed code of rules about hacking, the way the Geneva Convention establishes rules about war. Think of how attacks on our computers, and fraudulent calls, would be reduced if identified attackers could be arrested wherever they resided.

One feature of life in the mythical "good old days" was that everyone knew and looked out for each other, so you never had to lock your door. In the preweb internet, before every ad and wrapper had URLs, users all worked for universities or research institutions. We all used passwords, but much less processing power was spent looking for viruses and protecting our computers from each other.

We are not going back to the quaint towns of the past. Lock companies are not going out of business, and today we have doorbell cams. Antivirus companies have a secure business model also. We will have to keep reinforcing the walls around our computer systems and hope no one invents the equivalent of a big cannon. ■

Digital Object Identifier 10.1109/MDAT.2023.3273199
Date of current version: 26 June 2023.

Direct questions and comments about this department to Scott Davidson; davidson.scott687@gmail.com.

2168-2364/23©2023 IEEE Copublished by the IEEE CEDA, IEEE CASS, IEEE SSCS, and TTTC