

Internet Data Losses Likely, Warns Inventor of TCP/IP Protocol

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Beside US, Finland and Belgium, a new Google data centers are currently being built in Chile; Hong Kong, Singapore and Taiwan. Photo: Google

Digital “dark ages”™ are ahead of us, according to the “father of the Internet”™ Vint Cerf, the inventor of the TCP/IP protocol.

([Newsire.net](#) -- June 28, 2015) -- Digitalizing and storing data, especially online, does not preserve it for eternity, experts warn us. In fact, according to Vint Cerf, the inventor of TCP/IP protocol and later the chairman of the Internet Corporation for Assigned Names and Numbers (ICANN), the data we store today may become obsolete a lot sooner than we expect. The problem, however, lies not in the durability of the digital format and a medium that stores it, but in the way we may read it in the future.

“People think by digitalizing photographs, maps, we have preserved them forever, but we’ve only preserved them forever if we continue to read the bits that encode them,” [the Newsweek cited Cerf](#).

This is similar to what happened to videos stored on 8 mm tapes, then Super 8 tapes, followed by VHS. If one day, not that far in the future, you wanted to go down a memory lane and watch the tapes you or your parents made, the task of finding a working projector or even a VHS player can be a daunting one.

But don’t feel bad about failing to account for the changes in technology, it happens to the best of us - in 1975, NASA launched its Viking 1 and Viking 2 missions. Two deep-space probes were sent to Mars with what was the state-of-the-art recording technology at that time – a magnetic tape. Only a decade later, no one at NASA had the skills or the technology to read those recordings, and subsequently about 20 percent of the data was lost.

The modern technology has brought us Cloud Servers - we store photos on social networks, we secure data by sending it away from our storage devices which can easily break or get lost. The digital data-storing companies assure us our digital memory is safe and password-protected for eternity. But is that really the case?

What if a company that stores our data experiences certain problems, such as server issues, hacker attacks, or simply bankruptcy, and the new owner decides to erase the servers? It may be a morbid way to think of it, but why would anyone feel incentivized to tend your inbox and passwords after you die?

According to Cerf, our greatest weakness is our confidence in the eternity of data preserving, which is actually more vulnerable now than ever. Due to their lack of longevity, servers have to be replaced every five years. The risk of losing access to data sharply increases after that length of time, simply because the materials of which the storage devices are made, decay over the years.

The scientists who are aware of the longevity problems keep experimenting with different materials. Peter Kazansky and his partners from the [University of Southampton](#) are developing a storage device that uses the most stable material on Earth today, the silica glass, which is a form of modified quartz. According to Kazansky, the silica glass can preserve data for billions of years, which, from the viewpoint of an average person's life span, qualifies as eternity.

The only problem is the cost-per-capacity. The amount of the data stored in glass drives is about 40 MB per square inch, which is a few megabytes more than a CD-ROM. But the cost of producing such a storage device is \$0.75 per megabyte (equivalent of paying \$500 for a single CD-ROM), and that doesn't even include the cost of the equipment

needed to read and write such data.

But there is still hope for future generations - other scientists have turned to organic matter in their quest to increase the capacity and boost the longevity of data storage. Organic matter decays fast, however the DNA imprint itself could last for million years. The DNA may just be the perfect solution as the data density is approximately 700 TB per gram of material!

Although outlandish, the idea of using DNA as storage medium is not just a matter of science fiction. At least one bio-artist, Joe Davis, thinks so, as he announced his [plans to store a complete Wikipedia into an apple](#) .

Meanwhile, the chemist George Church claims to have already stored 70 billion copies of his book 'Regenesis' in a drop of synthetic DNA hundreds of times smaller than a raindrop. But don't expect to see DNA-based storage devices on the Best Buy shelves any time soon though - the major problems we're facing today when it comes to storing data this way, are the time required to access the data stored in DNA (which is limited to just over half a gigabyte per hour), as well as the cost of the machinery to do so.

Whatever scientists are working on to solve the problem of durability and accessibility of the data, they need to do it fast. According to IBM, the 90 percent of the all data generated has been created in past two years. Failing to preserve that data could be the greatest setback in the history of mankind.

Source: <http://newswire.net/newsroom/news/00089264-so-you-think-you-can-store-your-digital-data-forever.html>