SWCP Portal
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Wall-sized video and emojis: is Fahrenheit 451 almost here?

Fast Lanes and Firewalls

By the time you read this, a key principle determining how the internet functions in the US may have been changed. If worst comes to worst, it might speed the reduction of the world's information superhighway into a collection of toll roads and gated communities.

That governing principle is called "**net neutrality**." As Tim Berners-Lee, the inventor of the web, **pointed out**, the **Internet was designed to be neutral, open, and transparent end-to-end** from the very start. All internet traffic should be treated exactly the same regardless of source, content, or destination. *Everything*, from email, webpages, and streaming videos to spam and illegal downloads, seek out the fastest routes available without any interference.

But if big corporations and the **Federal Communications Commission** have their way, one result could well be that premium customers are granted priority. They would enjoy the fastest connections. Everybody else would have to make do. Heavily-used websites might charge for access also. It could even lead to censorship of others' content by those who own the channels, either hidden behind extra fees, or overtly. The free and open net we have known, loved, and relied upon might become just a fond memory.

How we got here

The internet was initially designed and built by idealistic geeks working at universities and government labs for the Defense Dept. They envisioned a free and open-ended data-sharing system with all content given equal treatment, "first come, first served".

It was built upon a postal model called "**packet switching**". Files are split up into small data packets. Upon reaching a server, they queue up and are sent out in the order of arrival along whatever path was working fastest at that moment. Since there have been basically no charges after the data is uploaded, distance and size have been as irrelevant as the kind of data the packets contain, their origin, or purpose.

Yet in the "real" world, such factors are important. **Physical mail** is highly prioritized, with some things like fireworks and batteries completely forbidden. Foreign and suspicious packages can be intercepted, inspected, and held up. Sending larger packages or

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The Weird World of Emojis

Emojis have come a long way since their ancestor, the sideways **smiley-face :)** first appeared. It was so useful for conveying emotions within text that thousands of other combinations of punctuation marks and letters were soon invented, called **emoticons**.

Microsoft adapted several of these into its popular **Wingding** fonts. The heart proved very popular with Japanese kids using pager messages. So **Shigetaka Kurita**, a designer working on prototype cellphones, devised a bitmap graphic heart and 175 other symbols, all drawn by hand in a 12 by 12 pixel grid.

Emojis had been born, rapidly multiplying after **Unicode** included some into their universal digital script encoding scheme, a few at first, then 56 more, then ever more as the Unicode standard evolved.

At **latest count**, there are now *2,623* Unicode emojis, a dizzying array of faces and expressions, hands and gestures, people, roles (including fantasy), animals, plants, places, things, abstract symbols, etc.. Plus modifications exist to show various skin shades, to combine emojis, and even to display them as text.

While Unicode gives a universal definition of emojis, the actual renderings are left up to the firms that use them. Apple, Windows, Samsung, Facebook, Google, Twitter, Gmail, and so on, all have their own unique styles – even animated ones. See them all **here**.

Most are cute and easy to understand, others are just plain weird or culturally specific, like the **pile of poo** graphic (which is a pun for "**good luck**" in Japan). Now anyone can **propose** their own to Unicode, too.

As emoticons tweaked the limits of text, emojis have also been used in ways not intended. Apple, for instance, **angered users** when it subtly changed its peach icon. Apparently a few fruit and vegetable graphics – the eggplant being another one – can represent **naughty bits** for obvious reasons.

Yet, as "**Face with Tears of Joy**" was Oxford's 2015 word of the year, emojis are here to stay.

"Emojis are here to stay, giving joy to all the world."

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over greater distances costs more. Extra-value services like priority delivery move items to the head of the line, and require special handling or tracking.

A few such practices have been adopted on the net as spam, black-hat hackers, and viruses proved that the academic designers were far too naive. Firewalls were invented to keep intruders out of machines, mail scanners employed to block annoying or booby-trapped emails, cookies and tracking methods devised to quietly follow users' every click.

Streaming video

The web adapted well to these and other unforeseen changes. Now it must make room for streaming large video files. Speed on the net is called "**bandwidth**" which is basically depends on the size of the connections carrying data. Bigger bandwidth pipes can carry more bits per second – and to display **streaming**, high-definition digital movies without pauses or interruptions requires a *lot* of bits moving *very* fast.

But the web is *not* TV**.** As we've **written before**, television and the internet work by radically different, opposing models. The internet is not a **broadcast medium**. The net requires exact addressing and constant feedback to make sure the packets get where they need to go, greatly complicating the problem.

Corporate content providers, especially those pushing on-demand video, want to speed their data packets with as few interruptions as possible. Large ISPs also are naturally unhappy about allowing packets from rival services – not to mention **peer-to-peer** networks which may be distributing an identical product without charge – to use their systems just as freely. Nor are they thrilled by the few users of their own who hog the most bandwidth, either.

The debate over net neutrality has been grinding on for more than a decade. Not long ago, the FCC was one of neutrality's most zealous defenders, but flipped positions with this administration. At issue is whether the net should be regulated as a neutral "**common carrier**" utility like the telephone system.

The battle lines are clear enough. On the pro-neutrality side are groups like the **American Civil Liberties Union** and the **Electronic Freedom Foundation** – plus most of the people actually using the net. In the latest round, *98.5%* of the **real comments** were strongly in favor of leaving the net open. This despite the FCC's comment site being flooded by *71.5 million* fake bot-generated comments in favor of eliminating neutrality by some **unknown party**.

Big broadband carriers – **Comcast**, **Verizon**, and **AT&T** in particular – who have been **throwing bushels of cash** would have little reason to use such tricks. They have official support. The new FCC chairman has even made the controversial **claim** that neutrality stifles internet growth and technical innovation.

It's true that near-monopolies like the old Ma Bell phone system tend to stifle progress, but this argument overlooks the fact that in America the big ISPs *already* form a **virtual monopoly**, a cartel in all but name. The **laggard adoption** of high-speed broadband across the country could be a sign of that. And the FCC may make it even worse by essentially lowering the **speed standards** for high-speed broadband.

Managing content

Up to now, any attempt to control bandwidth-hogging by consumers by their **ISPs** has generally meant imposing **usage caps and overage fees.** Though many claim it's to protect network sharing, caps are often really more about **stealthily raising rates**.

For that, no spying on content is necessary, just measuring usage. But deciding which packets should get priority treatment might require scanning each one, a covert opportunity for censorship. Large ISPs could slow downloads of news stories critical of them, charge more, or block content entirely. The goose that laid the golden egg could be in serious danger.

Yet the global network is already in the process of fracturing into hundreds of national and corporate nets. The **Great Firewall of China** to keep news and ideas of which the Communist government disapproves out of reach might be **just the beginning**.

With concerns of **cyberwar** and **corporate espionage** constantly rising too, the entire internet is at risk of fragmenting into firewalled enclaves. Add widespread online tracking and **surveillance**, and our online future might become a lot more insular.

Happily all these situations remain hypothetical for the moment; worst-case scenarios of paranoia and greed. How events play out may depend on whether the general increase in speed as fiber links like **SWCP's LightSpeed** spread across the land can keep pace with the rising demand for streaming video.

There's not much users can do but **write Congress**. SWCP supports net neutrality, but we can do nothing about speed throttling or censorship upstream – or downstream, for that matter. What may make the real difference is consumer demand, which depends upon awareness and informed choices. SWCP will keep doing our best to keep you posted.

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