April 7th

Hoover on TV

April 7, 1927

Dignitaries gathered at the AT&T Bell Labs auditorium in NYC to see the first American long distance TV demonstration. The centerpiece was a conversation between the US Secretary of Commerce, Herbert Hoover, in Washington and the AT&T President, Walter Gifford [Jan 7; April 15], in New York. Hoover's live picture, rendered at 50 lines of resolution, and voice were transmitted over telephone lines using a system developed by Herbert E. Ives.

Edna Mae Horner assisted during the transmission, and incidentally became the first woman to appear on TV.

An article in *The New York Times* the following day noted that Hoover's face was rather indistinct at times, and also quoted knowledgeable Government officials and AT&T representatives as having doubts about the commercial use of such a device.

Nevertheless, a year-long demonstration began in 1930, consisting of two-way TV booths based in AT&T's New York headquarters and Bell Labs.

Herbert E. Ives went on to develop a two-way videophone system called the ikonophone, and a means of sending video signals over coaxial cable. He won the Congressional Medal of Merit for work on night-vision goggles during WWII.

David Dana Clark

Born: April 7, 1944;

USA

Clark worked on the Multics [Nov 30] I/O subsystem with Jerry Saltzer [Oct 9] while a student at MIT. Later he became something on an expert on implementing support for Internet protocols, adding that feature to Multics, the Xerox PARC Alto [March 1], and the IBM PC [Aug 12]. He was also one of the developers of the token ring LAN [Oct 15], and helped with the IEEE 802.5 token ring standard.

In 1984, Clark, Dave Reed [Jan 31], and Saltzer, wrote the first paper on the end-to-end principle which argued that host computers, rather than network nodes, should be responsible for application-specific functionality. This view of the network as being purely for data routing is at the heart of today's net neutrality debate.

Clark's other work includes the Clark-Wilson integrity model, extensions to the Internet to support real-time traffic, and techniques for the explicit allocation of services and their pricing over a network.

David D. Clark should not be confused with Dave Clark, the drummer and manager of the 1960's rock and roll group the "Dave Clark Five". However, in 1982, Clark produced five RFCs (RFC 813 - 817), which some observers have termed the "Dave Clark Five".

Robert Melancton Metcalfe

Born: April 7, 1946;

Brooklyn, New York

Metcalfe and David Boggs developed Ethernet [May 22] while working at Xerox PARC. He's also known for Metcalfe's law: "the power of a network increases with the square of its nodes". In 1979, he founded 3Com, a networking company named in honor of the computer, communication, and compatibility.

Before Xerox, Metcalfe was part of MIT's Project MAC [July 1], and in 1969 helped link MIT to the ARPANET [Oct 29].

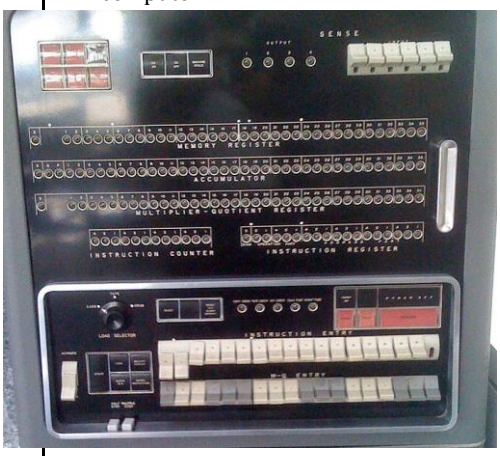
In a 1995 *InfoWorld* article, he wrote, "I predict the Internet will soon go spectacularly supernova and in 1996 catastrophically collapse." He was so certain, that he promised to "eat his words" if it didn't. As a result, during his keynote speech at the 6th World Wide Web Conference in 1997, he placed a printed copy of the article in a blender, along with some unspecified liquid, and consumed the pulpy mixture that resulted.

Many of his other predictions have proved just as successful, such as the demise of open source software [Feb 3], the failure of wireless networking, and the inability of Windows and Linux to deal with video streaming. His articles on these matters were collected in the book, "Internet Collapses and Other InfoWorld Punditry" (2000).

IBM 701

April 7, 1953

The IBM 701 was often called the "Defense Calculator" while in development, and the publicity surrounding its unveiling on this day never mentioned the word "computer".



The IBM 701 operator's console. Photo by Dan. CC BY 2.0.

IBM felt that particular word was too closely associated with the UNIVAC [March 31]. Also, one argument used by Cuthbert Hurd [April 5] to persuade IBM's patriotic chairman Thomas Watson [Feb 17] to back the project was that a DEFENSE Calculator would assist the US in fighting the Korean War. The calculator name also helped

reduce some of the other opposition inside IBM because a mere calculator obviously posed no threat to IBM's punch card line.

The 701 marked many firsts for IBM. It was the company's first commercially available scientific computer, the first computer produced in any quantity, and the first IBM system that stored programs in internal, addressable, electronic memory (it employed 72 Williams-Kilburn tubes [Dec 11]). It was designed by Nathan Rochester [Jan 14] and Jerrier Haddad, based in part on the IAS machine [June 10].

It could perform about 2,000 multiplications/sec, which was slightly faster than the UNIVAC 1103 [Oct 00], it's closest competitor.

More importantly perhaps was the discovery that several instructions executed in succession could produce a musical tone that could be heard by connecting a small speaker to appropriate pins on the front panel. "Three Blind Mice" was soon orchestrated, and Christmas tunes also became popular. However, the 701 wasn't the first computer-musician; that was the BINAC [April 4], almost four years before.

The first 701 was installed in the same showroom at 590 Madison Avenue previously occupied by the SSEC [Jan 27], but the 701 was some 25 times faster and occupied less than one-quarter of the space.

"Things went pretty well at the dedication." said D.E. Rosenheim, one of the engineers, "until the photographers started taking pictures of the hardware. As soon as the flash bulbs went off, the whole system came down. Following a few tense moments on the part of the engineering crew, we realized with some consternation that the light from the flash bulbs was erasing the information in the CRT memory [the Williams-Kilburn tubes]. Suffice it to say that shortly thereafter the doors to the CRT storage frame were made opaque to the offending wavelengths."

Nineteen 701's were eventually sold, mainly to the government, the military, and West Coast aircraft manufacturers. That was seen as remarkable since IBM had predicted a market for at most five. The success meant that the 701 became the first member of the IBM 700 series, which went on to include the 704 [May 7], 705 and 709.

IBM System/360 Launched

April 7, 1964

The IBM System/360 became the most successful mainframe family in history, but was initially seen as an amazingly risky business gamble which cost IBM over five billion dollars to develop.

It was called the "360" because different configurations of the basic system aimed to satisfy every type of customer. The initial announcement included Models 30, 40, 50, 60, 62, and 70, with the largest about 25 times faster than the smallest.

An IBM System 360/30. Photo by ArnoldReinhold. CC BY-SA 3.0.

The gamble paid off handsomely – in just three months, IBM received $1.2 billion in orders. In five years, over 33,000 units were sold.

The chief architect was Gene Amdahl [Nov 16], and the project was managed by Fred Brooks [April 19] (only 30 years old at the time). The commercial release was led by John R. Opel.

The S/360 architecture introduced a number of industry standards, such as binary addressing, the 8-bit byte, and the 32-bit word. It supported floating point operations, virtual memory, and caching (which IBM unsuccessfully tried to call the "muffer", short for "Memory Buffer"). A multiplexer channel let the machine handle I/O from several devices simultaneously.

The OS [March 31] utilized micro-instructions for low-level programming, which hid differences between each model's processor. This made the code more portable, easier to write, and made it simpler to upgrade the hardware. This wasn't just good for IBM; an entire industry was created for companies supplying plug-compatible peripherals.

Through the 1960's, the S/360 occupied a 65% share of the computer market, prompting observers to nickname the industry "Snow White and the Seven Dwarfs" [Dec 21]; IBM was Snow White.

Halt and Catch Fire

April 7, 1964

The "Halt and Catch Fire" (aka HCF) instruction causes a CPU to immediately lock up, typically requiring a reboot of the computer. The "catch fire" part refers to how the CPU's sudden cessation will somehow cause certain circuits to overheat and spontaneously combust.

Legend speaks of an HCF instruction on the IBM System/360 [previous entry], but extensive investigations only

found HCF in a list of *proposed* operations.

A collection of humorous instructions, including HCF of course, appeared in the April 1980 issue of *Creative Computing*. Other jocular examples included PBC (Print and Break Chain), SD (Slip Disk), and LMB (Lose Message and Branch).

The collection formed part of an entire humorous section, which was clearly separated from the more serious content by being printed upside down, starting from the back of the magazine.

HCF entered the real world with the Motorola 6800 [March 7]. Gerry Wheeler revealed in the Dec. 1977 issue of BYTE magazine that HCF was assigned to $DD in that CPU. It caused the processor to go into an endless loop, reading from each memory address in order.

Sadly the 6800's HCF did not also trigger any form of thermogenesis, and so some engineers preferred to call it the "Drop Dead" instruction.

It was actually useful, primarily as a way of spotting hardware timing and address logic problems. It was used to generate regularly cycling square waves for all the address and clock lines, which could be examined with an oscilloscope.

For something similar to HCF, but for printers, see [Dec 9].

RFC #1

April 7, 1969

Steve Crocker [Oct 15], a graduate student at UCLA, published the first "Request for Comments" document (RFC 0001), intriguingly entitled "Host Software." It considered how computers should be connected to Interface Message Processors (IMPs [Aug 30]) which acted as the routers for the ARPANET [Oct 29].

RFCs would grow into a long (and continuing) series of technical articles which define networking protocols, including those for the ARPANET, the Internet, the Web, and more.

Crocker coined the term RFC to avoid the reports sounding too prescriptive, based on a suggestion by Bill Duvall. He hoped that everyone would feel comfortable enough to offer suggestions for improving the proposals.

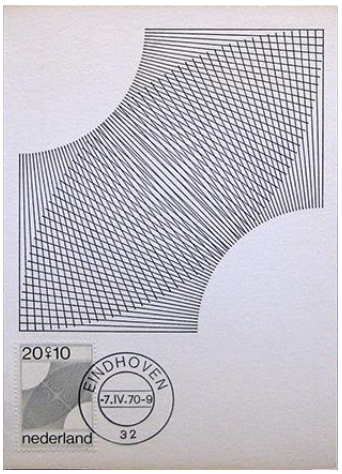
RFC is now an official word in the Oxford English Dictionary.

RFCs weren't distributed electronically in the beginning, for the simple reason that such a distribution mechanism wasn't defined until years later. Over time, the dispersal method changed from postal mail to FTP [Nov 23], to email, and then to the Web (all protocols defined in RFCs).

Computer Graphics Stamps

April 7, 1970

A set of five beautiful (though austere) Dutch postage stamps were issued, containing line drawings made by a computer, making them the first stamps to use computer-generated images.



"Two Scales" on a first-day postcard (1970). (c) Designed by R.D.E. Oxenaar.

They were created by Robert Deodaat Emile "Ootje" Oxenaar, Head of the Art and Design bureau at the Dutch Post Office, and were drawn by the Cora (the first Swiss transistorized computer) at the Technical University of Eindhoven, attached to a high-precision plotter called the Coragraaf.

Oxenaar also worked on adding computer generated lines to the background of banknotes to make them harder to forge. His 'Snip' (100 Gulden), Sunflower (50) and Lighthouse (250) banknotes from the late 1960's were internationally celebrated upon their release as the most beautiful and least counterfitable money in the world.

in 2004, Oxenaar was knighted, joining the Order of Orange Nassau, a Dutch order of chivalry founded at the end of the 19th century.

For more stamps action, see [June 30]; [Oct 8]; [Nov 11]; [Dec 11].

Computer Notes Begins

April 7, 1975

The first edition of the Altair [Dec 19] newsletter, *Computer Notes*, premiered with the headline, "Altair BASIC - Up and Running".

This was the first announcement (really an advert) for the BASIC [Jan 2] written by Bill Gates [Oct 28], Paul Allen [Jan 21], and Monte Davidoff.

Since the newsletter was a Micro Instrumentation and Telemetry Systems (MITS) publication, it tended to focus on company news and products, but there's also a lot of interesting historical material, including details on the MITS-Mobile [June 5] the first PC store [July 15], and the first PC convention [March 27].

David Bunnell [July 25] was the editor, and later founded *PC Magazine* and *Macworld*.

The newsletter probably contains the first writings by Gates and Allen, which starting appearing from the second issue, dated July 1975. Their articles were related to Altair BASIC, including bug reports, fixes, and useful subroutines.

A complete run of *Computer Notes* is online at http://altairclone.com/downloads/computer_notes/