

UCLA I-50

FALL 2019

JAN 2022

Fowler Museum Talk

50th Anniversary of the Internet

At UCLA

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UCLA **Samueli**
School of Engineering



On this day **50** years ago.

It's been **50** years since Leonard Kleinrock's team at UCLA sent the first-ever message across an innovative network from Boelter Hall on October 29th, 1969.



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Internet 50 celebrates UCLA as the birthplace of the Internet. Few cultural revolutions can trace their origins as precisely as the one that was born on October 29, 1969, in 3420 Boelter Hall at UCLA. The ripple effects of that moment are felt daily five decades later by nearly every human on the planet, and will likely be felt for centuries to come.

Hosted by the UCLA Samueli School of Engineering, leading technologists, visionaries and influences — including Eric Schmidt, Mark Cuban, Henry Samueli, Jameela Jamil, Vint Cerf, Patrisse Cullors, Jamie Dimon, Ashton Kutcher, Peter Thiel and many more — will discuss the genesis, current state and future aspirations of our connected world.



Jeff Drobman

14 hrs · 🧑🏻 📍 ▼

BIG day at UCLA today in Royce Hall: 50th anniversary of the Internet -- featuring top tech gurus and celebs like Ashton Kutcher. the tech guys were very knowledgeable while the celebs were not (don't know why they were there, other than for glam). Mark Cuban made some good points. Former Google CEO Eric Schmidt made some good points too. I greeted and chatted with Henry Samuelli and his wife Susan, along with pioneers Len Kleinrock, Vint Cerf and Charley Kline. besides the panels, there were many good videos and a music performance.





Los Angeles proclamation

Presented by LA mayor and Bruin
Eric Garcetti





Royce in its golden light splendor, with guests exiting.





UCLA Prof Len Kleinrock arranged this great day of debate over privacy issues and regulation on the Internet





famed chess champ Garry Kasparov gave an impassioned speech.



“I was the first man to be replaced by a computer!”



film maker Werner Herzog with sharp critique of
the power of the Internet and social media.





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post event reception in Dickson Quad lasting well into the evening. great food, champagne and a jazz band. I ran into quite a few of my old UCLA classmates, many who went on to teach at Stanford and UW.





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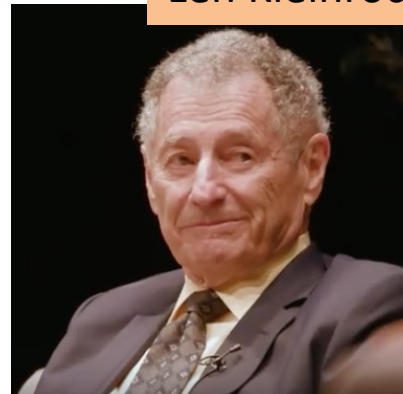
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Happy Birthday Internet

On Oct. 29, 1969, the first message on the precursor to the Internet was sent from Professor Leonard Kleinrock's research lab in Boelter Hall. Fifty years later, a day-long celebration was held at UCLA, bringing together an A-list of scientists, tech entrepreneurs, entertainers, activists and politicians to discuss the future of the Internet. [Watch the video](#) 



Len Kleinrock





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Chancellor Block

Mayor Garcetti

Len Kleinrock



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John Markoff
Journalist, New York Times



TCP/IP co-inventor, chief "father" of the Internet

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Meg Whitman

Ashton Kutcher

Mark Cuban



Ashton Kutcher

Actor, investor and entrepreneur





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Meg Whitman

Mark Cuban
Entrepreneur

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Patrisse Cullors
Co-founder, Black Lives Matter



Jameela Jamil
Actor and activist



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"See you in 50 years!"



Len Kleinrock



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Len Kleinrock's Videos

<https://techcrunch.com/2019/03/18/fifty-years-of-the-internet/>

<https://www.youtube.com/watch?v=-eVFFZzTlec>

Internet 50 – UCLA Medal

Prof. Leonard Kleinrock



Chancellor Block



Chancellor Gene Block and Mrs. Carol Block
cordially invite you to a dinner honoring

Leonard Kleinrock

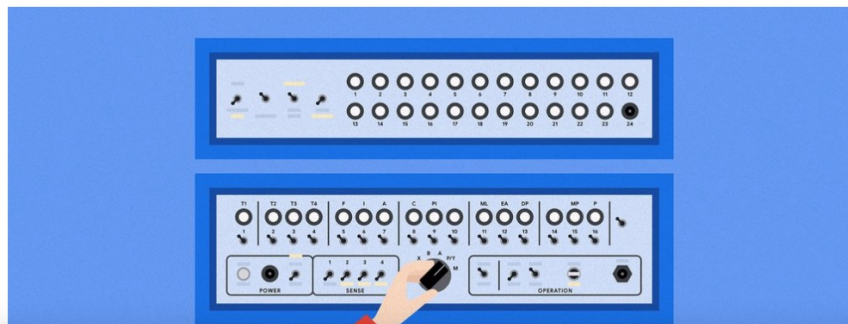
with the presentation of the UCLA Medal
in recognition of his extraordinary accomplishments

Friday, February 21, 2020

Vint Cerf Google Post

Vint Cerf's top moments from 50 years
of the Internet

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Vint Cerf

VP and Chief Internet
Evangelist

Published Oct 29, 2019

Editor's note: On the 50th anniversary of the Internet, this post comes from one of the most knowledgeable sources out there. Though it's not included in his official title, Vint Cerf is, in fact, one of the architects of the modern Internet.

Before there was the Internet, there was a packet. The "sending of the packet" was actually the first step toward the invention of the Internet as we know it, and it happened 50 years ago today. On that day, we established the first connection between two computers—from UCLA to the Stanford Research Institute—on the ARPANET, the predecessor to the Internet.

Connecting the planet in this way remains one of the most astounding technical and societal achievements of our lifetime. A lot has happened in the years since, and the rise of the Internet has come with its own set of challenges that will require new solutions. But over the years there have been many bright spots, including 17 moments that, for me, stand out the most.

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- 1. October 29, 1969:** The first packet was sent. This pioneered our understanding of operational packet switching technology, which prepared us for the subsequent development of the Internet.
- 2. 1971:** Networked electronic mail was created using file transfers as a mechanism to distribute messages to users on the Arpanet.
- 3. 1974:** The design of the Internet was released. Robert Kahn and I published "A protocol for packet network intercommunication." In this paper we presented not only a protocol, but an architecture and philosophy that supported an open design for the sharing of resources that existed on different packet-switching networks.

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4. November 22, 1977: A major demonstration of the Internet took place, linking three networks: Packet Radio, Packet Satellite and ARPANET.

5. January 1, 1983: The Internet was operationally born, and I've used an "electronic postcard" analogy to explain how it works.

6. 1983: The operational mobile phone arrived, which is crucial because, although the Internet and mobile phones were developed in parallel, they eventually proved to be complementary technologies.

7. 1984: Cisco Systems was founded, and with it came the arrival of commercial routers, which allowed the connection of disparate networks to share data between computers.

Vint Cerf Google Post

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7. 1984: Cisco Systems was founded, and with it came the arrival of commercial routers, which allowed the connection of disparate networks to share data between computers.

8. 1988: I realized the Internet was going to be really big when I attended an INTEROP show and exhibition, and there was a two-story exhibit from Cisco Systems. Turns out they spent \$250,000 on that exhibit—you don't do that unless you think it's worth the expense and will drive business. That's what triggered my interest in making the Internet accessible to the public.

9. December 1991: The invention of the World Wide Web introduced a new way of sharing information that had a profound impact on accessibility and utility. Its arrival illustrated how powerful the Internet could be for information discovery, access and sharing.

10. 1993: The release of the Mosaic browser to the general public was a stepping stone to the web that we know today. It was the first time there was an interface that was visually appealing to a general audience. Also that year, the word "meme" was used to [describe a viral idea](#)—although it would take another decade or two to become mainstream.

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- 11. 1995:** The IPO of Netscape Communications triggered a new era in technology and in business: the "Dot Com Boom."
- 12. 1996:** The arrival of voice over IP (Vocaltech), and the development of IPv6 allowed a superior cost benefit experience.
- 13. 1998:** The Internet Corporation for Assigned Names and Numbers (ICANN) was created, which is still one of the most important institutions responsible for the technical aspects of Internet governance. That same year, Sergey Brin and Larry Page founded Google.
- 14. April 23, 2005:** The first YouTube video was uploaded, which meant that ordinary people—not just television studios and broadcasters—could create and upload shareable videos. Today I turn to YouTube for "how to" videos like cooking and fixing problems with software, and watching TED talks or science explanations.

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15. 2007: The first smartphone marked a collision of two revolutionary technologies: the mobile phone, which made the Internet more accessible, and the Internet, which made the mobile phone more useful.

16. June 5, 2012: Google, as well as many other websites, Internet Service Providers (ISPs), and network hardware manufacturers permanently switched on [Internet Protocol v6 \(IPv6\)](#) as part of the World IPv6 Launch. At the time, the Internet was running out of IP addresses, but IPv6 allowed for unlimited growth of IP addresses in the future. This was also the subject of [my first tweet!](#)

17. 2019-2069 (the next 50 years): In the next five decades I believe that computer communications will become completely natural. Like using electricity, you won't think about it anymore. Access will be totally improved—think thousands of low Earth orbit satellites—and speeds will be higher, with 5G and optical fiber, and billions of networked devices with increased interactive capabilities in voice, gesture, and artificially intelligent systems. I also imagine an expansion of the Interplanetary Internet. But who knows, after everything that has been accomplished in the past 50 years, the only thing we can be certain about is that the possibilities are endless. ■

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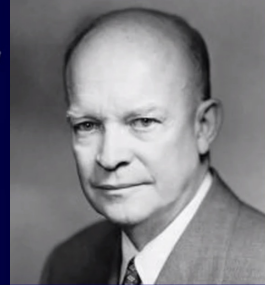
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Before the Beginning!

- **1957-1958** International Geophysical Year
- **Oct 4, 1957** Sputnik launched
- **Feb 7, 1958** The Advanced Research Projects Agency (ARPA) formed
- **Sep 13, 1959** Soviet spacecraft hits the moon
- **Apr 12, 1961** Yuri Gagarin first person in space
- **May 25, 1961** JFK sets goal to put a man on the moon by end of decade
- **Dec 1962** At MIT I publish the Mathematical Theory of Data Networks
- **Mar 1, 1966** Soviet spacecraft hits Venus
- **Jul 20, 1969** USA puts men on the moon.



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1969 Was an Incredible Year!

- The Internet was born

A background image of a cosmic scene with star trails and nebulae in shades of green, blue, and white against a dark space.

and nobody noticed!!

Yet it had the most
impact in the long run.

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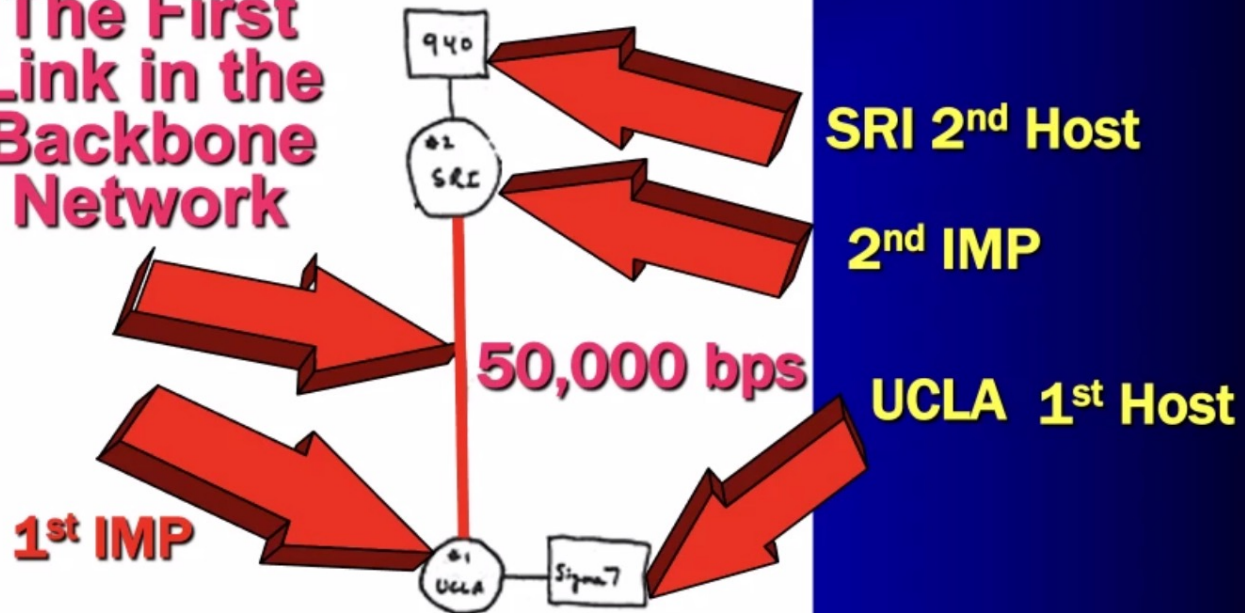
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What It Looked Like in 1969

**The First
Link in the
Backbone
Network**



THE ARPA NETWORK

October 1969

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An Important Entry



COMPANY _____ MONTHS OF _____

ADDRESS _____

ENGINEER IN CHARGE _____

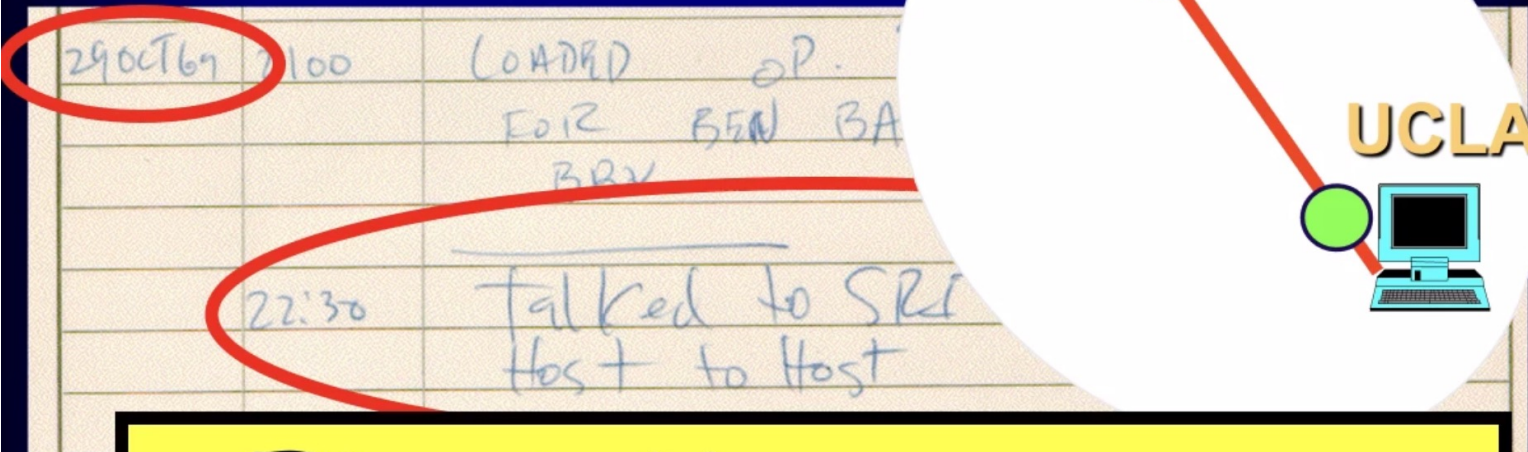
COMPUTER SERIAL NO. _____

IMP Log

| DATE | METER | PROBLEM & REMEDY | OPERATOR | DOWNTIME |
|-----------|-------|---|----------|----------|
| 29 Oct 74 | 1750 | FASTEST READING - TESTING LINE TO UCSB - LINE IS OPEN TO "A" END IS SENDING PAGES. BUT SHOULD HAVE CONTINUED TO TELCO BCS FOR 1000 | CSK | |
| | | CHARLES PLEASE CALL REW AT 005! | | |
| 29 Oct 74 | 2100 | LOADED CP. PROGRAM ERIC BEN BARBER BBV | CSK | |
| | 22:30 | Talked to SRT Host to Host | CSK | |
| | | Left up imp program running after sending a host dead message to imp. | CSK | |
| 30 Oct 74 | 1030 | Stopped on way | | |

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**First Message on
the Internet
- ever!**

Jan 13, 2022



But What WAS the First Message Ever Sent on the Internet?

- Was it “What Hath God Wrought” (Morse 1844)?
- Or “Watson, come here. I need you.” (Bell 1876)?
- Or “One Giant Leap for Mankind” (Armstrong 1969)?
- It was simply a **LOGIN** from the UCLA computer to the SRI computer.

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But What WAS the Fix? Even

- We
-



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Leonard Kleinrock

How It's a Documentatry Movie by Werner Herzog



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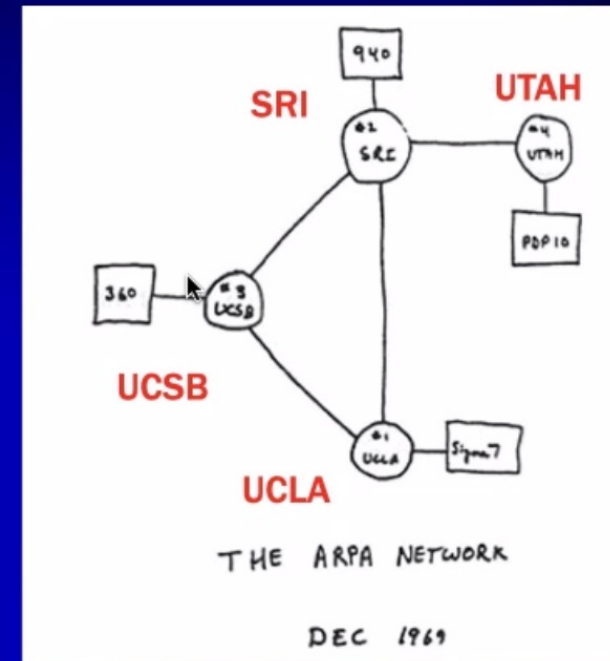
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Leonard Kleinrock

Growth of the Internet

- From 1969



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Growth of the Internet

- From 1969 to 1988, the net grew
 - Rapidly
 - Friendly
 - Broadly
- Until . . .
- 1988 Robert Morris unleashes 1st Internet **virus**

Uh Oh !

Oh well.



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Growth of the Internet

- From 1988 to 1994, the net continued to grow
 - As the dot-coms came on line
 - As the backbone went to gigabit speeds
 - As the Web began to roll out
- Until . . .
- 1994 Lawrence Canter & Martha Siegel introduce **spam**

Uh Oh!

Ouch!

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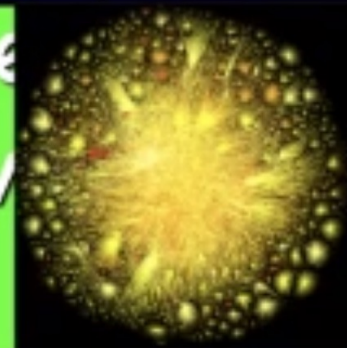
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The Future

- The **Infrastructure** is **easy** to predict.

The Internet will be
pervasive global nerve
system.



- The **Apps & Services** are **hard** to predict.
They have continually surprised us!

We have created a
global system for
shocking us with surprises.