

Prehistory, History, Present, Future

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Prehistory | Origins of the Internet

- The desire to communicate (also remote)
- First instruments: language and speech
- Communication form: written



Writing on rocks, cave walls, papyrus 😊

- Remote communication?
 - Fire signals
 - Morse Code
- 19th century: electricity and telegraph

History | Origins of the Internet

1837 Charles Babbage designs “first computer”



1863 Jules Verne:

"photo-telegraphy allowed any writing, signature or illustration to be sent faraway - every house was wired"

1891 – Ada Lovelace – first program for Babbage machinery

1936 Alan Turing – describes Turing machine

1939 HP is founded (Bill Hewlett, David Packard)

History | Origins of the Internet

1961-1972: first communication's attempts using packet-switching

1961: Kleinrock – proposed a theoretical model

1964: Baran – implemented the communication among US military computers

1967: ARPAnet was projected by Advanced Research Projects Agency

1969: first operational node ARPAnet, a network formed by 4 computers

History | Origins of the Internet

1972:

- public demonstration of ARPAnet technologies
- NCP (Network Control Protocol) – the first host-host protocol
- First program for electronic mail (e-mail)
- The sign @ is introduced
- ARPAnet contains 15 nodes

History | Origins of the Internet

1972-1980: The *Internetworking* concept appeared. Also, proprietary networks appeared.

1973: DARPA (Defense Advanced Research Projects Agency) – interconnected networks; Robert Metcalf (Harvard) developed Ethernet technology that allowed data transfer using coaxial cable

1974: Cerf si Kahn – proposed a communication protocol entitled TCP(Transmission Control Protocol)

1978: TCP/IP protocols stack was standardized via RFC (Request For Comments) documents

In the late of 70s: proprietary networks stacks appeared: DECnet, SNA, XNA

1979: ARPAnet contained 200 nodes

History | Origins of the Internet

1980-1990: new protocols, the network number was increasing, Internet

1983: TCP/IP was used

1982: SMTP (Simple Mail Transfer Protocol) was defined

1983: DNS (translation of host name into IP address and vice versa) appeared

1985: FTP (File Transfer Protocol) protocol appeared

1986: Internet backbone appeared

1988: some congestion control mechanisms for TCP were introduced

History & Present | Origins of the Internet

1990 ->2000->2016: World Wide Web, new commercial network applications

Early '90:

- **World Wide Web**

After the late '90 -> present :

- Global Networks
- Wireless networks
- Commercial applications of the Internet
 - instant messaging, P2P file sharing
 - social networks, video-streaming,
 - cloud-computing,
 - ...

Present

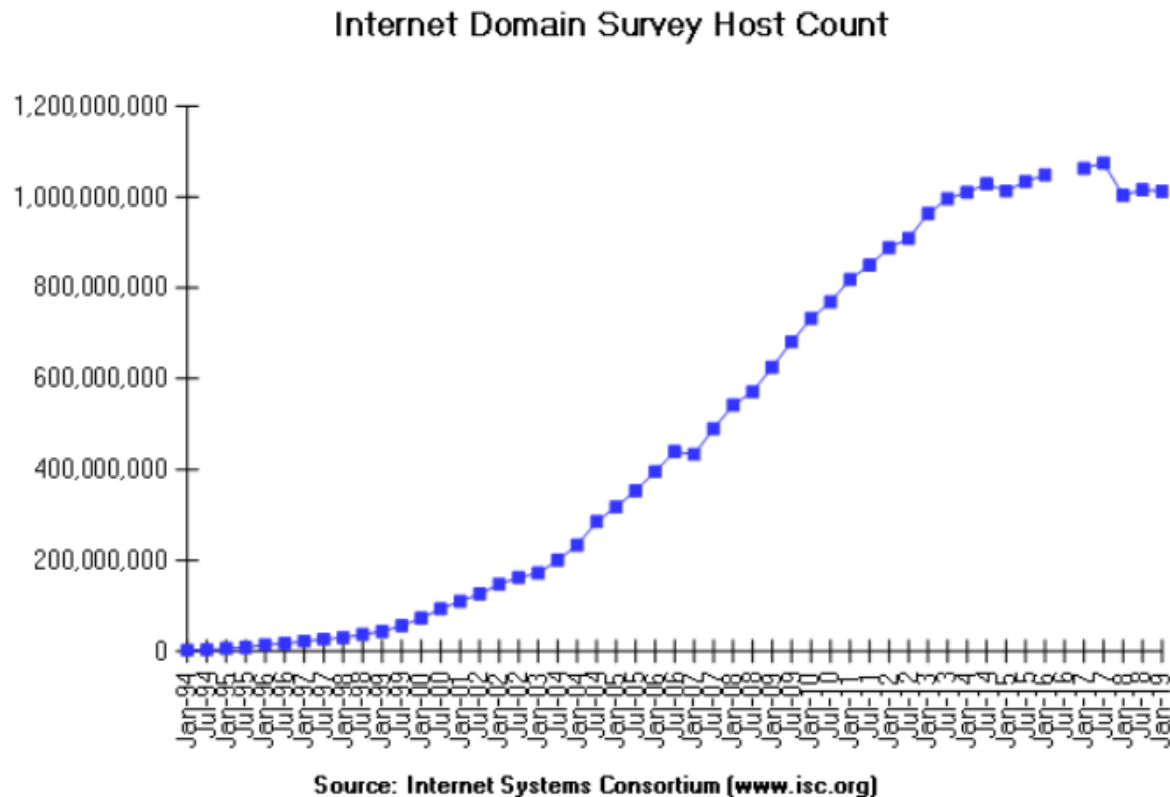


Figure. Hosts number form January 1994 till January 2019

Source: <https://www.isc.org/network/survey/>

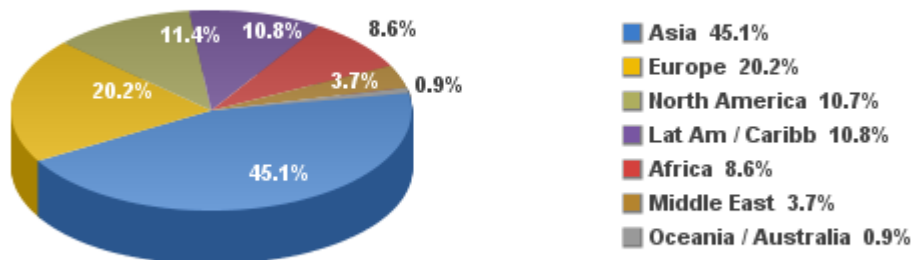
Past

WORLD INTERNET USAGE AND POPULATION STATISTICS December 31, 2013

World Regions	Population (2014 Est.)	Internet Users Dec. 31, 2000	Internet Users Latest Data	Penetration (% Population)	Growth 2000-2014
Africa	1,125,721,038	4,514,400	240,146,482	21.3 %	5,219.6 %
Asia	3,996,408,007	114,304,000	1,265,143,702	31.7 %	1,006.8 %
Europe	825,802,657	105,096,093	566,261,317	68.6 %	438.8 %
Middle East	231,062,860	3,284,800	103,829,614	44.9 %	3,060.9 %
North America	353,860,227	108,096,800	300,287,577	84.9 %	177.8 %
Latin America / Caribbean	612,279,181	18,068,919	302,006,016	49.3 %	1,571.4 %
Oceania / Australia	36,724,649	7,620,480	24,804,226	67.5 %	225.5 %
WORLD TOTAL	7,181,858,619	360,985,492	2,802,478,934	39.0 %	676.3 %

Tabel. INTERNET
USAGE STATISTICS
- The Internet Big
Picture

Internet Users in the World Distribution by World Regions - 2013 Q4



Source: Internet World Stats - www.internetworldstats.com/stats.htm
Basis: 2,802,478,934 Internet users on Dec 31, 2013
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Figura. Internet Users in the
World by Regions

December 2013 | Source:
<http://www.internetworldstats.com/>

Present

**WORLD INTERNET USAGE AND POPULATION STATISTICS
2019 Mid-Year Estimates**

World Regions	Population (2019 Est.)	Population % of World	Internet Users 30 June 2019	Penetration Rate (% Pop.)	Growth 2000-2019
Africa	1,320,038,716	17.1 %	522,809,480	39.6 %	11,481 %
Asia	4,241,972,790	55.0 %	2,300,469,859	54.2 %	1,913 %
Europe	829,173,007	10.7 %	727,559,682	87.7 %	592 %
Latin America / Caribbean	658,345,826	8.5 %	453,702,292	68.9 %	2,411 %
Middle East	258,356,867	3.3 %	175,502,589	67.9 %	5,243 %
North America	366,496,802	4.7 %	327,568,628	89.4 %	203 %
Oceania / Australia	41,839,201	0.5 %	28,636,278	68.4 %	276 %
WORLD TOTAL	7,716,223,209	100.0 %	4,536,248,808	58.8 %	1,157 %

Table. Internet usage statistics relative to the number of people in the main geographic areas of the world

**Internet Users Distribution
in the World - Mid-Year 2019**

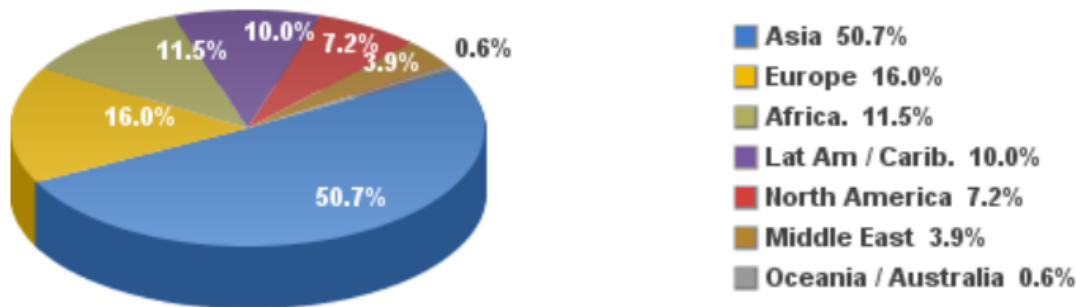
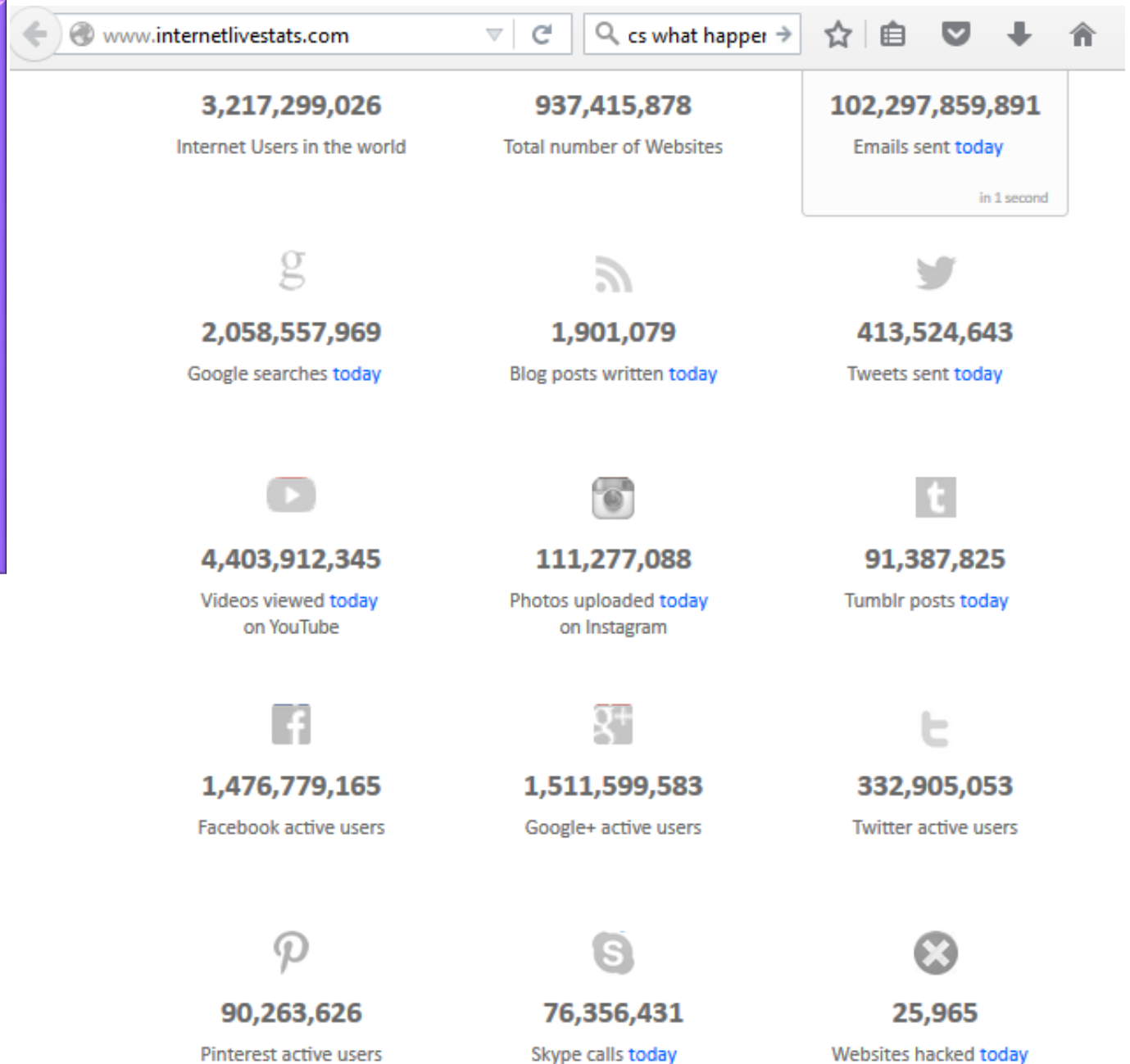


Figure. Internet users in the world - geographically divided
June 2019 | Source:
<http://www.internetworldstats.com/>

Source: Internet World Stats - www.internetworldstats.com/stats.htm
Basis: 4,536,248,808 Internet users in June 30, 2019
Copyright © 2019. Miniwatts Marketing Group

2015



2018



4,034,785,862

Internet Users in the world



1,917,268,622

Total number of Websites



59,436,723,979

Emails sent [today](#)



1,459,891,645

Google searches [today](#)



1,380,072

Blog posts written [today](#)



171,765,400

Tweets sent [today](#)



1,583,632,120

Videos viewed [today](#)
on YouTube



18,230,030

Photos uploaded [today](#)
on Instagram



30,000,050

Tumblr posts [today](#)



2,324,502,983

Facebook active users



641,046,211

Google+ active users



339,328,724

Twitter active users



255,464,399

Pinterest active users



70,823,093

Skype calls [today](#)



26,170

Websites hacked [today](#)



171,532

Computers sold [today](#)



1,002,546

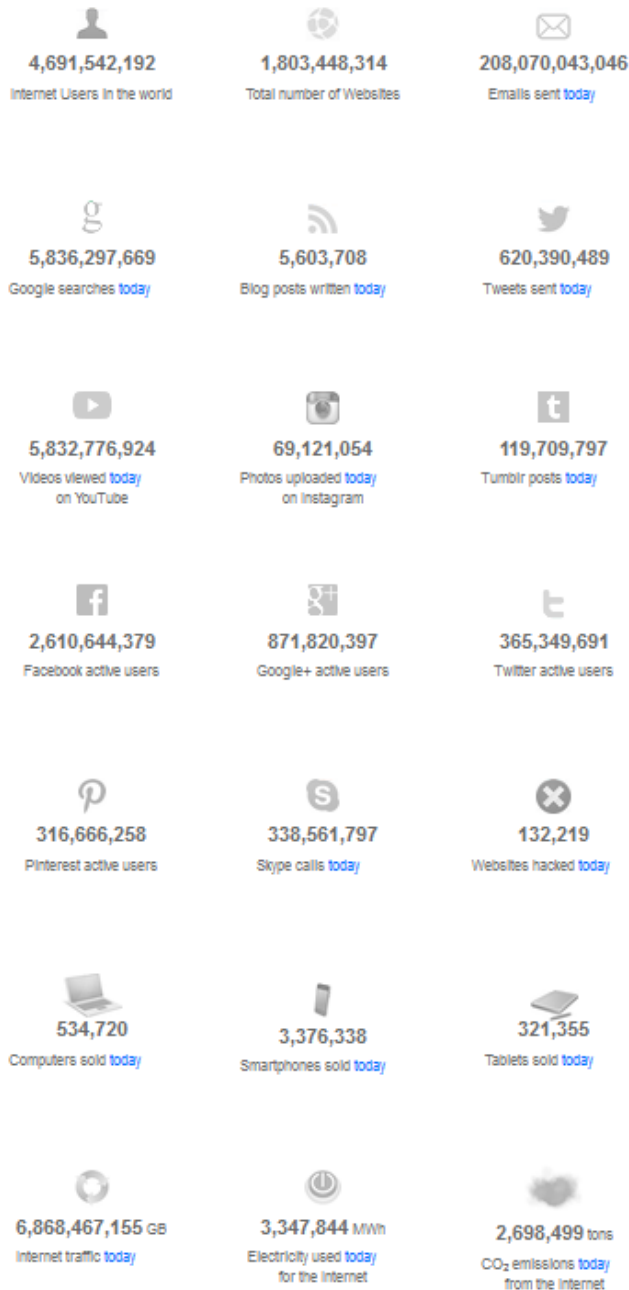
Smartphones sold [today](#)



110,882

Tablets sold [today](#)

2020



Present

Computer Network course – Weeks 1-13-

The future

Computer Network course – Week14–

Resources

- Internet Society: <http://www.isoc.org>
- FNC – Federal Networking Council:
http://www.nitrd.gov/fnc/Internet_res.html
- InternetWorld Stats: <http://www.internetworldstats.com>
- Internet Systems Consortium: <http://www.isc.org>
- Internet Assigned Numbers Authority (IANA): <http://www.iana.org/>
- Cisco Systems: <http://www.cisco.com>
- <http://www.nethistory.info>
- <http://www.caida.org/>
- http://news.netcraft.com/archives/web_server_survey.html
- <http://www.swivel.com/>
- <https://www.facebook.com/Grovo/info> :)
- <http://www.internetlivestats.com/>
- <http://www.worldometers.info/>
- <http://www.internetsociety.org/globalinternetreport/?gclid=CN6a2Y2wqMgCFUfkwgodZ8gL9A>