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How many bytes for...

DEFINITION -

This page provides tables and other information about how many bytes are required (how much computer storage) for various information objects or purposes; it also summarizes some facts that have been gathered about how much information exists in the world and, where appropriate, how much computer storage this requires.

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How Many Bytes for Anything
 Much of the following table is derived from figures calculated by Roy Williams on his page called "Powers of Ten." Although his page has expired, another version derived in part from it is located at [the University of California at Berkeley](#).

Information object	How many bytes
A binary decision	1 bit
A single text character	1 byte
A typical text word	10 bytes
A typewritten page	2 kilobyte s (KB s)
A low-resolution photograph	100 kilobytes
A short novel	1 megabyte (MB)
The contents of a 3.5 inch floppy disk	1.44 megabytes
A high-resolution photograph	2 megabytes
The complete works of Shakespeare	5 megabytes
A minute of high-fidelity sound	10 megabytes
One meter (or close to a yard) of shelved books	100 megabytes
The contents of a CD-ROM	500 megabytes
A pickup truck filled with books	1 gigabyte GB)
The contents of a DVD	17 gigabyte s
A collection of the works of Beethoven	20 gigabytes
A library floor of academic journals	100 gigabytes
50,000 trees made into paper and printed	1 terabyte (TB)
An academic research library	2 terabytes
The print collections of the U.S. Library of Congress	10 terabytes
The National Climactic Data Center database	400 terabytes
Three years' of EOS data (2001)	1 petabyte (PB)
All U.S. academic research libraries	2 petabytes
All hard disk capacity developed in 1995	20 petabytes
All printed material in the world	200 petabytes
Total volume of information generated in 1999	2 exabyte s (EB s)
All words ever spoken by human beings	5 exabytes

How Many Bytes for a Web Site
 The following table is derived from "How Much Storage Space Will You Need?," by Roy Harper, a WorkZ.com Contributing Editor.

Information object	How many bytes
The amount of text on an average print page (when converted into HTML)	1 kilobyte (KB)
A button-size image for a Web page	1 KB to 5 KB
A larger image for a Web page	30 to 60 KB and larger

REFERENCE DESK

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An average Web site	5 megabyte s (MB)
The range for typical PDF files	100 to 800 KB
A video or audio downloadable file	Typically range from 500 KB to 10 MB
An MP3 (music) downloadable file	2 to 5 MB
A downloadable program or driver	Will usually tell you before you download it

How Much Information Exists

Since 2000, researchers at the University of California, Berkeley, have continued to estimate each year how much information exists on the planet Earth. The Executive Summary of their report, "[How Much Information? 2003](#)" is available at their Web site. Here are just a few highlights:

Information object	How many bytes
How much information each person on earth produces per year	1 to 2 exabyte s
How much of the above is printed information	.03% of the total
How much e-mail information per year	11,265 terabyte s
How much radio information	788 terabytes
How much TV information	14,150 terabytes
How much telephone information	576,000 terabytes
How much postal information	150,000 terabytes
How much office document information	195 terabytes

LAST UPDATED: 19 Mar 2004

Do you have something to add to this definition? Let us know.
Send your comments to techterms@whatis.com

More resources from around the web:

- Roy Williams' "Data Powers of Ten" is available at a University of California at Berkeley research site.
- Roy Harper's "How Much Storage Space Will You Need?" is at workZ.com.
- The "How Much Information? 2003" Executive Summary is available online.

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