American Airlines, Inc. v. Yahoo! Inc. et al

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`IN THE UNITED STATES DISTRICT COURT
FOR THE NORTHERN DISTRICT OF TEXAS
FORT WORTH DIVISION

AMERICAN AIRLINES, INC.,	§	
Plaintiff,	§	
	§	
V.	§	Civil Action No. 4-08-CV-626-A
	§	
YAHOO! INC., and	§	
OVERTURE SERVICES, INC. d/b/a YAHOO!	§	
SEARCH MARKETING,	§	
Defendants.	§	

APPENDIX IN SUPPORT OF DEFENDANTS' MOTION
TO RECONSIDER PORTION OF AUGUST 4, 2009
CORRECTED ORDER ON MOTION TO COMPEL

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CERTIFICATE OF SERVICE

The undersigned attorney certifies that a true copy of the foregoing document has been served on counsel of record as follows:

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A

IN THE UNITED STATES DISTRICT COURT
FOR THE NORTHERN DISTRICT OF TEXAS
FORT WORTH DIVISION

AMERICAN AIRLINES, INC.,

Plaintiff,

-v.-

YAHOO! INC. and OVERTURE SERVICES, INC. d/b/a YAHOO! SEARCH MARKETING,

Defendants.

Case No. 4:08-CV-626-A

DECLARATION OF CATHERINE CAMERON IN SUPPORT OF DEFENDANTS' MOTION TO RECONSIDER PORTION OF AUGUST 4, 2009 CORRECTED ORDER ON MOTION TO COMPEL

I, Catherine Cameron, declare as follows:

1.   I am the Senior Engineering Manager of Internal Reporting at Yahoo! Inc. I manage a department within Yahoo! responsible for maintaining, accessing, and analyzing data stored within Yahoo!'s Sage database. I have been employed in a data analysis or management capacity at Yahoo! or Overture Services, Inc. since September 2002.

2.   I make this declaration in support of Yahoo!'s Motion to Reconsider a Portion of the August 4, 2009 Corrected Order on Plaintiff's Motion to Compel. I have personal knowledge of the facts set forth herein, and if called upon to do so, I could and would competently testify thereto.

3.   Yahoo!'s Sage database contains a large volume of data associated with Yahoo! Sponsor Results (*i.e.*, advertisements that are displayed on Yahoo!'s search page in response to web user searches). The Sage database stores data for every Sponsor Result that is clicked by a web user, of which there are millions each day. The Sage database is one of the largest databases in the world of its kind, containing more than 1.4 petabytes of data (*i.e.*, 1.4 billion megabytes). Yahoo! has more than 50 engineers and analysts who work on maintaining, accessing, and analyzing the data. There are hundreds more individuals within Yahoo! who regularly interact with the database either through queries or reports on the database in the course of their duties.

4.   For purposes of this litigation, my team collected data regarding clicked Sponsor Results that were displayed in response to searches for American Airlines trademarks and terms allegedly similar to those trademarks. Specifically, we collected data for Sponsor Results that were (1)(a) triggered by a search term containing an American Airlines trademark, including American Airlines trademarks encompassed in longer search strings; (b) triggered by a search term allegedly similar to an American Airlines trademark; or (c) triggered by a bidded keyword comprising an American Airlines trademark or term allegedly similar to an American Airlines trademark where the search term did not contain an American Airlines trademark; and (2) clicked on by a web user. I have been informed that this data was produced to American Airlines in the following Bates-labeled spreadsheets and files: YAH-AA 1-20, 8152-8173, 1381599, 1381601, 1381603, 1381605, 3776737. This data covers the period from October 2002 to May 2009, with the exception of

January 2007 to September 21, 2007, for which complete data is not readily available, as described below.

5.   Click data in the Sage database is ordinarily maintained in readily-accessible form for a period of 18 months from when the data is generated. After 18 months, the data is stored on back-up tapes. For purposes of this case, Yahoo! has been delaying the back-up of data from the Sage database, so as to keep the data in readily-accessible form for a longer period. As of today, the Sage database contains readily-accessible data from November 19, 2007 to the present.

6.   The 18-month retention practice for click data in the Sage database began in early 2008. The purpose of backing up data to tapes after 18 months is to limit the considerable expense associated with storing and maintaining large volumes of data in readily-accessible form. The hardware and maintenance associated with such data storage costs Yahoo! millions of dollars each year.

7.   In collecting data for this litigation, my team previously captured responsive data from the Sage database from September 22, 2007 to the present. Data from October 2002 to December 2006 was collected from certain older databases that are still maintained in readily-accessible form. Accordingly, the only period for which responsive data is not readily-accessible is the period from January 2007 to September 21, 2007. Data for this period was originally stored in the Sage database and is currently stored on back-up tapes.
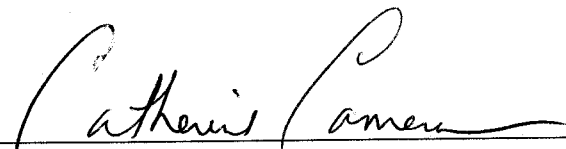
8.   My team, along with others, have been working to fully restore the data from back-up tapes for January 2007. Data restoration for half of that month is nearing completion and I anticipate that the remainder will be completed by the end of August 2009, assuming there are no unforeseen issues with the tapes.

9.   The process of data restoration is time-consuming and labor-intensive, requiring substantial computing and human resources. The process requires engineers to (a) restore each of billions of lines of data from tape and place them into the Sage filer, one day at a time; (b) extract the click data from the filer; and (c) insert the data into the Sage storage warehouse to be made available for purposes of this litigation. The data cannot be selectively restored (*i.e.,*

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limited to the data of relevance to this litigation), but must instead be restored for all of the pedabytes of data for the relevant time period.

10.   To restore data for the period of February 2007 to September 21, 2007, Yahoo! would need to purchase at least $350,000 worth of added equipment and expend roughly 3,500 man hours of labor. The process will take roughly 4-5 weeks for each month of data to be restored. Accordingly, the full restoration could not be completed until the Spring or Summer of 2010.

I declare under penalty of perjury that the foregoing is true and correct. Executed this 6th day of August, 2009.

Catherine Cameron
Catherine Cameron

B

Petabyte

From Wikipedia, the free encyclopedia

A **petabyte** (derived from the SI prefix *peta-*) is a unit of information or computer storage equal to one quadrillion bytes (short scale), or 1000 terabytes, or 1,000,000 gigabytes. It is abbreviated **PB**. The prefix peta- (P) indicates a power of 1000:

- 1 PB = 1,000,000,000,000,000 B = 1000^5 B = 10^{15} bytes.

The term "pebibyte", using the binary prefix pebi- (Pi), is used for 1024^5 bytes.

- 1 PiB = 1,125,899,906,842,624 B.

Prefixes for bit and byte multiples				
Decimal		**Binary**		
Value	**SI**	**Value**	**IEC**	**JEDEC**
1000	k kilo	1024	Ki kibi	K kilo
1000^2	M mega	1024^2	Mi mebi	M mega
1000^3	G giga	1024^3	Gi gibi	G giga
1000^4	T tera	1024^4	Ti tebi	
1000^5	P peta	1024^5	Pi pebi	
1000^6	E exa	1024^6	Ei exbi	
1000^7	Z zetta	1024^7	Zi zebi	
1000^8	Y yotta	1024^8	Yi yobi	

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Petabytes in use

Examples of the use of "petabyte" to describe data sizes in different fields are:

- **History**: According to Kevin Kelly of the *New York Times*, "the entire works of humankind, from the beginning of recorded history, in all languages" would amount to 50 petabytes of data.[1]
- **Computer hardware**: Teradata Database 12 has a capacity of 50 petabytes of compressed data.[2]
- **Telecoms**: AT&T has about 16 petabytes of data transferred through their networks each day.[3]
- **Archives**: The Internet Archive contains about 3 petabytes of data, and is growing at the rate of about 100 terabytes per month as of March, 2009.[4][5]
- **Internet**: Google processes about 20 petabytes of data per day.[6]
- **Physics**: The 4 experiments in the Large Hadron Collider will produce about 15 petabytes of data per year, which will be distributed over the LHC Computing Grid.[7]
- **Social networks**: Facebook has just over 1.5 petabyte of users' photos stored, translating into roughly 10 billion photos.[8]
- **P2P networks**: Isohunt has about 1.6 petabytes of files contained in torrents indexed globally.[9]
- **Online storage**: RapidShare stated in April 2008 that it had 5.4 petabytes of storage for users.[10]
- **Entertainment**: BBC iPlayer streams 7 petabytes of content per month[11]

See also

- Terabyte
- Exabyte

- Petabit
- Pebibyte
- Binary prefix
- Orders of magnitude (data)

References

1. ^ Kelly, Kevin (2006-03-14). "Scan This Book! (http://www.nytimes.com/2006/05/14/magazine/14publishing.html)". *New York Times*. http://www.nytimes.com/2006/05/14/magazine/14publishing.html.
2. ^ http://www.teradata.com/t/products-and-services/database/teradata-12/
3. ^ http://www.att.com/gen/press-room?cdvn=news&newsarticleid=26230&pid=4800
4. ^ http://www.archive.org/about/faqs.php
5. ^ http://www.computerworld.com/action/article.do?command=viewArticleBasic&taxonomyName=hardware&articleId=9130081&taxonomyId=12&intsrc=kc_top
6. ^ http://portal.acm.org/citation.cfm?doid=1327452.1327492
7. ^ http://www.interactions.org/cms/?pid=1027032
8. ^ http://www.facebook.com/note.php?note_id=76191543919&ref=mf
9. ^ http://isohunt.com/forum/viewtopic.php?t=145853
10. ^ http://en.wikipedia.org/wiki/Rapidshare
11. ^ I Pro Portal - "iPlayer Streams 7 Petabyte Of Content Per Month, Coming to Freeview Soon" (http://storage.itproportal.com/portal/news/article/2009/5/9/iplayer-streams-7-petabyte-content-month-coming-freeview-soon/)Accessed 9 May 2009

http://www.dell.com/downloads/global/casestudies/580_Dell_Case_Study_mp_v2.pdf

External links

- CacheLogic Survey: P2P Accounts for 10 Petabytes of Data (http://digital-lifestyles.info/display_page.asp?section=cm&id=1396)
- Fancy a Million-Gigabyte Hard Drive? (http://www.hiptechblog.com/2006/05/11/fancy-a-million-gigabtye-hard-drive)
- Remember when 1MB was a lot? (http://www.zenofnptech.org/2005/06/remember-when-1.html)

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Categories: Units of information

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Megabytes, Gigabytes, Terabytes... What Are They?

These terms are usually used in the world of computing to describe disk space, or data storage space, and system memory. For instance, just a few years ago we were describing hard drive space using the term Megabytes. Today, Gigabytes is the most common term being used to describe the size of a hard drive. In the not so distant future, Terabyte will be a common term. But what are they? This is where it gets quite confusing because there are at least three accepted definitions of each term.

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According to the IBM Dictionary of computing, when used to describe disk storage capacity, a megabyte is 1,000,000 bytes in decimal notation. But when the term megabyte is used for real and virtual storage, and channel volume, 2 to the 20th power or 1,048,576 bytes is the appropriate notation. According to the Microsoft Press Computer Dictionary, a megabyte means either 1,000,000 bytes or 1,048,576 bytes. According to Eric S. Raymond in The New Hacker's Dictionary, a megabyte is always 1,048,576 bytes on the argument that bytes should naturally be computed in powers of two. So which definition do most people conform to?

When referring to a megabyte for disk storage, the hard drive manufacturers use the standard that a megabyte is 1,000,000 bytes. This means that when you buy an 80 Gigabyte Hard drive you will get a total of 80,000,000,000 bytes of available storage. This is where it gets confusing because Windows uses the 1,048,576 byte rule so when you look at the Windows drive properties an 80 Gigabyte drive will report a capacity of 74.56 Gigabytes and a 250 Gigabyte drive will only yield 232 Gigabytes of available storage space. Anybody confused yet? With three accepted definitions, there will always be some confusion so I will try to simplify the definitions a little.

The 1000 can be replaced with 1024 and still be correct using the other acceptable standards. Both of these standards are correct depending on what type of storage you are referring.

Processor or Virtual Storage   Disk Storage

· 1 Bit = Binary Digit
· 8 Bits = 1 Byte
· 1024 Bytes = 1 Kilobyte
· 1024 Kilobytes = 1 Megabyte
· 1024 Megabytes = 1 Gigabyte

· 1 Bit = Binary Digit
· 8 Bits = 1 Byte
· 1000 Bytes = 1 Kilobyte
· 1000 Kilobytes = 1 Megabyte
· 1000 Megabytes = 1 Gigabyte

- 1024 Gigabytes = 1 Terabyte   · 1000 Gigabytes = 1 Terabyte
- 1024 Terabytes = 1 Petabyte   · 1000 Terabytes = 1 Petabyte
- 1024 Petabytes = 1 Exabyte   · 1000 Petabytes = 1 Exabyte
- 1024 Exabytes = 1 Zettabyte   · 1000 Exabytes = 1 Zettabyte
- 1024 Zettabytes = 1 Yottabyte   · 1000 Zettabytes = 1 Yottabyte
- 1024 Yottabytes = 1 Brontobyte   · 1000 Yottabytes = 1 Brontobyte
- 1024 Brontobytes = 1 Geopbyte   · 1000 Brontobytes = 1 Geopbyte

This is based on the IBM Dictionary of computing method to describe disk storage - the simplest.

Now let's go into a little more detail.

Bit: A Bit is the smallest unit of data that a computer uses. It can be used to represent two states of information, such as Yes or No.

Byte: A Byte is equal to 8 Bits. A Byte can represent 256 states of information, for example, numbers or a combination of numbers and letters. 1 Byte could be equal to one character. 10 Bytes could be equal to a word. 100 Bytes would equal an average sentence.

Kilobyte: A Kilobyte is approximately 1,000 Bytes, actually 1,024 Bytes depending on which definition is used. 1 Kilobyte would be equal to this paragraph you are reading, whereas 100 Kilobytes would equal an entire page.

Megabyte: A Megabyte is approximately 1,000 Kilobytes. In the early days of computing, a Megabyte was considered to be a large amount of data. These days with a 500 Gigabyte hard drive on a computer being common, a Megabyte doesn't seem like much anymore. One of those old 3-1/2 inch floppy disks can hold 1.44 Megabytes or the equivalent of a small book. 100 Megabytes might hold a couple volumes of Encyclopedias. 600 Megabytes is about the amount of data that will fit on a CD-ROM disk.

Gigabyte: A Gigabyte is approximately 1,000 Megabytes. A Gigabyte is a very common term used these days when referring to disk space or drive storage. 1 Gigabyte of data is almost twice the amount of data that a CD-ROM can hold. But it's about one thousand times the capacity of a 3-1/2 floppy disk. 1 Gigabyte could hold the contents of about 10 yards of books on a shelf. 100 Gigabytes could hold the entire library floor of academic journals.
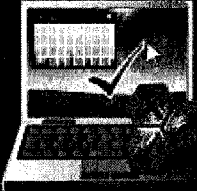
Terabyte: A Terabyte is approximately one trillion bytes, or 1,000 Gigabytes. Now we are getting up there to a size that is so large that it is not a common term yet. To put it in some perspective, a Terabyte could hold about 3.6 million 300 Kilobyte images or maybe about 300 hours of good quality video. A Terabyte could hold 1,000 copies of the Encyclopedia Britannica. Ten Terabytes could hold the printed collection of the Library of Congress. That's a lot of data.

Petabyte: A Petabyte is approximately 1,000 Terabytes or one million Gigabytes. It's hard to visualize what a Petabyte could hold. 1 Petabyte could hold approximately 20 million 4-door filing cabinets full of text. It could hold 500 billion pages of standard printed text. It would take about 500 million floppy disks to store the same amount of data.

Exabyte: An Exabyte is approximately 1,000 Petabytes. Another way to look at it is that a Petabyte is approximately one quintillion bytes or one billion Gigabytes. There is not much to compare an Exabyte to. It has been said that 5 Exabytes would be equal to all of the words ever spoken by mankind.

Zettabyte: A Zettabyte is approximately 1,000 Exabytes. There is nothing to compare a Zettabyte to but to say that it would take a whole lot of ones and zeroes to fill it up.

Yottabyte: A Yottabyte is approximately 1,000 Zettabytes. It would take approximately 11 trillion years to download a yottabyte file from the Internet using high-power broadband. You can compare it to the World Wide Web as the entire Internet almost takes up a Yottabyte.

Brontobyte: A Brontobyte is (you guessed it) approximately 1,000 Yottabytes. The only thing there is to say about a Brontobyte is that it is a 1 followed by 27 zeroes!

Geopbyte: A Geopbyte is about 1000 Brontobytes! Not sure why this term was created. I'm doubting that anyone alive today will ever see a Geopbyte hard drive. One way of looking at a geopbyte is $1_5 267\ 650_4 600\ 228_3 229\ 401_2 496\ 703_1 205\ 376$ **bytes!**

Now you should have a good understanding of megabytes, gigabytes, terabytes and everything in between. Now if we can just figure out what a WhatsAByte is......:)

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