

# **Characteristics of Big Data:**

## **Volume**

# After this video you will be able to..

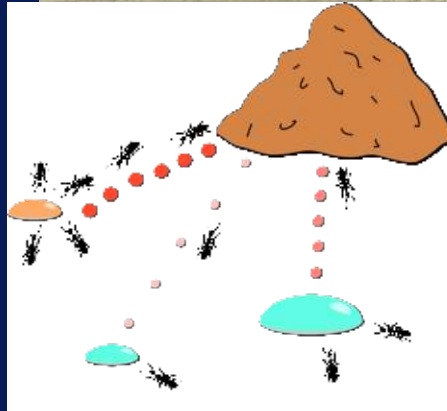
- Describe what volume of big data means and why you should care about it
- Explain why data volume is not just about storage

**Volume = Size**

**Volume = Size**



**Volume = Size**



# Every minute...



**204 Million emails**

# Every minute...



**204 Million emails**

**200,000 photos**

**facebook**

**1.8 Million likes**

# Every minute...



**204 Million emails**

**200,000 photos**

**facebook**

**1.8 Million likes**

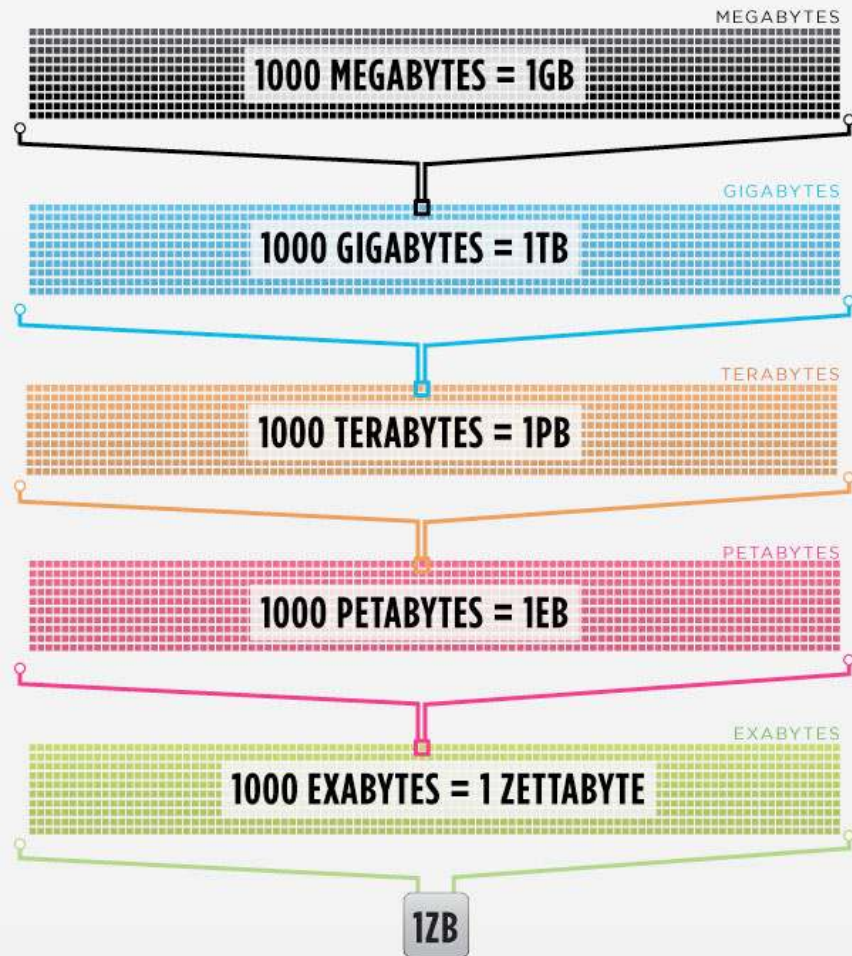


**1.3 Million video views**

**72 hours of video uploads**



But how much data are we talking about?



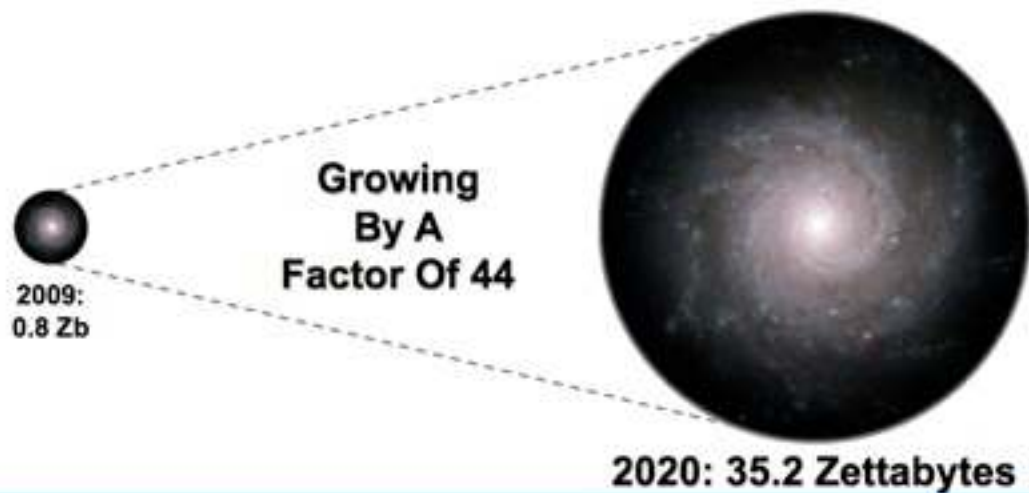
100 MBs  $\approx$  couple of volumes of Encyclopedias

A DVD  $\approx$  5 GBs

1 TB  $\approx$  300 hours of good quality video

LHC  $\approx$  15 PBs a year

# The Digital Universe 2009-2020



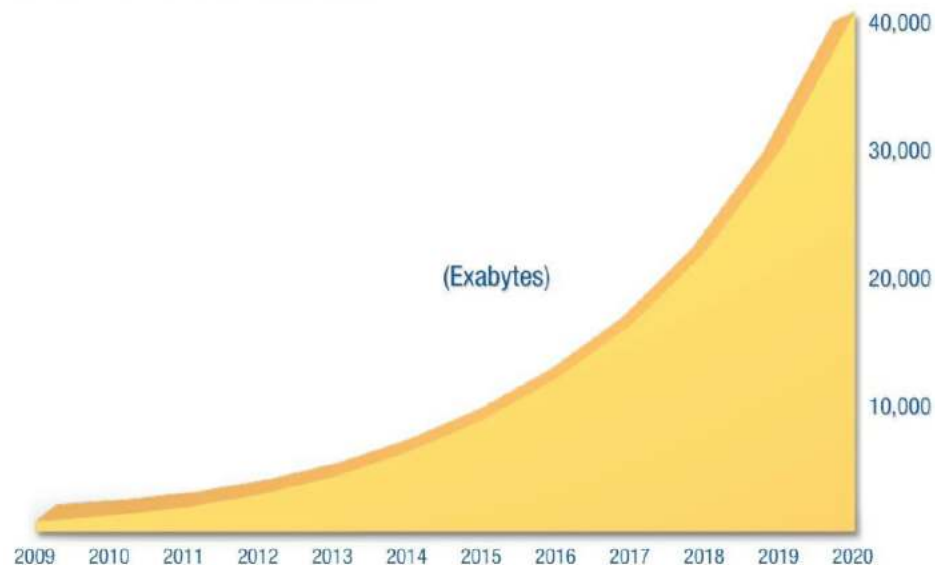
EMC  
Data Protection

Source: IDC Digital Universe Study, sponsored by EMC, May 2010

© Copyright 2010 EMC Corporation. All rights reserved.

# Exponential data growth!

The Digital Universe: 50-fold Growth from the Beginning of 2010 to the End of 2020



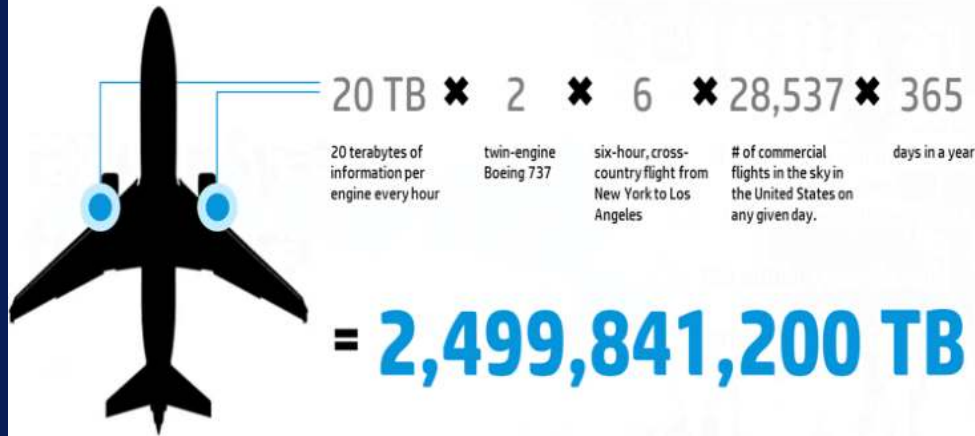
*This IDC graph predicts exponential growth of data from around 3 zettabytes in 2013 to approximately 40 zettabytes by 2020. An exabyte equals 1,000,000,000,000,000 bytes and 1,000 exabytes equals one zettabyte. Source: IDC's Digital Universe Study, December 2012, <http://www.emc.com/collateral/analyst-reports/idc-the-digital-universe-in-2020.pdf>.*

# Relevance of Volume for Us?



**More data = Better safety**

Sensor data from a cross-country flight

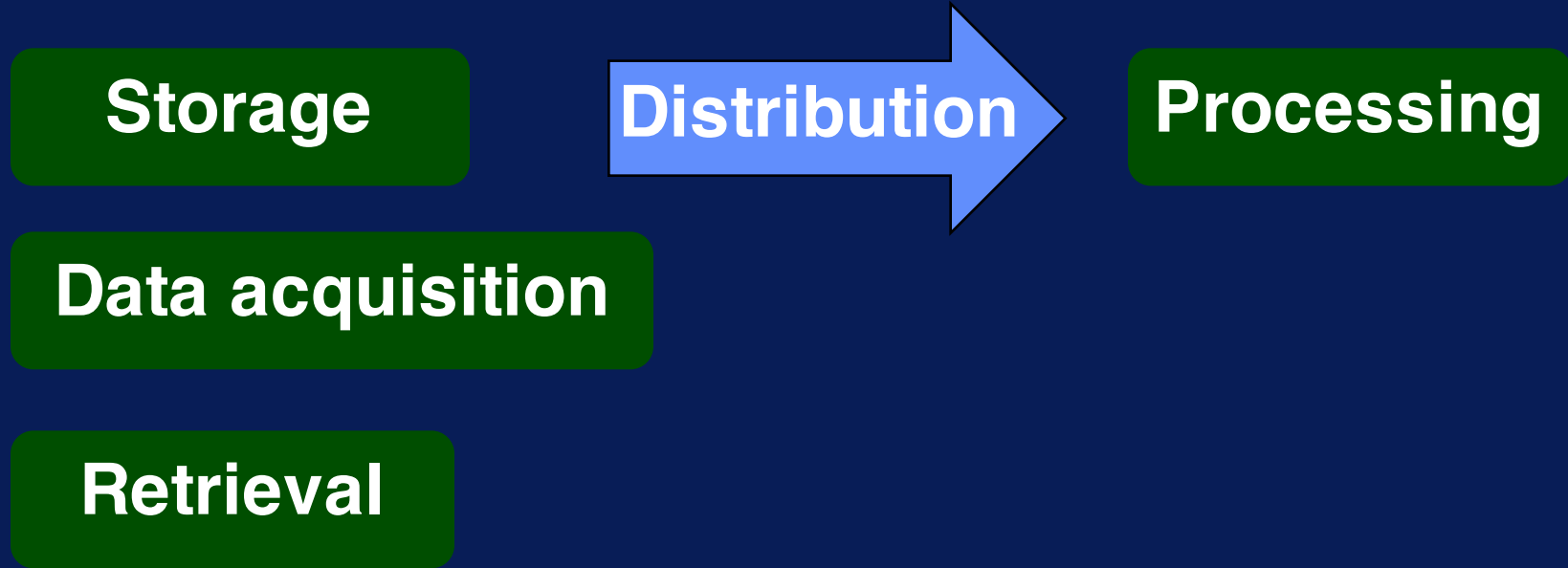


**Volume**



**Business Insight**

# Challenges: Storage and more...



# Processing Big Data



Volume

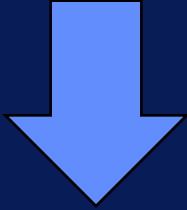


Performance



Cost

# Volume = Size



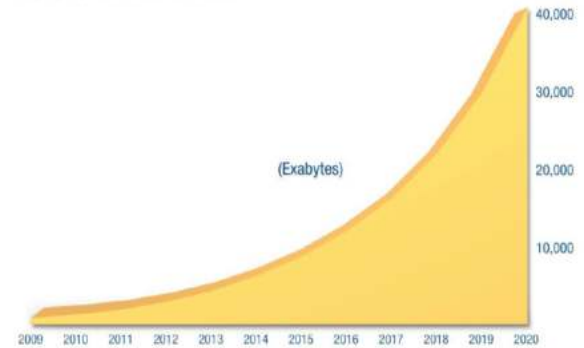
## Challenges

### Storage

### Access

### Processing

The Digital Universe: 50-fold Growth from the Beginning of 2010 to the End of 2020



This IDC graph predicts exponential growth of data from around 3 zettabytes in 2013 to approximately 40 zettabytes by 2020. An exabyte equals 1,000,000,000,000,000 bytes and 1,000 exabytes equals one zettabyte. Source: IDC's Digital Universe Study, December 2012, <http://www.emc.com/collateral/analyst-reports/idc-the-digital-universe-in-2020.pdf>.