

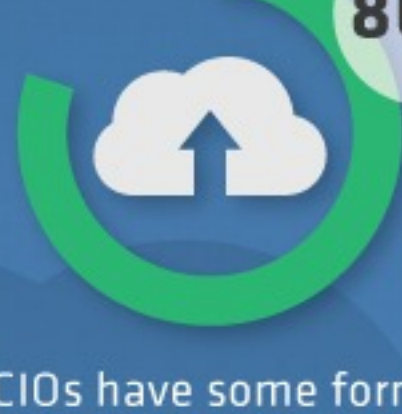
# DEMYSTIFYING THE CLOUD

## HOW DATA CENTERS KEEP INFORMATION BOUND TO EARTH

The expression, "The Cloud," has become commonplace in modern society. People use it all the time to discuss various apps, websites, servers, and countless other things that are Internet-related. But what does that ambiguous expression even mean?

## THE CLOUD: A SIMPLE EXPLANATION

A massive, physical collection of interconnected information technology servers that are easily accessible by a user through a network. Advances in technology have allowed for servers to essentially be outsourced, and this has had a large impact on business the world over:



of CIOs have some form of infrastructure delivered through a cloud network



of CIOs who have moved to the cloud have cut application costs



is the amount of annual savings for users who move applications to the cloud

### BECAUSE OF THE GROWTH BENEFITS OF CLOUD COMPUTING:



of CIOs have stated their #1 priority is cloud computing.



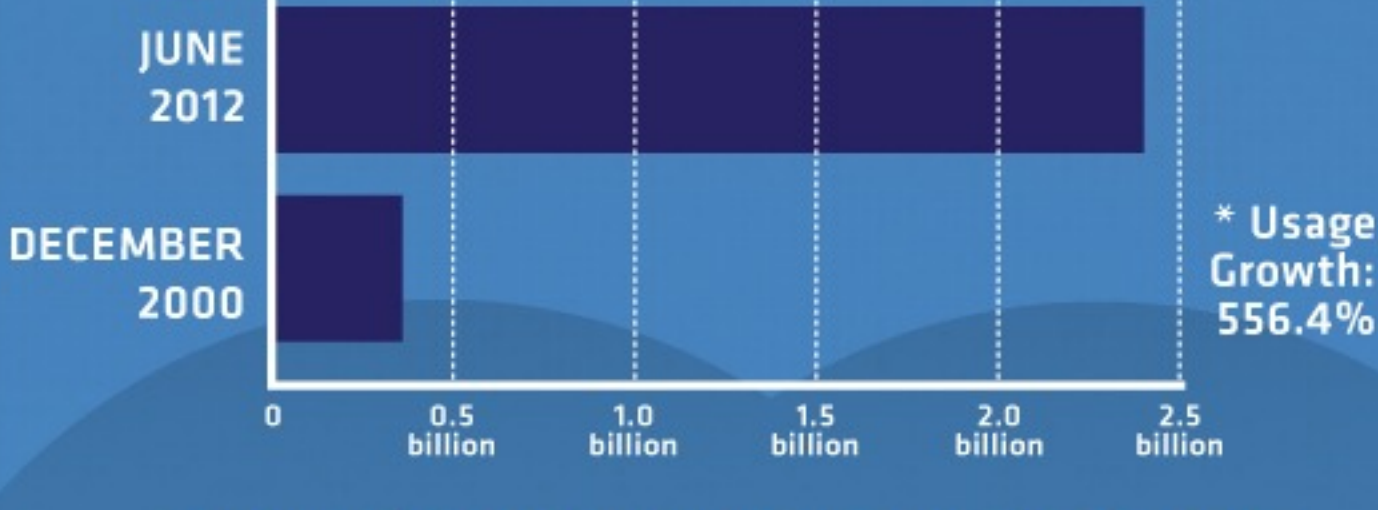
of IT budgets are estimated to be spent on cloud computing in 2013

## WHERE THE CLOUD RESIDES



Many people think the Cloud is a magical network of servers inexplicably up in space. However this simply isn't true. The Cloud is actually in data centers, in many physical locations across Earth. Thousands of data centers exist around the world, primarily in the **United States and Europe**, with growth and development in **Asia and Australia**.

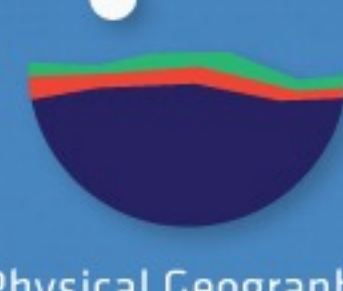
## INTERNET USAGE WORLDWIDE:



Because of this rapid surge in usage, safe and secure servers have been more necessary than ever before.

## WHERE TO CONSTRUCT DATA CENTERS IS DETERMINED BY:

### 1. AN APPROXIMATE PHYSICAL SPACE



**Physical Geography:** Large Flat surface area, possibly underground.



**Climate:** Limited risk of natural disaster.



**Natural Energy Saving Feature:** Water, geothermal, & wind energy



**Safety:** Away from crime, targets for terrorism, etc.

### 2. AVAILABILITY OF HIGH CAPACITY INTERNET



### 3. AFFORDABLE ENERGY RESOURCES



### 4. LACK OF INTENSE LAWS, POLICIES, & REGULATIONS



## CURRENTLY:

There are **50,000,000** physical servers in the world



Microsoft runs a data center that is the size of **10 football fields**

**Google** runs **900,000** servers in **13** data centers worldwide



**= 260,000,000 Watts** Equivalent to 0.01% of global energy used to power 200,000 homes

## THE INNER WORKINGS OF THE CLOUD



In data centers, servers are running 24/7. Companies go to great lengths to keep these functioning smoothly. Fiber optic networks connect data centers together. These run at speeds 200,000 times faster than a typical home Internet connection. Wires are typically color-coordinated in order to avoid confusion and increase worker efficiency.

## THESE MASSIVE COMPUTERS NEED TO REMAIN COOL IN TEMPERATURE:

Intricate air conditioning systems pump cold air constantly



Hundreds of fans pump hot air out of the server racks and into a cooling unit before recirculation



Complicated water-cooling systems are also used.

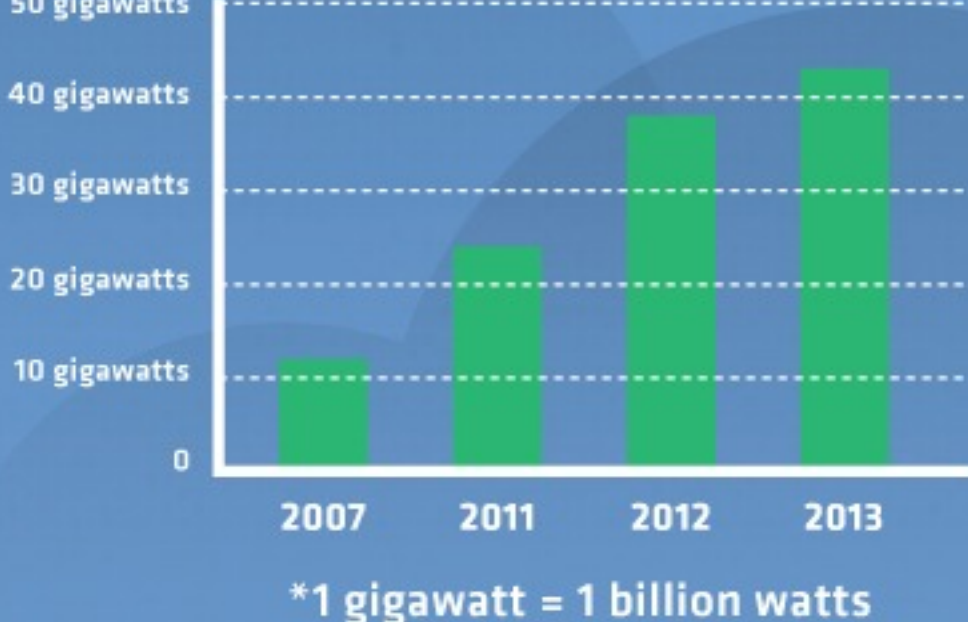


Thick plastic barriers keep cold air in, and hot air out



## MASSIVE AMOUNTS OF ENERGY

Globally, more energy is dedicated to data centers each year:



## SAFETY PRECAUTIONS:

### For fire prevention, certain policies must be maintained:



Temperature is maintained around 72 degrees and humidity at 45%.



Reasonable distance between servers to decrease risk of fire.

### Protect the information at all costs:



Massive 2 Megawatt generators to run the data centers in case of power outage.



Biometric security and 24/7 manned security monitors to check premises for safety.

It is important to know that the Internet is not up in the air; it is living in well-maintained data centers that are firmly grounded on Earth.

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