

Internet - 204100

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Overview

- Computer Network
- Internet
- TCP/IP
- Domain Names
- Internet Services

Computer Network

- Telecommunication network that allows computers to exchange data.
- The physical connection established using either cable media or wireless media.
- The best-known computer network is the Internet.

Computer Network

Pros

- Facilitates interpersonal communications
- Allows sharing of files, data, and other types of information
- Allows sharing of network and computing resources

Cons

- May be insecure
- May interfere with other technologies
- May be difficult to set up

Computer Network

- Computer network types by spatial scope
 - **LAN** (Local Area Network) – limited area such as a home, school, computer laboratory, or office building
 - **MAN** (Metropolitan Area Network) – geographically separated but in same metropolitan city (5-40km)
 - **WAN** (Wide Area Network) – across metropolitan, regional, or national boundaries
 - **WWAN**

Internet

- The Internet is a global system of interconnected computer networks.
- Uses the standard Internet protocol suite (TCP/IP) to serve several billion users worldwide
- Communications **protocol** is a system of digital **rules** for message exchange within or between computers.

TCP/IP

- Main protocol for the Internet
- Consists of
 - TCP (Transmission Control Protocol)
 - Breaks data down into packets
 - Combined received packets back into usable data
 - Error Checking/ Request for Resending
 - IP (Internet Protocol)
 - Use IP address to relay datagram across networks
 - Decide/Change datagram path (Routing)

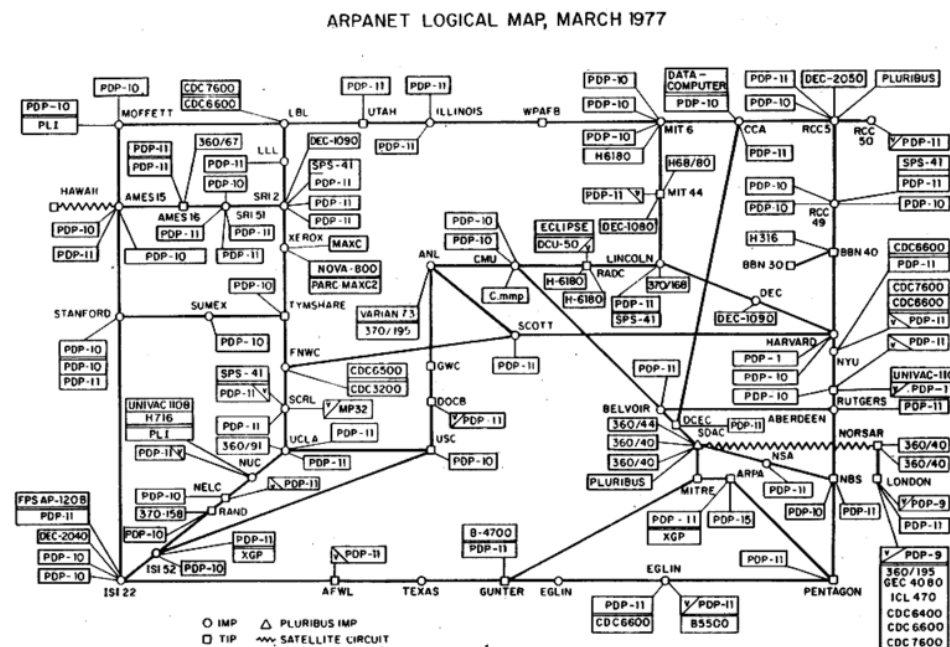
Internet Protocol

- The **Internet Protocol** (IP) is the principal communications protocol in the Internet protocol suite for relaying datagrams across network boundaries.



History of Internet

- The public was first introduced to the concepts with **ARPANET** (Advanced Research Projects Agency NETwork) within the U.S. Department of Defense in 1969



(PLEASE NOTE THAT WHILE THIS MAP SHOWS THE HOST POPULATION OF THE NETWORK ACCORDING TO THE BEST INFORMATION OBTAINABLE, NO CLAIM CAN BE MADE FOR ITS ACCURACY)

NAMES SHOWN ARE IMP NAMES, NOT NECESSARILY HOST NAMES

Internet in Thailand

- Thailand obtained internet access in 1996 as the third country in South East Asia.
- About 8.6 million people use the internet every day in Thailand, according to Google Thailand's 2012 figures
- 24 million people have regular access, representing over one-third the population

IP Address

- IP address (Internet Protocol address) is a numerical label assigned to each device (e.g., computer, printer) participating in a computer network.
- Originally defined as a 32-bit number and this system, known as Internet Protocol Version 4 (IPv4)
- Newer system called IPv6 but the term IP address typically still refers to the addresses defined by IPv4.

IP Address

- Consists of four decimal numbers (one byte each), each ranging from 0 to 255 (1 byte = 8 bit $\rightarrow 2^8 = 256$) separated by dots. For example 172.16.254.1



Public vs Private IP

- **Public IP**
 - Can be referenced across networks
 - Managed/Assigned by governing organizations
 - Network Information Center (NIC)
 - Internet Assigned Numbers Authority (IANA)
- **Private IP**
 - Within LAN
 - Managed by system administrators

Checking IP Address

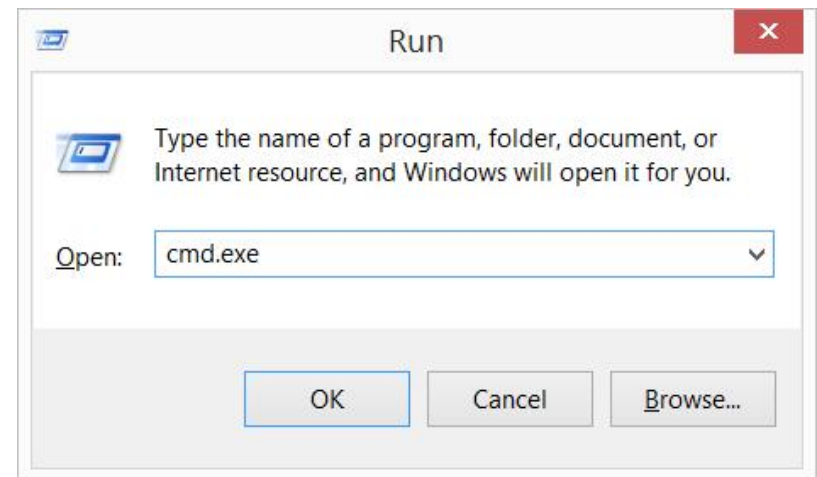
Windows

- Open terminal

- Press  + 

- You will get run command windows

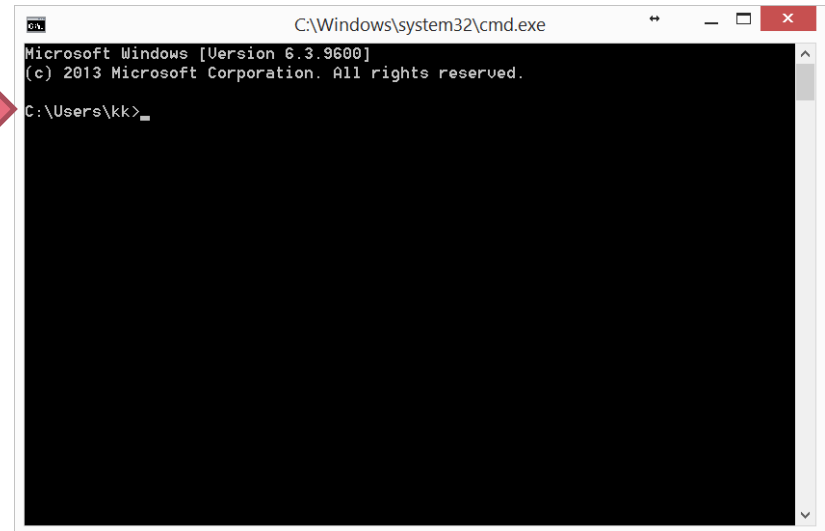
- Type in cmd.exe



Checking IP Address [2]

- You will terminal →
- Enter ipconfig

```
>ipconfig
```



A screenshot of a Windows Command Prompt window. The title bar reads 'C:\Windows\system32\cmd.exe'. The window content shows 'Microsoft Windows [Version 6.3.9600] (c) 2013 Microsoft Corporation. All rights reserved.' followed by the prompt 'C:\Users\kk>_'.

- You will get the following:

```
Ethernet adapter Ethernet:
```

```
Connection-specific DNS Suffix . :  
Link-local IPv6 Address . . . . . : fe80::d858:5a39:d8f0:f781%3  
IPv4 Address. . . . . : 172.16.0.143  
Subnet Mask . . . . . : 255.255.255.0  
Default Gateway . . . . . : 172.16.0.254
```


Domain Name

- Provides recognizable and memorizable names to numerically addressed Internet resources (IP address)
- Translated by **Domain Name Server** (DNS) to IP address (Name Resolution)



Top Level of Domain Name

- Rightmost Section
- Can be:
 - Entity Type
 - .com, .gov, .mil, etc.
 - Country Code
 - .th, .jp, .uk, .cn, .mm

TLD	Intended Use (Original)
.com	Commercial
.net	Network Infrastructure
.org	Organization
.gov	Government (US)
.edu	Educational Organization
.mil	Military (US)
.int	International Organization (Treaty)
.biz	Business
.info	Informational Site

Lower Levels of Domain Name

- Second-level Domain
 - Subdomain of TLD
 - .go.th, .ac.uk
 - Not Subdomain of TLD
 - www.google.com
- Other Subdomains
 - www.cs.science.cmu.ac.th

Services on the Internet

- E-mail
- WWW
- FTP, sFTP
- Telnet, ssh
- Web search engine
- Conversation
- Social Media
- Web Application

E-mail

- A method of exchanging digital messages from an author to one or more recipients.
- An email address identifies an email box to which email messages are delivered

E-mail Client

- is a computer program used to access and manage a user's email.
- Popular **email clients application** include Microsoft Outlook, Mozilla's Thunderbird, Apple Inc.'s Mail.
- Popular **web-based email clients** include: Gmail, Yahoo! Mail, mail.com, Lycos mail, and Outlook.com.

E-mail for CMU students

- The university mail server can be accessed at <https://studentmail.cmu.ac.th/>

The image shows the login interface for CMU mail. At the top, there is a logo with 'CMU' in orange and 'mail' in black script, with 'Chiang Mai University' written below 'CMU'. To the right of the logo is a faint envelope icon. Below the logo, the text 'Collaboration Suite' is displayed. The login form consists of two input fields: 'Username:' and 'Password:'. Below the password field is a checkbox labeled 'Remember me on this computer' and a 'Log In' button. Underneath the login fields is a dropdown menu labeled 'Which version would you like to use?' with 'Default' selected, and a link 'What's This?'. At the bottom, there is a line of text: 'Zimbra :: the leader in open source messaging and collaboration :: [Zimbra Blog](#) [Zimbra Wiki](#)' and a copyright notice: 'Copyright © 2005-2010 Zimbra, Inc. 'Zimbra' and the Zimbra logos are trademarks of Zimbra, Inc.'

Username : firstname_l

Password : xxxxxxxx

E-mail addresses for new students from the academic year of 2013 on is
firstname_l@cmu.ac.th

The screenshot shows a classic email composition interface. At the top is a toolbar with icons and labels for 'Send', 'Cancel', 'Save Draft', 'Add Attachment', 'Spell Check', and 'Options'. Below the toolbar are four input fields: 'To:', 'Cc:', 'Bcc:', and 'Subject:'. The 'Cc:' field has a 'Hide BCC' button to its right. The 'Subject:' field has a 'Priority:' dropdown menu to its right. The main body of the email is a large empty text area.

To

The message's primary recipient(s)

Cc

The receiver of a copy of a message addressed primarily to other recipient(s)

Bcc

addresses added to delivery list but remaining invisible to other recipients.

Subject

A brief summary of the topic of the message

WWW

- A system of interlinked documents accessed via the Internet with a **web browser**.
- Data are held at **web server**
- Web pages may contain text, images, videos, and other multimedia.
- Navigation via **hyperlinks**.
- Pages are accessed using Web Address



Browser usage worldwide, 2011-2013



Data source: StatCounter, February 2011-February 2013

www.pingdom.com

URL

- A uniform resource locator, abbreviated URL, also known as web address
- In most web browsers, the URL of a web page is displayed on top inside an address bar
- The format is **protocol://domain/path/file**
e.g.
**http://www.cs.science.cmu.ac.th/matinee/
picture/mypic.jpg**

Some Terminology

- Web Page
 - Document file used to display information
 - Contains text, images, sound, etc.
- Website
 - Series of web pages hosted on a single domain
- Home Page
 - Default page of a website

More Terminology

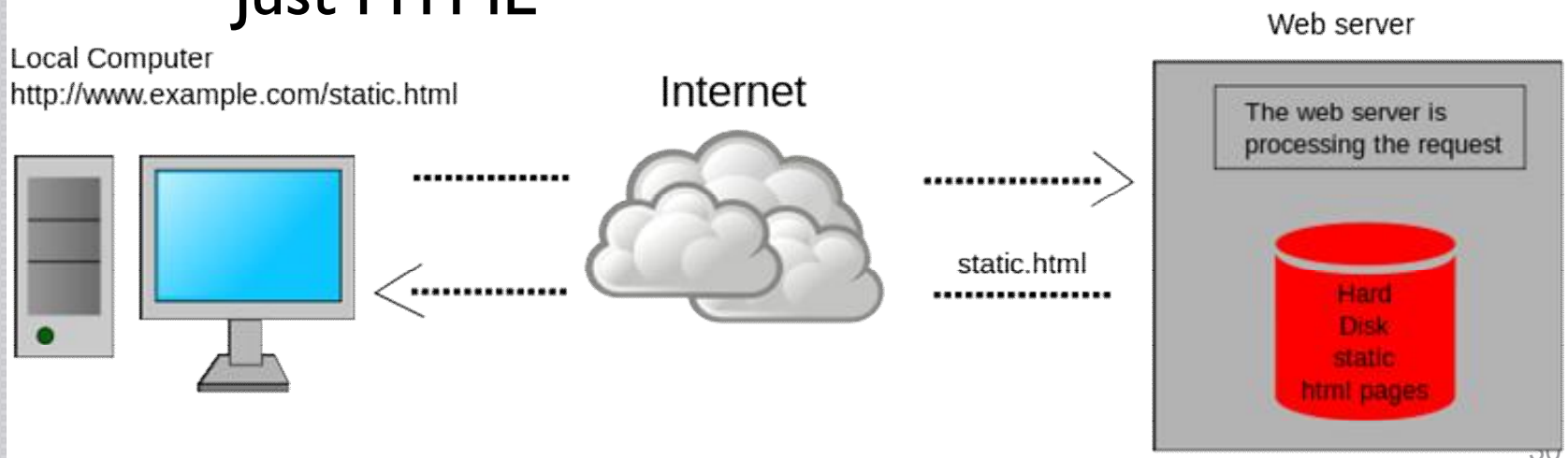
- Web Hosting
 - Host website on server, making it available on the WWW
- Internet Service Provider (ISP)
 - Provide access to the Internet
 - 3BB, AIS, TrueNet, ToT

WWW Protocol

- **http://** HyperText Transfer Protocol
- **ftp://** File transfer Protocol
- **news://** UseNet News group
- **gopher://** gopher (160 servers worldwide)

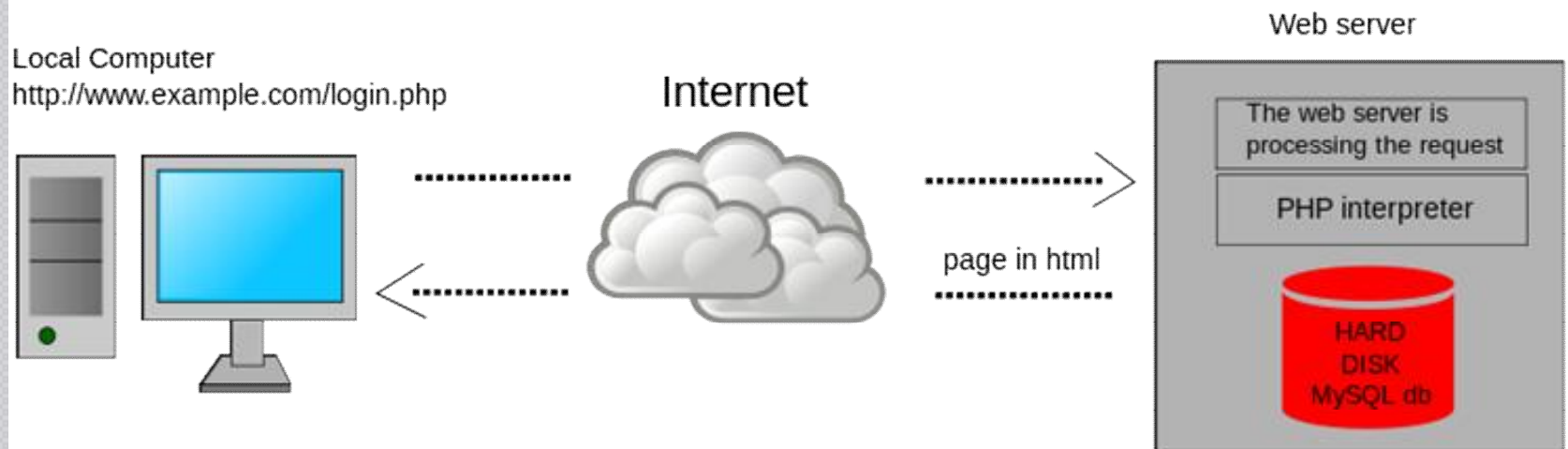
Static vs Dynamic Webpage

- A **static web page** is a web page that is delivered to the user exactly as stored, in contrast to **dynamic web pages** which are generated by a web application.
- Static Web Page
 - Just HTML



Dynamic Web Page

- Contents can change based on user's interaction
- May interact with database



- PHP, ASP, JSP, JavaScript, VbScript

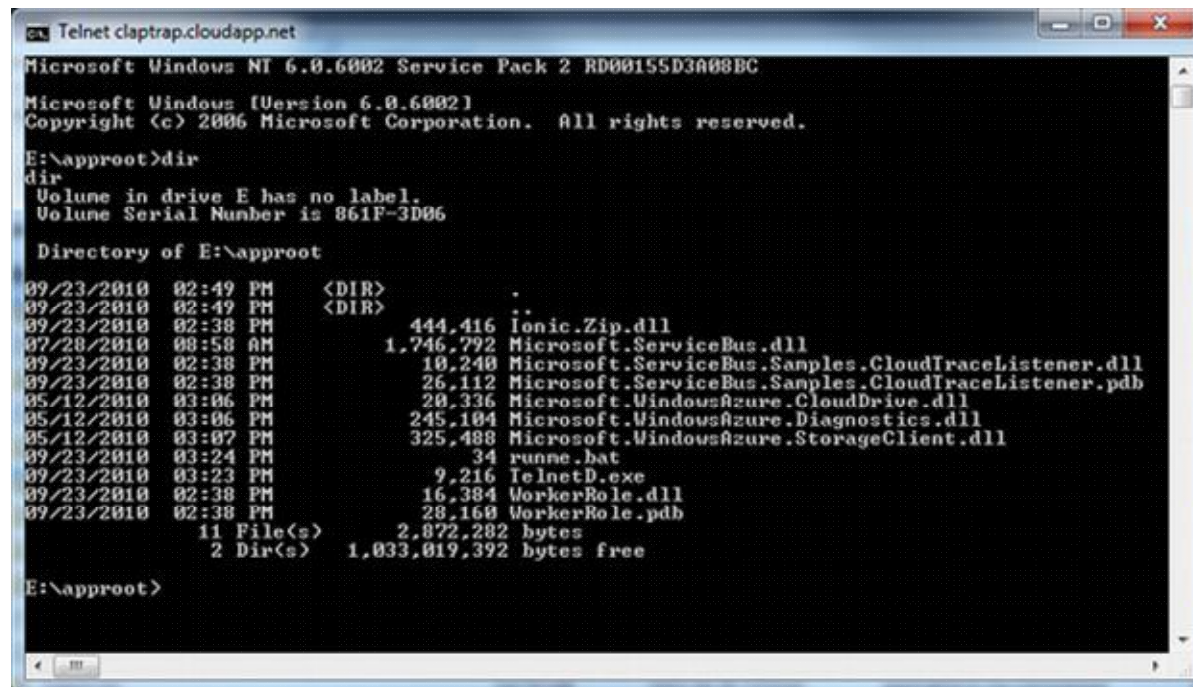
FTP

- **File Transfer Protocol (FTP)** is a standard network protocol used to transfer files from one host to another host over a TCP-based network, such as the Internet.



Telnet - SSH

- Provide a bidirectional interactive text-oriented communication facility using a virtual terminal connection.



```
Telnet claptap.cloudapp.net
Microsoft Windows NT 6.0.6002 Service Pack 2 RD00155D3A08BC
Microsoft Windows [Version 6.0.6002]
Copyright (c) 2006 Microsoft Corporation. All rights reserved.

E:\approot>dir
dir
Volume in drive E has no label.
Volume Serial Number is 861F-3D06

Directory of E:\approot

09/23/2010 02:49 PM <DIR>          .
09/23/2010 02:49 PM <DIR>          ..
09/23/2010 02:38 PM             444,416 Ionic.Zip.dll
07/28/2010 08:58 AM          1,746,792 Microsoft.ServiceBus.dll
09/23/2010 02:38 PM             10,240 Microsoft.ServiceBus.Samples.CloudTraceListener.dll
09/23/2010 02:38 PM             26,112 Microsoft.ServiceBus.Samples.CloudTraceListener.pdb
05/12/2010 03:06 PM             20,336 Microsoft.WindowsAzure.CloudDrive.dll
05/12/2010 03:06 PM             245,104 Microsoft.WindowsAzure.Diagnostics.dll
05/12/2010 03:07 PM             325,488 Microsoft.WindowsAzure.StorageClient.dll
09/23/2010 03:24 PM              34 runne.bat
09/23/2010 03:23 PM              9,216 TelnetD.exe
09/23/2010 02:38 PM             16,384 WorkerRole.dll
09/23/2010 02:38 PM             28,160 WorkerRole.pdb
11 File(s)              2,872,282 bytes
2 Dir(s)                1,033,019,392 bytes free

E:\approot>
```

Web search engine

- A software system that is designed to search for information on the World Wide Web
- Popular search engines: Google, Yahoo, Baidu, Bing, Yandex etc.



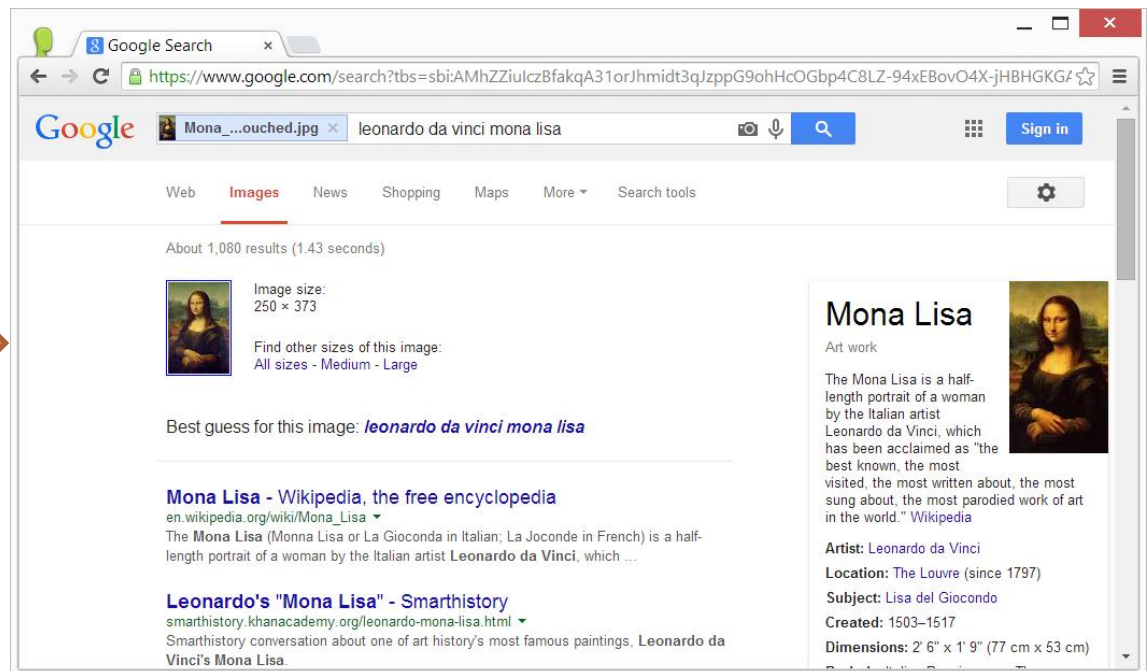
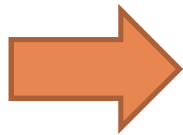
Google Image Search

- <https://images.google.com>



Search by Image

- Beside keywords, you can use image itself for searching with Google Image Search



Search by Image [2]

- How to perform Search by Image



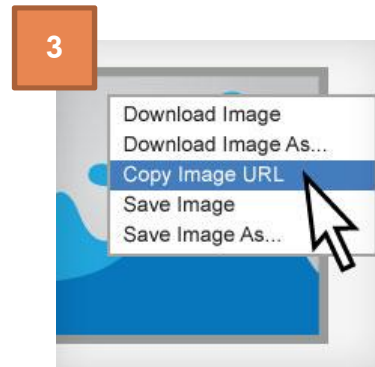
Drag and Drop

- Drag and drop an image from the web or computer into the search box



Upload an Image

- Click the camera icon
- Select "Upload an image".
- Choose image to upload.



Copy and Paste URL for an Image

- Right-click the image and copy the URL
- On images.google.com
- Click the camera icon
 - Select "Paste the URL"

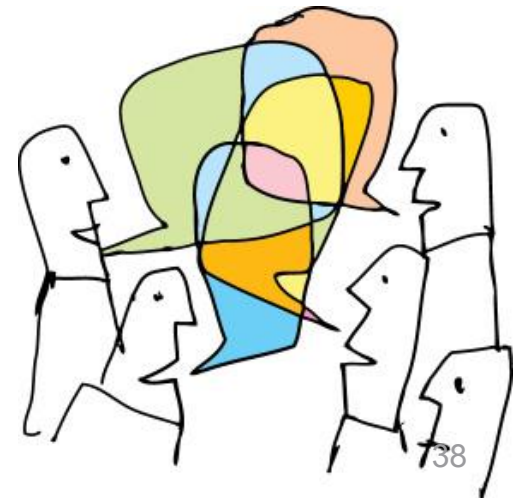


Right-click an Image on the Web

- Need web browser extension
- Just right-click on an image to search

Conversation

- Conversation
 - USENET newsgroup
 - Online Chat
 - IRC
 - Instant messaging: LINE, google talk, skype, etc
 - Web board



Social Media

- Means of interactions among people in virtual communities and networks
- Create
- Share
- Exchange information and ideas

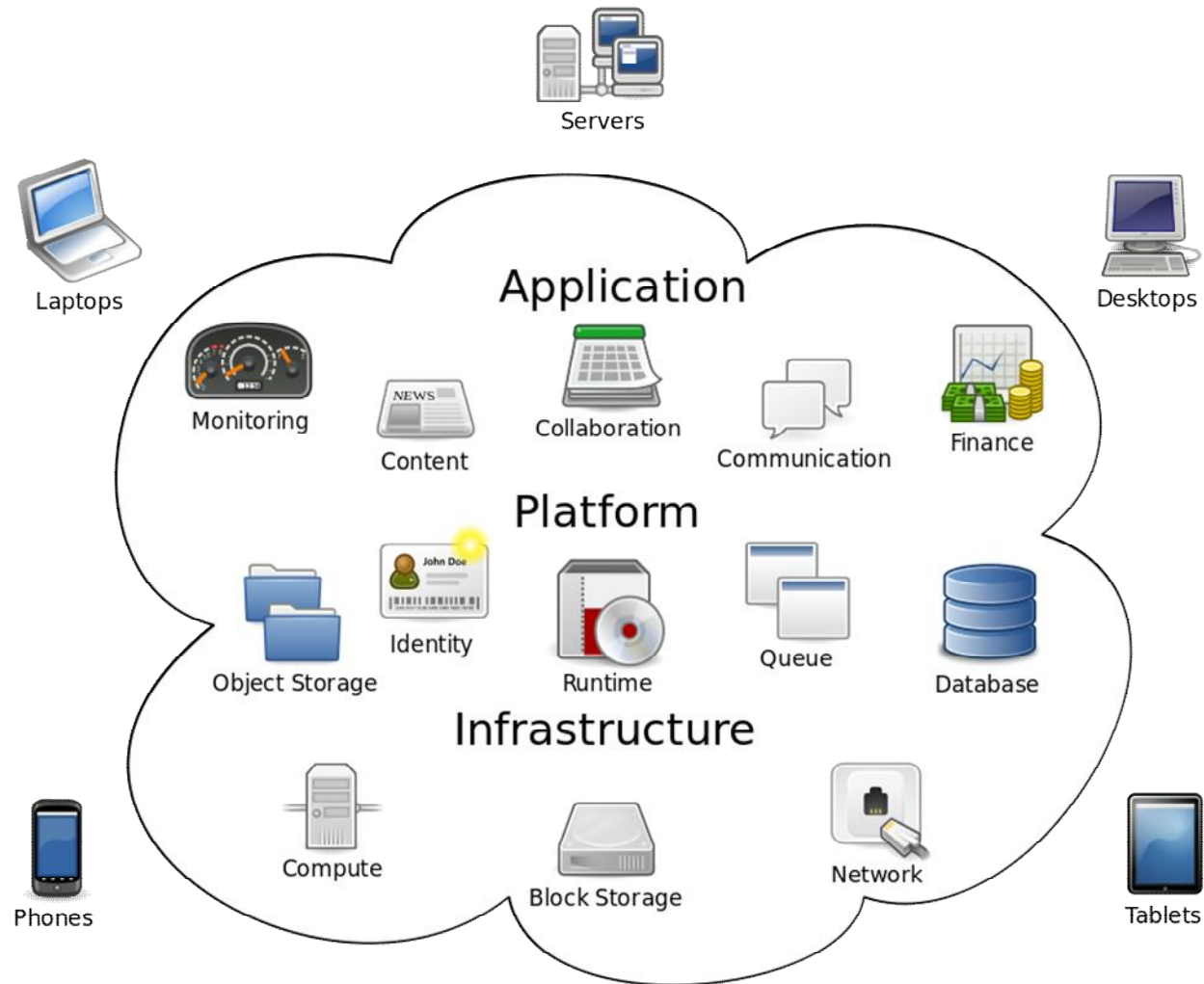


Notable Social Media

- **Blog:** Blogger, Tumblr, Wordpress
- **Video Sharing:** YouTube, Vimeo, SocialCam
- **Social Networking:** Facebook, Google+, Hi5
- **Micro Blog:** Twitter
- **Picture Album:** Flickr, Shutterfly, Photobucket
- **Bookmark:** Digg, Stumble Upon



Cloud Computing



Cloud Computing

Notable Cloud Applications

- Cloud storage: Dropbox, Google Drive, Microsoft Skydrive, Apple iCloud



Notable Cloud Applications

- Office Application: Google Documents, Microsoft Office Web App
- Online Collaboration

The screenshot displays the Google Docs web interface. At the top, the Google Docs logo is on the left, and the user's email 'philipp.lenssen@gmail.com' is on the right, followed by links for 'New features!', 'Docs Home', 'Help', and 'Sign out'. Below this, the document title 'Wikipedia on Microsoft Word' is shown, along with a timestamp 'saved on March 26, 2008 10:40 AM by Philipp' and buttons for 'Share', 'Save', and 'Save & close'. The main editing area features a menu bar with 'File', 'Edit', 'Insert', 'Format', 'Tools', and 'Table'. The 'Insert' menu is open, showing options like 'Picture', 'Link', 'Table', 'Comment', 'Special characters', 'Horizontal line', 'Page break (for printing)', 'Header', 'Footer', and 'Bookmark'. The document content is a Wikipedia-style article about Microsoft Word, starting with 'Bravo, the original GUI word processor developed at Xerox PARC to work for Microsoft in 1981. Simonyi hired Richard Brodie, who worked at PARC that summer. On February 1, 1983, development on the program October 25, 1983, for the IBM PC. Free with the November 1983 issue of PC World, making it the However, it was not well received, and sales lagged you Get", or WYSIWYG, and was the first application with text on an IBM PC. Word made full use of the mouse, which was so unusual at the time that Microsoft offered a bundled Word-with-Mouse package. Although MS-DOS was a character-based system, Microsoft Word was the first word processor for the IBM PC that showed actual line breaks and typeface markups such as bold and italics directly on the screen while editing,'

Google Docs

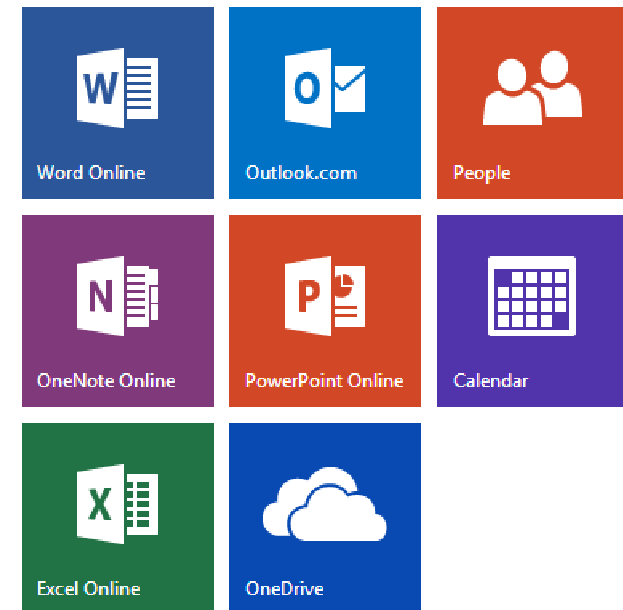
- <http://docs.google.com>
 - Office Suite from Google
 - Free to Use

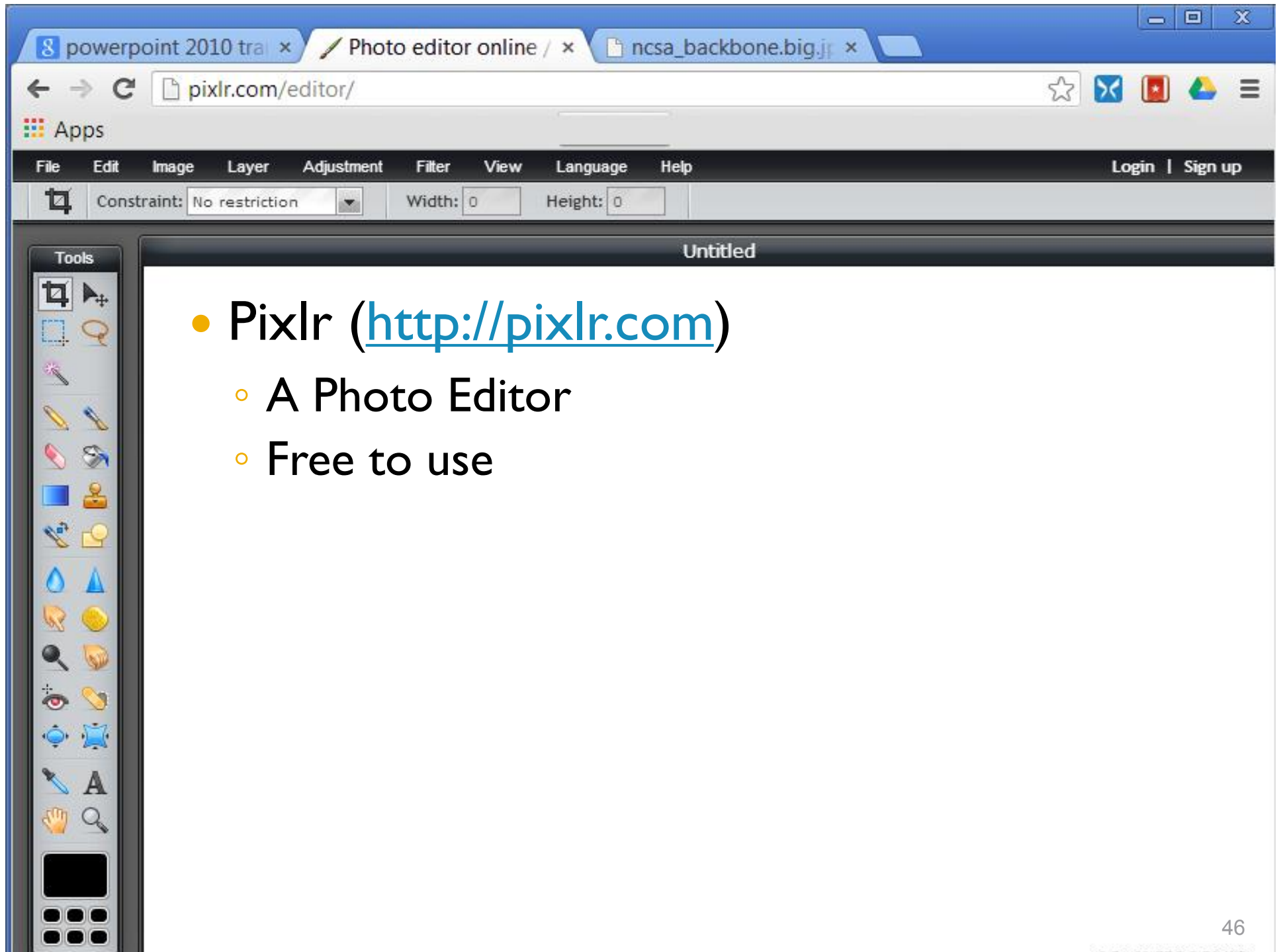
Google docs



Microsoft Office Online

- <http://office.com>
 - Office Suite from Microsoft
 - Similar to Offline version of Microsoft Office
 - Free to Use





- Pixlr (<http://pixlr.com>)
 - A Photo Editor
 - Free to use

Review

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