#Internet for Executives

Information Superhighway

"Information at your fingertips"
publish + access
Information will be
ubiquitous
interactive
high speed
all digital & multimedia

Services

Electronic Mail most popular, a must in your business card
 Databases documents, reports, catalogs, FAQ, online news, magazine, radios, movies,... Conferences ♦ discussion groups, online chats,... Remote Accesses

Applications

 News
 Education
 Electronic Commerce

 Shopping, Advertising, Business Transaction..

 Entertainment







Information Network













The Online Universe



Information Superhighway

Not be a single entity
Result from multi-origanization cooperation
Provide high-speed multimedia services
Evolve continuously

On the Road

Wireless access
Higher speed
Cable TV enhancement
Electronic money
Secure network protocol

Origins of the Internet

Problem : (Late 1960's)
 To interconnect different brands of computers used by
 Government employees
 University researchers
 Defense contractors
 Reliability & Survivability

Origins of the Internet

Solution : (1969)ARPANET

 sponsored by DoD Advanced Research Projects Agency

built around newly created TCP/IP

TCP: Transmission Control ProtocolIP: Internet Protocol

1970s and early 1980s

Primary use is still from initial constituents
Geographic coverage expands
System/network numbers grow
Usage increases significantly
ARPANET split into : Milnet + Internet

Mid to late '80s

Rapid implementation of TCP/IP
 TCP/IP exist for nearly every brands of computers

1990s

TCP/IP is internetworking
Multi-billion dollar market for TCP/IP products and services
Public domain & commercial implementations exist for nearly every type of computer.

Internet Boom



Internet Statistics

72,250,000 people (Aug. 1996)
556,000 WWW sites (Aug. 1996)
12,881,000 hosts (July 1996)
488,000 domains (July 1996)
3,054 ISPs (July 1996)
316,271 domains in .COM (April 1996)

Source : http://lcweb.loc.gov/global/internet/inet-stats.html

Internet Today

No organization owns it
No organization controls it
Usage is largely free once connected
No centrally maintained directories or indexes

What's on the Net?

Nearly anything you can imagine, and
A lot more that you can't ...

Millions of WWW pages
10,000+ Newsgroups
5000+ mailing lists

What's on the Net ?

Millions of computers
Millions of users
Millions of files

Name and Addressing

Every internet host has unique

 IP address
 host name

 Host names are grouped within domain name

 hosts
 cpu.cp.eng.chula.ac.th
 161.200.137.

- : kaew.cp.eng.chula.ac.th
- : mali.cp.eng.chula.ac.th

161.200.137.11 161.200.137.12 161.200.137.13

domain : cp.eng.chula.ac.th

Host Names

Host Name	Name	Domain Name	
www.chula.ac.th	WWW	chula.ac.th	
ftp.microsoft.com	ftp	microsoft.com	
www.internic.net	WWW	internic.net	

Domain Name



Top-Level Domain Names

- gov
 government
- edu education institution
- com
 commercial organization
- mil military

net

 \diamond org

 $\diamond XX$

- network resource
 - other organization
 - country designation (ca, au, fr, de, jp, th, ch, ...)

Statistics (July 1996)

Number of hosts ◆.COM 3,323,647 ◆.EDU 2,114,851 ◆.NET 1,232,902 Host names 212,155 ♦ WWW ◆mail 27,758 ♦ ftp 27,292 25,649 ♦ ns

Source : http://www.nw.com/

IP Addresses

- uniquely identify a host on a TCP/IP network
- specify routing infomation in an internetwork

 32-bit address, usually represented in dotted decimal notation
 e.g. 161.200.138.77

IP Addresses

IP address = network ID + host ID
 Network ID

 identify a group of computers in a LAN

 Host ID

 identify a computer within a particular

network ID

IP Addresses

chulkn.car.chula.ac.th mail.car.chula.ac.th vlsi.cp.eng.chula.ac.th galae.eng.chula.ac.th md4.md.chula.ac.th 161.200.145.5 161.200.145.4 161.200.138.77 161.200.88.1 161.200.96.100

Network ID 161.200.xxx.xxx

IP Address Classes

Class	w value	Network ID	Host ID	#Networks	#Hosts/net
Α	1-126	W	x.y.z	126	16,777,214
В	128-191	w.x	y.z	16,384	65,534
С	192-223	w.x.y	Z	2,097,151	254

w.x.y.z

Resolving Addresses

human : host names
h/w + s/w : IP addresses
Host names must be resolved to IP addressed when used.
Domain Name Servers (DNS) do the host name to IP addr. mapping.

E-Mail Addresses

cww@chulkn.car.chula.ac.th
webmaster@www.chula.ac.th
president@whitehouse.gov
72712.1057@compuserve.com

UserName @ HostName

Finding People on the Net

finger, whois Four11 WhoWhere ♦ BigFoot Internet Address Finder (IAF) OKRA SwitchBoard
Services in Internet

Electronic mail
File transfer
Remote system log-on
Network News
Internet Navigators

Electronic Mail

The most popular services

At InterNIC email:tel. ratio is 4.8:1

Each user has his/her own mailbox
Mail contains text + multimedia digital contents as attachments
Mail can be replied, forwarded, and kept in an organized manner.

Email S/W

- Online read/write mails at the postoffice
 Offline
 - Download mails to your machine from the postoffice mailbox, and read them offline.
 - Write mails offline on your machine and upload the mails to the postoffice.
- Mail S/W
 - Pine, EUDORA, MS Exchange, Netscape Navigator

Postmaster

Most systems have address of postmaster@<hostname>
 Use if you have difficulty with mail

to/from particular system

 Use as last resort to get someone's email addr. if you know their host name.

File Transfer

 File transfer between Internet hosts. Archives for documents, reports, manuals, specifications, FAQ, softwares, updates, patches,... Require access right on remote system anonymous ftp provides public ftp access
 ♦ User ID : anonymous ♦ Password : <email address> often optional



 Command : ftp <hostname>

 Commands to navigate remote system directories

♦ cd, ls, dir, get, mget, binary, ascii, ...

Remember to set proper transfer modes

- ascii mode for text files
- binary mode otherwise.

Telnet : Remote Log-on

Remotely connect to another system
 After connected, local computer acts as a terminal of the remote system
 Need access right
 command :

 telnet <hostname>

Network News

 Provide free-form discussion group among Internet users, aka Newsgroup Thousands newsgroups available # newsgroups at your ISP may varies Largely unmoderated Subscribe only groups of interest Free / Fee USENET news (predated the Internet)

USENET News

 Seven official USENET groups computers ♦ comp news news recreation, arts, hobbies ♦ rec sci research ♦ SCİ social issues ♦ SOC ♦talk controversial topics everything else ♦ misc

USENET News

Examples
 comp.arch
 news.announce.newusers
 rec.games.video.sony
 sci.math
 soc.culture.thai
 talk.abortion

Other Network News

- alt incredibly diverse, some bizarre
 ieee IEEE society related topics
- bizbusiness
- de in Germany
- k12 K-12 education
- ♦ etc...

Network News S/W

 Various commands ◆subscribe, unsubscribe, read, post, thread.... Softwares ♦ rn, nn, rtin Netscape Navigator ♦ MS Internet News ♦ etc...

Finding Information on the Net

Archie

- Search tool for ftp sites
- Indexes are periodically updated
- Gopher
 - Menuing system for finding Internet resources
 - Move from menu to menu to access other servers transparently

Finding Information on the Net

Veronica

 Search tool for gopher sites

 WAIS

 Wide Area Information Service
 Search indexed collections of database, articles, catalogs, and whatever someone chooses to index.

Finding Information on the Net

 WWW : World Wide Web
 Conceived by Tim Berners-Lee
 at CERN (European Particle Physics Laboratory in Geneva)
 Began in 1990
 Based on the premise that everything (resource) is connected to everything else.

World Wide Web



Home Page



World Wide Web

- "Home Page" is a starting point of exploration
 - ♦ No top or root
 - No entry point is any more logical than any other.
- Intended to let users discover and obtain useful information merely by following links from place to place.

Definition

 "Global, interactive, dynamic, crossplatform, distributed, graphical hypertext information system that runs over the Internet"

Lemay : Teach Yourself Web Publishing in a Week

Web Servers & Web Browsers



Web Servers

Store & distribute web pages Response to browsing requests ♦ static pages dynamic pages
 Act as a conduit between internet users and local database Keep connection logs and support authentication

Web Browsers

A Graphical user interface S/W for web browsing and also for
mail upload/download
news posting/reading
web pages publishing
etc...

 Communicate with web servers using HTTP (HyperText Transfer Protocol)

Servers & Browsers

Servers
Apache
NCSA
Netscape Fasttrack
MS Internet Information Server
WebSite
etc...

- Browsers
 - Netscape Navigator
 - ♦ MS Internet Explorer
 - ♦ NCSA Mosaic
 - ♦ etc...

Web Page : HTML

HyperText Markup Language
Standard format for creating web pages and specifying links
Currently HTML 3.2 (Aug. 96)
Support rich hypermedia contents

formatted text, picture, audio, video, table, frame, etc...

HTML : Example

<HTML> <HEAD><TITLE>Testing</TITILE></HEAD> <BODY> <H1>This is a test</H1> <HR> Look at this picture <P></P> <HR> Send mail to me </BODY>

</HTML>

HTML : Example



URL

 Universal Resource Locator (URL) ♦ Define link to resource ◆ Examples : http://www.set.or.th/ http://www.tv5.co.th/ http://www.cp.eng.chula.ac.th/faculty/spj ftp://ftp.microsoft.com/mslfiles

file:///c:mypage.htm

Internet Search Services

Yahoo
Infoseek
Excite
Lycos
Magellan
Altavista



Gettting Connected

Hardware
Software
Connection
People

Partial vs. Full Access

Parital access
Dialup
Full access
Temporary connection via dialup
Permanent leased line connection



Your computer becomes a terminal remotely connected to the Internet host at your ISP

Partial Access

Your computer
is not an Internet host
does not have an IP address
all of your files + mail are stored at the ISP
HW / SW
simple PC or dumb terminal + Modem
any modem-interface communication prog.

Partial Access

Advantages
your ISP gets and maintains Internet S/W
telnet, ftp, email, gopher, ... are available
minimal hardware and software requirements (does not require a fast Modem, 9600 bps is more than enough)
Cheaper fee (400 baht/month)

Indirect Access

Disadvantages
 One step removed from the Internet

 e.g., ftp moves file to the ISP host not to your computer, (one more move is required.)

 Can't run Internet service on your computer

Can't use most graphical Web browsers



Your computer temporarily becomes an Internet host



Your computer permanently connects to the Internet
Full Access

Advantages
 Full use of client tools
 Can run Internet services (ftp, gopher,..)
 Full access to WWW with multimedia capacity

Full Access

Disadvantages
 Mulst get and maintain Internet on your machine
 Requires IP address
 Requires a more capable computer

Full Access

Dialup line

require a fast modem14.4K bps is a minimum requirement.

1,200 baht / month

Lease line

In the second
fee is in the order of tens of thousands to hundreds of thousands per month depending on the line speed.

Full Access : Dialup

 Hardware ♦486+ PC should be OK. ♦ at least 14.4 Kbps or 28.8 Kbps modem Software ♦ TCP/IP software ◆ SLIP / PPP s/w to allow TCP/IP to run over dialup line. Already included in Win95

Full Access : Permanent

Hardware Server-class, workstation, computers ◆ Sun, HP, IBM, ..., or high-end Pentium Software Mostly included with operating system UNIX, Windows NT People ◆ Requires system admin staff.

ISP in Thailand

A-Net Asia Access www.asiaaccess.net.th The Idea www.theidea.com Info News www.infonews.co.th Internet Thailand www.inet.co.th ♦ KSC www.ksc.net.th Loxley www.loxinfo.co.th Samart Infonet www.samart.co.th

Internet Thailand : Pricing

Service Name	Hours	Disk Space	In/Out Msg.	Startup	Monthly
HomeNet	15	0.6MB	400/400	800	400
WorldNet	20	1.0MB	600/600	1,200	600
BizNet	40	2.0MB	800/800	1,600	800
WorldNet+	20	1.0MB	600/600	2,400	1,200
BizNet+	40	2.0MB	800/800	3,000	1,500

Individual Users

Internet Thailand : Pricing

Service Name	In/Out Data Vol. (MB)	. Startup	Monthly	
9.6k	200 / 200	30,000	15,000	
14.4k	300 / 300	40.000	20,000	
19.2k	500 / 500	50,000	25,000	
28.8k	1000/1000	100,000	50,000	
64k	2000/2000	200.000	100,000	
128k	4000/4000	350,000	175,000	
256k	8000/8000	500,000	250,000	
512k	16000/16000	1,400,000	700,000	

Corporate Connection

Info News



LoxInfo



Internet Thailand



KSC



Samart



Asia Access



The Idea



Setting up Server on the Net

Permanent Internet Host
 Hardware+Software+Connection+People
 "Rent-a-Server" Services
 Internet Thailand : INET-Web
 etc...
 Web Page Design Services

INET-Web

Start up WWW Server & software installation (150,000 + 60,000 refundable deposit) Domain name registration ♦ BizNet+ 3 accounts Monthly ◆ Server maintenance (45,000) Optional weekly backup, disk space, consulting,...



Server is hosted at the ISP
 UNIX based workstation, 16MB, 200MB HD
 NCSA HTTPD WWW Server
 Minimal delay time and investment

http://www.hway.net

\$24.95 / month
Domain name
Unlimited updated via ftp
500MB of data transfer / month (\$0.12 / MB over 500MB)
10MB for HTML doc (\$1 / MB over 10MB)
Custom CGI

http://www.navisoft.com

	Basic	Domain	Commercial	Dedicated
Start up	\$99	\$199	\$199	\$999
Monthly	\$15	\$99	\$199	\$1999
Space	20MB	50MB	100MB	1GB
Hits/day	1,000	5,000	10,000	50,000

INET : Web Page Design

Text	1,000	per page
Text & Graphic	4,000	graphics supplied
Original Graphic Design	case by case	per image or package deal
Forms	4,000 800	up to 4 hrs development per additional hour
Table	2,000 400	up to 4 hrs development per additional hour

Information Server on the Net

UNIX based machine ◆approx. 400,000+ Server software ◆Netscape Enterprise : 100,000 web, ftp, main, news, catalog, proxy servers Leased line ◆64K approx. 50,000+ / month ♦ ISP Fee Technical Staff ??? ♦64K : 100,000 / month

Security Levels



Physical Isolation

Security Levels



Protocol Isolation



Third-Party Router

Security Levels



TCP/IP routing disabled



Full Internet Gateway

Summary

Internet : a new highway to access and distribute information Internet growth is dramatic Advice browse and experience now Iook for competitive advantage Iook for new business opportunities I don't wait for all the roads to be paved