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This is my first AS/400 book. I have older books that I wrote in the mid 1980's for various publishers. I have no idea if Amazon still sells it. I have a set of files for the book but it was published by Midrange Computing in 1996 as I recall and it was very successful. From this book, my writing career spanned over 28 years and I produced well over 300 books from a panoply of publishers. I just found this Ad on the Internet. It took well over a month for Anita Craig the editor to finish editing with me, this monster 700+ page book. If you can get the book, it is probably still a good read. I tried to reclaim some of my old files but so far at least I failed in that effort. I put it here not because it is free but because it shows how long I have been at this trade.

The AS/400, The Internet, and E-Mail: Merging Your AS/400 onto the Information Superhighway

by Brian Kelly (Author)

Everything you need to know about connecting the AS/400 to the Internet is covered in this easy-to-follow, easy-implement new book. You get the hands-on help you need to Web-enable your AS/400, enhance its ability to act as your electronic post office, and implement facilities such as Internet Multimedia, native AS/400 Lotus Notes, Global Network Facilities, and Java. This informative book will lead your company into the future!

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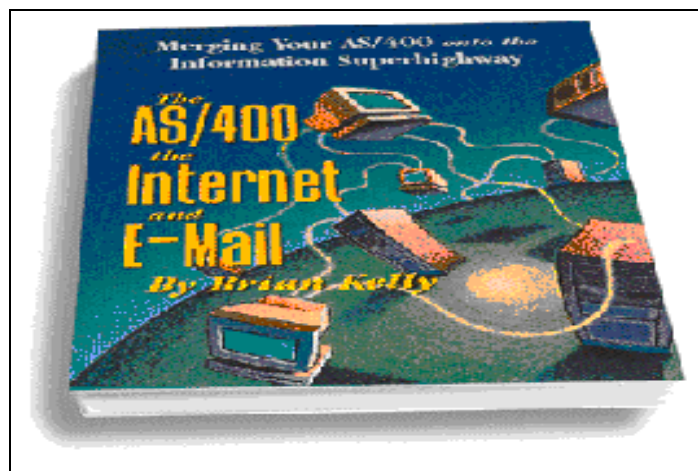
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Here are some notes from the original book. Sorry about any disappointments on this. I did try to make it right. It has been 28 years since I saw these files.

# Kelly Consulting

## AS/400 QuikCourse Series

### Course Code AS540



The  
The  
& E-Mail

AS/400,  
Internet

Course Book 3, Part 4, 62 Pages

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# General Information

College Misericordia, Kelly Consulting,  
Glenbrook Software,

Brian Kelly, Dennis Grimes, and this presentation

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# Agenda

What is the World Wide Web?

The Origins of The Web

How the Web Functions

Web Protocols

WWW Consortium

HTML Documents- The Basic Building Blocks

Using HTML

HTML Elements

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Linking

Uniform Resource Locators : URLs

FTP

Gopher

News

Mail

Http

Web Vs. Gopher

Search Engines and Indices

Format Negotiation

Web Client Requirements

Web Browsers

Places to go on the Web

# The World Wide Web Unprecedented Phenomenon

Growth & Excitement

Nothing Like it Before -  
Nothing Like it in the future?

Revolutionary, almost unbelievable.

Where did it come from?

Where is it going?

# Condensed History of the WWW

Take a trip World Wide Web Consortium home page

<http://www.w3.org>

Current custodians of Web information

Chronology of the World Wide Web @

<http://www.w3.org:80/pub/WWW/History.html>

Short history of hypertext

Leap out to <http://www.w3.org:80/pub/History>



# WHAT IS THE WORLD WIDE WEB?

Conceived as a seamless world

Objective:

ALL information, from any source can be accessed in a consistent and simple way

Universal readership

Is the World Wide Web the first try?

Before W3, Gopher was the tool!

## Not as exciting

Notes

Even with gopher (contrasted later) it was almost impossible to achieve universal readership, one of the goals of the Internet. For example, to find some information at CERN (the original development site of W3) a typical user would be located at one of a number of different terminals connected to a number of different computers, using a number of different programs to access the data located at CERN. Unless CERN and the USER agreed ahead of time how this would get done, we could reasonably expect that no data would ever be exchanged.

# Who did it?

Distributed, hypermedia information system

Created by CERN (the European Laboratory for Particle Physics)

Popularized by the many graphical front-ends

Web browsers

Mosaic browsers).

Tim Berners-Lee credited with vision /  
development

CERN initiative started at <http://www.cern.ch>

Now has many, many participants and  
contributors.

# How Does the Web Function?

Universe of network-accessible information

Storehouse of human knowledge

What makes it all work?

A body of software

Set of protocols and conventions

Hypertext and multimedia (hypermedia)

Distributed media

Resides on many computers

Supports hypertext links in documents

Allow movement from document to document  
effortlessly

Document links -- home system or another Web system

# More on How!...

Thousands of host computers:  
Running Web server software

Millions of other computers (probably PCs)  
Running Web browsers

All connected, worldwide, by the Internet.

Any modern browser can get to any server  
(AS/400)

HTML Web documents requested by clients  
delivered from servers

# What are the protocols?

Servers and browsers use TCP/IP base protocol

--

HTTP (hypertext transfer protocol)

Evolving protocol - Netscape the de facto leader

HTTP enables object-oriented hypertext and multimedia operations

Over great distances and at high speeds

Evolution of protocol under control of the World Wide Web Consortium

<http://www.w3.org>.

# What is the W3C?

Consortium exists to realize WWW full potential

Works with the global community

End Products:

Specifications

Reference software

Funded by industrial members

Products have been freely available to all

## Notes:

The Consortium is run by MIT LCS (Massachusetts Institute of Technology - Laboratory for Computer Science) and by INRIA Institut National De Recherche En Informatique Et EN Automatique --- The French National Institute for Research in Computer Science and Control), in collaboration with CERN where the web originated.

The Web part of the World Wide Web describes the appearance of the access trail you travel during a typical session of browsing the net. For example, using a favorite Web browser, a user starts weaving a web by viewing one document commonly referred to as a Web document or Web page. It may be somebody's or some firm's home page or another page linked to the home page. That page could, in turn, contain hyperlinks that point to other pages. These other pages can be from the same Web server or from an entirely different Web site. This new page can also contain hyperlinks to one or more additional Web sites.

After only a few minutes of following these links, the user has created a web-like trail. The W3 principle of universal readership is that once information is available, it should be accessible from any type of computer, in any country, and an (authorized by the author) person should only have to use one simple program to access it. This is now the case with the World Wide Web. In practice the web hangs on a number of essential concepts. Though not the most important, the most famous concept is that of hypertext and hypertext markup language (html) documents.

Hypertext is text with links. Hypertext is not a new idea: in fact, when you read a book there are links between references, footnotes, and between the table of contents or index and the text. If you include bibliographies which refer to other books and papers, text is in fact already full of references. With hypertext, the computer makes following such references as easy as turning the page.

This means that the reader can escape from the sequential organization of the pages to pursue a thread of his or her own. This makes hypertext an incredibly powerful tool for learning. Hypertext authors design their material to make it open to active exploration, and in doing so communicate their information and ideas more effectively.

W3 uses hypertext as the method of presentation, although this does not necessarily require that authors write hypertext links into every document or object type. In W3, links can lead from all or part of a document to all or part of another document. Documents need not be text, however: they can be graphics, movies and sound, so the term hypermedia, meaning multimedia hypertext applied equally well to W3.

# **HTML DOCUMENTS - THE BASIC BUILDING BLOCKS**

HyperText Markup Language--HTML

Many Education sources right on the Internet

HTML Primer at

National Center for SuperComputing Applications

<http://www.ncsa.uiuc.edu:80/General/Internet/WWW/HTMLPrimer.html>

Required Reading for AS/400 buffs to become Web buffs

Term document is used with html

General format

Means of creation and storage for html

HTML objects though stored as documents are much more than plain text

Java Programs can be served from the HTML documents



## Notes:

However, the basic building block for all html documents is plain text (aka ASCII text). These can be created using any PC editor such as DOS EDIT or IBM s E editor... even SEU in a source file.. They can also be built WordProcessors such as WordPerfect 7 or with Web Authoring tools like Hot Dog or Digital Chisel or with UNIX editors such as Emacs or vi, or BBEdit on the Macintosh or Notepad on a Windows machine. For the daring at heart, you can actually use a word processor to build plain text files as long as you remember to save the file as ASCII text when you are finished. Along with the plain text which will be displayed, html constructs such as tags and delimiters are also typed right along with the text to form a complete html document.

In practical terms, HTML is a collection of platform-independent styles (indicated by markup tags) that define the various components of a World Wide Web document. The original HTML was invented by Tim Berners-Lee while he was working at CERN, the European Laboratory for Particle Physics in Geneva, and the home of the World Wide Web.

### HTML Editors

Some WYSIWYG editors are available (e.g., Digital Chisel, which is available for several platforms or Adobe PageMill for Macintoshes - See Cahapter 13). These make your html document creation work much more simple than having to know all of the various html tags and links. It is probably a good idea to find an HTML editor rather than use the brute force method of supplying your own tags and constructs. However, it is useful to understand the underpinnings of html in order to produce it more effectively. If you ever plan to be an Internet aficionado, you are not going to do it by hiding from the html language. Just as AS/400 CASE tools and program generators did not do away with the need for good old RPG programming on the AS/400, you will never reach maximum effectiveness in html creation without actually learning it well.

### Getting Your Files on a Server

More than likely, the tool you select to build html will operate on a PC today. Conceivably, you can use SEU but this is the brute force method. SEU documnts however can be hosted directly without beig moved to folders or IFS files. The PC is the right editing tool. But once you get the html documents built, it would be nice to test them. to see how they function. Though you can get the same look and feel by testing with your browser against the local PC file, there is more of a sense of completion when you load the documents onto the http server and access them over the intranet with a Web browser.

More than likely, it will not be the AS/400 technician who designs the Web documents but you will have a role in making sure they get loaded correctly and function properly when accessed. However, since HTML does have object programming characteristics and can be laoded with java executable code, you can bet your help will be needed along the way. The V3R2 http documentation gives specific instructions on how to move your html documents to the http server and to enable them for access.

# Using HTML

HTML is a derivative of SGML  
(Standard Graphical Markup Language)

Generically called markup language or a tag language

Markup/Tag languages depend on the viewer

The browser or the printer function does the  
formatting

Inside a markup language document is ugly vs. plain  
text

Embedded instructions tell the formatter what to do  
(Not how to do it)

Included object references controlled by the formatter  
whether text or graphics or images

Thus an html document looks different depending on  
the browser

# HTML Tags

Tags or instructions provided for every formatting action

Not specific like WP (where FONTS and COLORS and STYLES are specified)

TAG languages are much more generic

No specific spacing or margins or justification

You just describe the type of action

The browser or client print function does the formatting.

# HTML Elements

Element is fundamental structure component

Examples of elements are:

Heads

Tables

Paragraphs

Lists.

Elements defined using HTML tags

Elements can contain plain text, other elements, or both

# Making the HTML Tags

Tags are used as the instructions for the browser

HTML tags consist of the following

A left angle bracket ( < ),

A tag name

A right angle bracket ( > )

Introduces clutter in the actual text document

Tags are usually paired to start and end the tag instruction

(e.g., <H1> and </H1> ).

First H1 would appear at the beginning of a block of text

Second H1 would appear at the end of the affected block.

End HTML tags looks just like start tags except

A slash (/) must precedes the text within the brackets

<u>Tag Instruction</u>	<u>Description</u>
<html>	Begin and end tag denoting html document encoding
<TITLE>	Begin and end tag for a page title
</head>	Begin and end tag for the head section of document
<body>	Begin and end tag for body of document
<Hy>	Begin and end tag for a specific level of heading for text (y= 1 - 6)
<UL>	Begin and end of an unordered (not numbered) list of elements
<LI>	Begin and end List Instruction for a particular element of a list
<P>	Begin and end designator for a paragraph

## . A sample of HTML tags

*Some elements may include additional information that is included inside the start tag. Although, you do not have direct control over placement of text and images, you can specify the alignment of images (top, middle, or bottom) by including the appropriate attribute with the image source HTML code. It is up to the browser where the images actually appear. This is why the statement All browsers are not created equal has great applicability*

*For AS/400 CL programmers, we will be glad to know that HTML is not case sensitive. For example <head> is equivalent to <HEAD> or <HeAd> . There are some exceptions to this rule as you will see as you pursue your degree in html. Another point on the equality of browsers is that not all tags are supported by all World Wide Web browsers. Normally, the essence of the document is maintained in well designed pages for if the browser does not support a tag, it usually just ignores it.*

## A Bare Bones HTML Document

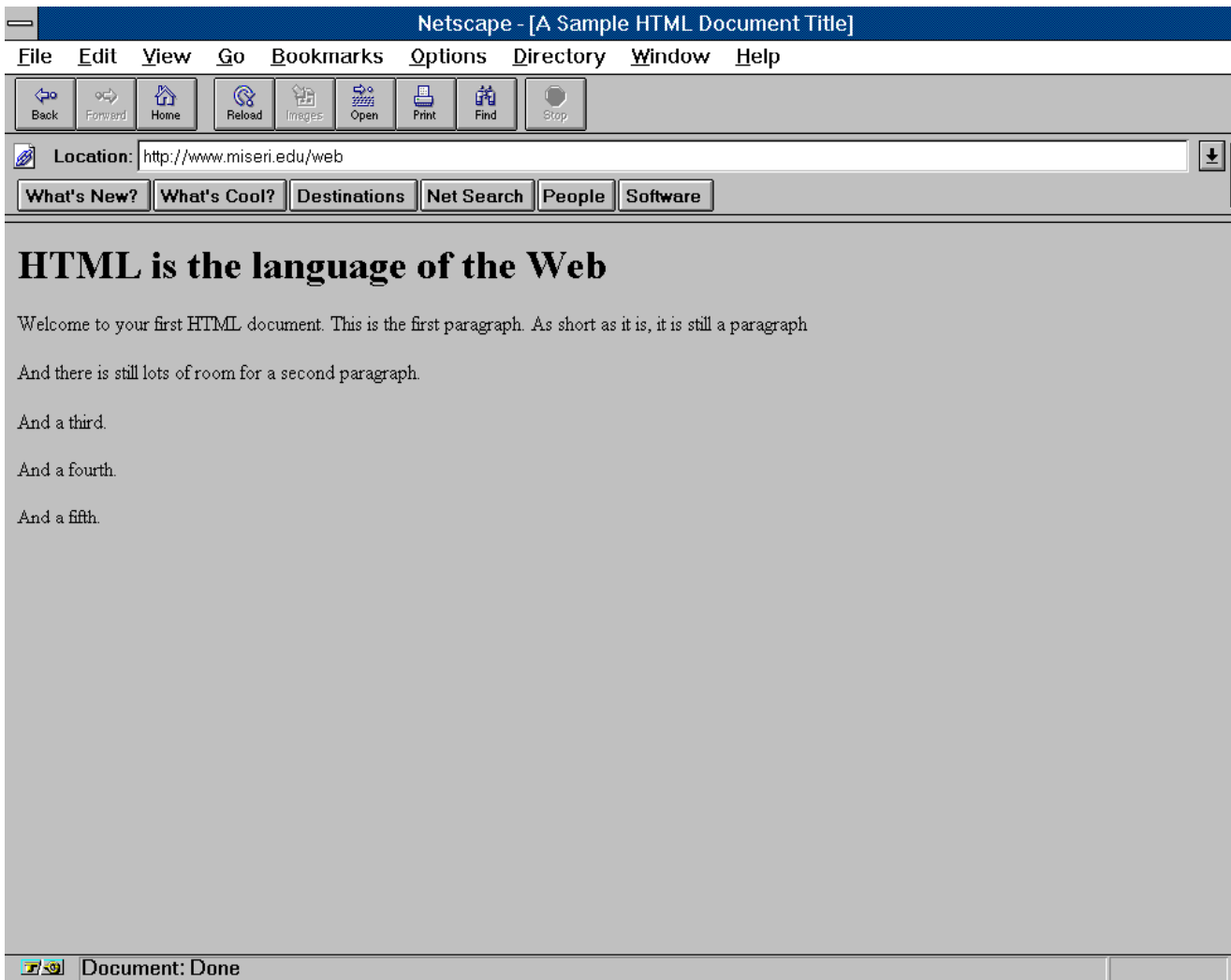
```
<html>
<head>
  <TITLE>A Sample HTML Document
Title</TITLE>
</head>
<body>
  <H1>HTML Is The Language Of The Web</H1>
  <P>Welcome to your first HTML.document.
  This is the first paragraph. As short as it is,
  it is still a paragraph!</P>
  <P>And there is still room for a second
paragraph.</P>
  <P>And a third.</P>
  <P>And a fourth.</P>
  <P>And a fifth.</P>
</body>
</html>
```

Notes:

Depending on the browser that is used, shortcuts can be taken in HTML. These shortcuts are not recommended. Just as you could get away with less CL programming if you accept all of the defaults, it is more appropriate for future maintenance to explicitly note parameter values. For no other reason, it makes the code easier to read, although the defaults may also change over time. Therefore, every HTML document should contain certain standard HTML tags. Each HTML document consists of head and body text. The head text contains the title, and the body contains the actual text that make up the page such as paragraphs, lists, and other elements. Browsers expect specific information in specific areas because they are programmed according to HTML and SGML standard specifications. The less conforming you are the less standard will be your documents when displayed by different browsers. The standard set of required elements are shown in this sample minimum HTML document:

As you may have discerned from the bare bones document, the required elements are the `<html>`, `<head>`, `<title>`, and `<body>` tags. Remember that they are always given in pairs, so do not forget their corresponding end tags. A standard suggestion for building Web page documents parallels the way many AS/400 programmers build new programs. They find old ones which they have been using as templates. that include all of the essential ingredients and add from there. DO the same with HTML. Since these tags are required in each file, you might want to create a template file with them.. You might want to test your HTML documents with multiple browsers. Whereas a powerful browser may format your HTML file correctly even if these tags are not included, a weaker browser may not. Your best bet is to make sure to include them.)





**How it looks!**

# Linking

Greatest power of the HTML language

Link text and/or image to another document or section

Browser highlights noticeably the link text

--- specific color etc. to indicate that it is a hypertext link.

Just one HTML hypertext-related tag. --

<A stands for anchor

# Using The Anchor

To Anchor a link address in your document

1. Start the anchor with <A
2. Make sure you leave a space after the <A
3. Specify the document to which you are linking
4. Use the parameter HREF=" filename "
5. Follow this with a closing right angle bracket ( > )
6. Type the text that will be visible / highlighted  
(serves as the actual hypertext link in current html)
7. Follow this text by the ending anchor tag: </A>
8. No space is needed before the end anchor tag)

# Sample Links

The following are a sample hypertext references

Local file called BASEBALL.html :

1. `<A HREF="PLAYERS.html">Baseball  
Players</A>`

Remote File from the www.baseball.org machine in the  
teams directory

2. `<A HREF= http://www.baseball.org/teams/PLAYERS.html">Baseball Players</A>`

`<A HREF=`

`http://www.baseball.org/teams/PLAYERS.html"  
>Baseball Players</A>`

Notes

Entry 1 above makes the word Baseball Players the hyperlink to the document PLAYERS.html , which is in the same directory as the first document. Entry 2 takes the same document and puts it in the teams directory of the www host computer at the baseball.org domain. OK, maybe we should make baseball a COM instead of an ORG? But it does not change this logic

# Uniform Resource Locators (URL)

Standard Form of WWW Address

Represents a Function and an address

URLs can invoke various functions

http

gopher

mailto

etc.

Examples:

1. `http://wings.buffalo.edu:80/internet/fun.html`

2.

`gopher://howdy.doody.com:7001/11/information/about-us`

3. `telnet://bison.cc.buffalo.edu`

Notes:

In order for the World Wide Web to access a wide variety of information on the Internet, a standard form of address is needed to refer to objects of different forms. This address is different than the IP address and the E-mail/Domain address previously discussed. The standard addressing scheme is called a Universal Resource Locator (URL). For those wishing to get a deeper perspective on URLs, take a Web trip to

`http://www.w3.org:80/hypertext/WWW/Addressing/URL/url-spec.txt`. This piece is written by Tim Berners-Lee, the person credited with being the father of the World Wide Web.

Above are some examples of URLs, the first of which I used as a reference to gain some of this material.

# Components of a Valid URL

## 1. The access protocol.

This is the language by which the client requests an item. This is indicated as http, gopher, news, Telnet, ftp, or something else, and is always followed by a colon (:). See Figure XXX for a reasonably complete list of the access protocols found today on the World Wide Web:

## 2. The host server.

The machine where the document resides, consists of two forward slashes (//) and a valid Internet address.

## 3. The access port.

A channel on the host computer dedicated to communicating in a certain protocol. If omitted, assumes the default for each protocol (i.e. http = 80, gopher = 70, Telnet = 23).

## 4. The path.

This is the directory in which the object resides, in UNIX syntax. Some protocols add other information into the path that doesn't exactly equate to directories (i.e., Gopher precedes the actual directory name with a file type number).

## 5. The filename of the item itself.

If omitted, the server, if enabled will probably display a directory of items available.

<u>Access Protocol</u>	<u>Description</u>
http	Hypertext Transfer Protocol
ftp	File Transfer protocol
gopher	The Gopher protocol
mailto	Electronic mail address
mid	Message id's for electronic mail
cid	Content identifiers for MIME body part
news	Usenet news
nntp	Usenet news for local NNTP access only
telnet	Interactive telnet session
rlogin	rlogin session
tn3270	Telnet via IBM 3270 protocol
tn5250	Telnet via 5250 (AS/400) protocol

## WWW Access Protocols

# Web Forms: CGI Facilities

HTML Document Interacts with Host Programs

Common Gateway Interface (CGI)

Some Elements Involved

Form

Action

Input

Name

Value

Size

Action can also be mailto:

Sample HTML Form Document Below

Sample Document Screens & E-Mail Action



Notes:

## URLs and Forms (CGI)

So, what exactly is a URL? Think of it as a networked extension of the standard filename concept: Using a URL, not only can you point to a file in a directory, but that file and that directory can exist on any machine on the network. It can also be served via any of several different tcp/ip applications (http, telnet etc.). Actually, the URL does not necessarily have to point to a file. It can, for example, point to objects other than files such as queries, documents stored deep within databases, or the results of a finger application or an Archie command, among other things. The URL concept is really pretty simple ( if it s out there, you can point at it ).

Remember in this context we are discussing the World Wide Web and http servers and Web browsers. Where do non http URLs fit in? you may ask. Why are these topics included with WWW stuff? What does FTP have to do with the Web ..or Telnet, or E-mail? The answer lies in the fact that Web browsers are very powerful tools. If we consider a Web browser to be like an interpretive programming language such as BASIC, we can gain a better appreciation for its power and marvelous facility and utility.

If a Web browser serves the role of Interpretive language, then the program source would be the html document. The html document comes down from whichever Web server is behind the last hypertext link that we have chosen. Phwoosh! From some system in cyberspace, we have an html document sitting in the memory of our PC under the control of our Web browser. You know what a Web page looks like by now. But to demonstrate my point, let us all look back at the midrange computing home page. (Formerly [www.as400.com](http://www.as400.com); but now [www.midrangecomputing.com](http://www.midrangecomputing.com))

Notice the button at the top that says feedback. You cannot necessarily tell from the figure, but the button that says Feedback has a hypertextlink behind it. It actually references a document named <http://www.as400.com:80/central/feedback.htm>. After you press the button, the feedback.htm Web Page is brought down from the server, interpreted and displayed. See Figure (reference <http://www.as400.com:80/central/feedback.htm> ) The underlying html document which caused the browser to display this panel is also shown in Figure XXXXX HTMLDOC for your review.

Looking at this document as a program, and understanding that the program is activated when it is displayed by the Web browser, we can see there are several options that may be taken with this panel. Since we are demonstrating the use of non http URLs, let us look for one in the html document itself. Note on line 22, the URL [mailto: .is](mailto:Webmaster@as400.com) clearly visible in the document and it is not an http URL. This statement is actually intuitive when we read it. If executed (if selected by the mouse), it will mail a message to [Webmaster@as400.com](mailto:Webmaster@as400.com).

Said the long way, when invoked by you pressing the E-mail hypertext link in the feedback document, your Web browser will read this <mailto:> and will invoke the E-Mail application code that is linked with your browser (your normal POP3 mail client). Just as your POP3 Mail comes alive and asks for your password when you invoke it by mouse click from your Windows Internet Application Group (It already knows your User-id), so does the html invoked <mailto:> function. See figure (MAILLOGIN below) You specify the same POP3 Mail password as you always do. You press the ENTER key and out comes a Mail CREATE screen pre-addressed to Midrange Computing ---[Webmaster@as400.com](mailto:Webmaster@as400.com) (see Figure MAILMESSAGE below).

You finish the process by completing your message and press SEND and the message is sent to Midrange Computing. You will then be brought back to your E-Mail application from which you can perform more E-Mail functions if you choose. However, once you close the E-Mail application, you will be brought back to your browser session displaying the Feedback screen once again.

# Midrange Computing Feedback HTML Document

<HTML>

<HEAD><TITLE>Feedback about as400.com</TITLE></HEAD>

<BODY BGCOLOR="#FFFFFF" TOPMARGIN="0">

<NOBR>

<IMG SRC="/imageuse/ascomlogo.gif" ALIGN=Middle  
ALT="Midrange Computing's as400.com">

<A HREF="/central/search.htm">

<IMG SRC="/imageuse/search2.gif" ALT="Search"  
ALIGN=Middle BORDER=0></A>

<A HREF="/central/feedback.htm">

<IMG SRC="/imageuse/feedback.gif" ALT="Feedback"  
ALIGN=Middle BORDER=0></A>

<A HREF="/order/index.htm">

<IMG SRC="/imageuse/order.gif" ALT="Order"  
ALIGN=Middle BORDER=0></A>

</NOBR><BR>

<H2>Feedback about as400.com</H2>

<HR>

We welcome your feedback about our site. If you have something you think we should change, or something new that would help you, let us know!<P>

You can either <a href="mailto:webmaster@as400.com">E-mail</a>

The webmaster, or fill in the form below:<P>

<FORM ACTION="/cgi-shl/feedback.pl" METHOD="POST">

<PRE>

Name: <INPUT TYPE="text" NAME="name" SIZE=50>

E-mail: <INPUT TYPE="text" NAME="email" SIZE=50>

Suggestion/Comment: <TEXTAREA NAME="text" ROWS=5  
COLS=70></TEXTAREA>

<INPUT TYPE="SUBMIT" VALUE="Submit"> <INPUT TYPE="RESET"  
VALUE="Clear">

</PRE>

</FORM>

<HR>

<CENTER>

<H6>Copyright &copy; 1996 Midrange Computing<P>

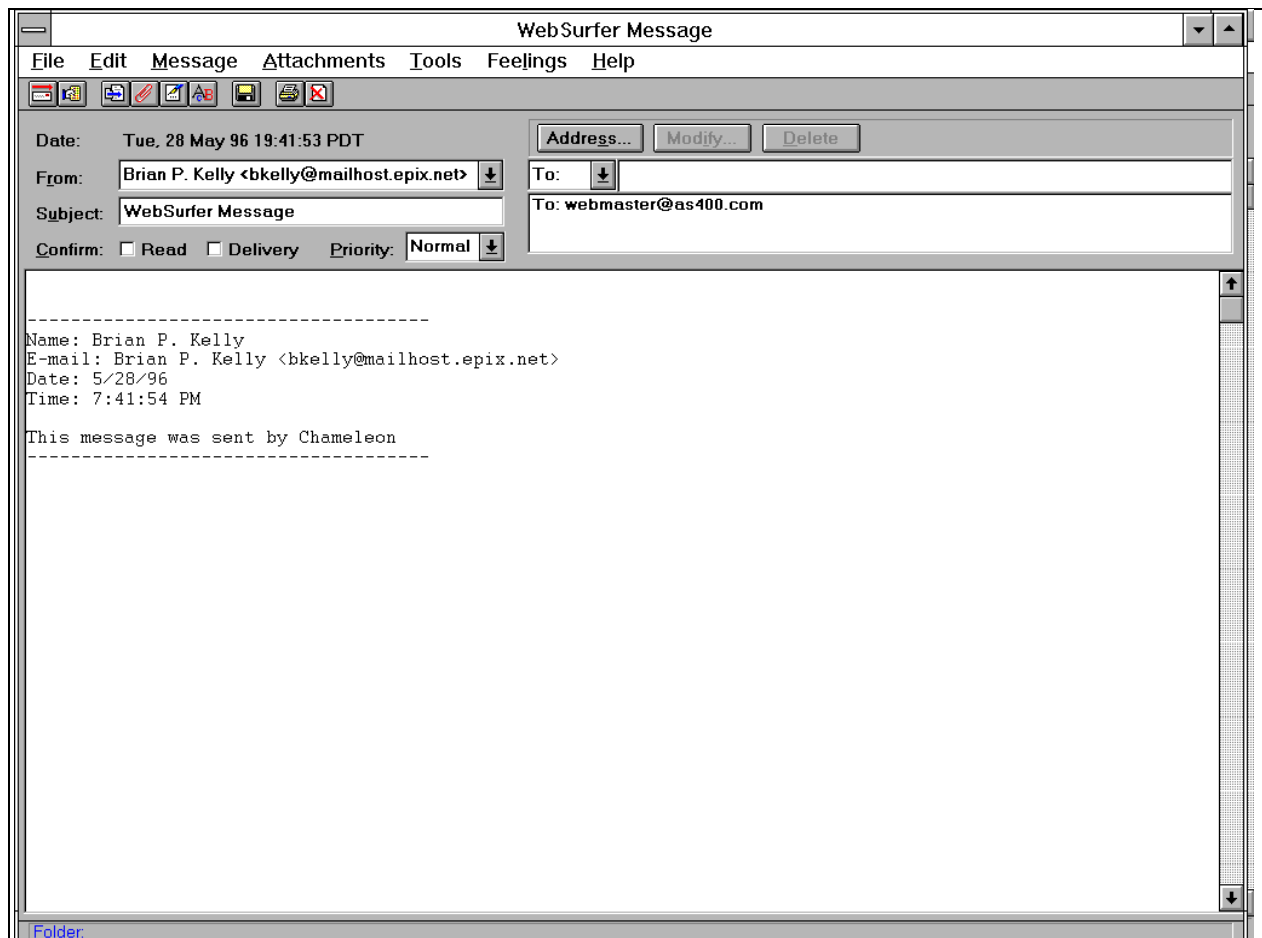
IBM&reg; and AS/400&reg; are registered trademarks of IBM</H6><P>

</CENTER>

<CENTER><H6>Last Modified: Friday, May 17, 1996 14:00:18</H6></CENTER>

</BODY>

</HTML>



Mail Login Screen displayed when the E-Mail hypertext link is selected

## Pre-Addressed E-Mail for Midrange Computing from Feedback application

### Notes

The power of the URL, as we have already witnessed with this simple examples is that you can spring into a different TCP/IP application from your Web browser merely by having the code included in the Web document. Let us walk through one more example verbally before we give a little more detail to the makeup of specific URLs..

One of the nice things about the Web documents today, is that they are written to expect that you have a full complement of TCP/IP applications in your Interent software package. This certainly comes in handy when building seamless html applications. Suppose, we wanted to allow for a Web browser user, when connected to our Web server, to bring some code or some catalog information down directly to their PC. To perform this function, we might construct a series of html pages/documents that would guide the Web visitor through a selection process so that they had requested the correct item for download. We might even model this scenario after the approach that IBM has used for downloading CA/400 for Windows over the Internet. After all, when we put up our http servers, we will have the option of enabling applications such as these from our own AS/400 Web servers.

```
<A HREF="http://205.217.130.11/client/cawin95/beta/rc3_1.exe"><IMG  
SRC="../MBUT1.GIF">
```

```
Download</A> <I><b>rc3_1.exe</b></I>.
```

You may remember that one of the first things IBM wanted you to do in the April - June timeframe was to download a copy of CA/400 for Windows 95. Since Web browsers are not built for downloads per se, IBM knew the best way to attack this was with some well placed URLs in their Web documents.

So, if you clicked, like I clicked, and you waited like I waited, to get your copy of CA/400 for Windows 95 from IBM, eventually, a URL was selected by you which your browser used to perform the download. Prior to this, I had the opportunity, and you had the opportunity to pick one of eleven files (representing diskettes) to be transferred to your hard disk. We did all of this setup work this with our Web browsers. If you remember, IBM walked us through six different pages to get to the download screen. and cautioned us to set our browsers to copy to disk along the way.

The final download screen contained some text and 11 buttons which we could select from an html document stored at the time at <http://205.217.130.19:80/client/cawin95/beta/402down.htm>. If you have the same logic sense as I, you would have expected to find an FTP URL embedded in this HTML document - one for each specific file. Just as I looked for the mailto: URL in the Midrange Computing example, I looked for the ftp:// URL in IBM's CA/400 download html document. When I did not find ftp:// references, I looked for the executable names to see what URL actually would be used to bring them down. To my surprise, I found an http:// URL built in the same fashion that one would code a reference to an html document. However, the document was not an html document, it was an executable (.exe) file. The two lines of html code used to bring down one of these files are included below:

When I clicked on the button with my Web Browser (I was using Chameleon WebSurfer at the time), the browser asked me if I wanted to SAVE TO DISK, CONFIGURE A VIEWER, or CANCEL. You see, the browser was smart enough to know that it did not have an html document (it was an executable -.exe) that it could deliver for my browsing pleasure . I selected SAVE TO DISK as all who actually received the code would have done.

## ***LEARNING ABOUT URLS AND OTHER HTML TOPICS***

*For an HTML education and some terrific perspectives, you ll find a wealth of information stemming from the links from this page:*

<http://www.usd.edu:80/~emosterd/HTML.html>

4. USD's Simple HTML Guide

5. NCSA's HTML Primer

6. General information about HTML

7. HTML Quick Reference Guide

8. URL Information

9. HTML 3.0 Examples: Banners, Toolbars, and Footnotes

10. HTML DTD Reference

11. HTML Reference Manual

Notes:

The lesson for me is that URLs are even more powerful than I had originally fathomed. Extensions are continually being implemented to HTML as well as expanded URLs and the newer your browser is, the better it will be able to deal with the nuances that continually emerge. As we have seen, http URLs can perform downloading quite handily for executables, but this is not always the case for all object types. And so, whenever there is openness and there is choice, the learning mission is more difficult. To help you keep up with this if you so desire, I would strongly suggest a trip out to <http://www.usd.edu:80/~emosterd/HTML.html>

The purpose of the referenced page above is to give people easy access to HTML/JAVA coding and script information. It was very hard for the page developer, who to me remains unknown to find all the information in one place so he / she decided to make this page specifically for those who need some thing for reference. Take a trip. You will find these items useful!

Just as we came out of the feedback document above to invoke the E-Mail SEND operation, this time we came out of an HTML document to invoke http:// for downloading CA/400. We never had to leave the browser application. We never had to point and click on an icon in another Windows applicaiton.. Consider the FTP work that was saved. For example, we did not have to remembere the site name and the dirctory name and the file name. It was all integrated for us. This is another parrt of the power of URLs in Web documents. There is no reason to stop at just http:// and Mail. There is no reason why we could not build html documents to invoke FTP or Telnet as an option or to enable gopher or even a News application. (News would be more valuable if the AS/400 were able to serve - but everything in its time). The sky is the limit? Almost! When we consider that we can now serve these applicaitons with CGI (and Java, in the AS/400 future), it is easy to conclude that the Web browser will take on an ever increasing role in the future giving the Web almost limitless, immense potential.

Before we move from URLs to our next topical area, to help us lock in our URL perspective, we will now examine the format of some of the major URLs FTP, Gopher, News, http, mailto, as well as partial URLs which we may use or find in html documents built for our AS/400 Web server or brought from other servers to our PC browser. This information is not detailed enough to allow us to become experts in coding URLs in our HTML documents, but it is enough to help us gain an appreciation for the full learning task at hand and the ultimate implementation effort using these tools..

# *FTP URLS*

The ftp: prefix indicates that the FTP protocol is used

Defined in the FTP RFC959 or any successor.RFC  
which changes its definition

The port number, as in all URLs, gives FTP Server a  
port

Can take default port

User name and password must be provided

Proper specific syntax

The default user when none supplied is "anonymous"

Password will be the user's Internet-style mail address .

# FTP URL Required Information

Many pieces of information must be supplied  
via html document parameters

E.G.

FTP protocol allows

CWD commands (change working directory)

TYPE command prior to FTP service commands

Service Commands such as RETR (retrieve) or NLIST

These actually access a file.

Format of the FTP arguments of any CWD command  
must be specified exactly

--- include / slashes as required.

If you're so inclined....FTP



# Finding documents using FTP URLS

Take a document named `buzz.txt`

Say it sits on an anonymous FTP server called  
`ftp.site.com`

The directory is *public/files*.

URL therefore is `ftp://ftp.site.com/public/files/buzz.txt`.

The top level directory of this FTP server is simply  
*ftp://ftp.site.com/*.

The public directory of this FTP server is  
*ftp://ftp.site.com/public*.

# ***GOPHER URLS***

Gopher URLs more complicated than html file URLs

---- `file://ftp.site.com/public/files/file.htm`

Gopher trickier with Local File servers

To visit a particular Gopher server such as:

*gopher.site.com*

Use *gopher://gopher.site.com/*.

Some Gopher servers may reside on unusual network ports on their host machines

Default Gopher port number is 70

Sample Gopher URL

*gopher://gopher.band.edu:1234/*

Notes:

Although we probably will not ever build a gopher server because of the WEB, stranger things have happened. Gopher may make an unexpected comeback. Regardless, it will help us as we examine html documents from other sites, to understand or at least recognize gopher functions and formats. It is always best to go first with the standards. but we cannot make others do the same However, if you know that the Gopher server on the machine *gopher.band.edu* is on port 1234 instead of port 70, then the corresponding URL would be as above:

# **Newsreaders are a little more different.**

## *NEWS URLS*

Usenet newsgroup for *rec.sewing*

URL is simply: *news:rec.sewing*.

*Notes:*

*When a news: URL is quoted, the assumption is that the reader will fetch the article or group from his or her local news host. News host names therefore are NOT part of news URLs.*

# HTTP

HTTP stands for Hypertext Transport Protocol

HTTP servers are used to serve hypertext documents

HTTP is an extremely low-overhead protocol

HTTP does not provide navigation since it can be embedded in documents directly

HTTP doesn't have to support full navigation features like the FTP and Gopher

# HTTP URLs

Assume a file called *buzz.html* on HTTP server *www.site.com*

Sitting in directory */public/files*.

This corresponds to the following URL:

*http://www.site.com/public/files/buzz.html*

The default HTTP network port is 80.

When an HTTP server resides on a different network port

(Port 1234 on *www.site.com*, for example)

URL becomes:

*http://www.site.com:1234/public/files/buzz.html*.

# ***MAILTO URLS***

Check out Midrange Computing Example Above

mailto: URL is a very powerful operator

Yet it is very easy to use

Allows a URL to specify an E-Mail address  
(Internet standard RFC822 addr-spec mail address  
format)

Feedback note generated by the user comes to the  
party cited in the html mailto URL..

*EASY WAY TO GET FEED BACK W/O WRITING CGI PROGRAMS  
(CAN ALSO USE FORMS WITH MAIL)*

# ***PARTIAL URLS***

Used when within a document

e.g. *http://www.site.com/public/onefile.html*

*Do not have to use the full URL in the HTML document*

Can use a partial, or relative, URL

This points to another file  
in the same directory  
on the same machine  
by the same server software

e.g. If file *anotherfile.html*, exists in same directory  
Then *anotherfile.html* is a valid partial URL at that point

Works much the same way as the PC DOS directory reference  
current directory path does not have to be repeated  
for files referenced within that directory..

# USING OTHER URLS

Notes:

Many other URLs are possible, but this little exposé covers the most common types you might have to construct by hand. You may notice when examining various html documents that, at the top of each browser document viewing window is a text field called Document URL. If you watch this window as you navigate through information on the network, you can observe how URLs are put together for many different types of information.

May your references always be clear and resolvable.

## *WATCH YOUR URLS*

When you build your own Web documents, you will be tempted to point to other reference sources so that you do not have to keep all of the detail about a given topical area on your own server. There are many reasons for this since more and more information on the Web is copyrighted and you have no right to store it on your system, but also, it will present a drag on your system if the world is coming to you for information easily achieved elsewhere. Unless you do this for exposure, it will probably upset your major constituents to get poor response from your site.

But it is not all gain to use URLs to send your visitors off to the Web unescorted. The Web is changing daily. Sites that are here today are literally gone tomorrow. Most try to maintain a reference when they move so you can find them but such references do not last forever. The message is that if you reference other links from your pages, you must assure that your links are valid on a somewhat frequent basis (probably at least once a month). It is easy to get caught with your links down, but it is embarrassing and does not serve you well.

When I was originally writing my book, I found some great links for you all to surf out to so you could learn more and more about the Web, html, URLs etc. One of these references was the original http development site at CERN. When my book editor Anita Craig sent back this chapter over FTP for me to make (one small change @#\$\$%), I tested this link and got the following message on my browser:

The link you have just followed is an old one, pointing to a "info.cern.ch". All documents originally maintained by CERN on info.cern.ch are now maintained on "www.w3.org" by the W3 Consortium. If you have troubles accessing www.w3.org then mail webmaster@w3.org. For now, you can jump on to the document in its new home but this forwarding message will not be maintained indefinitely. This change is being implemented so that Web software does not eternally contain an obsolete geographical reference, and so that CERN's name server does not eternally contain an off-site pointer.

Brian Carpenter, CERN

You can learn lots by taking the links on <http://www.w3.org>. Of course, you can always just plain surf looking for specific topical information via the many search engines available for your use:



# COMPARING THE WEB TO GOPHER

In many ways, the Web is like Gopher

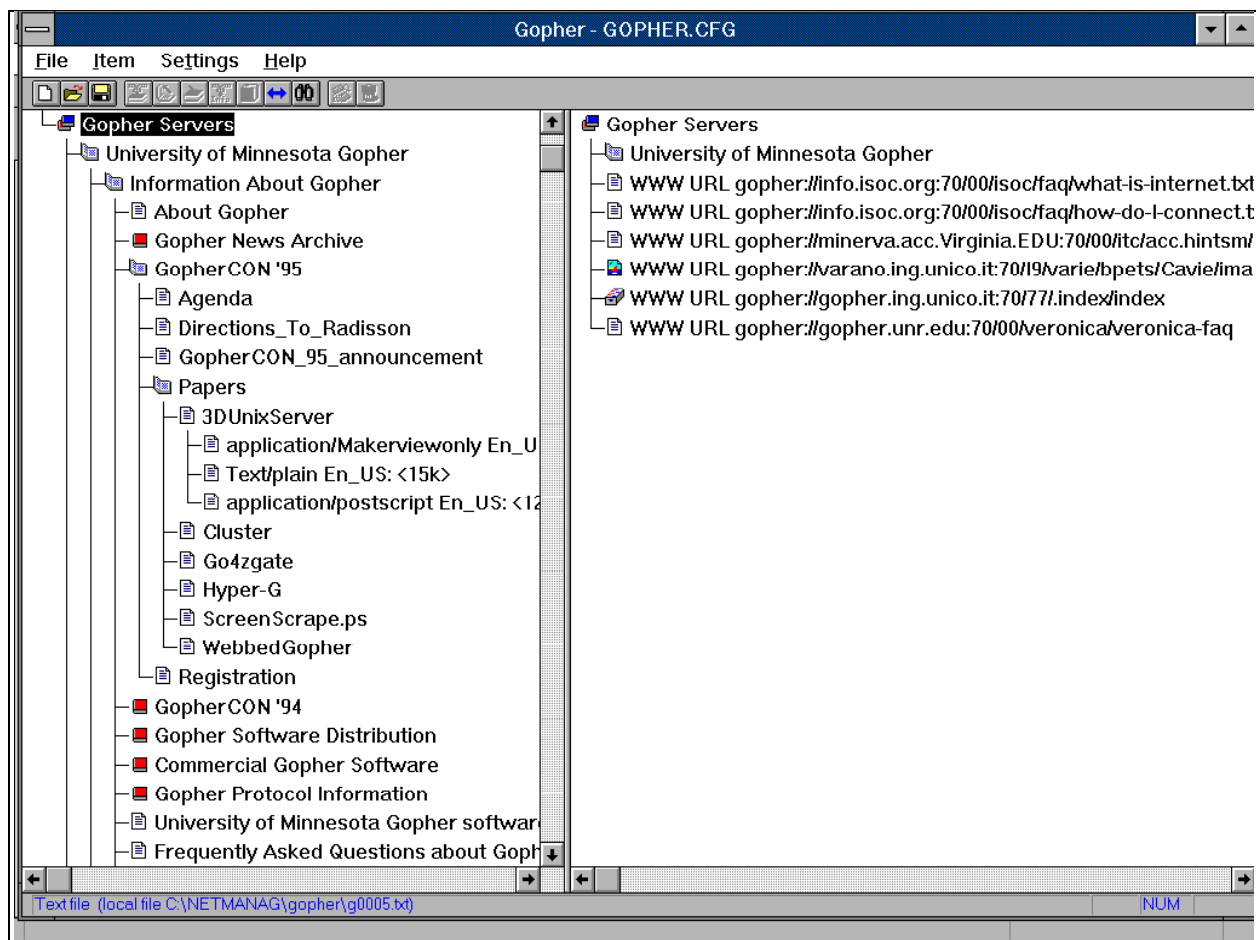
Both have good search engines and research facilities

Veronica Server provides searching facilities for Gopher Clients

As of January 1995, the Veronica records indicate that there were 5057 gopher servers indexed.

Gopher is Menu Driven, text oriented

Instead of Menus, web is document (html) & multimedia oriented



## SEARCH ENGINES AND INDICES

Publicise your existence on the Web

Tell somebody your stuff is out there

Give them some key words to use  
so that folks can find your stuff.

Use a Central Broker of Contact them yourself

Make it integral part of your Internet project

Below is a list of indices you want to be a part of.

**The Otis Index** at [http://www.interlog.com:80/~gordo/otis\\_pubsearch.html](http://www.interlog.com:80/~gordo/otis_pubsearch.html) provides links to these popular search engines:

12. Lycos
13. Yahoo
14. InfoSeek
15. People
16. Four 11
17. World Wide WebCrawler
18. ArchiePlex

**The NetManage Corporation**, makers of Chameleon products points to the following search engines and more from their site at <http://www.netmanage.com:80/netmanage/search.html>

19. Infoseek Net Search
20. Alta Vista
21. BOBAWORLD
22. CUSI
23. Eureka
24. Infoseek Professional
25. Lycos
26. Open Text Index
27. etc.

Notes:

Right now, we are moving from building hypertext links within documents as a means of Web navigation to the method we all use when there are no links around for what we want. While hypertext is a powerful tool for finding information that is related to an area under study within a document, it cannot cope with large, amorphous, independent masses of data. For these cases where we are performing raw research against huge independent databases from different sites, computer-generated indices allow the user to search for their desired information by providing textual input to a search engine such as Lycos or Yahoo.

The indexes would have no value without these search engines and therefore we can expect to find behind each index a corresponding search engine. Many different search engines with different capabilities exist on different servers across the World Wide Web. However, they are all used in exactly the same simple way. You type in some text and you get back a hypertext answer that offers a number of suggestions in summary form. You can either take one of the links in the summary, ask the search engine to go get more of the same, or refine your search with better input criteria. Eventually, in most cases, you will find more of what you need than you thought could ever have been written.

Nobody regulates the search engines per se, or the Internet as an entity. Anybody can set up a search facility and more and actually more organizations are jumping on the bandwagon. The lure of advertising revenue provided by the guarantee of numerous web surfers stopping off at your search engine to find their information has actually helped create some terrific search facilities. Although there is software to block the little ads we must endure when we use these facilities, my concern is that if we take away the incentive for well resourced organizations to invest in the utility of the Internet, it will no longer be an open highway for all people but will become a toll road only for the haves who can afford the toll.

Original Web planners wanted the Web to scale without the need for a large central computer complex or central governing body. To allow it to scale, it was designed without any centralized facility. Therefore, anyone can publish information, and anyone (authorized by the publisher) can read it. And anyone can index it and make it available for others. There is no central control. To publish data, you place it on your AS/400 Web server; to read data, you use a Web browser as a client. All the clients and all the servers are connected to each other by the Internet. The W3 protocols and other standard protocols allow all clients to communicate with all servers.

# Format Negotiation

Finding does not mean usability

Many different and competing formats

(tiff, jpeg, bmp, text, rich text, etc.)

Many and all are used on different computing systems

Even more, newer formats in the future

How can these disparate formats be dealt with effectively

# Format Negotiation

**Browsers have a solution**

## Notes:

Format problems will persist in the future while even newer formats are made available. With all of these formats being tossed from various servers to various browsers, how can the Web be assured of being able to handle the type of data being delivered from disparate servers to accessing clients.

Format negotiation is the principle which is used to allow the Web to distance itself from the technical and political battles of data formats. Since computers were invented, there has been a great variety of codes used to represent information. It has never been possible to pick one as the best code. It never will. Each coding structure always has its advantages and its advocates. It has been my experience that any attempt to enforce a particular representation, such as postscript, TeX, or SGML, leads to immediate war.

To aid in solving this dilemma for the World Wide Web, http has been designed with a feature that allows a client to send a list of the representations it understands along with its request to the server. The server can then ensure that it replies in a suitable way. If the server cannot handle the request with an appropriate format, the client browser cannot gain access to the file. The browser solution for this problem has typically been to get a newer version of the browser - one that understands more and more formats.

To cope with the existing mass of graphics formats (i.e., GIF, TIFF, JPEG) this feature is a necessity. If we cannot cope with the existing formats, how can we hope to evolve enough to take advantage of all the exciting new formats yet to be invented? A spin-off of format negotiation this involves even higher-level, more specific formats for unique requirements. In certain disciplines, special data formats have been designed to handle such uncommon items as DNA codes, the spectra of stars, classical Greek, or the design of bridges. Those working in a specialized field have software that allows them not only to view this data, but to manipulate it, analyze it, and modify it. When the server and the client both understand such a high-level format, they can take advantage of it, transferring the data in a distinct way that meets the requirements. At the same time, others without the specialized software can still view the data if the server can convert it into an inferior, but still useful, form. The W3 goal of universal readership without compromising total functionality at the highest level can therefore be maintained.



# BECOMING A PART OF THE WEB - THE CLIENT SIDE

On the Client side, we need our Web browsers

But we also need some other good stuff.

Dial Internet Connection

Modem

TCP/IP Stacks & Utilities

Web Browser

Notes:

To be part of the World Wide Web as a modem client, you also need a dial Internet connection, a modem, and a set of TCP/IP utilities most often provided by your ISP. And, of course you need this piece of PC software called a Web Browser. When you begin your Web experience, your Web Connection kit provided for you with your ISP subscription will more than likely already contain a Web Browser such as Netscape or Microsoft Explorer or some other high quality browser. If not, they are easy to come by so do not lose heart. Many are available for no charge just by downloading

Of course, there is one trick. Yes, a gothcha! You must have your PC on the Web already in order to download your new browser. If this is a problem for you, chances are one of your friends will be able to get you a copy of a browser for your use. More than likely, however, you will not need your friend s services because most ISP Welcome packages already provide the browser or an opportunity to buy one very inexpensively...

When you load your browser and make your way to the Web and click on that handsome little Netscape (or other browser) icon, away you go! But where? If your Netscape icon sends you where my icon sends me, then you will be at <http://home.netscape.com>. This must be one of the most accessed home pages in existence because it draws Navigator users into Netscapes clutches and makes Bill from Redmond cry a lot.



# For Many Now, The Web is the Internet!

E-Mail, Gopher, FTP, Telnet not the kingpins anymore

The Web is likeable, for some - exciting

Always room for one more

Parochial in origin, now universal appeal

Notes:

I think that there is a small time warp separating the desires of the current age Internet buffs from their counterparts from just several years ago. Whereas the more mature Internet users grew up in a non-Web environment (and Gopher is also a reasonably new phenomenon), the tried-and-true Internet buffs of the past were the Usenet addicts. Many will, in fact, freely admit that it was the Newsreaders and the Usenet discussions that really hooked them on the Internet.

Not me. Nine million years ago (or so it seems), while I was with IBM, I hated all the nifty ways the company had set up to give me the equivalent of a gazillion In baskets. I found one In basket to be enough because it was always full. So, Usenets and bulletin boards and automatic mailers and chat sessions do not appeal to me as they might to those who never faced the IBM army of In baskets.

But I do like the Web! I sure do. My contemporaries learning the Internet, along with me seem more prone to look at the Web as the killer application that is driving millions to the Internet every month. When they get there, they may love Usenet facilities, but it is the good old Web and the opportunity to play with their Web browsers that gets them started on the journey to the Internet. and keeps tem there

When I connect with my 28.8 kbps PPP modem connection from home running through my selected ISP (EPIX - Eastern Pennsylvania Internet Exchange),, I become an entity on the Web. At work, I have an even better means of connection.. Becoming a Cybernaut is much easier from the Office where I have the use of a T1 direct connect leased line to EPIX. Therefore, when I bring up my PC, with no dialing whatsoever, and I click on my Web browser, I am right on the Web, running at T1 speed,( 1.544 Megabits per second.) It is truly an awesome adventure. Although the Internet has been around for awhile, and there are quite a few stalwarts out there fully opinionated, there is room for many more. But it is not the long-time Internet rodeo champions who bucked the system for success who are causing all of the fuss. It is you, and it is I. It is I because *I* am a recent statistic in the growing number of Internet users. It is *you* because you are more than likely either about to take the plunge or are in the same situation as I -- relatively new to the Internet.

Folks like you and I have fueled the explosive growth the past few years by our romance with Mosaic, the original graphical front-end to the Internet that presents hypertext links that help us grab a wide variety of Net resources. Even while we are still on our Mosaic honeymoon, we quickly find that these Web browsers (e.g., Mosaic, Netscape, WebSurfer). also let us get at other built-in Internet services such as E-mail and FTP very quickly and without leaving the comfort of our browsers.. Form my eyes, there is no question that the Web browser is the Internet killer application. It now accounts for 75 percent of Internet traffic.

Every time you hear the words Mosaic or Netscape, the words World Wide Web (or more simply, the Web) follow right after. The World Wide Web is the underlying framework that supports a Web browser s hypertext links. It has been around a bit longer than the browsers that

make it fly. The Web was conceived in 1991 by the European Particle Physics Laboratory (CERN) as a way to let physicists share their documentation. Parochial in origin, this concept quickly became a worldwide phenomenon. Soon after the Web was introduced, its potential was recognized by the non-AS/400-community . A few programmer types began to build a graphical browserCMosaic. Let us now take a look at how the Web and Web Browsers came into being..

# The Origin of the Web Browser - NCSA Mosaic

Browser work began as recent as 1993

Mark Andreessen & James Clark

1993 founded Mosaic Corporation

Later became Netscape Corp.

Original National Center for Supercomputing Applications (NCSA) work

Developed the first version of Mosaic (Free)

Many Browsers are still free

Designed for GUI interfaces

point-and-click orientation

hypertext navigation within documents

to/from other documents on the same system

to/from documents on systems across the world.

HTML document basis

Hand in glove with HTTP servers



# *WHAT DO BROWSERS DO?*

All Terrain Vehicle for the Information  
Superhighway

USE httpURLs to access various Internet Hosts

Request documents from http servers

Documents combine graphics, text, images and  
video in a fascinating multimedia presentation.

Text, html, graphic documents displayed on  
browser

.exe, .dbf download to SAVE, nondisplay

Text in different color is a *hypertext link*.  
Changes to another color when link actually  
taken

Back and Forward Buttons, Settings

Web Search Engines, Browser Bookmarks

Performance Enhancing Cache



Notes:

Traversing the Web is a unique experience. The National Information Initiative, which Al Gore proposed several years ago, begins to unfold before your very eyes. You find yourself on the Information Superhighway looking for ramps to get you to some of the interwoven web-like side roads where the good stuff actually sits. ...a browser serves as your all terrain vehicle.

As browsers go, Netscape is awesome. It does not demand a rocket-science background, and as much as anything I have seen, it is quite intuitive. While on the highway driving Netscape, it behaves like a supercharged sports car, yet carries a heavy payload when needed. You know you are driving quality when you hit the road with Netscape.

Mosaic and Netscape combine graphics, text, images and video in a fascinating multimedia presentation. Text displayed in blue is a *hypertext link*. In other words, by clicking on the blue text, you are linked to an area that provides more information about the subject marked in blue. Another nicety is that, once you access information, the blue hypertext link changes color becoming violet, so that you know you have already taken that particular link.

The blue hypertext links may take you to another area of the same document. It may take you to a different document on the same system. It may take you to a different document on a different system in the same domain network. It may take you to a different document on a different host system in a different domain anywhere on the Internet. When I pick a link that takes me no place or causes the software to burp, I click on the Go Back button with my mouse, and I am back safely where I started.

Does this sound amazing? Well, it is! Long-time MIS professionals like you and I aren't easily impressed. When you turn on the ignition of your Netscape browser for the first, second, or third time, you cannot be anything but impressed.

Netscape, the corporation, also provides some interesting links, which can be taken right from their home page (the one displayed when you invoke the browser). From the home page, you get to some neat places quickly. Try clicking on What's Cool, What's New, or the Netscape FAQ (Frequently Asked Questions) document. You can also use the Netscape search facility to type in search arguments like Irish Stew, White House, or Fun. Try it out and see what you get.

When you are engrossed in this process, you will be oblivious to all else, but your family and friends will notice the electronic surfboard sticking out of your ear. So, Netscape makes it easy to get by a wave you've surfed before and get directly at some stuff that you know you'll want to examine further. All you have to do is set a bookmark. Netscape remembers the address or URL (Uniform Resource Locator) of the site and lets you get back there quicker than you can say, I'm a Net surfer. See how easy it is to be a Netanaut!

While Web browsers go a long way toward helping you realize the potential of the Internet, there are lots of ways that you may make a wrong turn, or hit some potholes, or even fall deep into the ocean. For example, you may link to no place, to an incorrect link, or to a site that has moved with no forwarding address. Yes, sometimes these trips lock up the best of PC systems. Usually, however, these situations typically are not of the lock-up variety and are reasonably easy to recover from. I mean it when I say that Go Back button is invaluable.

We all hate lock ups, whether they occur with or without a browser. One of the unmentioned goodies of a browser is that it retains lots of history and information on your current surfing activity. This feature makes it possible to use the Go Back (Back) and Go Forward (forward) buttons to get you back to the onramps and offramps you've traveled since you signed onto the Internet. When you close Netscape, you also kill the cache and all the history from the current

session. Stuff that you saved will still be there, but if you set bookmarks without saving them, they will be lost. Regardless, there is no major damage to be had, just the same old annoyances you have come to expect from PCs.

# PLACES TO GO ON THE WEB

The following is also from the Web, and lists a few interesting places to take that newly polished surfboard. Have fun!

<http://www.ncsa.uiuc.edu/S.D.G./Software/Mosaic/Docs/whats-new.html> >  
NCSA's What's New

<http://nearnet.gnn.com/gnn/news/announce.html>  
GNN Announcements

<http://www.yahoo.com/new>  
What's New at Yahoo  
Everybody's gotta go to YAHOO. Lots of links.

<http://galaxy.einet.net/galaxy/new-links.html>  
New Links on the Galaxy

[gopher://cwis.usc.edu.:70/11/Other\\_Gophers\\_and\\_Information\\_Resources/Gopher-Jewels](gopher://cwis.usc.edu.:70/11/Other_Gophers_and_Information_Resources/Gopher-Jewels)  
Gopher Jewels

<http://www.einet.net/galaxy.html>  
The EINet Galaxy

<http://www.ncsa.uiuc.edu>  
NCSA Home Page

<http://www.w3.org/>  
CERN Home Page

<http://white.nosc.mil/info.html>  
The Planet Earth's Home

<http://viswiz.gmd.de/MultimediaInfo/index.html>  
Index to Multimedia Sites

<http://nearnnet.gnn.com/wic/newrescat.toc.html>  
The Whole Internet Catalog

<http://www.yahoo.com>  
Yahoo - A Guide to WWW via Yahoo's search engine

<http://www.bbcnc.org.uk/babbage/>  
Babbage's Best of the Internet

<http://www.w3.org/hypertext/DataSources/bySubject/Overview.html>  
CERN's WWW Virtual Library

<http://srcm1.zems.etf.hr/inet-services.html>  
Yanoff's Internet Services Guide

<http://nearnnet.gnn.com/gnn/gnn.html>  
O'Reilly's Global Network Navigator

<http://www.ncsa.uiuc.edu:80/SDG/Software/Mosaic/StartingPoints/NetworkStartingPoints.html>  
Starting Points for Internet Exploration

<gopher://updates.gopher.ibm.com>  
IBM Internet Connection...The Gopher

<http://www.ibm.com>  
IBM Home Page

These URLs are brought to you from the IBM page:  
<http://www.ibm.com/globalnetwork>  
IBM Global Network.

# Summarize with Agenda

What is the World Wide Web?

The Origins of The Web

How the Web Functions

Web Protocols

WWW Consortium

HTML Documents- The Basic Building Blocks

Using HTML

HTML Elements

HTML sample Documents

Linking

Uniform Resource Locators : URLs

FTP

Gopher

News

Mail

Http

Web Vs. Gopher

Search Engines and Indices

Format Negotiation

Web Client Requirements

Web Browsers

Places to go on the Web