Off-line interactivity – bridging the gap between those with and without direct access to the World Wide Web

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Abstract

Information is power, is an old adage. The rapid growth of Internet, and particularly the World Wide Web (WWW or Web) has left many observers wondering how this new media is influencing the balance of information power. As a majority of the world's population lack even access to electricity, the situation is obvious: most people are left out. It is for this reason that connectivity is getting so much attention in international development circles. Another part of the equation which is in urgent need of being addressed is information flow in and out of the Internet, especially the WWW. This paper takes a look at a few methods of off-line Web interactivity, particularly e-mail to Web systems, including GetWeb, Mailing List WWW Gateway (LWGate), and the Association of Progressive Communication (APC) Conference-Newsgroup gateway. Some Lotus Notes/Domino applications are also mentioned. All these methods can help bridge the gap between those with and without direct access to the Web.

Foreword

This paper is meant to be a contribution to the discussion of off-line access to the Web. No attempt has been made to examine all methods of off-line access nor to take a comprehensive look at the topic.

1 Introduction

"Information is power," is an old adage. The rapid growth of Internet, and particularly the World Wide Web (WWW or Web) has left many observers wondering how this new media is influencing the balance of information power. As a majority of the world's population lack even ac-

cess to electricity, the situation is obvious: most people are left out. It is for this reason that connectivity is getting so much attention in international development circles. Another part of the equation which is in urgent need of being addressed is information flow in and out of the Internet, especially the WWW. As many people do not have on-line access to the Internet, methods of off-line interactivity with the Web are an important component of access to information on the Internet.

The concept of "off-line Web interactivity" may seem like a contradiction in terms. This is because, normally, access to the Web only occurs while "on-line" - or connected to the Internet. Though there is a variety of software that can capture and store Web information on a local hard disk, these programs can of course only be activated when on-line. Thus, the contradiction persists. Further, though viewing a Web site from a floppy disk or CD may be considered interactive from the perspective of letting the user choose what to view, no opportunity exists to submit information back to the Web site copied onto the floppy or CD.

The term "interactivity" can mean many different things. Thus, following first is a discussion of what is meant here by "off-line interactivity" and why it is important. Some comments are then made about off-line viewing of basic HTML Web sites. The next section addresses e-mail access to the Web and the GetWeb software. Included is a brief mention of a listserv-Web program called Mailing List WWW Gateway (LWGate), as well as the Association of Progressive Communication (APC) Conference-Newsgroup Gateway. Then, some of the features of the Lotus Notes/Domino e-mail to Web to e-mail discussion forum are introduced, followed by a description of the Lotus Notes/Domino built-in off-line interactivity and a brief conclusion.

2 What is it and why is it important

Off-line Web interactivity can loosely be defined as any method of viewing or receiving information from the Web and/or submitting information for later inclusion on the Web, while off-line. Using this definition, simply viewing or reading a print-out from a Web site is off-line interactivity. For purposes of discussion is it useful to call this "one-way interaction" or to be more precise, "non-computer-originating, receiving-only interaction". In the same manner, sending an e-mail that appears on a Web site in one format or another, e.g. in a discussion forum or guest book, can be called "computer-originating, sending-only interaction" – and is also one-way interaction. However, two-way interaction is also possible, both originating and not originating from computers.

An example of achieving two-way interaction without originating from computers is when an article in a magazine about a Web site is read by someone who writes a letter to the Web site publishers, who then type in the letter, publish it on the Web site, make a print-out of the Web page with the letter and mail it to the au-

thor. There are numerous variations of this example. However, a drawback of one or two-way, non-computer originating interactivity is that it can be much more labor and time intensive than either a combination of computer and non-computer originating interactivity, or only computer originating interactivity. It is the latter type of interactivity that is examined here, i.e. computer originating interactivity for both the receiver and sender. None-the-less, non-computer originating interactivity remains the only option for most people in disadvantaged regions.

Among those in disadvantaged regions who do have access to the Internet, many more have access only to e-mail than have access to e-mail and the Web. As well, those that do have access to the Web may have only limited access due to financial constraints from on-line fees.

3 Off-line viewing of basic HTML Web sites

Basic HTML Web sites can easily be viewed off-line if certain design considerations are taken into account. The word "viewing" was carefully chosen here. Looking at a Web site off-line requires much less technical sophistication that submitting or downloading information to a Web site off-line.

Though it is standard practice to preview at least part of a Web site off-line during development, it is not standard practice to design Web sites for easy off-line viewing. The reason for this is more likely due to a lack of awareness of the concept, rather than conscious design choices.

Basic requirements for viewing a Web site off-line include using the same directory structure locally as on the server, making internal links local rather than virtual, and taking into consideration case sensitivity and number of characters in links.

3.1 Directory structure

If during an on-line session, a group of HTML files and any images they include are saved to the same directory, if any of the files or images were in different directories on the server, the links to the files won't work nor will the images show up, though all files and images were transferred from the Web to the local hard disk. For the links to function, the HTML code must be edited, or the directory structure must be made and files moved to their proper place. Both methods can be very time consuming. There is of course a limit to how many files can be easily managed in one directory. Large Web sites require some sub-directories. In any case, using the same directory for related files, including images, makes off-line browsing much easier.

3.2 Link considerations

When a Web site is accessed on-line from a server, internal links function in the same manner whether they are virtual (href="http://www.sei.se/whatsnew.html") or local (href="whatsnew.html") (the full HTML code is not used here as it would not be seen in the Web version of this document). However, when a Web

site is accessed off-line from a local hard disk, links must be local as links that point to a Web server do not function off-line.

Another aspect of using local links are considerations for operating systems that don't support file names of more than eight characters and an extension of more than three characters (referred to as the 8+3 system). If there are more than eight characters in a link, it won't work on a Windows 3.x operating system as the file name will be shortened to eight characters when accessed. Further, since link addresses are case sensitive and Windows 3.x operating systems do not allow capital letters in file names, it is important to only use lower-case file names.

The four character ".html" file extension can however be used in links for both Window 3.x systems and systems that support long file names (e.g. Windows 95 and 98 and Mac operating systems). The files names will be shortened to ".htm" in Windows 3.x systems but most Web browsers when operated on Windows 3.x systems interpret .htm the same as .html. Operating systems that do support long file names will, for example, treat whatsnew.html differently than whatsnew.htm.

4 E-mail access to the Web

Many Internet services, including the Web, can be accessed via e-mail. Bob Rankin from the U.S. has summarised the situation well.

> *If you don't have direct access to the Internet through your BBS or online service, you're not alone. Many of the world's countries with Internet connections have only e-mail access to this world-wide network of networks.*
>
> *But if you think that sounds limiting, read on. You can access almost any Internet resource using e-mail. Maybe you've heard of FTP, Gopher, Archie, Veronica, Finger, Usenet, Whois, Netfind, WAIS, and the World-Wide Web but thought they were out of your reach because you don't have a direct connection.*
>
> *Not so! You can use simple e-mail commands to do all of this and much more on the Internet. And even if you do have full Internet access, using e-mail services can save you time and money. If you can send a note to an Internet address, you're in the game.*
>
> Source: Rankin, Bob. March 1998, 7th Edition. "Accessing The Internet By E-Mail, Doctor Bob's Guide to Offline Internet Access." WWW: http:// www.cis.ohio-state.edu/hypertext/faq/usenet/internet-services/access-via-email/faq.html

The International Development Research Council (IDRC) in Canada has a project called Unganisha that includes operation of a server for accessing the Web via e-mail. The following was recently downloaded from the Bellanet Web site (http:// www.bellanet.org/):

> *IDRC: UNGANISHA: Activities*
>
> *1. Web-to-Email Server*

> *Given that a large proportion of IDRC grant recipients have access to email but not access to the World Wide Web and given the veritable plethora of resources available now on the World Wide Web; the Unganisha established a Web-to-Email server that allows anyone with access to email to access pages from the World Wide Web. They can also conduct searches via email and fill out web forms. The server has been extremely successful since it's inception. The development of the server was done in collaboration with Bellanet using GetWeb software produced by Healthnet.*
>
> Source: http://www.idrc.ca/unganisha/services.html

4.1 GetWeb

GetWeb is a server program that can receive requests via e-mail to access Web addresses and e-mail back the documents requested. It is worth noting that some GetWeb servers can even handle Web pages that contain fill-in forms. The following description is from the HealthNet Web site:

> *GetWeb enables the user to request the text content of any Web document via electronic mail. The user can also use GetWeb to utilize commercial search engines like AltaVista and Yahoo!, navigate through links, submit forms, and search databases.*
>
> Sources: http://www.healthnet.org/info/info.html#internet GetWeb: http://www.healthnet.org/dist/getweb/help/indexgw.html

5 Mailing List WWW Gateway (LWGate)

The following quote summarises the nature of LWGate:

> *About the Mailing List WWW Gateway*
>
> *The Mailing List WWW Gateway was created by myself, David W. Baker, basically to bring mailing list functionality to the Web and take advantage of the easy-to-use characteristic of WWW interfaces. I've found that few people are comfortable with mailing list commands and hope that this program can make mailing lists more useful to their subscribers. Please send me mail if you have any comments, questions, or concerns.*
>
> Source: http://www.netspace.org/users/dwb/lwgate.html

6 Association of Progressive Communication (APC) conference-newsgroup gateway

The Association of Progressive Communication (APC) (http://www.apc.org) has a text-based conference system accessible via Telnet that can be set up to allow submissions via e-mail and viewing of all submissions in a public or password

protected Internet Newsgroup interface. The Newsgroup readers included in many Web browsers or specialised software can be used. The text-based conference system has functioned since the early 1980s. The Newsgroup interface was launched in the mid-1990s. It is of note that this conference system pre-dates public access to the Internet and existence of the World Wide Web. A feature of the conference system is that the world-wide network of APC servers regularly transfer information with each other, and thus act as continually updated mirrors of each other. This is the same type of feature referred to as "replication" by Lotus Notes/Domino.

7 Lotus Notes/ Domino e-mail to Web to e-mail discussion forums

Features of Web interface discussion forums made with Lotus Notes/ Domino are that they can be set-up to: receive submissions via e-mail; distribute via e-mail the full-text of submissions via e-mail or the Web; and allow user-configured, e-mail distribution of only the author, date, and subject line of submissions (where users can choose to be notified only of messages by certain authors or when specific keywords are used in the subject line). Thus, two-way interaction can be achieved using only e-mail or the Web, or a combination of the two. These features are being used in the Global Water Partnership Water Forum Web site (http://www.gwpforum.org).

8 The Lotus Notes/ Domino built-in off-line interactivity

Web sites built with Lotus Notes/ Domino software have built-in off-line interactivity via a Web browser. Lotus Notes is the client software that operates on an individual user's computer and Domino is the counter-part server software. In late 1997, version 4.6 of the both the client and server was released, and marked a turning point in possibilities for viewing information off-line using a Web browser. One of the innovations in this new version was that all information could be viewed off-line with a Web browser using only the client. Up until that point, off-line browsing required running the server version at the same time as the client. This meant not only the added expense of purchasing the server version, but also placed high system requirement demands (i.e. processor capacity, RAM, and hard disk space). Further, running the server and client on the same computer requires some advanced knowledge of the software.

A Web site designed with Lotus Notes can include such features as forms for submitting information (including discussion forums), automatic sorting and categorising of information submitted, registering and logging in, individual and group password protection for all or parts of the site, full-site and sub-site searches, and uploading and downloading files – all of which function via a Web browser when off-line.

There is an additional feature called "replication" that makes it possible to submit information off-line and then go on-line and incorporate the new information into a Web site accessible via the Internet, while at the same time receive any changes to the Web site (such as submissions via the Web, e-mail, or intermittent replication of the whole site from others). Domino servers connected to the Internet can be set to replicate with each other at regular intervals, resulting in continuously updated mirrors of interactive Web sites.

One scenario for achieving off-line interactivity is as follows. A computer is set-up with client versions of Lotus Notes and Netscape in a public location, say a university library in a disadvantaged region without an Internet connection. At the library, people interact with the Lotus Notes built Web site by reading information that was at some point previously submitted via the Internet, submitting items to discussion forums, uploading and downloading files, adding events to a calendar, posting employment requests and vacancies, etc. All submissions made at the library are stored on the local hard disk. Every few days someone transfers the Notes files making up the Web site to some type of storage media (e.g. floppy disks or zip disks), copies the files onto a computer with a modem, makes a dial-up connection to the Internet, and replicates the files with those on a Web server permanently connected to the Internet. Once the replication is complete, the files on the local computer are identical to those on the Web site on the server. The new files on the local hard disk are then copied onto some type of storage media and transferred to the computer in the university library, which then has an updated version of the Web site. The floppy or zip disks could even be sent back and forth between the North and the South via snail-mail, a courier service, or even diplomatic pouch. The interactivity achieved would not be instant as occurs when connected to the Internet, but interactivity would be achieved.

9 Conclusion

Simply viewing or reading information printed-out from a Web site can be considered interactivity. As well, standard HTML Web sites can be stored on floppy disks or CDs and easily viewed off-line if certain design considerations are taken into account. More important though is that there are several methods of interacting with the Web off-line via e-mail. Use of GetWeb servers is a viable option for e-mail access to the Web, as is participation in APC conferences, listserv-Web gateways and Lotus Notes/Domino discussion forums. It is more difficult to achieve interactivity off-line using Web browsers. Web sites built with Lotus Notes/Domino have off-line interactivity with Web browsers built-in. Implementing them as a solution though requires somehow transferring the data to a computer with Internet access. All these methods can help bridge the gap between those with and without direct access to the World Wide Web.