Providing Public Access to a Large CD-ROM Collection: Challenges and Solutions

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1. **Introduction**

   Setting up workstations for public use presents a challenge to any Government Documents Department. A dynamic balance must be achieved between the needs of the department and those of the user. For the user, the workstation must provide a simple and familiar interface that allows easy access to a myriad of different programs and search engines located on dozens of different cdroms. For the department, the interface must balance security against the need to constantly install and configure new software.

   The security needs of a public workstation must meet several criteria. The security system must:

- Limit user access to only the programs which you want them to use,
- It should inhibit users' ability to install new software on their own,
- And the system should inhibit users' ability to "hack" or damage the computer setup.
- The system must be easy for the department administrators to maintain -- installing, updating, or removing different programs-- as new CDROMs are received.

   The user needs of a public workstation also must address several important issues.

- The primary need is to provide an easily understandable interface to a multitude of different programs.
- Having dozens of icons on a desktop is not really an option, and even the start menu on a windows based workstation can quickly become overwhelmed by the sheer number of menu choices which must be made available.
- At the same time, the interface must provide a degree of flexibility in allowing users to easily print, save or even e-mail their search results, or to obtain help on how to use a given program.

   Some Caveats:

- Even the strongest security software may not provide full protection from a determined hacker. Remember that some users will regard any locked down system as a challenge. So try to achieve a balance between security and ease of

maintenance such that while it is possible that an experienced and computer savvy user may find ways to defeat the security installation, most users will not.
- For an intriguing conceptual discussion of security, see "Homeland Insecurity" - http://www.theatlantic.com/issues/2002/09/mann.htm - from the September 2002 Atlantic Monthly Online.

2. System Setup

2.1.1 BGSU System

The public workstation system currently consists of four computers:

- **Public Workstations:**

  Two workstations located in the public reference area just outside the Documents Office are used for CD-ROM and Internet access only.

- **The two public workstations, since they are generally available to anyone at all times, are the most heavily secured against misuse.**
- **Advanced Workstation:**

  One workstation located in the Documents Office is used for advanced research by patrons, and as a student workstation.

- **The advanced workstation, because it resides in the protected environment of the Documents Office, and because it must provide ready access to a much greater variety of software (Microsoft Office, Photoshop, CD-ROM burning software, color printer, graphics editing software, etc.), does not have security software installed on it.**
- **Server**

  One workstation serves as the Documents Office network server and used as a backup server for all of the government documents computers--including staff workstations-- and as a repository for all of our shared files.

- **The office LAN server, of course, has password protected drives and folders, and is available only to computers located within the Government Documents office.**

2.1.2 BGSU Software Platform

Software used for setup is as follows and should work with any Windows9x system. (Windows XP versions of the tweaking tools are also available.)

- **Microsoft Windows 98 (or any 9x version allowing multiple user desktop profiles)**
- **Tweaking Toolbox for Windows (shareware 24.95 registered version.) / http://www.windows-help.net/ttw/**
- **X-Setup from Xteq systems (freeware) / http://www.xteq.com/**
- **Mozilla 1.1 web browser (freeware) / http://www.mozilla.org/**
- **Opera Web Browser (freeware) / www.opera.com/**
- **Norton Ghost (commercial) / www.symantec.com/**

- **Taskzip (freeware)**
- **W3Launch (freeware) / http://www.tlsu.leeds.ac.uk/w3launch/home.htm**

2.2.1 GPL System

The public workstation system currently consists of five computers, each of which has 50 gigabytes of storage space:

- **Public Workstations:**

  Four workstations located in the public reference area just outside the Documents Office are used for CD-ROM and Internet access only. Viewer software is loaded for MS Excel, Lotus 1-2-3 and dBase files.

- **The two public workstations, since they are generally available to anyone at all times, are the most heavily secured against misuse. These workstations are secured with Fortres and a "public" user profile.**
- **Advanced Workstation:**

  One workstation located behind the reference desk is used for advanced research by patrons, and as a student workstation. Unlike the public workstations, it has Microsoft Office and Aleph, our staff-side catalog software.

- **The advanced workstation, because it resides in the protected environment of the reference desk and because it must provide ready access to a much greater variety of software and the Libraries' Novell network, does not have security software installed on it, although it does have a limited "general user" profile.**

2.2.2 GPL Software Platform

- **Windows NT, Service Pack 6**
- **Novell Networking**
- **VirtualCD 4.0 (shareware) / http://www.virtualcd-online.com/default_e.htm**
- **Public Web Browser (shareware) / http://www.teamsoftwaresolutions.com/**
- **Internet Explorer 5.5 (freeware) / http://www.microsoft.com/windows/ie/default.asp**
- **MS Excel 95 viewer (freeware) / http://govpubs.lib.umn.edu/zip/excelvwr.exe**
- **MS Excel 97 viewer (freeware) / http://govpubs.lib.umn.edu/zip/xlViewer.exe**
- **dBase viewer (freeware) / http://govpubs.lib.umn.edu/zip/dbf_view.zip**
- **WinZip (shareware) / http://www.winzip.com/**
- **WS_FTP (shareware) / http://www.ipswitch.com/Products/file-transfer.html**
- **Fortres Security / http://www.fortres.com/**
- **Microsoft Office**
- **Aleph by Ex Libris (staff-side of catalog)**

3. Workstation Setup

3.1 BGSU

Public Workstation setup was a three-stage process. First, Windows was installed, and a BIOS bootup password was enabled. Second, public and restricted use desktops were created, and finally, access to all computer functions and software were removed from the public desktop except for a web browser.

After all of the appropriate security and application software was installed and set up on the primary public workstation, it was thoroughly tested, and an image of this workstation hard drive was then created on the network server, using the Norton Ghost software. This image was then restored to the second public workstation to guarantee that both computers would be identical.

Setting up the Public Use Desktop

1. **Install Windows 98 or newer.**
2. **Install printer drivers.**
3. **Edit the BIOS settings to require a password when the computer is booted. Since many windows programs require rebooting the computer after a program is installed, this effectively blocks users from successfully installing many personal use programs (chat, streaming media, mp3 sharing etc..)**
4. **Create two user desktops:**
5. **A public desktop with no password. (named: Public Access)**
6. **A password restricted desktop (named: Restricted Access - Password Required)**
7. **Log into the public access desktop, and load X-Setup, (and/or) the Tweaking Toolbox for Windows, and use their many options to disable all features from the public desktop except the ability to load a web browser.**
8. **Tweaking Toolbox for Windows and Xteq Systems X-Setup program are both menu-driven Windows Registry Editing Programs. By selecting appropriate items from their many menu options, even casual windows users can gain a great deal of control over the appearance and security of the Windows desktop.**
9. **Using these tools, the following changes were made to the public access desktop:**
10. **All extra writable drives on the computer were disabled (Zip Drive, CD-R Drive).**
11. **All icons were removed from the desktop including: Network Neighborhood, My Computer, Recycle Bin.**
12. **All standard options were removed from the start menu including: Documents, Favorites, Settings, Find, Run.**
13. **All options were removed from task bar except 'Show Desktop' and 'web browser'.**
14. **The Screen Saver was enabled and an appropriate screen saver was selected.**
15. **Ability to run command.com was disabled.**
16. **We also disabled the ability to press 'Esc' when loading either desktop.**
17. **Note: One of the really notorious breaches in Windows system security is the ability to load any password protected user profile**

(desktop) by selecting that desktop on the menu, and then simply pressing the escape key.

18. **Installed the web browser as the only program available to the user, and placed shortcuts to it in both the startup and programs folders on the start menu.**

Setting up the Restricted Use Desktop

The Restricted (password protected) desktop provides full access to all of the software and hardware features available on the computer. It can be accessed, obviously, only by staff members who know the password.

In restricted mode, the documents staff can

- **Setup and configure both desktops,**
- **Adjust security settings with Tweaking Toolbox and X-setup,**
- **Install new software as it is received, burn CD-ROMs**
- **Update the html menus on the web browser to provide access to the installed documents CD-ROMs.**

The Advanced Workstation--Housed in the Documents Office

The Advanced Workstation is a standard networked Windows 98 computer. It is a typical office computer with a single desktop and no special security software installed. It provides full access to all features for all users. It is used as a combination staff workstation and advanced research workstation. It provides access to all of the CD-ROMs installed on the public workstation, and in addition allows users access to all of the university licensed software (Microsoft Office, Corel Office, Adobe products including Photoshop, and acrobat, Minitab, SPSS). In addition to the networked laser printer, it also has a color DeskJet printer installed.

The Documents Network Server

A separate Norton Ghost disk image was created and saved on the network server for the Advanced Workstation and for the Public Workstations. If at any time any of these three workstations should fail -- either through software or hardware failure, or through 'hacking' -- the entire contents of that workstation's hard drive can be restored from the backup image in a matter of only a few minutes.

3.2 GPL

First, a prototype computer was brought down to a non-public area and all of the CDs that were decided on were loaded via the VirtualCD emulation software. Once all the titles were on, working and ready, guides were created.

When the guides were complete, the prototype was taken upstairs to the University Libraries ITS department. They did all of the above and then cloned the prototype to create the other four computers for a total of 5 identical workstations.

Setting up the Public Workstations

Of the five, four are public workstations and they have MS Office removed. They add and configure Fortres, the viewers and Public Web Browser (which controls user interaction with Internet Explorer).

The Advanced Workstation--Housed behind the reference desk.

This workstation has Novell network access added, but is otherwise left alone.

4. User Interface

The large number of CD-ROMs that are available presents a challenge to any department which attempts to install them on a workstation for public use. As was already mentioned, the use of icons on the desktop or the use of program listings on the start menu are not particularly workable options. The number of icons which can be displayed on a desktop is limited, and worse, icons are difficult for first time users to identify, making it difficult for them to start the desired program.

The Start Menu is a more workable approach than the use of desktop icons, but again, a clear method of organization is difficult to achieve, and after a few dozen CD-ROMs are installed, the user is almost totally overwhelmed by the difficulty of navigating start menus which fill the entire computer screen.

For libraries wishing to provide access to large numbers of CDs, a better approach is create an integrated interface that embeds the CD's *.exe file within. Then the focus can be on the intellectual content of the disk and how to use it well, rather than on the mechanics of using it. Html is especially well suited to this job because it allows transparent switching from local web pages and applications to remote web pages and applications and the inclusion of images. The one challenge is to create links in the interface that will launch software.

4.1 BGSU and Executable Links

BGSU chose to control their links via one of the lesser used properties of the web browser. Netscape, Opera and Mozilla (the new open source upgrade to Netscape) allow the installation of "helper programs". One such program is a freeware product created at the University of Leeds, in England. Called W3Launch, this program, when installed, provides a secure method of using a web browser to launch any DOS or windows software installed on that computer.

The advantages of such a system are obvious: the user interface becomes a web browser displaying a standard HTML web page -- an interface with which almost everyone today is extremely familiar. Further, it becomes easy to create a system of web pages which can not only act as a menu with enough information about each of the CD-ROMs (full title, call number, or even a descriptive paragraph) to make locating the right item easy for even first time users.

Additional pages explaining the purpose and contents of the CD, a help file of information about how to use the CD-ROM, information about other related information sources, and URL links to the departmental web site and other useful web sites can be created and easily linked to each CD-ROM mounted on the workstation.

Although Mozilla, our installed web browser, has worked transparently and reliably on our workstations, we have found that a few of the recently produced governmental CD-ROMs are browser specific, and require the use of Internet Explorer only. If this trend continues, we may consider transferring to IE as our launch platform.

About W3Launch

W3launch is a small, free intermediary program which when installed as a 'helper program' allows a secure method of running any executable program through a web browser, using a standard web page as a menu. Once installed, W3launch allows users to launch any Windows or DOS program by simply clicking on a standard html link. When the program is closed, the user is returned immediately to the original web page.

W3Launch has been tested and found to work well with Netscape, Opera, and Mozilla. Microsoft Internet Explorer works equally well, although the original installation procedure is somewhat different, since the .w3l file type associations must be set up in both the web browser and in the windows registry.

The only problem found with W3launch, which is easy to work around, is that it was originally developed under Windows 3.1, and may present difficulties if software is installed in folders with long names or with spaces in the name (e.g. "Program Files" unless the program and folder names are enclosed in double quotation marks in the W3Launch initialization files. As a general rule, we always install software to folders following standard 8.3 file name conventions, and if the software requires command line options they are also enclosed in double quotation marks.

Examples

- **loading program with command line options:**

C:\windows\notepad.exe "c:\my documents\test.txt" works well

- **A program which tries to install itself to a default folder such as:**
  C:\Program Files\test this program.exe my documents\test document.doc
  will totally confuse the w3launch program.

- **Normally, we would install this program to a different folder with a standard name, and in some cases, rename the executable file to a standard form.**
  C:\programs\test.exe "my documents\test document.doc" works well.

To date, we have found almost no CD-ROMs which cannot be installed and run through the W3Launch program. Most problems are caused by 'bugs' in the software or physical problems with the newer DVD-ROM drives being unable to accurately read the tracks of some older disks.

The main advantages of using the W3launch program is that it removes much of the complexity of installing and running software through a web browser interface. Rather than having to create and associate individual file types for each program to be run, only a single file type (.w3l) needs to be created and be associated to call the W3launch program. W3launch then takes over the task of tracking and controlling which CD-ROM specific software is to be run.

Installation and configuration time is drastically reduced for each CD, and the process is simplified to the point that even a work study student can successfully manage the installation of CD-ROMs on the workstations.

4.2 GPL and Executable Links

Traditionally, administrators have used medium-specific hardware such as CD towers and software such as Local Area Networks (LANs) for this task, and that is how we handled some of our titles in our previous configuration. However, both medium-specific hardware and LAN software are expensive. Also, this approach increases the number of points at which a breakdown can occur, while potentially lengthening the downtime because new parts may be required for hardware problems and LAN administration may be limited to an institution's IT department. Finally, all tangible storage media are inherently and often quickly obsolete. Sinking large sums of money into a media-specific hardware solution was deemed to be inappropriate given other options now available to us.

In consultation with the University Libraries Information Technology Services (ITS), we decided to forgo the traditional

approach and to put the bulk of our time and effort into a reliable configuration which put all the installed titles on the hard drive of one of the new workstations we would be receiving. Then that original hard drive would be imaged and used to create the rest of the public workstations. The original would be saved in case of emergencies, thus simplifying disaster recovery.

However, we found that there were some fundamental obstacles to loading CDs in their entirety onto hard drives. Namely, many CDs were written on the assumption that each would be the only CD loaded on a computer and that putting in the disk every time each was used would be convenient. Given the above, both of these assumptions conflicted with our needs.

About Virtual CD

To resolve the conflict, we decided to use a CD-ROM emulation program called Virtual CD. This program resolves the conflict because it creates a virtual CD drive and inserts a virtual CD. Thus, effectively, each CD *is* the only one loaded and the disk *is* inserted into the drive. The steps for using Virtual CD follow below; for the full procedure and screenshots, see <http://govpubs.lib.umn.edu/cd/process.phtml>.

1. **Create emulated CD**
2. **Install from the emulated CD**
3. **Install the disc as usual**
4. **Create VCD Shortcut**
5. **Create New File Type**
6. **Edit the Registry entry for the new file type.**
7. **Create the Executable Link**

5. Processing New CD-ROMS

5.1 BGSU

Our current work process when receiving a CD-ROM is to:

1. **Determine if it is to be mounted on the workstations or checked out.**
2. **Catalog and link it into our library OPAC**
3. **Enter the CD into our local CD-ROM database, print and upload the updated pages.**
4. **Install the CD on the master office workstation, create all of the appropriate html pages, and verify that the software and web links are working properly.**
5. **Create the appropriate W3Launch files for that program, and verify that W3launch loads the software correctly.**
6. **Install the Software onto the primary public workstation and copy the html and w3l files to that workstation.**
7. **Create an updated disk image using Norton Ghost on the department server**

8. **Promote this image to the second public workstation, again using Norton Ghost.**

5.2 GPL

Our current list of installed CDs (see http://govpubs.lib.umn.edu/cd/titles.phtml) is basically stable. Anticipated changes are only in updates to serial titles. Updates will be done individually because there won't be that many and it isn't a workload issue. We do keep a separate CD database, but that entry work can be done at any point in time. Finally, the guides are manually produced. Since the list is stable, the bulk of the work was in the initial set up, not in maintenance.

The web pages themselves are created from a template that controls the formatting of each page's headers, footers and body. Additional formatting is controlled by cascading stylesheets. Lastly, a JavaScript is used to make links open new windows, so that users can always have the user guide open and available.

6. BGSU DOCUMENTS CD-ROM DATABASE

Overview: Purpose / Goals

Although all CD-ROMs are catalogued into the university OPAC when received, it was felt that because of their unique handling requirements, and their complexity of use, that an external database which could provide more complete information about each item was needed. After some preliminary discussions about what could be achieved through the use of such a database system, a long range plan using a multi-tiered approach was adopted which could be gradually implemented through a series of stages.

The goals for the database project included:

- **Provide complete inventory control of the CD-ROM collection.**
- **Provide bibliographic information external to the OPAC with ability to create web pages showing holdings by title, department, SuDoc Number, and subject.**
- **Provide enhanced descriptive information about each CD-ROM including:**
- **URLs for online information**
- **Whether or not CD is mounted on workstations.**
- **Complete description of contents**
- **Help file about how to use each CD-ROM.**
- **Provide an easy method of browsing the collection by title, department, Sudoc number, or simple subject.**
- **The ability to print the additional web pages and all of the necessary w3launch information files for each CD-ROM mounted on the workstations.**
- **Ability to update database through a password protected web form on an intranet server to provide a central database available to any staff member.**

While an online search engine would have been desirable for many of the proposed functions, usage restrictions on the university web server eliminated this option. The alternative approach of using a departmental web server to mount such a search engine to create dynamic web content was also impossible because the university firewall would block it from outside access. With these limitations in mind, using the database to generate a series of "static" web pages which could be mounted on the university web server seemed to be the most practical approach.

Developing the Database

Stage 1: Database Design and Input of Bibliographic Data

- **Design issues involved the development of a database structure that would parallel, but not emulate, the OPAC. The result was a relational database that preserved the bib record/item record relationship.**
- **Once the database structure was established, all of the government documents records in the OPAC were exported to a data file, and then imported into the new database.**
- **After importing, all records were checked against the actual CD-ROM collection, and any discrepancies were corrected in both the database and the OPAC. As part of this process, additional information not found in the OPAC was added to each of the bibliographic or item records in the CD Database. Tracking information includes:**
- **Date received,**
- **location of the CD during each stage of processing,**
- **final physical location of the CD-ROM (i.e. is it in Jerome or Science Library), whether it is mounted on the workstations, and any restrictions on use or checkout, etc.**

Stage 2: HTML Page Generator

- **Many databases now allow the generation of reports in html format. In order to create web pages that could be easily loaded on the campus server, the reports, each consisting of a single web page, were printed to a file rather than to a printer.**
- **Reports are currently generated to create web pages which allow browsing by title and department.**
- **Additional indexing and report generating routines are being written which will allow browsing by SuDoc number and simple subject headings as well.**
- **Page style and layout is controlled through the use of template files, so the appearance of the pages can be changed without having to reprogram or edit the report generator.**
- **All appropriate URLs and page links are generated automatically by the report generator out of the information stored in the database or in the template file.**

Stage 3: Development of html forms-based database engine for the intranet server.

- **While the implementation of an open access CD-ROM search engine was not feasible because of the university restrictions on their web server, setting up a locally accessible web server on the documents office LAN server to create an office intranet provides some unique advantages.**
- **Generally, web services provided through well written CGI programs will be more secure than sharing drives, folders, or files on a LAN (under Windows, almost anything is more secure than sharing resources using their networking system.)**
- **Additionally, setting up a small web server provides a wonderful platform for testing pages, etc., before uploading to the main university server.**
- **Finally, using forms-based access to a database has the advantage of providing full control over the entire process of access and data entry. The entire database system can be password protected to allow only approved users, and each user's activity can be controlled by allowing them different levels of access - some users may be restricted to only viewing records, some to editing current records, while others may be allowed full privileges including adding new records. Some users can be restricted to working only on item records while others may be allowed access to both item and bib records.**
- **Careful page design to control all phases of user activity can greatly simplify the entire process of data entry and editing, reduce the amount of staff training required, and reduce the number of user errors.**
- **The CGI program for the intranet database engine is currently in development. Like the program used for the page generator, all of the web pages and forms used by the system will be stored as a set of template files. This design allows great flexibility for future growth, since the CGI program is data driven - if additional data fields are needed, they can be simply added to the database, and the web forms can be edited to display/edit them. No change is needed to the CGI program itself in order to handle alterations in the database structure.**

Stage 4: Input of enriched data (help files etc.)

- **The structure of the database is being expanded to include many new fields, some suggested by the "GITCO" project. (many thanks to their efforts.)**
- **Data entry into these fields is progressing, although at a slower pace than anticipated.**
- **Data entry into these additional fields is being performed first on those CD-ROMS which are mounted on the public workstations.**
- **After those CD's are complete, the rest of the collection will be updated.**
- **Stage 5: W3Launch file generator.**
- **The final phase of the project will be to add several additional report functions to the web page generator. These functions will write all of the files used to access the CD-ROMs mounted on the public access workstation. The main menu page, all submenu pages, the program startup page, the w3launch startup file, the program listing file, and the w3launch initialization files will all be generated automatically from the database.**

7. Those Pesky Titles, or Some Challenges

CD-ROMs that display 'install' option on the beginning screen

Some disks--like the *Census 2000 STF1*--have the INSTALL option clearly displayed when the disk comes up. This is a great feature if the disk is not loaded on our workstation and users have to check it out and use it at home. However, if they have to use the disk on the Documents Workstation, we obviously do not want them trying to install the disk on our workstation.

Solution:

Auto-run is disabled after the disk is installed.

Then links are created that bypass the main (first) page which includes the install option.

Choose LAN installation where available; worked for WISTAT CD from the UN.

Foreign Broadcast Information Service (FBIS) Y2K Problems

The early FBIS disks were not Y2K compliant. We wrote a program that resets the clock when the disk loads to a pre-2000 date, then resets the clock to the correct date after the disk is removed.

Older CDs that don't run in our DVD drives

Landview 1, for instance, does not run in our current workstations. We loaded the disk on an older computer and burned a new CD that would run in our workstations.

Use emulation software like VirtualCD.

Complex or difficult Software

We decided early on that our public workstations would be treated as 'Ready Reference' resources and that we would load CD-ROMs that were more or less easy to use. The Census Bureau's *GO Software* and *Adobe Reader* are perfect examples. Users need little instruction to begin using this type of software.

CDs running on complex software such as the *SETS Software* would not be installed. Instead users can check out the disks and use them in the Computer Labs or at home.

The Advanced workstation enables us to provide a platform for users with more challenging research demands such as mapping or using a database like *Access* or *Excel*, but we still do not provide access to the SETS software.

Older DOS Software

Some older DOS software has trouble with newer Windows operating systems. In the case of Census Bureau CDs, there is a workaround and it does work for Extract.

see also http://govpubs.lib.umn.edu/cd/pesky.phtml

8. Summary of Steps to Create Public CD Access

1. **Decide which titles are to be made available.**
2. **Decide on the desired form of access: local/mediated, local/unmediated, remote, etc.**
3. **Decide on the user interface, perhaps by doing user testing or based on user comments at the reference desk.**
4. **Go to your IT department, tell them 1-3 and ask about institutional policies and constraints.**

- **If you are in a small institution without an IT department, then you will be constrained only by what you feel you can do.**

1. **Make an equipment request.**
2. **When the equipment arrives, set up a prototype with everything you might want on it.**

- **A rule of IT is that it's always easier to remove than add. Paradoxically, this is true of security software too: you lock the computer completely, then selectively remove restrictions.**

1. **Duplicate and backup the prototype.**
2. **Customize as needed.**
3. **Put them out for the public to use.**
4. **Fix the minor problems that *will* come up until they're stab**