

The Joy of Computing

Toolkit

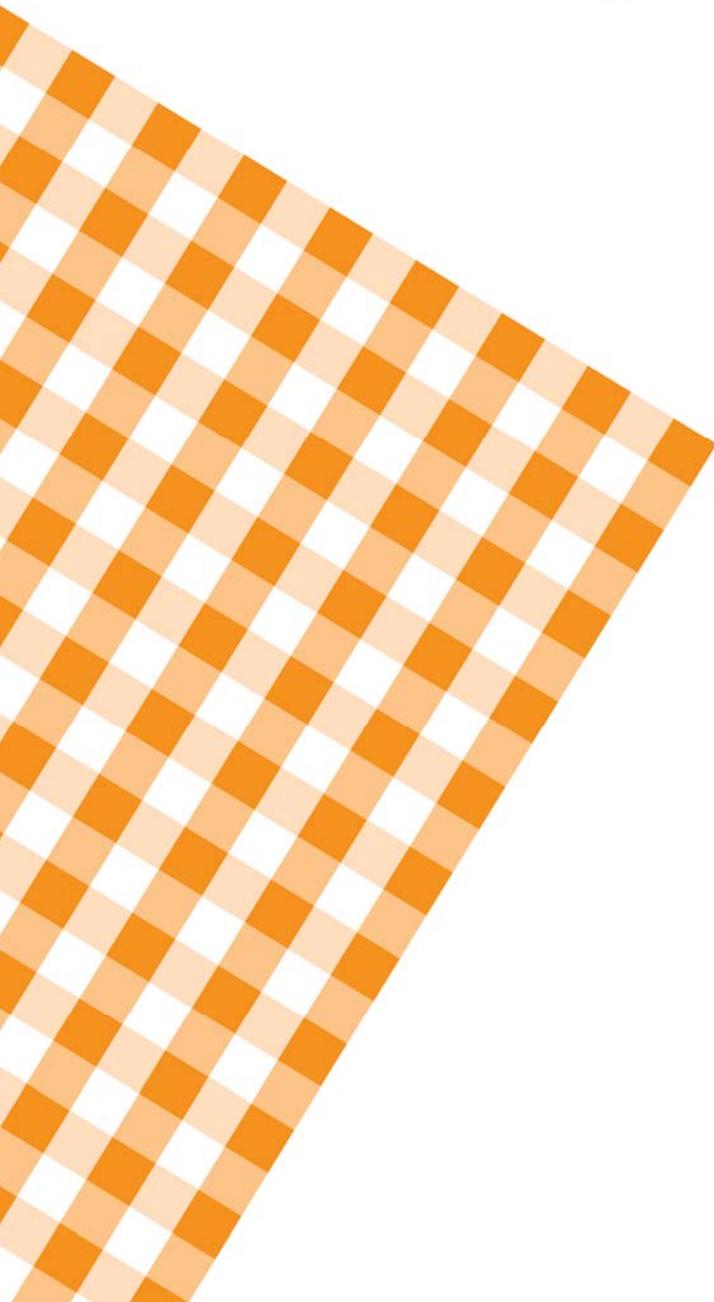




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Introduction

Welcome to the Joy of Computing Toolkit. It contains — in one easy-to-access location — a complete set of “how-to” resources and quick references to help you successfully build and maintain your library’s public computer services.

This toolkit is organized into six logical areas of interest. You can download the entire PDF document, if you like, or access the tools online by clicking on any of the following areas of interest, or on a specific tool title to link to and display the specific tips and tactics that you need.

ARE A OF INTEREST:	TOOLS AVAILABLE
Planning and Decision-Making	<ul style="list-style-type: none">▪ Technical Computer Competencies Assessment▪ Six-Step Technology Planning Tool▪ Quick Reference: What Do You Need to Know About Technology Decision-Makers?▪ Who Are Some Key Decision-Makers?▪ Technology Assessment Checklist▪ 10 Rules for Building and Managing a Tech Team▪ Writing a Technology Budget — Ideas in Action Chart▪ TCO/TVO Questions You Should Be Asking▪ Places to Learn About Technology
Communication and Partnerships	<ul style="list-style-type: none">▪ Building a Better Relationship with Your Techies▪ Possible Resources and Tools for Establishing Library Collaboration▪ Compatible Library Partners Chart▪ What to Consider When Entering Into a Collaborative Process▪ Tips and Techniques for Creating Strong Partnerships▪ Ten Examples of Successful Library Collaborative Projects
Buying and Deploying Technology	<ul style="list-style-type: none">▪ TechAtlas: Technology Planning Options for Libraries▪ Tips and Guidelines for Making Informed Computer Purchases▪ Using Older Computers – Key Considerations▪ Disk Protection Software Installation Tools and Techniques▪ Patron Computer Software Comparison Chart



ARE A OF INTEREST:	TOOLS AVAILABLE
Buying and Deploying Technology <i>(continued)</i>	<ul style="list-style-type: none"> ▪ Some General E-Rate Rules for Eligible Products and Services ▪ Maintenance Tasks/Costs: Computers WITHOUT Lock-Down and Disk-Protection Software ▪ Maintenance Tasks/Costs: Computers WITH Lock-Down and Disk-Protection Software ▪ Ten Steps to Successfully Working with Vendors ▪ How to Buy Cooperatively Quick Reference ▪ How to Examine a Lease Agreement ▪ Buying Hardware Checklist ▪ Buying Software Checklist ▪ Eight Smart Tips for Standardizing Your Equipment ▪ Guidelines for Disk-Cloning ▪ Deploying New Computers — What to Ask and Why
Maintaining and Sustaining Technology	<ul style="list-style-type: none"> ▪ Library Tech Support Evaluation Sheet ▪ Help-Desk Software Options ▪ Prolonging Computer Use — Tips and Tools ▪ Computer Disposal The Safe and Easy Way — Quick Reference ▪ Hardware and Software Inventory Worksheets ▪ Technology Policies, Plans and Procedures ▪ Tech Support Contact Information ▪ Troubleshooting Notes ▪ Troubleshooting Bootup Problems ▪ Software Troubleshooting Steps ▪ Internet Connectivity Troubleshooting Steps ▪ Troubleshooting Problems with a Network Printer
Network and Security	<ul style="list-style-type: none"> ▪ Wired for Success: A Tool for Understanding Your Wireless Network ▪ Wireless Options Comparison Chart ▪ Quick Checklist for Setting Your Wireless Access Policy ▪ Where and How to Find Vulnerabilities ▪ Firewalls at a Glance ▪ Network Performance Metrics Defined ▪ Ten Factors to Consider When Shopping for a Telecom Provider ▪ Bandwidth Management Techniques — Tips and Actions ▪ Network Inventory
Innovation	<ul style="list-style-type: none"> ▪ What You Need to Stay Future-Focused ▪ Collaboration Tools Chart ▪ Fifteen Ways to Effectively Use Web 2.0 Tools





1

Planning and Decision-Making

It doesn't hurt to have an extra set of tools around when you are creating a strategic technology plan for your library. Each of the following tools can be easily accessed and viewed online or downloaded as a PDF file.

- [Technical Computer Competencies Assessment](#)
- [Six-Step Technology Planning Tool](#)
- [Quick Reference: What Do You Need to Know About Technology Decision-Makers?](#)
- [Who Are Some Key Decision-Makers?](#)
- [Technology Assessment Checklist](#)
- [10 Rules for Building and Managing a Tech Team](#)
- [Writing a Technology Budget — Ideas in Action Chart](#)
- [TCO/TVO Questions You Should Be Asking](#)
- [Places to Learn About Technology](#)

Technical Computer Competencies Assessment

Use the following chart as a guide to set expectations around the competencies that can help you succeed.

MAINTENANCE AREA/TOOL:	COMPETENCIES:
Disk-Protection	<ul style="list-style-type: none"> ▪ Familiarity with the software components that require regular updating so that you can configure disk-protection to keep those changes (e.g., Windows updates, anti-virus definitions, MS Office updates). ▪ An understanding that disk-protection greatly affects how the computer handles changes you make to a computer (e.g., patrons cannot save work to the protected system drive, you have to turn off disk-protection to install software). ▪ Familiarity of hard drive partitioning so that you know which sections of a hard drive are protected and understand how to create parts that are unprotected to save work, if desired. For an overview of hard drive partitioning, see http://en.wikipedia.org/wiki/Partition.
Lock-down computers	<ul style="list-style-type: none"> ▪ An understanding of computer user accounts and how they limit or grant access to various pieces of the computer's operation (e.g., an administrator should have the ability to change other users' passwords, but regular users should not be able to do this). ▪ Familiarity with Microsoft Policies (or Group Policies) to modify user permissions and access is helpful. For an overview of Microsoft Policies, take a look at http://www.infopeople.org/resources/security/workstation/policies.html
Imaging and cloning	<ul style="list-style-type: none"> ▪ The capacity and the ability to manage large files (2 GB and greater) on various media (e.g., recordable DVDs, portable hard drives, servers). Imaging copies the contents of the whole hard drive to one file. This creates "big" files (anywhere from 2 GB on up, depending on what software you have installed on your computer). ▪ Familiarity with hard drive partitioning to understand the sections of a hard drive being imaged. Some people will store a copy of an image on the hard drive of the computer, making it much easier to clone the computer if the need arises. It is important to maintain a copy of these images elsewhere as a backup. For an overview of hard drive partitioning, see http://en.wikipedia.org/wiki/Partition. ▪ An understanding of available imaging and cloning tools. Some tools, especially older versions, may require the creation of bootable CDs, floppy disks, or flash drives. Newer versions of cloning software are more flexible and offer ways of imaging/cloning that don't require boot disks. Most imaging software includes tools to create boot CDs. ▪ An understanding of third-party imaging and cloning tools. For example, BartPE http://www.nu2.nu/pebuilder/ is an outstanding and free boot CD creation tool, but requires advanced knowledge of Windows operating system and hardware device drivers. There are other options at http://bootdisk.com.



Six-Step Technology Planning Tool

KEY ACTIONS (OR DECISIONS)	RESOURCES
<input type="checkbox"/> Step 1: Find the real IT decision-makers in your community and schedule meetings with them.	<ul style="list-style-type: none">▪ Read this article on dealing with key decision-makers.▪ If you're not sure what questions to ask your IT decision makers, use this interview guide.
<input type="checkbox"/> Step 2: Do a technology inventory to figure out what hardware, software, and networking equipment you already own.	<ul style="list-style-type: none">▪ A thorough technology inventory takes some time and planning, and it requires that you have the right tools. Our Technology Assessment gives you some tips on doing an inventory and some links to free software to get you started.
<input type="checkbox"/> Step 3: Look at your library's strategic plan or long-range plan and think about how it will affect your technology plan	<ul style="list-style-type: none">▪ Check our Strategic and Technology Plans.
<input type="checkbox"/> Step 4: Pull together a technology team and schedule your first meeting to discuss the information you've collected in steps 1 through 3.	<ul style="list-style-type: none">▪ This step is complicated, so be sure to review Building a Technology Team. We've included plenty of resources.
<input type="checkbox"/> Step 5: Write the technology plan	<ul style="list-style-type: none">▪ For guidance on the actual writing and brainstorming process, see the list of additional resources below.
<input type="checkbox"/> Step 6: Revisit and evaluate your technology. Plan on a regular basis (every 6 to 12 months).	<ul style="list-style-type: none">▪ Your technology plan should be rewritten entirely at least once every three years. For more information on the evaluation process, check out this article and these resources from WebJunction.



Quick Reference: What Do You Need to Know About Technology Decision-Makers?

Listed below are some thoughts and questions you can use to learn more about the key influencers and decision-makers in your community.

- **Who Are They?** Who makes the final decisions when it comes to IT? It could be one person, but since technology is so vast and complex, responsibility and influence are often widely distributed. More confusing for you is the fact that in some organizations no one has taken ownership of the IT turf. However in this environment there are also opportunities.
- **Your Bosses' Boss** Your supervisor has a supervisor, who in turn has a supervisor. It's easy to forget that key influencers have reporting and accountability requirements. Do your best to find out who they report to, and how their performance is judged.
- **Laws and Regulations** Most key decision-makers are circumscribed by a set of laws, regulations and policies. Some of these can be changed, others are set in stone. Get a sense of what's in these statutes and policies, and obtain copies if you can. You don't have to read them all, but you should have them on hand for reference purposes.
- **Criteria and Concerns** What other criteria do your IT decision-makers use in approving or rejecting IT projects and IT purchases? Are those criteria written down anywhere? What are their fears and concerns? Are they operating under a tight budget? Have they been burned in the past by network security problems?
- **Presentation and Communication** Everyone has a different learning style, and everyone absorbs information differently. Therefore, one decision-maker in your community will respond to charts and graphs, while another responds to stories about patrons, and another prefers statistics. What types of arguments and evidence do they respond to?
- **Initiatives** Are there any big technology initiatives already underway?
- **\$\$\$** Where does the money come from? Which budgets can you use to cover technology costs? There may be funds in your community that you are not currently aware of.
- **Technology Planning** Has someone else already written a technology plan? If you like the plan, that's great, there's less for you to do. You can sign off on the existing plan or use it as a foundation for your own work. Even if you disagree with the direction of the existing plan, you have to take those decisions into account and understand why they were made.
- **Tech Teams** Is there already a technology team in place? If there's a system-level, city-level or county-level tech committee, try to get a seat on the committee or at least sit in on the meetings. You may decide that your library needs a tech committee of its own. If this is the case, the two teams have to be aware of one another, and if your committee is the less powerful, the responsibility for contact and communication will probably fall on your shoulders.



Who Are Some Key Decision-Makers?

- City council or County council members
- Mayor or city supervisor or county supervisor
- City or County IT department
- Library's IT department
- Trustees or Library Boards
- A Regional Library Co-op
- A State Library – state libraries often have rules with regard to technology planning, budgeting and reporting, especially if they provide funding to your library.
- Federal Grant agencies (IMLS and USAC) – if you apply for any e-rate discounts you're accountable to USAC, and if you receive any money from IMLS, you have to play by their rules as well.

Please note some possible key decision-makers who can assist in your library technology planning.

NAME:	TITLE:	CONTACT INFORMATION:



Technology Assessment Checklist

When you're creating a technology assessment, this list of what's included in a technology assessment to help you to get started.

- What technology skills does your staff possess? How much do they know about different hardware and software topics?
- Do you have any written policies relating to staff and public use of technology? Do you have any informal, unwritten policies?
- What are your procedures and policies with relation to data backup, computer security, purchasing, change requests, tech support, etc.
- What's the current state of your ILS, your Web site, your local network, your Internet connection, and other key technologies? Are there any weaknesses or threats that need to be addressed?
- Who do you turn to for advice about technology?
- Who are your technology vendors and sales representatives?
- Who provides your Internet connection? How fast is that connection? What sorts of networking equipment (routers, switches, firewalls) do you have?
- What are the major technology services you provide to your patrons? Do you offer one-on-one or classroom-based technology training?
- Are you currently working on any new technology projects or services?
- A technology inventory.



10 Rules for Building and Managing a Tech Team

1. Include at least one frontline staff person on your team (i.e., a circulation staff person or a reference librarian). They see a wide variety of patrons and in some respects they might understand patron needs better than the patrons themselves.
2. Include at least one non-techie on your team.
3. If possible, include a techie who doesn't work in a library. Someone with an IT management background would be ideal, but any well-informed technology professional will do.
4. Assign a library techie to your team. If you don't have an IT department, just invite someone on your staff who's enthusiastic and knowledgeable about technology.
5. Prepare for each meeting. Gather relevant information and develop some questions that will generate discussion. Send these out to the team at least a week before each meeting.
6. Spend the first meeting or two educating your team about the current technology environment in your library, the library's strategic vision, and budget constraints.
7. Bring in examples of successful programs and services from other libraries. Use the MaintainIT Cookbooks and other resources to help your team understand what's possible and what's worked for other libraries.
8. Teach your team about the community and about the needs of the people you serve. If you don't have community members and patrons on your team, do some demographic research, observe patrons in the library, interview community leaders, and talk with the patrons themselves.
9. When you're discussing the needs of your community (#8), talk about the technology needs of people who don't visit the library on a regular basis.
10. Follow through on the team's recommendations.



Writing a Technology Budget — Ideas in Action Chart

IDEA	TAKE ACTION
<p>If you're a fiscal novice, learn a little about budgets and decide what type of budget you'll be using.</p>	<p>It's hard to recommend one type of budget over another, because the decision depends largely on your situation and your audience. This article from the Infopeople Web site will introduce you to some of the main types of budgets.</p>
<p>Pick a software tool to help you with creating your budget.</p>	<ul style="list-style-type: none"> ▪ If you're on a shoestring budget, you can start with an Excel spreadsheet or the TechAtlas inventory tool. It will help primarily when you're doing your technology budget, but you can export the results from TechAtlas and roll them into your larger organizational budget. ▪ Techsoup offers steep discounts to libraries on accounting software from Sage: http://www.techsoup.org/stock/Category.asp?catalog_name=TechSoupMain&category_name=Sage&Page=1 Intuit: http://www.techsoup.org/stock/Category.asp?catalog_name=TechSoupMain&category_name=Intuit&Page=1 Microsoft: http://www.techsoup.org/stock/category.asp?catalog_name=TechSoupMain&category_name=Accounting+MS&Page=1&Cat1=Microsoft&CatCount=1 ▪ For more information, read A Few Good Accounting Packages http://www.techsoup.org/learningcenter/software/page5144.cfm on the Techsoup Web site.
<p>Decide what expenses you'll include in your budget projections.</p>	<ul style="list-style-type: none"> ▪ If you have a recent technology budget, it helps to look there first, but if that's all you do, it's easy to perpetuate the oversights you made last year and the year before. If you're worried that you might be forgetting something, take a look at a few sample technology budgets http://www.webjunction.org/do/DisplayContent?id=12116 from the NPower Web site. ▪ Another budgeting model that might help you think specifically about your technology spending is called Total Cost of Ownership. ▪ Ask other libraries and other city government departments if you can see their technology budget. They may have included items that you forgot.
<p>Think about e-rate</p>	<ul style="list-style-type: none"> ▪ Always look at the suggestions of the e-rate administrators (USAC) if you plan to apply for e-rate discounts in the near future (under the section titled "Elements of a Technology Plan" look at the third element). If you don't follow their advice, you may receive an unpleasant visit from Mr. Auditor. ▪ The Alaska State Library has created a worksheet to help librarians track their technology expenses in terms that the e-rate administrators will understand. ▪ If you search for "erate budget requirements" on Google, you'll find similar documents from other state libraries.



TCO/TVO Questions You Should Be Asking

Total Cost of Ownership (TCO) refers to the hidden costs of a new technology. Total Value of Ownership (TVO) is the flip side of TCO and refers to the hidden benefits. Below are a few questions you can ask yourself to help uncover these hidden costs and benefits. However, this list is only partial. For more considerations, check out our additional resources:

TOTAL COST OF OWNERSHIP QUESTIONS

- **IT Staff Support:** How much time will your IT staff spend supporting and maintaining the new technology? If you're installing wireless,
- **Vendor Fees:** Will you be paying any ongoing support or licensing fees to the vendor?
- **IT Training:** For any complex technology, your IT staff will need ongoing training. They might need formal classroom training, or they might make do with books, Web sites and advice from colleagues. However, whatever technique they choose, they'll need paid time to absorb the new knowledge.
- **Staff Training:** Any time you replace a major productivity tool such as your ILS or your Office productivity suite, staff will request some formal or informal training. Talk to
- **Bandwidth Costs:** Will you need a faster Internet Connection to handle the new technology? For instance, if you begin a project to digitize local history resources and put them online, and you include high-quality photos and streaming audio files of interviews with residents, will your connection be able to handle the traffic? Certain applications will also increase the traffic between branches, so you might need to upgrade your Wide Area Network connections.
- **Hardware Costs:** Does the software you're considering require new hardware? For example, a lot of enterprise class technologies run best on dedicated servers or single-purpose hardware appliances. Even if you have an unused server in your library, is it compatible with the new software?
- **Infrastructure Costs:** Computers need electricity, and they have needs in terms of temperature and humidity. Will a new technology initiative require that you upgrade your HVAC system? Will you need more electrical outlets? Will you need a new electrical panel? Will you need more network drops, more patch panels or more switches?
- **Electricity Costs:** If you're running more desktop and laptop computers, you'll be paying more each month for electricity. Servers also use electricity, but they might have additional costs related to maintaining stable temperature and humidity.
- **Technology Replacement:** How long will it be before you need to replace this technology, and how much will it cost?

TOTAL VALUE OF OWNERSHIP QUESTIONS

You can turn any of the questions above on its head and ask yourself what are the benefits and savings of this new technology?

- **Service to Patrons:** It's hard to measure the impact that a new technology will have on patrons, but it's obviously a primary consideration that can easily outweigh all the other factors on this list.



- **Library Visibility:** Some technologies generate excitement and publicity. For example, video game events are still controversial in some quarters, but journalists like to write about them. On the other hand, your new disk-cloning software probably won't get a write-up in the local paper.
- **Staff Productivity:** Will library staff be able to do their jobs faster with the new system you're considering? If you're tracking your income and expenses using a clunky, ten-year-old piece of software, could you save time in the long run by upgrading? How many extra steps and unnecessary workarounds does your staff use to deal with the quirks and limitations of your ILS software?
- **IT Staff Support:** If a new technology is more reliable and user-friendly than the solution you have in place, your staff will spend less time fixing problems and answering support calls.
- **IT Training:** Again, more reliable, user-friendly software may reduce the amount of time your IT staff spends trying to learn the intricacies of the technology.
- **Staff Training:** Ditto. User-friendly technology means less staff training.
- **Hardware Costs:** It may sound counterintuitive, but some technologies can reduce your long-term hardware costs. For example, you may be running a technology in your library that requires its own piece of hardware, while the replacement option you're considering is happy to run alongside other programs on a shared device. If you run a lot of server-based programs that all require their own dedicated hardware, virtualization software <http://www.techsoup.org/learningcenter/software/page4826.cfm> might let you consolidate those applications and run them all on the same server without any conflicts. Thin client solutions such as Useful Desktop <http://www2.userful.com/products/userful-desktop> can also reduce the amount of hardware in your library.
- **Infrastructure Costs:** Again, any technology that reduces the amount of hardware in your library (see above) might lower your long-term infrastructure costs by reducing the number of electrical outlets and network drops that you need.
- **Electricity Costs:** Is the new technology you're looking at more energy efficient? For example, LCD monitors use much less electricity than older CRT monitors, and computer manufacturers are making strides in terms of reducing the energy-consumption of their products. Also, anything that reduces the total number of PCs and servers in your library will probably reduce electrical costs as well.
- **Bandwidth Costs:** Some vendors are more conscientious than others when it comes to conserving precious bandwidth. In other words, the software you're looking at may use less bandwidth than your existing solution and could therefore save you money. Bandwidth management tools [Bandwidth Management] are specifically designed to reduce your bandwidth usage.

What additional TCO questions should you be asking about your specific technology purchases?



Places to Learn About Technology

- **Magazines** – Most technology magazines are available online in one form or another, but since a lot of these Web sites are often difficult to navigate, many folks still buy or subscribe to print magazines.
 - For a general overview of technology, check out [Wired](#) and [PC World](#) ([MacWorld](#) or [Linux Magazine](#) are the Mac/Linux equivalents), but there a lot of magazines that cover the same ground.
 - [Fast Company](#) and [Business 2.0](#) also do a good job of writing about technology for a general audience. They're usually interested in entrepreneurial applications of technology, but some of those ideas apply to libraries as well.
- **Enterprise-level magazines** -- If you're managing technology for a large library system, [InformationWeek](#), [eWeek](#), [CIO](#) can keep you apprised of developments in the enterprise IT realm.
- **Blogs** – As mentioned above, Meredith Farkas' post on [library blogs](#) will introduce you to the library technology blogosphere, and [the Technorati top 100](#) will introduce you to the wider blogosphere.
- **Web Sites** – If you're looking for product reviews or in-depth, detailed news about specific technologies, some of the enterprise magazine sites above (eWeek, CIO) can help. Also check out [CNet](#), [Slashdot](#), and [Ars technica](#).
- **Conferences** – State, regional and national conferences are great places to learn and get inspired.
 - [Computers in Libraries](#) and [Internet Librarian](#) are entirely technology-focused.
 - The Public Library Association (PLA) and the American Library Association (ALA) vary in their coverage of tech from year-to-year but they usually feature a good selection of tech programs.

The Library of Information Technology Association (LITA) tends to be more focused on academic libraries, but it has some sessions that might be useful to public librarians.
- **Classroom Training** – Classroom-based technology trainings often cost several thousand dollars for a week-long course, but for those who learn best in this environment, it's a worthwhile investment.
 - State libraries and state library associations occasionally sponsor free or low-cost technology trainings, so keep an eye out for those.
 - Also, the OCLC regional cooperatives frequently offer online and face-to-face training on technology topics.
 - New Horizons is probably the best-known national provider of technology training, but there are thousands of local businesses that offer the same services.
 - Some prefer community college technology courses because they're often cheaper and less exhausting than the intensive New Horizons type class. Instead of learning eight hours a day for five days straight, college adult education courses let you attend class one or two evenings a week.
- **Webinars and E-learning** – Free technology webinars (aka webcasts) are easy to find these days. Webinars are real-time, interactive Web presentations with some mix of lecture, demonstration, Q&A, and student participation. Of course, as often as not, you'll learn about a webinar after it takes place, in which case you can usually access an



archived version with all of the original content, but none of the interaction. Chris Jowaisas from the Texas State Library attends webinars put on by tech vendors. Microsoft, Symantec, Cisco and others put on thousands each year. These webinars usually begin with a broad discussion of a particular type of technology or a particular problem that IT folks frequently face. According to Chris, this is the informative piece. Once the presenters begin selling their own solution, he often drops off the webinar.

- If you're looking for free webinars that address library technology issues without the vendor pitch, keep an eye on [the WebJunction](#), [MaintainIT](#), and [OPAL Web sites](#).
- WebJunction offers [dozens of free and low-cost technology courses](#). Most of these are self-paced tutorials, so you don't have an instructor/presenter.
- WebJunction also maintains the [E-learning Clearinghouse](#), a large collection of self-paced and instructor-led online courses, all geared towards librarians.
- **23 Things** – About a year and a half ago, Helene Blowers (working then at the Public Libraries for Charlotte and Mecklenburg County) developed a hands-on collaborative curriculum for learning new technology, especially Web 2.0 software. It's been wildly successful and dozens of libraries have used this model. However, you don't have to be part of a group. Almost all the tools that Helene highlights are free, and her exercises are easy to follow. The original *23 Things* <http://plcmcl2-things.blogspot.com/> site has everything you need to get started, and a search for "23 Things" <http://del.icio.us/search/?all=23+things> on del.icio.us will pull up related sites from other libraries.
- **Vodcasts and podcasts** -- If you're more of a visual or audio-based learner, there are thousands of technology-related video and audio presentations available for free on the web. These presentations go by various names depending on the technology being used (e.g., vodcast, podcast, video-on-demand, streaming audio, etc.), but you can view most of them in your Web browser.
 - If you want software designed specifically for viewing audio and video, check out [iTunes](#), [Joost](#), or [Miro](#).
 - If you want to search for a video on a particular topic, try [Blinkx](#) or [Google Video](#).
 - If you want library-specific vodcasts, check out [SirsiDynix Institute](#) or the [Library Gang](#).
- **Mailing Lists and Discussion Boards** – Neither is a cutting edge technology anymore, but they're consistently popular.
 - [Web4Lib](#), [LibNT-L](#), [SysLib](#), [PubLib](#) and other lists all feature excellent discussions, and most are archived.
 - The [discussion boards](#) at WebJunction also receive heavy use.
- **RSS feeds** – This is mainly a tool that facilitates information skimming. You can scan the titles of a hundred blog posts in five minutes or so and get a good sense of what's going on in the tech world and the library world. Feed readers are also great for targeted searching. Most of them let you search for a keyword across all of your feeds, or within a particular subset of your feeds (e.g., all your feeds about Web 2.0 category, or all your feeds about management). In effect you're searching twenty or fifty or a hundred of your favorite sites, and filtering out the billions of sites that you haven't vetted.
 - [Google Reader](#) and [Bloglines](#) are popular, and if those two don't appeal to you, there are lots of alternatives to choose from.



- If you've never used RSS and have no idea what it is, we recommend [RSS in Plain English](#) from the folks at Common Craft.
- **Social Search and Social News** – In a sense, all search engines rely on social search features. For example, Google's PageRank search algorithm returns results based on how many other pages link to a particular site. However, other Web 2.0 companies are harnessing collective intelligence more directly to create information retrieval services that filter out irrelevant, poor quality content.
 - For instance, [del.icio.us](#) is a social bookmarking site that lets you collect and organize your own information, but it also lets you search across everyone else's bookmarks, seeing which sites on "[RAID](#)" or "[Ubuntu basics](#)" have been bookmarked most often.
 - [Digg](#) and [reddit](#) are social news sites which let users determine the most important tech stories in the world on any given day.
- **Wikis** – Many people frequently start out at [Wikipedia](#) when researching a topic that they know little or nothing about. It's especially good at showing how a particular technical topic relates to other subjects, and you can usually find one or two useful links at the bottom of each article. For library-related technology, try the [Library Success Wiki](#).
- **Books** – A lot of folks can't stand technology manuals, but they've improved a lot in terms of design and readability.
 - For tech beginners, we've heard a lot of good y for a subscription to Safari <http://safari.oreilly.com/> or Books 24x7 <http://www.books24x7.com>. Both are online, searchable collections of IT manuals. Your library or another one in the area may already have a subscription.
- **Geektastic** – If you're looking for inspiration, and technology is a passion of yours and not just a job requirement, there are several great online resources that provide a deeper, broader perspective.
 - The annual [TED](#) (Technology, Education, Design) Conference gives scientists, entrepreneurs and big thinkers the chance to imagine the future of science and technology, y, along with a description of the science that underpins these developments. Wired and Fast Company also includes regular articles about big picture trends in the tech world. All of these sites will challenge you and they might get you revved up and enthused about IT, but they won't have much impact on your day-to-day management of technology.
- **Co-workers** – If you're lucky enough to have some engaged, informed techies on your own staff, you probably already rely heavily on them for advice.
- **Other Library Techies** – If you have the opportunity, talk to the other accidental library techies in your area and set up a technology interest group or library technology meetup. In *Stories from the Field* at the bottom of our article on [Keeping Up with Technology](#), Janet McKenney describes a small group in southern Maine that meets four times a year to discuss library technology issues. They have five or six core members and other librarians and techies drift in and out, attending some but not all of the meetings. In other words, you don't need a huge group in order to start your own regional library technology association. You can have formal presentations, facilitated discussions, informal conversations, or a mix of all three.



- **Computer User Groups and Technology Clubs** – Get in touch with local techies outside the library field. Not every town has a computer user group, but a surprising number do. Some of these clubs have a general focus, while others concentrate on a specific platform or technology. The groups listed at the Association of Personal Computer User Groups <http://cdb.apcug.org/loclist.asp> include more hobbyists and enthusiasts, while the groups at Culminis <http://new.culminisconnections.com/Locator/Forms/AllItems.aspx> seem to focus more on Enterprise IT. Both sites include Windows-centric associations, but if you're looking for more leads in that direction, check out User Groups: Meet and Learn with Your Peers <http://www.microsoft.com/communities/usergroups/default.mspx> on the Microsoft site. Linux.org <http://www.linux.org/groups/usa/> and LinuxLinks http://www.linuxlinks.com/UserGroups/North_America/United_States/ both host a directory of Linux User Groups (LUGS), while the Apple site has a Macintosh User Group (MUG) database <http://www.apple.com/usergroups/find/>

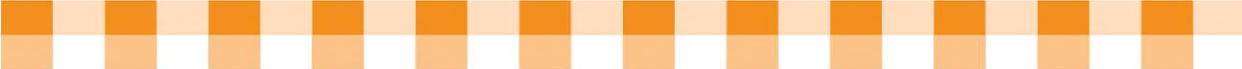


2 Communication and Partnerships

The essence of collaboration is suggested by the word itself. Collaboration is about co-labor; it occurs when people from different organizations work together through shared efforts, resources and ownership of a common goal. Effective partnerships occur between organizations with similar backgrounds; clear loyalties and interests; clear communication channels; responsibility and accountability for success and sharing of resources, risks, and rewards.

The following tools are designed to help you form strong, collaborative partnerships inside and outside of your organization. Each of these tools can be easily accessed and viewed online or downloaded as a PDF file.

- [Building a Better Relationship with Your Techies](#)
- [Possible Resources and Tools for Establishing Library Collaboration](#)
- [Compatible Library Partners Chart](#)
- [What to Consider When Entering Into a Collaborative Process](#)
- [Tips and Techniques for Creating Strong Partnerships](#)
- [Ten Examples of Successful Library Collaborative Projects](#)



Building a Better Relationship with Your Techies

- **Be as Specific as Possible.** Have you ever called tech support and started a conversation with “My computer won’t turn on,” or “The Internet’s broken”? These sorts of calls will make your IT department prematurely grey. Help-desk technicians prefer to spend time diagnosing and solving problems as opposed to figuring out exactly what you were doing when the problem occurred. For example, instead of saying that the Internet’s broken, tell them exactly what program you were in, what webpage you were trying to visit, and what type of error message you received. Also, if you know something about network troubleshooting and you’ve done some work to narrow down the problem, let your IT folks know what steps you’ve already taken.
- **Be Empathetic.** We ask our IT departments to implement technology that’s reliable, secure, user-friendly and cheap. That’s a lot to ask of anyone, so keep in mind the pressure your techies are under and the competing interests they have to balance.
- **Don’t Pretend to Know More Than You Really Do.** If you fake it by smiling and nodding your head, they’ll bury you in jargon and you’ll walk away with a headache. Don’t be afraid to stop and ask for an explanation of some basic terms and concepts. You’ll learn more that way, and they’ll respect you for your honesty and willingness to learn.
- **Challenge Your Techies.** A lot of tech folks love to solve thorny problems and grapple with new ideas. Take advantage of their curiosity and their thirst for knowledge (they want you to). If you don’t have any big projects for them to research or difficult problems for them to solve, make sure they have some time each week to pursue their own interests.
- **Talk to the Techies in Your Organization** in a relaxed, informal setting. Ask them about their workflow, their projects, the things that motivate them, and the technologies they’re excited about. Like anyone else, techies want to be heard. If you listen carefully to their enthusiasms and their concerns, they’ll be more likely to do the same for you. Moreover, as you listen to IT staff talk about their projects, you’ll start to absorb a lot of IT lingo and knowledge.
- **Become an Amateur Techie.** The more you learn about technology, the more likely it is that your techies will see you as a peer and the more willing they’ll be to trust your instincts when it’s time to make a decision. Some good ways to become an unofficial member of the “tech collective” are as follows:
 - Talk to techies and ask them questions.
 - Do a little research on your own. Subscribe to [PC Magazine](#), [PC World](#), or [Wired](#) (these magazines cost between \$10 and \$30 a year), and skim each issue when it arrives. Then read the three or four articles that look most interesting. When you encounter terms you’re not familiar with, look up the definitions on [Webopedia](#) or [Whatis](#). Of course, you can read the Web versions of these magazines, too, but you may find the print version more congenial.
 - Learn a little about “Geek culture.” A good starting point is [Wired’s Geekipedia](#).
 - Play and experiment with computers. If possible, have an old PC around (at home or at work) and use it to download interesting software. If you want to do this at work, make sure you clear it with your IT department, because a “sandbox” computer can be a security risk. Even if you’re doing it at home, be careful about the software you download. Programs that are downloaded from disreputable sites are often filled with viruses, malware, and spyware.



Possible Resources and Tools for Establishing Library Collaboration

RESOURCE/TOOL	ACCESS
Clubs and Organizations	Research your local community directory at http://fdncenter.org/getstarted/topical/sl_dir.html and Michigan State University's list of service clubs and civic organizations that provide funding at http://www.lib.msu.edu/harris23/grants/servicec.htm . Your library friends groups, board, staff and local directories may also help identify clubs and organizations that are potential collaborators.
MaintainIT and TechSoup	http://www.maintainitproject.org and http://www.techsoup.org are both sources for collaborative information and resources.
National Network of Libraries of Medicine	<i>Public Libraries and Community Partners: Working Together to Provide Health Information.</i> http://nnlm.gov/libinfo/community
State Libraries	http://www.publiclibraries.com/state_library.htm
State Library Associations	http://www.ala.org/ala/aboutala/offices/cro/chapters/stateandregional/stateregional.cfm
Urban Libraries Council; ULC Collaborations Database	http://www.urbanlibraries.org/research/database.html
WebJunction	http://webjunction.org There are many articles and discussions around the topic of collaboration and partnerships. A good example is WebJunction's Focus on Demonstrating Impact 2006: Building Partnerships http://webjunction.org/do/DisplayContent?id=12377 .



Compatible Library Partners Chart

POSSIBLE PARTNER	DESCRIPTION
Businesses/Chambers of Commerce/Economic Development Organizations	Local employers, small business owners, visitors' centers, chambers of commerce, economic development councils, industry councils, real estate agents, restaurants
Community Services Organizations/Associations/Clubs	Literacy organizations, YMCA, AARP, AAUW, American Red Cross, Kiwanis, Lions, Rotary, United Way, neighborhood associations, organizations serving the homeless, Salvation Army
Cultural Groups	Theater groups, art leagues, dance supporters, arts commissions, historic preservation groups, state humanities council
Educational Organizations	Public schools, private schools, colleges/universities, PTA or PTO groups, school boards, home school organizations, multilingual programs, higher education institutions/organizations, tutoring organizations
Ethnic Organizations	Ethnic chambers of commerce, NAACP, tribal councils, Latino/Hispanic groups, Asian groups, Urban League, refugee rights associations, refugee/immigrant centers/services
Family Services Organizations	Family service agencies, social services departments
Financial Representatives	Bankers, credit unions, financial planners, stockbrokers
Government/Political Representatives	Mayor, city/county manager, city council, county supervisors, city/county fiscal office, city/county planning office, law enforcement officers, job training programs
Health Organizations	American Cancer Society, American Heart Association, hospitals, public health nurses, public health clinics, National Network of Libraries of Medicine
Legal Organizations	Legal aid, ACLU, bar associations
Library Representatives	School media center staff, college or university librarians, special librarians
Media Representatives	Newspaper, radio, TV, ethnic media, local magazines, community newsletters
Organizations of/for People with Disabilities	Center on Deafness, Council of the Blind, state/county/city health and human services, Easter Seal, Goodwill, independent living centers, United Cerebral Palsy
Professional Groups	Medical associations, board of realtors, bar association, business and professional women's groups
Religious Groups and Organizations	Churches, ministerial alliance, youth groups, Jewish community centers, Young Life, Catholic Services
Senior Centers/Service Organizations	Area Agency on Aging, senior centers, RSVP



POSSIBLE PARTNER	DESCRIPTION
Technology Experts	Computer clubs, consultants, community colleges, Internet providers, universities
Youth Services Organizations	Big Brother/Sister, Boy Scouts, Girl Scouts, FFA, FHA, child abuse agencies, city/county recreation programs, Junior Achievement, Head Start, Even Start, child care associations, local Association for the Education of Young Children, school-age care and enrichment programs
Women's Centers/Service Organizations	Women's shelters, YWCA, National Organization for Women, Junior League, Soroptimist, sororities



What to Consider When Entering Into a Collaborative Process

- **Assess needs.** It is important for you to really examine your community and see how the library can most meet the needs of its members. Evaluate your library and community goals, and incorporate existing strategic plans based on community needs. Envision what your library could be in the future to consciously make the choices to get you there.
- **Use appreciative inquiry to examine opportunities.** What is working well? What services are most used and valued in your community? For example, are there long lines for computers or people wanting to share computers, such as teens or families? What could be done to support this service?
- **Build sustainability to support your programs and projects into the future.**
- **Look locally for partners that will help make an impact.** Collaborative efforts should center on finding an answer, making a difference or taking charge of a community issue.
- **Determine if there is strategic alignment.** Will the collaboration help fulfill the library's mission and goals? Find common ground between the library and community organizations that can help with implementation of library services and goals.
- **Focus on the cause and the people — whether it concerns literacy, children, unemployment, etc.** Be careful to not get caught up in focusing on how the individual organizations could benefit, but on what you can accomplish *together* to serve your community members.
- **Specify shared goals and rewards that your partnerships will foster.**
- **Use open communication; share timetables and have periodic meetings to share information with your partners.**
- **Clearly define roles and responsibilities in any collaboration.**
- **Ensure the ability to make necessary decisions for situations that arise.**
- **Consider what your library has to offer and how you can better reach out to your community.**
- **Complete a SWOT analysis.** Determine the library's strengths and weaknesses, as well as the threats and opportunities in the community.
- **Examine the implications of sharing resources.**
- **Consider the chances of success for each partnership.**
- **Create a memorandum of understanding for collaboration.** Clearly communicate what is expected of the collaboration and what the responsibilities are. Use a detailed, signed agreement that confirms expectations in writing. Terms not to use, as they could denote a legal arrangement, include partnership agreement (this can imply equal liability and shared profits and losses) and also joint venture. Some things to include:
 - Summary of assets and needs identified
 - Description of target audiences and constituencies
 - Description of goals, objectives, purpose and shared agreements
 - Resources and equipment needs and how needs will be fulfilled



- Defined roles and responsibilities
- Milestones, timeline, what happens when
- Key contacts and decision-making process and approval
- Expected deliverables
- Termination procedures: what to do if the collaboration doesn't work out
- Plan for program documentation and evaluation. What will success look like? What information needs to be gathered for evaluation, and who will be responsible?
- Budget and funding sources and responsibilities
- Plan for public awareness and marketing



Tips and Techniques for Creating Strong Partnerships

- Build from existing relationships.
- Make sure the library is in the right place at the right time.
- Join existing coalitions and networks.
- Target groups and initiate specific strategies.
- Conduct focus groups to stay aware of community needs and opportunities.
- Organize a committee or meetings with community leaders.
- Contact members individually or meet one-on-one with leaders informally.
- Identify local groups and potential community partners.
- Include individuals and organizations that are well connected to the community.
- Make sure there are benefits for all parties.
- Utilize effective communication strategies.
- Have designated and responsible representatives.
- Focus on a specific project, program or issue.
- Put the right people in the right positions. Because collaborations are built on trust and convergent goals, the major determinate of success lies in the human factor.



Ten Examples of Successful Library Collaborative Projects

Tempe Public Library is located in Maricopa County, Arizona, the fastest growing county in the nation. With a constant flow of newcomers, the library is one of the only non-commercial places for residents to gather, learn about their new communities and exchange social and educational information. The library offers special opportunities to bring families with young children together and to build social connections between older adults, young parents and relevant community services.

One of their strategies emphasizes collaboration and co-location. Tempe Library has located its branches near other public services, such as the Escalante Community Center, which operates under the city's Community Services Department and houses the Tempe Community Action Program, the Escalante Senior Center, the Youth Assistance Program, summer camp programs, health services, adult employment services and recreational activities as well as a library branch. The library offers opportunities such as the Family Place Libraries program to bring families with young children together and to build social connections between older adults, young parents and relevant community services. The library's outreach staff collaborates with colleagues at the Escalante Community Center to maximize possibilities for community engagement.

Tempe Public Library also obtained funding for the construction and operation of the Tempe Connections Café and program space through a \$547,644 grant from the Virginia G. Piper Charitable Trust. Civic Ventures <http://www.civicventures.org> is a community-focused think tank that partnered with Tempe Connections and is part of Civic Ventures' national initiative, The Next Chapter, which encourages communities to create new approaches that help retiring adults transition to new life phases by providing a supportive community for ongoing learning, development and societal contributions.

The Friends of the Tempe Public Library operate the café and program space, with all profits used for the support of Connections programs and services. Community collaboration and citizen involvement is a key part of the Tempe Connections program. During the planning for the grant, Tempe Task Force on Aging members provided input, and now a Connections Advisory Council sets project goals, hires staff and plans for operations. More than two dozen community organizations and educational institutions partnered with the City of Tempe to participate in the planning and delivery of program offerings. A few highlights include:

- Lifelong learning and new career opportunities in partnership with Arizona State University, Maricopa County Workforce Development and other partners
- Life planning workshops
- Wellness classes, screenings and exercise programs provided by St. Joseph's Hospital and Medical Center
- Civic engagement through peer mentoring
- Volunteer information through Civic Ventures' Experience Corps and Tempe's Volunteer Office



Salt Lake City Public Library has established itself as the community gathering place. The city block it occupies, called Library Square, includes retail outlets such as The Community Writing Center of Salt Lake Community College, a nonprofit artist's cooperative, public radio station KCPW, a delicatessen, a coffee shop and Night Flight Comics, a graphic novel and comics shop. The library's contract with the retailers stipulates that they must be community-focused. They share programming, training, broadcasting and implementation of large events. More than 1,000 other groups and organizations meet at SLCPL, including the League of Women Voters, Wasatch Coalition for Peace and Justice, Utah Quilters, Utah Storytelling Guild, the Authors Club, Women in Recovery and Leukemia and Lymphoma Society. Most of these groups partner in programming with SLCPL, making the library not only the place to meet in Salt Lake City, but the place to develop events as well.

Laramie County Library System, Wyoming, was *Library Journal's* Library of the Year 2008. Some of the many agencies and organizations with which LCLS has formed alliances include The Wyoming State Museum, Old West Museum, Laramie County Head Start, Stride Learning Center, Cheyenne Animal Shelter, YMCA, Cheyenne Boys and Girls Club, Cheyenne Lions Club, Cheyenne Rotary Club, Cheyenne Eye Clinic, Starbucks, Cheyenne Women's Civic League and Susan G. Komen Breast Cancer Foundation. *Library Journal* selects a library of the year annually. Online profiles of these libraries demonstrate the commonality of great collaborations as evidence of a strong and valued community library.

Nashville Public Library and their community partners provide a constant stream of programs in literacy, culture, public affairs, education, design and local history. Partners include the Vanderbilt Symphony, the Hispanic Chamber of Commerce, the National Association for the Education of Young Children, the Nashville Kurdish Association, the Women's Bar Association and the Intermuseum Council. To educate the community about the significant role that Nashville citizens played in the civil rights movement, the library built a Civil Rights Room and presents programs with the National League of Cities, Fisk University, the First Baptist Church, the First Amendment Center and the Winter Institute for Racial Reconciliation. According to the Tennessee state librarian, the Nashville Public Library is "a diverse and welcoming activity hub and a center for public discourse...The library is committed to building strategic community partnerships and responsive public programs that enhance the lives of all residents of the Nashville community. It demonstrates the power of libraries to inform and bring communities together."

Boston Public Library's Kirstein Business Branch provides business development services to new immigrants. A microlending program in New England sends aspiring immigrant entrepreneurs to the Kirstein Business Branch. The library developed a Spanish version of a popular workshop, Getting Started in Business, in partnership with the Small Business Center at the University of Massachusetts.

The September Project <http://www.theseptemberproject.org> is a grassroots effort that encourages libraries and communities to come together in meaningful ways throughout the month of September. September Project events explore issues that matter — like peace or freedom — and can include book displays, panel discussions, civic deliberations, film screenings, theatrical performances, community book readings, murals, kids' art projects and so much more. The September Project began in 2004 and continues to grow. In 2007, there were more than 500 free September Project events organized locally in libraries in 30 countries, including public forums, discussions and round tables.



Brooks Memorial Library in Vermont partnered with their local college IT department to get computer donations to use as backups when the library computers are of service so that they can still provide the public with basic Internet and word processing services. (source: MIT interview, Jerry Carbone)

Southwest Harbor Public Library in Mt Desert Island, Maine, created a computer committee. Libraries are creating technology advisory committees to help with planning, tech support and community needs assessments. “The computer committee is a group comprised of patrons and several staff members. It’s all volunteer. There are about five or so core folks with experience in computers because of their professional background or out of interest. It’s an opportunity for me and other staff members to bring up things that have come up in our daily computer interactions, and it’s also an arena through which we can plan. This has been a focus that we’re trying to move toward, and it’s been really great to have outside information and ideas. It’s like a think tank, and when I get frustrated, I can say, ‘Hey, I really don’t know what’s going on. Does anyone? Have you heard of this?’ These are folks that I can email or call. They’ve just been really quite invaluable.” Kate McMullin, MIT interview

Pryor Public Library collaborates with the local high school to support their technology needs. Shreffler, who teaches the high school computer classes and acts as Pryor Public Library’s technology consultant, explained that when the current librarian wanted to spend money to hire a full-time IT staff member, he stepped in and offered his students’ services instead. “I have students that are available about every hour, and we train them to help,” Shreffler said. “And it’s a good thing for us, and it’s not a lot of trouble.” Shreffler and his students visit the library several times a week to perform a variety of maintenance chores on the computers, including replacing malfunctioning computer components, installing software and troubleshooting occasional connectivity problems. Because most of the computers are more than four years old, having a regular maintenance team has been especially useful in keeping Pryor Public Library’s machines functional. MIT interview

Richland County Library in Sidney, Montana, collaborates with local businesses. For example, Renee Goss said she received a lot of free help from the local computer store in exchange for letting the store train its employees on library computers. Goss has also been working with local electronic stores to offer discounts on mp3 players for library card holders. “I think it’s in collaboration that you learn about your community, they learn about you and you figure out how you can pair up with somebody,” she said. “Collaborative efforts are the key to whatever it is you’re doing. Work with as many groups as you can.” MIT interview Renee Goss, Director, <http://www.maintainitproject.org/files/Renee%20Goss.pdf>

Princeton Public Library Discussion on WebJunction: Unconventional Partnerships by Janie Hermann, <http://www.webjunction.org/advocacy-outreach/resources/discussion/4285184>

“I just thought I would share a few of the unconventional partnerships that Princeton Public Library has established over the years to increase our level of programming without incurring too much additional cost.



“One of partnerships is with local theaters to provide previews and pre-performance lectures or ‘meet the cast’ sessions prior to the show opening. One series is called ‘McCarter Live @ the Library,’ and we normally have anywhere from 75 to 100 people show up for these programs. We also do ‘Passage Theater Previews.’ The theater benefits with a bit of extra promotion, and our patrons love having a chance to mingle with the cast and crew and to hear about the behind-the-scenes making of the productions.

“We have also teamed with the local arts council to create an art gallery in our reference section. They change the installation every three months and feature the works of two artists per show. When the installation is complete, we host an ‘Art Talk’ with the artists — the library provides food, the arts council brings wine and it is a classy night. Attendance ranges from 50 to 100.

“Another unique partnership is with a local Italian restaurant that pays the public performance rights for our Italian films series and then hosts a reception at the restaurant after the films. We have a large Italian community that just loves this event.

“We also collaborate with a local poetry group to do a ‘Poet Invite’ every month. They select the poets and host the evening; we just provide space and PR.

“There are several other partnerships, but the one thing that all of our partnerships have in common is that we get quality programming for minimal expense.”

Create a culture of collaboration. Library leaders should not just understand the value of collaboration; you also need to convince and inspire others to initiate collaborations and work to help them succeed. One of the first steps in this process is to articulate and promote a vision of collaborating without boundaries — not just as a short-term response to an immediate need, but as a critical element of the library’s long-term strategy. Management has to make it clear in both word and deed that everyone needs to find potential collaborators to help them solve problems and create opportunities. Speak about it and model it. Celebrate successes and make the benefits clear to everyone at the library. Encourage library staff to attend meetings and networking opportunities outside of the library.



3 Buying and Deploying Technology

There are so many things to consider when buying library technology. Where are the best deals — the city, the county or the state? Perhaps cooperative negotiations are the best way to go for you. Then there's the actual job of deployment and installation. You've got to plan ahead for that. Fortunately, we've provided a few tools to help you in this endeavor and make the whole process a bit easier. Each of the following tools can be easily accessed and viewed online or downloaded as a PDF file.

- [TechAtlas: Technology Planning Options for Libraries](#)
- [Tips and Guidelines for Making Informed Computer Purchases](#)
- [Using Older Computers – Key Considerations](#)
- [Disk Protection Software Installation Tools and Techniques](#)
- [Patron Computer Software Comparison Chart](#)
- [Some General E-Rate Rules for Eligible Products and Services](#)
- [Maintenance Tasks/Costs: Computers WITHOUT Lock-Down and Disk-Protection Software](#)
- [Maintenance Tasks/Costs: Computers WITH Lock-Down and Disk-Protection Software](#)
- [Ten Steps to Successfully Working with Vendors](#)
- [How to Buy Cooperatively Quick Reference](#)
- [How to Examine a Lease Agreement](#)
- [Buying Hardware Checklist](#)
- [Buying Software Checklist](#)
- [Eight Smart Tips for Standardizing Your Equipment](#)
- [Guidelines for Disk-Cloning](#)
- [Deploying New Computers — What to Ask and Why](#)



TechAtlas: Technology Planning Options for Libraries

It's impossible to predict the future, especially when dealing with technology. Having a good technology plan, however, will serve as a map for your journey. TechAtlas at <http://webjunction.techatlas.org> is a free online tool for library technology assessment and planning.

If your library receives e-rate funds, then you know that it's necessary to have a current technology plan for your library. The plan you create in TechAtlas can be used to fulfill that requirement.

Tech Atlas includes many features from which a library can pick and choose. Potential uses include the following:

- **Track hardware and software with the automated inventory.** If you use TechAtlas for only one thing, or if you are looking for a first step in using this powerful resource, then consider running the inventory tool. An automated script will run and gather detailed information about each computer, compiling that information in a web-based inventory that you can access from any computer. **This means the information can be shared with anyone who helps you with your computer.** It is a simple and fast process that provides you with an up-to-date inventory of the hardware and software in your library, allowing you to feel much more on top of the technology in the building. Knowing what you have now will help you feel prepared for planning and budgeting for tomorrow.
- **Survey your staff's technology skills.** How do you know if there are technology skills you should have or may benefit from having? The number of skills you can learn is large, so how do you pick and choose where to focus your energy and brainpower? The tools in TechAtlas can help you track staff skills and can also compare your library to other libraries. The staff skill section of TechAtlas is customizable, so you can add skills that are specific to your library.
- **Create a technology plan.** Does your library have a technology plan? If so, is it a meaningful document, or was it simply created to fulfill a requirement for a grant application? A well-done technology plan requires time and energy, but the end result is well worth it. Setting your goals and priorities and then reviewing them on an ongoing basis will mean the difference between feeling overwhelmed by technology and feeling like your community needs are being well-served. TechAtlas can help in this area. After answering questions and inputting the necessary data, you are able to print out a technology plan.
- **Track computer problems and issues.** Event Tracker is a component of TechAtlas that can be used to log problems and other information about your library technology. In a library where multiple people are responsible for technology troubleshooting, Event Tracker can be a way to share information with one another about the computers in the library. It can also be useful in smaller libraries, where there is only one person responsible for fixing computers and solving technology problems. Looking back at logs over time can help you pinpoint problems. It can also serve as a reminder of previous fixes that worked. In addition, if there is staff turnover at the library, Event Tracker can help new staff people quickly review past technology problems and solutions.



Tips and Guidelines for Making Informed Computer Purchases

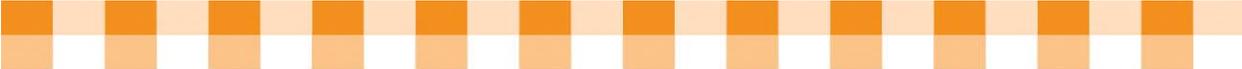
- **Do some research.** Before you buy a new computer, be sure to read the consumer reviews and look at price comparisons. CNET <http://www.cnet.com/> is one place to find reviews. Consumer Reports magazine is another place to look. MySimon <http://www.mysimon.com> is a great place to do price comparisons.
- **Know the basics.** A grasp of computer hardware and software fundamentals can help you make informed decisions. If thinking about hardware specifications is new to you, then you might begin by focusing on three essential things:
 - **Processor speed.** The faster the processor, the more quickly it can process computations.
 - **RAM (Random Access Memory).** More memory lets you run more applications at the same time without slowing down your computer.
 - **Size of hard drive.** The larger the hard disk, the more data you can store. The *How Stuff Works* Web site has easy-to-understand explanations <http://computer.howstuffworks.com/>.
- **Make your computer purchase decisions make sense for your patron computing environment.** You should ask yourself: How will the library's computer be used? How much software will be loaded on it? What sorts of applications will run on it?
- **Be sure to get any possible discounts.** You may be able to get a lower price by purchasing your computers as part of a group or through an existing county or statewide contract. For software purchases, be sure to take advantage of donated and discounted software available to public libraries through TechSoup Stock at www.techsoup.org/stock/libraries.



Using Older Computers – Key Considerations

If your library needs to keep older computers and use them as long as possible, here are few points to keep in mind:

- **Computer upgrading:** Ideally, all your computers will be able to run the same version of a currently supported operating system. This makes it easier to maintain the computers and use the latest features. To do this, you'll need to upgrade your computer operating system and software. However, very old computers may not be upgradeable to the current version of Windows.
- **Compatibility issues:** Moreover, after you upgrade, you may find that the other software applications and utilities that you installed previously may not be so completely compatible with the new version of Windows. To avoid this unfortunate outcome, you may want to consider leaving these computers as they are, and limiting their purpose to specific tasks. As an example, one library designated their older computers – Gates-granted computers which ran Windows NT – for use by children to play educational games. These computers were taken offline so that the children were not able to access the Internet.
- **Computer donations:** Donated computers should be evaluated for their potential usefulness before accepting them; some older computers may be more trouble than they're worth. It's a good idea to have a policy in place that states that you will only accept computers capable of running the same software as the other computers in the library (e.g., Pentium IV processor, 512 GB RAM, 20 GB hard drive). That way, you can gracefully decline donations that won't be useful.
- **Linux considerations** – A few rural libraries have also made the foray into Linux, a free, open-source operating system. Some flavors of the Linux-based operating system are “lighter” and geared to run on fewer computing resources than Windows. This reduces the costs of buying operating system upgrades. So, this might be another way to extend the life of your computers.



Disk Protection Software Installation Tools and Techniques

For some libraries, the simple act of restarting the computers may be the most effective maintenance and troubleshooting technique...thanks to disk-protection software.

Disk-protection is a way to revert back to the way a computer was configured at a particular point in time. Ideally, you want to start off with a solid configuration that has all the elements to serve your patrons well. This is the configuration that disk-protection will revert back to when you restart your computer.

- **Take some time to plan and think about all the elements you want to have on these computers before installing disk-protection.** These include:
 - Patron-use software such as office productivity software, games, or alternative browsers such as the Public Web Browser
 - Antivirus or anti-spyware software policies that you use to customize the look-and-feel of the computers
 - Accounts for patron use (e.g., you may want several different patron accounts — one for children, one for teens, one for adults, etc.)
 - Patron management and lock-down software such as the Fortres 101, CybraryN, or CASSIE
- **Set up your patron computer accordingly, so that changes to the computer will not stick.** This brings up some issues that do not apply to a “normal” computer setup. For one thing, as mentioned previously in this section, patrons wishing to save work or downloads from the Internet should use their own media or online. If they save on a disk-protected computer, it will get wiped away when the computer restarts.

Also, by nature, disk-protection makes it harder for you to change your patron computer's configuration. You must turn disk-protection off before you install new software or upgrade software. For example, if you want to upgrade Microsoft Office to the new version, you will have to turn disk-protection off before you can install it, then turn it back on once its installed.

- **If your patrons use a certain kind of software that needs to update configuration information as it is used, configure your setup to accommodate that.** For example, a typing tutor program might include a feature that saves the progress of its students so when they return at a later date to do more exercises, the program will know where the student left off. If you don't configure the typing tutor software to save this progress data to an unprotected area, disk-protection will wipe out this information when you restart the computer. How disappointed your hard working typing students would be!
- **Along with planning, test the disk-protected setups to make sure things are working as intended, especially after you restart your computer.** First, test the computers yourself. Once this is done, ask one or more of your patrons to sample the computer with the new features and setup. If the patrons identify problems, you can address them before installing and setting up the other patron computers.



Patron Computer Software Comparison Chart

The chart on the following pages compares some of the better-known titles that are currently in use in small libraries. They have been grouped by family, based on the most prominent patron computers' management features. The pricing and support terms reflect discounts for public library licensing and 15 workstations (where applicable).

Patron Computer Software Comparison Chart

TYPE OF SOFTWARE	SOFTWARE PUBLISHER AND TITLE	APPROXIMATE COST	INCLUDED SUPPORT, MAINTENANCE, AND SOFTWARE UPGRADE TERMS
Patron Management offers session time and print management, workstation reservations, patron computer usage reporting	Librarica CASSIE Supports: Windows 95, 98, NT, 2000, XP, 2003, Vista Feature list: http://www.librarica.com/features.html	\$995 for 5 workstations \$1,990 for 10 workstations \$2,485 for 15 workstations	One year phone, email, online help documentation support (add additional years for 15% of licensing cost per year)
	CybraryN Library Solutions ¹ Supports: Windows 98, ME, NT, 2000, XP Feature list: http://www.cybraryn.com/Solutions/	\$774.95 for 5 workstations \$1074.95 for 10 workstations \$2,519 for 15 workstations	One year phone, email, online help, documentation and remote assistance support (add additional years for \$375, according to number of workstations)
	Userful DiscoverStation1,2,4 Supports: Linux-based thin-client w/ included hardware Feature list: http://userful.com/products/library-ds	\$1,740/year for 5 workstations \$3,480/year for 10 workstations \$5,220/year for 15 workstations (all rates based on 3-year term agreement)	Phone, email, online help, documentation, and remote assistance support
	Fortres Grand Time Limit Manager Supports: Windows 2000, XP, 2003 Feature list: http://www.fortresgrand.com/products/tlm/tlm.htm	\$125 for 5 workstations \$250 for 10 workstations \$195 for 25 workstations	Lifetime phone, email, online help, and documentation support
Disk-Protection preserves a computer's baseline configuration and restores it upon restarting or logoff	Faronics Deep Freeze STD Supports: Windows 95, 98, ME, 2000, XP, Vista Feature list: http://www.faronics.com/html/deepfreeze.asp	\$219 for 5 workstations \$236 for 10 workstations \$334.90 for 15 workstations	One year phone, email, online help, and documentation support (add additional years for \$44, up to three years)
	Faronics Deep Freeze Mac Supports: Mac OS 10.3 and 10.4 Feature list: http://www.faronics.com/html/DFMac.asp	\$330 for 5 workstation \$364 for 10 workstations \$516 for 15 workstations	One year phone, email, online help, and documentation support (add additional years for \$68, up to three years)
	Fortres Grand Clean Slate Supports: Windows 2000, XP http://www.fortresgrand.com/products/cls/cls.htm	\$295 for 5 workstations \$590 for 10 workstations \$335 for 15 workstations	Lifetime phone, email, online help, and documentation support
	Centurion Technologies CompuGuard CornerStone Supports: Windows 2000, XP Feature list: http://www.centuriontech.com/products/compuguardcornerstone	\$462 for 15 workstations	One year phone, email, online help, and documentation support (additional years at 10% of license cost per year)
	Centurion Technologies MacShield Universal Supports: Mac OS 10.3 and 10.4 Feature list: http://www.centuriontech.com/products/macshielduniversal/	\$453.75 for 15 workstations	One year phone, email, online help, and documentation support (additional years at 10% of license cost per year)

NOTES

¹Includes some workstation lockdown features

²Includes disk-protection functionality

³Includes some patron management features

⁴Requires Linux/Unix

⁵Requires Windows XP Service Pack 2

A note about the listed costs: These are prices as reported by the respective vendors in April, 2007. Prices are subject to change, please contact vendor for current rates. In addition, you should always discuss your specific situation with the vendor to get the most appropriate package and pricing for your library.

Patron Computer Software Comparison Chart (continued)

TYPE OF SOFTWARE	SOFTWARE PUBLISHER AND TITLE	APPROXIMATE COST	INCLUDED SUPPORT, MAINTENANCE, AND SOFTWARE UPGRADE TERMS
Workstation Lock-Down restricts patron access to a limited number of functions	Microsoft Windows SteadyState ^{2,5} Supports: Windows XP Feature list: http://www.microsoft.com/windowsxp/sharedaccess/default.msp	Downloadable for free	Online help, documentation, and discussion forum support.
	Fortres Grand Fortres 101 Supports: Windows 2000, XP Feature list: http://www.fortresgrand.com/products/f101/f101.htm	\$295 for 5 workstations \$590 for 10 workstations \$335 for 15 workstations	Lifetime phone, email, online help, and documentation support
	Faronics WINSelect ³ Feature list: http://www.faronics.com/html/Winselect.asp	\$245 for 5 workstations \$490 for 5 workstations \$755 for 15 workstations	Through next version (typically two year lifecycle per version) phone, email, online help, and documentation support
Application Launch Restriction prevents patrons from launching unapproved applications	Faronics Anti-executable standard Supports: Windows 95,98,ME, 2000, XP Feature list: http://www.faronics.com/html/AntiExec.asp	\$179 for 5 workstations \$236 for 10 workstations \$398 for 15 workstations	One year phone, email, online help, and documentation support (add on up to three years for additional fees, according to number of workstations)
	Beyond Logic Trust-No-Exe Supports: Windows NT, 2000, XP Feature list: http://www.beyondlogic.org/consulting/trust-no-exe/trust-no-exe.htm	Free downloadable	Online help, and documentation support
Web Browser Customization modifies the way Internet Explorer looks/locks down its functionality	TeamSoftware Solutions Public Web Browser Supports: Windows 95, 98, ME, NT, 2000, XP, 2003, Vista Feature list: http://www.teamsoftwaresolutions.com/	\$125 for one year, renewable site license	Email, pager, online help, and documentation and discussion forum support
Workstation Remote Control and Administration allows library staff to see/interact with the workstation desktop to make changes, troubleshoot, or assist a patron	GoToMyPC Supports: Windows 2000, XP, Vista Feature list: https://www.gotomypc.com/en_US/personalFAB.tpl?_sid=209346628%3AFE2219DAD0D8CF8	\$777/year for 5 workstations \$1554/year for 10 workstations \$2,025/year for 15 workstations	One year phone, email, online help, and documentation support
	VNC Supports: Windows 98, ME, 2000, XP, Mac OS 9 and 10.x, Unix, Linux (various sites, e.g., http://www.realvnc.com/)	Free download	Online help, and documentation support
	LogMeIn Feature list: https://secure.logmein.com/go.asp?page=products_free Supports: Windows 98, 2000, XP, 2003	Free for LogMeIn Free version	Phone (leave message for call back), email, online help, and documentation support
Patron Privacy Data Cleanup can clean patron tracks	CCleaner Supports: Windows 95, 98, ME, NT, 2000, XP, 2003, Vista Feature list: http://ccleaner.com/features.aspx	Free download	Online help documentation and discussion forum support



Some General E-Rate Rules for Eligible Products and Services

If you apply for E-rate reimbursements, be sure to check the *Eligible Services List* at <http://www.usac.org/sl/tools/eligible-services-list.aspx> before you order products or services. Sometimes a particular hub or router is eligible, while a similar product, but a different make and model, is not. E-rate does not fund redundancies — for example, if you need only one server and buy the second server as a backup or “fallback,” E-rate will not fund it..

The Eligible Services List provides guidance regarding what products and services may be able to receive E-rate reimbursements. It is organized by category of service and revised and updated each year in advance of the application window.

Here are some general E-rate rules to consider by funding category.

- **Telecommunication** — USAC funds various types of services. Examples: T-1, Centrex, Local and Long Distance Telephone Service, Cellular Service and Paging Service, but NOT end-user equipment, such as telephone sets.
- **Internet** — USAC funds the basic conduit access to the Internet or services that are an integral component part of basic conduit access. Examples: T-1, DSL, DS-3, wireless service, email server, Web hosting services, but NOT content or design and development of the Web site.
- **Internal Connections** — USAC funds components at the applicant site that are necessary to transport information to the school or library. Examples: Access points, routers, switches, hubs, wiring, PBXs and codecs, but NOT the end-user equipment, such as telephones (including IP telephones) or laptops.
- **Basic Maintenance of Internal Connections** — USAC funds basic maintenance of the internal connections to ensure the necessary and continued operation of eligible internal connection components at eligible locations. Examples: Repair and upkeep of eligible hardware, wire and cable maintenance, but NOT the end-user support, such as a student calling a help-disk for technical assistance.
- **LANs and WANs** — A LAN is considered Internal Connections and is funded beginning with the highest poverty level areas. WAN is not considered Internal Connections because it runs from the demarcation point at school or library to a point outside.
- **WAN network facilities may only be leased, not owned, by applicants.** See the [WAN Fact Sheet](http://www.universalservice.org/sl/applicants/step06/wide-area-network-fact-sheet.aspx) for detailed information at <http://www.universalservice.org/sl/applicants/step06/wide-area-network-fact-sheet.aspx>

Maintenance Tasks/Costs: Computers WITHOUT Lock-Down and Disk-Protection Software

Items that must be completed on a regular basis to maintain computers that are NOT locked down and do NOT have disk-protection.

* Monthly time does not include hours required on a quarterly and annual basis.

AREA	TASK SCHEDULE				MONTHLY TIME REQUIRED (PER COMPUTER)	OUTSIDE CONSULTANT @ \$50 PER HR.
	WEEKLY	MONTHLY	QUARTERLY	ANNUALLY		
Security	<ul style="list-style-type: none"> ▪ Update virus definitions, and run a full antivirus system scan. ▪ Update spyware definitions, and run a full anti-spyware system scan ▪ 1 hr. 	<ul style="list-style-type: none"> ▪ Change system passwords. ▪ Visually inspect computers for signs of tampering. ▪ 30 min. 	<ul style="list-style-type: none"> ▪ Check for unneeded or unused applications and consider uninstalling them. ▪ 15 min. 	<ul style="list-style-type: none"> ▪ Renew antivirus software subscription. ▪ 1 hr. 	4.5 hrs.	\$225.00
Computer	<ul style="list-style-type: none"> ▪ Run "ScanDisk" to check hard drive for errors. ▪ Run "Defrag" to defragment files. ▪ Run "Disk Cleanup" to delete Temporary Internet files, Temporary Files, and Recycle Bin. ▪ Troubleshooting and fixing problems on computers ▪ 2 hrs. 	<ul style="list-style-type: none"> ▪ Check for the latest Service Packs/Updates for Windows, Office, and Internet Explorer. ▪ Clean the mouse so it is free of dust and grime. ▪ Make sure all the plugs are properly connected. ▪ 1 hr. 	<ul style="list-style-type: none"> ▪ Clean the screens with appropriate screen-cleaning cloth/solution. ▪ Check printers. Print a test page to ensure printers are producing clean copies, and toner cartridges are full. ▪ Clean the CD-ROM drive. ▪ Check supplies (e.g., paper, cartridges, disks, etc.) and order as needed. ▪ 30 min. 	<ul style="list-style-type: none"> ▪ Check cables for crimps, breaks, wear and tear. ▪ Clean inside PC. ▪ Update drivers as needed for printers, modems, sound cards, video cards, and other devices. ▪ 1 hr. 	9 hrs.	\$450.00
Internet	<ul style="list-style-type: none"> ▪ Clear browser history ▪ Delete cookies ▪ 15 min. 	<ul style="list-style-type: none"> ▪ Identify policy and procedure issues ▪ 1 hr. 			2 hrs.	\$100.00
Patrons		<ul style="list-style-type: none"> ▪ Restock: ▪ Computer use policies and procedures ▪ Instructional handouts for computer and Internet use ▪ 30 min. 	<ul style="list-style-type: none"> ▪ Review and update as needed: ▪ Computer use policies and procedures ▪ Patron instructional materials ▪ 8 hrs. 	<ul style="list-style-type: none"> ▪ Review and update as needed: – Library policies – Patron instructional materials ▪ 32 hrs. 	30 min.	\$25.00
TOTAL MONTHLY PER COMPUTER					16 hrs.	\$800.00

Maintenance Tasks/Costs: Computers WITH Lock-Down and Disk-Protection Software

Items that must be completed on a regular basis to maintain computers that ARE locked down and disk-protected.

* Monthly time does not include hours required on a quarterly and annual basis.

AREA	TASK SCHEDULE				MONTHLY TIME REQUIRED* (PER COMPUTER)	OUTSIDE CONSULTANT @ \$50 PER HR.
	WEEKLY	MONTHLY	QUARTERLY	ANNUALLY		
Security	<ul style="list-style-type: none"> Update virus definitions Update spyware definitions 15 min. 	<ul style="list-style-type: none"> Change system passwords. Visually inspect computers for signs of tampering. 30 min. 	<ul style="list-style-type: none"> Check for unneeded or unused programs and consider uninstalling them. 15 min. 	<ul style="list-style-type: none"> Renew antivirus software subscription. 1 hr. 	1 hr. 30 min.	\$75.00
Computer		<ul style="list-style-type: none"> Check for the latest Service Packs/ Updates for Windows, Office, Internet Explorer. Clean the mouse so it is free of dust and grime. Make sure all the plugs are properly connected. 1 hr. 	<ul style="list-style-type: none"> Clean the screens with appropriate screen-cleaning cloth/solution. Check printers. Print a test page to ensure printers are producing clean copies, and toner cartridges are full. Clean the CD-ROM drive. Check supplies (e.g., paper, cartridges, disks, etc.) and order as needed. 30 min. 	<ul style="list-style-type: none"> Check cables for crimps, breaks, wear and tear. Clean inside PC. Update drivers as needed for printers, modems, sound cards, video cards, and other devices. 1 hr. 	1 hr.	\$50.00
Internet		<ul style="list-style-type: none"> Identify policy and procedure issues 15 min. 			15 min.	\$12.50
Patrons		Restock: <ul style="list-style-type: none"> Computer use policies and procedures Instructional handouts for computer and Internet use 15 min. 	<ul style="list-style-type: none"> Review and update as needed: Computer use policies and procedures Patron instructional materials 30 min. 	<ul style="list-style-type: none"> Review and update as needed: <ul style="list-style-type: none"> Library policies Patron instructional materials 8 hrs. 	15 min.	\$12.50
TOTAL MONTHLY PER COMPUTER (after installation)					3 hours	\$150.00
Lock-down and disk-protection software install	One time installation: 6 hours for first computer, 2 hours for each additional computer (not counted in total above)				Approx. \$45 - \$90 for first computer, \$30 for each additional computer Note: if you have Windows XP, you can use the free Windows SteadyState for locking down and disk-protection.	



Ten Steps to Successfully Working with Vendors

ACTION	TO LEARN MORE
<p>1. Determine if this is the right time to make this purchase.</p>	<p>The NPower guide mentioned above offers five criteria for deciding if you're ready for a particular technology project. See the "Assessing Feasibility" section.</p>
<p>2. If the project involves considerable time and labor, decide if you should outsource it. In other words, do you need a vendor...or should you keep the project in-house?</p>	<p>Summit Collaborative offers guidance for answering this question in its article Determining Whether to Outsource http://www.techsoup.org/learningcenter/techplan/page5353.cfm</p>
<p>3. Figure out your organization's needs. What are you trying to change in your organization by buying this product or service? What are the outcomes you're trying to achieve?</p>	<p>The article What Do You Need from a Provider? http://www.techsoup.org/learningcenter/techplan/page5364.cfm can help you define your needs up front. If you create a formal requirements document (also known as a needs assessment) that defines your required and desired outcomes, you can use this as the basis of your RFP and your vendor evaluation matrix.</p>
<p>4. Determine if you should write an RFP. Call your city attorney, IT department, or purchasing agency and ask for the policy on RFPs. Frequently, RFPs are required above a certain dollar amount (e.g., \$5,000 or \$10,000).</p>	<p>The article The RFP Process: An Overview http://www.techsoup.org/learningcenter/techplan/page5507.cfm explains the difference between an RFP (request for proposal), an RFI (request for information), and an RFQ (request for quotation), and provides guidelines to help you decide between a formal and an informal RFP process. Remember, by buying off a state contract, you can often satisfy local requirements and avoid the tedious process of writing your own RFP. See the following "State Contracts" section for more information.</p>
<p>5. Become an RFP pro. There are a number of excellent resources that can help you get started.</p>	<p>The articles Writing an RFP http://www.rfp-templates.com/RFP-Template.html and The RFP: Writing One and Responding to One http://www.juliasilvers.com/rfp.htm each provide helpful RFP checklists to get you started. Beyond the Template: Writing an RFP that Works http://www.sourcingmag.com/content/c070228a.asp offers additional advice on making your RFP stand out from the crowd.</p>



ACTION	TO LEARN MORE
<p>6. Research possible vendors.</p>	<p>TechSoup's Nine Tips for Navigating the RFP Research Phase http://www.techsoup.org/learningcenter/techplan/page5517.cfm recommends places to turn to when you're researching a vendor's track record, while TechRepublic's Follow These Guides on the Road to a Valuable Vendor Relationship http://articles.techrepublic.com.com/5100-22-1040162.html emphasizes the importance of checking a vendor's references.</p>
<p>7. Develop vendor selection criteria</p>	<p>Idealware's article Vendors as Allies: How to Evaluate Viability, Service, and Commitment http://www.idealware.org/articles/vendors_as_allies.php offers some great suggestions about the criteria you should apply when choosing a software vendor, especially when the software in question is large, complex, and mission-critical. Ellyssa Kroski focuses her analysis on choosing an ILS vendor.</p> <p>NPower's Selecting the Right Technology Vendor http://www.techsoup.org/learningcenter/techplan/page5353.cfm includes a thorough list of evaluation criteria in its appendix.</p>
<p>8. Negotiate and write the contract. Work with an individual or department in your organization that is the expert in contract rules and regulations. Turn to them first so that you abide by the relevant laws and policies. However, for large, complex, important projects, make sure you and your colleagues are involved in drawing up the contract.</p>	<p>TechSoup's Writing a Contract http://www.techsoup.org/learningcenter/techplan/page5484.cfm offers helpful guidelines on contract negotiation, while Casanet's Putting Agreements in Writing http://www.casanet.org/program-management/finance/agree.htm outlines the key elements of a written contract.</p> <p>It may be appropriate to put a service level agreement (SLA) into some contracts. An SLA defines the performance level a provider is bound to. For more information, see HelpDesk Journal's Service Level Agreements Boot Camp http://helpdesk.wyopub.com/2005/07/service-level-agreement-sla-boot-camp.html, and Computerworld's SLA 101: What to Look for in a Service-Level Agreement http://www.computerworld.com/securitytopics/security/story/0,10801,109558,00.html</p>
<p>9. Manage your vendor relationships. You can't just sign a contract and then ignore your vendor.</p>	<p>For tips on how to keep that relationship running smoothly, read Marc and Beth's article on Techsoup https://www.techsoup.org/learningcenter/techplan/page5410.cfm.</p>



ACTION	TO LEARN MORE
<p>10. Evaluate your vendor relationships. Examine the market and your library's needs on a regular basis. The best vendor last year won't necessarily be the best vendor this year. On the flip side, a long-term vendor relationship can pay off in service and perks. Also, a well-written contract often includes benchmarks that you can use later to evaluate the vendor's performance.</p>	



How to Buy Cooperatively Quick Reference

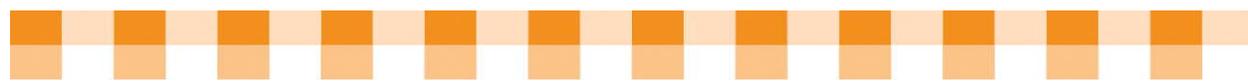
- **Buy off state contracts.** In most states, the government has negotiated deals with a variety of vendors, obtaining steep discounts that local government agencies can take advantage of. You can buy hardware, software, supplies, even cars off state master contracts. For nonspecialized hardware and software, the prices on the master contract frequently beat the prices you can negotiate for yourself. However, you probably won't find highly specialized items, such as print management software or ILS software. Not every state has this great arrangement, but most do. Also, the details vary widely from state to state. If you don't know anything about state contract and you want to learn more, get in touch with your state library or state procurement office, or do a Google search for "state contract *your state*."
- **Buy off the city or county contract.** In some cases you'll be partnering with other municipal agencies whether you want to or not. If the library is under the legal authority of the town government and local policy dictates that everyone has to buy computers through the IT department, that's what you'll do. However, if your library is administered independently, it could still be worthwhile to meet with the town's IT folks. They might be able to negotiate a better deal for you than you can get on your own, or they might have some good advice about bargaining with vendors.
- **Let a library cooperative negotiate for you.** In many areas, the state library or a statewide library cooperative negotiates steep discounts for members and constituents. Some of these cooperatives only negotiate the licensing of online databases from vendors such as Proquest and Thomson-Gale. Others focus on a wider range of library-specific products such books, magazines, furniture, preservation materials, barcode scanners, etc. In other words, these library cooperatives often complement the work done by state government purchasing agencies (see state contracts above), though there might be some overlap. You're more likely to find desktop computers, servers and other commodity technology on the state contracts. The Colorado Library Consortium http://www.clicweb.org/cooperative_purchasing/ and Minitex <http://www.minitex.umn.edu/cpers/> are two examples of consortia that negotiate on behalf of member libraries.
- **OCLC Regional Service Providers.** If your library system or your state library has paid for membership in an OCLC regional consortium, you're probably eligible for discounts on library-related supplies and services. Of course, these organizations begin by negotiating deals with OCLC itself, but they also negotiate with other vendors. For the most part the regional service providers represent multiple states. BCR, Amigos and Solinet are prominent examples. Wikipedia http://en.wikipedia.org/wiki/Online_Computer_Library_CenterOCLC_regional_service_providers has a full list.
- **Set up your own cooperative purchasing arrangement with other libraries in your area, local colleges, K-12 schools, or area non-profits.** It can be time-consuming to create a consortium, so ask yourself if the long-term benefits outweigh the initial effort. Also, talk to lawyers and accountants who know the local laws and regulations. They can probably guide you to templates that you can use as a basis for your purchasing agreements.



How to Examine a Lease Agreement

Do your homework and read the terms of the lease carefully before signing. The following are some questions you'll want to consider:

- 1. What happens at the end of the lease?** In the past, some leasing companies required that you return to them the exact same machine that they sent you originally, and they checked the serial number to make certain. However, more and more, companies are willing to be flexible and accept a computer that's comparable in most respects to the one they loaned you.
- 2. Do you have a good asset-tracking and management system?** Even though companies are becoming more patient and understanding about end-of-lease arrangements, you still have to return something to them in fairly good condition. If you constantly have trouble tracking and locating your equipment, you should buy rather than lease.
- 3. Are there other end-of-lease terms?** Can you buy the equipment and at what price? How strict will they be about the condition of the computers? Don't be afraid to push back if the leasing company gives you trouble, because you may be negotiating a new lease at the same time you're returning the old equipment.
- 4. Who is responsible for maintenance and repair?** Also, while vendors will probably replace defective parts during the period of the lease, they usually don't repair damage done by patrons, whether accidental or intentional.
- 5. Does the lease lock you into any financial issues downstream?** If possible, show the lease to your accountant, your director, your CFO, or whoever it is that balances your books. The structure of the lease could have unforeseen consequences on your budgets and your cash flow, so you want to get their approval if possible.
- 6. Does the leasing company require an up-front down payment, security deposit, proof of insurance, or some other hedge against losses on their part?** Most likely, as a government agency, you won't have to bother with this stipulation, but check the leasing agreement to make sure.

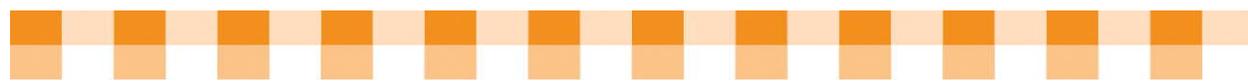


Buying Hardware Checklist

ACTION	KEY CONSIDERATIONS
<input type="checkbox"/> Pay attention to your users. <ul style="list-style-type: none"> – What are they actually doing with their computers? – What software do staff and patrons use most often? 	<p>In most libraries, staff and patrons aren't using resource-intensive applications, so you don't need the latest, greatest, fastest computers. However, if you're buying machines for teen gaming, or video editing, you may need something more robust.</p>
<input type="checkbox"/> Think about obsolescence. <ul style="list-style-type: none"> – You don't need to pay a premium for the speediest PCs, but if you buy bargain-basement equipment, will it cost you more in the long run? 	<p>Remember, every few years, Microsoft releases a new, resource-intensive operating system (e.g., Windows Vista) and then stops supporting one of its older operating systems. So it's important to strike the right balance. For a quick take on buying desktop machines, see <i>A Simple Guide to Buying Computers</i> http://www.techsoup.org/learningcenter/networks/page4821.cfm. If you want a more detailed discussion, read <i>Desktop Computers for Your Business</i> http://www.allbusiness.com/technology/computer-hardware-desktop-computers/2974998-1.html</p>
<input type="checkbox"/> For labs/public computing environments, consider business model computers rather than consumer computers.	<p>Business-grade machines tend to be more durable.</p>
<input type="checkbox"/> Ask some questions about the vendors on your shortlist. <ul style="list-style-type: none"> – How long have they been in business? How stable are they financially? – What's the average failure rate and/or return rate on their equipment? 	<p>It's often hard to get a reliable answer to this last question, but it doesn't hurt to ask.</p>
<input type="checkbox"/> Find out if the company offers imaging and installation services. <ul style="list-style-type: none"> – Will they install the operating system and the core software? – Will they install customized software and peripheral devices? – Will they come to your library and put all the equipment together? 	<p>All of these services cost extra money, but they're worth considering if your IT department is short-staffed. For more information, see our chapter on Preparing and Deploying New Computers, and our chapter on Disk-Cloning in Libraries.</p>

BUYING HARDWARE CHECKLIST (CONTINUED)

ACTION	KEY CONSIDERATIONS
<input type="checkbox"/> Ask about vendor support after installation. <ul style="list-style-type: none"> – What's their initial response time to a tech support call? – What's the time to resolution (e.g., the time between your initial call and the time the problem is fixed)? – Which problems will they help you with? 	<p>For more information, see the following section on warranties and service plans.</p>
<input type="checkbox"/> Determine whether you should do business with the manufacturer or with a hardware reseller.	<p>A reseller with multiple manufacturer relationships can sometimes simplify your life by serving as a single point of contact, handling multiple purchases on your behalf, and presenting you with a consolidated bill. A reseller might also be closer to you geographically and better able to offer personalized service. On the other hand, resellers will charge you extra for this added value. For details, read <i>Where to Buy a PC</i> http://compreviews.about.com/library/weekly/aa-wherebuy.htm and <i>What is a Value-Added Reseller</i> http://www.allbusiness.com/technology/services-value-added-reseller-var/1475-1.html</p>
<input type="checkbox"/> Check out the vendor's disposal policy. <ul style="list-style-type: none"> – Can you return out-of-date equipment to the vendor, knowing it will be properly disposed of? – What do they charge for this service? 	<p>For more information, see our section on Reusing, Recycling and Replacing Old Computers.</p>
<input type="checkbox"/> Talk to an e-rate expert. Certain networking equipment purchases (e.g., routers, switches, firewalls, wiring) qualify for e-rate discounts if your library is located in a high-poverty area.	<p>If you plan to apply for e-rate discounts, you have to abide by certain rules when selecting a vendor. The eligible services list http://www.universalservice.org/sl/tools/eligible-services-list.aspx will help you decide whether a service or a piece of equipment is eligible for discounts. Better yet, get in touch with someone who really understands the e-rate system and ask them if you might qualify for Priority Two discounts (also known as Internal Connections discounts).</p>



Buying Software Checklist

ACTION	KEY CONSIDERATIONS
<input type="checkbox"/> Do some research and testing.	If possible, download a trial software application on a machine that closely matches the typical library computer, so you can see if it's compatible with your existing hardware and software. For major software purchases, ask librarians and patrons from different departments and backgrounds to help with testing.
<input type="checkbox"/> Look at TechSoup Stock to see if you qualify for discounted software.	TechSoup only charges an administration fee, so you're only paying between 5 and 20 percent of the retail price. All public libraries in the U.S. and Canada qualify for this program, and almost all Microsoft titles are included.
<input type="checkbox"/> Pay attention to the software license agreement (sometimes known as the End-User License Agreement or EULA).	Some license agreements will actually tell you that by using the software, you've agreed to install spyware on your computer. While this is more of a problem with free software, it's always a good idea to run through the license agreement. Since most of us don't have time to wade through each EULA, check out EULAnalyzer , a utility that examines each agreement for key words and phrases.
<input type="checkbox"/> For major pieces of software, such as an ILS system, seek expert advice before signing a contract or license agreement.	You're tying your library into this agreement for years to come, and since this is such a large purchase, you may have more leverage to renegotiate some of the terms. Check out How To Make Software Contract Negotiations Work for Your Business http://www.gartner.com/DisplayDocument?doc_cd=126089 and Reviewing Software License Agreements http://www.mbbp.com/resources/iptech/software_license.html for more suggestions.
<input type="checkbox"/> Know your vendor.	10 Things You Should Ask Before Buying Software http://chinese-school.netfirms.com/computer-article-buying-software.html has some questions you can pose to your vendor.
<input type="checkbox"/> If you're buying a large quantity of a particular software title, investigate volume licenses and site licenses.	You can often receive discounts for this type of bulk purchase, and software that comes with a site license is generally easier to install and administer. Usually, volume discounts start somewhere between 3 and 10 copies of an application, but it varies from vendor to vendor. Save Money with Volume Software Licensing http://www.allbusiness.com/technology/computer-software/3311-1.html has more information. Also take a look at Microsoft's documentation on volume license keys .



BUYING SOFTWARE CHECKLIST (CONTINUED)

ACTION	KEY CONSIDERATIONS
<input type="checkbox"/> If you have a system for tracking your license agreements and installation keys, be sure to input the information about your new purchase.	This is discussed in more detail in Asset Management .
<input type="checkbox"/> Keep your IT department in the loop from the beginning.	They'll be the ones supporting the software, and will probably play a role in training staff. They can also help you test the software.
<input type="checkbox"/> Centralize software purchases as much as possible to avoid the proliferation of different applications that serve the same purpose and different versions of the same application.	For more information, see our section on IT Standardization and Consistency .



Eight Smart Tips for Standardizing Your Equipment

- 1. Buy in quantity.** Dell, HP, and other vendors change their models constantly, meaning that the computer you buy this week may be different from the one you bought last week, even if the model number is exactly the same. It may have a different network card, a different hard drive, or even a different motherboard. If you space your purchases out over the year, each batch of machines will be a little different from the others. You can mitigate this somewhat by working with your sales representative and buying business-class computers (see below), but it's still worth it to consolidate your purchases.
- 2. Buy business-class computers.** When you're buying new computers, consider business over home models. Manufacturers change the components in their business machines much less frequently, and they often will guarantee configuration support for a certain period of time (usually six months).
- 3. Plan ahead.** If you speak with a broad cross-section of your colleagues and supervisors when you're planning your budget for the year, you'll know roughly how many new computers you'll need and what other types of technology you'll be buying, making it easier to standardize your equipment.
- 4. Make technology inventories and track your assets.** If you know how many computers you have and how old they are, you'll know roughly how many you need to replace in the upcoming year. Also, you can identify the one-off, non-standard pieces of hardware and software in your nonprofit and then get rid of them as soon as possible.
- 5. Make purchases centrally.** Although all staff should have some input into your purchasing plans, don't let every department do its own buying unless they're buying off of a predefined list of approved items. Individual purchasing can not only lead to hardware and software incompatibility, but it can also cause confusion on the accounting side as you try to sort through and reconcile bills from multiple vendors.
- 6. Accept donations selectively.** If you accept every hardware donation that shows up on your doorstep, you'll eventually have an unmanageable patchwork of computing equipment. One way to prevent this is to create a written policy specifying which donations you will and won't accept. This policy can help you politely decline gifts that don't fit with the mission and technology plan of your organization, and direct unwanted donations to qualified computer refurbishers and recyclers, where they will be updated or disposed of responsibly. Unsure about when to accept or decline the offer of new equipment? See TechSoup's article [Six Tips for Accepting \(and Refusing!\) Donated Equipment](#).
- 7. Adopt Standardization Policies.** Your policies should reflect your decisions with regard to centralization and standardization. A simple policy entitled "Supported Hardware and Software" is a good start, but your IT Purchasing Policy, and your Computer Acceptable Use Policy should also reflect your approach to these questions.



8. Use Systems Management Software Suites. Microsoft's System Center Configuration Manager [available on TechSoup Stock](#), Novell Zenworks, and several dozen other software packages can help your IT department automate routine tasks and control the configuration of end user machines. Be aware though, that these programs are often expensive, complex and difficult to implement. Wikipedia has a [List of Systems Management Software](#), and [a short definition of this type of software](#). Also if your organization has a Windows domain controller (using [Windows Server 2003](#) or [Windows Server 2008](#), both available on TechSoup), you can use Active Directory and Group Policy to control the configuration of your desktop PCs. However, you won't have all the options and features that you would get with most systems management systems.



Guidelines for Disk-Cloning

WHAT TO...

...Look for in a Cloning Solution

- **Imaging assistance:** Should you do the imaging yourself or pay a third party? Computer manufacturers, resellers, and other companies are happy to clone your computers for a price. The larger your order, the more likely you can benefit from this type of arrangement. Cloning 100 or 200 computers in your library can put a serious strain on your network and your IT department staffers.
- **Maximum limits:** What's the maximum number of computers that the software can handle simultaneously?
- **Efficiencies:** How does the cloning software react to differences in hardware components? If you have two batches of PCs with similar components, you may be able to clone both with a single image. This can save you time and disk space. Also, can you restore individual files from your disk image without restoring the entire disk? In other words, can you browse the image as though it were a file system and pull out a single file or a handful of files? With the current versions of most cloning programs, you can do this.
- **Software capabilities:** Will the software perform incremental updates? In this sense, cloning software is becoming more and more like backup software. It scans your source computer for recent changes and incorporates them into the master image without forcing you to shut down or reboot. Also, creating a full image can really hog your library's network and computing resources. These small, incremental updates are much more efficient.

...Consider When Implementing a Cloning Solution

- **Hardware purchases planning:** For cloning to work effectively, you need to have a minimum number of different hardware models. If you buy a few computers here and there, you'll wind up with a patchwork environment, and you'll have to manage dozens of different disk images. More is not better in this case.
- **Master disk images planning:** Who creates the images? Who decides what software to include and how to configure that software? Remember, these disk images may be deployed to dozens of staff computers or public computers, so the affected parties should have a voice in the development of the image.
- **Source image preparation:** Microsoft Windows operating systems come with a utility called Sysprep that strips out all unique, specific information (e.g., computer name and Security Identifier) from your source hard drive and gets it ready for cloning. Nlite is an open-source program that lets you strip out Windows Media Player, Outlook Express, and other add-on features from Windows XP (but not Vista). These preparation utilities are often used in concert with post-cloning tools such as Setup Manager and Ghostwalker.
- **Image deployment:** You can always perform a direct disk-to-disk copy of an image. In other words, your source and destination hard drives are connected to the same computer, or they're connected via a network. The transfer is direct, without any intermediate steps. However, many librarians and systems administrators create a "master image" and then deploy from that. The master image is usually stored on a



removable hard drive or a network drive (see Testing below). When you have a large number of computers to image, you should consider deploying the image across the network. Using a technology known as multicasting, most disk-cloning programs can image dozens of computers at the same time. Multicasting may slow your network down somewhat (do it after hours or during non-peak hours), but it was designed specifically to send lots of information to lots of computers with the least possible overhead and bandwidth use. It won't choke your network as long as your network infrastructure is relatively up-to-date. Also, if you'll be cloning and multicasting on a regular basis, you should consider dedicating a server to the process.

- **Testing:** If you're cloning lots of computers, image one or two and examine them carefully before deploying to your entire library. Check that your image is reliable and uncorrupted. Also, look again to make sure that you haven't forgotten an important setting or an important piece of software.
- **Tweaking and customizing:** Your computers might be 99 percent identical, but that last 1 percent is still important. After you've cloned your PCs, you need to change the name of each one to avoid conflicts on the network. If your computers use static IP addresses (increasingly rare), you should assign these manually to each machine after they're imaged. In a Windows domain environment, you also need to assign a special identifier (called a SID) to each machine. Often, your cloning software will have a tool that can handle this automatically (e.g., Ghostwalker or Setup Manager).
- **Image storage and management:** With most cloning software, you can save your images to a local hard drive, a network drive, a tape backup, CDs, or DVDs. Avoid CDs and DVDs if you can. Since most images won't fit on a single CD or DVD, you'll have to span your image across multiple disks. However, once you've saved your master drive to a local hard drive or a network drive, you can use DVDs to create backups of these images.



Deploying New Computers — What to Ask and Why

ACTION	KEY CONSIDERATIONS
Who will prepare and deploy your computers?	In most libraries, the in-house IT staff deploys the computers, but if your IT department is understaffed, you can always hire a third party to help you. The computer manufacturer or reseller can handle part or all of the preparation. Finally, to a limited degree, library staff can assist if they're savvy enough.
How will you install the operating system and the core software?	Disk-Cloning is the easiest way to do this when you're dealing with more than a handful of computers.
Do you need to install any special software or make other tweaks?	Disk-cloning programs will help deploy a core, standard configuration. However, some librarians work with special applications. For instance, one person needs accounting software, while another needs graphic design software. Also, certain settings are unique to each computer (e.g., computer name, IP address, SID, and mapped network drives).
Is there any special hardware that you need to install and deliver along with the computer itself?	For example, circulation computers often need barcode readers and receipt printers, and some users need their own local printer or scanner.
Do you need to migrate data from the old computer to the new computer?	In the best of all possible worlds, library staff save their files to a server, and the IT department backs it up on a regular basis. However, some users insist on saving their data to the desktop or the local hard drive. Before you swap computers, make sure the user has backed up all his or her data to a secure location.
When will you deploy the new computers?	Timing is especially important if you're replacing computers for an entire department or library branch. For larger installations, you should ask the IT department to do their work at night or on the weekend.
Did you get what you paid for?	Consider spot-checking your new computers to make sure you received the components and software that you actually ordered. Run TechAtlas' inventory tool or Belarc Advisor to see how much memory and hard disk space your computer has. Did you receive the processors, network cards, and graphics cards that you requested? Are any programs missing?
Should you document all the decisions you've made previously?	Deploying new computers is a complex process. Even if you're the only one involved, it can be difficult to remember all the steps. If you're working with multiple staff members and/or multiple organizations, you need to write it all down. Be especially careful to note what software and hardware you've included with each new computer. Though you can use a word-processing document or spreadsheet for this, you should also consider some sort of Asset Tracking Software .



4

Maintaining and Sustaining Technology

The success of your library’s technological structure depends on how well it is maintained. This, in turn, has a lot to do with if and how *you* are using diagnostic measures and preventative procedures to help extend the life of your computer. Your IT asset management system also plays a big part in keeping your hardware and software up-to-date and in good shape.

To assist you in this area, we’ve assembled a variety of tools. Each of these can be easily accessed and viewed online or downloaded as a PDF file.

- [Library Tech Support Evaluation Sheet](#)
- [Help-Desk Software Options](#)
- [Prolonging Computer Use — Tips and Tools](#)
- [Computer Disposal The Safe and Easy Way — Quick Reference](#)
- [Hardware and Software Inventory Worksheets](#)
- [Technology Policies, Plans and Procedures](#)
- [Tech Support Contact Information](#)
- [Troubleshooting Notes](#)
- [Troubleshooting Bootup Problems](#)
- [Software Troubleshooting Steps](#)
- [Internet Connectivity Troubleshooting Steps](#)
- [Troubleshooting Problems with a Network Printer](#)



Library Tech Support Evaluation Sheet

ACTION	KEY CONSIDERATIONS
Do you have a regular maintenance checklist for your computers?	Joy of Computing: A Cookbook for Small and Rural Libraries contains routine maintenance checklists.
Have you considered your IT staffing requirements and alternate staffing solutions (e.g., consultants, shared IT staff)?	See IT Hiring for further details.
What should you look for when you're hiring a new techie? How do you write the job description, what questions do you ask at the interview, and how do you evaluate the candidates?	Check out IT Hiring for more information about screening and interviewing potential IT staff.
Do you need policies regarding: <ul style="list-style-type: none">• Help request workflows?• Help-desk priorities?• Guaranteed service levels?	See our Help-Desk Policies and Procedures page.
Would help-desk management software improve communication and efficiency in your library?	See our Help-Desk Software page.
Do you need remote desktop software? If you have many branches and few IT staff, the answer is probably yes.	See our Remote Desktop Software page.
What are the pros and cons of letting staff perform their own routine maintenance and troubleshooting? Is there a compromise between overcentralized IT and chaotic, decentralized IT?	See our IT Standardization page and the Help-Desk Policies and Procedures section.
Should you make more of an effort to standardize your IT infrastructure? Consistent, standard hardware and software is much easier to maintain.	See our IT Standardization page.



Help-Desk Software Options

TYPE OF SOFTWARE	TO LEARN MORE
<p>Issue-tracking software (aka trouble ticket software) offers libraries a way to manage support requests and minor IT projects. When someone calls your help-disk, the technician creates a trouble ticket with an incident number and uses the software to record his or her efforts to fix the problem. Also, with each update to the status of the problem, the software can send out automatic messages (usually by email) to the end user. Issue-tracking software can report on certain key metrics, such as the average time it takes your technicians to respond to a request and the average time it takes them to solve a problem. Finally, the details of each incident can form the basis of a knowledge management system. Therefore, issue-tracking software and knowledge management software are usually integrated or sold as a package (see below).</p>	<p>Wikipedia has a good overview article on this topic, as well as a comparison of different issue-tracking programs. Slashdot has a long, useful forum discussion, where managers and techies describe their experience with different programs.</p>
<p>A knowledge management system (aka knowledge base) keeps individuals and organizations from solving the same problem more than once. Ideally, once a solution has been found, no one in the organization should have to repeat the process of research and discovery. Often, a knowledge management system is simply a different interface to your issue-tracking software (see above). As technicians record the details of each incident, they're actually creating the knowledge base. It's important that technicians have an intuitive, well-designed set of categories and keywords to choose from when classifying support incidents. Without that, retrieval becomes difficult. Also, you may want to give non-technical librarians access to the knowledge base so they can solve their own problems. If so, ask about what types of customer and end-user interfaces are available.</p>	<p>Should You Ditch Your KnowledgeBase and Use a Wiki Instead? http://blog.evergreensys.com/post/2006/04/26/Should-you-ditch-your-Knowledgebase-and-use-a-Wiki-instead.aspx describes a low-cost, informal approach to knowledge management.</p>
<p>Remote desktop applications allow you to establish a connection with a computer anywhere in the world, see what's happening on that computer, and control it using your own mouse and keyboard.</p>	<p>For more information, see Remote Desktop Software.</p>
<p>Systems management software actually refers to a suite of IT management tools that have been integrated into a single package. The specific tools and utilities included in a systems management software suite varies from vendor to vendor, but you'll often find a single package that includes all the other utilities in this list (e.g., asset management, disk imaging, software deployment, etc.).</p>	<p>For more information, see Installing and Patching Software.</p>
<p>Disk-imaging software can be used to reinstall the operating system and core software after a hard drive crash or a major software problem.</p>	<p>For more information, see Disk-Cloning in Libraries.</p>
<p>Rather than walking from machine to machine or driving from branch to branch with an installation CD every time you purchase new software, consider acquiring a software deployment tool. A software deployment tool automates the installation of other software. More often than not, these tools are part of the systems management software suite mentioned previously.</p>	<p>For more information, see Installing and Patching Software.</p>



HELP-DESK SOFTWARE OPTIONS (CONTINUED)

TYPE OF SOFTWARE	TO LEARN MORE
<p>Patch management software is similar to a software deployment tool. Rather than automating the installation of an entire application, patch management programs download and install security patches and other updates.</p>	<p>For more information, see Installing and Patching Software.</p>
<p>Asset-tracking tools let you know the exact location of each piece of hardware and software, as long as you're using it regularly and keeping it up-to-date. It can also record information about the configuration of each computer, who supports it, service agreements, and other metadata. Ready access to this can save your IT department time, but it's also useful for managers and accountants.</p>	<p>For more information, see Asset Management.</p>

Prolonging Computer Use — Tips and Tools

WHAT	HOW
Install an open-source operating system	Many open-source, Linux-based operating systems are designed to use a minimum of system resources. In other words, they'll run just fine with an older processor and 128 MB of RAM. For example, Xubuntu is an officially supported variant of Ubuntu that needs less speed and less memory than the main distribution. Fluxbuntu is even less resource-intensive, but it's not officially supported by Canonical (the folks who develop and maintain Ubuntu). Bear in mind that making the switch to Linux often requires retraining for your systems librarians, your regular staff and your patrons. On the other hand, Linux distributions, such as the ones mentioned here, are becoming increasingly user-friendly, so the transition from Windows isn't as hard as it used to be.
Add some memory	The cheapest way to make an old machine run faster is to add some RAM. It is generally cheap these days, but you need to be careful and buy RAM that's compatible with your motherboard. How to Upgrade Your PCs RAM http://www.pcworld.com/article/id,129177/article.html has some good advice on buying and installing RAM.
Clean out the junk	Computers slow down after a while due to spyware, disk fragmentation, temp files and so forth. Read Preventing Trouble on Windows Through Regular Maintenance http://www.techsoup.org/learningcenter/software/page5391.cfm for tips on how to keep your computers clean.
Use it for spare parts	Old computers can be a source of replacement parts — expansion cards, memory modules, hard drives, etc.
Keep it as a temporary or swap computer	When a computer crashes, it's nice to have spare machines on hand. You can roll out one of your older PCs while you're repairing the newer one. Also, if you have guests or new employees, you can set them up on one of the older machines until you've prepared their permanent computer.
Use it as an OPAC station	If you dedicate a few computers to searching your online catalog, you might as well use older machines. Searching the OPAC usually doesn't require a lot of power.
Use it as a test machine	Experimenting is a great way to learn about technology, so your staff might appreciate the opportunity to play on some of your older machines.

Computer Disposal the Safe and Easy Way — Quick Reference

THE SITUATION	THE SOLUTION	SOME SOURCES
<p>Your computer is less than five years old and it's in working condition.</p>	<p>Donate or sell the computer to a qualified refurbisher. There are hundreds of nonprofit computer refurbishers in the U.S. If you have a computer that's less than five years old and still in working condition, they'll wipe the hard drive, install an operating system, upgrade some of the components if need be, and then give the computer to a school, nonprofit, or low-income family. If you're considering a donation to a school or nonprofit, it's often easier for everyone if you give to a nonprofit refurbisher instead. Otherwise, the school or nonprofit will waste a lot of time upgrading components and installing software. Furthermore, they'll eventually have a patchwork of mismatched hardware that they can't support.</p>	<p>To find a refurbisher near you, look at the Microsoft Authorized Refurbisher (MAR) at http://www.techsoup.org/mar/marList.aspx database. MAR refurbishers donate some or all of their refurbished equipment to schools and nonprofits. If you can't find a MAR refurbisher in your area, try TechSoup's directory of refurbishers and recyclers [see the url for the link in brackets below]* or search My Green Electronics at http://www.mygreenelectronics.com/home.aspx.</p>
<p>Your computer is more than five years old or it's damaged beyond repair.</p>	<p>Find a commercial recycler. If your computers are more than five years old, or if they're no longer in working condition, you should find a qualified recycler who can dismantle the machine and dispose of the parts in an environmentally friendly fashion. You'll usually have to pay a small fee to the recycler (anywhere from \$5 to \$30).</p>	<p>Again, TechSoup [see the url for the link in brackets below]* has a searchable directory of recyclers as does My Green Electronics. The Basel Action Network maintains a list of electronics recyclers who have agreed to abide by a strict set of criteria regarding how they dispose of e-waste and who does the work.</p>
<p>You could really use some extra cash.</p>	<p>Sell the computer at a yard sale or auction. If your old computers are in working condition, you may be able to sell them, as long as you've reviewed the relevant regulations (see below). Don't expect a huge windfall of cash, but you might recoup somewhere between \$25 and \$100 per machine.</p>	<p>Your local government may sell the computers for you at an auction, or you might get some money from a refurbisher, or you might sell them at your annual book sale. Again, be careful to obey the relevant regulations.</p>

*http://www.techsoup.org/resources/index.cfm?action=resource.view_summary&resourcelist_id=144&style=recycle&set=products



Hardware and Software Inventory Worksheets

In this section, you'll find several tools and worksheets for keeping track of hardware, software and software licenses.

Keep in mind that you have a few options when it comes to IT documentation. You can use worksheets like the ones provided here, or you can use asset management programs (aka asset tracking programs). Basically, the following worksheet and asset management programs are designed with the same purpose in mind — tracking the location and configuration of your hardware, software and networking infrastructure. Which one you use depends on your personal style and the size and complexity of your IT environment. If you opt to use these worksheets, you don't have to install anything or learn a new interface (assuming you know how to use Microsoft® Word or Excel), but worksheets don't scale well in large, complex environments, and they don't have any reporting features. With asset management programs, you may need to test a few to find the one you like, and with some you'll have to install the software locally, but they have the tracking and reporting features that administrators need in mid-sized and large organizations.



STANDARD HARDWARE CONFIGURATIONS

NAME	NUMBER AND DESCRIPTION	MAKE AND MODEL	PURCHASE DATE	PURCHASE ORDER #	WARRANTY EXPIRES
2006 Dell	18 desktop computers for the patron lab at the Waushega branch library	Dell Optiplex 745	November 19, 2006	5422	November 30, 2009
Tech Support #	OS	RAM	CPU Type & Speed	Video Card	Hard Drive
	Win XP Home	1 GB	Core 2 Duo2/2.4 GHz		
Monitor	Other components	Notes			

NAME	NUMBER AND DESCRIPTION	MAKE AND MODEL	PURCHASE DATE	PURCHASE ORDER #	WARRANTY EXPIRES
Tech Support Info	OS	RAM	CPU Type & Speed	Video Card	Hard Drive
Monitor	Other Components	Notes			

STANDARD DESKTOP SOFTWARE CONFIGURATIONS

CONFIGURATION NAME	EXAMPLE CONFIGURATION	PUBLIC PCs	CHILDREN'S PCs	STAFF PCs
Description	Basic software image for all patron computers			
Server (optional)	GHLSERVER01			
File Path (optional)	D:\Images\Pac001.ghc			
Antivirus Software	Symantec Antivirus 10.1			
Operating System	Windows XP, SP3			
Productivity	Microsoft Office 2003 OpenOffice			
Reference	Encarta Premium 2007 Google Earth			
Web Browsers	Internet Explorer 7 Firefox 3			
Browser plugins	Flash 9 Shockwave 9 Adobe Reader 8			
Multimedia	Windows Media Player 10 Quicktime Real Player			
Utilities	Windows Firewall AdAware CCleaner			
Games				
Other Programs				

Notes: In small libraries, this worksheet can serve as a checklist of the software that you install on each new computer. Mid-sized and large libraries often use disk-cloning software (aka disk imaging software) to install everything at once onto new computers (i.e., the operating system, the software, and all of the configuration settings). If you use this approach, you can record the contents of your standard disk images on this worksheet.



SOFTWARE LICENSE INVENTORY

CATEGORY	SOFTWARE	NUMBER OF LICENSES	NUMBER OF INSTALLED COPIES	LICENSE TYPE	PRODUCT KEYS	WHERE IS INSTALLATION CD
Office Productivity	MS Office 2003	33	31	Volume license	XXX-12345-678910-XXX	Locked file cabinet in Barbara's office
Operating Systems						
Antivirus						
Other						

Notes: Every vendor has different license types and license categories, so the information you enter here will vary. For example, you might note here that the license and the software came with the computer and can't be transferred to another machine. This is known as an OEM license. Also, most large vendors sell volume licenses if you need more than a certain number of copies. For more information, see your documentation or contact your vendor.

The product key (aka activation key or license key) is a number that you use to prove that you have a legal, authorized copy of the software. If you enter your product keys in this worksheet, be sure to encrypt the file and keep hard copies of it in a safe location. Anyone who knows your product key can install the software themselves, which might deactivate your copy or cause problems for you with your vendor. Instead of entering the product keys here, you might use this field to point to another, more secure location.



SERVER INVENTORY

ITEM	ASSESSMENT
Server Name	
Location	
Server Role(s)	
Make/Model	
Serial Number	
Asset Tag Number	
Date Purchased	
Purchase Order Number	
Tech Support Number	
Warranty Expiration Date	
CPU Type and Speed	
RAM	
Hard Disk(s)	
RAID Configuration	
Network Card	
UPS/Battery Backup	
Other Hardware Components	
Operating System	
# of OS Client Access Licenses	
Antivirus Software	
Procedure for Virus and Security Updates	
Other Software and Licensing Information	
Other Notes	



Technology Policies, Plans and Procedures

POLICY AREA	DESCRIPTION	DATE CREATED	LAST UPDATED	LOCATION	INTENDED AUDIENCE	HOW IS IT DISTRIBUTED?	WHO KEEPS IT UP TO DATE AND AUTHORIZES CHANGES?
Technology plan							
Acceptable use policy for patrons and guests using our computer							
Acceptable use policy for patrons and guests using their own computers on our network							
Acceptable use policy for staff							
Data privacy policy							
Security policy							
Password security policy							
Licensing and copying software							
Backup procedure							
Disaster recovery plan							
Document retention							
Computer disposal policy							
Policy regarding computer donations							
Other							



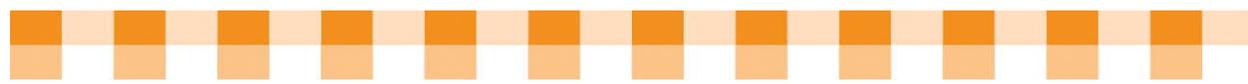
Troubleshooting Notes

PROBLEM

Staff name	Date
Computer name	
Problem category	
Problem description	
What was the user trying to do (i.e., what was the desired outcome)?	
Error messages	
Attempted solutions	
Suggestions for next step	
More information	
Computer name	

SOLUTION

Person who fixed it	Date
Solution description	
More Information	



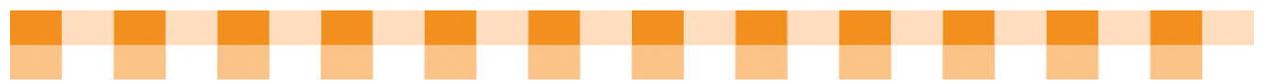
Troubleshooting Bootup Problems

SCENARIO 1: You don't see anything on the screen at all

#	DESCRIPTION	NOTES
1	Check that both ends of the monitor's power cord are plugged in tightly.	
2	Check that both ends of the power cord are plugged in tightly.	
3	Is the surge protector plugged into the wall? Are there lights on the surge protector?	
4	Press the power button on the CPU. Which lights, if any, are lit up on the front of the tower? What color are they?	
5	Press the power button on the monitor. Does the monitor's power button light up? What color is it?	
6	If you see power lights on the monitor and the tower but nothing on the screen, make sure the brightness and contrast on the monitor aren't set to zero. Usually they should both be set between 70 and 90. The monitor controls are different for each model, but they're usually found near the bottom of the monitor. Consult the monitor's manual for more information.	
7	If you still don't see anything on the screen, contact tech support.	

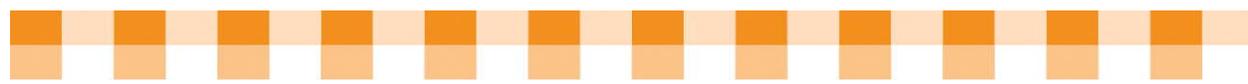
SCENARIO 2: You see some bootup messages, but the computer doesn't make it to the logon screen.

#	DESCRIPTION	NOTES
1	Turn the computer off, let it sit for 30 seconds and turn it back on.	
2	If you still can't log on, make sure you've removed all CDs, DVDs, floppy disks or USB drives. Reboot.	
3	If you're comfortable accessing the BIOS, get into the BIOS and make sure that the hard drive is set as the first boot device. Exit, saving your changes.	
4	If your machine runs Windows and you're familiar with last known good configuration or restore points, press F8 to access the menu. Reboot.	
5	What was the end user doing before the computer began malfunctioning?	
6	Has anyone added new hardware or software to this machine recently?	
7	Where does the machine stop? Does it freeze, turn off or reboot? Does it show any error messages? Write all of this information down.	
8	Contact tech support.	



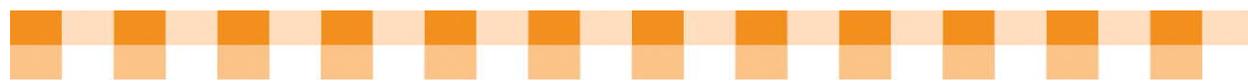
Software Troubleshooting Steps

#	DESCRIPTION	NOTES
1	Close all open programs and dialog windows.	
2	Restart the program and try to re-create the problem.	
3	If the problem recurs, turn off the computer, let it rest for ten seconds and turn it on again.	
4	Log on and try to re-create the problem.	
5	If the problem recurs, did you change any configuration settings recently? If so, reverse the changes.	
6	Did you install new hardware or software recently? Uninstall and try to re-create the problem.	
7	If the problem recurs, record the exact sequence of actions and clicks that generated the unexpected results. Also describe in detail how the program reacted and why that reaction was abnormal or undesirable.	
8	Finally, write down word for word the text of any error messages that you see.	
9	Also write down the name of the computer that's experiencing the problem. On most Windows machines, go to Start → Run, and type in sysdm.cpl. Click on the Computer Name tab. Write down the full name of the computer.	
10	Contact tech support.	



Internet Connectivity Troubleshooting Steps

#	DESCRIPTION	NOTES
1	If you feel it's appropriate, ask the end user what Web site they're having trouble getting to and write it down.	
2	Click the refresh button on the Web browser toolbar.	
3	Try to visit at least two other Web sites. For example, if you can't reach the library catalog, go to http://www.cnn.com and http://www.abcnews.com . Can you reach any of these sites?	
4	Are the computers nearby reaching the Internet? If not, you can skip steps 5 through 9.	
5	Close all the open Web browser windows and relaunch the Web browser. Try to reach one or two different Web sites.	
6	Reboot the computer. Log on and try to reach one or two different Web sites.	
7	Check the network cable (aka Ethernet cable) on the back of the computer. Make sure it's plugged securely into the back of the computer and the network jack on the floor or the wall. Try reaching the Internet again.	
8	If you're still having trouble, use a different network cable, preferably one from a computer with a working Internet connection. If your Internet connection works again, you should replace the defective network cable.	
9	If you're still having trouble, check to see if there's a green light on the back of the computer where the network cable plugs in.	
10	If you know how to use the ping utility, open a command prompt and see if you can ping the loopback address (127.0.0.1), the default gateway and an address outside your local network (e.g., 4.2.2.2).	
11	Write down the name of the computer that's having trouble. If you know how to find the computer's IP address, write that down as well.	
12	Call tech support.	



Troubleshooting Problems with a Network Printer

#	DESCRIPTION	NOTES
1	Reboot the computer. If there's a print job stuck in the local print queue, this usually clears the problem. Log on again and try to print a test page from Microsoft Word.	
2	If you're still having a problem printing, open a Web browser and try to access one or two different Web pages. If you can't access them, you probably have an Internet connection problem rather than a printer problem.	
3	Try printing to the same networked printer from another computer. If you succeed in printing from another PC, the problem is local to the first machine and you should skip to step 10.	
4	Make sure the printer is plugged in and check that the lights are on.	
5	Check the paper trays and make sure there's paper.	
6	Check for paper jams. If you find one, turn off the printer and slowly, carefully pull out the paper.	
7	Many printers have an online/offline button. Make sure the display indicates that the printer is online.	
8	Many printers have a resume button that you have to press after a problem or interruption.	
9	If you're still having trouble, turn the printer off and on again.	
10	If the problem is only happening on one computer, try printing from another program.	
11	If you have authorization, go to Start → Settings → Printers. Make sure that the network printer you're trying to print to is listed and set as the default. If you don't know the name of the network printer, you can often find a label on the printer itself. If you're still not sure, write down the name of the default printer so you can tell tech support.	
12	Double-click on the icon corresponding to the printer you're trying to print to. Delete any stalled print jobs. Also, make sure the printer itself isn't paused.	
13	If you're still experiencing a problem, call tech support.	



5 Network and Security

Vulnerabilities and threats to your library's technological infrastructure can be opposed through proper computer, communications and physical security.

Check out the following list of tools. They have been included to help create a library plan that addresses network security issues. Each tool can be easily accessed and viewed online or downloaded as a PDF file.

- [Wired for Success: A Tool for Understanding Your Wireless Network](#)
- [Wireless Options Comparison Chart](#)
- [Quick Checklist for Setting Your Wireless Access Policy](#)
- [Where and How to Find Vulnerabilities](#)
- [Firewalls at a Glance](#)
- [Network Performance Metrics Defined](#)
- [Ten Factors to Consider When Shopping for a Telecom Provider](#)
- [Bandwidth Management Techniques — Tips and Actions](#)
- [Network Inventory](#)

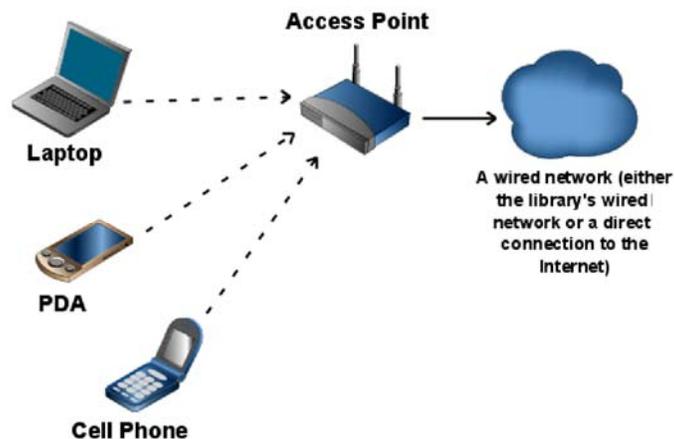
Wired for Success: A Tool for Understanding Your Wireless Network

A wireless network is similar to a wired network, but instead of using cables, it communicates using radio frequency signals. There are dozens of different flavors of wireless networking: Cell phones, satellites and radios all communicate wirelessly. For the purposes of this program, however, the term “wireless networking” refers to a technique for interconnecting computers wirelessly at the building level. This kind of wireless network is sometimes described as wi-fi, an 802.11 network or a “wireless local access network (LAN)” or “WLAN.” These networks have a radius of 300 feet under ideal circumstances.

At a minimum, there are three pieces to a wireless network:

- First, there’s the **wireless access point**. The center of a wireless network acts like the hub, or switch, of your wired network, though it also has many of the features of a standard router. On one side, it connects to the Internet, usually through a standard Ethernet cable, and on the other side, it broadcasts a wireless signal
- Also, there are “**wireless devices**.” These are the computers and gadgets that use the access point in order to hook into your network and your Internet connection. The first wireless device that comes to mind for most people is a laptop computer. However, there are hundreds of gadgets that can access wireless networks these days. Library patrons use cell phones, smartphones, personal digital assistants (PDAs), personal gaming devices (like Playstation) and more to connect themselves to wireless networks. Through the rest of this book, “laptop” will be used as shorthand for all of the wireless devices out there.
- Each wireless device has a **wireless network adapter** — a specific piece of hardware that connects a computer to a WLAN. Wireless adapters come in all shapes and sizes. Some adapters are built into the computer. Others need to be purchased separately and then plugged into the Universal Serial Bus (USB) port or PC Card port.

A BASIC WIRELESS NETWORK





Wireless Options Comparison Chart

The following chart is an overview of some wireless options.

SOLUTION	WHY?	COST	TIME AND LABOR
Access point	Basic wireless connectivity	\$50 to \$80	One to two hours
Wireless gateway	Increased control over your wireless network	\$500 to \$1500	Variable, depending on what features you want, but gateways are more difficult to configure than a regular access point
Hotspot provider	Ease of maintenance	\$500 to \$1000 startup cost and \$50 per month	Depends on your package, but providers often perform all setup and troubleshooting for you and your patrons
A second Internet connection	Improved security	\$25 to \$50 per month	One to two hours
A firewall with separate VLANs	Improved security	\$500 to \$1500	Variable, but firewalls are complex devices, and you may need outside help to configure it properly

Note: Sorting through the variations of this approach can be confusing. You might want to talk to an experienced network consultant first.



Quick Checklist for Setting Your Wireless Access Policy

Use this “Quick Look” checklist to make sure you’re covering your bases when it comes to crafting a wireless policy for your library.

- **Check your existing Internet (Computer) Use Policy.** Do you need to add anything to it relating to use of the wireless? You may decide that it covers your situation. However, do keep in mind the following possible additions:
 - **Network Security:** If you’re providing a fairly open network, consider a disclaimer about the possibility of radio signals (wireless) being intercepted. This is more specific to wireless than the equally useful disclaimers in your Internet policy about how the “library is not responsible for lost data due to network failure” and “beware of viruses” and “be careful about transmitting your personal information on an open network.”
 - **Network Availability:** WLANs can be flaky, and patron laptops can be even more so. Note that they may lose signal at random and the library takes no responsibility for lost data, etc.
 - **Limitations on Use:** Time limits, bandwidth limits, no FTP, no telnet, no streaming content. Do you offer printing? Web-based email only (no SMTP server)?
 - **Personal Equipment Security:** Warn patrons that the library is not responsible for stolen equipment, lost data due to their equipment failure, etc.
 - **Filtering:** Note if the wireless access is filtered, especially if the in-house is not, or is only partially filtered (filter by patron choice only, for instance). You may want to quote any law (CIPA) relating to this in brief.
 - **Support:** Will your library staff provide help with patron laptops? Can they provide help with determining if there is a signal present (i.e., if the APs are working)? If you don’t want staff touching patron laptops due to liability, say so.
- **Make sure your staff are kept in the loop about any wireless initiatives**, in particular about what they’ll be expected to offer in the way of support for patrons. This sounds silly, but wireless initiatives can happen so quickly that staff may not have time to become aware of all the issues involved, especially what patrons will ask them.
- **Promote the Policy:** How will you notify users of the policy? Do they have to sign off on it before they can use your system? Will you print it out and post it? Put it on your Web site? Use a captive portal or similar product to force users to agree to the policy?
- **Get Policy Approval:** Any policy should be run by your board or advising committee, and preferably your university or city attorney, to be sure the language is appropriate both for liability and also in line with your existing policies.

Adapted with permission from: [Wireless Networking: A How-To-Do-It Manual for Librarians](#) by Louise Alcorn and Maryellen Mott Allen. New York: Neal-Schuman Publishers, 2006.



Where and How to Find Vulnerabilities

POSSIBLE VULNERABILITIES	WHAT TO CONSIDER
<p>Patrons can access the staff network</p>	<p>Use your networking equipment (e.g., router, switch, firewall) to create separate sub-networks for patron computing and staff computing. Network administrators often use Virtual LAN's (VLANs) and firewalls to accomplish this. This step is especially important if you have a wireless network for patrons. Some of those laptops will be riddled with viruses and malware. Also, while most patrons have no interest in hacking your network, there's no point in tempting them. For more information on wireless security, see Chapter One of Recipes for a Five Star Library at http://www.maintainitproject.org/cookbooks.</p>
<p>You don't have control of critical data</p>	<p>Where do you keep your patron data, circulation records, financial documents, staff documents and critical databases? Make sure you have a list of all the mission-critical data collections in your library, where they're stored, how they're backed up, and who has access to them.</p>
<p>You haven't secured your servers</p>	<p>Devices that connect directly to the Internet must be secured. Do you have servers (e.g., web servers or email servers) exposed to the Internet or your public network? Have the servers been "hardened" by removing all unnecessary applications, services, and user accounts? You should not have a Web server that also has additional services running beyond what it needs to complete its primary function. The exact steps for hardening a server depend on your configuration, but you should look for advice and see if there are any software tools that might help (e.g., the Microsoft Baseline Security Analyzer at http://technet.microsoft.com/en-us/security/cc184924.aspx).</p>
<p>You aren't taking basic precautions</p>	<p>All PCs should have the latest operating system updates, the latest software patches, and up-to-date virus definitions. As much as possible, try to automate these updates so they aren't forgotten. For more information, see Chapter Two of A Cookbook for Small and Rural Libraries http://www.maintainitproject.org/cookbooks.</p>
<p>You haven't paid attention to physical security</p>	<p>Who has the keys to your building? Are there locks on your server room? Who has keys to that room? Do you have any computers in far off corners of the library where your staff has a hard time seeing them? If you check out laptops and other equipment to the public, have you thought about theft-prevention?</p>
<p>You aren't backing up critical data on a regular basis</p>	<p>For more information on backup tools and strategies, see Backing Up Your Data http://www.techsoup.org/learningcenter/software/page6089.cfm at Techsoup</p>
<p>You aren't testing your backups</p>	<p>We've heard a few horror stories about libraries who thought they had backups, only to find that the backup tapes were blank or unusable. For more information, see Worst Practices: Don't Test Your Backups http://articles.techrepublic.com.com/5100-10878_11-6172154.html at TechRepublic.</p>



WHERE AND HOW TO FIND VULNERABILITIES (CONTINUED)

POSSIBLE VULNERABILITIES	WHAT TO CONSIDER
You're using weak passwords	For advice on choosing good passwords, read Strong Passwords and Password Security at http://www.microsoft.com/protect/yourself/password/create.aspx .
You have not addressed possible internal security threats	Many surveys show that internal security breaches are the most common type. Departing, bored and disgruntled employees are potential problems that we sometimes overlook. Design your network with limited and appropriate access. Create policies regarding the process for changing of passwords. When an employee leaves, delete or suspend their user accounts immediately.
Your staff doesn't understand the risks of social engineering	Social engineering http://www.webopedia.com/TERM/S/social_engineering.html is a technique that hackers use to trick people into divulging private, secure information. It's still one of the leading causes of security breaches. For example, an employee might receive a phone call from someone who claims to work for your Internet service provider or other technical support. The caller says that he's fixing a problem and needs the user's password to test a possible solution. The employee hands over the information without verifying the caller's identity.



Firewalls at a Glance

With so many firewall products on the market, trying to fit each into a specific category would be nearly impossible. The following categories provide generalized descriptions of the most typical firewalls for different-sized library networks.

TYPE	PRICE RANGE	DESCRIPTION	COMMON MANUFACTURERS
Basic – Firewall commonly found in homes, small offices, and small libraries.	From \$50-\$150	These firewalls provide basic port forwarding, packet filtering and logging. Although the specification may claim to support more connections, these are generally designed to support networks with 5-10 computers.	Belkin, D-Link, Linksys, and Netgear
Mid-range – These firewalls made by Watchguard, Symantec, and Sonicwall, are found in medium sized libraries with more specific needs and with 10-50 computers.	From \$300-\$700	These firewalls provide more advanced, stateful packet inspection, and technologies such as VPN, user authentication, and content filtering.	Watchguard, Symantec, and Sonicwall
Advanced – For larger library systems, advanced firewalls offer very high capacity and feature-rich devices.	From \$2,000 to well into five-figures	You will not find these in most small to medium libraries.	Cisco, Checkpoint, and Juniper

The manufacturers listed do not represent recommendations nor are they restricted to any particular category, they are meant to provide common names for each category.



Network Performance Metrics Defined

Latency:

- Refers to the amount of time (usually measured in milliseconds) it takes for data to travel from one location to another across a network (or across the Internet, which is a network itself).
- Is sometimes referred to as delay, because your software is often waiting to execute some function while data travels back and forth across the network. For example, Internet Explorer can't display a story from CNN.com until CNN's Web servers respond to your request for that page.
- Is often less than 100 milliseconds on today's high-speed network, which has very little impact on Web surfing.

If you'd like a more thorough explanation, see [It's the Latency, Stupid](#) and [It's Still the Latency, Stupid](#).

> How It Applies to You

Generally, you only need to be concerned about latency in two situations:

- When your staff and patrons complain about a slow connection, high latency could be part of the problem, though you might not be able to do anything about it other than contact your ISP and ask them to address the issue.
- Second, if you're planning to install Voice over IP (VoIP) or any other application that relies on live, real-time transmission of video or audio, you need to ask your service provider about their latency. Real-time voice and video applications are sensitive to network delays. For instance, with VoIP, you'll notice that the audio is choppy, with lots of pauses and dropped syllables. **Jitter** refers to variation in the amount of latency, and it has a similar negative impact on real-time communication.

Bandwidth and throughput

These two terms are sometimes used interchangeably, and though they are related, they're not quite the same. They both refer to the amount of data transferred between two points on a network in a given period of time. In other words, how many bits per second can you send across your network or over your Internet connection?

Bandwidth vs latency

If you're still having trouble grasping the difference between latency and bandwidth (or throughput), this analogy from the [Gentoo Linux wiki](#) might help:

"Latency is a measure of the time a packet needs to get from point A to point B. Bandwidth measures the amount of data that got from A to B in a certain time. So, if you were to take a dictionary to your friend on

the other side of town, your bandwidth would be good, but the latency would be bad (the time spent driving, to be exact). However, if you were to phone your friend and start reading the dictionary to him, the latency would be lower, but the bandwidth would be substantially less than in the first example."

> How It Applies to You

On a day-to-day basis, you'll usually see them measured in Kbps (kilobits per second), Mbps (megabits per second) or Gbps (gigabits per second). Bandwidth generally refers to a theoretical maximum, while throughput is a real-world, practical measurement. The distinction is relevant because ISPs will usually advertise their bandwidth, which is often higher than the throughput that you'll actually receive. In other contexts, you'll see the terms bandwidth, throughput and speed used



Uptime or responsiveness

Uptime, sometimes referred to as availability or responsiveness, refers to the amount of time that a computer or a network connection is functioning and usable.

Hardware and software

Your network relies on switches, servers, routers and firewalls, so network monitors can usually track metrics such as CPU utilization, remaining hard drive space and memory use. Also, by sending messages to your Web site, your OPAC and other key applications, your network monitor can track the responsiveness of mission-critical services and software.

Etc.

There are hundreds of data points you could track on your network, so you'll have to spend some time talking to your vendor or wading through the documentation.

> How It Applies to You

If you're buying a leased line, the ISPs guarantee with regard to uptime should be written into the Service Level Agreement. You also want to measure the uptime of your own equipment to see if a device has a recurring problem.



Ten Factors to Consider When Shopping for a Telecom Provider

- 1. Business vs. Residential:** ISPs usually distinguish between the services they market to businesses and the services they market to home users. Residential customers can usually choose between dial-up, cable Internet, DSL and, in some areas, Fiber to the Home (FTTH). Business customers often have several additional options to choose from such as Frame Relay, Metro Ethernet, SONET, and SDSL. The underlying technologies and protocols shouldn't be your first concern, and the exact menu of choices varies a lot from city to city. What's important here is that business-class connections provide more reliability, greater upload speeds, and other advantages important to some nonprofits. On the downside, business-class connections usually cost a lot more. If your needs are limited you might not need a business-grade connection. On the other hand, ISPs don't always offer residential broadband service to office buildings and organizational customers.
- 2. Reliability and Service Level Agreements:** Most business-class Internet connections come with assurances regarding "uptime" and other metrics. In other words, your ISP might guarantee that 99.9 percent of the time your connection will work, and they promise to refund some of your money if they fail to meet that target. Also, they often make promises with regard to throughput, latency, dropped packets and other measures. These promises are usually captured in a Service Level Agreement (SLA). Bear in mind that your ISP only makes these promises with regard to service between your building and the edge of the ISP's network (where it connects to the Internet backbone). Beyond that they have no control. Also, if you have several connections from the same provider, your ISP may make assurances about average, across-the-board metrics. For instance, if they promise a monthly average of 99.8 percent uptime across ten high-speed connections, that leaves them a lot of leeway. Your main Internet connection could be down for roughly 14 hours a month and they'd still be within the terms of the SLA. Pay close attention to this type of detail. An example of an SLA can be found at <http://www.speakeasy.net> at <http://www.speakeasy.net/sla>.
- 3. How long does the contract last?** ISPs will sometimes offer reduced rates in exchange for a long-term contract. Be cautious about any contract that lasts for more than two years. The services, prices, providers and technologies are changing all the time in the Internet access market. When a cheaper, faster service shows up in your community a year from now, you don't want to be locked into a four-year contract.
- 4. Equipment and Installation Costs:** Residential plans usually have very low setup costs. You pay \$50 to \$75 for a modem and a \$25 to \$50 installation fee. On the other hand, for some business-class Internet connections, the equipment can cost thousands. For example, if you buy a T-1 connection, you need a CSU/DSU and a router, both of which can cost a thousand or more. Also, the installation and setup fees are usually much higher. You can roll some of these initial costs into your monthly bill by renting equipment from your ISP. In other words, you'll trade lower up-front costs for higher ongoing costs.



- 5. Uploading vs. downloading:** Uploading, or upstream, refers to the transfer of data from within your local area network to machines outside your network, and downloading is the reverse. We spend most of our time on the Internet downloading Web pages, files, audio streams, etc., as do our patrons. However, since libraries host Web sites, email servers, Web-accessible online catalogs and other services, your ability to send data upstream over your Internet connection is nearly as important as your download speed. In fact, with more and more patrons uploading videos, photos and other large files to sites such as YouTube and Flickr, you should think about upload speeds even if you aren't hosting a Web site or an OPAC in your building. Most broadband connections marketed to home users (e.g., DSL and cable) are asymmetric. In other words, the upload speed is much lower than the download bandwidth. With DSL for example, your download rate might be 1 Mbps, while your bandwidth for uploading is only 150 Kbps. In fact residential service contracts from some ISP's expressly forbid the hosting of Web sites and other online services. On the other hand, business-class broadband connections usually provide more bandwidth for uploading. If you have a leased line (e.g., a T-1 line), your upload and download speeds are usually the same. **SDSL** <http://webopedia.com/TERM/S/SDSL.html> is another synchronous technology that's often used for business-grade Internet access.
- 6. Scalability:** If you need more bandwidth a year from now, will your existing networking equipment and data lines handle the extra traffic? How much will your ISP charge you to upgrade the connection?
- 7. Integrated voice and data service:** Ten years ago, most companies sent their phone traffic over one connection and their data over another, and these lines were often purchased from different providers. It's more and more common to get both services from the same vendor, over the same lines, sharing much of the same equipment. For example, you can lease a T-1 line from your phone company and use half of it for Internet traffic and half for phone traffic, and a single device can handle routing and security for both services. Also, bear in mind that some networking technologies can allocate bandwidth dynamically while others can't. In other words, if the voice section of your high-speed line is empty because nobody's making a call, can staff and patrons use that bandwidth to surf the Web?
- 8. Managed services:** If you have the required expertise, you can manage your own routers and the other networking equipment you need for Internet access. However, most ISPs offer a managed option where they handle all the configuration and troubleshooting. Sometimes the managed equipment still resides in your building, but in other cases, it's hosted by your ISP. When it's time to dispose of the router or the firewall, the service provider takes care of it. Obviously, you pay more for this type of service.
- 9. How does this impact e-rate?** If you plan to buy new equipment or upgrade your Internet connection, how will it impact your e-rate application? If you plan to change service providers and you apply for discounts under Priority 1, make sure your new provider is an eligible telecommunications carrier. Also, the cost of on-premises telecommunications equipment is often eligible for e-rate discounts under Priority 1 if the equipment is integral to the provision of the high-speed connection. For a short explanation of what's eligible under e-rate and what isn't, see Appendix G http://www.maintainitproject.org/files/CB2_Appendix_G_E-rate.pdf of Recipes for a 5-Star Library. For the long explanation, see the 2008 eligible services list <http://www.universalservice.org/sl/tools/eligible-services-list.aspx>.



- 10. Redundancy:** Do you have more than one way to get to the Internet? Sooner or later a construction crew will cut a line somewhere in your town, or a transformer will blow up. Some ISP's can provide redundancy by selling you two data lines that connect to the ISP's network at two different locations. In other words you can lease two T-1 lines that terminate at two different Points of Presence (or POP, which just refers to a phone company facility near your building). If that's too expensive, you could lease a single T-1 from the phone company and buy cable Internet service or dial-up service as a backup solution in case your primary line goes down. Of course, you should only consider this if 24x7 Internet access is critical to the operation of your library. For anything besides dial-up access, you'll pay a lot of money for a redundant connection that you might need only once or twice a year.



Bandwidth Management Techniques — Tips and Actions

BANDWIDTH MANAGEMENT TECHNIQUE	DESCRIPTION	TIPS AND ACTIONS
<p>Traffic Shapers limit the speed and bandwidth available to certain data streams.</p>	<p>You can limit a particular type of application (e.g., specify that traffic from file-sharing software can never exceed 200 Kbps), or you can specify how much bandwidth is available to each user. This technique is sometimes known as packet shaping or bandwidth limiting.</p>	<ul style="list-style-type: none"> ▪ Limiting by type of application (or port number) is occasionally difficult because software can be designed to use random port numbers to communicate in order to evade traffic shapers. ▪ Also, port 80 (the HTTP port for standard Web traffic) handles a wide variety of different data, and you don't want to throttle it all indiscriminately. ▪ Most traffic shapers can handle these routine evasive maneuvers by inspecting each packet of data carefully. ▪ Investigate your packet-shaping tool to see what kinds of distinctions it can make. For example, can it tell the difference between Web audio and Web video? Can recognize BitTorrent traffic, regardless of the port it's traveling across?
<p>Quality of Service (QoS) complements packet shaping, and it often requires packet shaping to work effectively.</p>	<p>Packet shaping delays and limits low-priority Internet traffic, which makes room for higher-priority traffic. QoS, in turn, prioritizes the important or delay-sensitive network traffic, making sure it gets sent out before other traffic streams and guaranteeing that it arrives at its destination within a specified time frame (e.g., under 100 milliseconds). Real-time media, such as voice, video and online gaming, react badly to latency and jitter, so they often need QoS. For instance, latency above 145 milliseconds makes Voice over IP calls unlistenable. On the other hand, most of us can surf the Web at much higher latencies without noticing a serious delay, so there's no point in applying QoS to ordinary Web traffic.</p>	<ul style="list-style-type: none"> ▪ To obtain true QoS, with guaranteed latency and bit rates, you need to have some control over the entire network connection, including the equipment at both ends and all the circuits and routers in between. Usually, this means you have to pay your service provider for higher-quality point-to-point connections (aka leased lines), because you can't guarantee QoS over the public Internet. ▪ On the flip side, you can implement packet shaping on one end of a network connection, so it's often cheaper and less difficult to set up. Packet shapers can usually prioritize certain traffic streams, but they can't guarantee delivery the way an end-to-end QoS connection can.
<p>WAN Optimization doesn't discriminate between traffic streams the way packet shapers and QoS devices do. Instead, optimizers use a variety of techniques to strip out the inefficiencies and redundancies from network traffic. In other words, an optimizer speeds up all the traffic that passes through it.</p>	<p>Compression and caching are two basic techniques that optimizers use, but there are a variety of advanced algorithms that we won't get into here. As with the other devices that we've discussed, WAN optimizers usually reside at the edge of your network, behind your router or firewall.</p>	<ul style="list-style-type: none"> ▪ With certain types of WAN optimizers, you need a device at both ends of the network connection. For example, to take advantage of compression, you need a device at the far end of the connection that's capable of decompressing.



BANDWIDTH MANAGEMENT TECHNIQUES — TIPS AND ACTIONS (CONTINUED)

BANDWIDTH MANAGEMENT TECHNIQUE	DESCRIPTION	TIPS AND ACTIONS
<p>Web Caching is a piece of software or hardware that saves copies of recently accessed pages in memory or on a hard drive in order to speed up retrieval.</p>	<p>If you have 200 patrons surfing the Web on any given day, chances are that they're accessing the same sites over and over again. Some of these sites are saved, or cached, in the Web browser on each individual desktop computer. If you return to a story you were reading half an hour ago, you don't have to wait while your browser pulls down a fresh copy from a remote Web site. Instead, your browser shows you the version contained in the browser's local cache. However, this only helps your personal connection. If the patron next to you wants access to the same article, they can't get it from your local cache. They have to send another request to the remote Web server and download the same article that you downloaded half an hour ago. A Web-caching server acts like a big shared cache for the entire network. All the PCs on the network can be configured to check the server first to see if a copy of the desired page has already been retrieved for someone else.</p>	<ul style="list-style-type: none">▪ Some Web pages are constantly updated (e.g., weather information or stock quotes), and other sites are fairly static.▪ Obviously, your caching server shouldn't hold and redistribute a page of stock quotes that someone retrieved two hours ago.▪ Any request for time-sensitive information should bypass the caching server. Fortunately, most Web pages contain this information. A field in the page header will tell your caching server how long the page should be held.



Network Inventory

As with anything IT-related, you have the option to automate all or part of your network inventory. Many different types of software (e.g., asset management programs, network management programs, network inventory tools) have the ability to scan your network and collect information about your existing equipment. However, it takes time to find the right tool, learn it, and integrate it with your networking equipment. If you don't have a large network, or don't have the time to investigate network inventory software, use the worksheets provided here.

At the end of each inventory sheet, we've included space below for you to record administrative logon information. As always, be careful about how you handle sensitive usernames and passwords. It's often a good idea to record usernames and passwords in a separate, encrypted file. Also, regardless of how you record logon information, be sure to protect these worksheets and any IT documentation. Even without passwords, a hacker could use the information to compromise your network.



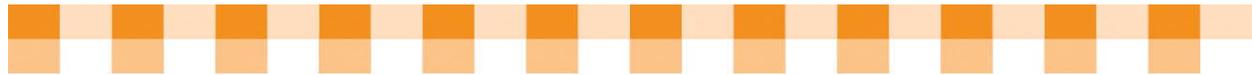
SWITCH

MAKE/MODEL		LOCATION	IP ADDRESS		VLAN INFO (IF ANY)
			IP		
			Subnet Mask		
			Gateway		
ADMIN LOGON		CONNECTED TO	SPEED		SERIAL #/ASSET TAG #
PORTS		DATE PURCHASED	PURCHASE ORDER #	TECH SUPPORT PHONE NUMBER	
TOTAL	FREE				
Notes					



WIRELESS ACCESS POINT

MAKE/MODEL	LOCATION	IP ADDRESS (WIRELESS SIDE)		IP ADDRESS (WIRED SIDE)	
		IP		IP	
		Subnet Mask		Subnet Mask	
		Gateway		Gateway	
SSID (I.E., THE NAME OF YOUR WIRELESS NETWORK)	ADMIN USERNAME AND PASSWORD	WIRELESS SECURITY KEY (IF ANY)	SERIAL #/ASSET TAG #		
DHCP INFO	DATE PURCHASED	PURCHASE ORDER #	TECH SUPPORT PHONE NUMBER		
Notes					



ROUTER

MAKE/MODEL		LOCATION	INTERNAL ADDRESS		EXTERNAL ADDRESS	
			Static?		Static?	
			Router IP		Router IP	
			Subnet Mask		Subnet Mask	
			Gateway		Gateway	
ADMIN LOGON		REMOTE ACCESS	WHERE IS THE CONFIGURATION FILE BACKUP?		SERIAL #/ASSET TAG #	
PORTS		DATE PURCHASED	PURCHASE ORDER #	TECH SUPPORT PHONE NUMBER		
TOTAL	FREE					
Notes						



FIREWALL

MAKE/MODEL		LOCATION	INTERNAL ADDRESS		EXTERNAL ADDRESS	
			Static?		Static?	
			Firewall IP		Firewall IP	
			Subnet Mask		Subnet Mask	
			Gateway		Gateway	
ADMIN LOGON		REMOTE ACCESS INFO	WHERE IS THE CONFIGURATION FILE BACKUP?		SERIAL #/ASSET TAG #	
PORTS		DATE PURCHASED	PURCHASE ORDER #	TECH SUPPORT PHONE NUMBER		
TOTAL	FREE					
Notes						



INTERNET CONNECTION HARDWARE

EQUIPMENT TYPE (E.G., CABLE MODEM)	MAKE/MODEL	INTERNAL ADDRESS		EXTERNAL ADDRESS	
		Static?		Static?	
		Hardware IP		IP	
		Subnet Mask		Subnet Mask	
		Gateway		Gateway	
ADMIN LOGON	REMOTE ACCESS INFO	LOCATION		SERIAL #/ASSET TAG #	
CONNECTION SPEED (E.G., 1.54 MBPS)	DATE PURCHASED	PURCHASE ORDER #		TECH SUPPORT PHONE NUMBER	
Notes					



OTHER NETWORK INFORMATION

DHCP SERVER

Server Name	
IP Address	
Subnet Mask	
Gateway	
Physical Location	
Range 1	
Exceptions	
Range 2	
Exceptions	
Range 3	
Exceptions	
Notes	

DNS INFORMATION

Primary DNS Server	
IP Address	
Who Hosts It?	
Notes	
Secondary DNS Server	
IP Address	
Who Hosts It?	
Notes	



WEB SITE

Web Site URL	
Web Server Software	
Root File Directory	
FTP Server Name	
FTP logon Info	
Web Server Software	
(if hosted internally)	
Server Name	
Physical Location	
IP Address	
Subnet Mask	
Gateway	
(if hosted by a third party)	
Web Hosting Company	
Web Host Contact Info	
Account Management URL	
Account Management Logon Info	
Monthly Bandwidth/Storage Limits	
Cost	
Notes	

DOMAIN REGISTRATION

Domain Name	
Registrar Name	
Registered Admin Contact	
Registered Technical Contact	
Registration Login Information	
Contact Email	
Expiration Date	
Last Renewed	



6 Innovation

Web 2.0 services and concepts make it easier to facilitate group use of information and allow for the creation of new data and value for library members. We hope you'll find the following tools greatly beneficial as you select and apply Web 2.0 to drive and implement innovation in your library. Each tool can be easily accessed and viewed online or downloaded as a PDF file.

- [What You Need to Stay Future-Focused](#)
- [Collaboration Tools Chart](#)
- [Fifteen Ways to Effectively Use Web 2.0 Tools](#)



What You Need to Stay Future-Focused

By creating an environment of continuous learning, by finding ways to stay aware of changing trends and needs, and by staying committed to thoughtful planning, it is possible to achieve that future-focused service vision in your rural library.

How can your library achieve goals and prepare for an unknown future? When doing strategic technology planning, here are seven key areas to consider:

- 1. Staff technology skills (and volunteers and trustees) as a continuous priority.** Make learning an expected part of everyone's work routine. Find ways to teach one another and to help keep each other apprised of changes and ideas. This culture of learning will help alleviate some of the stress around not feeling "caught up". The reality is, there will always be more to learn. Try to embrace this thought and even make it fun!
- 2. The continued development of patron skills.** Some people come to the library with strong technology skills and high expectations. Find ways to stay aware of popular tools and "gadgets". Are you noticing a lot of people carrying iPods or other MP3 players? Ask questions and pay attention to the uses. There is also a need, however, to always look at the gaps. Who does not know about technologies that could potentially benefit them? What role can the library play in closing that gap?
- 3. A means for continued awareness and planning need to be in place.** Some ideas to be discussed in more depth later in this section include the development of a new technology advisory group, a guest speakers series, and/or panel discussions on technological topics.
- 4. A larger library world connection to glean new ideas/create partnerships for learning, purchasing, and more.** Use online resources like WebJunction at <http://www.webjunction.org> to connect with librarians from many places. Consider organizing face-to-face meetings or partnerships with libraries in your geographic area, too.
- 5. Community outreach and communication to develop relationships.** The goal here is for the library to be seen as a center of technology in the community. Are there other.
- 6. The Pew Internet Reports** <http://www.pewInternet.org> site offers an overview of the changing ways in which people use technology. You may also find it useful to view census data (<http://www.census.gov>) for your community – past, present, and future predictions – and to think about the implications they may have for library services, including public computers.
- 7. Advocating for the library! Make sure that you get the word out about all of the great services you offer.** Do not take for granted that people know about the technology that is available in today's libraries. Many do not. When you begin offering a new service, make sure to highlight it prominently with publicity efforts. Develop relationships with your local legislators. When a library technology issue is being discussed in the legislature, make sure your local legislators know how the issue affects your library and community.



Collaboration Tools Chart

CATEGORY	EXAMPLE OF TOOLS
<p>Blogs and microblogs — Short for “Weblog,” a blog is an easily updated Web site, generally in reverse-chronological order by date. These Web sites range from personal diaries to professional tools, and you can often subscribe to them via RSS using an aggregator. Often, they contain links to and comments on other online information. Microblogging involves sending brief posts to a personal Web space or a microblog site (such as Twitter). Microblog posts are short (Twitter limits them to 140 characters). Blogs represent the fastest-growing medium of personal publishing and the newest method of individual expression and opinion on the Internet.</p>	<p>Blogger Blogging software owned and powered by Google.</p> <p>Movable Type Blogging platform for organizations.</p> <p>Twitter: A microblogging service that allows users to immediately share short (140 characters) snippets of content via text messaging, the Web, and other interfaces. <i>The New York Times</i> called Twitter “one of the fastest-growing phenomena on the Internet.” <i>TIME Magazine</i> said, “Twitter is on its way to becoming the next killer app.”</p> <p>WordPress Personal publishing platform with a focus on aesthetics, Web standards and usability.</p>
<p>Social bookmarks and tags — This involves online services that allow you to store your bookmarks online, categorize them and share them with other site visitors interested in similar topics. Tags are descriptive terms to categorize online content. Tagging content allows it to be shared with others interested in similar topics; multiple tags can be given to the same content. Also referred to as “folksonomies,” created by folks.</p>	<p>Delicious: A “social bookmarking” site. Users can store URLs, personal comments and descriptive tags to organize Web pages. It is like a Favorites folder that is located on the Internet, and it can be accessed from any computer.</p> <p>Digg Digg is a user-driven social content Web site, where news and online content are submitted and rated through online votes and displayed in order of most votes.</p> <p>Squidoo is an easy-to-build Web page that can point to blogs, favorite links, RSS feeds, Flickr photos, Google maps and/or eBay auctions.</p> <p>SuprGlu helps you gather your content from all over the Web and publish it in one place.</p>

COLLABORATION TOOLS CHART (CONTINUED)

CATEGORY	EXAMPLE OF TOOLS
<p>Multimedia sharing (including audio, photo and video) — Podcasting involves putting audio content on the Internet, and may be delivered via RSS feeds, so that subscribers receive new content automatically. Podcasts can be downloaded to iPods, or other players or listened to on a computer. Screencasting is the capture of a video of computer screen activity (for example, to show people in real time where to click, what to type or to capture video for tutorials, presentations, etc.).</p>	<p>Audacity is free, open-source software for recording and editing sounds. It is available for Mac OS X, Microsoft Windows, GNU/Linux and other operating systems. Many libraries offer podcasts of book talks, library news items and book reviews.</p> <p>Camtasia and CamStudio are common screencasting tools.</p> <p>Flickr is an online photo management and sharing application that includes the use of tagging. You can share your favorite photos to the world or securely and privately show photos to only your friends and family.</p> <p>Live Plasma allows users to map music and movie interests.</p> <p>Pandora makes a streaming “radio station” just for you, based on your ratings of favorite music.</p> <p>Picasa is a free software download from Google that helps you find, organize and share your photos.</p> <p>SlideShare provides a place to share and discover slideshows and presentations.</p> <p>YouTube has been called the “million-channel people’s network” and allows for the viewing and uploading of videos.</p>
<p>Collaboration, projects, and productivity — The collaboration and community evident in Web 2.0 even led <i>TIME Magazine</i> to name the Person of the Year in 2006 as “You.” The magazine designated Web 2.0 as a revolution and a massive social experiment. “The new Web is...a tool for bringing together the small contributions of millions of people and making them matter... it’s about the many wrestling power from the few and helping one another for nothing and how that will not only change the world, but also change the way the world changes.”</p>	<p>Furl allows you to save a copy of your favorite Web sites with 5 GB of free storage space.</p> <p>Google Docs and Spreadsheets provide an online tool for individual or group document creation and editing.</p> <p>Mayomi allows for creating of online mind maps.</p> <p>SurveyMonkey.com is a tool to create and publish custom online surveys in minutes and then view results graphically and in real time.</p> <p>Ta-da Lists creates simple, sharable to-do lists.</p> <p>Writeboard creates sharable, Web-based text documents that let you save every edit, roll back to any version and easily compare changes.</p> <p>Zoho offers a suite of online Web applications geared towards increasing productivity and collaboration. Includes a word processor, spreadsheet application, presentation tool, hosted wiki, notebook, Customer Relationship Management (CRM) tool, etc.</p>



COLLABORATION TOOLS CHART (CONTINUED)

CATEGORY	EXAMPLE OF TOOLS
<p>Gaming — This is not just for fun! Libraries find that offering gaming attracts teens and young adults to other library services and is a good marketing technique.</p>	<p>eGames Generator allows you to create your own custom learning games. Since eGames Generator is online software, there are no downloads or installations necessary: You can create a game in just a few minutes.</p> <p>Neopets involves keeping a pet alive in this online community; great for children.</p> <p>Second Life is a 3-D virtual world entirely built and owned by its residents. Not just a game, there are opportunities for communicating with the public, including in the library on “Info Island.”</p>
<p>Instant messaging and communication — Differs from email in that conversations are able to happen in real time. Most services offer an indication of whether people on one’s list of contacts are currently online and available to chat. This may be called a “Buddy List.” In contrast to emails or phone, the parties know whether the peer is available. Examples include AIM (AOL Instant Messenger), Yahoo! and MSN, also embedded in gmail.com, Facebook, etc.</p>	<p>Meebo is a Web-based instant-messaging application that combines all the major IM services into one.</p> <p>Skype is an Internet call software and service.</p> <p>Trillian is a software application for instant messaging. Compatible with all the major IM applications.</p>
<p>Library and book-related tools — People are doing library-related things online for fun!</p> <p>Social software can provide ways to communicate, collaborate, educate and market services to patrons and other community members. Libraries can be the online hub of their communities just as they have traditionally been the physical community center. Often, a library is the only place where someone can get free connectivity, free training and free assistance and access to technological information.</p>	<p>Goodreads and Shelfari. Like Facebook and MySpace, users sign up for an account, post a profile, add friends, create personalized online bookshelves, find reading recommendations based on friends’ shelves and reviews, connect with authors and the literary community, read about book signings and view excerpts.</p> <p>Library Elf is a personal reminder service for library users that will send library notifications, such as overdue reminders with email alerts and text message alerts for holds.</p> <p>LibraryThing catalogs your books online, easily, quickly and for free.</p> <p>Scriblio (formerly WPopac) is a free, open-source CMS and OPAC with faceted searching and browsing features based on WordPress.</p>
<p>Mashups and widgets — Mashups involve combining multiple tools and Web sites to create a new interface, product or tool, such as a Web site. Widgets are small, specific applications that can reside on a desktop or Web site, such as displaying a weather forecast, playing a game or a list of activities. Widgets are simple to develop and easy to install on a Web page. Most require a few images and expertise with JavaScript and XML to create.</p>	<p>Mashup Dashboard lists hundreds of mashups, with new updates daily.</p> <p>Web 2.0 Mashup Matrix is a programmable Web 2.0 mashup.</p> <p>Yahoo! Widgets allows you to create, find and rate widgets.</p>



COLLABORATION TOOLS CHART (CONTINUED)

CATEGORY	EXAMPLE OF TOOLS
<p>“Real Simple Syndication” or “Rich Site Summary” (RSS) and aggregators — You can subscribe to RSS-enabled blogs, newspapers, journals and other online content so that updates automatically come to you, rather than having to return to the original site to see if new material has been posted. It’s a way of packaging Web items such as blog entries in a stripped-down, XML-based format so that they can be imported into other Web pages. Most blog-hosting services automatically create RSS versions of blog posts. That means bloggers can “syndicate” their content across the entire Web, while readers can subscribe to RSS feeds. An aggregator, news reader or feed reader is a usually free service that allows you to subscribe to and read blogs, news or any type of feeds in one customized Web page. It is client software that uses a Web feed to retrieve syndicated Web content. Subscriptions can also be created for podcasts, photos, searches or other media. Web sites publish updates — called “feeds” — that indicate when new content has been posted. Aggregators automatically update and keep track of what you’ve read!</p>	<p>Bloglines is a Web-based RSS reader, which includes blogging capabilities.</p> <p>FeedBurner is a provider of media distribution and services for blogs and RSS feeds. It offers tools to assist bloggers, podcasters and commercial publishers promote, deliver and profit from their content on the Web.</p> <p>Google Reader is Google’s RSS reader in its “lab.”</p> <p>NewsGator Online is a free, Web-based RSS aggregator.</p>
<p>Search engines — Search technologies today have moved beyond traditional content retrieves. They are now designed to combine existing Internet search engines with new and improved models that allow for stronger connections to user preferences, collaboration, collective intelligence and a richer user experience.</p>	<p>BlogPulse is an automated trend discovery system for blogs. BlogPulse applies machine-learning and natural-language processing techniques to discover trends in the dynamic world of blogs.</p> <p>Google Blog Search allows you to find blogs on your favorite topics.</p> <p>LibWorm: Librarianship RSS Search and Current Awareness is intended to be a search engine, a professional development tool and a current awareness tool for people who work in libraries or care about libraries.</p> <p>Podscope lets you search the spoken word for audio and video that interests you.</p> <p>Podzinger is an audio and video search engine.</p> <p>Technorati searches and organizes blogs and other forms of user-generated content (photos, videos, voting, etc.).</p> <p>Top 25 Web 2.0 Search Engines Online Education Database’s Top 25 Web 2.0 Search Engines.</p>

COLLABORATION TOOLS CHART (CONTINUED)

CATEGORY	EXAMPLE OF TOOLS
<p>Social and collaborative networks — Researchers are discovering that beyond the original digital divide, separating those who owned technology from those who didn't, there is now an increasing social divide, termed technocultural isolation. Social technologies are connecting people and providing communication structures in more ways than ever before. Even teens are conversing and networking across countries and cultures. Those who do not have continual access to these tools will be isolated and at a societal disadvantage, particularly in the workforce.</p>	<p>Classmates.com allows you to connect with school friends.</p> <p>Facebook is a social utility that connects you with the people around you.</p> <p>Friendfeed enables you to keep up-to-date and discuss the Web pages, photos, videos and music that your friends and family are sharing.</p> <p>Friendster is a social network emphasizing friendships and the discovery of new people through friends. Search for old friends and classmates, stay in better touch with friends, share photos and videos.</p> <p>LinkedIn strengthens and extends your existing network of professional contacts.</p> <p>MySpace is an online community that lets you meet your friends' friends and share day-to-day events.</p> <p>Ning allows creation of public or private social networks, including groups, forums and sharing.</p> <p>WebJunction is an online library community, created by librarians, for librarians, and includes articles, forums, etc.</p>
<p>Wikis — Collaborative Web sites where anyone can create new content or edit existing content. Share staff knowledge through wikis, communicate regarding policies and brainstorm on projects.</p>	<p>Library Success: A Best Practices Wiki This wiki was created to be a one-stop shop for great ideas and information for all types of librarians.</p> <p>LISWiki The Library and Information Science Wiki, a free encyclopedia that anyone can edit.</p> <p>PBwiki lets you quickly set up your own free, hosted, password-protected wiki to edit and share information. It's as easy as a peanut butter sandwich.</p> <p>Wikipedia is a free online encyclopedia that allows anyone to add or edit the entries. With over 10 million articles written in 253 languages, it is the world's most comprehensive (though not most reliable) reference work. It may be the largest collaborative literary work in history. Wikipedia proclaims it is a project that attempts to summarize all human knowledge.</p>



Fifteen Ways to Effectively Use Web 2.0 Tools

It's all about sharing information, just using new tools. Instead of pencils, card catalogs or even databases, it's blogs, wikis and del.icio.us. There are millions of blogs and online resources. The library cannot track and keep up with everything. Create teams and pilot Web 2.0 projects. Some key ideas include:

1. Web 2.0 lunch discussions
2. Learning partners or mentors
3. Fifteen-minute demos (for staff and patrons)
4. Fifteen minutes of personal learning
5. Online marketing projects
6. Workshops on emerging technology updates
7. Personal development time for online exploration
8. Promote staff use of WebJunction.org
9. Show and tell technology topics
10. Attend state and national conferences (Internet Librarian and Computers in Libraries are great)
11. Host blogs; read and comment on blogs
12. Subscribe to journals that address Web 2.0 technologies
13. Participate in Webinars and Web casts
14. Attend local workshops
15. Create an emerging tech committee, wiki and/or blog

Instant messaging is important, and Meebo in particular seems to be a library favorite, as it is easy to use and to add to an existing library Web site, see <http://www.lib.berkeley.edu/math>. Meebo adds value to a static Web site without requiring big changes. Instant messaging with Meebo “pushes” your reference service where it's needed the most — side by side with other instantaneous services. But the true value point is the human being — moderating and interacting with the community.