

healthy&secure
computing



HSC Workbook



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About CompuMentor

[CompuMentor](#) is one of the most comprehensive nonprofit technology assistance providers in the U.S. The organization conducts a range of major programs both on the national and the local level. It powers the nonprofit technology web site [TechSoup](#), as well as its distribution service for donated and discounted technology products, [TechSoup Stock](#). It also collaborates with local and regional partners to bring technology implementation and support to San Francisco Bay Area nonprofit organizations through the TechCommons and [Consultant Commons](#) programs.

About This Guide

Introduction

The *Healthy & Secure Computing (HSC) Workbook* has been specifically designed to help nonprofit organizations make the kind of decisions that will ultimately increase the reliability and security of their information technology at a minimal cost.

Initially developed as a companion document for HSC seminars, this workbook is now offered as a standalone resource for nonprofit organizations and the technology assistance providers that support them. It includes detailed descriptions, justifications, and upgrade options for the technologies that most nonprofits use daily. The technologies discussed in this workbook are based on several factors:

- Ease of use
- Reliability
- Low cost
- Availability
- Sustainability

HSC Workbook Organization

Designed for ease of use, this workbook is organized into four basic sections, each with a different main focus:

Section 1: Introduction to Healthy & Secure Computing provides a general overview of the HSC Program, process, and methodology.

Section 2: Getting Started – Assessing and Prioritizing Your Technology Needs outlines the steps you must take to properly gather the information needed to improve your technology infrastructure.

Section 3: Gearing Up – Upgrading and Implementing Your System contains a complete set of HSC guidelines and recommendations that have been organized into seven broad categories:


- Desktop Hardware
- Desktop Software
- (LAN) Technologies
- Internet Technologies
- Server Technologies
- Security and Privacy
- Computer Equipment Ergonomics

Section 4: Staying on Track – Maintaining and Supporting Your System offers

helpful guidance for maintaining a solid technology infrastructure over the long term with the most efficient use of ongoing investment.

HSC Tools

The workbook also includes an **Appendix** section that contains tools such as worksheets, checklists, samples, and documentation templates that support specific HSC guidelines.

At various points in this workbook, you will see a **TOOLS** icon [] that cues you to a specific resource in the Appendix section.



To download the most current version of the HSC Workbook and see other resources, go to www.techsoup.org/toolkits/hsc.

The HSC Program Approach

As you go through this workbook, you'll find that the HSC methodology takes a "one-size-fits-most" approach to basic information technology (IT). Because most nonprofits use IT in similar ways, the workbook has been developed to minimize support and maximize reliability of the most common technology configurations and situations. It does not cover specialized applications and databases, as these technologies typically differ depending on the organization.

The HSC guidelines presented in this workbook serve as a community resource, reflecting the practical needs and technical knowledge of organizations like yours. Organizations that adopt the HSC guidelines are encouraged to participate in the HSC community, which will guide the evolution of the HSC Program.

We hope you will find this workbook and the HSC Program useful. Your feedback is encouraged. Please submit your thoughts and comments via [e-mail](#).

SECTION 1:

Introduction to Healthy & Secure Computing

HSC Program Overview and Goals

The Healthy & Secure Computing (HSC) Program consists of a set of targeted guidelines and recommended technologies that, when taken together, can assist small to medium-sized nonprofit organizations in building and maintaining a stable and secure information technology (IT) infrastructure. An HSC environment allows you to:

- Plan for and implement transformative technologies,
- Integrate IT with programmatic functions,
- Lower basic IT support costs, **and**
- Improve reliability of IT systems.

The HSC Program has four major goals. When the HSC guidelines and recommendations are appropriately implemented, they can help your organization:

- Reduce instances of catastrophic computing failures.
- Decrease the time and expense needed to support basic computing infrastructure.
- Increase your ability to engage in smart IT planning and management.
- Enable technology assistance providers to implement solutions according to HSC principles at a lower cost than would otherwise be possible.

HSC Program Approach

The HSC Program takes a holistic approach to technology by focusing on hardware, software, networking, management, planning, maintenance, operations, and the staff training that is most appropriate to small- to medium-sized nonprofit organizations. Included are HSC guidelines for basic technologies commonly used by nonprofits. These guidelines are geared toward helping nonprofits achieve a robust, consistent, easy-to-use, and easy-to-maintain computing environment.

HSC guidelines may not, in part or as a whole, be right for organizations without paid staff, or with multiple, widely separated sites. They may also be inappropriate for virtual organizations. It is up to your organization to determine which guidelines to implement, based on your own priorities, needs, and resources.

HSC Guidelines Commitment

Successful HSC Program implementation cannot be accomplished without the buy-in and cooperation of your whole organization. In order to effectively implement the HSC guidelines, you need to commit financial and human resources to the process; the exact amount depends on the status of existing IT systems. Keep in mind, you will also have recurring IT systems maintenance costs. To this end, suggestions have been included at the end of this section to help you promote the HSC Program to non-technical decision makers in an effort to raise funds for IT implementation and support.

How the HSC Program Works

Getting Started

This initial phase of the HSC Program follows a simple step-by-step process to help you successfully implement the HSC guidelines on your own. Here you begin by conducting an IT inventory that covers the basics of computer hardware and software systems, Internet connections, technology management, and maintenance capability. You are also given a set of tools to perform an IT systems gap analysis and develop an HSC Program implementation plan.

Gearing Up

Once you've gathered information and set priorities, you can start actually implementing and configuring your technology. You begin by repairing or replacing existing IT systems that the inventory found to be in crisis. After your existing IT infrastructure is stable, you can then continue to work through the HSC guidelines. The goal of the implementation and configuration guidelines is to minimize the resources and effort needed to maintain your IT systems.

Staying on Track

The HSC Program also recommends maintenance and resource support procedures to ensure a safe and successful computing environment.

Getting the IT Resources

It can be easy or challenging to follow and implement HSC guidelines, depending on the state of your organization's IT resources. If you have mature IT systems or available support resources, you will find that adopting the HSC methodology is relatively simple. If you do not have a well-developed infrastructure or a dearth of support resources, HSC guidelines may prove to be a little more difficult to adopt. In any case, the decision to use the HSC guidelines in this workbook will require your organization to commit resources toward your IT infrastructure, either in staff time, financial outlays, or both.

It is highly recommended that you first choose a staff member to attend an HSC workshop and/or to review this workbook in its entirety. Once you are fully informed about the HSC Program, you should examine the organizational benefits of applying the HSC methodology, review the actions required to reach the HSC Program goals, assess the costs associated with program implementation guidelines, and evaluate whether the technology guidelines are appropriate, based on the planning considerations discussed in the workbook. At this point you should have enough information to make the proper

decision as to whether or not to commit the necessary resources to HSC.

If your organization has complicated IT infrastructures or limited IT know-how on staff, you may want to use the HSC workbook in the context of a workshop or a one-to-one engagement with an IT consultant.

Promoting the HSC Program to Non-Technical Decision Makers

Nonprofit organizations today often work with limited resources and personnel, making IT an indispensable component for any operation. Even with this reality, it still may be difficult to justify any costs or resources used toward the application of the HSC guidelines, especially to someone who is non-technical. Listed below are the three key benefits that your organization can use when promoting HSC to an Executive Director or funder:

- **HSC Maintains Productivity**
As hardware and software become less expensive, your employees' and volunteers' time is ultimately the most precious. HSC enables you to be the most productive with the least amount of downtime, so you can carry on your organization's mission without interruption.
- **HSC Facilitates Accountability**
In a healthy IT environment, your data is secure, accessible, and available. The HSC Program establishes a framework for you to be accountable to both internal and external stakeholders. With HSC guidelines, you can be proactive about your data, rather than having to scramble for it.
- **HSC Reduces Liability**
An unhealthy computing environment is a risky one. Be it the loss of data or confidence, a sound IT infrastructure mitigates those risks. The HSC Program educates your organization with industry best practices, so that even when there are IT problems, you are prepared.

The HSC workbook can be thought of as "tried-and-true" standard that all nonprofit organizations should follow. The successful implementation of HSC by different organizations is testament to its applicability. You are encouraged to use this workbook as a means to inform and educate non-technical decision makers.

SECTION 2:

Getting Started – Assessing and Prioritizing Your Technology Needs

This section includes a series of step-by-step activities to help you determine how well the HSC Program fits your organization's actual technology needs and uses. Most of the steps described here are accompanied by worksheets contained in the Appendix A of this workbook.

Step 1: Planning

Before you implement the HSC Program, your organization must first decide whether or not it is the appropriate IT fit. This first step discusses the **ten key factors** you must consider while planning to implement the HSC methodology, including legal mandates and programmatic concerns. You will also be referring to these factors at different points when deciding among the various technology options. You can use only those HSC Program guidelines that you feel are most appropriate, or you can adopt all of them.

The HSC Program is not intended to fit every organization, but should apply to the IT resources of most. If HSC doesn't seem to fit well, it is highly recommended that your organization undertake a formal technology planning process to find solutions that meet your specific needs, requirements, and constraints.



Additional technical planning articles and resources are available at the [TechSoup Tech Planning Learning Center](#).

Security and Confidentiality Concerns

Your organization can go a long way toward reducing, but not completely preventing, security risk with a minimum investment of resources. This is the recommendation that CompuMentor typically provides. A delicate balance exists between ease-of-use and security. Many secure systems usually require additional access steps making them more complex to use. The HSC guidelines and recommendations follow a moderate path in this regard.

If your organization handles highly confidential information or has specific legal security mandates, you may have security needs that are beyond the scope of these HSC guidelines and technology recommendations. Organizations that typically fall into this category are those that must safeguard confidential client data such as medical information, Social Security numbers, or bankcard information.

Security issues are discussed in greater detail later in Section 3 of this workbook.

Plans for Growth

If you expect to grow significantly, you should adopt the HSC technologies that will be appropriate for your expected size. It's easier to grow into a network than to smoothly expand a network. For example, it's more cost-effective to purchase networking equipment with more connections than you need now, than having to replace the device later on because you didn't make room for growth.

Size

If you have a large number of computers or users, you may need to adopt different parts of the HSC Program, and rethink and reconfigure your resources. Exactly what size is too big depends on how tightly your IT is integrated into your daily operations. For example, if you actively use a shared database, (even though you might be a smaller organization), you will find that the HSC guidelines scale better to organizations that do not integrate a database with their daily work, than to those of a larger size with a bigger IT operation.

IT Complexity

If you use complex technologies, some HSC guidelines may not be applicable to your situation. For example, if you have a custom-built, Internet-enabled database that handles all your programmatic data, you are more likely to find that the HSC guidelines are less appropriate for your organization, compared to another one that uses an off-the-shelf, stand-alone database application for its work.

Pre-existing Conditions

If your organization currently experience serious technical problems, such as virus outbreaks or key hardware failures, you will need to solve these problems before implementing the HSC guidelines. You may find solutions at the TechSoup Learning Center that can address these pre-existing conditions before you start the HSC process. It is important to be aware of the HSC guidelines while repairing existing systems, so that the repaired systems will fit easily into the larger HSC framework.

Specialized Applications

If your organization uses specialized software applications, such as geographic information systems (GIS) or customized client tracking software, some of HSC guidelines may be inappropriate for your hardware and environment. It is strongly recommended that you follow vendor-specific hardware and software specifications for specialized applications. Trying to shoehorn an application into an unsuitable hardware and software environment is a recipe for IT headaches.

Computer Labs

If you are a community technology center (CTC), or your organization has a computer lab, or is planning to set one up, you should follow other guidelines that are pertinent to lab situations.

Bandwidth Use

If your organization has large quantities of data, such as digital video archives or multimedia databases that you need to send, serve, or store, you may find that the HSC guidelines do not adequately address those network or storage requirements.

Staff Skills and IT Management

If your organization staff members have very limited IT knowledge, you may need to budget additional resources to IT consulting and staff training in order to effectively use the HSC guidelines.

Resources

To successfully adopt the HSC guidelines, your organization will need significant expenditures in terms of time and money, so make sure you have the necessary resources on hand to engage in this process. This includes the following:

- Management time for planning and decision making
- Staff and consultant time for implementation
- Staff time for training
- Financing for hardware and software purchases
- Time and money for regular maintenance and support.

TOOLS



To see if the HSC Program is suitable for your organization, complete *Worksheet 1: Planning Considerations* in Appendix A of this workbook.

Step 2: Inventory

HSC guidelines require that you first collect some information about your existing IT systems, including desktop hardware and software, server hardware and software, network equipment, and specialized software. An inventory does not need to be exhaustive, but should include the basics such as make and model, serial numbers, and software titles and versions. It is also important to track licensing information, proof of purchase information, warranties, and support contracts. Often much of this information is available from receipts kept by your accounting department.

TOOLS



Use the HSC *Worksheets 2A and 2B Hardware and Software Inventory* in Appendix A of this workbook to collect your organizations basic IT systems inventory information. The worksheets have been partially filled out for sample purposes. Please modify as needed.



For additional information about inventory assessment, you can also use the *TechSurveyor tools* at [TechAtlas](#)

Step 3: Gap Analysis

In Step 3, your organization must determine how its existing IT system deviates from the HSC guidelines. To complete this step, you need to perform a Gap Analysis, This type of evaluation allows you to set priorities and plan for the implementation of a more robust system.

As you complete the Gap Analysis, remember you are only looking for the baseline

standards for each area of technology. At this point, you are not concerned with what it may take to meet the current IT standards. These standards and any associated questions will be answered as you move through the HSC guidelines in this workbook.

TOOLS



Complete HSC *Worksheet 3: Gap Analysis* in Appendix A of this workbook. As you fill out this worksheet, you will need to refer to Section 3 for the hardware and software minimum standard implementation guidelines.

Step 4: Security Assessment

Information security revolves around three concepts: confidentiality, integrity, and availability. In a secure environment, your information should meet the following criteria:

- **Confidential:** User access and modification privileges of information are suitable to assigned level of responsibility.
- **Whole and Complete:** Information is accessible to users in their entirety, and any additions or deletions must be authorized.
- **Available:** Information is accessible to those who need it when and where appropriate.

You need to assess your security risks, and determine what issues need to be addressed and how. Every organization perceives certain risks differently, and may choose to rank their resolution differently.

Risks and Consequences

The HSC Program advocates looking at security from a “risks, consequences, and resources” viewpoint:

- What are the risks you face from a security breach, and what are the possible consequences of that breach?
- What would it take to address those risks?
- What resources do you have to address these important risks?

For example, the confidentiality of an information and referral database of social services available to low-income families may be a lower priority than the data maintained by a domestic violence shelter. A social services organization may invest very little to protect its data, while a domestic violence shelter may be “required by law” to make confidentiality a top security priority.

COMMON RISKS AND CONSEQUENCES	
RISKS:	CONSEQUENCES:
Loss of confidential or sensitive data e.g., from a server drive failure	Cost of collecting and re-entering hard-to-find data
Theft or loss of a laptop computer e.g., from an office burglary	Financial burden of replacing lost or stolen hardware
Unauthorized access to data	Legal fines and penalties, and/or loss of

e.g., a hacker steals sensitive client data	confidence from clients as a result of sensitive data losses
Loss of important hardware e.g., an Internet router failure	Loss of organizational capacity due to lost Internet connection

The HSC Program uses a “defense in depth” approach to security so that any individual security flaw has a limited impact on your systems. Every technology in use in your organization should be *hardened*; that is, configured in as secure a fashion as possible, so that there are no weak points for an intruder to exploit.

What Should You Secure?

Some important IT areas to secure are as follows:

Internet Access/Internet Gateways

Any connection to the Internet (e.g., dial-up, DSL, leased line) is by definition, public and accessible from anywhere else on the Internet. The numerical nature of the Internet makes it impossible to hide your connection from hackers. As a result, securing your Internet connection with a firewall is a necessity.

- If you use a dial-up connection, be sure to install a firewall program, such as ZoneAlarm, and turn on the integrated firewall in Windows XP and Macintosh OS X.
- DSL and other broadband users should put a dedicated router device on their connection. Besides allowing multiple users to access the line, a router device functions as a simple and effective firewall, limiting access from the Internet to computers on your local network.

Internet Applications

Any application that makes use of the Internet, such as web browsers, e-mail clients, and operating systems, must be secured. This usually means installing the latest versions and patches, though some applications may require additional configuration to insure their security. If you operate your own Internet servers, such as e-mail servers or web servers, you will need to make sure that these services are configured securely.

User Accounts, Authentication and Access Control

All computers and information systems (e.g., databases, e-mail, and file servers) need to use some sort of authentication system so only authorized users may access these systems. In practice, this usually means user accounts and strong passwords. In addition, many organizations need to set up a permissions-based access system for most of its data. With this kind of system, only authenticated users have access to the data appropriate to their position in the organization.

Encryption of Exposed Transport

Increasingly, organizations use technologies such as wireless networking and virtual private networking that extend the local network beyond the confines of the office. These technologies need to be configured to use robust encryption so that the information passed through them cannot be easily compromised.

Security and convenience are often difficult to balance: the more secure a system is, the

more difficult it can be to access and use. An important aspect of HSC Program is end-user training that is targeted toward helping users understand the security systems and how to properly apply them to do their work without unnecessary inconvenience. It is worth remembering that secure systems are often compromised by the system users in the name of convenience and ease-of-use.

TOOLS



Complete HSC *Worksheet 4: Security Assessment* in Appendix A of this workbook. The worksheet includes a sample item.

Step 5: Set Priorities

Where and when should you begin implementing the HSC guidelines? Your gap analysis has helped you generate a list of technology projects that your organization should undertake, however, most likely there are too many for your current time and budget.

In this step you set the project priorities necessary to come up with some clearer answers. You may have to go through this process more than once because as you get more details about your technology infrastructure, your priorities may change.

TOOLS



Refer to *HSC Worksheet 5: Prioritization* in Appendix A of this workbook. To assist you in prioritizing your projects, Compumentor has already filled out the worksheet, using the General Recommendations specified below. Please modify the worksheet as needed for your organization.

Note: *This prioritization process is by no means exact. Using numbers in the worksheet, and tallying up the totals will not give you an accurate answer—use a letter-ranking system (e.g., A, B, C) to give you a general idea of what projects carry greater weight—and by all means trust your judgment. Technology consultants generally follow this approach, weighing pros and cons in their heads as they assess priorities and options. The process usually requires compromise and inexact answers.*

General Recommendations for Setting Priorities

Backup, backup, backup

If you need to add or reconfigure a data back-up solution, do so as early in the process as possible. A good reliable backup is critical, since there is always a small chance that an implementation task will go astray and result in data loss.

Put out the fires first

If there is an obvious security or stability issue, such as an unsecured router, a virus outbreak, or malfunctioning PC, address these issues first.

Work on the server before the clients

The process of installing, rebuilding, or reorganizing a server almost always requires some changes to the client PCs, so HSC recommends working on the server first, and then working on all the PCs second.

Grab the low-hanging fruit

If there are easy-to-accomplish tasks, such as minor changes to network hardware, go ahead and get these out of the way first, as small successes will help keep you motivated enough to tackle the bigger projects.

Do software upgrades all at once

If you need to upgrade software applications, do the upgrade for all necessary applications on one machine. This way any software incompatibilities will be apparent immediately. Afterwards, you can roll out to the other workstations.

Step 6: IT Project Implementation

You can assign appropriate technical staff (internal or consultants) to implement your priority projects. But remember, these are not complex, proprietary or organization-specific projects; they are standard tasks like upgrading desktops or implementing a back-up system. Most technology consultants you hire can do these projects; the challenge is for you to determine which projects are most important.

TOOLS



To plan accordingly for your IT project implementation and support, complete *Worksheet 6: IT Staffing and Training* in Appendix A of this workbook. For additional details and recommendations related to IT Staffing and Training, refer to Section 4.

SECTION 3:

Gearing-Up – Upgrading and Implementing Your System

Now it's time to roll-up your sleeves and start upgrading and implementing your system. This section details the HSC Program guidelines for baseline technologies. This includes coverage of the following categories:

- **Desktop Hardware:** Minimum specifications for Windows and Macintosh systems, buying advice, and more.
- **Desktop Software:** Guidelines for PC software, including operating systems, and basic application software.
- **Local Area Network (LAN) Technologies:** Cabling, switches and hubs, wireless networking, printers, and other network-attached devices.
- **Internet Technologies:** Internet access, routers, e-mail, and web services.
- **Server Technologies:** Server hardware and operating systems, server appliances, peer-to-peer options, and file servers (as opposed to e-mail, web, and database servers).
- **Security and Privacy:** Guidelines on firewalls, data backups, anti-virus, anti-spam, anti-malware, and associated best practices.
- **Computer Equipment Ergonomics:** Recommended keyboards, mice, and displays.

Desktop Hardware


Desktop Computers

All nonprofit staff should have access to a functioning personal computer capable of running HSC recommended software. The following HSC guidelines for desktop hardware include specifications for replacement of existing machines, as well as for new computer acquisitions.

Depending on your organization, you should consider the different roles the workstations play. For instance an intern's workstation used primarily for research, need not to be as fast or have as much storage as the financial manager's. Likewise, a notebook computer which is used solely for presentations and workshops, need not to be as powerful as one used for an off-site employee.

Replace your existing desktop computers if they are operating below the minimum specifications charted here:

COMPONENT	PC	MAC
Processor	Intel Pentium III 500 MHz / AMD K6 III 450	G4 500 MHz
RAM (memory)	128 MB	
Hard Drive (storage)	10 GB	
Network	10 Mbps Ethernet network card	
Removable media	Functioning CD-ROM and floppy drives	Functioning CD-ROM drive

 **QUICK TIP:** The Macintosh specifications outlined above include many, but not all, PowerMacs, G4 iMacs, G4 eMacs, G4 iBooks, and G4 PowerBooks. All modern Macintosh computers have integrated 100Mbps Ethernet interfaces.

New or donated computers should meet these minimum HSC specifications.

COMPONENT	PC	MAC
Processor	Intel Celeron 1 GHz / AMD Athlon 900	G4 1 GHz
RAM (memory)	256 MB	
Hard Drive (storage)	30 GB	
Network	100 Mbps Ethernet network card	
Connectivity	Universal Serial Bus (USB)	

Removable media	Functioning DVD-ROM/CD-RW drive
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Peripherals

Computers should have at minimum a 15" diagonal monitor capable of running at a screen resolution of 1024x768. All computers should have fully functioning keyboards and pointing devices (mice, trackballs, joysticks, etc.). Please see the Computer Equipment Ergonomics guidelines starting on page 29 of this workbook for more information on this topic.

Notebook Computers

Replace your existing laptop computers if they do not meet the minimum HSC specifications charted.

COMPONENT	PC NOTEBOOK	MAC NOTEBOOK
Processor	Intel Pentium III 500 MHz / AMD K6 III 900	G4 500 MHz
RAM (memory)	128 MB	
Hard Drive (storage)	10 GB	
Network	10 Mbps Ethernet network card	
Screen Resolution	800 x 600	

New or donated computers should meet these minimum HSC specifications.

COMPONENT	PC NOTEBOOK	MAC NOTEBOOK
Processor	Intel Celeron 1 GHz / AMD Duron 1200	G4 1 GHz
RAM (memory)	256 MB	
Hard Drive (storage)	20 GB	
Network	Built-in 100 Mbps Ethernet network card, WiFi capable	
Screen Resolution	1024 x 768	

Handheld devices

HSC does not have any recommendations for handheld devices. Palm, Windows Mobile, and Blackberry all have their strengths and weaknesses depending on your organization's needs. Track the asset as you would with a notebook computer.

Due to their portable nature, devices such as laptops and PDA's are difficult to secure. You can restrict access to the data on a handheld device by using its security system to set up a password. You should also limit the amount of sensitive data on the device, if possible.

HSC Recommendations and Buying Guide

- **Dell computers**, which are available at a discount to nonprofit organizations through a program sponsored by [TechFoundation](#).
- **Refurbished computers**. To learn more, visit TechSoup Stock's [Recycled Computer Initiative](#).



Refurbished machines meeting the minimum specifications are available for as low as \$150, and is an affordable option for non-mission critical tasks and functions

Desktop Software

An operating system (OS) is the core software that controls a computer. All nonprofit organization staff should use computers that run a secure and reliable operating system and include fully functioning application software appropriate to the organization's needs.

Operating Systems

The following operating systems will run on the HSC hardware minimum standard, and are secure and reliable:

- Windows 2000 Professional, SP4
- Windows XP Professional, SP2
- Linux distribution with kernel 2.4.x and above
- Macintosh OS X, version 10.2 and above

Since it is the most essential piece of software that runs on your computer, make sure all security updates are applied. Detailed Windows security settings can be found in our *Windows 2000 Effective Practices* and *Windows XP Pro Effective Practices* guidelines at [HSC](#).

Office Productivity Software

The HSC Program highly recommends the Microsoft Office suite for Macintosh and Windows to support your organization's administration and operational needs. Acceptable installed versions include:

- Microsoft Office 2000 for Windows, and up
- Microsoft Office v.X for Macintosh, and up

For new purchases, use the latest version of the Microsoft Office suite. Be aware that there can be document format incompatibilities between different versions of Office. In any event, it is strongly recommended that all computers in an organization use the same version of Office, if at all possible.



QUICK TIP: Install Windows operating systems and Microsoft Office products with all updates, and configure them appropriately.

Other Recommended Software Tools

SOFTWARE	PC	MAC
Web Browser	Internet Explorer 6.x, Firefox 1.5x	Safari, Firefox 1.5.x
Calendar and E-mail	Microsoft Outlook 2000 and up	iCal, Microsoft Entourage
PDF Viewer	Adobe Acrobat Reader	Preview (integrated into Mac OS X)
File Compression Tool	7-Zip	Built into Mac OS X
Multimedia	Windows Media Player, Real Player, Quicktime Player	
Instant Messaging and VOIP	Skype	



QUICK TIP: Neither Outlook nor Entourage are effective tools for managing and sending e-mail to large lists of addresses. Organizations looking for the capability to send out mass e-mails should look for dedicated software or services for this functionality.

HSC Recommendations and Buying Guide

HSC recommends the following free, downloadable software tools to help improve your office productivity and maintain a strong technology infrastructure.

- [Adobe Acrobat Reader](#)
- [7-Zip](#)
- [Windows Media Player](#)
- [Real Player](#)
- [Quicktime Player](#)
- [Skype](#)

If you're a 501(c)(3) organization, it is highly recommended that you look into purchasing Microsoft and other software titles from [TechSoup Stock](#) (see the Microsoft donation guidelines for limitations and eligibility requirements), **or** from a Microsoft Charity Licensing reseller.

Local Area Network (LAN) Technologies

This part of Section 3 covers the hardware and software components that keep your network running within your office.


Cabling

Replace the following network components if they are below standard.

EXISTING NETWORK COMPONENT	MINIMUM STANDARD
Cable	Cat 3
Ethernet speed	10 Mbps
Switches/hubs	Hubs

If installing new network components, ensure the following standards are met.

NEW NETWORK COMPONENT	MINIMUM STANDARD
Cable	Cat 5e
Ethernet speed	100 Mbps
Switches/hubs	Switches

 **QUICK TIP:** Get professionals to install your cabling – it takes a skilled person to make sure data can continue to run at high speeds across the whole network. Also make sure that cables are clearly labeled in case they need to be troubleshooted or replaced.

Wireless Networking

Where installation of network cable is impractical (e.g., when significant structural modifications are needed), wireless network technology based on the Wi-Fi standard can be used.

Replace the following network components if they are below the following standard.

EXISTING NETWORK COMPONENT	MINIMUM STANDARD
Wireless Standard	802.11 b
Encryption Protocol	Wired Equivalent Privacy (WEP)

If installing new network components, ensure the following standards are met.

EXISTING NETWORK COMPONENT	MINIMUM STANDARD
Wireless standard	802.11 g
Encryption Protocol	Wi-Fi Protected Access (WPA) turned on

HSC Recommendations and Buying Guide

HSC recommends a wireless access point that supports closed network (non-broadcasted SSID), WPA-pre-shared key (PSK) security, and MAC filtering. Most access points offered by Linksys, Netgear, and D-Link will have these features.

As for wireless interface cards, consider built-in/on-board wireless for laptops. For desktops, PCI cards are more affordable than USB adapters. They are also more secure in terms of theft deterrence. However, it may be more daunting to install a card compared to plugging in to a USB port. It is not necessary to purchase components of the same manufacturer.

Some Linksys and Cisco devices are offered through Cisco's donation program at [TechSoup Stock](#).

Network services recommendations are as follows:

NETWORK PROTOCOL	MINIMUM STANDARD
Network Connection	TCP/IP
Dynamic Host Configuration Protocol (DHCP)	DHCP – Set up on a separate server if possible, otherwise on router
Dynamic/Static Internal IP addresses	<ul style="list-style-type: none"> • Static IP addresses for printers and servers • Dynamic IP addresses for user devices (such as desktop machines).
DNS	Necessary if organization has a server

Organizations that use a server to run a network operating system will most likely need to set up a DNS server for the internal network. DNS servers are integrated with the recommended network operating systems and are required to enable most of the higher-end security features. In most cases, a simple bare-bones DNS installation is all that is needed for the server to operate properly.


Internet Technologies

This category covers Internet technologies, including Internet access, routers, e-mail, web services, and domain names.

Internet Access

If possible, you should have a dedicated broadband, Internet connection that is always “on”. Apply the following guidelines.

IF YOUR ORGANIZATION:	THE CONSIDER USING:
Is limited (for the most part) to basic web browsing and e-mail	A basic 768 kbps down/128 kbps up connection (This will suffice for offices with fewer than five workstations.)
Has Virtual Private Networking (VPN) or other Wide-Area Network (WAN) requirements, or has large web-based database needs	Business DSL or Cable with fixed IP, at speeds of 3.0 Mbps / 384 Kpbs.
Provides hosting services that are needed by other Internet users—such as a web site or data base	A leased line, such as T1 or partial T1. Depending on your area, some companies offer synchronous connection speeds of up to 1.5 Mbps, and are usually cheaper than a T1 line.

 **QUICK TIP:** If the above services are not available, carefully examine the trade off between cost and Internet access of other connections such as dial-up (including multiple-line dial-up), ISDN, and satellite.

IP Addressing

If your organization needs host services such as web, mail, or VPN, use static IP address(es). If this is not the case, use dynamic IP-addressing.

Routers

Routers should be able to provide network address translation (NAT). Organizations that intend to set up VPN should get a router with an integrated VPN server. Your broadband internet package may or may not offer a router with the service, and might only supply a modem. In that case, it is crucial to purchase a router for security. Organizations with leased lines need to purchase higher capacity routers. This is outside of the HSC scope, please ask your provider for details.



QUICK TIP: To lower the risk of losing Internet access, avoid using your router as a network switch, robust firewall, wireless access point, or print server. Purchase separate devices for these tasks (see LAN guidelines).

HSC Recommendations and Buying Guide

Most “broadband” routers by Linksys, Netgear, and D-Link offer the features that HSC recommends. You can also find Cisco and Linksys-branded products at [TechSoup Stock](#) through the Cisco donation program.

Internet Domain

All organizations should register their own Internet domain and use that address for their e-mail and web site (e.g. use *RBadder@acme.org* and *http://www.Acme.org/* rather than using *AcmeOrg@hotmail.com* or *http://www.rr.net/users/~AcmeNPO*).

Organizations that use their web presence as the major focus of their communication with constituents should register the *.org*, and *.com* versions of their name, as well as common misspellings or abbreviations.

Make sure that your organization owns the domain name, not your consultant, web designer, or volunteer.



QUICK TIP: Ensure the registrar’s record for your domain name is accessible by more than one person in your organization.

E-mail, Calendaring, and Scheduling Services

All nonprofits should provide e-mail addresses to everyone who is required to communicate via e-mail on behalf of the organization.

Organizations that do not require groupware functionality, should use a hosted e-mail service and download e-mail via the POP protocol. More advanced organizations that require groupware functionality should consider hosted or in-house Exchange solution.

All organizations should purchase spam filtering, at either the provider, server and/or workstations.

Web Hosting

Organizations with external, public-facing web sites should use an external web host. Those that cannot use external hosting for their web site because of unique, complex data or functionality requirements should co-locate their web server at a professional co-location facility.

HSC Recommendations and Buying Guide

- There is no one hosting provider or registrar or email provider we recommend, as needs vary greatly by organization. Many organizations find combining e-mail hosting with their Internet service from their ISP to be an inexpensive option.
- If hosting Exchange internally, consider acquiring **Exchange Server 2003 Standard** from TechSoup Stock (see the Microsoft donation guidelines for limitations and eligibility requirements), **or** from a Microsoft Charity Licensing reseller.
- You can also find updated resources at our webbuilding [learning center](#).

Server Technologies

The following guidelines cover devices that provide network services, such as file sharing, printer sharing, directory, and management services. How these services are applied within your organization will vary, depending on the size and complexity of the computer network.


Network Server Roles

The table below does not address network infrastructure services such as DHCP and DNS. These services are covered in this section, under LAN Technologies.

NETWORK SERVICE	SIMPLE NETWORK	TYPICAL NETWORK	ADVANCED NETWORK
File Sharing	Share files from “master peer”	Dedicated file server without server-class operating system	Dedicated file server with server-class operating system
Printer Sharing	Network print with a dedicated print server (usually internal)		
Directory Services	None		Active Directory or Open Directory
Management Services	None		Group Policy or Workgroup Manager

Printers

Replace personal inkjet printers with a shared network-enabled laser printer. If you need a small printer for occasional color printing, or for a staff person to print confidential documents, HSC recommends a basic inkjet printer (shared if appropriate).

 **QUICK TIP:** Whenever possible, purchase printers that use the same consumables (ink cartridges and print heads), as this can allow for reduced purchasing and support costs.

Dedicated Server Hardware

Whenever possible, organizations should use specialized server hardware, rather than an enhanced desktop computer. Server hardware is designed for better performance and more reliability.

Upgrade or replace server hardware if it does not meet these minimum server HSC specifications.

COMPONENT	WINDOWS OR LINUX SERVER	MAC SERVER
Processor	Intel Pentium III 1 GHz / AMD Athlon 900	G4 800 MHz
RAM (memory)	256 MB	
Storage (Non-RAID)	40 GB	
Removable Storage	CD-ROM and floppy	CD-ROM
Network Interface	100 Mbps Ethernet	

When purchasing new servers, consider following the recommendations below:

COMPONENT	WINDOWS OR LINUX SERVER	MAC SERVER
Processor	Intel Pentium 4 2 GHz / AMD Athlon XP 2400	G5 1.5 GHz
RAM (memory)	1 GB	
Storage (Software or Hardware RAID1 or RAID5)	80 GB	
Removable Storage	DVD-RW / CD-RW	
Network Interface	100 Mbps Ethernet	

Dedicated Server Software

HSC recommends the following server operating systems:

- Windows 2000 Server
- Windows Server 2003
- Windows Small Business Server 2003
- Macintosh OS X Server 10.2 (or later)
- Linux Kernel 2.6.x

Uninterruptible Power Supply (UPS)

Any office with centralized file sharing should use an uninterruptible power supply (UPS) to protect the server from accidental surges and power loss.

The UPS should be of sufficient capacity to power attached equipment long enough so that it will shut down normally (at least 20 minutes). It should also include a cable and software to automatically shut down the server when the battery power runs low.

HSC Recommendations and Buying Guide

HSC recommends these server technologies tools:

-
- **HP Printers with Integrated Print Servers.** Many models have built-in Ethernet and have user-friendly print sharing features for a variety of clients.
 - **Apple Xserve with Dual Hard Drives and Hardware RAID Option.** Alternatively a used PowerMac in good condition or Mac Mini can serve as an affordable Mac server platform when loaded with Mac OS X Server.
 - **Dell PowerEdge Servers from Dell.** Factory-refurbished hardware from Dell Outlet is less expensive than buying new at outlet.dell.com
 - **Microsoft Windows Server 2003 or Microsoft SBS 2003** from TechSoup Stock or a Microsoft Open License Charity Program Reseller
 - **APC Products for UPS.** You can use the selector at the APC [web site](#) to calculate the type of UPS you need.



QUICK TIP: It is usually less expensive for nonprofit organizations to order Windows servers without an operating system, and then acquire the operating system separately.

Security and Privacy


On the next few pages, you will find a set of security and privacy guidelines on firewalls, data backups, anti-virus, anti-spam, anti-malware, physical security, and associated best practices. These guidelines cover the common technological precautions that organizations should take. They are appropriate for most organizations, but may not be adequate for organizations with special or heightened security concerns.

Data Backups

All computers need access to some form of backup system so that important data can be safely and reliably secured. HSC recommends that organizations use a centralized, network-based backup solution.

Backup Recommendations:

Minimum Recommendations	Size of Network		
	Very Small (1-3 Computers)	Small (2-10, No Server)	Larger (10+ and/or Server)
Hardware	CD-R or other media	External hard-drives or tape	Dedicated backup server
Software	Manual copy or Windows Backup	Dedicated backup software	
Frequency/Schedule	At least weekly	At least weekly Take hard-drive off site	Daily Weekly version off site

 **QUICK TIP:** Hard drive systems are not suitable for archiving data. For these purposes, HSC recommends the use of CD-R or DVD-R technology to make archival copies of important data. Be sure to purchase the same media technology for the entire organization, if possible (e.g. CD+RW, CD-R, DVD-R, DVD-RAM).

Though manual backups (like copying to a flash memory device) can be effective for very small networks or home offices, whenever possible, use a dedicated backup application. A dedicated application will make scheduling backups easier. Properly configured, an automated system is more reliable and easier to manage. It also allows for easier data recovery when it is needed.

When setting up a backup system, pay particular attention to media security. Your backup hard drive or tape will contain all your organization's vital information. Be sure that this media is properly protected, both on-site and off-site. You can password protect and encrypt your data archive as well.

For more details, check out TechSoup's in depth article on [backups](#).

Firewall

Any computer system with Internet access needs to shield itself from unauthorized external access using some form of firewall set up on its Internet connection. For network installations, HSC recommends a basic NAT firewall, at minimum. Computers with direct connections to the Internet should use software firewalls, which are integrated into OS X and Windows XP SP2. Standalone products are also available.



QUICK TIP: NAT technology is included in almost all routers, and provides strong protection against external threats. From outside the local network, a NAT firewall appears as a single, non-responsive computer, shielding computers on the network from external probing and manipulation.

Organizations with special security concerns may want to look into a more robust hardware that can filter out outbound connections as well. These firewalls are beyond the scope of HSC.

Anti-virus

All computers should have up-to-date anti-virus and anti-malware software installed and running.

IF YOUR ORGANIZATION:	THEN:
Does not have a server	Install anti-virus desktop products.
Has a server	Get centrally managed versions of anti-virus software.

Be sure to enable the automatic virus definitions update feature on your software program. However, if you are on a slower connection, you may want to schedule updates when network traffic is at a minimum. You may also download the new virus definition and roll out the update using a removable media. At the time of writing, HSC is not aware of any public viruses that run on Mac OS X or Linux.

Anti-spam

For most nonprofit organizations, e-mail spam is a nuisance. As such, it is highly recommended that your organization put into place appropriate anti-spam filters. If possible, use e-mail server-based anti-spam tools. Look for an e-mail provider that offers spam filtering. If your organization operates an e-mail server of its own, set up a spam filter on the server. To effectively use server-side filtering, you may need to train e-mail users how to set up a simple filter that separates out the e-mail tagged by the server as spam.

For organizations unable to use server-side filtering, HSC recommends using the built-in spam filtering in the latest version of Microsoft Outlook and Entourage.

Anti-Phishing

Even though phishing scams may be detected by anti-spamming software, the best defense against them is vigilance by the user. E-mails purportedly sent by your banking institution or an e-commerce site to an e-mail address officially on record should be an instant red flag. Ensure that users are aware of such emails, and be prudent when giving out private information online.

Anti-Malware

Malware or spyware can compromise the security of the network and the workstation. It can collect personal information, slow down your computer, and in general make for a poor computing experience. Limiting user account privileges on the workstation may prevent malicious programs from being installed.

HSC Recommendations and Buying Guide

HSC recommends:


- The latest version of **Symantec's** security software from [TechSoup Stock](#) addresses spam and spyware. Both desktop and server versions are available.
- If you purchased a dedicated backup device, it probably came with backup software already. **EMC's** [Retrospect](#) is a good choice for organization-wide backup solution, and supports a variety of clients. **Symantec's** [Backup Exec](#) is also a good solution for small- and medium-sized non-profits.
- Browsers **Internet 7** and **Firefox 2.0** now have built-in phishing protection. They flag suspicious sites and periodically updates from a central database of addresses. The **Netcraft Toolbar** is also effective in blocking of phishing sites. Its database is also updated frequently to counter phishers. It can be downloaded from toolbar.netcraft.com
- **Lavasoft's "Ad-aware"** anti-spyware program, which is offered to nonprofits at a discount. A free personal edition is also available. For more information go to www.lavasoftusa.com. **Spybot Search & Destroy** is another free anti-spyware product that is quite effective, at www.safer-networking.org. **Microsoft's Windows Defender**, included in their Vista operating systems, addresses spyware issues. It is offered as a separate [download](#) for Windows XP.

Confidentiality and Privacy

Organizations with significant confidentiality and privacy responsibilities must have well defined data handling, privacy, and retention policies.

Data handling policies should address what data must be retained, how long the data should be retained, how it should be transmitted and stored, and how it should be deleted or destroyed at the end of the retention period.

Privacy policies should specify the type of client, staff, and/or other data that can be kept, how this data should be handled, and who should have access to it.

 **QUICK TIP:** A key aspect of privacy and confidentiality is keeping only the minimum necessary data in your organization's databases.

Physical Security

The most overlooked aspect of data security is physical security. Organizations should make sure that servers and other key network components such as backup tapes and drives are secured in a locked cabinet or room.

Laptop computers are extremely vulnerable to theft. They should be locked down at all times with a cable lock. Since thieves are very adept at stealing laptops from cars, be wary of leaving laptops visibly displayed in the car.

Implement password-protected screen savers to ensure that a computer, when left unattended, will automatically lock and prevent unauthorized access. All HSC recommended operating systems include this feature.

Computer Equipment Ergonomics

The following HSC guidelines cover some of the ergonomic issues related to computer equipment. General office equipment is not covered, though it has a profound impact on most computer users' environments. For a more complete introduction to ergonomics, including information on ergonomic use of computers, check out this [article](#) on TechSoup, and the OSHA ergonomics [website](#)

The ergonomic standards presented here are the minimum recommended by HSC. If a piece of equipment does not meet these standards, you should replace it.

Monitors

A monitor should fit on the desk directly in front of user between 20 and 40 inches away, with space for keyboard and mouse directly in front, preferably on an adjustable keyboard tray. In addition, the monitor should:

- Be adjustable for height, vertical angle and horizontal angle.
- Have no visible flicker.
- Have a sharp, bright, clear and square picture, with good contrast and color adjustment.
- Provide resolution that allows for easy reading of text.



QUICK TIP: Many of the picture quality related requirements above are adjustable. If your monitors do not meet these requirements, try adjusting the settings (usually accessible via a "menu" button on the monitor itself or via the computer settings) before you decide to replace them. Also, keep in mind that monitor flicker can be caused by power fluctuations when monitors are plugged into the same circuits as fluorescent lights.

Keyboards

Keyboards should be placed on an adjustable height surface such as a keyboard tray. All keys should have free, consistent action - no broken keys, no sticky keys.

To protect those who are straining themselves to use the keyboard, provide keyboard components that suit their specific physical needs. Such components include the following:


THIS COMPONENT:	IS FOR PEOPLE WHO:
Light action keyboard	Strain to depress the tab, enter or ctrl keys.
Split keyboard	Have difficulty adjusting to the placement of straight line keyboards.
Small keyboard	For people who have a limited hand span and cannot easily

	reach all keys.
Numeric keypad	Frequently enter numbers (such as accountants). Separate, USB, numeric keypads are appropriate for both left and right-handed users.

Mice (and Other Pointing Devices)

Every computer user in the organization should have a clean, working mouse on a height and angle-adjustable surface within easy reach. Users should be able to move the mouse without having to twist from the screen and keyboard. Ideally, the mouse should be on a keyboard tray, next to the keyboard.

For those users who find a mouse puts a strain on their wrists, provide access to track pads, joysticks and graphics tablets. Allow users to adjust pointing device sensitivity and speed to their preference (especially on laptops).


 **QUICK TIP:** Some users may need access to more than one type of pointing device so they can swap back and forth between the devices during the day.

Other

Make sure that adjustable document support holders (devices that hold documents level with the screen) are available for people who frequently enter data from pieces of paper.

Incorporate routine checks on user workstation comfort into managers' conversations with direct reports.

Ask your insurance company if it has someone who will talk to employees about ergonomic issues. Intermittent trainings help inculcate good habits.

 **QUICK TIP:** Look for low-cost ways to adapt workstations. Can monitors be raised on stacks of paper you would otherwise recycle? Can window glare be blocked with a sheet of cardboard? Can a keyboard tray be extended by affixing a piece of wood to one side?

Recycle equipment that does not meet HSC guidelines. Do not keep it "just in case."

HSC Recommendations and Buying Guide

HSC does not have specific ergonomic equipment recommendations. Local suppliers, or searches on the Internet for the best available pricing are your best strategies for maximizing your time and dollars. HSC advises users to get a feel for the product at a store first before purchasing.

SECTION 4:

Staying on Track – Maintaining and Supporting Your Systems

Technology is not a one-time “retail purchase” experience. Ongoing maintenance, proper support procedures, resources, and management are essential, or the technology will degenerate. The HSC Program guidelines and recommendations in this section can assist you with end-user support, staff training, and documentation preparation actions that are geared toward HSC Program adoption, implementation, and maintenance.

Tech Support

Desktop User Support

Any organization that uses computers needs to have some form of end-user support. Lack of this first-level support is almost certain to result in significantly more costs in staff time and data loss.

Desktop user support should be able to:

- Help you implement desktop software.
- Provide basic desktop troubleshooting skills and networking skills.
- Document problems and solutions, using something as simple as a paper log, or as complicated as an automated trouble-ticket system.

There are two main approaches to providing desktop user support: **internal support** resources, such as an IT manager or accidental techie, or **external support** resources, from a volunteer, mentor, or professional support organization.

Internal Support

Any organization that makes significant use of computers should consider having some level of internal IT knowledge. A staff member with basic computer support training can solve most of the problems encountered by desktop users. Someone also needs to be responsible for coordinating additional support resources as they are needed.

- **Smaller organizations** may find their needs are best met by selecting and training an accidental techie—a staff member who has basic IT skills, but whose primary responsibilities are not IT-related. This role can be very useful both as a first responder to IT issues and as an interface with external support resources.
- **Larger organizations or organizations with significant IT investments** should have a qualified IT manager on staff who can handle both the basic helpdesk functions and manage higher-level system resources, such as servers and network equipment. More details on these roles follow in the next section.

External Support

Most organizations need to have access to high-level IT expertise for those occasions where problems occur that cannot be handled by their own staff. Many organizations would rather not spend resources on internal IT, but instead look to external IT support providers for all of their system needs. In either case, organizations must understand that the even though they do not have technical expertise, they need to maintain ownership of their technology and monitor the activities of external support providers.

Depending on an organization's specific IT needs, volunteers or mentors with good technical skills can be an adequate resource, though they may be unable to provide immediate emergency support. Professional support organizations can usually offer fast and effective support, though at a higher cost.



QUICK TIP: Additional articles and resources on how best to manage consultants can be found at TechSoup's Learning [Center](#).

Staffing

Nonprofit IT staff fall into two common roles:

- An **IT Manager** is a staff member with an IT support background whose primary job function includes IT support for the organization. This role is responsible for most IT decision making.
- An **Accidental Techie** is a staff member with basic IT skills, but whose primary responsibilities are not IT-related. Often an accidental techie participates with management to make IT decisions rather than taking sole responsibility for those decisions.

TOOLS



For *IT Manager* and *Accidental Techie Sample Job Descriptions*, refer to Appendix B of this workbook.

Not everyone is cut out for a tech role. When deciding on how to staff IT roles you should look for someone interested in technology; not necessarily a “gear head,” but someone who doesn’t mind digging into technical issues and who gets some enjoyment out of problem solving. Equally, if not more important, are one’s basic communication skills and the ability to follow written instructions. A key function of a technical person is explaining technical issues to non-technical people, and understanding non-technical people’s computer hardware or software questions. Rather than look for someone to address all the technical issues that might arise, try to find someone who can listen and clearly explain technical issues to everyone.

Whether you provide in-house desktop support or not, it is important to have some sort of “technical” representative on staff. This is the person who can help shepherd the HSC process, manage consultants, and arrange (and possibly provide) training. You may already have staff with specific technology responsibilities, perhaps a person to help restore backups, or a person responsible for calling in a consultant. The key is to identify these roles, and not let them just be ad-hoc positions.

Some sample internal technology roles and responsibilities include:

- IT management (budgeting, decision making)
- Network troubleshooting
- Desktop troubleshooting
- Database administrator
- Backup administrator (running backups, performing restores)
- Web site updates
- E-mail account changes
- Software license tracking

Training

Fancy IT systems will not do your organization any good unless your staff has the necessary skills and knowledge to use the systems. To this end, make sure that resources have been set aside to cover the costs of staff training. There are various ways to approach IT skills training, from formal classroom lessons, to informal one-to-one knowledge transfer. **Here are some recommendations:**

Basic IT Training for All Staff

Any staff member who uses a computer for daily work should have some basic skills in:

- Using the operating system
- Navigating the web
- Safe computing
- Common productivity tasks (usually Microsoft Word and Microsoft Excel)

Classroom training in these skills is available from organizations such as CompassPoint or CiBER. Self-directed training courses are available on CD or through online programs such as Microsoft's Electronic Learning Library (MELL), which is available as part of the Microsoft donation program from TechSoup Stock.

Training for Specific Procedures

Your organization may have unique IT systems such as data organization on your file-server, specialized applications, and internal IT processes like back-up system maintenance. Ideally, the documentation for these systems developed earlier in the HSC process can provide users with adequate training for most of these procedures.

Training in Specialized Applications

If your organization uses specialized applications, you will need to develop a process to train new users on these systems. You can provide **external training** on these applications such as vendor workshops, or **internal training**, such as one-on-one training with a super-user. In instances where the cost of external training exceeds the available resources, HSC recommends that you choose one user to become the trainer. This user should go through the "train the trainer" program for a particular application so that he or she can then train other staff members. It is important in these circumstances to choose someone who has the aptitude to be a good trainer, as well as a solid understanding of the system's use in your organization.

Role-Based Training

Often someone in your organization will have unique knowledge of the systems involved in his or her job role. In this case, they should transfer this knowledge to other staff, either through accurate documentation or through job shadowing or one-to-one training.

TOOLS



You should continually revisit and modify *Worksheet 6: IT Staffing and Training* in Appendix A of this workbook to ensure the IT roles that you need are covered accordingly by your staff member and/or external resources.

Documentation

Documentation is necessary for effective service and support of your technologies. It should be updated regularly, but does not need to be exhaustive, except in organizations with complex mission-critical systems that require the retention of careful records. In addition, when and what changes were made in this document, its version history, should be carefully kept.

Good documentation requires consistency in development methodology and terminology. It also mandates that there be a process in place to validate the documentation and its usability.

IT Infrastructure and Procedures

Documentation should focus on the unique information about your IT infrastructure, including Internet service accounts and location of passwords, hardware configurations, software licenses, network configurations, server configurations, and application configurations. The objective is that a competent technical staff member or external resource, starting from scratch, should be able to recreate your computing environment from the information in the documentation.

Common procedures should also be documented. This can include coverage of back-up system use and management, how things operate, how to accomplish specific tasks, and how to respond to specific events. You may also find you need to create custom end-user documentation, such as procedures for log-ons or directions for using common applications.

Policies

In addition to procedures, you should institute basic policies that cover acceptable computer use for staff and computer data privacy for clients and customers. You may need to develop other policies to meet programmatic needs or legal requirements.

Inventory

An inventory of your computers is one of the basic parts of your documentation. Various automated tools for inventory data collection exist, including TechSurveyor (a part of NPower's TechAtlas planning tool) and Belarc. Automating the inventory process allows central data collection and analysis. **For larger networks**, configuring and testing these tools may be worth the cost in both money and staff time. **For smaller networks**, these automated tools are most likely inappropriate because a manual inventory is just as effective, and less costly. Both the Windows and Macintosh platforms have easy-to-use tools to assist in the inventory process:

- **For Windows**, the System Information (SI) program provides access to a wealth of information about a computer. The system information application is at Programs>Accessories>System Tools>System Information.

-
- **For Macintosh**, the System Profiler program provides in-depth information about a computer. This application is located in the Utilities folder in the main Applications folder.

Budget Items

All the tech know-how in the world won't help you if you are unable to fund the hardware and software you need. Your annual budget should contain technology costs, hardware, software, training, and support as line items. The budget should also include the costs of purchasing and maintaining the information systems you need to keep your organization's programs up and running. For more information on technology budgets, read our article on budgeting on [TechSoup](#).

TOOLS



We have included a sample online privacy policy document in Appendix B of this workbook. For a sample acceptable use policy visit [here](#).

TOOLS



Appendix C contains a full set of *Sample System Documentation Templates* to help you record your IT infrastructure information. Each template includes fields for the information that HSC considers most useful to record.

TOOLS



Complete the *Documentation Checklist* in Appendix D of this workbook to ensure your organization has the proper inventory, policy, and budget item documentation in place.

Next HSC Steps

Congratulations! By completing the HSC Program, you have taken the first steps to ensuring a safe and stable technology foundation for your organization.

HSC began as a three-year campaign by TechCommons as a CompuMentor initiative dedicated to helping nonprofits use basic technology effectively. Since then, it has been expanded to provide more materials and resources for the nonprofit community. This Workbook is just one of the many resources on TechSoup, and we encourage you to check back often for new materials and updates.

We Want to Hear From You!

Do you have feedback on the HSC Workbook you would like to share?

Do you have a great story about how your organization is using technology to achieve your mission?

E-mail us at hsc@techsoup.org

Appendix A: Worksheets

HSC Worksheet 1: Planning Considerations

TOPIC	POTENTIAL ISSUE	GUIDELINES AFFECTED	RESOLUTION
<i>Security and confidentiality concerns</i>	<i>Youth records in database</i>	<i>LAN Server PC Software PC Hardware</i>	<i>-Implement restricted user accounts on database -Beef up server security -Patch all desktops to improve security</i>
Security and confidentiality concerns			
Plans for growth			
Size			
IT complexity			
Pre-existing conditions			
Specialized applications			
Bandwidth usage			
Staff skills and IT knowledge			
Resources			

HSC Worksheet 2a: Desktop Hardware Inventory

#	NETWORK ID (MAIN USER)	MAKE AND MODEL	OS	RAM	CPU TYPE	CPU SPEED	HARD DRIVE TOTAL/FREE	APPLICATIONS	ANTIVIRUS
	<i>Client (Joe)</i>	<i>Dell XP203</i>	<i>Win XP Pro SP2</i>	<i>256M</i>	<i>Celeron</i>	<i>2.5G</i>	<i>40G / 18.4G</i>	<i>Office 2K FileMaker Pro</i>	<i>NAV 2001 def (12/30/03) exp (12/30/04)</i>
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									

HSC Worksheet 2a: Desktop Hardware Inventory [continued]

#	NOTES	#	NOTES
1		6	
2		7	
3		8	
4		9	
5		10	

HSC Worksheet 2b: Desktop Software Inventory

ITEM	ASSESSMENT	QUANTITY OF LICENSES
Office Productivity	MS Office XP MS Office 2000 MS Office 98 Other:	
E-mail	MS Outlook XP Netscape Messenger AOL Mozilla/Thunderbird Other:	<i>Open source, no licenses required</i> <i>Open source, no licenses required</i>
Database	FileMaker Pro MS Access Other:	
Accounting	Quickbooks Pro or QuickBooks Non-Profit Other:	
Antivirus	Symantec Antivirus Norton Antivirus Other:	

HSC Worksheet 3: Gap Analysis

	CURRENT STATUS (VERSION, ETC)	RECOMMENDED (IN GUIDELINES)	PRIORITY
PC Hardware	<i>Pentium II, 128MB RAM</i>	<i>Celeron, 256 MB RAM</i>	X
PC Software	<i>Windows 98 Office 2000</i>	<i>Windows 2000 Office 2000</i>	X OK

HSC Worksheet 4: Security Assessment

SECURITY AREA	APPLICABLE DETAIL	RECOMMENDED (IN GUIDELINES)	PRIORITY
<i>Internet access</i>	<i>Yes – DSL</i>	<i>Install router</i>	<i>X</i>
<i>Internet access</i>			
<i>Network applications</i>			
<i>User accounts</i>			
<i>Wireless</i>			

HSC Worksheet 5: Prioritization

Use this worksheet to begin developing an idea of the areas of priority within your organization's technology.

- List projects the organization plans to undertake
- Rank the subsequent columns

Resist the urge to rank using numbers. You'll be tempted to make decisions based on simple math, as opposed to your best judgment.

PROJECT	ORGANIZATIONAL NEED A = highest need E = lowest need	EASE OF IMPLEMENTATION A = easy E = difficult	AFFORDABILITY A = very affordable E = expensive	CAPACITY A = all resources/ knowledge available in-house E = few resources/ knowledge available	DEPENDENCIES A = few dependencies E = many dependencies
<i>Upgrade backup system</i>	<i>B</i>	<i>D</i>	<i>C</i>	<i>B</i>	<i>D – Replace main server</i>

Thanks to NPower (<http://www.NPower.org>) for this worksheet. © 2006 NPower

HSC Worksheet 6: IT Staffing and Training

WHO IS RESPONSIBLE FOR:	INDIVIDUALS (NAMES AND TITLES), OR COMMITTEE/TEAM/COMPANY NAME
<i>Setting technology budget</i>	
<i>Managing the network, server, user accounts</i>	
<i>Resolving day-to-day technology issues</i>	
<i>Ensuring that the database is accessible, secure, and is running</i>	
<i>Administering backups, and testing restores</i>	
<i>Administering basic web site content updates</i>	
<i>Administering e-mail accounts</i>	
<i>Tracking software licenses</i>	
<i>Overseeing technology skills and training</i>	
OTHER	

TRAINING NEEDS	TRAINING TYPE	PARTICIPANTS	PRIORITY
Basic IT training			
Specific procedures			
Specialized applications			
One-on-one w/ super-user			
Role-based			

Appendix B: Supporting Documentation

IT Manager

Sample Job Description

The IT Manager should have a general interest in and understanding of technology issues. He or she does not, however, need to be a programmer or network administrator. The IT Manager must be able to do the necessary research and ask the necessary questions regarding IS projects. The research and questions must concern available options, product support, cost in direct dollars, cost in maintenance, cost in staff resources, and training requirements.

The IT Manager should have a good understanding of technology, be able to develop strategies, oversee implementation and manage staff. He or she should also have a thorough understanding of the organization's culture and the ways in which technology is used to further the mission of the organization.

Without the structured support of this role, it is impossible to implement any long-term IT planning or projects successfully. Even short-term projects may be less successful because of conflicting, contradictory or unclear goals. Operating without a management-level staff person who is responsible for the IT Manager's tasks is not management by design - it is management by luck.

Responsibilities:

- Budgeting, approving, funding and creating technology plans, policies, and strategies
- Designs, maintains, and reviews organization-wide It policy
- Member of technology team
- Makes final decisions for hardware and software standards
- Approves all IT projects
- IS advocate to other executives and board
- Ensures IT operates instep with strategic plan
- Ensures IT operates instep with organization's mission

Requirements:

- Strong interest in technology
- Able to make decisions regarding technology
- Understanding of strategic plan of organization
- Understanding of organization's mission
- Understanding of budget process
- Meeting facilitation skills
- Excellent analysis skills
- Excellent communication skills, written and oral

Accidental Techie

Sample Job Description

This person is accountable to management and is responsible for maintaining system and network documentation, identifying IT problems, managing upgrades, and providing basic user support. While it is the IT Manager's job to make decisions about the above tasks, the Accidental Techie is responsible for implementing the organization's technology plans and policies, and keeping systems operational. This may be done with the assistance of other IT team members or non-IT staff.

Accidental Techie should have specific knowledge of computer systems and networks and is expected to consult with management regarding IT plans and policies. He or she is expected to be able to solve user problems, system problems, and network errors independently.

The Accidental Techie, works closely with the IT Manager and responds to user problems as required. Additionally, in a networked environment, she or he will serve as the system administrator, though many of the specific tasks of system maintenance may fall to others within the organization.

Responsibilities:

- System maintenance
- System documentation
- Identify potential IT problems and needs
- Work with CIO to prepare budget or other reports as required
- Manage relationship with vendors, contractors, and service providers
- Conduct and lead trainings as required

Requirements:

- Knowledgeable in required network systems
- Familiar with operating system and server applications
- Able to manage multiple projects
- Able to perform system tasks such as back-up, upgrades, network troubleshooting as required
- Able to prioritize diverse tasks
- Able to troubleshoot user systems or network devices as required
- Excellent communication skills, written and oral

Sample Online Privacy Policy

Privacy Policy

This privacy statement discloses the privacy practices for [Organization].

Information Collection and Use

[Organization] is the sole owner of the information collected on this site. We will not sell, share, or rent this information to others in ways different from what is disclosed in this statement. [Organization] collects information from our users at several different points on our Web site.

Web Site Registration

In order to use some features of this Web site, users must first complete the registration form. During registration, users are required to give their contact information (name and e-mail address). This information is used to contact users about the topics on our site for which they have expressed interest and to enable users to retrieve lost passwords. It is optional for the user to provide demographic information (mailing address, position, technical skill, etc.).

Cookies

[Organization] uses cookies to remember if users have logged in while on our site. This allows web site users to avoid logging in more than once, thereby saving time. Users have the option of disabling or not accepting cookies by changing the preferences on their browsers*. If users opt to disable cookies, they will still be able to use our Web site. However, they will not be able to use some functionality or post to the message boards. No personally identifiable information (e-mail address, name, etc.) is collected with the cookies that we set. Accepting cookies while on the [Organization] site will not put the user at risk for marketing to other sites.

*Different browsers have different cookie settings. With Netscape, you can ask the browser to allow, warn you, or completely disable cookies. Internet Explorer has an additional feature where you can specify different settings for different security zones. You can choose to allow Web sites to create cookies for you in your "trusted sites" (like [Organization]), to warn you before you create them in your local Intranet zone, and to give you an option to never allow them in a "restricted zone." See the "Help" section of your particular browser for more information on working with cookies.

Web Statistics

We use IP addresses to analyze trends, administer the site, track user movement, and gather broad demographic information for aggregate use for reporting and sponsorship purposes. IP addresses are not linked to personally identifiable information.

Sharing

We will share aggregated demographic information with our partners, sponsors, and donors. This is not linked to any personal information that can identify any individual person. We only share this information so that we can secure funding to continue providing this site free of charge.

Links

This Web site contains links to other sites. Please be aware that [Organization] does not claim any responsibility for the privacy practices of such other sites. We encourage our users to be aware when they leave our site and to read the privacy statements of each and every Web site that collects personally identifiable information. This privacy statement applies solely to information collected by this Web site.

Security

This Web site takes every precaution to protect our users' information, and we have security measures in place to protect the loss, misuse, and alteration of the information under our control.

Surveys

Occasionally, our site requests information from users via Web surveys. Participation in these surveys or contests is completely voluntary and the user therefore has a choice whether or not to disclose this information. Information requested may include demographic data (such as zip code and age), but nothing that can identify any individual person will be collected. Survey results will be used for purposes of monitoring or improving the use and satisfaction of this site.

Send This to a Friend

If users elect to use our "Send This to a Friend" function, we ask them for the friend's name and e-mail address. [Organization] will automatically send friends a one-time e-mail message inviting them to visit the site. [Organization] stores this information temporarily for the sole purpose of sending this one-time message.

Updates

We may also send the user site and service announcement updates. Members are not able to unsubscribe from service announcements that contain important information about the service. We communicate with users to provide requested services and to discuss issues relating to their accounts via e-mail or phone.

Correction/Updating Personal Information

If a user's personally identifiable information changes (such as zip code or e-mail address), or if a user no longer desires our service, we will endeavor to provide a way to correct, update, or remove that the personal data that was provided to us. Users can use the "Edit My Profile" link from their homepage or they can e-mail our Help Desk to change, correct, or remove information.

Choice/Opt-in

Our users are given the opportunity to "opt in" to newsletters and site update e-mail messages. To unsubscribe from mailings, please see that section above. To unsubscribe from any updates, users can use the "edit my profile" link from their homepage. To avoid receiving certain topic updates, the user can simply deselect the topics and select the "modify" button.

Notification of Changes

If we decide to change our privacy policy, we will post those changes on our home page so our users are always aware of what information we collect, how we use it, and under what circumstances, if any, we disclose it. If at any point we decide to use personally identifiable information in a manner different from that stated at the time it was collected, we will notify users by e-mail. Users will have a choice as to whether or not we use their information in this different manner. We will use information in accordance with the privacy policy under which the information was collected.

Appendix C: Sample System Documentation Templates

Physical Network

WIRING	
ITEM	DESCRIPTION
Wired By	
Cable Type	
Central Wiring Location	
Wiring Diagram Stored Where	

WIRELESS						
MAKE AND MODEL	SSID	PROTOCOL	IP ADDRESS	ENCRYPTION SETTINGS	CHANNEL	CONNECTED TO:

HUBS/SWITCHES							
MAKE AND MODEL	SPEED	LOCATION	PORTS		IP ADDRESS	USER/PASSWORD	CONNECTED TO
			TOTAL	FREE			

ROUTER						
MAKE AND MODEL	INTERNAL IP		EXTERNAL IP		USER/PASSWORD	PURPOSE
	IP		IP			
	SM		SM			
	GW		GW			

FIREWALL						
MAKE AND MODEL	INTERNAL IP		EXTERNAL IP		USER/PASSWORD	RULES
	IP		IP			



SERVERS	
Server name:	
Hardware:	
HARDWARE ITEM	DESCRIPTION
Computer model	
Serial number	
BackPlane	
CPU	
Hard disk(s)	
Floppy disk	
RAM	
NIC	
Hard drive controller card	
CD-ROM	
Tape backup	

Windows Server Installation

ITEM	DESCRIPTION	
Windows Server version		
Windows Server role		
Domain name		
Computer name		
Install directory		
Source File Location		
Swap file		
Protocols		
Disk configuration		
Licensing		
Printer		
Special groups		
Item	Address:	
	Internal:	External:
This machine IP		
Subnet mask		
Default gateway		

Services

IIS	
ITEM	DESCRIPTION
Version	
InetPub Location	
Purpose	
Security	
Frontpage Extensions	

DNS	
ITEM	DESCRIPTION
Forward Lookup Zones	
Forward Lookup Zone Type	
Reverse Lookup Zone	
Reverse Lookup Zone Type	
Manually configured hosts	

DHCP	
ITEM	DESCRIPTION
Scope	
Exclusions	
Options	

ROUTING AND REMOTE ACCESS	
ITEM	DESCRIPTION
Remote Access Ports	
Remote Access Security	
Remote Access Policy Specifications	
IP Assigned Via	
Routing Purpose	
NAT Configuration	

WINS	
ITEM	DESCRIPTION
Purpose	
Replication Configuration	

SHARES			
SHARE NAME	ACTUAL LOCATION	DESCRIPTION	SECURITY

Backup

HARDWARE	
HARDWARE ITEM	DESCRIPTION
Tape Drive	
AutoLoader	
Driver version	
Updated/From	

SOFTWARE	
SOFTWARE ITEM	DESCRIPTION
Backup Software	
Version	
Responsibilities	

SCHEDULE	
DAY	BACKUP DETAILS
Monday	
Tuesday	
Wednesday	
Thursday	
Friday	
Saturday	
Sunday	

TAPE/DISK ROTATION						
SUN	MON	TUES	WED	THUR	FRI	SAT

Exchange Server

MICROSOFT EXCHANGE SERVER INSTALLATION	
ITEM	DATA
Org name	
Site name	
Computer name	
Service account	
Service account password	
Connectors	

Peer-To-Peer Configuration

COMPUTERS				
COMPUTER	SHARE	ACTUAL LOCATION	DESCRIPTION	SECURITY

PRINTERS				
PRINTER TYPE	SHARE	LOCATION	IP ADDRESS	SECURITY

Appendix D: Documentation Checklist

Documentation Checklist

INVENTORY	STATUS (E.G: NONE, NEEDS REVISION, NEW)	PRIORITY
Desktop hardware		
Desktop software		
Server hardware		
Server software		
Network hardware		
Network configuration		
Specialized software		
Internet service accounts and passwords		

POLICIES	IN PRACTICE	WRITTEN	PRIORITY
Information access, usage, and distribution (data privacy)			
E-mail & Internet usage policy			
Password security policies			
Licensing and copying software			

PROCEDURES	IN PRACTICE	WRITTEN	PRIORITY
How to access databases			
How to create new e-mail users			
How to restore backups			
Updating virus definitions			
How to request technology support			

BUDGET ITEMS	IN PRACTICE	IN BUDGET	PRIORITY
Hardware			
Software			
Ongoing costs			
Printer toner			
Hosted services (Web domains, ASPs, e-mail)			
Support contracts			
Training			
Support and maintenance			