About The Organization

Organization

Breachmenders Ministries functions as an outreach program for the community. It is their mission to improve affordable housing, youth activities, employment training, and community development for the surrounding area The organization is located in the two renovated apartment buildings of 200 and 202 Robinsons Street, and houses 15 employees, several after school tutors, and a classroom size of children. Breachmenders Ministries has been in operation since May 1st 1980 till the present, and as a result has benefited the local residence by providing low income housing, training for students geared towards a vocational future, and after school activities to help local children improve their performance in school.

In the two apartment buildings located on Robinson street Breachmenders Ministries provides internet access for children who otherwise would not have access to such facilities. The organization is also equipped with a reading center and a cafeteria, which provides many donated foods from the Community Food Bank.

Programs

Breachmenders Ministries, because it is an outreach program to the general community, can be viewed as a composite of separately functioning programs that work towards the goal of benefiting the community in an efficient way. While programs such as Housing Development, Labor Free Repair, and Apartment Management are an integral part of Breachmenders Ministries, the focus so far has been on the After-School Tutoring and School to Career programs, in an attempt to integrate and improve the use of technology into these programs.

The After-School Tutoring program is aimed at increasing the cognitive skills of students K-12, helping them with their homework and school work through use of a tutor/mentor system. Upon joining the program, each child is paired up with a tutor who helps in areas of math, reading, and study skills. The children also gain skills in computer literacy through use of the computer cluster, which is used to supplement the learning process. The students also participate in constructive activities as groups to build social interaction and go on field trips to enhance cultural awareness.

The School to Career program is geared towards integrating young people, ages 14-21, into the work force as productive members of society by providing work opportunities at such places as UMPC or University of Pittsburgh. In addition to these opportunities, work related skills such as resume building and interviewing are highly stressed and critiqued throughout the year. Ideally these positive work experiences and improved vocational skills will ultimately result in better opportunities for the people who participate in the program.

Staff

Walter Tymoczko – is the Interim Executive Director of Breachmenders Ministries. His main purpose is to run the organization as efficiently as possible in conjunction with the board of directors, and controls budgeting for spending.

Robert Frank – is the Associate Director of Development. He is in charge of Breachmenders' income: grants, fundraising, and donations. In addition, he uses marketing via newsletters, press releases, and community meetings to raise awareness for Breachmenders Ministries' goals and ambitions.

Karla Stallworth – is the Youth Program Director. Karla is the main Contact Person within the organization. She uses Microsoft Access to keep track of important contact numbers and backs up many files on the main server.

David Richardson – is a Single Point of Contact Coordinator. His main job is to keep in contact with those people who are involved in the lives of the young people as a way of supporting the participants of the program. Some of this responsibility is also held by Karla. Both make use of the current database for tacking student progress and keeping contact numbers of the young people involved in the program and those around them.

Sherri Collins – is the Computer Specialist. Sherri manages all students as a group so that the tutors can help the children individually. Sherri is also in charge of the computer cluster and planning the day's curriculum.

Technical Environment

Both the staff and recipients of the program have access to computers. Most computers are Pentium 4's with a Windows XP OS, except the old server which use to house the databases and backup files, which was a Pentium 2 using Windows 98. Much of the software was donated by Microsoft and the actual computers were purchased using grant money. All computers are or should be on the network and accessible from any other computer on the network assuming appropriate access rights. There are two printers, one color and one black and white connected to the network. In the recent past the internet connection was a 56k phone modem and not fast enough to meet the needs of the staff and youth. To solve this problem Wireless Neighborhoods provided an affordable 100 Mbps connection upgrade. This connection has since superceded all bandwidth needs.

The New Beginnings Learning Center(NBLC), primarily used by the students of the after school and employee training program, houses approximately 17 computers, all with 100 Mbps connection to the internet, printers, and network sharing. The Computer Instructor's computer was recently designated as the new server where the databases and backed up files are stored. This was done because of problems accessing the databases from and backing up on to the old Win98 server. Problems backing up files have resulted in the loss of important information.

Technology Management

Sherri Collins is in charge of the NBLC and computer upkeep. Although she has computer experience and training, she lacks the free time necessary to properly troubleshoot many of the problems on her own and therefore has trouble maintaining the technical infrastructure. Occasionally an outside technician 'Andrew', a student in the Carnegie Mellon University Masters program, will come in and fix any problem related to networks or printers. He will also perform virus scans and backups as needed, but none of the staff know how to do this on their own. Unfortunately Andrew's schedule has been getting busier lately and he cannot come often enough to satisfactorily maintain the computer systems that the organization relies upon.

Technology Planning

Currently there is no team or group with the assignment of maintaining the technical infrastructure or related budgeting. As a result, key decisions involving the distribution of financial assets for use in the

NBLC are made by the department heads, who are farther removed from the use of the computer systems than is the Computer Specialist or the assistants. All budgeting and maintenance decisions for the computer cluster are made by the Directors. The Breachmenders' Board is consulted if expenses are extremely large.

Internal & External Communications

Email is used to communicate to both staff within the network and to outside sources, such as members of Breachmenders' many programs. In the past most staff members had to rely on hotmail accounts to conduct email communication, but with the newly installed internet connection staff members are using new email accounts through the wireless internet provider. These new email accounts have stemmed the major problem of not having enough space that many staff members encountered when using their hotmail accounts. Also, Outlook is more frequently used in conjunction with the new email accounts due to the switch over from hotmail.

There is a website in place for Breachmenders Ministries that provides a brief summary of the organization and contact information. It is maintained by another part of Breachmenders Ministries and is not actively used by the CP.

Information Management

Information flows through the network in one of two ways: as communication in the form of email, and as shared files on the network. The phone is another key, non-technical, asset to the flow of information. Interruptions in the flow of information throughout the organization occur when the technical infrastructure is not managed properly due to staff unfamiliarity with either the software or network. An example of this is when the CP has trouble accessing the database which stores the names and numbers of important contacts, such as children's supervisors or parents.

Problems/Opportunities

Consulting Task: Sustainability of the technical infrastructure

Over the past few years Breachmenders Ministries has taken steps towards improving its performance by integrating technology into its organization. These steps have not fully improved the performance of the organization and in some cases have even hindered it. Problems such as a lack of communication between the CP and children's supervisors, trouble contacting student mentors, and losing files because they are unable to be backed up successfully have been detrimental to Breachmenders' mission.

These issues stem from the main problem of not being able to sustain the current technical infrastructure. This major problem undermines many of the technical integration achievements of the past and limits the future possibility of such

Although the organization does not have much personnel time to spare, there is sufficient down time in the morning before the children arrive to conduct some sort of training session. Also more importantly, many of the staff members are aware of the shortcomings of a computer cluster that cannot be maintained properly and have expressed a desire to become self-sufficient in the areas of technical support. This ability to learn combined with the desire to learn will lead to an effective result provided the plan is properly executed.

Documentation is key to the sustainability of the skills the staff members acquire through the training interaction. A Troubleshooting Guide (TSG) will be formed from documentations of problems fixed with the staff members. Thus the issues in the TSG will be network specific and focus on the most commonly

encountered problems. Also, a slight restructuring of Breachmenders' technical infrastructure may help limit networking errors by lowering the number of software conflictions that now occur on the network. This restructuring would involve reconnecting printers to different computers and moving all important files onto Windows XP computers.

Approach:
- Identify two or more employees to form the group in charge of maintaining computers based on availability, prior knowledge, willingness to learn, and current responsibilities.
- Fix problems using 1-on-1 personal tutoring.
- Come to a consensus of the minimal skills the employees need to master in order to sustain the technical infrastructure properly.
- The actual learning process and formation of the group will be through observing the technical consultant fix problems aided with verbal description and documentation of what is going on. Followed by active participation of the group in solving the technology problems at hand.
- Problem will focus on those that plague the organization the most and therefore are the most valuable to learn first.
- Hands on learning will also take place, where upon the chosen staff members will be chosen to fix designated problems themselves.
- Fundamentals such as how to use Microsoft help, and basic file hierarchy will be stressed, in order to increase computer literacy.
- Document problems and solutions as the training course proceeds, thus supplementing the learning process. Documentation is the priority to ensure that future employees can maintain technical infrastructure.
- Compile documentations into a Troubleshooting Guide.

Goals for sustainability of technical infrastructure:
- Meeting at least the minimal skills that the staff members need to know to sustain the current technology.
- The staff will be more technology savvy and as a result will start using technology more often on their own. This can be realized through such actions as using digital pictures and Microsoft Publisher to create promos, finding interactive activities for the children on the internet, or using computers to sort contact information.
- The problems of contacting student mentors and children's supervisors, which is due to trouble accessing the databases, will be fixed through better maintenance of the databases.
- More efficient use of technology within the organization as will be evidenced by such practices as sharing files on a network rather than emailing them to others, and backing up files to prevent permanent loss of data.
- The information can be passed down to other employees.
- All the information taught does not leave with just one employee since because a team of at least two has been taught.
- All of the databases, networks, and printers that have been created and installed in the past will be able to be used efficiently by the staff members.

Risks
- The trainer may lack teaching skills, and as such, not thoroughly train the chosen staff members in a way that allows them to apply what they have learned.

- There is also the chance that both team members selected leave the organization, effectively neutralizing the training. In this case documentation of prior troubleshooting efforts with the network should be put into use.

The ultimate outcome of this consulting task, through proper creation of a technology group, staff training, and documentation, is to create sustainability, thus enhancing all of the previous technological integration that the organization has received in the past. While there are real risks, the problems that this solution fixes cannot be ignored, and the possibility of success is high. This plan will allow for the full potential to be gained from prior technological integration and pave a way for further integration in the organization.

I. Results of Consulting Work

Consulting Task: Sustainability of the technical infrastructure

Breachmenders Ministries has a technical infrastructure, including their New Beginnings Learning Center (NBLC) computer lab, sufficient to support Breachmenders needs and demands, such as email to allow communication between staff members, a network that allows important files to be shared and accessed by everyone, and a server to store large databases and back up files. Unfortunately, in many cases this increased infrastructure can cause more problems than it solves due to trouble maintaining it. Many common problems Breachmenders encounters are trouble printing, trouble accessing important databases, and trouble using and maintaining the network.

A solution to this is to:
- Create a Troubleshooting Guide (TSG) that documents the specific problems the student consultant and CP encounter and fix. Thus, the guide will be network specific to Breachmenders Ministries and allow them to maintain it in a proficient manner.
- Undergo a slight restructuring of the technical infrastructure in the NBLC. This entails removal of all files off of the old Win 98 server which is no longer fully functional and transferring the files to a more current Win XP computer, making this the new server which will house the databases.
- Remove and reconnect the black and white printer from the Win 2000 computer to a Win XP computer, making the printer more accessible.

These two modifications to the technical infrastructure are crucial because most network errors originate from trouble accessing networked non-Win XP computers. Thus removing the old Win 98 and Win 2000 computers from the network will drastically improve network performance.

1. Outcomes from the Troubleshooting Guide

Concrete Outcomes:

The technical infrastructure at Breachmenders Ministries suffers from far fewer problems that need to be fixed by an outside consultant because of the Troubleshooting Guide. As a result, this has decreased their dependence on outside help, which prevents situations where the technical infrastructure must remain down for sometime until someone from outside of the organization can come to fix it.

By working with the student consultant to fix common problems that plague Breachmenders' network, the CP and many other staff members have learned how to fix these problems on their own. Although normally such problem solving skills would have deteriorated over time without use, the longevity of these skills has been enhanced by using the Troubleshooting Guide

Breachmenders Ministries is now in possession of a 7 paged Troubleshooting Guide that diagrams their entire NBLC computer lab, illustrating all appropriate computer names and connections. This guide also covers network specific problems that are frequently encountered such as 'How to network my computer' and 'My shortcut is not working'. It also comes with an appendix that outlines procedures for the Computer Instructor to follow whenever significant modifications to the network have been made and it is necessary to update the TSG.

State Prior To Consulting Partnership:
Before the creation of the Troubleshooting Guide the organization was very much dependent on outside help, most notably a Carnegie Mellon Graduate named Andrew. Andrew could only visit once every two weeks or so, and because of this any problems Breachmenders had would hinder the performance of their organization until Andrew was able to fix it. As a result, Breachmenders would frequently go one or two weeks without use of a printer or access to important databases.

An example of this kind of technical destitute was during a time when the CP would flip through a large catalogue of student files to find a single telephone number despite that she already had a large database with all the necessary information. The reason she used the catalogue instead was because she could not access the databases and did not know how to fix the problem.

Currently the CP and Computer Consultant are now able to fix these kinds of problems with the aid of the Troubleshooting Guide. Karla, the CP, was able to successfully browse the network, find the databases and files she needed, and add them to her Network Places. When the driver for the black and white printer got lost again Sherri, the Computer Instructor, successfully browsed the internet, identified the correct driver, downloaded, and installed it.

Future Outcomes:
Outcomes that have yet to be reached are a network that functions entirely without the outside help of computer consultants to fix it. This is because the more the TSG is used the more comfortable the staff will become with the computers and the more problems they will be able to solve. Also, in the near future I would expect to observe an increased expansion of their technical infrastructure. This doesn't necessarily mean more computers or software, but instead suggests technology playing a larger role in how the staff communicates with each other, the staff plan out daily activities for the students, and the students learn essential tools. This is the ultimate goal, and the true indicator of the effectiveness of the Troubleshooting Guide.

Increasing Capacity to Further The Mission:
As a result of the TSG there is less down time and problems with the network and so the effective technical capacity of Breachmenders has been increased. This has helped further their mission by fixing many of the problems that hindered them in the past, such as a lack of communication between the CP and children's supervisors, trouble contacting student mentors, and losing files because they are unable to be backed up successfully.

Outcome Sustainability:
The TSG will remain network specific until Breachmenders revamps their network, at which point the computer instructor should follow the instructions for updating the TSG located in the appendix. Even with a network change, many of the instructions such as networking and printing will still be valid as long as Win XP computers are being used.

The sustainability of the TSG is dependent upon its constant use whenever problems are encountered and for the person in charge of the computers to become familiar with the guide. There is a risk that the guide may not be used if it is not user friendly, i.e. the CP or Computer Instructor cannot understand it clearly. Another problem may arise if it is lost and therefore cannot be used.

To solve these potential dilemmas I have had the CP and Computer Instructor peer review and practice using the TSG to make sure it is user friendly. To lower the risk of loosing the guide the TSG has instructions, listed in the appendix, that it should be saved on the CP and Computer Instructors computers as read only and one hard copy will be kept by the Computer Instructor. Should a saved version of the file ever become corrupt a new copy will be made of the remaining of the two files. Should the hard copy ever be lost or destroyed a new one will be printed from one of the saved files.

A New Vision:
Now that the current technical infrastructure is sustainable, as thus far observed, there is a solid technical composition upon which to build and expand, allowing for a new vision of how technology can support the mission. In addition to this, a deeper understanding of the technical infrastructure by the employees can lead to new ideas of how technology can support their mission. Other than these two points, there have been no observed new ideas generated by the staff of Breachmenders with regards to creative ways in which technology can be used to support their mission.

2. Outcomes from restructuring the technical infrastructure

Concrete Outcomes:
The most noticeable outcome is that the number of network errors has decreased drastically, this means fewer problems printing to networked computers and accessing important files on networked computers. Whereas the Troubleshooting Guide was intended to fix many of Breachmenders commonly encountered problems, the restructuring is a preventative measure that decreases the number of problems of the network.

State Prior To Consulting Partnership:
Before the restructuring every two weeks there would be a printer offline, or trouble accessing the main database. These problems were the result of software conflictions that the old Win 98 and Win 2000 had when networking with the more current Win XP computers. Now that the printers and databases are on Win XP computers two of the most common problems are fixed.

Future Outcomes:
Outcomes that were not observed are elimination of all network errors. Unfortunately, occasionally a computer will become disconnected from the network, or there will be a problem opening a program. These are errors that cannot be fixed by restructuring. This suggests capacity 'yet to be reached' because there is still room for improvement in an attempt to streamline the technical infrastructure.

Increasing Capacity to Further The Mission:
The decrease in the number of problems with the network has a similar effect on the capacity of the organization as does the Troubleshooting Guide; it allows the organization to utilize a larger portion of their technical infrastructure by decreasing the amount of down time it experiences. Utilizing more of their current technology, which has been under utilized in the past, allows them to increase the efficiency of daily tasks, thus allowing technology to play a bigger role in the organization's mission.

Outcome Sustainability:
This outcome can be sustained as long as the technical infrastructure does not change, since the action responsible for the outcome was a restructuring of the technical infrastructure. The computers currently in use are relatively new, and will not need to be replaced for 3-4 years at least. Until then this restructuring is sustainable because there are no current plans to purchase any new technology that would change the modification made to their technology.

A New Vision:
Most times an organization is reluctant to incorporate technology into their daily routine because many problems with the software and hardware can arise that they have no control over and have no idea how to fix it. The modifications made to the computer setup at Breachmenders Ministries eliminates most of these problems and provides a technical infrastructure that is much more robust. This reliability in the technology makes it appear far more user friendly and increases confidence of the user. This inspires further investigation of employees in how technology can be used to support their mission.

II. Additional Recommendations

1. Professional training programs for all employees
Problem:
In addition to the CP and Computer Instructor, which have been educated by personal tutoring, I recommend that Breachmenders Ministries train all of its employees. Breachmenders Ministries is still under utilizing its technical infrastructure. Understandably training all of these employees to the extent of the CP or Computer Instructor will cost valuable time and money, and therefore is not economical. What is suggested instead is that Breachmenders trains most of its employees, those who use computers the most, in the areas that they use most frequently or areas that are most beneficial to the employee. It would be up to Breachmenders or an outside consultant to determine which staff member would benefit from what kind of training.

Recommendation:
The implementation of this recommendation would benefit the company by increasing the organization's overall knowledge base of technology they have available. The motive behind training the CP and Computer Instructor was to create a support system that could reliably restore and fix any problems with the network, thus allowing the company to function more smoothly with the use of technology. This goal can be further enhanced by supplemental training for most of Breachmenders employees. By familiarizing and educating most of the staff with the aspects of technology that they encounter most, such as email, file sharing, and Microsoft Office, many of the same goals that were seen in the outcomes from the previous recommendations can be enhanced. Increased efficient use of technology will allow Breachmenders to execute its mission more efficiently, in addition to building confidence in technology which will naturally lead to increased technical capacity in the future.

Steps:
To implement this recommendation the following steps should be followed:

- All employees of Breachmenders should spend an hour or two and write down the software and different aspects of the computer that they use during a typical day, or think they will use in the future, and how often they use these features. This list can then be used as a starting point when deciding what specifics to train the individual employees in.

- A good idea would be to have only those employees who use certain features of the computer frequently trained in those specific areas.
- Although Breachmenders Ministries is equipped to train adults in computer use, it is recommended that for specialized training in specific areas of computers outside sources should be used. Some examples of recommended skills to be outsourced are networking computers and file sharing, designing web pages, and Microsoft Office. More basic tutorials on how to surf the internet can be taught by Breachmenders.
- Whenever a group of employees need to be trained for the same skill set group training is the most economical option and 1-on-1 training should be pursued only when necessary. There will be cases where the employee will be too busy to take time off work or to travel to a learning center, in which case the option of bringing in a trainer should be looked at, but in general it is less expensive to travel to the trainer.
- Training will be requisite for new staff members. They should be trained in similar areas as the previous staff member was who held their position.

Although the task of training most employees seems daunting, each employee would receive only minor training specific to his/her needs.

Resources:
The most economical resource for training individual employees is Breachmenders itself. They already have a program set up to train adults in using common aspects of the computer. This course could be attended by many employees for free, saving Breachmenders the cost of outsourcing for training services.

When outsourcing is necessary, there are several available options in the local area. One is Mentors, www.mentors.com, which offers personalized training for professional and educational training purposes.

Another company, called Computer Training and Applications, specializes in individual training for Non-Profit organizations. They are also based in the Pittsburgh area, and can be reached on the web at http://home.comcast.net/~pegbowman/cta/ .

2. Purchase a new black and white printer
Problem:
Albeit many of the problems that Breachmenders has had with the black and white printer were actually caused by the computer it was hooked up to, this highlights the fact that they use this printer enough to be significantly hindered by its absence. Hence, the problem is that in the near future this printer will brake down and Breachmenders should be prepared for this. Also, occasionally the driver for this printer, because it is old, gets 'lost' and the computers cannot print to it unless they have the driver re-installed, which takes quite a bit of time.

Recommendation:
I recommend that Breachmenders Ministries purchase a new black and white printer to replace the current one that, although still functional, is very old and will soon deteriorate. Replacing the old black and white printer will eliminate many of the software conflictions the old printer has with the newer Win XP computers, which usually results in the printer driver being lost. This will result in less network glitches and save the staff the trouble of periodically re-installing the printer driver. The less effort Breachmenders needs to put in to maintaining its technical infrastructure the more time it can spend using that infrastructure to further its mission.

Steps:
To best execute this recommendation the steps below should be followed:

- If possible, a donated printer from one of Breachmenders sponsors would be a cost effective solution. Else the purchase of a new or used printer will be necessary.
- There are two types of printers, an Inkjet and Laser. A Laser printer, although slightly more expensive, is ideal for printing large numbers of papers quickly and quietly and should be purchased. This situation often occurs in the New Beginnings Learning Center, where lots of children are printing out many papers at once.
- It might be time efficient to purchase the printer online, rather than at a retail store like Comp USA, in which case there are two excellent online sources below that outline cheap prices and consumer guides.
- With the Plug and Play features of Windows XP once the printer is purchased it should be a simple matter of installing it on a Win XP computer.

Resources:
As far as sponsors go, Breachmenders Ministries has a list of who to contact. If they choose to purchase the printer through a retailer it is possible to purchase it online, saving them the trouble of leaving work to go buy one and hauling it back.

A great website for this, which not only lists great deals on printers, but also acts as a beginners guide for purchasing a printer, is: http://www.helpwithpcs.com/buying/hardware_buying_guide_printers.htm .

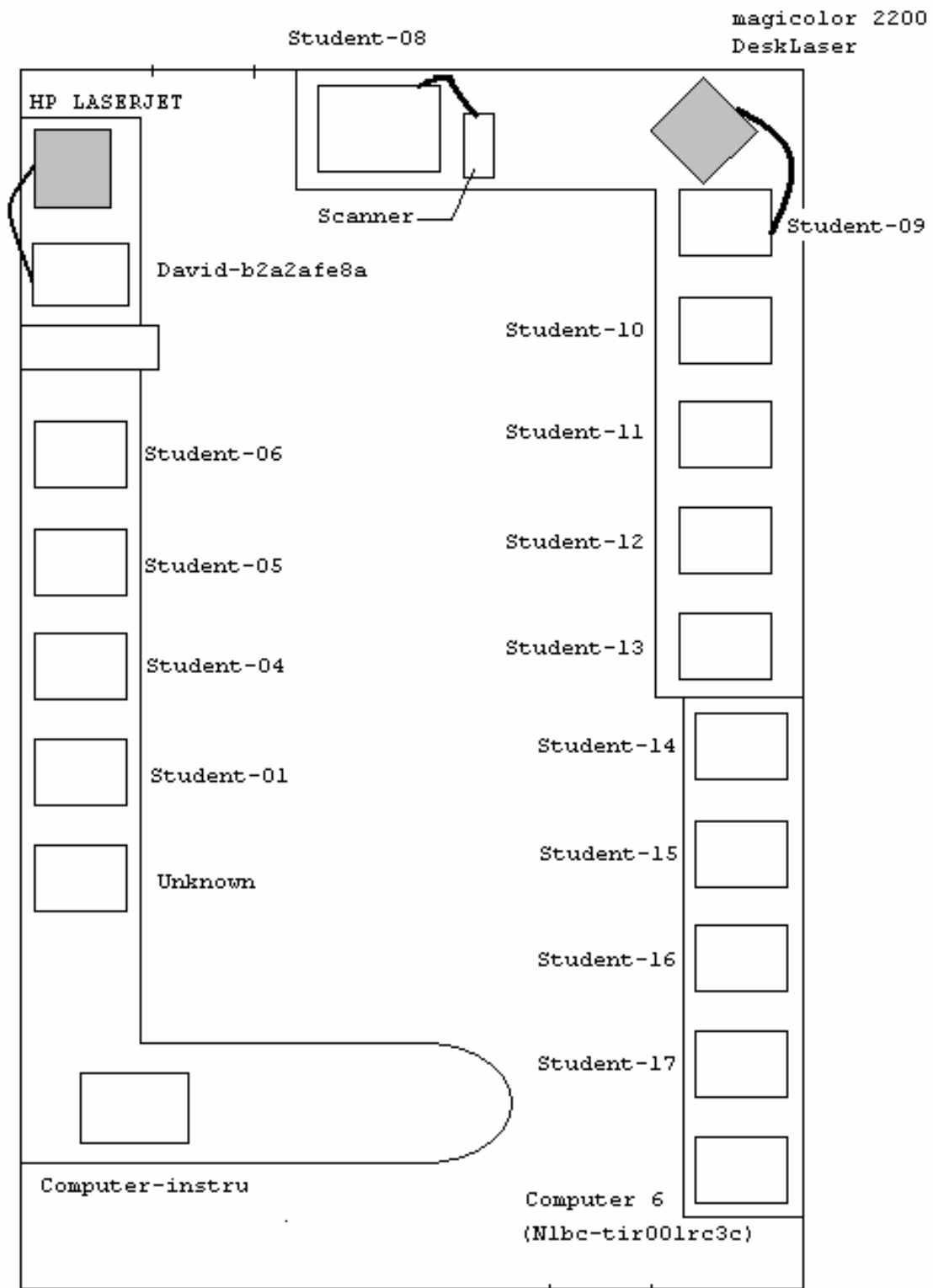Another great resource is a recycled hardware forum that specialized in donated hardware, a great place for finding a good deal. This webpage can be found at http://www.techsoup.org/products/recycle/index.cfm?#donate .

About the Consultant
Michael Treidl is a senior majoring in Physics and double minoring in Computer Science and Business at Carnegie Mellon University. He will be graduating this spring and plans to spend the summer traveling abroad throughout Europe, after which he will begin his two year MBA program at Rollins College in Florida.

Troubleshooting Guide
Breachmenders Ministries

By Michael Treidl

NBLC Computer Cluster

Student-08

magicolor 2200
DeskLaser

HP LASERJET

David-b2a2afe8a

Scanner

Student-09

Student-10

Student-06

Student-11

Student-05

Student-12

Student-04

Student-13

Student-01

Student-14

Unknown

Student-15

Student-16

Student-17

Computer-instru

Computer 6
(Nlbc-tir00lrc3c)

*This diagram does not include all computers connected to the Breachmenders network. This diagram shows NBLC computers only.

A Description of the Computers:

Computer-instru
- Operating Platform is Windows XP
- Contains Breachmenders databases
- Used for backing up files (mostly word documents and files that are low memory)
- Pentium 4 Processor

Student-(01..17) , Computer 6, and Unknown
- Operating Platform is Windows XP
- Used primarily by students to access the internet and type documents in Word.
- Pentium 4 Processor

Student-09
- Is also connected to the magicolor printer

Student-08
- Operating Platform is Windows 200 Server
- Used primarily to scan pictures
- Connected to the Microtek ScanMaker scanner

David-b2a2afe8a
- Operating Platform is Windows XP
- Used primarily by staff for research on the internet and to conduct the days' activities.
- Pentium 4 Processor
- Connected to the HP LaserJet printer

Unknown
- Due to an error that does not allow the control panel to be accessed by the administrator the computer does not have a network name and is not on the network.

3

My printer is not working.

NBLC has two printers, the HP LaserJet and magicolor DeskLaser. Each of these printers is connected to the network through the computers David-b2a2afe8a and Student-09 respectively. If these computers are not turned on then the printers will not show up on the network and cannot be accessed by other computers on the network.

Sometimes a printer will get disconnected from the network or the computer in use will forget the printer's driver information. In any of these events it is necessary to add the printer back onto the list of printers the current computer can print to. To do this, follow these steps:

- Go to the Control Panel located under that Start button.
- Open Printers and Faxes. This folder shows all printers known to the computer.
- If the printer attempting to be used does not show up in this folder it is necessary to add it.
- Click on 'Add a printer' located under Printer Tasks on the left.
  First step is to select the network printer option, since you are trying to add a computer that is not directly connected to yours. (Unless you are using David-b2a2afe8a or Student-09)
- Second step is to select the printer. It is easiest to browse for the printer you want. You can use the NBLC Computer Cluster diagram on page 2 to aid you in locating the desired printer.

You have the option of choosing this printer as your default. Do so if desired. If you cannot find the printer while browsing, this most likely means that the printer is not accessible from the network. This could be because the printer is attached to a computer that is turned off, the printer itself is turned off, its computer on the network does not share the printer, or there is a problem with the physical connection. (i.e. there is a cord unplugged somewhere)

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4

How to network my computer or share my files.

A network is generally a loose collection of computers located in a local area, known as a LAN (Local Area Network). Each network is designated by a name. The name of Breachmenders' network is called Workgroup. To view all the computers and shared files that your computer can 'see' go to My Network Places located under the start button.

To add a folder on the network to My Network Places it is important to first know the name of the computer that contains the folder. Adding this folder can be accomplished by following these steps:

- Go to My Network Places and click on Add a network place located on the left hand side under Network Tasks.
- Follow the wizard through the steps
- First step select 'Choose another network location'
- Second step you need to select a shared folder on a local computer by selecting the browse option. This should look something like '\\Computer_name\folder_name\'.
- Third step you select a name to call it. The default name is the recommended name to use.

Essentially all you have done is create a link on your computer to a folder on another computer. Note that this folder must be shared else it will not show up as a visible folder on the network. If you cannot find the desired computer while browsing that computer may either be turned off or not on the network.

To add a computer to the Workgroup Network follow these steps:

- Go to My Network Places on the computer that you want to add to the network.
- Once there, select 'Set up a home or small office network' under Network Tasks.
- Follow the steps, and choose the option 'This computer connects to the internet through another…' when prompted.
- When prompted for the Workgroup name type in 'WORKGROUP'. This is the name of Breachmenders' network.
- For the last step select the final option 'just finish the wizard'.
- You will need to restart your computer.

The computer has now been added to the network and should be able to view as well as be visible to all other computers on the Workgroup network.

5

How to transfer files across networked computers.

Every computer on the network has one or more shared folders located on its hard drive. Other computers can view these shared folders as if they were their own, but these shared folders are, in fact, only located on the host computer. When opening a folder, it is possible to check whether that folder is located on the current computer's hard drive or on another computer's hard drive, which is viewed as a shared folder, by checking that folder's name or title. If the title of the folder ends with the name of another computer on the network, then that folder is located on the computer whose name was specified in the title. An example of this is the title 'Patches on Computer –instru'. This folder is located on the networked computer 'Computer-instru', not on the hard drive of the current computer.

To transfer a file from computer A to computer B it is necessary to place the file into the shared documents folder on computer A so that it can be shared on the network and accessed by computer B. To do this, follow these steps:
- On computer A, open the shared documents folder by clicking on the start button.
- Then click on My Computer
- Located on the top should be the shared documents folder.
- Open the folder and move the file into this folder.

The file may be moved by either copying and pasting or clicking and dragging the file into the shared documents folder. Any file or folder placed into the shared documents folder will be accessible by all other computers on the network.

Now that the file or folder is accessible on the network, the next step is to access it from computer B and download it onto computer B's hard drive. To do this, follow these steps:
- On computer B, click on the start button and go to My Network Places.
- Find computer A and click on it to access its shared documents.
- Locate the file or folder designated for transfer.
- Transfer by either copying and pasting or clicking and dragging onto the desktop.

This process automatically copies the file from the shared documents folder on computer A to the desktop of computer B. The file is now located on the hard drive of computer B. When clicking and dragging files across two computers the file automatically copies itself and never leaves the original computer. However, when clicking and dragging a file within a single computer the file will move to its new location and will no longer be located in its previous location.

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My Shortcut is not working.

Basically what this error means is that the Shortcut is unable to reach whatever target (file or folder) it has been given, whether or not that destination is valid or invalid. The first thing to do is to check and make sure the file or folder that the link is pointing to exists.

- Right click on the shortcut and go to properties.
- Click on the shortcut tab.
- The 'Target' will be listed as a path pointing to the file or folder. Almost always this will be located on either the hard drive of the computer, so the path will start out something like "C:\…", or the target will point to a location on a networked computer. In this second case the target will look something like "\\Computer_Name\….".
- If the target points to a location on your computer just follow the path specified or copy and paste the path into Windows Explorer or Internet Explorer (make sure you do not include the quotations). Here you can check to see if your target is valid by exploring the hard drive on your computer.
- If the target points to a location on a networked computer, use the Computer_Name and the NBLC Cluster Map on page 2 to find the actual computer it is referring to. Explore that computer in a similar manner as described above to verify that the file or folder does exist and is *shared* by right clicking and viewing properties. If a file or folder is not shared then other networked computers cannot access it.

If the file or folder the target is pointing to does not exist then there is chance it might have been moved. It would be easiest to find it on the current hard drive by using 'Search' located under the start button.

If you have verified that the location the target is pointing to does in fact exist, is designated as a shared file or folder, and the shortcut is still not working, then this means that at some point between the Shortcut and the file or folder there must be a breach in the communications between the two computers. A quick test to make sure all the physical connections are in tact is to access the Internet from both computers. If this is successful then the computers need to be networked, else one of the computers is not connected to the Internet and this should be fixed before proceeding.

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Appendix 1

Maintaining the Troubleshooting Guide

In order to preserve the Troubleshooting Guide it is important to always keep two backups of the file, one on the Computer Instructor's computer, and one on the Youth Program Director's computer. In addition, the Computer Instructor in the NBLC lab should keep a hardcopy. If ever any one of these three copies (the two files and one hard copy) should be destroyed or damaged in anyway, it should be replaced immediately.

It is also important for any new Computer Instructor to familiarize themselves with this document. If possible, have the old Computer Instructor review the TSG with the new Instructor. The best way to review this document is through practice using it; reading or skimming the guide is not enough to properly familiarize oneself with it.

Updating the Troubleshooting Guide

There are three instances when the TSG should be updated. First, if a new problem is encountered that is not already covered in the TSG. Secondly, if a more efficient solution is found to an already existing problem covered in the TSG. Thirdly, if there is a change to the technical infrastructure of the NBLC.

In the first case, it is recommended that the problem and solution should be documented in the TSG following the existing format. This format begins with a clear explanation of the problem in the title summary. It is followed by a paragraph that outlines the problem in detail as well as providing background information on the subject to promote learning and give the reader important tools for the upcoming problem solving. Next the steps of the solution are summarized in bullets points with introductions and conclusions for each listing of steps. Possible options and other solution paths are also appropriately summarized using bullet points in the same way. The format ends with a conclusion explaining what has just been done, as well as possible explanations as to why the solution did not work if it was ineffective. Appropriate pointers to other solution sources are given in such cases.

When a more efficient solution to an already existing problem covered in the TSG has been uncovered, it should be added to the TSG in addition to the old solution. Because of software or network glitches that cannot be predicted it is possible that in a given circumstance a certain solution might not be feasible and alternate solutions necessary. These solutions should be added in using the same format as the previous solutions.

In the event that a change to the technical infrastructure of the NBLC occurs, it will be necessary to modify two components of the TSG. First the diagram of the NBLC must be updated to reflect the current arrangement of computers and printers. Second, the description of the computers must too be updated appropriately to reflect the current status of the NBLC network.

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