UC Merced Service Learning
A Woman’s Place
Spring 2008
Executive Summary

U.C. Merced’s Engineering Service Learning- A Woman’s Place (ESL-AWP) is an educational program dedicated to helping the development of A Woman’s Place (AWP) throughout the Central Valley. AWP aids battered women and their children by providing shelter and training to get them back on their feet. Additionally, the organization serves as a hotline for all women with questions or concerns. Our main goal this semester was to continue modifying the organization’s technological systems (i.e. computers, website, and database).

After purchasing a server that will be used to centralize and organize their information by allowing more convenient access for all employees, we began assembling the pieces together. Also, the server will host their new website, which will cut costs. Furthermore, we continued building the PLONE-based website for the organization. This semester we researched and implemented several plug ins. With our goal in mind, we hoped to alleviate any technical difficulties present at their headquarters here in Merced, CA. Our plan is still to link all the computers together on a secure network and to ensure that all their systems are operational.

With these works-in-progress on the verge of completion, AWP personnel will be able to effectively communicate within their network, and easily access information from a secure database. AWP has faced a number of obstacles over the period of this semester. We attempt to follow in their footsteps by forging ahead and working harder to accomplish our goals when faced with difficulties.
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Introduction

A Woman’s Place of Merced County is a non-profit organization that has been serving the County of Merced for many years. The organization’s mission is to eliminate sexual assault and domestic violence and to provide aid and shelter to the victims. Due to the sensitive information that AWP handles, the organization is looking for ways to maximize efficiency in electronic communication between their facilities in Merced County. Using the Plone site will be much simpler for communicating and recording the interactions between the offices and shelters. This Engineering Service Learning team focused on helping optimize communication between the different offices and staff members. The first objective was to purchase a server where AWP can store their client information and archives. Secondly, we continued to implement the prototype database where AWP personnel and clients can look up information, such as contacts, more efficiently and with greater ease. The last component of our goal was to revise AWP’s current website so it is up to date.

We made many strides this semester. We received the server and began assembling it, installing the operating system, programs, and such. Our team explored many possibilities for the website this semester: companies to help simplify the donation process, calendars, content translators, and an escape script, along with alternate color themes. We also created a training script to help clients learn how to navigate the Plone website. To accomplish these tasks more efficiently, we divided our team into three sub teams: content, server, and website.
Project Tasks

A Woman’s Place of Merced County services people from all sorts of backgrounds and ethnicities. The goal of the AWP service learning team has been to provide our client with the tools they need to function in a fast paced environment. Last semester, ESL-AWP continued to assist primarily in aiding A Woman’s Place with installing and implementing technological applications for their organizational and safety purposes. We aimed at successfully creating a computerized network within their organization that will satisfy their technological objectives. To achieve our goals, our tasks included repairing some of their old computers, making sure their computer infrastructure is functioning smoothly, and training our clients to use Linux as an operating system for their computers or server. We also intended to purchase a server by the end of that semester.

This semester we obtained our server. Our server team worked long hours installing the operating system, comparing alternative options, and installing programs. They also updated a good portion of our clients’ computers. Nearing the end of this semester, they installed the website onto the server.

The content team was the documentation of our service learning team this semester. They updated the prototype and wrote a training script for the client.

The website team worked diligently to meet all the desires of AWP. The website team spent part of their weekends learning Plone from Matt Dudys. The client had previously suggested several plug-ins, such as a calendar; the website team explored a number of options for each plug-in; they finally decided the most suitable options were Pay Pal to collect donations, Plone4Artists to serve as a calendar, and Babelfish to translate content.
Content Team

The content team’s main goal was to document all the actions of the AWP service learning team. The content team worked and edited the content on our webpage. The team also created a flyer and poster for Bobcat Day to get the word out about both A Woman’s Place and our AWP service learning team. The team works closely with the web team to help create the most suitable website for our client. In addition, we aid the other sub teams in any task that needs an extra hand, such as researching and documenting information.

This semester the content team met with the client to discuss the website prototype content. AWP asked us to alter minor pieces of the content, such as changing “abuse victims” to “victims of abuse.” This change is more suitable because it clarifies that victims are not defined by abuse; they are much more. Little changes like these can make a huge difference to the people whose lives are affected by the website’s words. Overall, our client asked us to give the website a more positive and welcoming tone.

Our team also developed a training script to bridge the cap between our team running the website and our clients running it. The training script was designed to teach our clients how to work with the Plone website easily.

In order to teach Plone to others, our team had to learn it first. Last semester, our knowledge of Plone was inadequate to make any big changes to the website. We asked the website team to help us learn Plone. After meeting with the website team, we began writing the training script. It includes step by step directions to perform a number of tasks like adding a folder, a file, or an event, organizing folder contents, updating content, and setting items to public
or private. Once the server and website are complete, our clients will be able to work on the website themselves with ease.

This training script will be an essential contribution for our clients because it will enable them to interact with their website more independent. If for some reason our clients forget how to work in Plone, or gain new members, they can refer to the script and find the answers to their problems. The script will familiarize our clients with the technology we used to help them throughout the semester.
Server Team

The primary tasks of the server team, as its name suggests, were to set up and configure the server for a productive environment and to document our progress so that future teams understand our setup and reasoning behind it. Our secondary tasks at the beginning of the semester were to map and to optimize AWP’s network; in the middle of the semester, we were faced with transitioning their computer systems to a new environment.

Primary Tasks

Setting up the server meant installing the operating systems and any needed services from a package repository. Last semester, it was determined that AWP required a Plone/Zope server for their public website, an Active Directory (AD) for user authentication and profile management, and a central file server to share and store documents. We decided to run multiple operating systems on the server for two reasons. First, the operating systems are running in separate environments; there is a barrier between the public web server (running Debian Linux) and the internal server (running Windows 2003). This way the sensitive files on the internal server are not as exposed to the outside world. Second, we can reboot one operating system without interrupting the other, making systems management easier.

We used Xen virtualization underneath our operating systems so both operating systems can run simultaneously on the same hardware. Xen works by installing itself below the level of the operating system and intercepting any requests the operating systems make to the hardware. Xen takes care of the operations below the operating system and automatically manages the hardware on behalf of the guest operating systems. With hardware assisted virtualization
technology (Vanderpool in our case) built into the CPU (Intel Xeon), the overhead for Xen is minimal.

Active Directory (AD) is Microsoft’s implementation of an LDAP database-backed user authentication. For AWP, we planned to use AD to allow users to move around the office and access their profiles anywhere or to share documents without using “sneaker-net” (copying to a floppy and downloading it to a remote computer). We can also control read/write privileges to sensitive files using NTFS access controls and implement network wide system policies, making computer management more “manageable”.

In earlier semesters, we noticed staff storing documents on individual computers. This made their files more susceptible to being lost through hard drive failure, harder for other staff members to access, and, in some cases, more vulnerable to unauthorized access. Our solution involved integrating Active Directory with a central file server on Windows. Active Directory authenticates users, and the NTFS file system, used to store files, provides access control to all users. To prevent catastrophic data loss, we have plans for a redundant backup system. The first backup will be in the computer itself with RAID 1. Effectively, the data on one drive mirrors the other, so if a drive crashes the other drive will be on standby and will keep the computer running while the broken drive is replaced. Our second backup will be an onsite backup; and for disaster circumstances, the last backup will be an encrypted offsite hard drive.

Currently, a third party service hosts AWP’s website. In order to edit their site and add new content, the staff would need to know HTML. We decided that it’s more appropriate for AWP to host their own web server and to run Plone/Zope. The server team will be responsible for switching the Domain Name Service (DNS) entry. DNS is responsible for changing a human understandable web address, such as www.testsite.info, to an IP address, 192.168.0.5, that the
computer can interpret. With DNS there are different entries, called records, that can be changed depending on intended function. The entry we plan to change is the A-name which is the primary record. This one changes the behavior as described above. As of now, this record points to AWP’s old website. Other entries, such as the MX (Mail eXchange) record, will be left alone to continue receiving email.

**Secondary Tasks**

Our reason for attempting to map out AWP’s network was that for some users it was a “not-work”. Their network currently consists of a tree topology with the router and DSL modem as the root and three switches as the branches. The switches and patch boards are called A, B, and C; they match the right, middle, and left areas of the office respectively. Generally, the ports on the patch board correspond to the area where they are housed, one exception being the connection to the root router. Of the other exceptions, some connections may have made sense when the building was originally wired but no longer fit. A port on the A patch board runs to an end user port on the C side of the building, and a B patch board port connects to an end user port in the A section.

We also purchased improved networking equipment with more throughput capacity in preparation for the deployment of the server. We planned to replace their existing networking equipment in place and label the cables appropriately. Currently, all the networking devices are 100Mbit. The new router is 1Gbit, and the ports connecting the switches to the router are also 1Gbit. The end user ports on the switch are 100Mbit since it was more economical than going all 1Gbit and we expect that AWP will not need 1 Gbit in the near future. With the new setup, a single client on a switch would not be able to max out the connection between the switch and router, allowing other clients to connect without a significant performance drop. With the planned
relocation of AWP, we switched our efforts to keeping their networks operational, doing an informal survey of their network, and transitioning their computers to a new environment. Our clients moved to one side of their building, side A. We reconfigured the networking on that side because unused ports were disconnected. The ports were not well documented, so, in some cases, looking for wall ports and matching them to a patch board port turned into a hunt for a needle in the haystack.

When AWP downsized, they were left with computers that needed to be disposed of properly. For security reasons, the hard drives of computers we eliminated were purged of all data; we used a freely available application, Darik’s Boot and Nuke, to wipe the hard drives, rendering them nearly impossible to read. Because the previous operating system is now unsupported by the maker, we proceeded to install Ubuntu Linux on them to promote the use of Linux and to use it as a training tool for the employees.
Website Team

Managing tasks, providing multilingual content, and online security had all been deferred projects from past semesters. Therefore, as this semester’s webmaster, it became my personal goal for the team to finish all that we set out to do.

First on the task list was adding a translation service to the AWP prototype website. We researched three different plug-ins that were supported by Plone’s open-source software. Each plug-in was either no longer being maintained by its respective developer or was not suited to our intended goal. For example, LinguaPlone, which was the best of the plug-ins, indicated that we had to make copies of all our content, make new folders, and then translate the content by hand. In other words, the only translation it would provide was changing the root names i.e. “Home,” “Log Out,” “Events.” We later discovered that the version of Plone we have been using already has LinguaPlone installed. The prospects of this task were looking rather grim until I stumbled upon a service called “Babelfish.” To our amazement, this service had the ability to translate entire websites into twelve different languages with a simple click of the mouse. Dedication and perseverance paid off for our team and for the future of A Woman’s Place. Now AWP can inform a wider range of people looking for information online.

Another big goal for the development of AWP’s online prototype was adding a calendar plug-in. A Woman’s Place of Merced County has needed a better way to organize their tasks for a quite some time. Consequently, this also became one of our main priorities for this semester. The objective of the website sub-team was to research as many options as possible in order to provide our clients with the most efficient and user friendly alternatives. CalendarX had been a popular plug-in, which we intended to implement last semester. After a solid week of research though, it
became evident that Plone4Artists’ calendar was superior in every way, while also having ample support from its developers. Now our clients at AWP can easily update their schedules onto their online webpage with ease.

The only task left to accomplish this semester was the so called “escape script.” This was also one of the many deferred goals from past semesters because we did not have the knowhow to create or implement such a script. This semester our wonderful friend, Matt Dudys, returned to assist us in completing the above named tasks. He wrote the Java code and then proceeded to explain to us how it worked. In technical terms, the code iterates a string, which collects all the URL information having to do with the AWP prototype and discards it once a user clicks the back button. Not only is this a very interesting feature for a website, but it also increases the security of victims of domestic violence who are attempting to keep their abusers from tracing where they’ve been online. The only setback is that once a person chooses to navigate away from the page they were on, they can’t return to it via the back button. They would have to click on the navigation icon they wish to return to. For instance, if someone visits the donation page and wants to return to the home page, they have to click on the correct navigation icon and not the back button. Still, the addition of an escape script is a big breakthrough that this semester’s team accomplished.

In conclusion, the AWP service learning team equipped our clients’ online prototype with many new features that will aid them in their daily routine. Now our clients have the ability to help out more people, to organize themselves better, and to increase their clients’ security while researching online content. This semester yielded numerous breakthroughs in the process of accomplishing our goals. We finished all that we set out to do by working hard and dedicating a lot of time to our projects. Furthermore, Matt Dudys was of tremendous help; without him, the A Woman’s Place online prototype would not have been completed on time. He met with us on a
weekly basis, taking time out of his busy schedule to give us assistance. For this, we’d like to express our gratitude and appreciation for all that he helped us accomplish.
Summary

I. Server
   a. Set up and Install Multiple Operating Systems: Debian Linux and Windows 2003
   b. Install Xen Virtualizations
   c. Install Microsoft’s Active Directory for greater security
   d. Implement NTFS File System
   e. Create Redundant Backup System:
      i. RAID 1
      ii. Onsite Backup, and
      iii. Encrypted Hard Drive

II. Purge excess computers in preparation of disposal
    a. Wipe Hard Drive using Darik’s Boot and Nuke
    b. Install Ubuntu Linux

III. Learn Plone

IV. Training Script
    a. Decide on Operations to Outline
    b. Write Training Script

V. Plone Website
    a. Research Plug-ins and Donation Options
    b. Choose new Color Scheme
    c. Update Content
    d. Decide on Plone4Artists as a calendar
e. Get Babelfish as a content translator
f. Matt Dudys creates escape script
g. Learn how escape script operates
h. Implement plug-ins
Plans for the Future

A Woman’s Place has current plans to relocate with the possibility of merging with an agency of similar values. They will continue to serve Merced County with greater efficiency and strength. In the future, our team plans to add users to the Active Directory and assign them space on the file server, to implement the backup system, to map the network, to install networking devices, and to transfer their DNS A-record to their new web server. With the prospect of a new union, our team anticipates updating the content and presumably redesigning the layout of the website. To make suitable changes, our team will research the new agency and discuss new options with our clients. We hope to help the agencies with networking and communication between their various locations. As we hand off the website, we’d also like to give our clients the training script and hold a session to teach them how to navigate the website. As A Woman’s Place continues to provide assistance, we, too, plan to continue assisting our clients in the future.
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NTFS. <http://www.ntfs.com/>. (File System)


Plone. <http://plone.org/>. (Open Source Content Manager)


RAID 1. <http://www.bestpricecomputers.co.uk/glossary/raid-1.htm>. (Mirroring Backup)


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Team Website

https://awp.sl.ucmerced.edu

This is our team website; we use this site as a source of documentation and communication and as an archive. The team website is the most fundamental component of our team, next to our ingenuity and determination.
Task List

https://awp.sl.ucmerced.edu/sl_awp/semester-projects/spring-projects-2008/tasksorganization/task-definition-list-page/

This is our team task list, which can be found under “Tasks Organization” in the Spring 2008 folder on our website. We use this list to gage our progress and to stay organized and on task.
Above is the flyer we handed out on Bobcat Day (April 19, 2008) to let people in the community learn about our service learning team and our client. On the left is the poster we displayed at our table on Bobcat Day.
Thanks

Soroptimist

Foster Family

Jeff Wright

Matt Dudys

PG & E

Rosalina Aranda