

Department of Computer and Information Sciences Student IT User Guide

**UAB CIS Department
Revision v1.1
9/25/2009**

Contents

I. Introduction.....	4
Overview of the CIS IT Organization	4
New User Quickstart.....	4
Getting Access to CIS Resources.....	5
Applying for a CIS Account.....	5
Physical Access to CIS Resources.....	5
CIS IT Policies.....	5
Acceptable Use Policy.....	5
Account Lifecycle Policy.....	6
Alumni Services Policy.....	7
Using the CIS Helpdesk.....	7
Relationship to Other IT on Campus.....	8
II. Getting to Know CIS IT Resources.....	10
How CIS IT Manages Department Resources.....	10
Introduction.....	10
System Management and Updating.....	11
Physical and Electronic Monitoring and Protection of Resources.....	11
Laboratories.....	12
Laboratory Software List.....	12
Open Labs.....	12
Closed Labs.....	13
Research Labs.....	13
Data Center.....	14
Data Center Resources	14
Checkout Library.....	14
III. Account Usage and Management.....	16
Passwords.....	16
Changing your password.....	16
Home Directories.....	16
Remote Access to CIS Resources.....	17
Linux and Mac SSH Client.....	17
Windows SSH Client	17
Using PuTTY.....	17
Using WinSCP.....	17
IV. Software.....	19
Subscription Libraries	19
UAB Software.....	19
Microsoft Developer Network Academic Alliance (MSDNAA)	19
VMware Academic Program.....	20
IBM Academic Initiative.....	21
V. Network Services.....	22

File Services.....	22
Home Directories.....	22
Backup and Restore.....	23
Email Services.....	25
Undergraduate and Masters Student Email	25
PhD Student Email.....	25
Mailing Lists.....	25
Personal CIS Web Space.....	25
Publishing Content to your Web Space.....	26
Subversion Source Code Repository.....	26
Accessing CIS Subversion.....	26
Users' Personal SVN Repository.....	26
Research Lab and Special Project Repositories.....	26
PostgreSQL.....	26
How the PostgreSQL Accounts are Set Up.....	27
Using PSQL to Connect.....	27
Using Perl to Connect.....	29
Using PHP to Connect.....	29
Seeing PHP Errors in the Web Browser.....	30

I. Introduction

Topics:

- [Overview of the CIS IT Organization](#)
- [New User Quickstart](#)
- [Getting Access to CIS Resources](#)
- [CIS IT Policies](#)
- [Using the CIS Helpdesk](#)
- [Relationship to Other IT on Campus](#)

Overview of the CIS IT Organization

The CIS IT group is a subset of the Department of Computer and Information Sciences staff and is responsible for managing all of the production, research and academic IT infrastructure in the Department of Computer and Information Sciences here at UAB. This includes all of the hardware in the computing labs, the datacenter and the offices, as well as all of the software, services and accounts that run on all of those systems.

We provide both reactive (e.g. Helpdesk response, hardware break/fix) and proactive (e.g. custom app code development, strategic initiatives such as new lab deployment) services, and each team member splits time between the two types of tasks.

The CIS IT staff is comprised of both full time employees and student workers. Although the staff grows and shrinks over time, as of the time of this writing the staff is managed by Sr. Systems Analyst Fran Fabrizio and includes 1.5 full time employees and 2 half-time student workers.

As a result of our small staff size and irregular schedule, we are not a 24x7 on-call operation. However, we rely upon a number of technologies such as our Helpdesk and documentation such as our User Guides to provide our end users with a high level of support.

New User Quickstart

If you've just arrived at UAB CIS and you just want to know the steps required to get started with CIS IT, here is a quick summary of steps you should follow. For more in-depth information, please read the remainder of this guide.

There are several prerequisites before you may use CIS IT:

- You must be affiliated with UAB (e.g. student, faculty, staff, visiting student, research collaborator)
- You must already have a working BlazerID and email account (see <http://www.uab.edu/blazerid>)
- You must be registered for CIS courses, pursuing a degree in the CIS department or have another CIS-related activity which requires access to CIS resources.

Once you have fulfilled the prerequisites, complete the following steps:

1. Fill out the CIS Account Application, found at <http://www.cis.uab.edu/account>
2. Visit with Janet Tatum in the front office to request keys and keycards
 - a. **Undergraduate Students:** You will need to have your student ID programmed to allow access to the undergraduate computing lab.

- b. Masters Students:** You will need to request your graduate student key.
 - c. PhD Students:** You will need to request your graduate student key and your research lab key
3. (Optional) If you are scheduled to TA a course (PhD students), you should request a door code from CIS IT by sending an email to helpdesk@cis.uab.edu.

Getting Access to CIS Resources

Applying for a CIS Account

All CIS systems require a CIS account to login. Your UAB Blazer account is not used to access CIS resources.

To obtain a CIS account, fill out the online CIS Account Application, found at <http://www.cis.uab.edu/account>.

Please be patient; this process may take up to 2 business days to complete. You will receive an email at your blazerid@uab.edu email address when the account is ready for use.

Physical Access to CIS Resources

The following department resources require a physical key, a student ID keycard which is correctly programmed, or a keycode sequence.

- **Campbell Hall (after hours)** – Requires your keycard to be programmed for access. Available to all CIS graduate students.
- **Undergraduate Lab CH154/154A/154B** – Requires your keycard to be programmed for access. Available to all undergraduate CIS majors or minors, graduate CIS students, and any other students enrolled in CS105 or above which have specific need to use the lab computers for their CS classes.
- **Graduate Lab CH135/135A** – Requires a physical key. Available to all CIS graduate students. See Janet Tatum.
- **Teaching Labs CH145, CH430 and CH435** – (For Teaching Assistants Only. Not for students taking classes in these rooms.) Requires a keycode. Send a request to the CIS Helpdesk specifying the class which you are teaching.
- **Research Labs** – Require a physical key. Available to all students assigned to work in the lab, with permission of the supervising faculty member.

CIS IT Policies

This section contains policies which govern the use of CIS IT. All users of CIS IT are governed by these policies. Use of our IT resources is understood to mean that you accept all provisions set forth in these policies and agree to abide by their terms.

Acceptable Use Policy

Introduction

This policy governs what activities are deemed acceptable when using CIS IT. The most recent version of this policy is available at <http://www.cis.uab.edu/acceptableusage>.

CIS IT Acceptable Usage Policy

In managing the limited resources available to the CIS community, we strive for fair, equitable and accountable use of the resources by all authorized users. This means that resource management and security are the responsibility of all users. Note: For the purposes of this document, “CIS resources” refers to the network, computers, software, disk

space, web space, printers, computer labs, special purpose hardware and any other equipment, resource or service owned or provided by the CIS department to its users.

Section 1. Authorized usage only

Accounts and access to CIS resources are issued to you and are to be used solely by you. You may not give anyone else access to these resources. If you do so, your account and/or access may be removed on a permanent basis. It is your responsibility to keep your accounts secure. If you are found using accounts or resources for which you have not been authorized, your own accounts may also be disabled permanently. This includes attempts to alter hardware, software or network configurations or connect personal equipment to the network without permission.

Section 2. Academic use only

Academic useage only CIS resources are provided for the sole purpose of supporting your academic computing needs related to the CIS academic program. CIS resources are not be used for personal purposes unrelated to your CIS academic work. This includes the storage of files not related to your academic work. This policy extends to any web space which you may be granted. Excessive use of CIS resources for personal purposes may be treated as theft of services.

Section 3. Illegal activities

It is strictly forbidden to use CIS resources for illegal purposes. Examples of illegal usage include, but are not limited to, attempts to gain access to computer systems for which you are not authorized and the sharing or downloading of copyrighted material such as music, videos or books. Any illegal activities will be treated as attempted theft of services.

Section 4. File access

Even if permissions on another user's account permit you to view, copy, create or remove files, you may not do so without prior explicit permission from the owner of the file. Unauthorized file access will be treated as theft. This includes using other disk resources as a way to avoid disk space quotas.

Section 5. Email usage

Each student is responsible for reading all email from faculty and staff sent to both your CIS email address and your BlazerID email address (note that for new accounts the default behavior is to automatically forward CIS email to your BlazerID address). Announcements and policy changes announced by email to either of these addresses is considered formal notice and the student shall be held responsible for reading this information. You may not use CIS email resources to send unsolicited emails for the purposes of seeking employment, selling or buying services or merchandise or any other similar activity.

Account Lifecycle Policy

Accounts in the CIS department have one of the following statuses: Active, Archived, Alumnus. Each status has a different level of services and access associated with it. This policy explains the functionality associated with each status and when accounts transition between the various statuses.

Explanation of Account Statuses

- **Active** – The account owner is currently involved in an ongoing activity in the department (e.g. taking a CS class, performing research). Accounts with Active status have full access to the department resources afforded to their student level (e.g. undergrad, masters, phd).
- **Archived** – The student has not participated in CIS department activity for some period of time. Accounts that are in Archived status no longer have the ability to authenticate and login to CIS resources or access any data that is stored in the account. The account data is moved to an archive area and is no longer included in the daily backup process. Websites associated with this account are no longer publicly visible.
- **Alumnus** – The student has received a degree from the CIS department and is not currently involved in an ongoing activity with the department. Accounts that are in Alumnus status function identically to accounts in Archived status with the exception that the account owner may be entitled to certain functionality available only to alumni of the department, as outlined in the Alumni Services Policy.

Account Status Transitions

All new accounts start in Active status. The following transitions are possible throughout the lifetime of an account.

Active to Archived

An account will transfer from Active to Archived status after some period of inactivity, where activity is defined as being registered for a CIS class, participating in a CIS research effort, or some other indication that the account is being used regularly.

This period of time varies depending on the student's prior relationship with the department. For instance, CS101 students that do not go on to higher level CIS classes are typically moved to Archived status within a semester after completing CS101, whereas CIS majors' accounts are typically kept in Active status for a full year past their last activity unless there is conclusive information that they are permanently inactive.

The grace period between the start of the inactive period and the transfer of the account to Archived status is intended to be used by the account owner to transfer their data elsewhere and to otherwise tie up loose ends associated with ending a formal relationship with the CIS department. Once an account is archived, these tasks are difficult or impossible to achieve.

Archived to Active

An account will remain in Archived status indefinitely. An account can transfer back to Active status if the account owner re-engages with the department by registering for a class, participating in research, or other similar activities.

Active to Alumnus

An account will transfer from Active to Alumnus status some period of time after the account owner receives a degree from CIS, if the account otherwise meets all of the requirements for Archived status. Note that Active status trumps Alumnus status e.g. if a student receives a Bachelors' Degree and then starts a Masters' Degree, the account will remain in active status.

The grace period between the conferral of the degree and the transfer of the account to Archived status is intended to be used by the account owner to transfer their data elsewhere and to otherwise tie up loose ends associated with ending a formal relationship with the CIS department. Once an account is archived, these tasks are difficult or impossible to achieve.

Alumni Services Policy

At the time of writing, the Alumni Services policy is still in development, but it is expected that this policy will define a set of services that the department will offer accounts with alumnus status. These services might include: email forwarding, alumni database access, newsletters, optional mailing list, and listing of links to a personal web site URL.

Using the CIS Helpdesk

The CIS Helpdesk is the preferred way to seek help for all CIS-provided IT services. To open a CIS Helpdesk ticket, send an email to helpdesk@cis.uab.edu.

When you open a ticket with the CIS Helpdesk, you will receive an email receipt soon after submitting your request. This receipt, and all other emails from the Helpdesk, will have a special subject line tag that contains a ticket number. **It is very important that future communications between you and the Helpdesk about this issue contain this subject line tag. The easiest way to ensure this is to simply reply to the Helpdesk email when communicating about your request.**

The Helpdesk processes thousands of requests each year, so it's important to help the IT staff quickly understand the issue you are reporting. Here are four simple steps for getting timely and successful results.

- 1. Use Descriptive Subjects.** We often get tickets with a subject line of "help" or no subject at all. Please provide a descriptive subject, such as "Subversion authentication is failing for cs693 repository".
- 2. Fully Explain the Problem.** If it is a software problem, please provide the exact error message that you are receiving. Describe the behavior you expected, and the behavior you actually observed. If it is a hardware problem, please describe the symptoms and/or machine behavior.

3. **Tell Us How to Reproduce the Problem.** Tell us what you did to produce the error, so that we can reproduce it to study the problem
4. **Tell Us What You've Already Tried.** Let us know of your own attempts to solve the problem, and the results. If you think you know the problem, describe a suggested fix.

Example of a poor Helpdesk request:

Subject: *Help*

I tried to edit my course's web page but cannot. Please help.

This is troublesome for several reasons. The subject line is vague and does not help us assign the ticket to the right person or easily find the ticket in the Helpdesk. The problem description is too general; there are many different reasons why a user might not be able to edit a file, and this report does not say which file or for which course. It does not tell us what error message was received. Finally, it does not tell us what investigation the user has done or what they think the problem might be, so the IT staff may end up spending time redoing what you have already tried, delaying a resolution to the issue.

Example of a good Helpdesk request:

Subject: *joeuser does not have permission to edit CS306 web files.*

I am the TA for CS306 and attempted to update the course web pages in /nethome/webfiles/courses/cs306/summer2007/ by logging into the vulcan machines and editing them using vi. However, I received the error "permission denied" when attempting to save my changes. I was successful doing this last week, but as of last night it does not work.

The file in question is index.html. If you attempt to edit and save that file as 'joeuser' on vulcan1, you receive the error above.

I have examined the permissions on index.html. The file is owned by 'jane' and is in group 'cs306web'. The owner and group both have write permissions. Perhaps it was accidentally removed from the 'cs306web' group?

This is descriptive, thorough and to the point.

Following these guidelines will help CIS IT serve you better, and will provide a better IT experience for the entire CIS community.

CIS IT Staff Office

The Helpdesk is the best option for submitting requests to CIS IT because of the limited staff and irregular hours of operation. However, if immediate help is truly needed, the IT Staff office is located in room CH140, and the phone number for that office is **934-8644**.

These methods of contact should be reserved for emergency use only, and we cannot guarantee that personnel will always be present to speak to you in person or over the phone. For normal requests, please submit a Helpdesk ticket.

Research Lab IT Requests

If you are a student assigned to a specific research lab, and you wish to request changes or additions to the IT in the lab, please discuss your request with the supervising faculty member for your lab. All requests for changes to research labs must originate from the supervising faculty member. CIS IT cannot make changes to research labs based on student requests.

Relationship to Other IT on Campus

The IT resources available to you at UAB are managed by a number of different entities on campus. In particular, the list below includes common IT resources that are not managed by CIS IT, and pointers on how to seek help for those resources.

- **Wireless Network** - UAB IT provides the uabwifi network in most of the buildings on campus as well as some outdoor areas. This includes Campbell Hall, which has nearly complete coverage for uabwifi. Information about connecting to uabwifi can be found at <http://www.uab.edu/wireless/> You will need to use your BlazerID account to sign into that web page and retrieve the encryption key for the network. All questions regarding the use of uabwifi should be directed to the AskIT Helpdesk at askit@uab.edu.
- **Blazer Email** - CIS undergraduates and some CIS graduate students have their CIS email address automatically forwarded to UAB Blazer email. The Blazer Email system is managed by UAB IT. Questions regarding the use of this email system should be directed to the AskIT Helpdesk at askit@uab.edu.
- **Blazernet** - UAB recently launched Blazernet, which is a one-stop web portal for many of the administrative systems that students need to access. This system is maintained by UAB IT. Questions regarding the use of Blazernet should be directed to the AskIT Helpdesk at askit@uab.edu.

(The above services and more are fully described in UAB's Student Computing Guide. Visit <http://www.uab.edu/it/>, click the Student tab, and then click Computing Guide.)

- **Baseline IT vs. class-related IT** - The CIS IT staff is focused on supporting the baseline IT that is relevant across the entire department. However, this being a Computer Science department, we also have several classes that require usage of specialized software and/or resources. (For example, our distributed, parallel and grid computing classes require that students use the HPC software and resources on the department's cluster computers.) In such cases, the instructor will provide you with specific instructions on how to use the required software, and if you have questions you should ask the instructor.

II. Getting to Know CIS IT Resources

Topics:

- [How CIS IT Manages Department Resources](#)
- [Laboratories](#)
- [Data Center](#)
- [Checkout Library](#)

How CIS IT Manages Department Resources

Introduction

There is a substantial amount of IT required throughout CIS in order to support the academic, research and production computing needs of the department. CIS IT's mission is to manage this wide array of information technology hardware and provide our end users with the best possible computing experience. These computing assets include:

- **CIS Data Center** - An 800 sq. ft. facility with over 300 servers running production, academic and research compute loads.
- **CIS Laboratories** - There are more than 175 computers spread across 14 open, teaching and research labs throughout the department.
- **CIS Offices** - All of the office PCs and circulating laptops are managed by CIS IT
- **A/V Equipment** - Projectors, touchscreen monitors, document projectors and videoconferencing equipment found in our teaching labs and meeting rooms.
- **Printers** - There are over a dozen printers throughout the department.
- **Miscellaneous Equipment** - e.g. plasma display boards, tape library robot, visualization wall, security camera network.

In addition to the hardware assets of the department, CIS also manages a wide array of software and services. These include:

- **Departmental Production Services** - Web sites, email and mailing lists, file services, user account management, domain name service, DHCP service, data backup, databases, Subversion repositories, certificate authority, CIS Helpdesk.
- **Research Support** - 4 HPC Clusters, various research project servers.
- **Curriculum Support** - Class services such as databases, wikis, Subversion repositories, compilers, servers, libraries and other software packages, CS101 support.
- **Client Workstation Support** - Three operating systems (Windows, Linux, Mac) and dozens of software packages on each platform.
- **Laboratory Support** - Instructor classroom management software, automated image management and software deployment.
- **Custom Code Development** - Web site custom modules, account management, inventory tracking, High School Programming Contest support.
- **Software Subscription Programs** - MSDNAA, VMware Academic Alliance, IBM Academic Initiative.

As evidenced by the above lists, there is a significant amount of IT hardware, software and services that are present in the department and available for your use. CIS IT has a number of policies and procedures in place to make the management of the department's resources consistent and sustainable.

System Management and Updating

Nearly all computers in the department are deployed and managed via automated software systems which install the operating system, deploy and configure all of the software packages, create the proper configuration for that computer's location and function, and manage updates over time. The CIS IT staff validates and configures each software package, driver and OS prior to deploying it into the department. This provides a consistent computing experience for our users regardless of the particular machine they are using.

As a result of these automated systems, making changes to department systems is a more complex process than it would be on a typical personal computer. Proposed changes to software, drivers or operating systems must be studied carefully. There are many reasons why an update or change may be delayed or prevented altogether.

- A software package may not be packaged in a way that is compatible with automated deployment, requiring the CIS IT staff to create one from scratch. In some cases, this is not possible.
- There may be concerns regarding backwards compatibility for other users.
- There may be a desire to avoid disruptions in the middle of the academic semester
- There may be licensing restrictions
- The operating system vendor may not have released an updated package for that software
- There may be an incompatibility with a UAB or CIS application

When managing an IT environment of this size and complexity, decisions are made with a greater emphasis on manageability than would be the case if only a few machines were being managed or if there were only one platform to support. While CIS IT tries to provide state of the art hardware, software and services to the department, this must also be balanced with the cost of managing the systems. For this reason, CIS IT strives to avoid custom software solutions, favoring standard software packages that are available from OS vendors or trusted 3rd party sources.

Physical and Electronic Monitoring and Protection of Resources

In order to protect the department's investments in IT from physical security threats, environmental concerns, and policy violations, CIS IT employs a number of monitoring tools. All CIS users should be aware that these mechanisms are in place and that CIS IT takes your privacy very seriously, and monitors resources only to the extent necessary for protection of our assets.

Some of the monitoring mechanisms are outlined in the list below.

- **Security Cameras.** CIS IT monitors security cameras in key laboratories and other spaces throughout the department. The video footage is used to help investigate situations such as thefts, suspicious persons activity, and suspected equipment abuse. Historical archives of captured footage are retained indefinitely.
- **Session Logging.** Logs are kept of user logins and other actions performed on the network. These logs are not routinely examined unless there is reasonable suspicion of illegitimate use of our IT resources, as outlined in the CIS Acceptable Use Policy.
- **Workstation Monitoring.** Each teaching lab has special software which allows the instructor to take control over the student workstations in various ways. This includes the ability to observe and control the student desktops, as well as broadcast the instructor station to all of the student desktops.
- **Physical Access Restrictions.** A number of our facilities have their entries protected by physical keys, keycode pads, or electronic card readers. This helps to ensure that our facilities are only used by the intended audience.

These mechanisms are in place to ensure the safe and fair use of our facilities and IT. Safety and security are the responsibility of all CIS users. Please do your part by ensuring that you do not distribute your access credentials to

others or let unknown people into secure areas of the department. If you see anything suspicious, please report it to CIS IT or to any of the department's faculty or staff members.

Laboratories

Laboratory Software List

Windows Software

All workstations that run Windows XP in our labs have a basic set of software installed on them as well as various additional software packages that vary per lab. The standard software is listed in the table below.

Standard Windows Software	
<ul style="list-style-type: none"> • ActivePerl 5.10.0.1003 • Adobe Acrobat Pro 9.0 • Adobe Reader 9.0 • Alice 2.0 • DrJava • Eclipse 3.4 • GME • ImageJ 1.4.1 • JDK 1.6.0_11 • JGrasp 1.8.6_11 • JRE 1.6.0_11 • MASM32 	<ul style="list-style-type: none"> • Matlab R2008a • Microsoft Visual Studio 6 • Microsoft Visual Studio 2008 • Mozilla Firefox 3.0.5 • OpenOffice 2.4.1 • PowerDVD • Python 2.6 • QuickTime 7.5.5 • SSH Secure Shell 3.2.9 • Tortoise SVN 1.5.0 • VMware • Wolverine

Linux Software

All Linux workstations in our labs have a basic set of standard software installed on them. Additional software is also accessible via the /netbin network mount that is on all Linux workstations. The standard software does not require any path alteration to execute them from a command line, whereas the software available on /netbin may require path alteration to point to the resident directory in which the software is located. The list of standard and additional Linux software is listed below.

Software in Standard Location	Software in /netbin
<ul style="list-style-type: none"> • flash-plugin 9.0 • postgresql 8.1.11 • gprolog 1.3.0 • gcl 2.6.7 • firefox 2 • thunderbird 2 • eclipse 3.2 • pine • openoffice 2.0.4 • perl 5.8.8 • python 2.4.3 • gcc 4.1.2 	<ul style="list-style-type: none"> • Java 1.6.0_2 • JFlex 1.4.2 • apache-tomcat 6.0.14 • ImageJ 1.38 • globus

Open Labs

Graduate Lab

The Graduate Lab consists of two adjacent rooms (CH135 and CH135A) and contains seven Windows XP workstations. The Graduate Lab is open during all hours when the building is open. Requires a key to gain access.

Undergraduate Lab

The Undergraduate Lab consists of three adjacent rooms designated CH154, CH154A, CH154B. Rooms CH154 and CH154A contain 13 Windows XP workstations, and CH154B contains four iMac OS X 10.5 workstations and six Centos 5 Linux workstations. One Windows XP workstation is reserved for the TA when on duty. The Undergraduate Lab is open during all hours when the building is open. Requires a key card to gain access.

Closed Labs

Closed Labs are open only for scheduled classes and events led by an instructor.

CH145 Lab

The CH145 instruction lab contains 20 Windows XP student workstations, and one Windows XP instructor workstation.

CH430 Lab

The CH430 instruction lab contains 21 Windows XP student workstations, and one Windows XP instructor workstation.

CH435 Lab

The CH435 instruction lab contains 36 Windows XP student workstations and one Windows XP instructor workstation.

Networking Lab

The Net Lab contains 24 Fedora Core 8 Linux student workstations, and one Windows XP instructor workstation. The Linux workstations in the Net Lab contain networking software specific to that lab, and is limited to the specific tools necessary for the Networking curriculum.

Research Labs

We have seven research labs supervised by members of the faculty, and are available to students associated with those labs.

AI Lab

The AI research lab contains one Windows XP workstation and one Linux workstation. Dr. Kevin Reilly oversees the research in the AI Lab.

CCL Lab

The CCL research lab contains six Windows XP workstations. Dr. Puri Bangalore oversees the research in the CCL Lab.

GRAIL Lab

The GRAIL research lab contains five Linux Centos 5 workstations. The VisLab, or Viswall room, is an extension of the the GRAIL facilities and has a single Centos 5 Linux workstation to operate the Viswall. Dr. John Johnstone and Dr. Kenneth Sloan oversee the research in the GRAIL Lab.

HPCL Lab

The HPCL research lab contains three workstations: one Linux Centos 5 workstation, one Windows XP workstation, and one Mac Pro workstation. Dr. Skjellum oversees the research in the HPCL Lab.

KDDM Lab

The KDDM research lab contains seven Windows XP workstations. The KDDM Lab also has software licenses for Matlab and Photoshop. Licenses and availability are determined by the lab instructor. Dr. Alan Sprague and Dr. Chengcui Zhang oversee the research in the KDDM Lab.

Softcom Lab

The Softcom research lab contains nine Windows XP workstations. Dr. Jeff Gray and Dr. Barrett Bryant oversee the research in the Softcom Lab.

Forensics Lab

The Forensics Lab consists of two adjacent rooms, CH155 and CH156. CH155 has 10 student workstations, and CH156 has four student workstations, that periodically change Operating Systems. The workstations in the Forensics Lab contain software specific to that lab, and is limited to the specific tools necessary for the Forensics curriculum. The Forensics Lab is supervised by Mr. Gary Warner.

Data Center

Data Center Resources

The UAB CIS Department has a production data center located within the department's first floor wing of Campbell Hall. This data center, or server room, contains the server-class machines responsible for most IT services we provide. Examples include the Windows domain controllers, mail server, backup server, and others. This room is also equipped with a 30-ton air conditioner and additional 5-ton units which remove the heat produced by these servers.

The CIS data center also contains the high-performance computing resources available to CIS students and faculty. These resources are used for both research by the UAB community as well as curriculum support. Various departments throughout the university, such as Genetics, Microbiology, and Chemistry, use the computational power of these resources to do research through computer simulations. Courses in the HPC track (distributed, parallel and grid computing) also utilize this equipment.

The following high performance clusters are located in the CIS data center:

1. **olympus.cis.uab.edu** - 128 Compute Nodes (2x3Ghz Intel Xeon/4GB DDR), 6TB storage, and Infiniband.
2. **everest.cis.uab.edu** - 27 Compute Nodes (2x1.6Ghz AMD/2GB DDR), no additional storage, and 1GB Ethernet.
3. **ferrum.chem.uab.edu** - 75 compute nodes (8x2.3Ghz Intel Xeon Quad-Core/12GB DDR), 8TB storage, and Infiniband.
4. **viswall.cis.uab.edu** - 5 rendering nodes and an 10'x8' display wall (13 megapixels).

Checkout Library

CIS IT maintains a library of equipment that can be checked out by students and faculty for academic use. The following are available for checkout:

- Laptops
- Projectors
- Digital Cameras

Users who wish to check out equipment should send an email to the Helpdesk. Please include the following information:

- Desired Equipment
- Reason that equipment is needed
- Time period of use

III. Account Usage and Management

Topics:

- [Passwords](#)
- [Home Directories](#)
- [Remote Access to CIS Resources](#)

Passwords

Your CIS account is used to access a variety of services, each of which will require you to logon using a combination of your username and password. The default password for your CIS account will be the one specified on your CIS account application form unless otherwise noted in your account creation e-mail.

Your CIS account is independent of your UAB BlazerID, though the two accounts may share the same name. The [CIS Account Verification](#) utility may be used to:

- determine the existence of your CIS account,
- change the password for your account,
- and verify any account features associated with your account.

This tool should be a user's first stop when facing any difficulties using their account.

Changing your password

If you know your current password, you can change it voluntarily or when forced by password expiration policy. Remember that you must change your passwords for both Unix and Windows components of your CIS account. To change your CIS password:

1. Logon to a CIS Windows desktop computer.
2. Press Ctrl+Alt+Del and select "Change Password".
3. Type your new password twice to set it. A prompt will notify you if your password was successfully reset.
4. Logout of the Windows desktop.
5. Logon to a Unix desktop or server computer.
6. At the command prompt, type the command "passwd".
7. When prompted, enter your current password and then your new one.
8. Logout of the Unix desktop or server.

If you've forgotten your password, you should send an e-mail to the CIS Helpdesk <helpdesk@cis.uab.edu> from your UAB BlazerID e-mail account indicating that your password needs to be reset. The CIS IT staff will respond to your request with updated user credentials.

Home Directories

A user with his or her CIS account in the Active status is allowed access to network-based file storage. This storage is referred to as the user's "home directory" and can be used for discretionary storage of any data the user needs to complete his or her coursework. For more information see **Section V: Home Directories**.

Remote Access to CIS Resources

You may access your CIS Linux account from any Internet-enabled computer by using SSH to connect to one of the department Linux machines. This will allow you to access your files that are saved to your Linux and Mac home directory as well as your Z: drive on Windows. You can also run Linux applications such as text editors and compilers that are available on the Vulcan machines.

Note that from outside of the department, you first need to SSH to our department's SSH gateway, moat.cis.uab.edu. From moat, please connect to another Linux machine (such as the vulcan1 - vulcan11 machines). Do not try to run programs on moat. It is solely provided as an SSH gateway. To establish an SSH session, you need an SSH client and an SSH server. The SSH server is the machine you want to connect to (such as a Vulcan machine in the CIS Linux lab). The SSH client is what you run on your local computer to make that connection.

Linux and Mac SSH Client

If you are using Linux or Mac, the system already comes with an SSH client – simply use the 'ssh' command from a command line.

Windows SSH Client

To use SSH from a personal Windows system, you must download an SSH client. CIS IT recommends PuTTY, a free SSH client, which is available from <http://www.chiark.greenend.org.uk/~sgtatham/putty/>. WinSCP, available from <http://www.winscp.net/>, is recommended for file transfers.

Using PuTTY

PuTTY is an SSH client which can be used to access CIS department Linux machines. You can use the following steps to connect to the CIS network.

1. Download the putty.exe file to your desktop
2. Double click on the icon to open PuTTY.
3. In the PuTTY Configuration window, type "moat.cis.uab.edu" for the Host Name.
4. At the "login as:" prompt type your CIS user name.
5. Type in your CIS password when prompted.

You should now be logged in to Moat. Remember that you must login to one of the Vulcan machines to run programs. Use the "ssh" command followed by the name of the machine you wish to access. For example, you can type "ssh vulcan1" to access vulcan1.

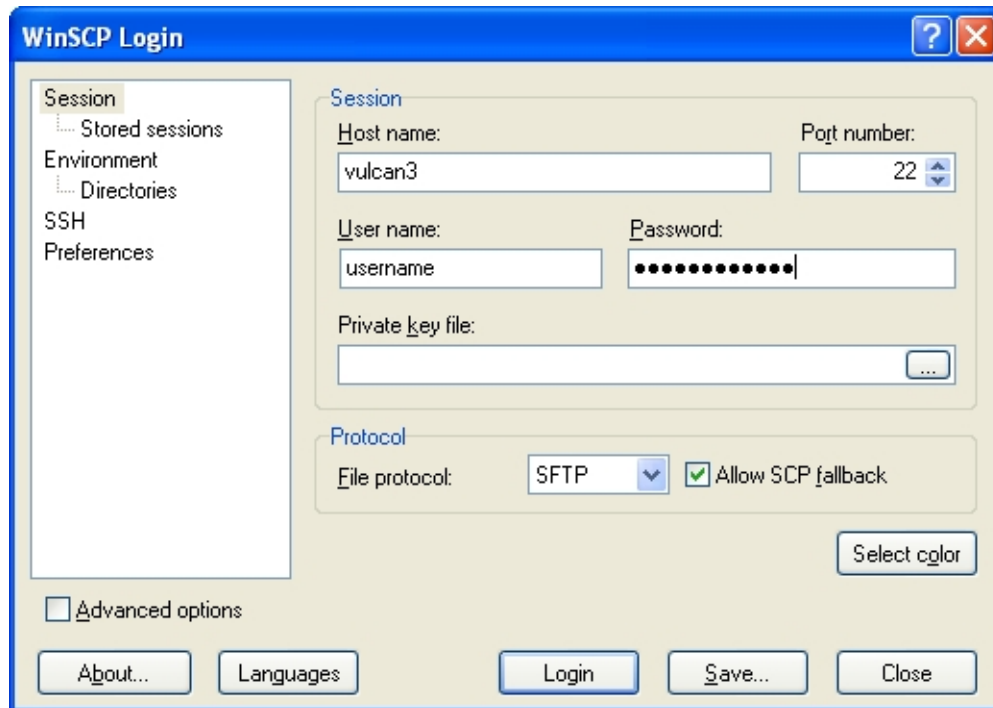
Using WinSCP

WinSCP is a file transfer application which can be used to access your files remotely.

1. Download and install WinSCP
2. Run the WinSCP program.
3. Enter the following information into the WinSCP Login window:
 - a. **Host name:** "moat.cis.uab.edu"
 - b. **User name:** your CIS user name
 - c. **Password:** your CIS password

4. In the "File protocol" drop down menu select "SCP".
5. Click "Login"
6. Select "Yes" when prompted to add the server's host key.

You will see a window that is divided into two panes. The files displayed on the left are on your local computer. The files displayed on the right are in your CIS home directory. You can transfer files by dragging them between the two panes.



Connecting to Vulcan 3

Figure 1: Opening an SSH terminal

IV. Software

Topics:

- [Subscription Libraries](#)

Subscription Libraries

The UAB CIS department has partnered with third-party software companies to provide students and faculty with discounted or in some cases entirely free commercial software. These partnerships are either directly between CIS and the vendor or through the UAB IT department. Each partnership is subject to its own licensing agreement.

UAB Software

[Note: Software in this section is not managed or provided by CIS IT. It is provided by UAB Central IT. For your convenience, we have provided some basic information about these programs in this guide. Please see <http://www.uab.edu/it/> for more information.]

The university has several contracts and programs in place to allow students and other campus users access to various software packages at either no additional charge or for a reduced price for use on personal machines. The software falls into one of three categories:

- 1. Site License** - UAB has purchased a campus-wide license for this software. It is available for your use at no extra charge. There may be usage restrictions on some of the software titles in this section, and there may also be a nominal charge for the media, which is typically available at the bookstore for students. Example titles: Microsoft Office, Microsoft Forefront Anti-Virus for Windows, Sophos Anti-Virus for Mac.
- 2. Volume Discount License** - UAB was able to negotiate a reduced price for a bulk quantity of licenses. Most of these titles are free for use by the UAB community - the only difference is that the University must keep track and count the number of copies of the software being used, in order to comply with the license agreement. Example titles: Visio, SAS.
- 3. Freeware License** - These software titles are free to use under the license provided with the software. Example titles: TN3270 Emulator Software for Mac.

Full software lists and detailed information on how to obtain this software can be found at <http://www.uab.edu/it/software/>. Please note that presence of these software titles in UAB's software library does not guarantee that they will be available for use on CIS-owned machines.

Microsoft Developer Network Academic Alliance (MSDNAA)

The department has a subscription to the Microsoft Developer Network (MSDN) Academic Alliance. MSDNAA is the easiest and most inexpensive way for students and faculty to get the latest commercial Microsoft development software they need. Members receive access to a variety of the latest Microsoft platforms, servers, and developer tools via a download Web site.

Eligible students are automatically granted a free membership in the program on a per-semester basis. Access to the program is open to students enrolled in courses CS105, CS106, and all CIS courses at the 200-level or above. Access permissions are updated periodically as registration status changes. Typically, students should have access within two weeks of the start of a semester. Access is removed once the semester ends and reset based on the next semester's registration.

Acceptable Use Policy

The software provided with the MSDNAA subscription is intended for instructional or research purposes. Instructional purposes are defined as conducting educational classes, labs, or related programs for teaching and/or

learning the products or concepts related to the products that are part of this program. Research purposes are defined as conducting not-for-profit research projects.

If you are a current CIS student taking at least one eligible course for credit, a CIS faculty member, or a staff member directly involved in administering systems and providing support for MSDNAA software, the MSDNAA usage guidelines state that you can install software on your personal computer. For a more complete summary of the Usage Guidelines, see MSDNAA Usage Guidelines from the MSDNAA web site.

Obtaining Software

The UAB CIS e-Academy website is located at the following address: http://msdn07.e-academy.com/uab_cisc.

To login to the UAB CIS e-Academy site, use your CIS linux credentials. Access to the site is automatically granted or removed for your CIS account periodically based on your registration status. Please do not send requests to the CIS Helpdesk about MSDNAA unless **1.** you feel you meet the eligibility requirements but cannot access the download site and **2.** it is at least two weeks past the start of the semester.

Once logged into the e-Academy, you will see the Software tab at the top of the screen. On the Software tab, you can choose from a dropdown of available software, or you may click on one of the featured products. This will take you to a screen where you may choose your delivery method. Depending on the software you choose, you will have one or more of the following delivery methods:

- **Secure Internet Download** [Internet Explorer required] - Download the software from a CIS web server.
- **Mail Order** (fee for CD media + Shipping & Handling) - Order your own set of the CDs directly from Microsoft to your home.

The e-Academy will present you with the license agreement. It will also provide your product license key if necessary. You will then provide some additional info such as name and email. For Secure Internet Download, you will then be given the opportunity at the end of the ordering process to download the software from our server. e-Academy will send you an email receipt of your order, which will also contain any necessary product keys.

If you have any questions about using e-Academy, please visit the Support tab on the CIS e-Academy website.

VMware Academic Program

CIS IT is enrolled in the VMware Academic Program (VMAP), which provides benefits for CIS department faculty, staff and students. VMAP is a comprehensive program designed specifically for the academic community. The program enables qualifying academic institutions worldwide to gain easy access to cutting-edge virtualization technology and resources at no charge. Faculty can use VMware software under specific program usage guidelines, free of charge, in a wide variety of areas of academic research and classroom instruction. Students can use this software as part of their coursework or research projects.

Licenses for software such as VMware ESX vSphere 4 Advanced, VMware Fusion for Mac, VMware vCenter Lab Manager and VMware Workstation for Linux and Windows are available through the program.

A summary of the key points of the usage guidelines is presented here. Program users are responsible for familiarizing themselves with the full eligibility and usage guidelines of the VMAP program.

Examples of Acceptable Use

- The free licenses provided through The VMware Academic Program may be used for instruction and non-commercial research only.
- Faculty members as well as staff directly involved in administering systems and providing support for program software may install the software on their personal computers
- Students taking qualified courses or conducting research can use the software on their personal computers. Students may use the licenses after the course or project is concluded while they are still at UAB.

Examples of Unacceptable Use

- Students who are in an approved department but are not taking courses that lead to credit or a certificate or not involved in relevant research projects are not eligible to use the software.
- Students, faculty members, or other parties that received a license under the program but no longer attend or are employed by the institution are not eligible to use the software.

- The software provided by VMAP may not be sold, rented, leased, or transferred to any third party including contractors, consultants, other companies, and other department personnel.

Use of free VMware software for instruction and research is governed by the specific program guidelines and the conditions described within the Academic EULA and the use of software for infrastructure purposes is governed by the VMware EULA for each of the products. The UAB CIS VMAP program administrator will have final say on whether to grant access to the VMAP program based on the program rules and guidelines.

Obtaining Software and Licenses

Please follow this link to the UAB CIS VMAP Online Store to obtain the software downloads and licenses. The store will ask for authentication during the shopping cart and checkout process. At that time, you will be redirected to the CIS website to authenticate. Please use your CIS credentials. Note that not all CIS accounts are granted access to the VMAP program - this access is enabled on a semester-by-semester basis based on your current circumstances and the program rules. In addition, not all products in the store are available to all member classes (faculty, staff, and students) of the department. The store will indicate when this is the case.

IBM Academic Initiative

UAB CIS is a member of the IBM Academic Initiative. This program grants UAB CIS access to IBM software and courseware materials for teaching, learning, and non-commercial research. Members can download a wide variety of IBM and open source products and technologies at no cost. This program is not open to students directly. If there is a product within the IBM Academic Initiative program that you feel would benefit your CIS research, please contact the CIS Helpdesk for more information.

V. Network Services

Topics:

- [File Services](#)
- [Email Services](#)
- [Personal CIS Web Space](#)
- [Subversion Source Code Repository](#)
- [PostgreSQL](#)

File Services

Home Directories

Introduction

Every CIS account has a home directory on the network that is used to store your files. This directory is available to you whenever you are using CIS lab computer. On Windows, the home directory is available as your Z: drive, while on Linux and Mac, this is your default directory that you are in when you login or open a terminal or SSH session. This means that you may access your network files regardless of which platform you are currently using, as long as you are connected to a CIS computer.

Whenever possible, all CIS users are strongly encouraged to use this location to store your data as opposed to storing it on local machines. This storage is hosted on enterprise grade storage and is backed up nightly (see the section Backup and Restore below).

Cross-Platform Notes

Files which are manipulated and saved on one platform (e.g. Windows) will be available from the others (e.g. Linux and Mac, which acts just like Linux in this case). Users should be aware that Linux and Windows filesystems have some different characteristics which may not be obvious. The following three examples are the most common sources of confusion for users:

1. Windows filenames may contain extended characters such as spaces and exclamation points, whereas to access such files while using a Linux shell may involve escaping such characters with a backslash '\' character.
2. Windows is case-insensitive with regards to filenames, but Linux will treat two similarly named files with different cases, such as 'ReadMe.txt' and 'readme.txt', as unique files. For the least confusion, we recommend using simple, short filenames where possible.
3. Linux files which begin with a dot '.' character are considered hidden files and are not displayed by default by the 'ls' command. These files will also, by default, be treated as hidden files when viewed from Windows. However, files explicitly set to be hidden from Windows will not be hidden on Linux unless the filename begins with the dot character.

To prevent potential confusion, it is recommended that you use all lowercase letters in filenames, and avoid using spaces within filenames.

Special Files and Directories

Special files and directories within a user's home directory are used to either provide configuration information or access points for other department services. These files should not be deleted or modified unless the user is aware of the complete implications of such an action.

- **.forward** - this file specifies where incoming mail to the CIS account should be forwarded. By default, users' mail is forwarded to corresponding UAB BlazerID email accounts.
- **svnaccess** (where applicable) - this folder contains the svn configuration file necessary to access the user's own subversion repository.
- **webfiles** (where applicable) - any files placed within this directory are automatically published to the user's website.

Quotas

Currently, there are no quotas enforced on the network home directories. However, scans are performed regularly and students who are using an excessive amount of storage will be required to remove some of their data.

CIS IT reserves the right to enforce quotas in the future at any time.

Remote Access

You may transfer files to and from your CIS network home directory by establishing an SFTP or SCP session with moat.cis.uab.edu. SFTP and SCP are file transfer variants of the SSH protocol and are used in a very similar manner. There are several file transfer programs available for Windows that support the SFTP and/or SCP protocol. These include: WinSCP, FileZilla, SSH Secure Shell's SFTP window, and Putty's pscp.exe and psftp.exe executables. From a Linux or Mac client, sftp and scp are both available via the terminal command line.

Appropriate Use

All usage of the CIS-provided network storage is bound by the CIS Acceptable Use Policy. This means that data contained within a user's home directory is deemed to be the private property of that individual. Security mechanisms such as username/password authentication systems are in place to prevent unauthorized access to these files from others. Although such mechanisms are in place, it is the user's responsibility to make sure that their data is not made publicly available to others. For example, users must take care to logout of department resources such as Windows or Unix desktops when their sessions are completed.

Conversely, even if a user inadvertently sets permissions on a file or directory such that other users can access those files or forgets to log out of a workstation, this does not automatically grant other users the right to examine the files. You must still receive explicit permission from the file owner prior to accessing any of their files.

The CIS IT staff reserves the right to access users' home directories when necessary to troubleshoot problems, add new functionality to existing systems, or verify that a user has not violated the CIS IT Acceptable Usage Policy. Scans are performed to detect if users are using the CIS storage space allocated for their account to store non-CIS related materials. Users should not use their CIS storage to store large amounts of personal material such as photo albums and personal documents. The storage is intended to support CIS-related computing.

We are particularly interested in ensuring that our storage is not used to store illegally downloaded materials. We take such violations very seriously, and offenders are subject to the disciplinary actions outlined in the CIS Acceptable Use Policy.

Backup and Restore

Disclaimer

While CIS IT makes its best effort to protect against accidental or hardware-failure related data deletion and modification, we can make no guarantees of our ability to restore data after it has been deleted, modified or lost. We have put in place what we feel is a reasonable backup and restore policy and implementation, as well as several other investments designed to increase data storage and availability (e.g. RAID arrays, redundant paths to storage). We have been able to leverage this infrastructure to perform many data retrievals, and have a successful track record in data protection.

Nevertheless, it is up to all CIS IT users to be careful with their data. It is also highly recommended that users take advantage of a version control system such as the Subversion repositories provided to all CIS accounts to manage files that change frequently. It is far easier, faster and more reliable to revert to a previous version of a file via

Subversion than via data backup and restoration. As data restoration is a very time-intensive process, CIS IT reserves the right to refuse to perform a file restoration that is requested as a result of user-initiated edits to a file.

Introduction

The goal of our data backup service is to provide a last line of defense against both hardware failure (e.g. a disk array suffering a catastrophic failure with associated data loss) and user error (e.g. a user mistakenly deletes a file).

To support this goal, the department performs nightly backups on several areas of our IT infrastructure. Below is a partial list of the areas that are targeted for backup:

- CIS Network Home Directories
- CIS Webfiles
- CIS Subversion Repositories
- CIS Cluster/HPC Home Directories (with some exceptions for very large data sets)
- CIS PostgreSQL Databases
- CIS Email Servers
- CIS Class-Related Services (e.g. Wikis, Bugzilla Instances)

These are areas that the department has identified as containing critical user data. Note that we do not back up any data that resides on a client workstation anywhere in the department. All of these backup targets are hosted on server infrastructure within the CIS data center.

Backup Rotation

Each night, we perform an incremental backup, which captures the changes that occurred to a set of files since the last incremental backup. Once per week, we perform a full backup, which makes an exact copy of an entire backup target. By combining full and incremental backups, we can reconstruct the state of one or more files as it existed at any one of the overnight backup points in the past week. By saving multiple generations of full+incrementals, we can go further back in time. Currently, we save four generations.

An important note is that the backup system cannot capture intraday file changes. If a user creates or edits a file at 9am and accidentally deletes it at 7pm, that new file or those new edits are not known to the backup system, and there is no chance for recovery.

Archival Backups

CIS IT performs a minimum of two offsite archival backups per year. A complete snapshot of each backup target is captured to tape media and housed in an offsite location.

File Restoration

It is possible for CIS IT to attempt a restore of either a single file or an entire backup target. In order to request a file restore, the user should contact the CIS Helpdesk with the following information:

- The file(s), director(y/ies), or entire backup target(s) to be restored.
- The desired date of restore

For example, "Please restore the files foo.txt and bar.c from my home directory to the way they existed on December 12th".

Once the user provides this information, CIS IT can attempt to restore those files by first retrieving the last full restore of those files from tape, and then iteratively applying all of the incremental changes to those files up to the desired date of restore.

Please note that file restores require pulling data from a series of tape media. Tape media is accessed linearly and therefore is much slower than hard disks. It can take several hours, or even days, to restore a set of files. Therefore, it will likely take 1-3 business days to service a file restore request. Restores from offsite media may take much longer. Please plan accordingly.

Email Services

Undergraduate and Masters Student Email

Undergraduate and Masters students are granted a blazerid@cis.uab.edu email alias which automatically forwards to the student's blazerid@uab.edu email account. It is up to the student to ensure that they either actively check their blazerid@uab.edu account or forward that account to an account that they check regularly. Students can setup forwarding for their UAB email account at their BlazerID management page, www.uab.edu/blazerid. CIS IT does not manage UAB BlazerID email systems; please contact AskIT (askit@uab.edu) with questions or issues with your UAB BlazerID email system.

The email forwarding from CIS to UAB is defined in a special file in your account home directory called .forward. Your "dot forward" file contains a single line, your blazerid@uab.edu email address, which informs the CIS email servers as to where your email should be forwarded. There is generally no reason to edit this file. If you want your CIS email to end up at some other location, the usual solution is to continue forwarding CIS email to your UAB account, and then define a forwarding address within your UAB email preferences, as described above. CIS personnel will often email you directly at your @uab.edu email address, so in order to ensure that you are receiving all important mail from the department, you would want your UAB and CIS email addresses to end up in the same account in most cases.

Undergraduate and Masters students are not granted actual email accounts on the CIS Zimbra email system.

PhD Student Email

By default, PhD student account email addresses are set up in the exact same manner as Undergraduate and Masters student accounts. (Please see the Undergraduate and Masters Student Email section above).

As of January 2009, we are examining an option to grant PhD students accounts on the CIS Zimbra email system, in order to allow PhD students to gain access to the calendaring and intranet features that are available through that product. No decisions have been made at this time.

Mailing Lists

There are multiple mailing list and similar technologies in use by the department and it is important to understand how each works, as this is a common source of confusion for students.

- **CEDS** - "Class E-mail Distribution Service". Provided by UAB IT. Users must be specifically authorized to use CEDS. CEDS provides a mechanism to automatically send e-mail to an entire class or group of classes. Only registered students will receive mail sent to a class via CEDS. CIS instructors use CEDS regularly to communicate with classes.

Note that with CEDS, students cannot be added to or removed from the list. The lists are generated on the fly every time an email is sent through them, and are completely dependent upon the information in the UAB administrative databases. If you are not receiving mail from your professor who is using a CEDs list to email the class, it is because your record does not show that you are enrolled in the class. This needs to be addressed with the professor and if you are indeed registered, then you should contact the UAB AskIT Helpdesk at askit@uab.edu.

- **CIS Mailman Mailing Lists** - CIS uses the Mailman mailing list software to manage several mailing lists in the department. These lists are more traditional, with membership lists that can be edited by CIS IT or other authorized personnel. Example lists that are managed via Mailman include: CIS undergraduate and graduate students, CIS IT news, CIS Cluster Users, and UAB ACM. Mailman list administrators and moderators are assigned on a per-list basis. CIS IT has the ability to create custom mailing lists for department-related purposes. Please contact the CIS Helpdesk for more information if you are in need of mailing list software.

Personal CIS Web Space

The CIS department provides personal web space to CIS students and faculty for academic use. Students can view their personal web site by visiting students.cis.uab.edu/blazerid.

Publishing Content to your Web Space

A student's web content resides in the webfiles subdirectory of the students home directory on UNIX systems or in the webfiles folder in the Z: drive on Windows. Students can modify their home page by editing the index.html file that is in the webfiles directory.

Subversion Source Code Repository

This page provides brief instructions on the specifics of the CIS setup and how to access and configure your repository. General usage of Subversion is not covered here. We recommend consulting the free online book, Version Control with Subversion, which can be found at <http://svnbook.red-bean.com/>. The CIS IT team will also run Subversion training sessions if a large group can commit to attend (e.g. for a specific research lab or class).

Accessing CIS Subversion

Access to the CIS Subversion repositories is through https access only. We do not provide local filesystem access to the subversion repositories.

Users' Personal SVN Repository

Each CIS user is issued a personal SVN repository. This repository is located at <https://svn.cis.uab.edu/users/username>. Generally, you do not use a regular web browser to access your repository (doing so only gives you read-only access to the latest revision). Instead, you use a Subversion client. On the department's linux systems, this is in the form of the 'svn' command line program. On Windows we recommend using TortoiseSVN. Instructions on using these tools is beyond the scope of this document, but plenty of documentation is available at the command line for 'svn' and online for TortoiseSVN.

The access control for this repository is completely controlled by the user via the file `~username/svnaccess/username.svnaccess` found in your home directory. This file contains instructions regarding the syntax and usage of the file, and how to set up various project areas with different access permissions.

By default, each user's repository is set to allow full read-write access by themselves and no anonymous access or access by any other CIS users. This can be changed following the instructions in the access file.

Research Lab and Special Project Repositories

These repositories are administered by the faculty member in charge of the lab or project. Please contact those individuals if you need access to one of these repositories.

PostgreSQL

PostgreSQL is a powerful, open source relational database system. It has more than 15 years of active development and a proven architecture that has earned it a strong reputation for reliability, data integrity, and correctness. It runs on all major operating systems, including Linux, UNIX (AIX, BSD, HP-UX, SGI IRIX, Mac OS X, Solaris, SunOS, Tru64), BeOS, and Windows. It is fully ACID compliant, has full support for foreign keys, joins, views, triggers, and stored procedures (in multiple languages). It includes most SQL92 and SQL99 data types, including INTEGER, NUMERIC, BOOLEAN, CHAR, VARCHAR, DATE, INTERVAL, and TIMESTAMP. It also supports storage of binary large objects, including pictures, sounds, or video. It has native programming interfaces for C/C++, Java, Perl, Python, Ruby, Tcl, ODBC, among others, and exceptional documentation.

The PostgreSQL home page and documentation are available at <http://www.postgresql.org>.

The PostgreSQL server, version 8.1.9, is installed on cisdb.cis.uab.edu. You will be issued an account on this system if you are in a course which requires a database account. You have the following options for connecting to the server:

- Using the 'psql' command-line utility, which is available on the vulcans or the ugrad "coffee" machines
- From Perl using DBI and DBD::Pg. This is available on the vulcans, ugrad coffee lab machines, or from the department web server from a CGI script.
- From PHP using PHP's pgsq extension. PHP is available on the department web server.

At this time, you cannot reach cisdb.cis.uab.edu from outside the department firewall. However, you can ssh into the department through the usual methods, and thus work remotely.

Below are quickstart instructions for each of these methods.

How the PostgreSQL Accounts are Set Up

Each CIS user account has an associated PostgreSQL database. The databases are on the server cisdb.cis.uab.edu. The database has the same name as your CIS username. For instance, a CIS account by the name joeuser has a database named joeuser. In addition, two database accounts are created for each CIS account (replace joeuser in the following examples with your blazerid):

- joeuser - This account should be used to connect to the database from local command-line sessions and code which is run locally in a shell. This user's password is the same as your department password for your CIS account.
- joeuserweb - This account should be used to connect to the database from web applications. This is to protect your department password from being exposed to the web server. This user has a temporary password assigned which is stored internal to the database server.

Before using the joeuserweb account for the first time, you need to change the password for that account. To do this, log into your database from the command line using the joeuser account, and then run the SQL command:

```
select change_web_user_password('newpassword'); (replacing newpassword with
the desired password).
```

The select statement does not have any return value. If you don't see an error message, the password was changed successfully.

Using PSQL to Connect

On the vulcans and coffee lab machines, psql is available in the default command path:

```
# psql -h cisdb
```

This will connect as the current user to a database of the same name as the current user on the host cisdb. Thus, if you are logged in as joeuser, this will try to connect to a database named joeuser as the user joeuser on the host cisdb. If an account exists for joeuser and the database joeuser exists and the connecting host has rights to connect to the database as joeuser, you will receive a Password: prompt. Upon entering the correct password (your standard department password), you will then be presented with the psql command line.

Once on the psql command line, you can issue SQL queries to set up your tables, populate them with data, and make queries against your data. Here is a sample session.

```
# psql -h cisdb -U testuser
Password:
Welcome to psql 7.4.7, the PostgreSQL interactive terminal.
```

```

Type:  \copyright for distribution terms
\h for help with SQL commands
\? for help on internal slash commands
\g or terminate with semicolon to execute query
\q to quit

testuser=> create table test (testfield text);
CREATE TABLE
testuser=> \d test
Table "public.test"
Column   | Type   | Modifiers
-----+-----+-----
testfield | text   |
testuser=> insert into test values ('This is a test');
INSERT 17384 1
testuser=> select * from test;
testfield
-----
This is a test
(1 row)

testuser=> delete from test where testfield like 'This%';
DELETE 1
testuser=> select * from test;
testfield
-----
(0 rows)

testuser=> drop table test;
DROP TABLE

```

```
testuser=> \q
#
```

Using Perl to Connect

Perl's DBD::Pg is available on the vulcans and ugrad coffee machines using default perl (/usr/bin/perl) or as a CGI on the department web server which should use /usr/bin/perl as the perl path.

You can use Perl's DBI database-independent abstraction layer to connect to PostgreSQL. Below is a simple example (not to be considered robust code). For more information about using DBI, type 'perldoc DBI' at the command line.

```
#!/usr/bin/perl

use DBI;

my $dbh = DBI->connect("DBI:Pg:dbname=testuser;host=cisdb",
                    "testuser",
                    "PASSWORD") || die;

my $sth = $dbh->prepare("CREATE TABLE test (testfield text)");
$sth->execute;

$sth = $dbh->prepare("INSERT INTO test VALUES ('This is a test')");
$sth->execute;

$sth = $dbh->prepare("INSERT INTO test VALUES ('Another test')");
$sth->execute;

$sth = $dbh->prepare("SELECT * FROM test");
$sth->execute;

while (my $row = $sth->fetchrow_hashref) {
    print "This row's testfield column has a value of: $row->{testfield}\n";
}
```

Using PHP to Connect

The PHP on students.cis.uab.edu supports PostgreSQL. Here is a very simple example PHP file. For more information about PHP's PostgreSQL interface, see <http://www.php.net/manual/en/ref.pgsql.php>.

```
<?php

$database = pg_connect("host=cisdb user=joeuserweb password=XXXXXXXXX
    dbname=joeuser");

pg_query($database, "create table foo (bar int)");

?>
```

WARNING: Note that the special "joeuserweb" database user is provided specifically for this use case, which requires a password to be provided in plaintext within your web-based code. Do not use your normal "joeuser" user to connect to your database from a webapp. Use the "joeuserweb" user so that the password is a "throwaway" one, in the event that it is compromised.

Seeing PHP Errors in the Web Browser

By default, the web server will not display PHP errors in the browser. You can override this behavior if you wish with an `.htaccess` configuration file. To do so create a directory for your PHP project, and in that directory create a file called `.htaccess`, with contents:

```
php_flag display_errors on
```

Now, PHP will display errors in the browser for PHP code that lives in that directory (and any subdirectories). Make sure that the `.htaccess` file is world-readable (permissions 644).