

Creating and Maintaing Accounts Under the One-Account System

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1 Overview

As of fall 1998, the CS department's old policy of creating accounts each semester for each class will be replaced by providing each student one account which they keep throughout their time at Brown. This requires several considerable changes both to the software that we use to manage our systems and the policies that we have in place regarding creation, maintenance and deletion of accounts. This document describes the basic workings of the accounts, what TAs (and others) need to know for account creation and how accounts will be maintained and adminstred under the new system.¹

2 Major Changes

With the one-account system moving into place, several things are changing in the way the system is setup:

- no more course accounts
- initialed accounts based on shortid
- identities instead of groups
- a new fsh

In the past, course accounts have been given out at the start of each semester in every class that uses the lab. These accounts took the form of DDCCCNNN, where D is the department, C is the course, and N is the student number. For example, a student in 31 might have the account cs031045. TAs were given similar accounts, with numeric IDs ranging from 1-39.

These student accounts were created at the start of the semester, had a small quota (typically 1-2 megs), used fsh as the login shell and were destroyed at the

¹Note that a web page describing some of the motivation behind this change, as well as more technical information of the system can be found at <http://localhost/~scs/1acct.html>

end of the semester. A student might have to juggle two or three accounts in a semester, and would have to somehow backup data between semesters. The accounts themselves were in a class group (for example, “cs031”), and this along with the account name gave permissions to login to certain machines, handin assignments, etc.

Under the new system, each student will be given one account when they take their first CS class. The login name will be their CIS shortid (which is unique), and this account will be kept as long as they are in the department. As is the current practice, all accounts will have a base limit of 10 megs, but depending on involvement in classes or projects, this could increase.

Instead of determining these disk space changes, as well as handin permissions and access rights on account names or UNIX groups, each account will also have a certain number of identities. These are explained in more detail later, but they act to modify accounts.

Under the old system, course accounts used fsh as the login shell. This was done to restrict access to certain machines and allow students to effectively have no limit while logged in. The new accounts will use an updates version of this as their login shell, which includes a limited shell to allow students to monitor their disk usage and the ability to use any shell as the subsequent login shell.

3 Identities

One of the most important additions with the one account system is the usage of identities. Identities act as tokens that grant an account special features. An identity could be used to grant more disk space, allow the user access to certain machines, give permission to handin programs in certain classes or any number of other privileges. When an account is granted some identity, that account assumes all attributes of the identity.

Identities are provided as yp maps. There is a database of information that is available from anywhere in the department, and this serves up the attributes associated with the identities. The easiest way to access this information from an account is to use the `ypcat(1)` command. Typing `ypcat <type>` will give each identity using that field, and what the value is. For example, typing `ypcat usage` will give the extra disk space (usage) that each identity grants.

In general, there is one identity for each class. There is also one each for groups like consultant, TA, graphics, etc. Instead of creating new accounts for each of these groups, an already existing account will simply be given some new identities. For example, an undergrad concentrator who is also a consultant and is taking cs123 would have identities `ugrad`, `concentrator`, `consultant` and `123student`. This might grant an initial 10 megs of disk space and access to a personal web page (from `concentrator`), extra disk space (both for `123student` and `consultant`) and permissions to handin 123 assignments. If an account has no identities, then it is removed from the system.

4 Account Names

In the past, when “named accounts” (as opposed to course accounts) were created, they were done based on the student’s initials. So, for instance, Phil A. Buster might have had the account `pb` or `pab`. Now that everyone is being granted accounts based on name, it’s important to make sure that every account has a unique name. The names also have to fall within certain department guidelines, and they need to be easy to refernece/lookup against other identity data. For this reason, each account will use CIS’ shortid.

The shortid is based on the student’s name. This means that the student can provide their CIS login name (NetID, for example, Phillip_Buster), and this in turn will yield the shortid, provide a mechanism for kerberized communication and validation, etc.

5 Account Creation

So, given all of this, what needs to happen to create an account? A TA (or whoever is creating the account) needs to provide the CIS login name for each student, and whether or not they already have an account (and what the account is if they have one). That’s it! This will map to the shortid, and allow for account creation. The account will automatically be given the `ugrad` identity and also the identity for the class. If the account is being created for something other than a class, more some identitie(s) will also need to be provided.

Instead of filling in the `student_accounts` file with full names and account numbers to use, TAs will fill in this file with CIS login names for those students who need an account created. When it’s time to create the accounts, the request is mailed to the `meta-ta`, and this file will be used. In addition to this, every new account is using the `modules` system², so a TA staff can also provide a module to make the needed modifications to the new accounts. The inclusion of this module, however, or any other account changes will not be done on account creation. It’s up to the TA staff to educate their students about how to modify the new accounts.

At the end of each semester, old identities will be removed from the account.

6 Account Modification

When students taking a class already have an account, they simply need their identity list changed. When a class has students that just need their accounts modified, these student’s current account and NetID should be put in an `add_identity` file in the form `account_login:NetID`. Once this is done, submit the request to the `meta-ta`. The accounts that need to be created will be filtered from the list, and then all the accounts (new and previous ones) will have the class’ identity added.

²see [http://localhost/courses/ta/tech/modules.\[ps|pdf\]](http://localhost/courses/ta/tech/modules.[ps|pdf])

7 Account Deletion

At the end of each semester, the identities in each account will be checked. Identities such as those that belong to classes will be removed from accounts. If this causes the account to lose all its identities, then it ceases to be usable. This could happen because a student is no longer active in the department, or because the student has graduated. At this point the account will be stored to disk, and the account will be removed from the system. It can subsequently be restored in the event that the student returns to active status in the department. If you are unsure about the future of your account, see a spoc, the meta-ta or Dorinda Moulton (djm).

8 Quotas

Each account has a hard limit set at 100 megs. This means that at no point can anyone have more than this amount in their account. There is also a soft limit, however, which is checked on startup. As has been described, this limit is based on the identities you possess.

9 Fsh2 and the Limited Shell

Enforcing the soft limits, as well as your ability to access certain machines is done by fsh. fsh is the login shell that every account has. On login, fsh is run, and it checks that you are allowed to log into the machine, and that you are under your soft limit. If you are over this limit, you are prompted with a shell.

The shell is a limited shell, with few properties of a real shell. Typing help, or ? will give a list of all commands. The shell supports wild cards (like `rm *.o`), but there is no ability to pipe or redirect. There is also no access to `/tmp` or `/ltmp`. There are enough commands that a user over their limit should be able to get to the point where they can login. Once they exit the shell, if they are under their limit, fsh proceeds to log them in, using tcsh as the default shell, or any shell specified in `$HOME/.fshshell` that's also in `/etc/shells`.

10 Conclusion

That's all you need to know to start setting up accounts and get involved in using the one-account software.