Computing Support Services at the Hawai`i Institute of Geophysics and Planetology

Introduction

Three tiers of support are available from HIGP Computing Services. Described in detail below, they are summarized here. The most basic level of support, open to all members of HIGP, is access to a User Account and simple programming and administrative services. The User Account provides access to email, web, computing, and storage, while the programming and support services provide help with simple user activities. The next level of service is tied to the payment of a machine support fee. Anyone paying this fee for at least one machine gains access to; extended services, a variety of software packages, and hardware and software maintenance for the supported machine. Finally, if a long term commitment of time is required for a particular project, dedicated blocks of time can be reserved for either of the Computing Support Services personnel by funding a portion of their salaries.

Basic Services

The Computing at HIGP is a unified resource. A single username provides you with access to multiple Linux, and Windows 7 workstations. From these, you can access multiple disk drives, CPU's, printers, scanners, etc. You also have access to a wide range of software packages, data resources, and network tools. Finally, your username provides you with a direct link to a personal email and web identity.

Secure Socket Layer

A number of software packages support SSL. Since the certificates are self-signed, some packages will insist on a root authority. This can be found at:

http://www.higp.hawaii.edu/cacert.crt

HIGP Email

Creation of your User Account starts with the choice of a username that is unique to the HIGP computer network. First and foremost, this provides you with a unique HIGP email address of username@higp.hawaii.edu. If you provide a first and last name when creating your account, this will be aliased to first.last@higp.hawaii.edu. Email can be either over the web, at https://www.higp.hawaii.edu/rcm, or using any standard email client that supports IMAP or POP. For both IMAP and POP, the server is mercury.higp.hawaii.edu. In both cases, only secure connections are allowed, so SSL/TLS should be chosen and the Port number should be 993 for IMAP and 995 for POP. The SMTP server is also a secure connection at mercury.higp.hawaii.edu. STARTTLS should be used at Port 587.

There are no outgoing restrictions of any kind to email, except for the web interface which limits attachments to about 200MB. There are no size limitations to incoming mail. There is spam filtering using spamassassin, and greylisting using milter_greylist. Either of these can be fine-tuned through a combination of administrator and user based controls. This generally takes the form of special exceptions, either for or against.

Web Pages

HIGP hosts an institute website at www.higp.hawaii.edu. It features a comprehensive list of employees automatically generated from the personnel database. Each person's name is linked to a webpage that has a preset design with content including: name, job title, office number, email, phone and fax numbers, mailing address, educational background*, areas of research interest*, description of current projects*, link to your personal homepage* (described below), other links relevant to your work or awards*, photo*, and publications list*. The items marked with an asterisk may be personalized and updated by contacting the HIGP webmaster. In particular, the publications list is automatically generated from the HIGP publications database. This list may be replaced with a new link: If you have created your own publications list, then please provide the URL of the file (preferably a .pdf file) to the webmaster.

Your username also provides you with a default web link at www.higp.hawaii.edu/~username. This is your personal homepage. When your account is first created, this link automatically loads an empty file called index.html. The location of this file will be covered in the section on disk space. You can replace this file with one of your own if you wish. Directory listings are provided automatically, so you can provide someone with a URL like www.higp.hawaii.edu/~username/directory and they will be able to view the files in directory. Please keep in mind that this means that any directory that is listed in a web page could theoretically be browsed by robots and then included in databases like Google. For this reason, you should not remove index.html at the top level.

Calendars

WebDAV based calendars are available. General web access to them can be found at https://www.higp.hawaii.edu/calendar. This access is read only. If you want to make changes, you will need to use a calendar client, like Mozilla Sunbird, and access the calendars at https://www.higp.hawaii.edu/calendars/name.ics. Unfortunately, iCal does not support SSL, nor does it allow calendars to be mounted read/write.

Personal calendars are also available at https://www.higp.hawaii.edu/pcal/name.ics.

Subversion

Users can establish a repository that will then be available at https://www.higp.hawaii.edu/svn/repository. Access can be limited through password based control.

Storage

Each username is tied to a directory, /home/username, which is accessible from any of the general use Linux machines. This directory is generally readable, but not writeable by anyone but the owner. By default, three private directories exist, /home/username/personal, /home/username/maildir, and /home/username/windows_profile. These are only accessible by the user. One special directory, /home/username/public_html, is also created by default. It is where the personal web site is stored.

The permissions for anything can be changed. However, the three private folders listed above should remain private, while /home/username and /home/username/public_html should remain generally readable.

There are no administrative limits on disk usage. Practical limits exist in that each home directory exists with others on one of a number of 4TB drives. Once the free space on any drive gets below 100GB people will be asked to clean house. If this is not sufficient, more space will be added, but this takes time. Due to the impact this can place on performance, if a given project expects to use 100's of GB, that project will be asked if it can provide some additional disk space that can be connected to the network.

Processing

Five general use 64 bit Linux machines are available for various types of processing. One can be accessed physically with a graphical interface, while the other four are available remotely. All five are equipped with a full range of software standardly available on Linux. The full software development suite is installed, as well as versions of ISIS, Matlab, ENVI and IDL. Special use software can be installed on request.

Two public use 64 bit Windows 7 machines are also available. They are equipped with the latest version of Microsoft Office, Adobe products, Corel products, Matlab, ENVI, IDL, and ArcGIS.

Logins

Your username is used for logging in to all public Linux and Windows workstations. Separate passwords are kept for the Linux and Windows sides, though it is advisable to set them both to the same thing. Either password can be changed from the Linux side using two different programs. Password changes made from the Windows side will change both at once.

Upon logging in to either, you will be placed somewhere in your home directory. On Linux this will be /home/username, while in Windows, thing like Desktop and My Documents will be stored in /home/username/windows_profile.

Your resources can be accessed from outside HIGP in a number of ways.

- SSH – all public Linux boxes support Secure Shell logins
- X11 – all public Linux boxes are configured to support X
- FTP – an FTP server is available at ftp.higp.hawaii.edu

Data Sets

A few large DEM's are available on line. These include the MOLA 128 per degree, the SRTM 1 asec US / 3 asec global, the Moon at 10 per degree, and select higher resolution sets of certain areas. Except for a few high resolution DEMs, all are raw binary files in INTEL format with signed 2 byte integers representing meters relative to the datum. They all also include ENVI header files that include the Lat/Lon spacing. The root for all of this data starts at /local/worldbase.

For those interested in the exact MOLA points, these have also been placed in a database, and can be extracted for any desired region. Contact Harold Garbeil for information about this feature.

Programming Support

The Computer Support staff can answer many basic programming questions in a variety of environments, including Matlab, IDL, Excel, HTML, C and Fortran. They can also help with the installation of packages that require compilation, as well as planning for the development of new software. Any major work that would require more than a week of dedicated time would require funding of a block of time as detailed in the section on Dedicated Support below.

Administrative Support

The Computer Support staff is happy to support any questions that arise in relation to software already installed on the public machines, as well as entertaining any questions relating to the installation of new software. They will also help with the configuration and fine-tuning of the publicly provided services such as email and web pages.

Simple questions relating to personal machines will also be answered, especially as relates to use of the Basic Services listed above. More involved issues, and anything relating to hardware or software maintenance, will require the individual to put at least one machine on Machine Support Services.

Poster Printer

A 60" Epson Stylus Pro 11880 poster printer is available for use, at cost, in room 505. The charge for any printing is based solely on the linear feet of paper used. The rate is $10./foot.

Machine Support Services

In order to fund a more rich set of services, especially as regards more expensive items of software or hardware, HIGP Computing Support Services has implemented a second tier of service tied to a machine support charge. The current rate is $1,500 per year, assessed quarterly. Each individual that wishes to make use of these extended services should pay support for at least one machine. Any machine making extensive use of some major portion of the services should be on support. These charges cover hardware, software and

supplies for the various services provided, as well as funding part of the salary of the Computing Support Services assistant.

Wireless Network

HIGP supports a network of Wireless Access Points, inside the SOEST firewall, that are independent of the UH network. Access is through a WEP phrase and can be used for any wireless device. All basic services are available through this network.

DHCP

A small number of automatically assigned addresses is available for short duration use. These should be for machines that will be on the network only temporarily (such as with a visitor), or machines that are only on at periodic intervals.

Printing

A number of additional printers are available to users paying a machine support charge. Additionally, users paying machine support charges can purchase their own printer, which Computing Support Services will then maintain with toner and replacement parts.

Software

Most of the software installed on the public workstations is available for installation on a supported machine. In addition, software not already installed, but of particular use to a project, will be considered as long as it is not prohibitively expensive.

A variety of packages are available, some on multiple platforms:

- Microsoft Office – Word, Excel, PowerPoint
  - 2010 for Windows
  - 2011 for Mac OS
- Adobe Web Design Suite – InDesign, Illustrator, Photoshop, Acrobat
  - 1, 2 and 3 for Windows and Mac OS
- ENVI – All platforms
- ArcGIS – installed on pubwin3
- Matlab – Windows and Linux
- Corel Graphics Suite – Draw, PhotoPaint
- McAfee Anti-Virus

Computer Maintenance

Any computer covered under a machine support charge is eligible for software and hardware maintenance. Software covers any already installed software, version updates (including OS updates), and any new software that might be of use (within reason.) Hardware updates cover any failed part, as well as periodic upgrades to aging parts (also within reason, entire laptops are not upgraded.)

High Throughput Computing

A 46 node processing cluster is implemented using HTCondor. The staff can assist with preparing software for use with this system. It is ideally suited to jobs that are not disk intensive, and would normally take at least 10’s of seconds to run. Under the right conditions, speed increases of over 40x can be realized.

Remote Access

Individuals paying for machine support can set up a unique Virtual Private Network connection. This will then allow access to the majority of services, including those that are restricted to within the SOEST firewall.

Dedicated Software Support

As indicated earlier, large projects utilizing more than one week of a staff person’s dedicated time, are possible. Since only 50% of the salary of each of the Computing Support Services staff is funded, the additional 50% needs to be raised through special projects. Those able to supply at least one month at .5 FTE can make special arrangements to get dedicated support for specific projects with targeted outcomes.