EEMS SERVERS
USER GUIDE

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1.0 GETTING STARTED

This user guide serves as a reference on how to use EEMS servers. It is strongly advised that you review this document and abide to its rules to avoid misusage which could cause inconvenience to other lab members during day-to-day work. It is recommended that you have basic Linux knowledge before using the servers (This is not a Window Machine!). Please read or watch online on Linux basic scripting, you can find plenty of materials online.

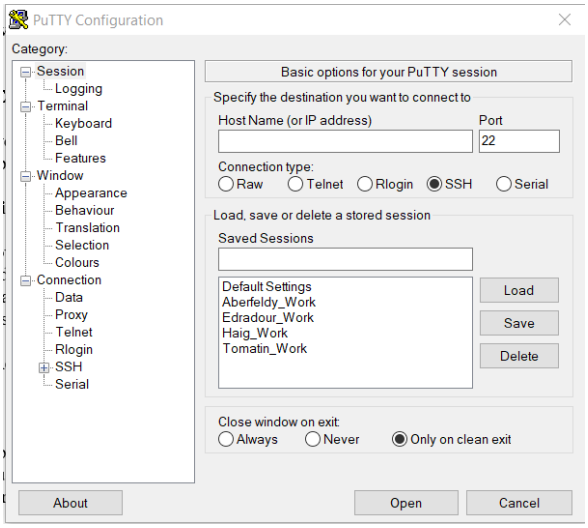
New members are provided with usernames and temporary passwords in a welcome email. Usually, you will be prompted to change your password on the first login.

Whether you access the servers from home or EEMS lab; UCSD VPN is not required. Depending on your operating system, you can access the servers as explained in the following sections. If you use a VPN you might notice slowness in the window refresh rate which could be highly inconvenient while working.

1.1 Access EEMS Servers Using Windows-Based Machines

You need to install PuTTY to SSH (Meaning log into) any of the EEMS servers. Download and install it from this link: (http://the.earth.li/~sgtatham/putty/latest/x86/putty.exe).
In addition, to view a windows terminal, you need to install VNC Viewer application from this link: (http://www.realvnc.com/download/viewer/).

Once you install both, open PuTTY, it should look like this (you might have a slightly different view depending on the version):



You will have (Default Settings) shown only since you did not save any sessions yet. The host names are actually the available EEMS servers available to you.

EEMS has 5 servers with the following names and capabilities:

- aberfeldy.ucsd.edu
- tomatin.ucsd.edu
- haig.ucsd.edu
- edradour.ucsd.edu
- dalmore.ucsd.edu

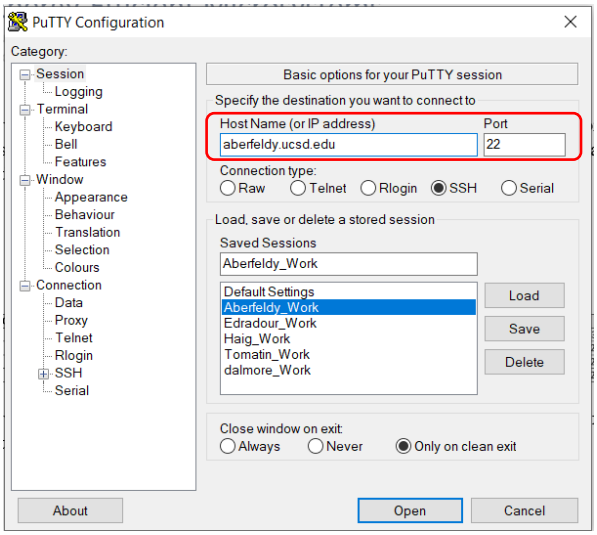
Server Number	1	2	3	4	5
Server Name	**aberfeldy**	**haig**	**tomatin**	**edradour**	**dalmore**
Operating System	CentOS 7.8.2003	CentOS 7.8.2003	CentOS 7.8.2003	CentOS 7.8.2003	CentOS 7.8.2003
x32 / x64	x64	x64	x64	x64	x64
Number of Processors	56	24	40	40	32
Physical Memory	314 GB	315 GB	315 GB	312 GB	315 GB
Virtual Memory	128 GB	128 GB	128 GB	128 GB	128 GB
Available Sim Disk Space	3.9 TB	3.5 TB	2 TB	1.7 TB	3.5 TB
Vendor	Dell Inc.	Dell Inc.	Dell Inc.	Dell Inc.	Dell Inc.
Model	PowerEdge T640	PowerEdge T620	PowerEdge T430	PowerEdge T430	PowerEdge T620
CPU	Intel(R) Xeon(R) Gold 6132 CPU @ 2.60GHz	Intel(R) Xeon(R) CPU E5-2630 v2 @ 2.60GHz	Intel(R) Xeon(R) CPU E5-2650 v3 @ 2.30GHz	Intel(R) Xeon(R) CPU E5-2660 v3 @ 2.60GHz	Intel(R) Xeon(R) CPU E5-2650 v2 @ 2.60GHz
GPU	Matrox G200eW3 [66MHz]	Matrox G200eR2 [96,450 MB - 33MHz]	Matrox G200eR2 [33MHz]	Matrox G200eR2 [33MHz]	Matrox G200eR2 [96,450 MB - 33MHz]
Networking (NIC)	10 Gbps	10 Gbps	1 Gbps	10 Gbps	10 Gbps

Note: Tomatin NIC will be upgraded soon.

All servers fairly have the same computation power; IC simulators usually depend on the available physical memory. A typical simulation uses from 4 to 16 processors but might requires tens of GBs of memory for a medium sized circuit. All servers have the same physical memory and enough processors/diskspace for typical simulations.

Please do not assume that aberfeldy server is the most power one to use and just use it; if many users used it at the same time for small simulations then it will become congested with jobs. This will slow down the server and prevent others who actually need this machine capabilities to use.

Now, you need to set PuTTY up, choose any of the above servers and type its full name in the host name space as shown below:



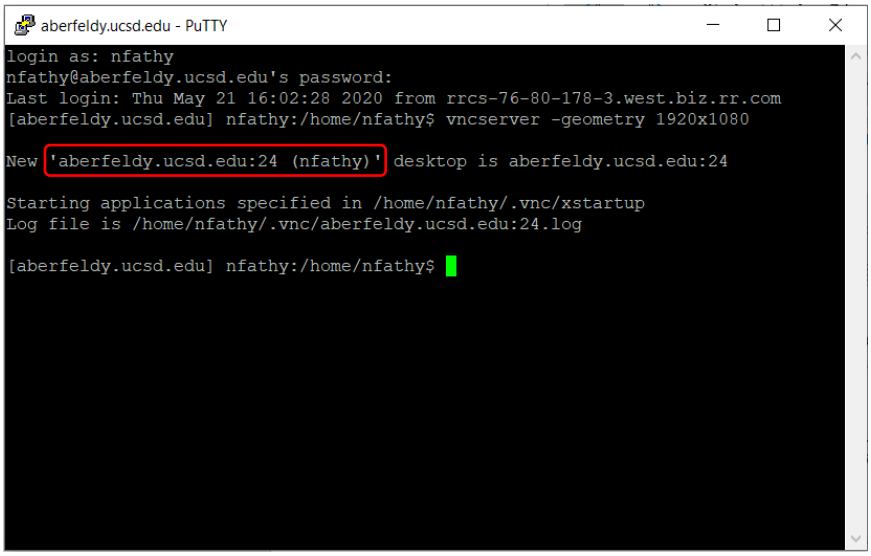
And then click (Open), a black terminal will appear, enter your username and password given in this document. Now, you have access to the server, but you still don't have a graphical user interface (GUI) to use.

For new users; first type your current temporary password provided in the welcome email when prompted to change, then type your new password twice to confirm. Once you press enter the shell terminal might terminate, which is normal, so open a new one and use your new password. If you wish to change your password at any time just type "passwd" in a terminal to change your password. You should never save your password of your account on any PC for security reasons. EEMS servers contain sensitive information and is constantly hit by hacker worldwide. It is highly recommended that you use a password that you can memorize which is at least 8 characters long and includes (Capital letters, Small letters, numbers and symbols).

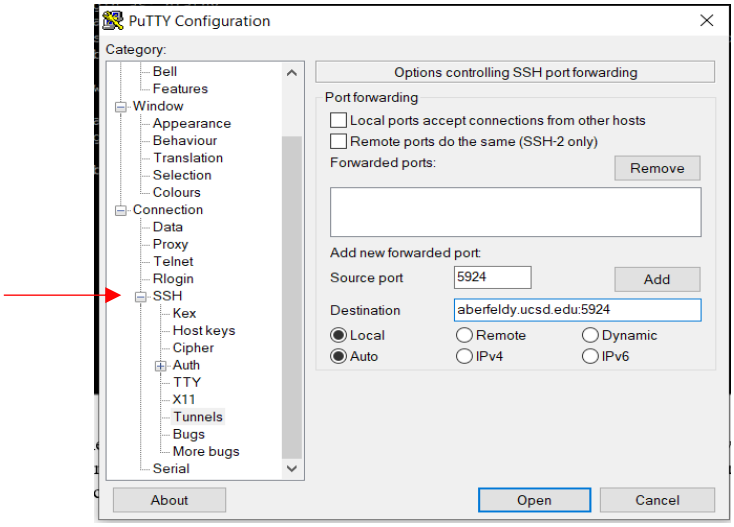
To make a GUI session, you need to make a VNC session; just type this command in the terminal you have after entering your username and password:

- vncserver -geometry 1920x1080

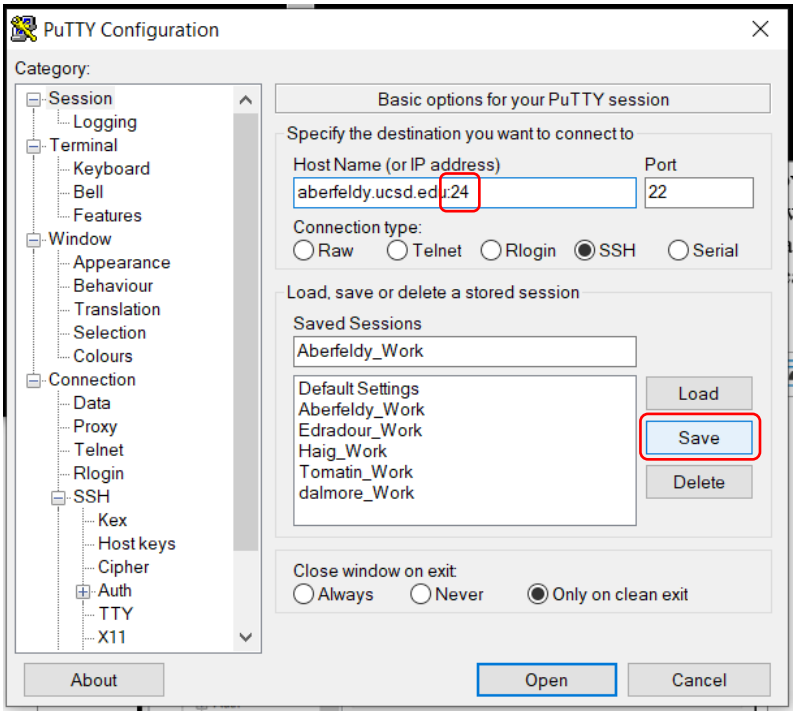
You can change the resolution depending on your PC capabilities. After entering the command, you should get a response similar to the example shown below:



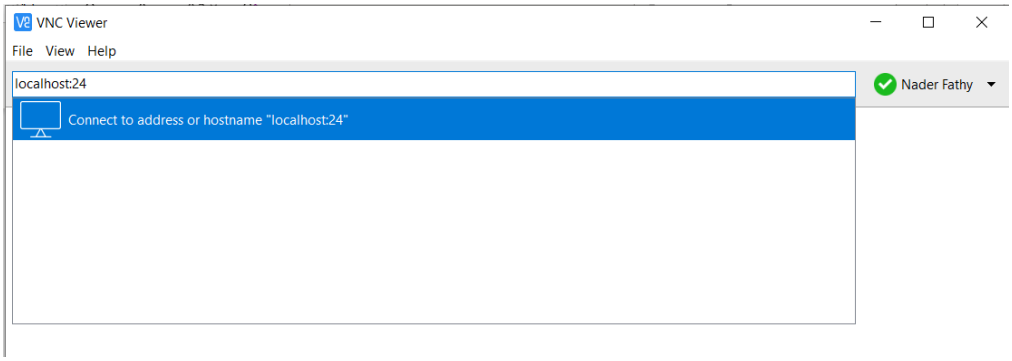
The server Aberfeldy gave us a free session number (24) in this example. Now close the terminal completely, and open Putty again, retype “Aberfeldy” hostname, afterwards, click on (+) on the left side of “SSH” Category, then Tunnels. Type the Destination as the server name followed by “ :59# ”, where # is the session number that you got, in our case (24); so type 5924. And in the source port, type the same number, then click Add.



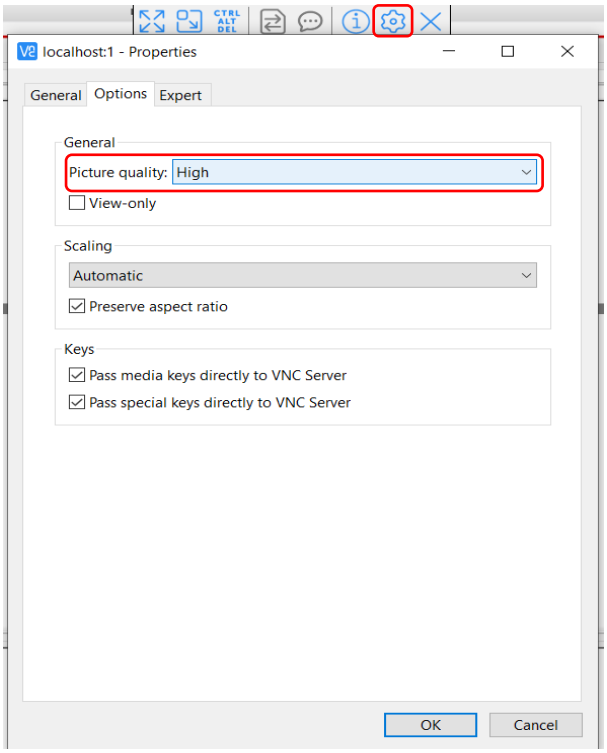
The final step is to save all of this so that you access the servers quickly in your next login, go to "Sessions" again in Categories on the left bar and then add " :# " next to the hostname, then click on save. Next time, when you open PuTTY, just load your settings and open the terminal directly.



Now, to get the GUI started, open VNC Viewer you installed earlier, type localhost, then " :# " where # is you session number, then hit enter. You get a security message, just click continue and mark it as "don't show again". You might also get prompted for a VNC server password, you can choose whatever password you want (It doesn't need to be your Linux password).



Your GUI should start, and you are good to go now. You might want to increase the quality of the GUI, just click on settings and edit this option to high:



1.2 Mac-Based Machines

Install the RealVNC viewer on your Mac from this link (http://www.realvnc.com/), Open a terminal window, and SSH directly into the machine by typing the following (Example of using Aberfeldy server):

- ssh -XL 59YY:127.0.0.1:59ZZ username@aberfeldy.ucsd.edu

The YY is a number of your choice. The ZZ in 59ZZ will be replaced by the source port you are assigned next time you ssh. This time, just use 00 or something.

Once you are ssh'd into Aberfeldy for example, type the following into the terminal window to get the GUI starting:

- vncserver -geometry 1920x1080

You will be assigned the first available source port as :ZZ, look for it. You might have to set a password, make it the same as your login one. Close that terminal on your Mac and then ssh in again, as above, but this time use the ZZ you were assigned.

Now start up the VNC viewer application and in the 'VNC server:' menu type in localhost:YY . It will then prompt you to enter your password. It will also give you a warning about the encryption status, but you can ignore it. You will now be able to view the screen for your account on your own machine.

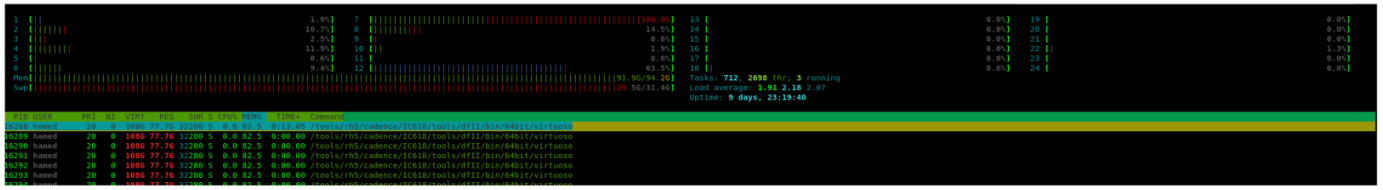
2.0 EEMS SERVERS USAGE GUIDELINES

This section serves as guidelines to EEMS server users. It discusses the server's infrastructure, main useful directories, choosing a suitable server for use, and modifying the default GUI interface.

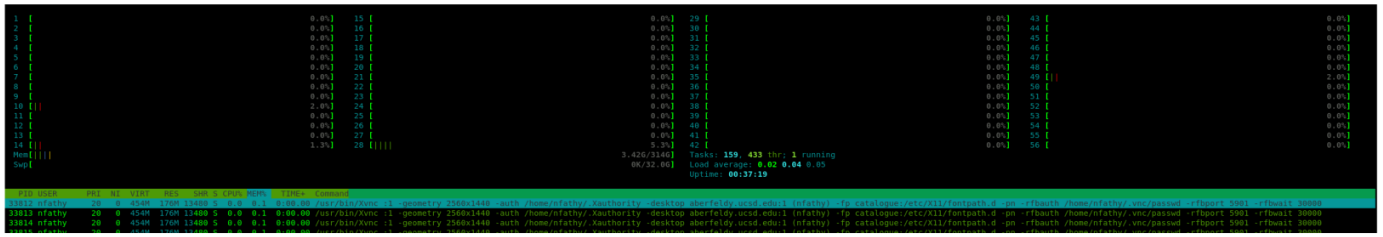
2.1 Choosing the Best EEMS Server

It depends on the usage, you can login on any server and check before you start your simulations. Just open a shell and type "htop", an example is shown below:

Example 1: Haig



Example 2: aberfeldy



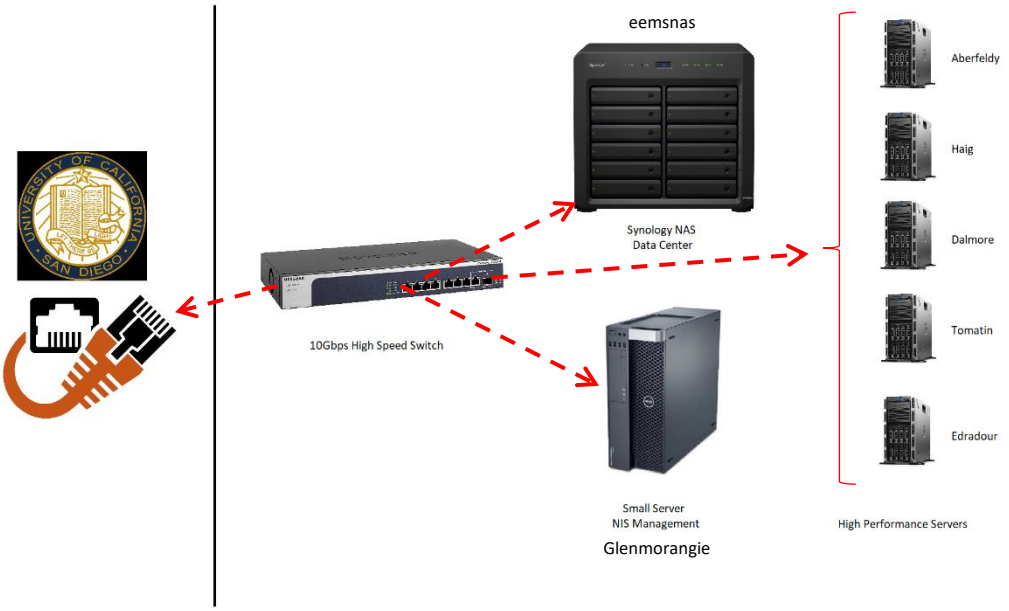
Referring to the examples above, one should defiantly avoid using Haig at the moment because the physical memory [Mem] and virtual memory [Swp] are full. Although it has many free CPUs still, but the busy memory will slow down you simulations because the cache memory (fast access) is no longer available and the server is using the hard drive (slow read/write) as its memory now. Just avoid using Haig till the users on it finish simulations.

On the other hand, Aberfeldy looks nice, it has plenty of memory available to use and many free CPUs for parallel processing tools if needed.

Another thing to note is the available disk space. All EEMS lab members are using a shared disk-space resource on each server to perform circuit simulations. Some of us might need a larger space, for a specific simulation so you need to be careful which server has these capabilities. If the disk-space is full, it will freeze the servers, so to avoid that we have an automatic script that removes all simulation data for all members automatically to save the servers from freezing and avoiding members form getting their unsaved work to be lost.

2.2 EEMS Servers & Directories Infrastructure

EEMS lab has 7 different servers; five of which can be used by the lab members and the remaining two are for data storage and Server management. The figure below shall illustrate more:

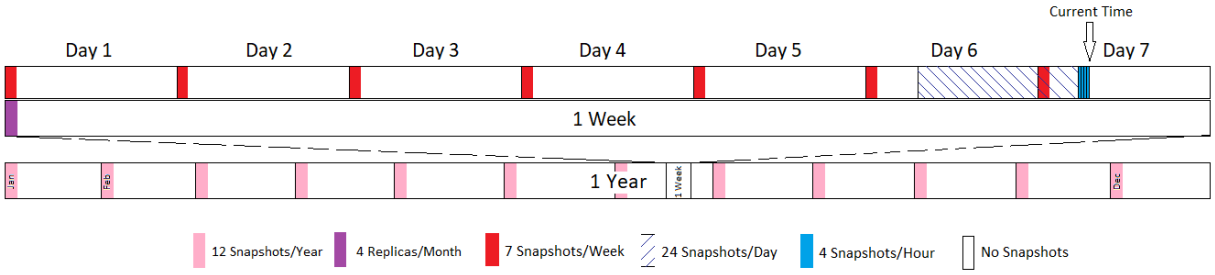


Directories Data Structure:

When you login to any EEMS high performance server; you can go to the base directory "/" which has multiple mounted directories; each is explained below. Each of global directories means that it is stored on the data center and that it is shared among all EEMS servers (i.e: Any change of data on any server will be reflected on all other servers):

- /home:
  - This is the main global home directory in which you will find a directory with your alias inside of it. Your entire home directory is backed up periodically (refer to periodicity in /backup section).
  - The home directory is a shared diskspace; although the physical limit for data storage is multiple Terabytes but you are only allowed to use 80GB. The home directory is not limited such that when you exceed the 80GB your work will freeze; however, you will receive a weekly email with your home usage quota if you are already signed up for EEMS group mail by Professor Mercier.
  - If you don't free up your diskspace to be under 80GB you will slow down the backup process that occurs on periodic basis!

- /scratch:
  - This is a global non-backed up disk space. It is not safe to use it for critical projects since any two simultaneous hard-drive malfunction means your data might be lost (Highly unlikely though). So, use this area for long-term storage or less important data only. You have a limit of 150GB, your lab admin will notify you if you crossed this limit, so please keep an eye on it as well.
- /backup:
  - This is a global directory has two sub-directories inside of it: "replicas" & "snapshots" which serve as backups to the entire /home directory. The entire directory is a read-only directory so that your data can be protected always.
  - The "replicas" are basically a copy-paste of the home directory that is taken every week on Saturday 1:00 AM. You will receive an email that says when the replica is taken and when will it end if you are signed in with Professor Mercier's EEMS mail group. Please note that you might experience some slow down with the servers during the replication since it is a heavy process and usually takes several hours during the night.
  - The "Snapshots" are a smarter way of backups that saves diskspace by saving the changes of a file only. To the users; it will seem like a copy-past backup as well (you won't notice a difference). However, from a technical prospective is saves a lot of diskspace and it can be taken in less than 1 minute to complete. Accordingly, you can find a daily snapshot backup from the entire /home directory at 1:00 AM for the past 7 days.
  - Please be carful with your data; don't delete anything on your diskspace before you are 100% certain that you don't need it. Reckless data deletion might give you an entire day worth of work. You would be surprised how many times this has happened with lab members. /backup will help restore some of the data but you should always be careful!
  - The backup schedule is show below:
    - 4 Hourly Snapshots (i.e., 1 Snapshot every 15 mins for the past hour)
    - 24 Daily Snapshots (i.e., 1 Snapshot every hour for the past day)
    - 7 Weekly Snapshots
    - 4 Monthly Replicas
    - 12 Yearly Snapshots
  - A visual representation is shown below for better visualization:



- /archive:
  - This is a global directory simply holds the /scratch and /home directories of all the former EEMS lab members.

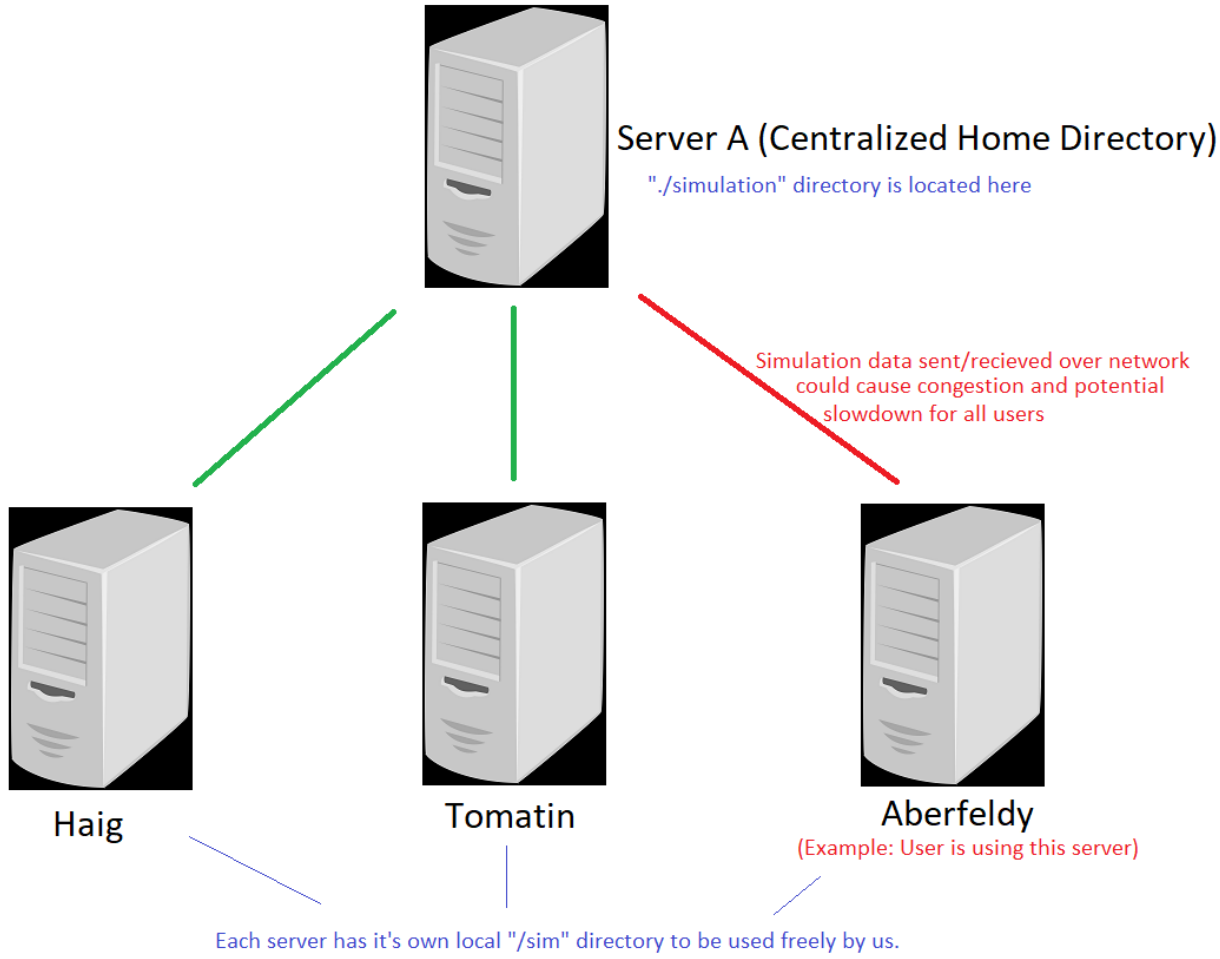
- If you need access to the data of a specific member; you can email/slack the lab admin and Professor Mercier to approve your access.

- /PDKs:
  - This is a global directory has all the technology files that are used with various simulation tools. See section 4.0 for additional details.
- /tools:
  - This is a global directory has all the tools that you might need for simulations. For example: MATLAB, Cadence, Siemens (Mentor Graphics), EM-Simulations, etc.
  - Please refer to section 3.0 for additional information.
- /sim:
  - This is the only local directory (Meaning: each server you use has a different /sim directory).
  - It is used for simulation purposes only to reduce the network overhead when executing a heavy simulation.
  - Section 2.3 explains the importance of this directory.
- /eems:
  - This is a global directory that stores common data for EEMS lab members. There are four sub-directories inside of it: "documentation", "ips", "projects", and "server_utilities".
  - In the documentation directory, you will find useful documents of various subjects. (Can be accessed by eems_help which is explained later in the user guide).
  - The "ips" directory stands for Intellectual Property; each lab member has his/her own directory inside of it which is private from anyone else. You can store your Cadence Circuit libraries that has a complete block to be shared with other lab members. (See how to share in section 2.5). For example: Member A designed a very nice silicon-proved ADC; member B wants to plug this ADC in his system to use. Member A can share the library in this directory and then Member B can add it to his/her cds.lib file as read-only IP.
  - The "projects" directory is meant for adding your taped-out projects only! (i.e: silicon proved projects only). Each member has his/her own directory and no one else can access it by default. The user can control to share his projects with other lab members later. The user can add the PCB design as well for completeness. There is a strict format on placing the libraries of your project here: make a directory with a name "project_#_name_of_project"; replace the hash by the number of the project. Project #1 is the oldest one you finished. **It is very important that you place all your projects in this directory before you graduate**!

It is important that you know the use of each of the above directories well, so please take a couple of minutes to review them again for better servers' usability.

2.3 Simulation Disk-Space Usage

All EEMS lab members MUST configure any circuit simulation to save its output data on a shared simulation directory in the server itself located at “/sim” directory. Why do we do that? Because our servers experience a slowdown from time to time which is usually caused by someone setting his/her simulation project directory on home directory (For example: "./simulation") instead of "/sim" in ADE environment. To explain why the following is very important, consider the following figure which illustrates EEMS server’s configuration:



All our homes are centralized in a centralized in the NAS server (You are not allowed to use this server for simulation); so when someone chooses the simulation directory to "/home/linux_alias/simulation" for example or any other location at home, it sends/receives data over the network which causes a slowdown for all of us! The figure above explains the issue.

Accordingly, it is mandatory for everyone to make sure that the project directory is set to "/sim/your_linux_alias" (NOT "./sim" with a dot !) In Cadence for example, in ADE (Setup > Simulator/Directory/Host...) prior to running any simulations.

2.4 Linux GUI Selection

GNOME is the default GUI setting for Centos 7. Some lab members are facing intermittent GNOME session freeze and Cadence freeze which could cause loss of data and work. Accordingly, MATE session is installed on all of our servers to decrease the frequency of this issue.

What is a MATE or GNOME session?

Both GNOME and MATE are free and open-source desktop environment for Unix-like operating systems. MATE forked from GNOME version 2 a long time ago as people started receiving GNOME V3 negatively. MATE provides the classical look and feel of a linux GUI for desktops.

How do I convert to MATE session?

It's very simple, just follow these steps:

This process should be done on every server once. You can, for example, have a MATE session on Aberfeldy server and GNOME session on Haig/Tomatin.

Save your work on a server you select to convert to MATE, then close every application in this session and all sessions opened on this server.

Open (/home/you_linux_alias/.vnc/xstartup) with any text editor. (Example: gedit /home/nfathy/.vnc/xstartup).

Take a backup of this file before editing it in case something went wrong.

Delete all the content of the file and replace it with the following. If you have special settings, then just replace the exec line you have with the red line below:

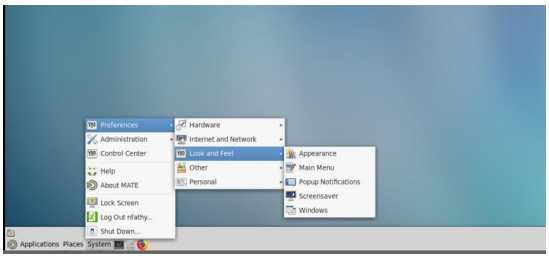
```
#!/bin/sh

unset SESSION_MANAGER
unset DBUS_SESSION_BUS_ADDRESS
#exec /etc/X11/xinit/xinitrc
exec /usr/bin/mate-session
```

Save the file, and close the session. Kill it using (vncserver -kill :your_session_number). Make a new session normally, and open VNC viewer again, you will find a MATE session instead of the traditional GNOME.

Additional Hints:

MATE sessions tend to lock the screen automatically and quickly, you can turn off auto-lock by the following steps:

Click on System > Preferences > Look & Feel > Screensaver.



Uncheck "Lock screen when screensaver is active" or increase the ideal time for it to be locked again. You can also turn off screensaver completely.

To use the same gnome-terminal instead of mate-terminal, just type "gnome-terminal &" in a mate terminal, then close the mate terminal. Or, Click on Applications > System Tools > Terminal. You can always take a shortcut from it by dragging to the taskbar or desktop.

2.5 Permissions & Sharing a Specific Directory with Lab Members

It is very important that you understand permissions in Linux environment. Avoiding so might lead to data loss! The following example shows the home directory of some members:

```
[tomatin.ucsd.edu] nfathy:/home$ ll
total 0
drwx------. 1 a5aggarw    a5aggarw     742 Dec  6 15:36 a5aggarw
drwx------. 1 aabdulsl    aabdulsl    2.5K Nov 14 20:41 aabdulsl
drwx------. 1 amseshad    amseshad    1.2K Nov  4 12:25 amseshad
drwx------. 1 anikoofa    anikoofa    4.4K Dec  3 14:11 anikoofa
drwxr-xr-x. 1 bhl029      bhl029      3.6K Dec 11 21:19 bhl029
drwx------. 1 cgungor     cgungor     1.1K Jun 13 13:34 cgungor
drwxrwxrwx. 1 cpochet     cpochet     1.1K Jun 23 13:15 cpochet
drwx------. 1 drewhall    drewhall     116 May 13  2018 drewhall
drwx------. 1 hamed       hamed       3.2K Dec  3 18:17 hamed
drwx---r-x. 1 hol013      hol013       802 Nov 15 21:28 hol013
drwxrwxr-x. 1 hossein     hossein     2.8K Dec 11 16:20 hossein
drwxrwxrwx. 1 jih324      jih324      2.9K Dec  2 10:52 jih324
drwx------. 1 kdeng       kdeng        532 Dec  8 01:57 kdeng
drwx------. 1 m6mansou    m6mansou    1.3K Oct 20 19:38 m6mansou
drwx------. 1 mbui        mbui         888 Dec  7 23:44 mbui
drwx---r-x. 1 mimeng      mimeng      2.0K Nov 25 15:13 mimeng
drwx------. 1 nfathy      nfathy      1.9K Dec 12 18:48 nfathy
drwx------. 1 nmaganti    nmaganti     978 Oct 17 19:04 nmaganti
drwx------. 1 nmagnezi    nmagnezi    1.2K Oct 17 19:12 nmagnezi
drwx------. 1 peterwang25 peterwang25 2.0K Nov 13 12:05 peterwang25
drwx------. 1 pgudem      pgudem       144 Mar 21  2019 pgudem
drwxr-xr-x. 1 pmercier    pmercier    1.5K Mar  4  2020 pmercier
drwx------. 1 redhat      redhat       210 Apr 17  2019 redhat
drwx------. 1 s1kuo       s1kuo       1.4K Dec 11 13:36 s1kuo
drwxrwxrwx. 1 schamanian  schamanian  1.3K Dec 11 21:23 schamanian
drwxrwx---. 1 Somayeh     Somayeh     2.3K Jul  5 16:01 Somayeh
drwxrwxr-x. 1 youngwx     youngwx     2.6K Nov 30 22:38 youngwx
[tomatin.ucsd.edu] nfathy:/home$
```

You will notice some members with green directories and others with blue; each one has different level of security. On the left of each directory shows the level of security with this format:

- {directory=d, file=-}{user permissions rwx}{group permissions wrx}{other permissions wrx}

Let's take an example "hol013" starts with a "d" which means this is a directory. Then "rwx"; this is the permissions of the user/owner of the directory being: read/write/execute; in other words full control. Then followed by "---"; which means that the group permissions of this directory is null. Then followed by "r-x" which means that all other users in the system have read/execute permissions. It is always safer to set the group and especially "others" permissions to null for home directories. The command to do so is: "chmod 700 *path_to_dir*". Read more online!

Often lab members would want to share directories with each other on their home. It is very important that you don't set rwx permissions to all lab members! If you do so, anyone will be able to delete all your data! So be extremely careful of what you share.

The best way to do so is to use the following Linux command:

- setfacl -R -m u:alias:rwx dir

Let's explain what this command does exactly:

- The "-R" means recursive action; so if you have Dir A, and inside of it there are 2 other directories B and C; if you setfacl -R on directory A then the user will get access to A, B and C altogether till the end of the hierarchy. (i.e: Everything inside of Dir A is shared with a specific user)
- The "alias" is the Linux alias of this user.
- The "dir" is the directory path you want to share with the other member.

The following command is useful to see the sharing status of each directory:

- getfacl *dir_path*

```
[tomatin.ucsd.edu] nfathy:/home/nfathy$ getfacl /home/nfathy/Nader
getfacl: Removing leading '/' from absolute path names
# file: home/nfathy/Nader
# owner: nfathy
# group: nfathy
user::rwx
group::rwx
other::r-x
```

In this example, the directory "Nader" on my home gives information about the directory. It shows that nfathy is the only owner/group member who can access this file with "read, write and execute" permissions (i.e: rwx). All "other" members have read and execute permissions on this directory.

However, if we check the parent directory "/home/nfathy" below, you will see that the owner (i.e: user) is the only one that has permissions to the directory. Accordingly, no one can actually access "/home/nfathy/Nader" since it is inside "/home/nfathy" which has closed permissions.

```
[tomatin.ucsd.edu] nfathy:/home/nfathy$ getfacl /home/nfathy
getfacl: Removing leading '/' from absolute path names
# file: home/nfathy
# owner: nfathy
# group: nfathy
user::rwx
group::---
other::---
```

So how can I share my directory "Nader" with another member? Let's assume the member alias is called "redhat". You would need first to give read/execute (rx) permissions to this member over your home directory (Warning: this means that the user can see the first level of hierarchy inside your home! So, you need to set permissions of "others" to null to everything else inside your home to avoid access (the member will however see the files/directory names only without access).

So, to execute this example, I will first give permissions as follows (Note: I removed -R because I don't need this to be recusrsive!), and I removed the (w) in permissions because I need to share this as read-only:

- setfacl -m u:redhat:rx /home/nfathy

Afterwards, I will give the member read/write/execute access to the directory Nader:

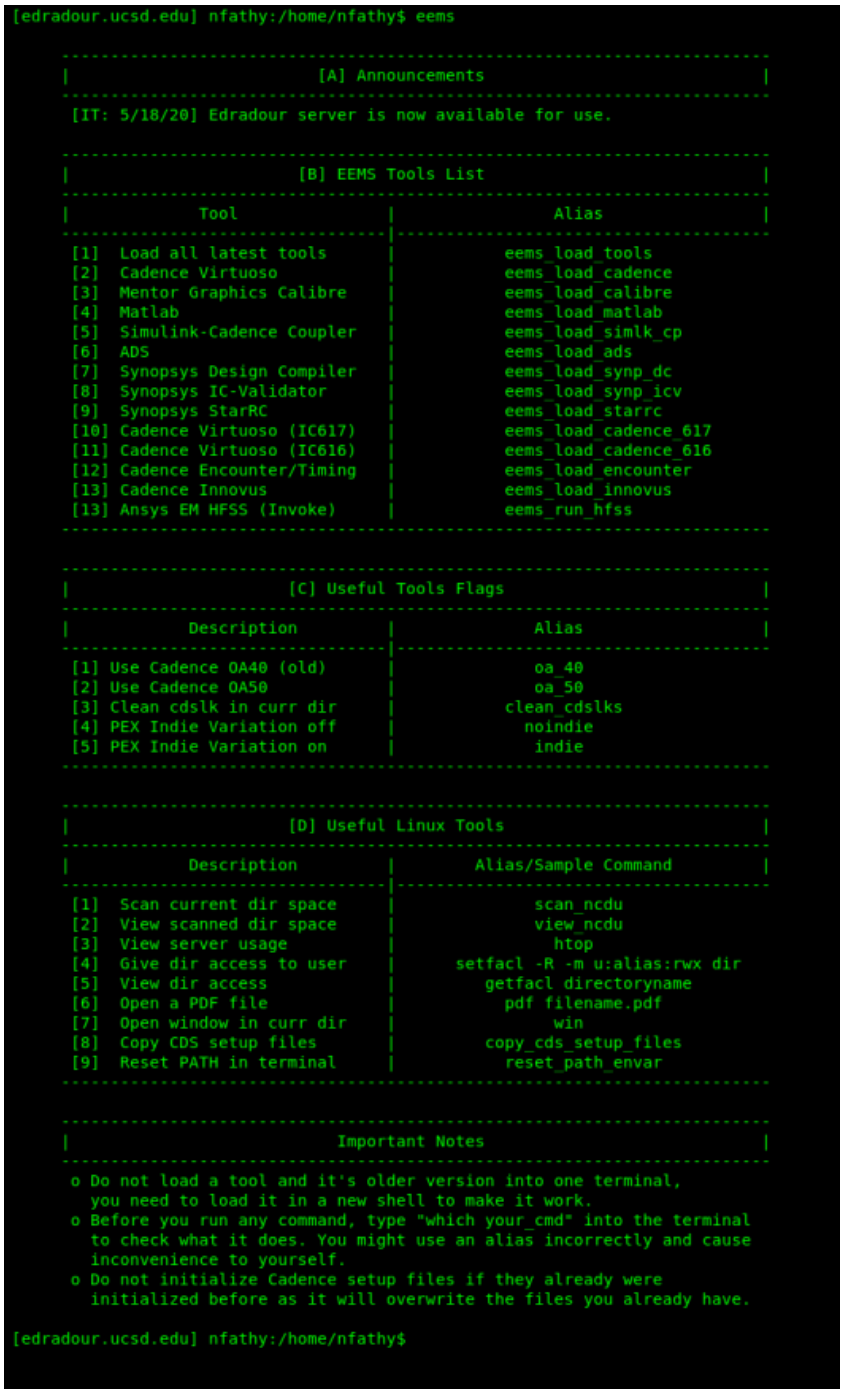
- setfacl -R -m u:redhat:rwx /home/nfathy/Nader

This command might take several hours or seconds, depending on the size of the directory.

3.0 EEMS AVAILABLE SIMULATION TOOLS

The default shell type in EEMS servers is C-Shell (i.e:"csh"). The servers are not maintainable over bash, so if you need to convert, you will not be able to use "eems" scripts below.

After you set your GUI environment, you can view all available EEMS tools by typing the following in any terminal "eems", an example of the output is shown below:



In section [B], there is a list of available tools that you might need. If you need additional tools, email EEMS lab admin and Professor Mercier.

To load a tool into the terminal, just type the alias of this tool, for example Matlab: just type "eems_load_matlab" and it will load the tool in the terminal, then invoke the tool by typing "matlab".

It is everyone's duty to report the tools that are not working/loaded properly to the lab admin. Additionally, if you see a missing tool that is not in the list of eems please inform the lab admin.

3.1 Running Cadence Virtuoso

To open Cadence Virtuoso for the first time, just open a terminal, create a new directory in your home directory: For example "mkdir /home/your_linux_alias/cadence_work", then go to this directory: "cd /home/your_linux_alias/cadence_work".

Afterwards, you need to execute the following command only once: "copy_cds_setup_files", this should give you confirmation as shown below:

```
[edradour.ucsd.edu] nfathy:/home/nfathy/tmo$ copy_cds_setup_files

 -> Initialized Cadence Virtuoso setup files in current directory: cds.lib, .cdsinit, .cdsenv
```

It simply copies the files above into your current working directory. The file ".cdsinit" contains command lines that sets your simulation directory to "/sim/your_linux_alias" automatically, so as long as you invoke virtuoso from this directory you don't need to worry about setting the simulation directory correctly (Unless you are running ADE XL MonteCarlo Simulations, which you need to set it manually: Refer to Cadence Manuals to see how).

Now, to load Cadence, just type "eems_load_cadence". This will not start Cadence Virtuoso but it will initialize it on your terminal.

The final step is to load a PDK that you need, each account has access to a specific PDK according to our PI instructions. You can open a terminal and type "groups" to check which group you belong to. If for example you have access to TSMC 65LP, then your account will belong to TSMC65 group and hence you will have access to:

- /PDKs/MUSE/TSMC/CRN65LP
- /PDKs/MUSE/TSMC/CRN65GP

To include a PDK library in Cadence, just include the following example statement in cds.lib file in your working directory (Choose one only for TSMC65), Open the file by typing this command "gedit cds.lib", it will already have a few lines including a commented line for CRN65LP:

- DEFINE tsmcN65 /PDKs/MUSE/TSMC/CRN65LP/tsmcN65
- Type this instead if you intend to use GP. (You cannot add both simultaneously):

  DEFINE tsmcN65 /PDKs/MUSE/TSMC/CRN65GP/tsmcN65

(Blue font is the PDK of 65nm LP/GP technology), you can use Cadence GUI to add it as well (See Cadence Help), so choose whatever method is convenient for you. Each library is added in Cadence in a different manner; please consult me if you can't add a specific one. An example for cds.lib file is discussed in the next section (4.0 PDKs).

Finally, to invoke Cadence Virtuoso just type "virtuoso", or "cadence" in the terminal you loaded the tool from. And in the following times you will use Cadence, just go to your working directory again, then load virtuoso by typing "eems_load_cadence", then type virtuoso.

Important Hint: In Cadence, whenever you get the message "*Failed to check out license Analog Design Environment L, use XL instead*", just click "Always", it will open ADE L for you; and don't worry you won't be getting this annoying message again. Do not click "Never"! if you did so I will have to reset your account.

4.0 EEMS PROCESS DESIGN KITS (PDKs)

EEMS lab has various PDKs available for use; each one has its own setup and configuration. For example, you can load TSMC PDKs directly into Cadence and start using it, meanwhile some PDKs like X-FAB uses a personal checked-out PDK version at the user workspace which lets the user configure the number of layers and dielectrics freely.

Standard cell (Logic IPs), Interface IPs (PADs) and Embedded Memory IPs are usually installed separately, so not every PDK has those readily available. In addition, they might not come readily integrable with Cadence Virtuoso OA environment, so you need to spend some time to read about them in the manuals.

Unfortunately, you do not have access to all PDKs, if you need access to one of them just email Professor Mercier and CC the lab admin to grant you access. You will be asked to sign an NDA if the process you are requested requires you to for security reasons. To find out which PDK is available to your account, type "groups" in any terminal, compare the output group access with the PDK table shown below.

The current active vendors are MUSE, MOSIS and XFAB which align with EEMS lab activities as of 2019/2020.

For most PDKs, if you need to load them, just include the cds.lib file in the main PDK directory that you will use into your cds.lib file. You can add it by including the following line:

- SOFTINCLUDE /PDKs/path/to/your/pdk/cds.lib

If you experienced conflicts when Cadence starts in the cmd window, then open your cds.lib file by gedit or vim, and compare the PDK cds.lib file with your file, you can just include the essential lines of the PDK into your cds.lib file instead of soft-including it.

You can check the vendors webpages for tapeout schedules; here is an example from MUSE:

- https://www.musesemi.com/shared-block-tapeout-schedule

The following section summarizes the list of all available PDKs and IPs per vendor. All PDKs are stored in these two paths /PDKs, and /EEMS_PDKs (Will soon be combined in a single path):

#	Vendor	FAB	Tech (nm)	Process Name	Logic IP (STD Cells)	Interface IP	Memory IP	Group Access
1	MOSIS	IBM	7	IBM7HV	×	×	×	IBM7RF
2	MOSIS	IBM	7	IBM7RF	×	×	×	IBM7RF
3	MOSIS	IBM	7	IBM7RFSOI	×	×	×	IBM7RF
4	MOSIS	IBM	7	IBM7SW	×	×	×	IBM7RF
5	MOSIS	IBM	12	soi12s0	×	×	×	IBM12SOI
6	MOSIS	TSMC	16	CLN16FF+	×	×	×	TSMC16
7	MOSIS	TSMC	16	CLN16FFC	×	×	×	TSMC16
8	MOSIS	GF	22	22FDX	✓	×	×	GF22
9	MOSIS	GF	22	22FDX-EXT	×	×	×	GF22
10	MOSIS	GF	45	45RFSOI-RF	×	×	×	GF45
11	MOSIS	TSMC	65	CMN65GP	✓	✓	×	TSMC65
12	MOSIS	TSMC	65	CRN65LP	✓	✓	×	TSMC65
13	MOSIS	TSMC	180	CM018	×	×	×	TSMC18
14	MOSIS	TSMC	180	CR018G	×	×	×	TSMC18
15	MOSIS	TSMC	250	CL025G	×	×	×	TSMC25
16	MOSIS	TSMC	250	CM025	×	×	×	TSMC25
17	MOSIS	TSMC	250	CR025G	×	×	×	TSMC25
18	MOSIS	TSMC	250	CV025BCD	×	×	×	TSMC25
19	MOSIS	TSMC	250	GPIIRF	×	×	×	TSMC25
20	MUSE	TSMC	65	CMN65GP	✓	✓	×	TSMC65
21	MUSE	TSMC	65	CRN65LP	✓	✓	×	TSMC65
22	MUSE	TSMC	180	180hv	×	×	×	TSMC18
23	Peregrine	PSC	130	U130S	×	×	×	PSC250
24	Peregrine	PSC	250	U250B4	×	×	×	PSC250
25	ST	ST	28	cmos28fdsoi	×	×	×	ST
26	ST	ST	65	stcmos065	×	×	×	ST
27	TAPO	IBM	12	IBM12SOI	×	×	×	IBM12SOI
28	TAPO	IBM	32	32SOI	×	×	×	IBM32SOI
29	XFAB	XFAB	180	xt018	✓	×	×	XFAB

Note: The PDKs organization is a slightly a mess left by previous lab admins, unfortunately it is not easy to fix due to the loss of access for most PDKs from vendors we used to tapeout with. It is being fixed slowly though and more IPs will be added later when we regain acce

The following table summarizes the compiled TSMC IP libraries ready for use in MUSE vendor directory (/PDKs/MUSE):

Library	Technology	Type	Version	Feature	Comment	
tpbn65v	CLN55GP, CLN65GP, CLN65LP, CLN65ULP	Standard I/O	200b	Bond pads library	Has no ESD	gdscup9m6x1z1u=Circuit Under Pad (CUP) gdswb9m6x1z1u= Wire Bond (Wb), Non-CUP gdsfcmt9mz=Flip Chip (fc)
tpan65lpnv2od3	CLN65LP	Standard I/O	200b	1.2V/2.5V,over-drive to 3.3V, universal analog I/O compatible with linear universal standard I/O	Analog ESD	Linear
tpdn65lpnv2od3 - "Sunset IP"	CLN65LP	Standard I/O	200a	1.2V/2.5V, over-drive to 3.3V, regular, linear universal standard I/O	Digital ESD	Linear
tpdn65lpgv2od3_sd	CLN65LP	Standard I/O	200a	1.2V/2.5V, over-drive to 3.3V, staggered universal standard I/O	Digital ESD	Staggered
tpfn65lpgv2od3	CLN65LP	Standard I/O	200d	1.2V/2.5V, over-drive to 3.3V, fail-safe, staggered universal standard I/O		
tphn65lpgv2od3_sl	CLN65LP	Standard I/O	210a	1.2V/2.5V, over-drive to 3.3V, hybrid staggered slim I/O library that contains both digital and analog slim I/O		
tphn65lpnv2od3_sl - "Linear I/O Library"	CLN65LP	Standard I/O	200b	1.2V/2.5V, over-drive to 3.3V, hybrid linear slim I/O library that contains both standard and analog slim I/O		
tpzn65lpgv2od3	CLN65LP	Standard I/O	200b	1.2V/2.5V, over-drive to 3.3V, 5V Tolerant, Staggered Universal Standard I/O		
tpin65nv	CLN65LP	Standard I/O	130b	N65 interconnection library for linear universal I/O		
tcbn65lp	CLN65LP	Standard Cell	220a	TSMC 65 NM CMOS LOGIC LOW POWER (AL_RDL SALICIDE CU_LOWK 1.2/2.5V) Core cell library Standard Vt 9-track ,support multi-Vdd, raw gate density = 855KGate/mm^2		
tcbn65lphvt	CLN65LP	Standard Cell	220a	TSMC 65 NM CMOS LOGIC LOW POWER (AL_RDL SALICIDE CU_LOWK 1.2/2.5V) Core cell library, High Vt 9-track ,support multi-Vdd, raw gate density = 855KGate/mm^2		
tcbn65lplvt	CLN65LP	Standard Cell	220a	TSMC 65 NM CMOS LOGIC LOW POWER (AL_RDL SALICIDE CU_LOWK 1.2/2.5V) Core cell library, Low Vt 9-track ,support multi-Vdd, raw gate density = 855KGate/mm^2		
6x1z1u_icc_files	CLN65GP	PnR	N/A	Synopsis ICC (IC Complier) Place and Route Files	Not a CDS library	
6x1z1u_innovus_files	CLN65GP	PnR	N/A	Cadence Innovous Place and Route Files	Not a CDS library	
tcbn65gplus	CLN65GP	Standard Cell	200a	TSMC 65 nm cmos logic general purpose plus (al_rdl salicide cu_lowk 1.0/1.8v) core cell library, standard Vt, 9-track, support multi-Vdd, raw gate density = 855KGate/mm^2		
tcbn65gpluslvt	CLN65GP	Standard Cell	200a	TSMC 65 nm cmos logic general purpose plus (al_rdl salicide cu_lowk 1.0/1.8v) core cell library, Low Vt, 9-track, support multi-Vdd, raw gate density = 855KGate/mm^2		
tcbn65gplushvt	CLN65GP	Standard Cell	200a	TSMC 65 nm cmos logic general purpose plus (al_rdl salicide cu_lowk 1.0/1.8v) core cell library, High Vt, 9-track, support multi-Vdd, raw gate density = 855KGate/mm^2		

Library	Technology	Type	Version	Feature	Comment	
tcbn65gplushpbwphvt	CLN65GP	Standard Cell	140a	TSMC 65nm Logic 1.0V/1.8V GPLUS process (1P9M, core 1.0V), 0.20um x-pitch, High-Vt, 10-tracks, Tapless cell layout structure, Support multi-Vdd design , low-voltage range is 0.8*Vdd +/- 10%. Includes level shifter and isolation cell for multi-vdd designs.		
tcbn65gplushpbwplvt	CLN65GP	Standard Cell	140a	TSMC 65nm Logic 1.0V/1.8V GPLUS process (1P9M, core 1.0V), 0.20um x-pitch, Low-Vt, 10-tracks, Tapless cell layout structure, Support multi-Vdd design , low-voltage range is 0.8*Vdd +/- 10%. Includes level shifter and isolation cell for multi-vdd designs.		
tpan65gpgv2od3	CLN65GP	Standard I/O	200b	1.0V/2.5V overdrives to 3.3V, Universal Analog I/O compatible with Staggered Universal Standard I/O		
tpdn65gpgv2od3_sd	CLN65GP	Standard I/O	200a	1.0V/2.5V, over-drive to 3.3V, staggered universal standard I/O		
tpfn65gpgv2od3	CLN65GP	Standard I/O	200d	1.0V/2.5V, over-drive to 3.3V, fail-safe, staggered universal standard I/O		
tphn65gpgv2od3_sl	CLN65GP	Standard I/O	210b	1.0V/2.5V, over-drive to 3.3V, hybrid staggered slim I/O library that contains both digital fail-safe and analog regular slim I/O		
tpin65gv	CLN55GP, CLN65GP, CLN65LP, CLN65ULP	Standard I/O	120a	N65 Inter-connection library that contains the adapter (i.e. bridge) cells for N65 staggered universal I/O libraries.		
tpzn65gpgv2od3	CLN65GP	Standard I/O	200b	1.0V/2.5V, over-drive to 3.3V, 5V tolerant, staggered universal standard I/O		
tcb018g3d3	CL018G	Standard Cell	280a	TSMC 0.18um cmos logic general purpose 1.8V/3.3Vprocess, core cell library, 3.3V I/O device, standard Vt, 9-track		
tcb018gbwp7t	CL018G	Standard Cell	290a	TSMC 0.18um Logic 1.8V/3.3V general purpose process (1P6M, core 1.8V), Standard Vt, 7-track METAL1 only library. 0.56um x-pitch, total 568 cells (include 560 base cells, 7 filler cells, 1 tapcell), Raw gate density = 140 Kgate/mm 2		
tpa018nv	CL018G	Standard I/O	270a	1.8V/3.3V Universal Analog I/O Library Compatible with Tpd018nv/Tpz018nv		
tpb018v	CL018G	Standard I/O	180a	Bond Pad and Bump Library		
tpb973gv	CL018G	Standard I/O	140a	Bond Pad Library		
tpd018nv	CL018G	Standard I/O	280a	1.8V/3.3V, regular, linear universal standard I/O		
tph018nv3_sl	CL018G	Standard I/O	280b	1.8V/3.3V, hybrid linear slim I/O library that contains both standard and analog slim I/O		
tpi018nv	CL018G	Standard I/O	270a	Interface Library for 0.18um Linear Universal Standard I/O		
tpi973gv	CL018G	Standard I/O	250a	Bridge Library for 0.18um Staggered Universal Standard I/O		
tpz018nv	CL018G	Standard I/O	280c	1.8V/3.3V, 5V Tolerant, Linear Universal Standard I/O		
tpz973gv	CL018G	Standard I/O	280a	1.8V/3.3V, 5V Tolerant, Staggered Universal Standard I/O		

All the IPs are available in the following path:

- /PDKs/MUSE/TSMC/CRN65LP/IPs
- /PDKs/MUSE/TSMC/CRN65GP/IPs

To include the libraries in Cadence Virtuoso, include the desired library paths to your cds.lib. An example for TSMC 65nm LP cds.lib is shown below, you can imitate it for any other technology you need:

```
# Native Cadence Libraries:
# -------------------------
DEFINE cdsDefTechLib $CDSHOME/tools/dfII/etc/cdsDefTechLib
DEFINE basic $CDSHOME/tools/dfII/etc/cdslib/basic
DEFINE analogLib $CDSHOME/tools/dfII/etc/cdslib/artist/analogLib
DEFINE ahdlLib $CDSHOME/tools/dfII/samples/artist/ahdlLib
DEFINE rfLib $CDSHOME/tools/dfII/samples/artist/rfLib
DEFINE rfExamples $CDSHOME/tools/dfII/samples/artist/rfExamples
DEFINE aExamples $CDSHOME/tools/dfII/samples/artist/aExamples
DEFINE passiveLib $CDSHOME/tools/dfII/samples/artist/passiveLib
DEFINE bmslib $CDSHOME/tools/dfII/samples/artist/bmslib/

# TSMC Kit:
# ---------
DEFINE tsmcN65 /PDKs/MUSE/TSMC/CRN65LP/tsmcN65

# IPs:
# ----
# TSMC IOs
DEFINE tpan65lpnv2od3 /PDKs/MUSE/TSMC/CRN65LP/IPs/TSMC/io_lib/tpan65lpnv2od3
DEFINE tpbn65v_cup /PDKs/MUSE/TSMC/CRN65LP/IPs/TSMC/io_lib/tpbn65v_cup
DEFINE tpbn65v_fc /PDKs/MUSE/TSMC/CRN65LP/IPs/TSMC/io_lib/tpbn65v_fc
DEFINE tpbn65v_wb /PDKs/MUSE/TSMC/CRN65LP/IPs/TSMC/io_lib/tpbn65v_wb
DEFINE tpdn65lpgv2od3_sd /PDKs/MUSE/TSMC/CRN65LP/IPs/TSMC/io_lib/tpdn65lpgv2od3_sd
DEFINE tpdn65lpnv2od3 /PDKs/MUSE/TSMC/CRN65LP/IPs/TSMC/io_lib/tpdn65lpnv2od3
DEFINE tpfn65lpgv2od3 /PDKs/MUSE/TSMC/CRN65LP/IPs/TSMC/io_lib/tpfn65lpgv2od3
DEFINE tphn65lpgv2od3_sl /PDKs/MUSE/TSMC/CRN65LP/IPs/TSMC/io_lib/tphn65lpgv2od3_sl
DEFINE tphn65lpnv2od3_sl /PDKs/MUSE/TSMC/CRN65LP/IPs/TSMC/io_lib/tphn65lpnv2od3_sl
DEFINE tpin65nv /PDKs/MUSE/TSMC/CRN65LP/IPs/TSMC/io_lib/tpin65nv
DEFINE tpzn65lpgv2od3 /PDKs/MUSE/TSMC/CRN65LP/IPs/TSMC/io_lib/tpzn65lpgv2od3

# TSMC STD Cells
DEFINE tcbn65lp /PDKs/MUSE/TSMC/CRN65LP/IPs/TSMC/stdcell_lib/tcbn65lp
DEFINE tcbn65lphvt /PDKs/MUSE/TSMC/CRN65LP/IPs/TSMC/stdcell_lib/tcbn65lphvt
DEFINE tcbn65lplvt /PDKs/MUSE/TSMC/CRN65LP/IPs/TSMC/stdcell_lib/tcbn65lplvt

# ARM STD Cells
DEFINE sc12_base_hvt /PDKs/MUSE/TSMC/CRN65LP/IPs/ARM/stdcell_lib/sc12_base_hvt/r0p0/oa/sc12_cln65lp_base_hvt/
DEFINE sc12_base_lvt /PDKs/MUSE/TSMC/CRN65LP/IPs/ARM/stdcell_lib/sc12_base_lvt/r0p0/oa/sc12_cln65lp_base_lvt/
DEFINE sc12_base_rvt /PDKs/MUSE/TSMC/CRN65LP/IPs/ARM/stdcell_lib/sc12_base_rvt/r0p0/oa/sc12_cln65lp_base_rvt/
DEFINE sc8_base_hvt /PDKs/MUSE/TSMC/CRN65LP/IPs/ARM/stdcell_lib/sc8_base_hvt/r0p0/oa/sc8_cln65lp_base_hvt/
DEFINE sc8_base_lvt /PDKs/MUSE/TSMC/CRN65LP/IPs/ARM/stdcell_lib/sc8_base_lvt/r0p0/oa/sc8_cln65lp_base_lvt/
DEFINE sc8_base_rvt /PDKs/MUSE/TSMC/CRN65LP/IPs/ARM/stdcell_lib/sc8_base_rvt/r0p0/oa/sc8_cln65lp_base_rvt/
DEFINE sc9_base_hvt /PDKs/MUSE/TSMC/CRN65LP/IPs/ARM/stdcell_lib/sc9_base_hvt/r0p0/oa/sc9_cln65lp_base_hvt/
DEFINE sc9_base_lvt /PDKs/MUSE/TSMC/CRN65LP/IPs/ARM/stdcell_lib/sc9_base_lvt/r0p0/oa/sc9_cln65lp_base_lvt/
DEFINE sc9_base_rvt /PDKs/MUSE/TSMC/CRN65LP/IPs/ARM/stdcell_lib/sc9_base_rvt/r0p0/oa/sc9_cln65lp_base_rvt/
```

5.0 REMOTE CONNECTIVITY

This section illustrates methods of connecting your personal laptop with EEMS Window-Based Machines. In addition to illustrating file-transfer between EEMS servers and Window-Based Machines.

5.1 Remote Connection to EEMS Window-Based Machines

If you need to connect to your Windows-based PC (Not EEMS Servers) located inside the lab from your laptop, you can simply follow these steps. Note: If the Window-Based Machine doesn't have a static IP, then this method won't work; you need to contact UCSD IT by a ticket to request a static IP. In addition, the machine must be connected with an ethernet cable, WIFI-connectivity won't work with RDesktop:

- Make sure that the EEMS machine has remote desktop enabled from settings. (Google how to enable it, depends on your windows version)
- Download Remote Desktop Assistant software to help identify the machine credentials and give you the correct machine name. (https://www.microsoft.com/en-us/download/details.aspx?id=50042).
- Install the assistant and copy the credentials.
- On your personal PC, make sure to connect on a UCSD network, or use VPN if you are working off-campus.
- Open Remote Desktop and enter the credentials you got from assistant tool.
- You should be connected successfully.
- Hints: Sometimes, if the EEMS machine is on Wi-Fi and not on network cable, the Wi-Fi drops when you try to connect remotely. Try to connect the EEMS machine to a cable network to avoid this issue.

Important Note:

DO NOT use any software other than Windows "Remote Desktop Connection" or "RealVNC" for security purposes. It has been reported before that there were security breaches caused by third-party software that establishes remote connectivity. RealVNC can work with WIFI without static IP, but anything you do remotely will be shown on the screens in the LAB, so your data will be available to everyone!! So be careful, manually shutdown your monitors (or use RealVNC automatic option to shut it down) so no one can see what you are working on. Always lock your machine if left unused.

5.2 File Transfer Between EEMS Servers and Windows-Based Machines

To transfer files between your home, scratch of backup from EEMS servers; you can use (WinSCP) to transfer files from/to EEMS servers. Download the source .exe on your windows machine (https://winscp.net/eng/index.php), install it. Agree to make it use putty configuration, use your Linux credentials to login the machines and start transferring files.

6.0 MISCELLANEOUS GUIDELINES

This section provides some additional miscellaneous information that might be useful to EEMS server users.

6.1 Automatic Tools Loading

If you wish to keep specific tools loaded in any terminal without typing "*eems_load_xx*", you can use your Linux "~/.cshrc" file for that. Open your file located in your home directory with gedit or any text editor, then type for example the tools you always need to be kept in any newly open terminal. EEMS servers use C-shell, it is highly recommended that you keep using it as well. An example of a cshrc file is shown below:

```
#!/bin/csh -f

# ----------------------------
# ----------------------------
# Nader Fathy cshrc Settings:
# ----------------------------
# ----------------------------

# -----------------
# Genereic Aliases:
# -----------------

   #Initializing (Overriding) PATH settings:
   setenv PATH /tools/asitic:/usr/local/bin:/usr/bin:/usr/local/sbin:/usr/sbin

   # Shell Display Settings
   alias cd 'cd \!*;set prompt = "[`hostname`] `whoami`:$cwd""$ "'
   set prompt = "[`hostname`] `whoami`:$cwd""$ '

# --------------------
# Load all EEMS Tools:
# --------------------

   setenv LOAD_EEMS_TOOLS_SILENTLY 1
   eems_load_tools
```

The environment variable "LOAD_EEMS_TOOLS_SILENTLY 1" prevents the terminal from displaying the loaded versions of the tool.

It is also useful to keep the shell display settings as shown above, this will keep your current path written on the terminal whenever you change the directory.

If you no longer need your VNC Session, you can kill it by typing this in PuTTY (replace # by your session number):

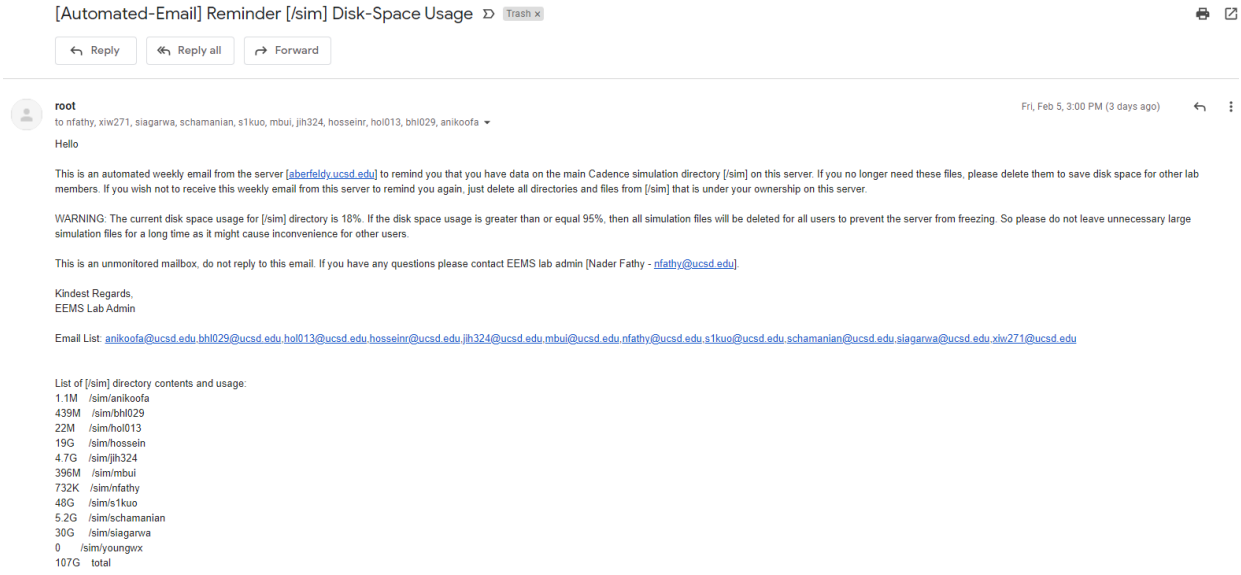
- vncserver -kill :#

And if you need to list available sessions, just type "vncserver -list"

6.2 Automatic Server Notifications

Once you get registered to be an EEMS server user, you will be receiving automatic email notifications from different servers depending on your usage. These emails are vital since it gives the users guidance if the guidelines were not followed correctly. The following are some examples (Subject to change):

- ***Weekly simulation directory usage:***
  Depending on which server you use to run cadence, once you place a directory or a file under your ownership in /sim directory you will receive a weekly notification every Friday (3:00 PM PST) to remind you to remove your simulation data. If you are done with your simulations and no longer need the files, please delete them to allow other users additional diskspace. A sample of the email is shown below:



[Automated-Email] Reminder [/sim] Disk-Space Usage

Trash ×

Reply | Reply all | Forward

root Fri, Feb 5, 3:00 PM (3 days ago)

to nfathy, xiw271, siagarwa, schamanian, s1kuo, mbui, jih324, hosseinr, hol013, bhl029, anikoofa

Hello

This is an automated weekly email from the server [aberfeldy.ucsd.edu] to remind you that you have data on the main Cadence simulation directory [/sim] on this server. If you no longer need these files, please delete them to save disk space for other lab members. If you wish not to receive this weekly email from this server to remind you again, just delete all directories and files from [/sim] that is under your ownership on this server.

WARNING: The current disk space usage for [/sim] directory is 18%. If the disk space usage is greater than or equal 95%, then all simulation files will be deleted for all users to prevent the server from freezing. So please do not leave unnecessary large simulation files for a long time as it might cause inconvenience for other users.

This is an unmonitored mailbox, do not reply to this email. If you have any questions please contact EEMS lab admin [Nader Fathy - nfathy@ucsd.edu].

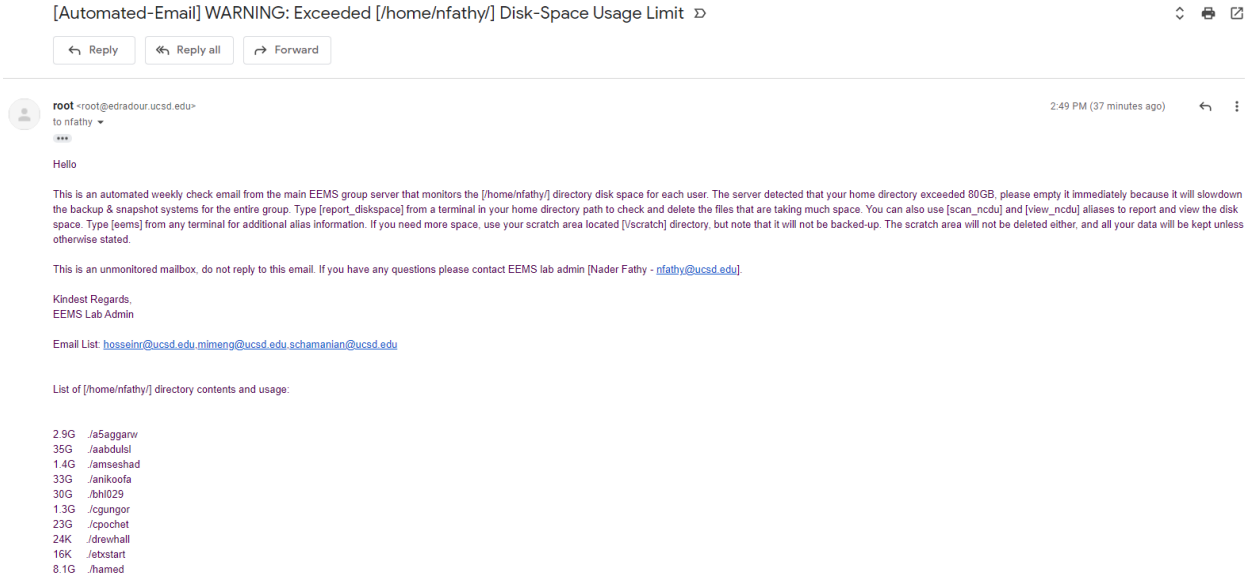
Kindest Regards,
EEMS Lab Admin

Email List: anikoofa@ucsd.edu,bhl029@ucsd.edu,hol013@ucsd.edu,hosseinr@ucsd.edu,jih324@ucsd.edu,mbui@ucsd.edu,nfathy@ucsd.edu,s1kuo@ucsd.edu,schamanian@ucsd.edu,siagarwa@ucsd.edu,xiw271@ucsd.edu

List of [/sim] directory contents and usage:
1.1M /sim/anikoofa
439M /sim/bhl029
22M /sim/hol013
19G /sim/hossein
4.7G /sim/jih324
396M /sim/mbui
732K /sim/nfathy
48G /sim/s1kuo
5.2G /sim/schamanian
30G /sim/siagarwa
0 /sim/youngwx
107G total

  To avoid getting this notification, make sure to delete any directory/file from /sim directory (Note: deleting the content inside the directory only and leaving the directory of your alias will make the server send you an email as well).

- ***Weekly home directory usage check:***
  This is a weekly check done by the main EEMS server every Friday at (12:00 PM PST). You will only receive this email if you exceeded your /home directory assigned quota, which is 80GB/user. Please delete some data from your home or move it to /scratch area to avoid getting the weekly notification. A sample email is shown below:



[Automated-Email] WARNING: Exceeded [/home/nfathy/] Disk-Space Usage Limit

Reply | Reply all | Forward

root <root@edradour.ucsd.edu> 2:49 PM (37 minutes ago)
to nfathy

Hello

This is an automated weekly check email from the main EEMS group server that monitors the [/home/nfathy/] directory disk space for each user. The server detected that your home directory exceeded 80GB, please empty it immediately because it will slowdown the backup & snapshot systems for the entire group. Type [report_diskspace] from a terminal in your home directory path to check and delete the files that are taking much space. You can also use [scan_ncdu] and [view_ncdu] aliases to report and view the disk space. Type [eems] from any terminal for additional alias information. If you need more space, use your scratch area located [/scratch] directory, but note that it will not be backed-up. The scratch area will not be deleted either, and all your data will be kept unless otherwise stated.

This is an unmonitored mailbox, do not reply to this email. If you have any questions please contact EEMS lab admin [Nader Fathy - nfathy@ucsd.edu].

Kindest Regards,
EEMS Lab Admin

Email List: hosseinr@ucsd.edu,mimeng@ucsd.edu,schamanian@ucsd.edu

List of [/home/nfathy/] directory contents and usage:

2.9G ./a5aggarw
35G ./aabdulsl
1.4G ./amseshad
33G ./anikoofa
30G ./bhl029
1.3G ./cgungor
23G ./cpochet
24K ./drewhall
16K ./etxstart
8.1G ./hamed

- ***Alert for simulation directory excessive usage:***
  This check runs hourly, when a server /sim directory crosses 80% if its total usage, you will receive an hourly email to alert you that your simulation data inside /sim directory might be lost if the usage reached 95% of total use. This is important to keep the server from freezing if its hard drives were completely filled. If you caused this issue, please stop the simulations you are running immediately and delete your simulation data by: 1) Shift+Delete your simulation directory data, or 2) Using a terminal by using the command "rm -rf". If you deleted your data into the trash bin only, the directory will still be full and you will get notifications.
  If were not the one causing the problem, then please delete your simulation data that you don't need to allow others some diskspace. Delete all your directories/files under your ownership if you do not wish to receive the hourly notifications till the problem gets fixed.

- ***Alert for simulation data on home directory***
  This check runs daily, you will only receive an email from the serves if you have a directory/file on your home that has the keyword "simulation"; for example "/home/nfathy/my_simulation" or "/home/nfathy/simulation.txt". The default Cadence simulation directory is always located at "~/simulation" path, so the servers run checks to see if users ran simulations on /home directory instead of the designated path /sim. If you receive this email please remove the directory/files immediately. If you receive the email for 2 consecutive days you will be considered violating EEMS server guidelines and will be reported to EEMS lab PI.

6.3 Additional Notes

The automatic backup system is usually scheduled weekly every Saturday (1:00 AM till ~ 6:00 AM PST). The duration of the backup depends on the amount on data copied from /home directory to the /backup directory. During this time, you will not be able to access the data inside of /backup/replicas directory as it is being created. However, the data inside /backup/snapshots is always available if needed. In addition, due to the heavy computing operation of copy/paste, you might notice some server slowdown during the operation, please be patient until the backup procedure ends.