

# CyVerse Atmosphere



Cloud computing for life science



Cold  
Spring  
Harbor  
Laboratory



Download Slides and Follow Along

[mcbios.readthedocs.org](http://mcbios.readthedocs.org)



# Welcome to Atmosphere



Custom Cloud Computing for Life Sciences





# What is Cloud Computing?

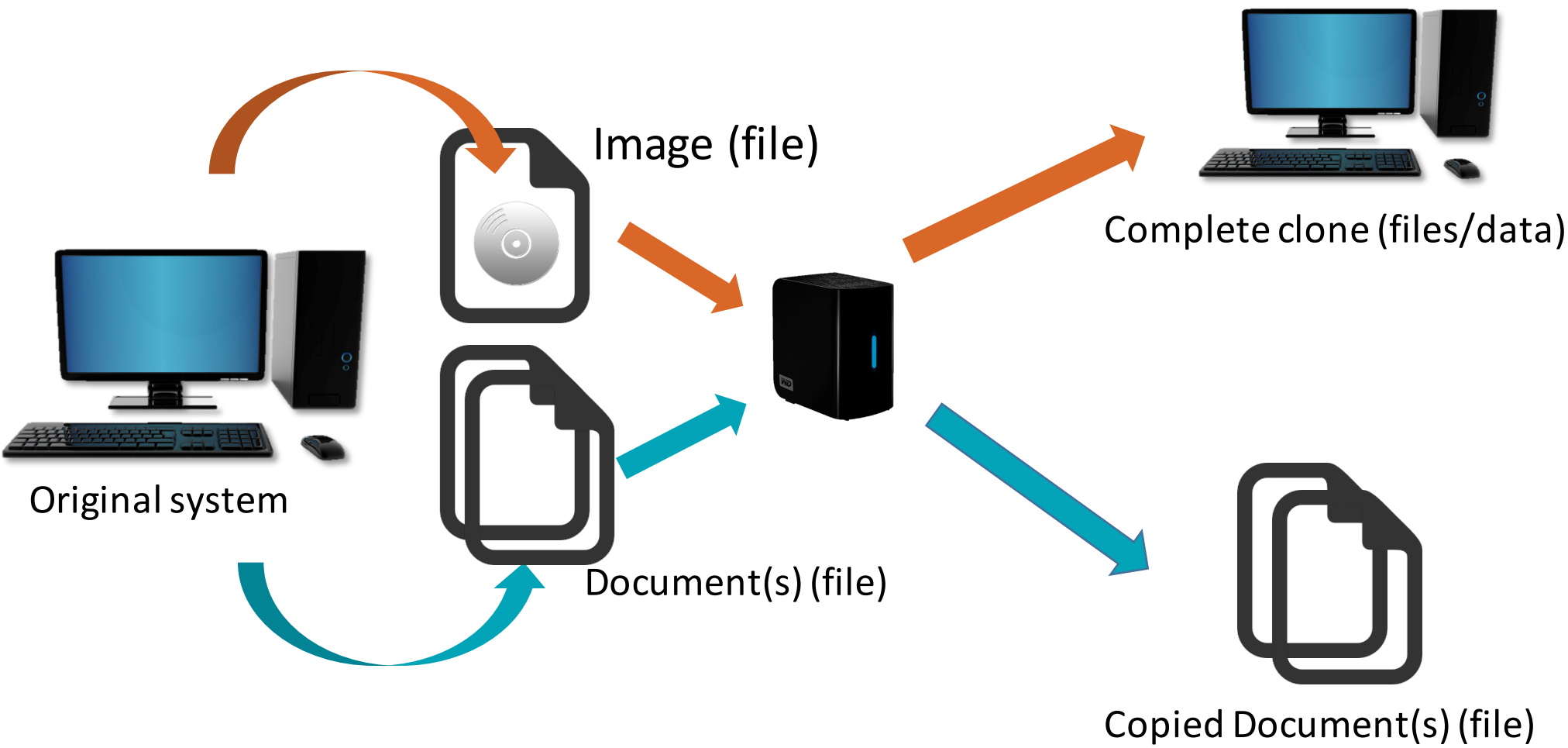
Yet another round of jargon





# What is Cloud Computing?

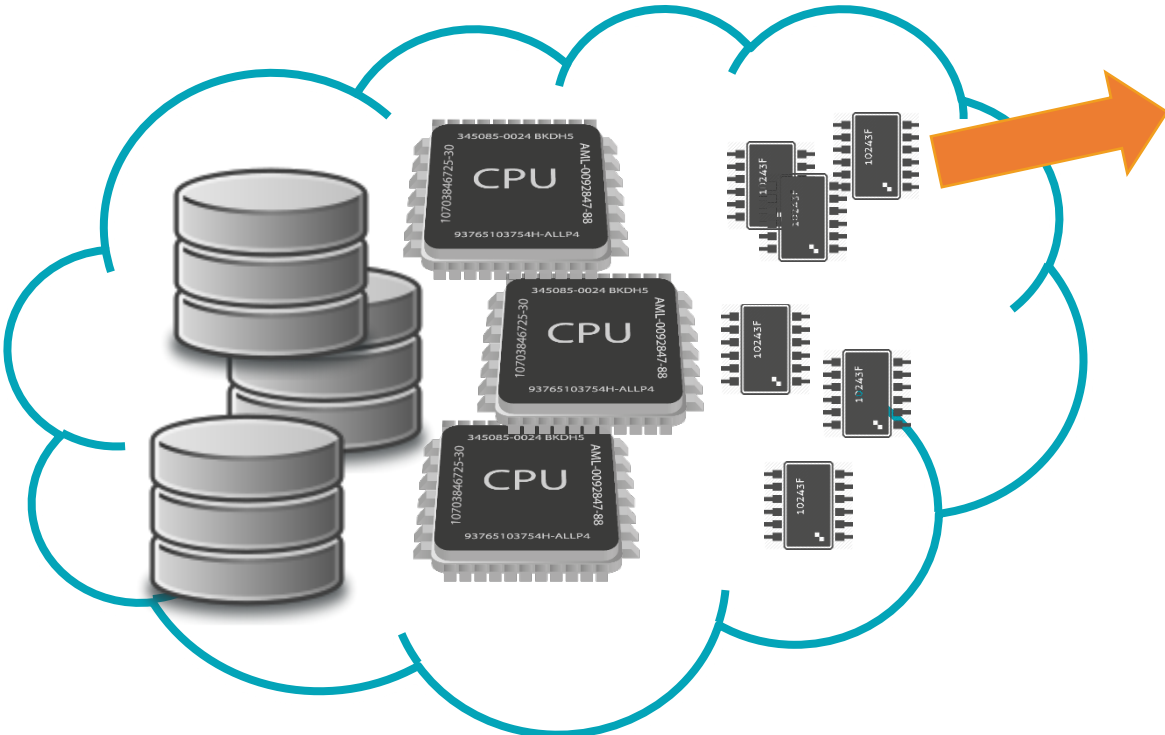
Important concepts: Image



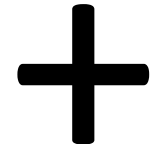
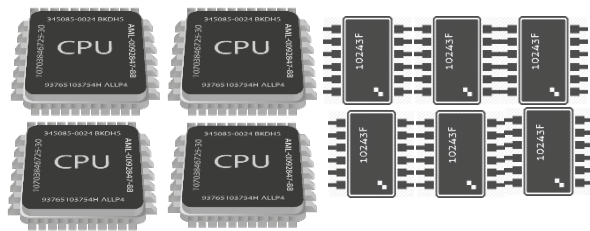


# What is Cloud Computing?

Important concepts: Instance



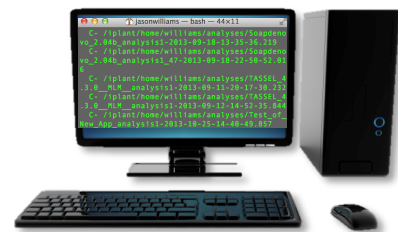
CyVerse Cloud



(Disk + CPU + Memory) + (Image)



128.196.34.158



Atmosphere Instance (virtual machine)





# Atmosphere Overview

Largest, easiest to use cloud for Life Sciences

**CYVERSE** BETA | Dashboard | Projects | Images | Providers | Help

## Getting Started

- Launch New Instance**  
Browse Atmosphere's list of available images and select one to launch a new instance.
- Browse Help Resources**  
View a video tutorial, read the how-to guides, or email the Atmosphere support team.
- Change Your Settings**  
Modify your account settings, view your resource quota, or request more resources.

- Choose an existing image or customize
- Instances up to 16-Core / 128 GB RAM
- Access via shell or VNC
- Share you image with selected users, or make them public





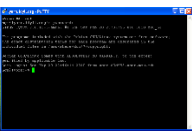
# Atmosphere Overview

Connecting to your instance

## Windows



VNC Viewer

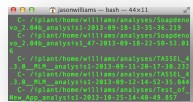


PuTTY

## Mac



VNC Viewer

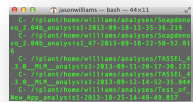


Shell/terminal

## Linux



VNC Viewer



Shell/terminal

VNC Viewer: [www.realvnc.com/download/viewer](http://www.realvnc.com/download/viewer)

PuTTY: [www.putty.org](http://www.putty.org)







# Atmosphere Overview

## Benefits

### Get Science Done



- Work in an on-demand **Linux environment** (most bioinformatics)
- Collaborate with students and colleagues on the same instance

### Reproducibility



- Make data, workflows, and analyses available in a **public image**
- Access previous software version and images

### Productivity



- Multicore high memory images to run multithreading applications
- Move your analyses **from your laptop to the cloud**





# Atmosphere Overview



Hands-on demo



# Atmosphere Overview

Key things to remember when you try this yourself

- Images do not have automatic access to your Data Store
  - Use Cyberduck to access the Data Store
  - Use iCommands
- Users have monthly allocation limits
  - Terminate, or stop instances not in use
  - If a larger allocation is needed, contact support
- All data on terminated instances will be destroyed
  - Use Cyberduck or iCommands to transfer data off the instance
  - You may also create an EBS Volume (see documentation)





# Atmosphere Overview

User perspectives and possible applications

Bench Scientist



- Learned how to use the shell and how to work with Linux
- Mastered using R to develop plots for his manuscript

Bioinformatician



- Launches an image and has full SUDO access to customize
- Developed a software with numerous R and Python library dependencies
- She updates it regularly by making a new image

Core Facilities



- Linked several atmosphere instances with Apache Hadoop
- Worked with CyVerse to import existing Amazon image





# Keep asking: ask.iplantcollaborative.org

Detailed instructions with videos, manuals, documentation in Learning Center

The screenshot shows the iPlant Collaborative 'Ask iPlant' page. At the top, there is a navigation bar with the iPlant Collaborative logo, a search bar, and buttons for 'Tags', 'People', and 'Badges'. Below the navigation bar, there are tabs for 'ALL' and 'UNANSWERED', and a search bar with the text 'Search or ask a question'. A prominent orange button says 'ASK YOUR QUESTION'. The main content area displays a list of questions with their respective statistics (votes, answers, views) and tags. The questions listed are:

- Broken link in AGAVE Beginners Guide**  
Agave\_API | 0 votes, 1 answer, 6 views | 3 hours ago | jdebarry
- I'm having proplems with SoapdeNovo runs failing. I think there might be an error in how the program is getting the manual entries for insert size. I'll paste my error file below.**  
soapdenovo-trans | DiscoveryEnvironment | 0 votes, 2 answers, 12 views | 3 hours ago | matthewterry
- Where is shared data?**  
DiscoveryEnvironment | 0 votes, 2 answers, 23 views | Jan 25 '16 | kycklark
- Output from Scythe-Adapter-Trimming\_analysis is not showing up...**  
DiscoveryEnvironment | scythe | 0 votes, 1 answer, 11 views | Jan 22 '16 | jdebarry

On the right side of the page, there is a 'Contributors' section with a grid of profile pictures and a 'Tags' section with a list of tags including: 454, Agave\_API, Assembly, Atmosphere, Bisque, CoGe, DNASubway, DataStore, DiscoveryEnvironment, EST, General, HPC, Metadata, blast, bwa, concatenate, cuffdiff, error, genome, icommands, instance.

