



Transforming Science Through Data-driven Discovery

Atmosphere Overview

Intro Cloud Computing



Cold
Spring
Harbor
Laboratory



Welcome to Atmosphere



Custom Cloud Computing for Life Sciences



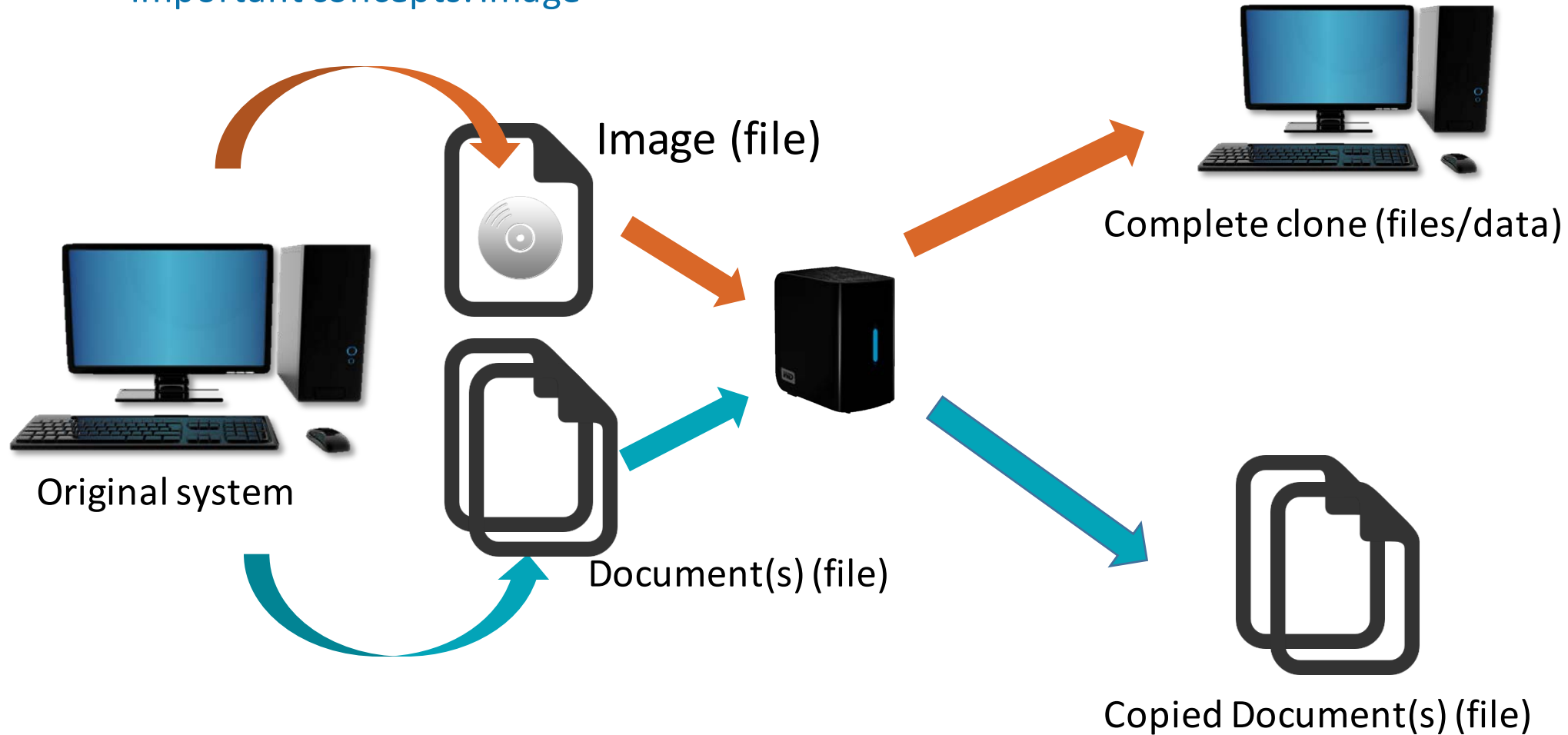
What is Cloud Computing?

Yet another round of jargon



What is Cloud Computing?

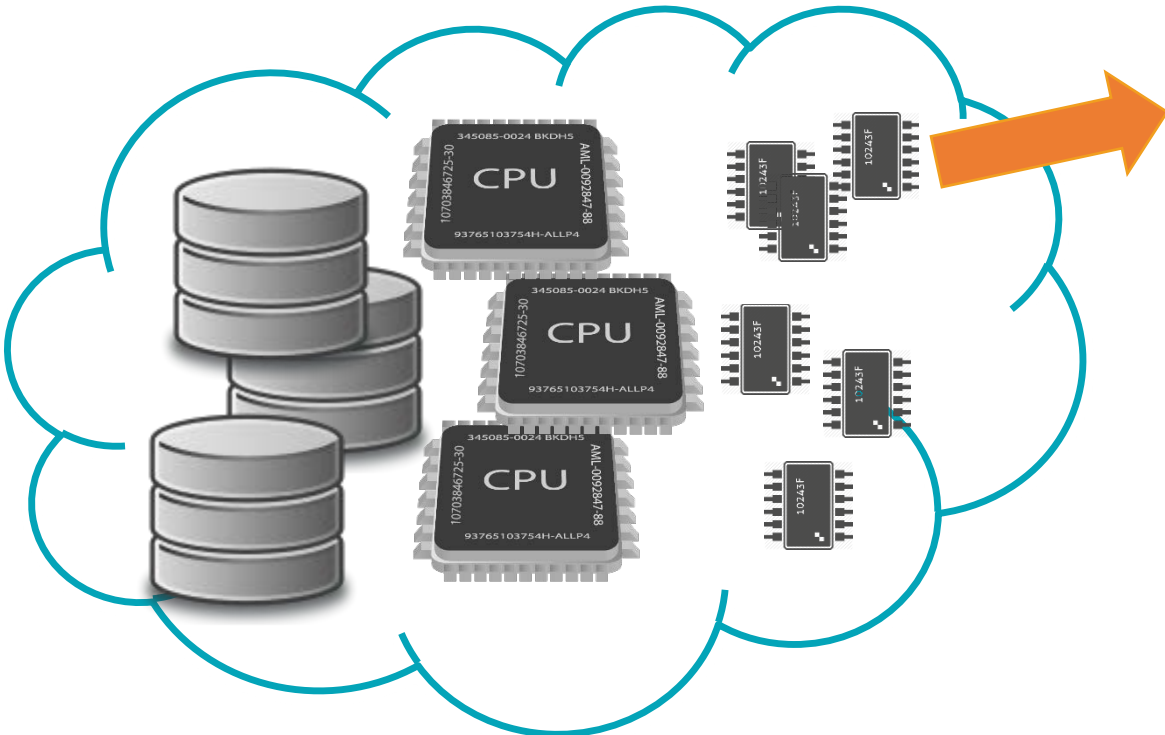
Important concepts: Image



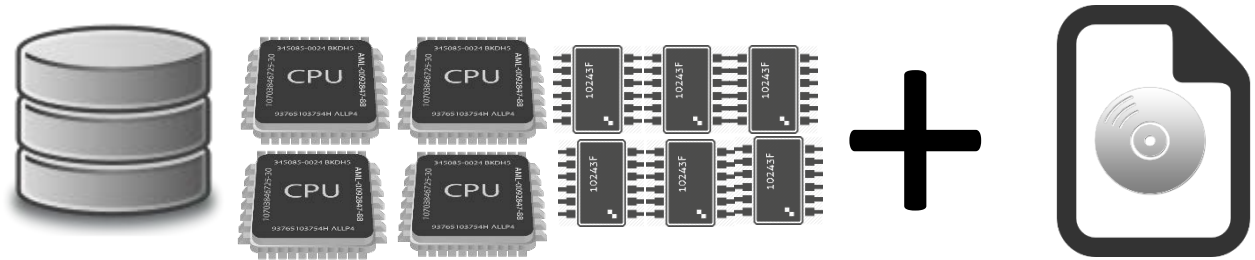


What is Cloud Computing?

Important concepts: Instance



CyVerse Cloud



(Disk + CPU + Memory) + (Image)



128.196.34.158



Atmosphere Instance (virtual machine)



What is Cloud Computing?

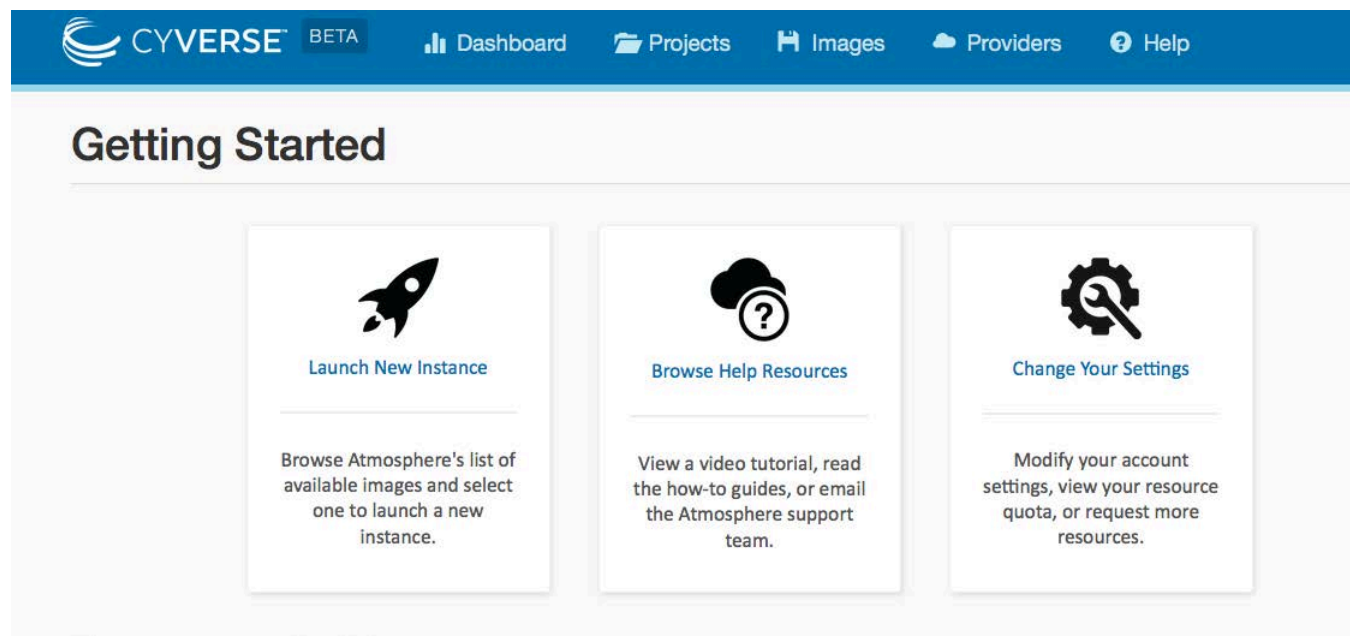
Yet another round of jargon





Atmosphere Overview

Largest, easiest to use cloud for Life Sciences



- 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

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

Connecting to your instance

Windows



VNC Viewer

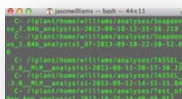


PuTTY

Mac



VNC Viewer

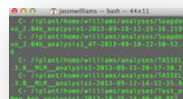


Shell/terminal

Linux



VNC Viewer



Shell/terminal

VNC Viewer: www.realvnc.com/download/viewer

PuTTY: www.putty.org





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





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)



Where to go from here:



Learning Center

- Get Started Guide
- Tutorials and Videos
- Documentation

Upcoming Events

- Workshops
- Webinars





Keep asking: ask.iplantcollaborative.org

Detailed instructions with videos, manuals, documentation in Learning Center

The screenshot shows the homepage of the iPlant Collaborative Ask iPlant forum. The header includes the iPlant Collaborative logo, a search bar, and navigation links for Tags, People, and Badges. Below the header, there are tabs for ALL and UNANSWERED questions, a search bar, and a prominent orange button labeled 'ASK YOUR QUESTION'. The main content area displays a list of questions with their respective statistics (votes, answers, views) and tags. The questions shown are:

- Broken link in AGAVE Beginners Guide** (Agave_API tag, 1 answer, 6 views, 3 hours ago by jdebarr)
- I'm having problems 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 tags, 2 answers, 12 views, 3 hours ago by matthewterry)
- Where is shared data?** (DiscoveryEnvironment tag, 2 answers, 23 views, Jan 25 '16 by kycklark)
- Output from Scythe-Adapter-Trimming_analysis is not showing up...** (DiscoveryEnvironment, scythe tags, 1 answer, 11 views, Jan 22 '16 by jdebarr)

On the right side, there is a 'Contributors' section with a grid of user avatars and a 'Tags' section listing various tags such as Agave_API, Assembly, Atmosphere, Bisque, CoGe, DNASubway, DataStore, DiscoveryEnvironment, EST, General, HPC, Metadata, blast, bwa, concatenate, cuffdiff, error, genome, icommands, and instance.





Transforming Science Through Data-driven Discovery



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