**Amazon Web Services (AWS)**

**AWS Online Learning:**

• AWS Technical Professional 2020/04  
 <https://www.aws.training/Details/Curriculum?id=45423>

**AWS Learning Experience:** 2020/12

AWS services provisioning setup, configuration.

User Capability Enabled:

Bioinformatics in AWS Cloud

- RStudio (Local PC Web Browser) <== HTTP ==> RStudio Server (EC2 AMI)  
- Bioinformatics workflows using Bioconductor Packages in RStudio.

AWS Services Explored:

Config Security Groups, Key Pairs, IAM, SSH connect to AMI Instance, HTTP connect to AMI Process (RStudio).

AMI Image Instance chosen;   
[A] (Ubuntu Linux, t2.xlarge, 4 vCPUs 2.3 GHz, 16 GB Memory, EBS Volume SSD 40 GB).

• EC2 AMI:   
 <https://www.bioconductor.org/help/bioconductor-cloud-ami/#ami_ids>   
 Bioconductor Community maintained Public AMI image  
 AMI Image: [A]   
 Includes: Bioconductor.org distribution (R Packages, RStudio Server, Git, …)

• EC2 Image Builder:   
 Service enables custom image builds  
 Bioinformatics Developers choose build components.  
 AMI Image: [A]   
 Includes: Bioconductor.org distribution (R Packages, RStudio Server, Git, …);   
 And other components of choice; e.g., Tensorflow, etc.

• EC2 Container Service (ECS):   
 <https://docs.aws.amazon.com/AmazonECS/latest/developerguide/launch_container_instance.html>   
 Service supports Docker containers  
 Bioconductor Community maintains Docker image builds.  
 AMI Image: [A]   
 Public AMI ECS-Optimized; with Docker Engine, ECS container agent, etc.

Docker Image1: Bioconductor.org distribution (R Packages, RStudio Server, Git, …)   
 <https://hub.docker.com/r/bioconductor/bioconductor_docker>   
 Docker ImageN: And other Docker images of choice; e.g., Tensorflow,   
 Enables: Docker on AMI <== Docker Pull/Push ==> DockerHub (Bioconductor.org image)

• Elastic Container Registry (ECR):   
 Docker container registry service  
 Docker container images build components  
 Public Linux repositories 823 (12/14/2020)  
 e.g., Airflow, Tensorflow, Spark, etc.