
AWS
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AIM305

How to use fully managed Jupyter notebooks in Amazon SageMaker

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AWS

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Agenda

- What is Amazon SageMaker?
- SageMaker notebook instances
- Amazon SageMaker Studio notebooks
- Studio notebooks vs. notebook instances
- Features deep dive
- Demo



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SageMaker helps you build, train, and deploy models



Collect and prepare training data
Fully managed data processing jobs / data labeling workflows



Choose or bring your own ML algorithm
Collaborative notebooks and built-in algorithms / models



Deploy model in production
1-click deployment and auto scaling



Monitor models
Automatically spot concept drift



Validate predictions
Add human review of predictions



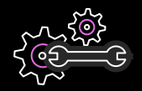
Scale and manage the production environment
Fully managed with auto scaling for 75% less



Set up and manage environments for training
1-click training



Train, debug, and tune models
Debugging and optimization



Manage training runs
Visually track and compare experiments



WEB-BASED IDE FOR ML

AUTOMATICALLY BUILD AND TRAIN MODELS

SageMaker notebook instances

SageMaker notebook instance and SageMaker Studio

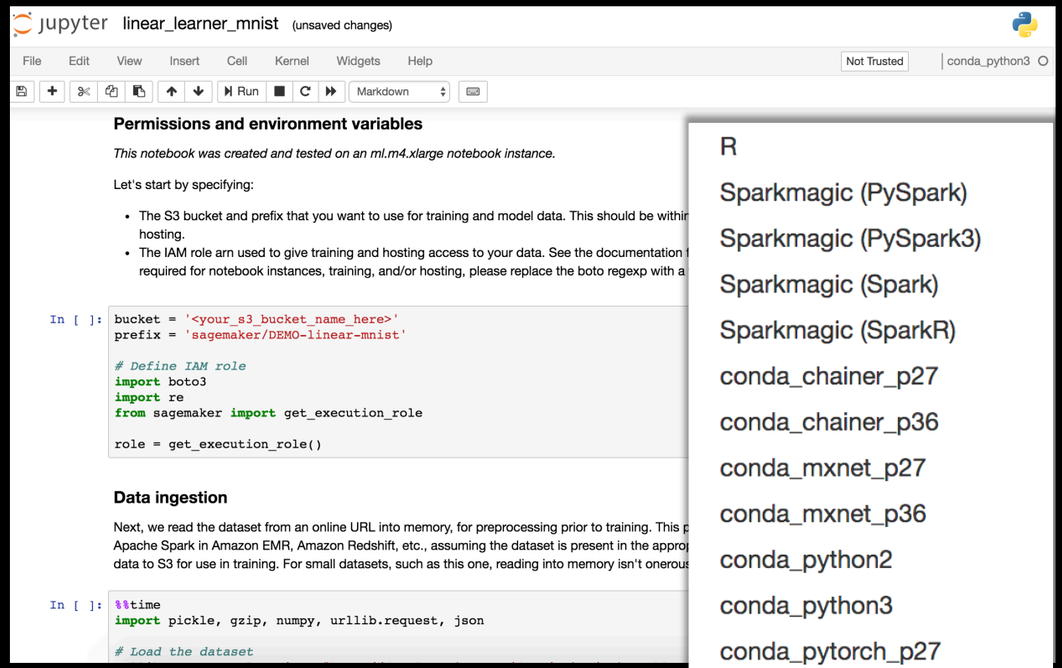
Interfaces to SageMaker

SageMaker notebook instance environments

Jupyter kernel + Python packages +
install external libraries and kernels

Fully managed

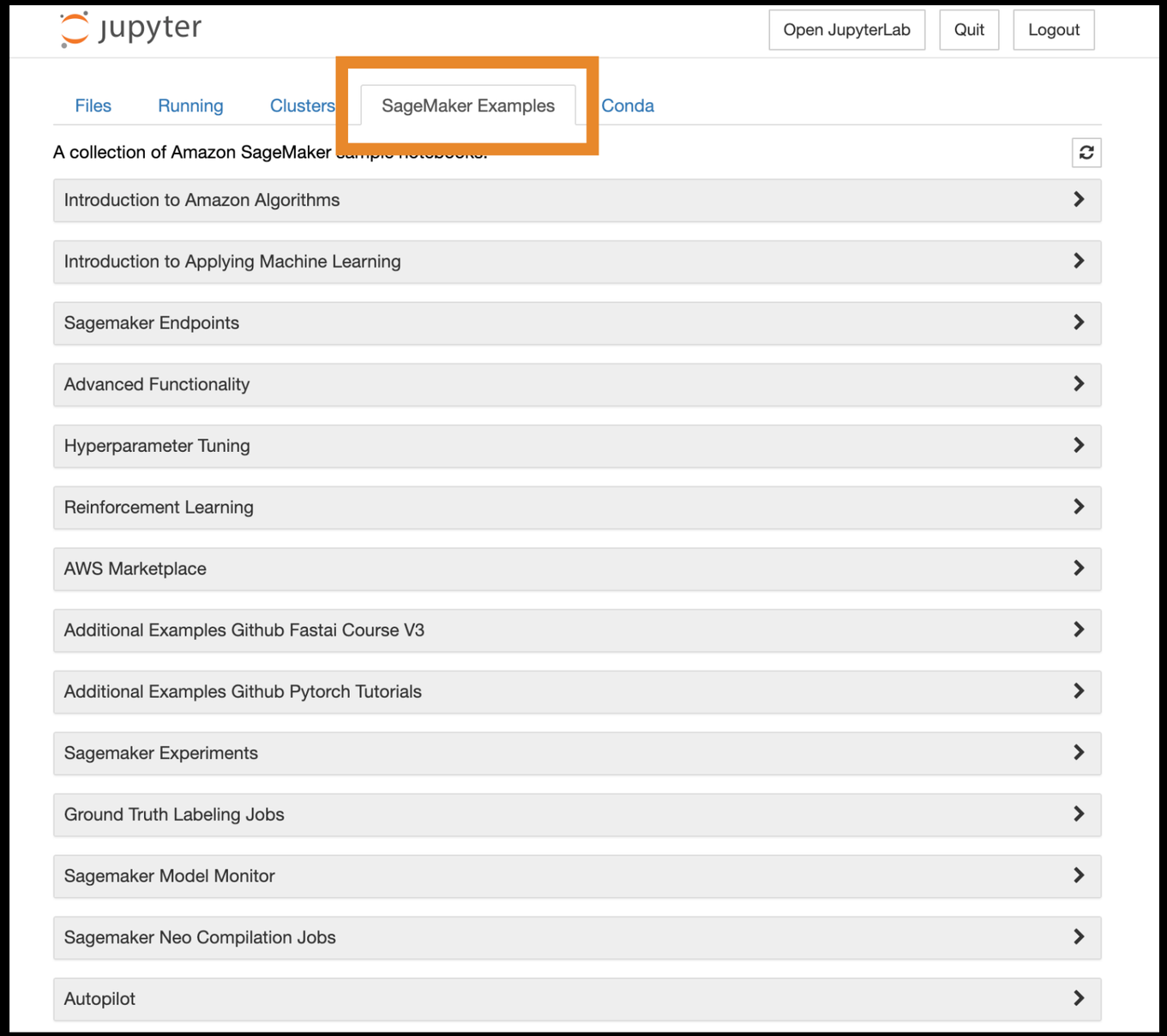
Transformation
Batch processing
Model training
Model deployment



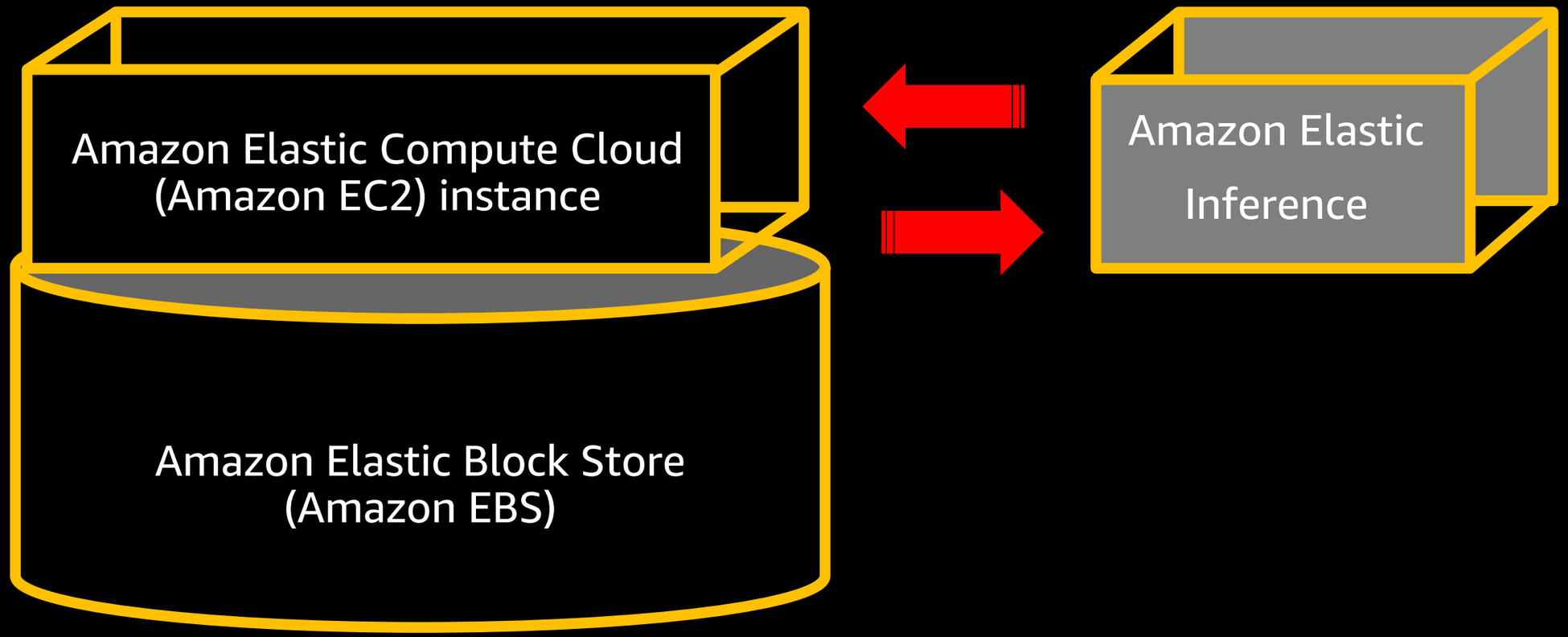
SageMaker examples

Key takeaway
SageMaker examples

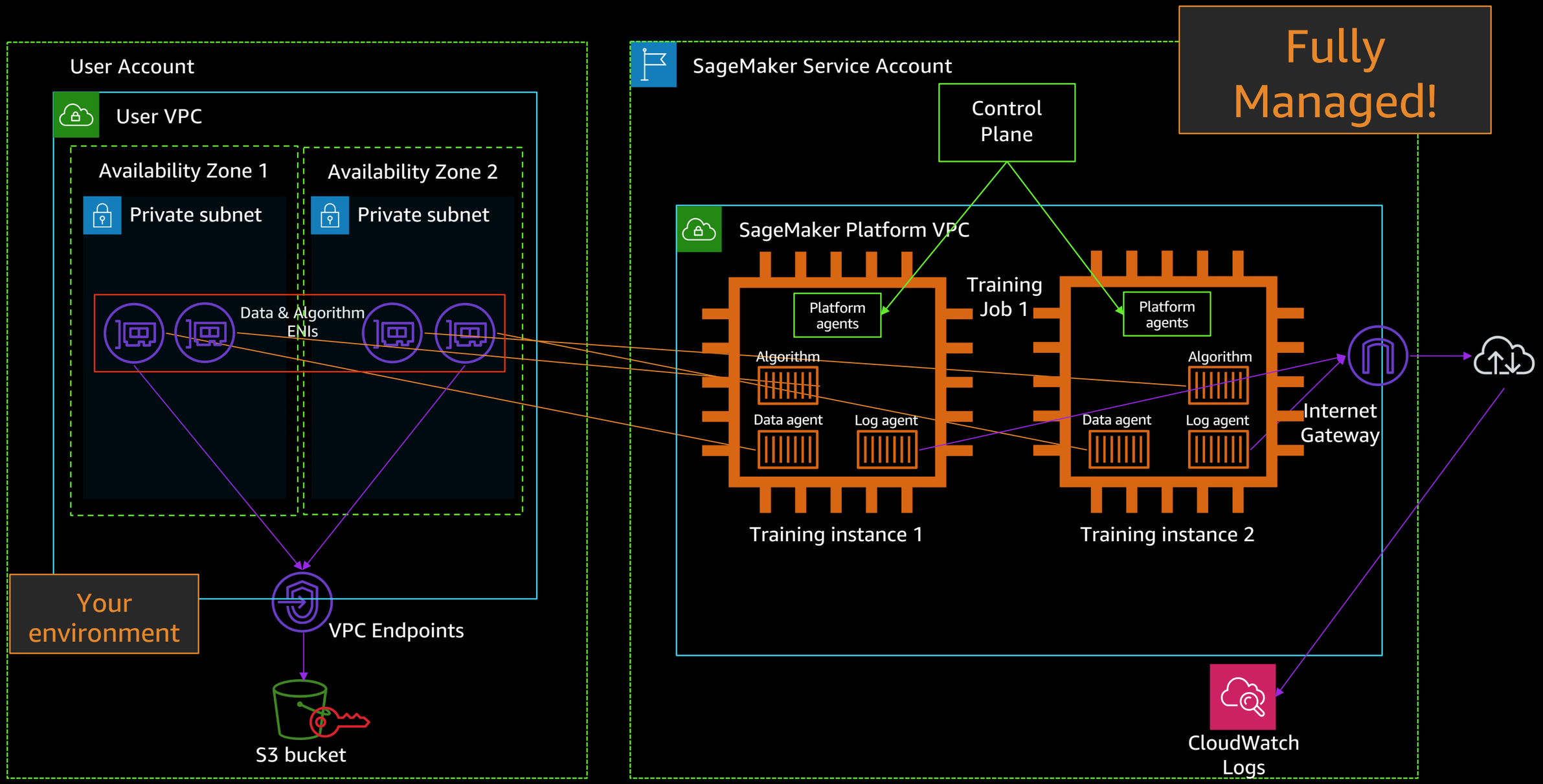
The best place to start learning and practicing machine learning!



Create a notebook instance in SageMaker



Deep dive - SageMaker training job deployment



What users tell us they want to do

- Simplify access control
- Build team-specific workflows
- Improve team collaboration
- Standardize development environment
- Accelerate learning curve for users to increase adoption speed

SageMaker Studio notebooks

FAST-START SHARABLE NOTEBOOKS



Easy access with AWS Single Sign-On (SSO)

Access your notebooks in seconds



Fully managed and secure

Administrators manage access and permissions



Fast setup

Start your notebooks without configuring compute resources



Easy collaboration

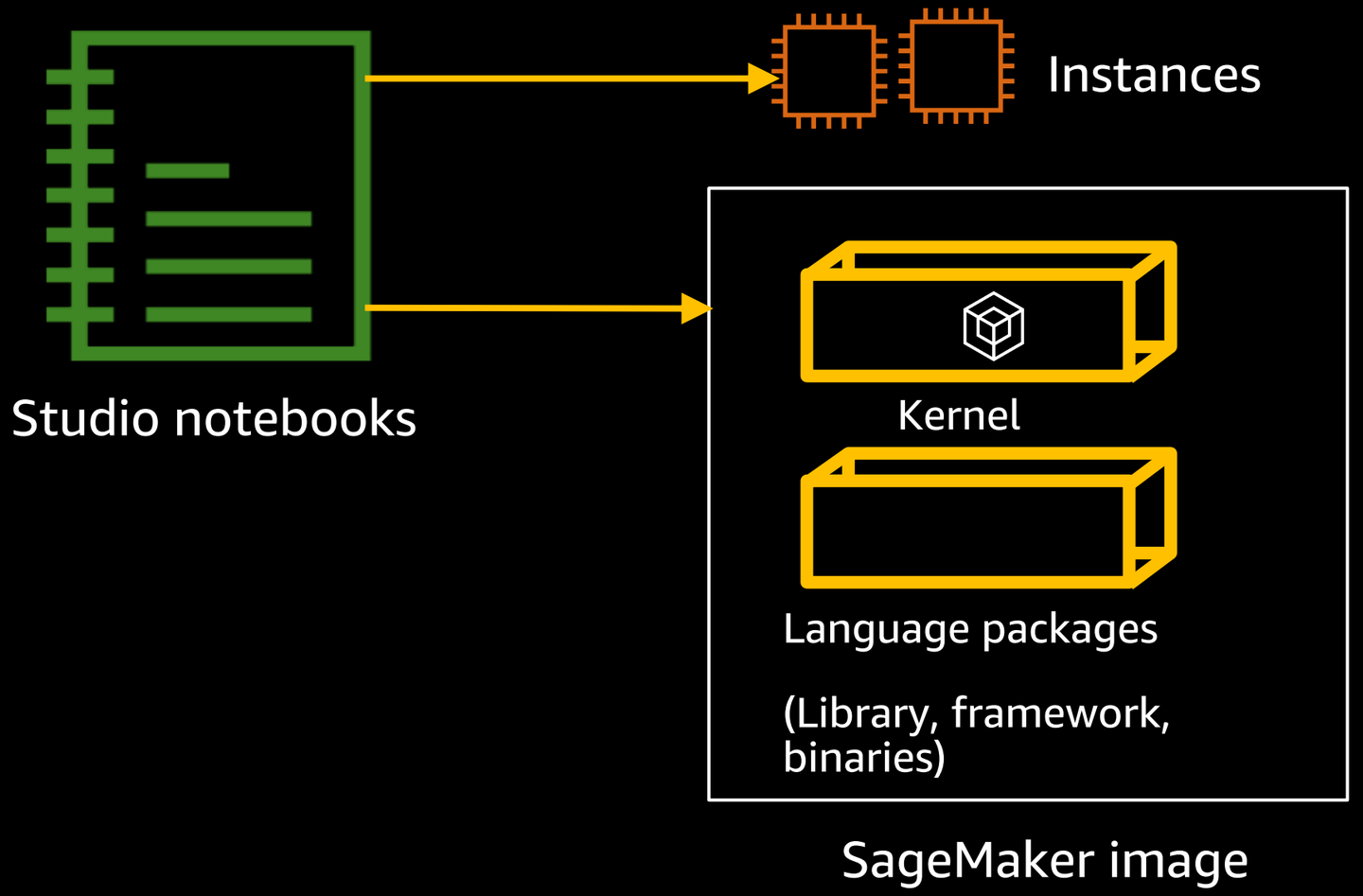
Share notebooks with a single click



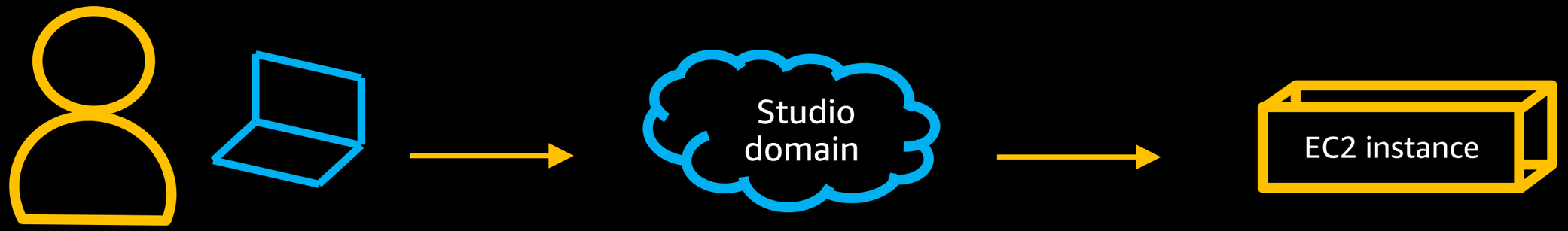
Flexible

Dial up or down compute resources

SageMaker Studio notebooks



SageMaker Studio



You

Your IDE

Your compute

- Can enable AWS Identity and Access Management (IAM) or AWS SSO
- Fast startup
- Consolidated experience
- A slice of the shared Amazon Elastic File System (Amazon EFS)

Low-lift / automatic feature access

- Autopilot
- Experiments
- Debugger
- Model monitoring
- Versioning
- Endpoint management

- Can create a shareable link with package dependences in a single click
- Dedicated compute resource
- Elastic compute
- Billing is per usage, not uptime
- Change environments per project

Remember, features are backwards compatible but differ in ease of use across instances vs. Studio

Studio notebooks vs. notebook instances

Faster launch time

Integrated full-environment sharing

Preinstalled with SageMaker SDK

Persistent storage with Amazon EFS

Elastic compute options

Environment standardization

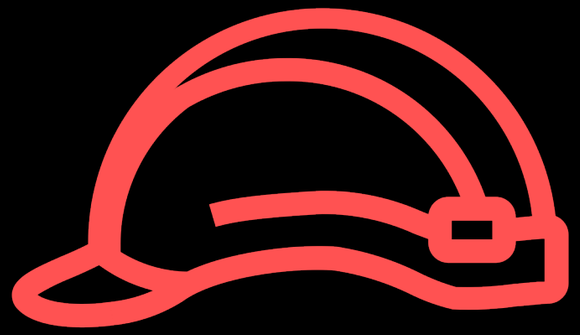
Features deep dive



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Flexible user management



IAM roles



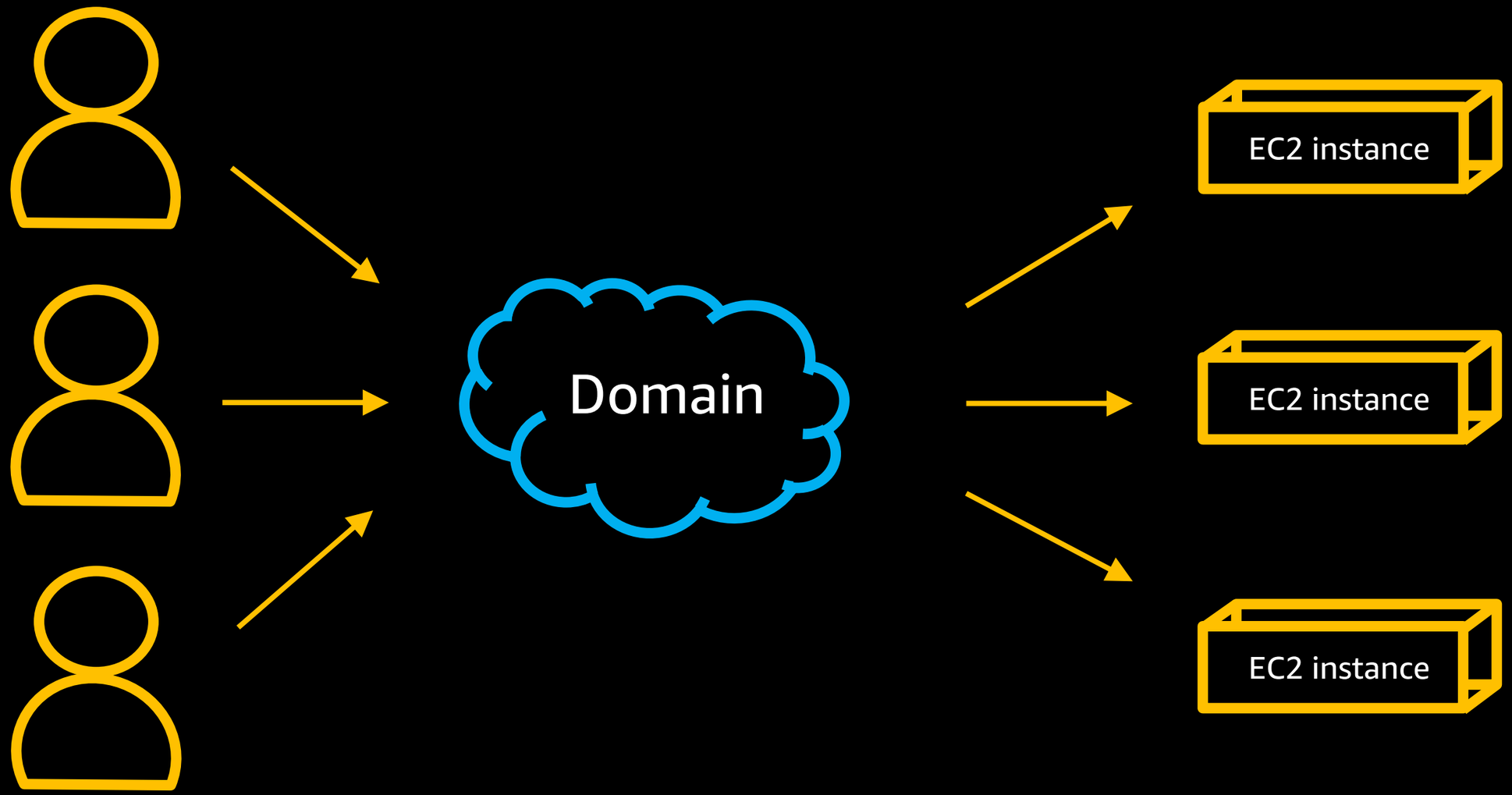
AWS SSO

Remember, you get 1 domain *per AWS account, per region*. When you need to delete this, just delete the users first and then the domain.

Studio notebooks enhance data scientists' productivity

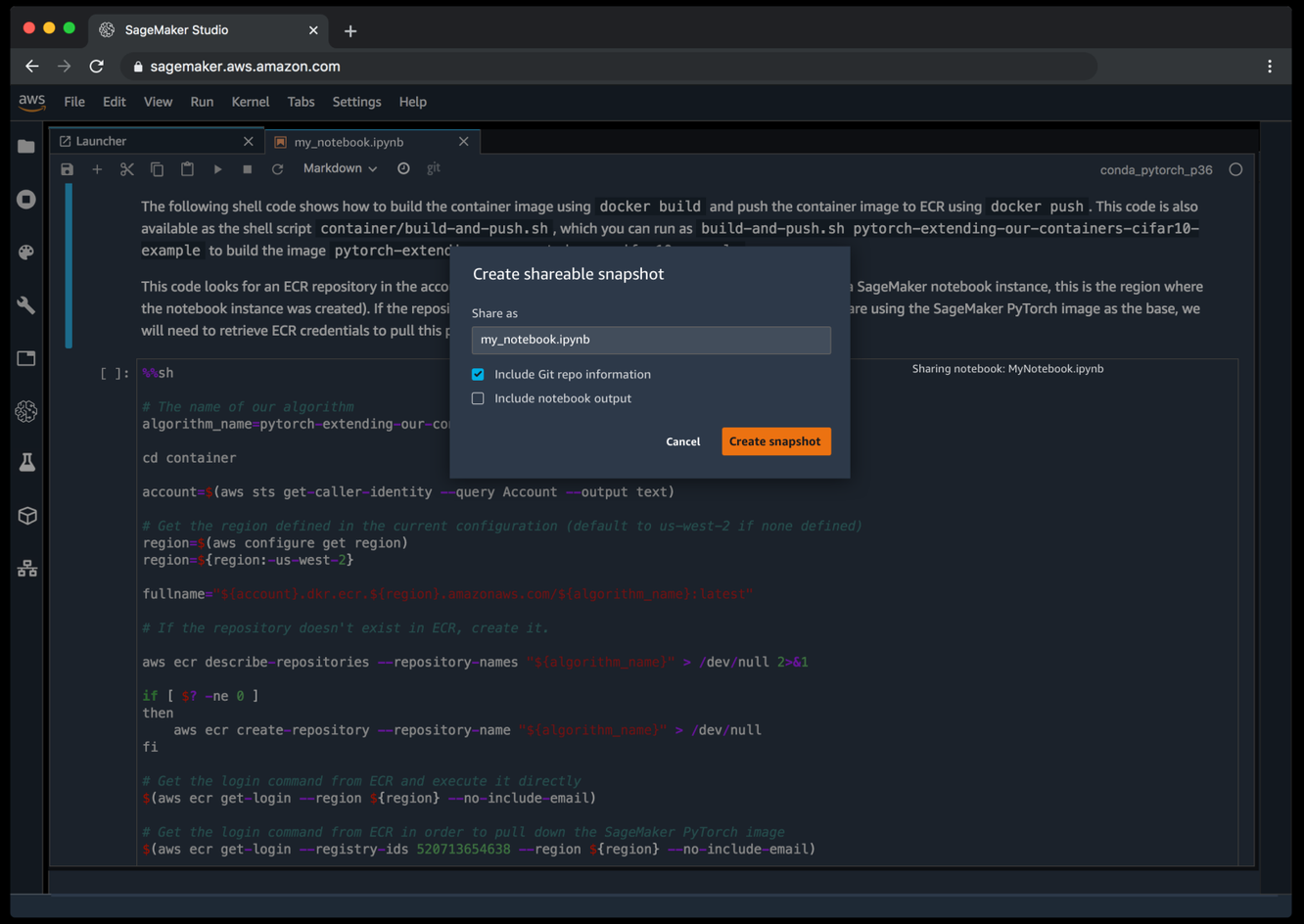
- Extension of the JupyterLab interface
- Dedicated home directory for users
- Quick startup and 1-click deployment
- Dedicated link for users with no direct interface with AWS Management Console
- Get notebook differences and integrate with Git
- Manage resources

1-click notebook sharing

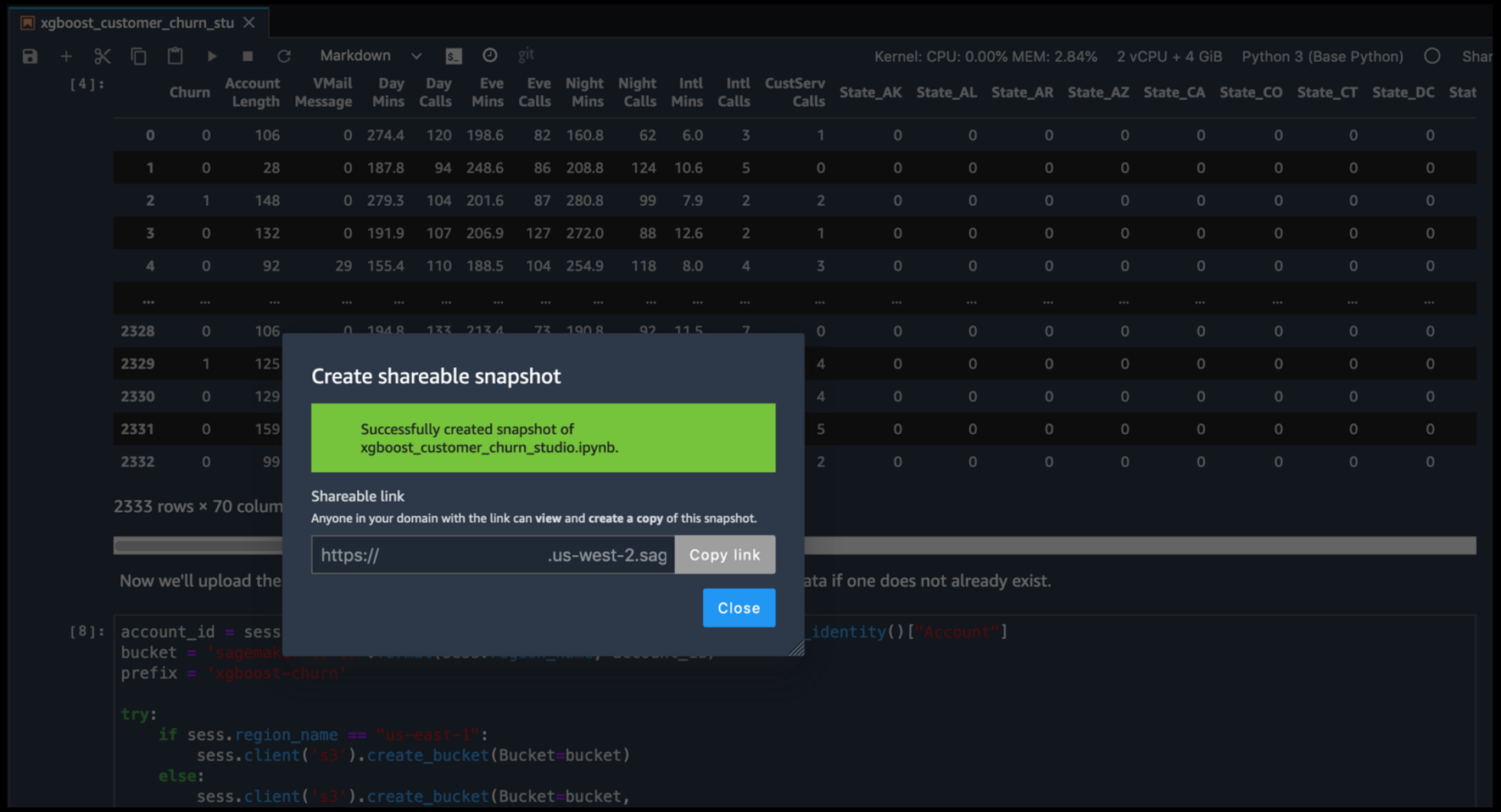


Studio defaults to 1:1 user-to-instance mapping, but you can share these via snapshots

Use SageMaker notebooks to easily share work with colleagues

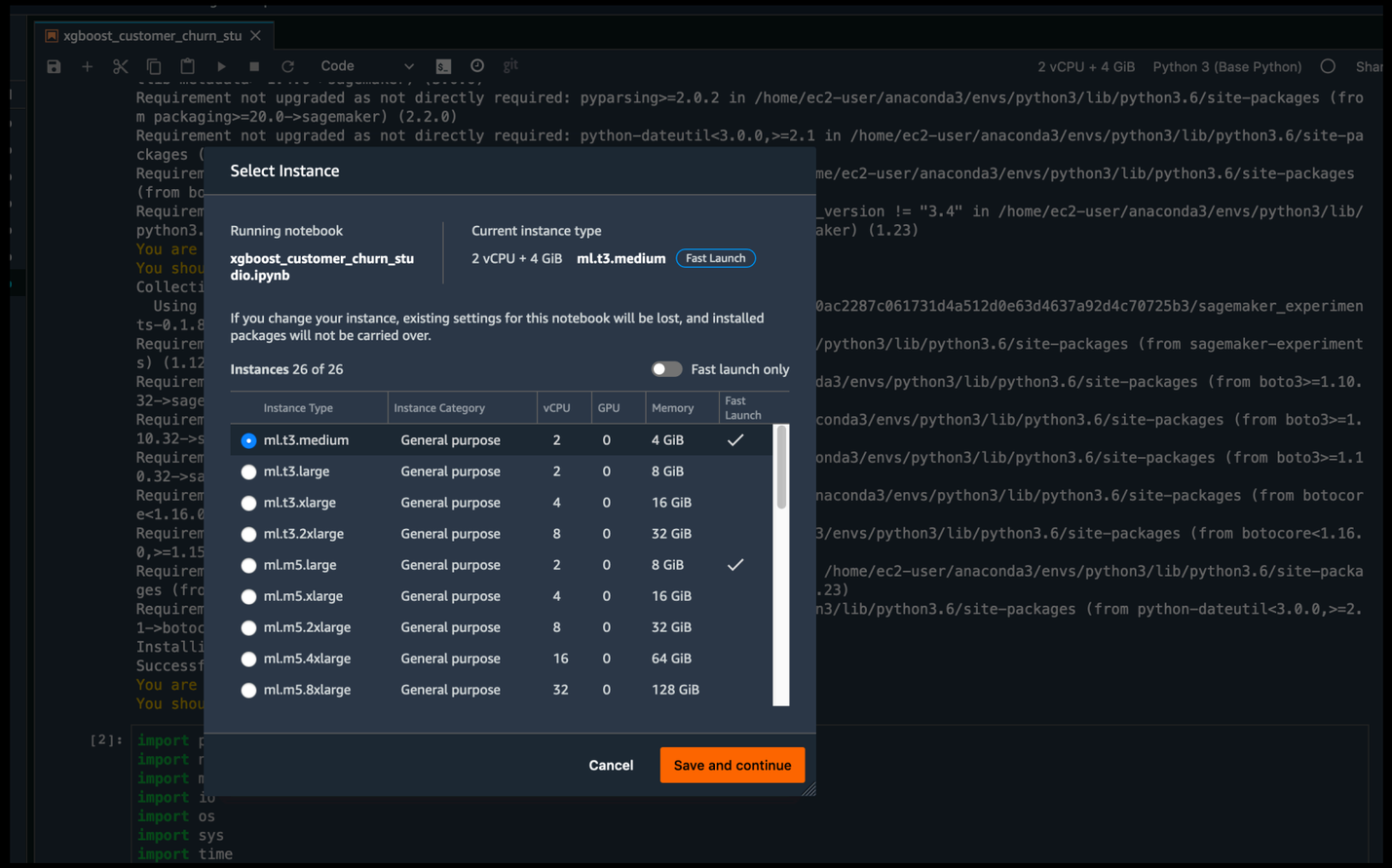


Base execution environment and notebook output are captured

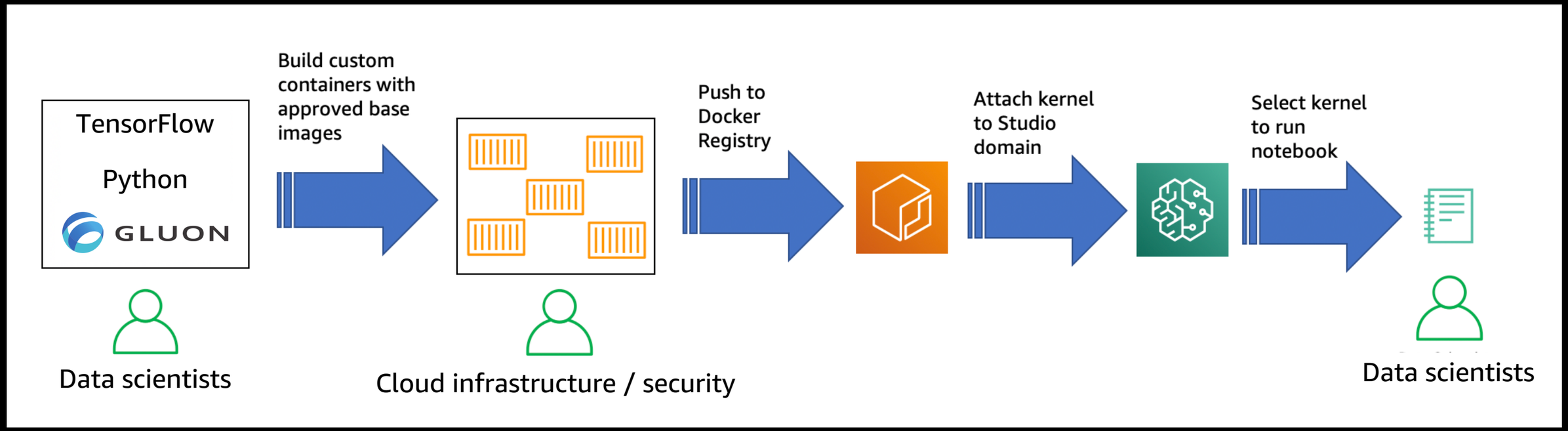


SageMaker Studio notebooks provide flexible compute

- Switch to compute with more memory, more CPU, or GPU acceleration when you need it
- Switch back to very inexpensive compute when you want



SageMaker Studio notebooks provide persistent custom development environment



SageMaker Studio does security hardening



VPC support



End-to-end encryption

SageMaker Studio notebooks provide full control of the development environment



Bring your own image



View and shut down instances in Studio

AWS Management Console

https://us-east-2.console.aws.amazon.com/console/home?region=us-east-2

Services

Support

AWS Management Console

AWS services

Find Services
You can enter names, keywords or acronyms.

Example: Relational Database Service, database, RDS

Recently visited services

S3

Amazon SageMaker

All services

Build a solution

Get started with simple wizards and automated workflows.

Launch a virtual machine
With EC2
2-3 minutes

Build a web app
With Elastic Beanstalk
6 minutes

Build using virtual servers
With Lightsail
1-2 minutes

Register a domain
With Route 53

Connect an IoT device
With AWS IoT

Start migrating to AWS
With CloudEndure Migration

Stay connected to your AWS resources on-the-go

Download the AWS Console Mobile App to your iOS or Android mobile device. Learn more

Explore AWS

Amazon SageMaker Autopilot

Get hands-on with AutoML. Learn more

Amazon S3 Glacier

Move your on-premises archives to low cost and durable data archiving solutions with AWS. Learn more

AWS Certification

Explore the resources available to help you prepare for your AWS Certification. Learn more

Amazon S3 on Outposts

You can now use S3 object storage in your on-premises environment. Learn more

Resources

- Guide to getting started
  https://docs.aws.amazon.com/sagemaker/latest/dg/gs.html
- Developer resources
  https://aws.amazon.com/sagemaker/developer-resources/
- Introduction to SageMaker notebooks
  https://docs.aws.amazon.com/sagemaker/latest/dg/notebooks.html

Thank you!

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