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Get Started with Databricks Data Science & Engineering Workspace

Module 01

Module Objectives

Get Started with Databricks Data Science and Engineering Workspace

1. Describe the core components of the Databricks Lakehouse platform.
2. Navigate the Databricks Data Science & Engineering Workspace UI.
3. Create and manage clusters using the Databricks Clusters UI.
4. Develop and run code in multi-cell Databricks notebooks using basic operations.
5. Integrate git support using Databricks Repos.

Module Overview

Get Started with Databricks Data Science and Engineering Workspace

Databricks Workspace and Services

Navigate the Workspace UI

Compute Resources

DE 1.1 – Create and Manage Interactive Clusters

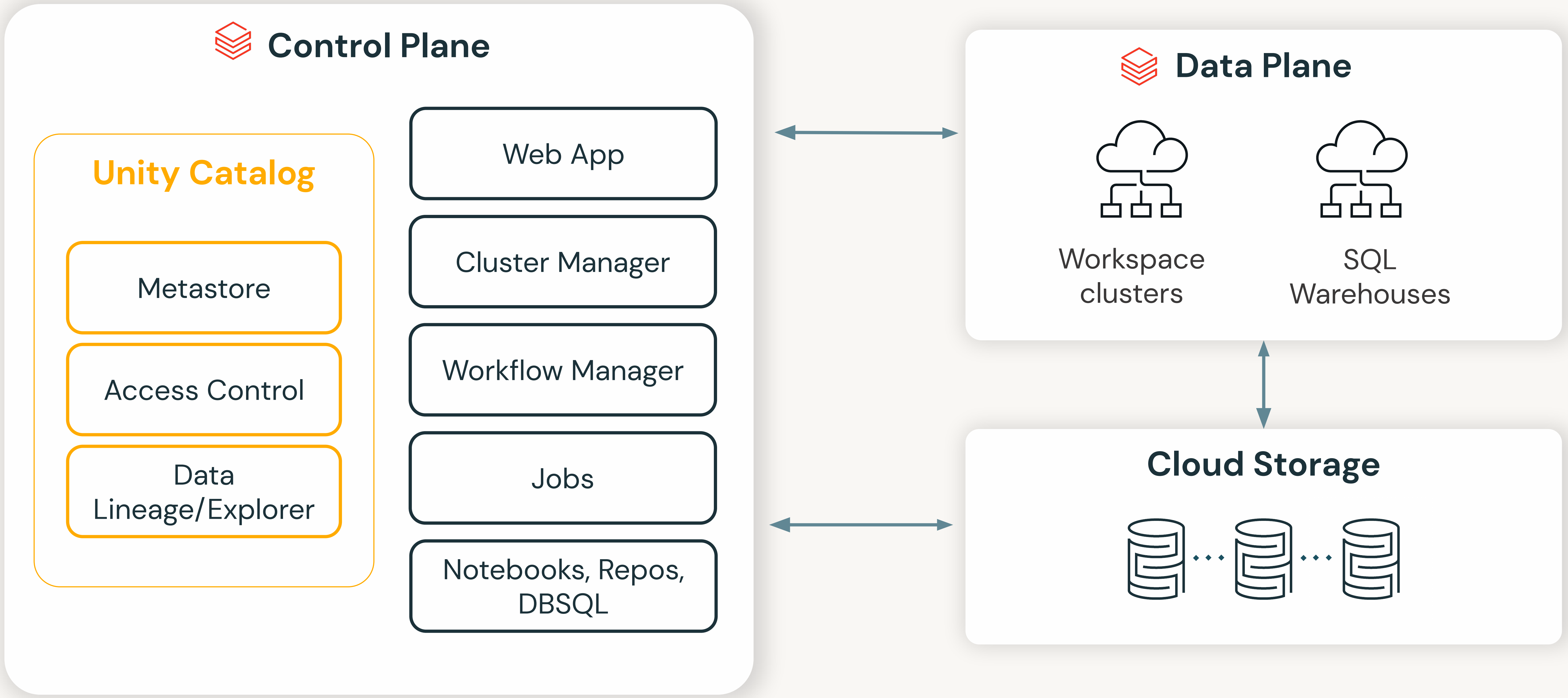
Develop Code with Notebooks & Databricks Repos

DE 1.2 – Databricks Notebook Operations

DE 1.3L - Get Started with the Databricks Platform Lab

Databricks Workspace and Services

Databricks Workspace and Services



Demo: Navigate the Workspace UI

Compute Resources

Clusters

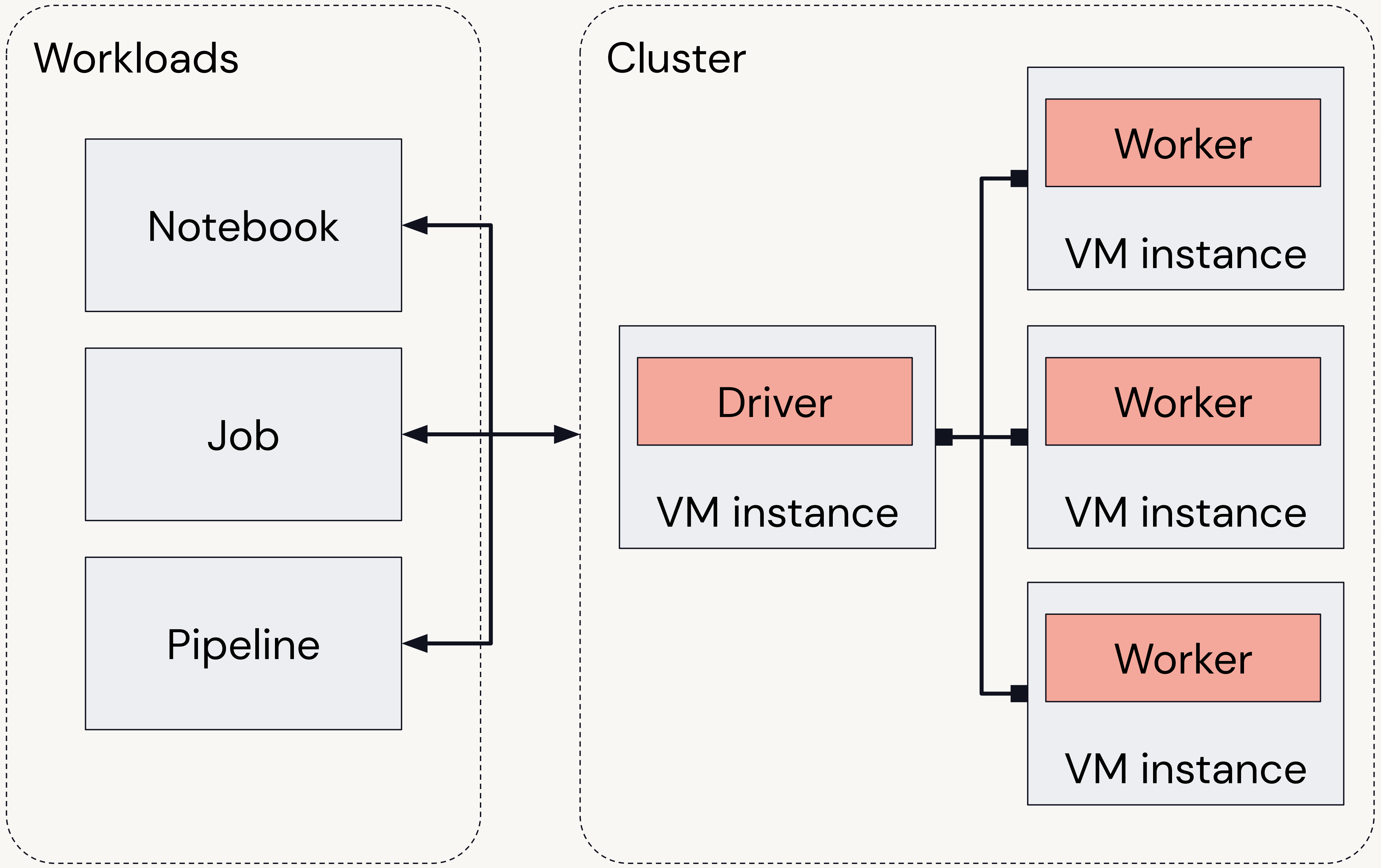
Overview

Collection of VM instances

Distributes workloads across workers

Two main types:

1. **All-purpose** clusters for interactive development
2. **Job** clusters for automating workloads



Cluster Types

All-purpose Clusters

Analyze data collaboratively using **interactive** notebooks

Create clusters from the Workspace or API

Configuration information retained for up to 70 clusters for up to 30 days

Job Clusters

Run **automated** jobs

The Databricks job scheduler creates job clusters when running jobs

Configuration information retained for up to 30 most recently terminated clusters

Cluster Configuration

Cluster Mode

Standard (Multi Node)

Default mode for workloads developed in any supported language (requires at least two VM instances)

Single node

Low-cost single-instance cluster catering to single-node machine learning workloads and lightweight exploratory analysis

Databricks Runtime Version

Standard

Apache Spark and many other components and updates to provide an optimized big data analytics experiences

Machine learning

Adds popular machine learning libraries like TensorFlow, Keras, PyTorch, and XGBoost.

Photon

An optional add-on to optimize SQL workloads

Access Mode

Access mode dropdown	Visible to user	Unity Catalog support	Supported languages
Single user	Always	Yes	Python, SQL, Scala, R
Shared	Always (Premium plan required)	Yes	Python (DBR 11.1+), SQL
No isolation shared	Can be hidden by enforcing user isolation in the admin console or configuring account-level settings	No	Python, SQL, Scala, R
Custom	Only shown for existing clusters *without* access modes (i.e. legacy cluster modes, Standard or High Concurrency); not an option for creating new clusters.	No	Python, SQL, Scala, R

Cluster Policies

Cluster policies can help to achieve the following:

- Standardize cluster configurations
- Provide predefined configurations targeting specific use cases
- Simplify the user experience
- Prevent excessive use and control cost
- Enforce correct tagging

Cluster Access Control

	No Permissions	Can Attach To	Can Restart	Can Manage
Attach notebook		✓	✓	✓
View Spark UI, cluster metrics, driver logs		✓	✓	✓
Start, restart, terminate			✓	✓
Edit				✓
Attach library				✓
Resize				✓
Change permissions				✓

DE 1.1: Create and Manage Interactive Clusters

Use the Clusters UI to configure and deploy a cluster

Edit, terminate, restart, and delete clusters

Develop Code with Notebooks

Databricks Notebooks

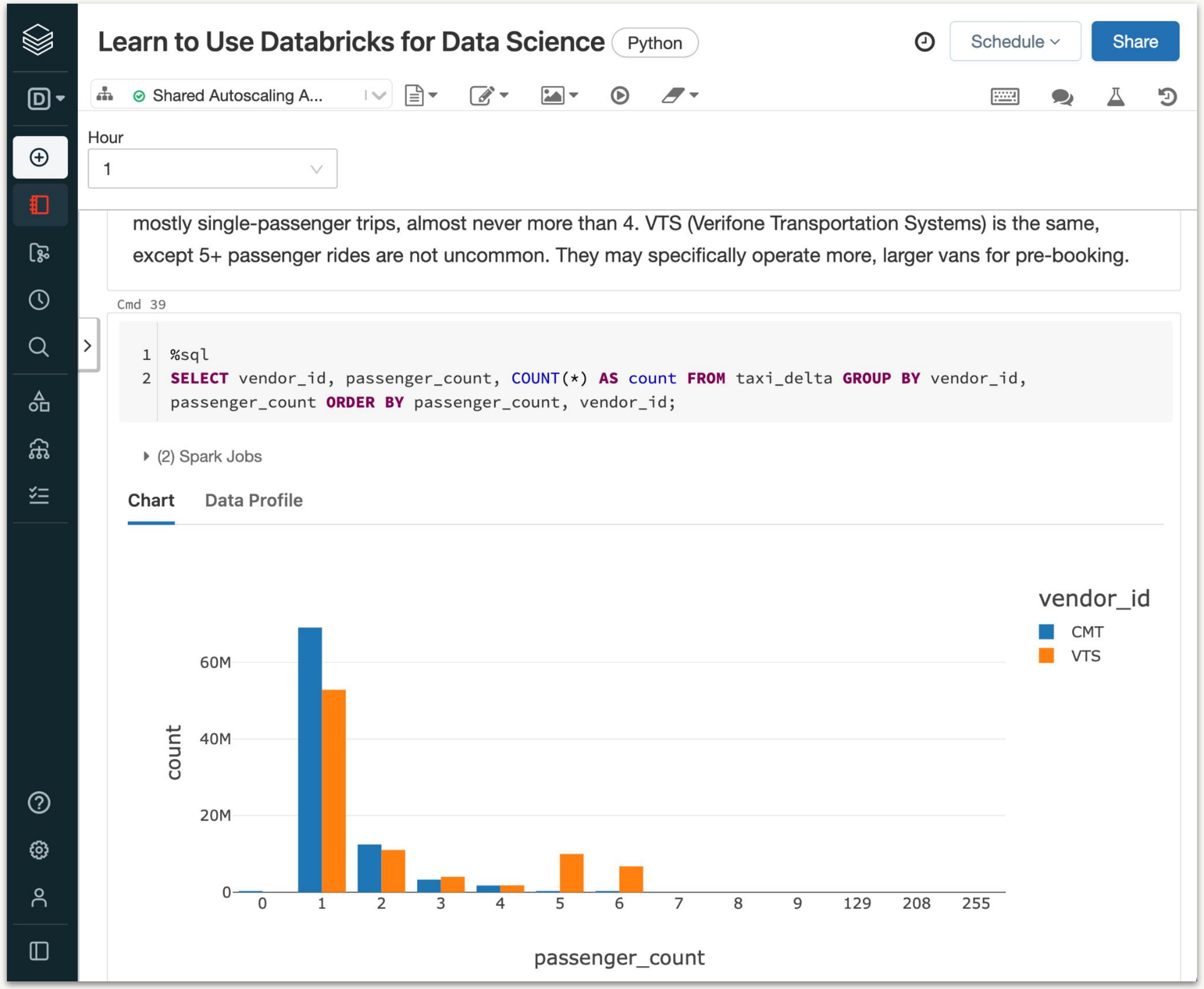
Collaborative, reproducible, and enterprise ready

Multi-language
Use Python, SQL, Scala, and R, all in one Notebook

Collaborative
Real-time co-presence, co-editing, and commenting

Ideal for exploration
Explore, visualize, and summarize data with built-in charts and data profiles

Adaptable
Install standard libraries and use local modules



mostly single-passenger trips, almost never more than 4. VTS (Verifone Transportation Systems) is the same, except 5+ passenger rides are not uncommon. They may specifically operate more, larger vans for pre-booking.

Cmd 39

```
%sql
SELECT vendor_id, passenger_count, COUNT(*) AS count FROM taxi_delta GROUP BY vendor_id,
passenger_count ORDER BY passenger_count, vendor_id;
```

Reproducible
Automatically track version history, and use git version control with Repos

Get to production faster
Quickly schedule notebooks as jobs or create dashboards from their results, all in the Notebook

Enterprise-ready
Enterprise-grade access controls, identity management, and auditability

Notebook magic commands

Use to override default languages, run utilities/auxiliary commands, etc.

%python, %r, %scala, %sql	Switch languages in a command cell
%sh	Run shell code (only runs on driver node, not worker nodes)
%fs	Shortcut for `dbutils` filesystem commands
%md	Markdown for styling the display
%run	Execute a remote notebook from a notebook
%pip	Install new Python libraries

dbutils (Databricks Utilities)

Perform various tasks with Databricks using notebooks

Utility	Description	Example
`fs`	Manipulates the Databricks filesystem (DBFS) from the console	`dbutils.fs.ls()`
`secrets`	Provides utilities for leveraging secrets within notebooks	`dbutils.secrets.get()`
`notebook`	Utilities for the control flow of a notebook	`dbutils.notebook.run()`
`widgets`	Methods to create and get bound value of input widgets inside notebooks	`dbutils.widget.text()`
`jobs`	Utilities for leveraging jobs features	`dbutils.jobs.taskValues.set()`

Available within Python, R, or Scala notebooks

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Git Versioning with Databricks Repos

Databricks Repos

Git Versioning

Native integration with Github, Gitlab, Bitbucket and Azure Devops

UI-based workflows

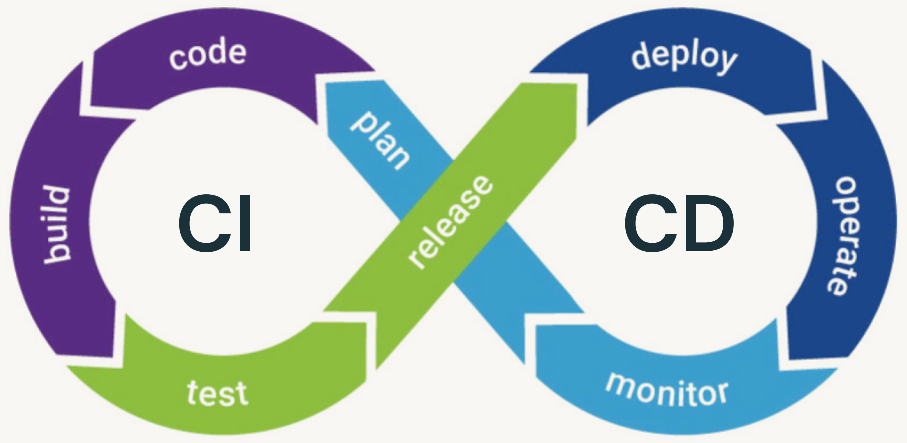
Azure DevOps GitHub

GitLab Bitbucket

CI/CD Integration

API surface to integrate with automation

Simplifies the dev/staging/prod multi-workspace story



Enterprise ready

Allow lists to avoid exfiltration

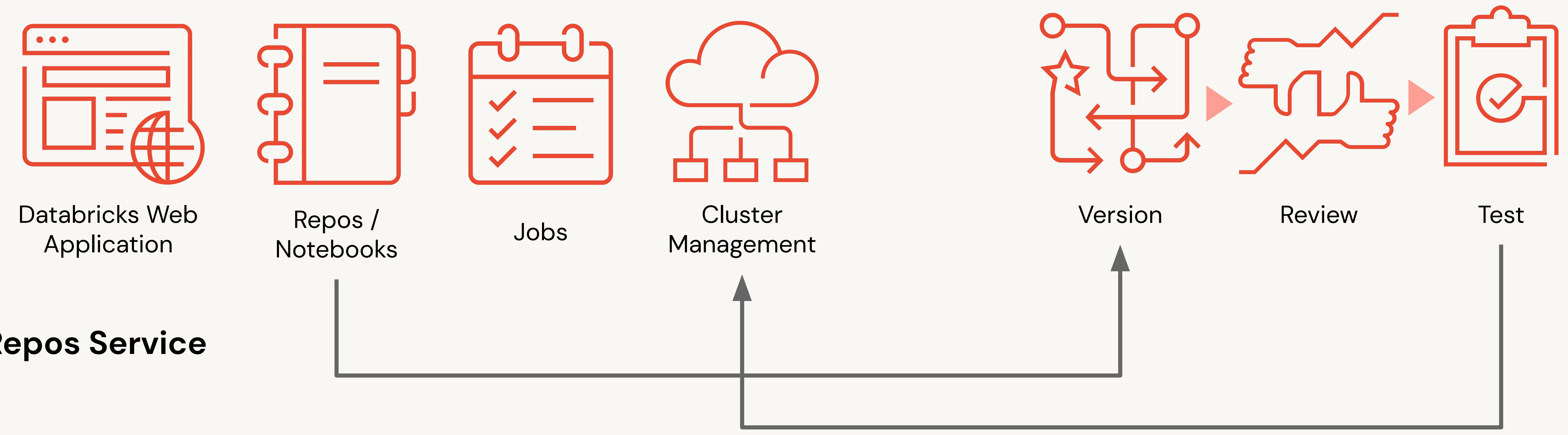
Secret detection to avoid leaking keys

Databricks Repos

CI/CD Integration

Control Plane in Databricks
Manage customer accounts, datasets, and clusters

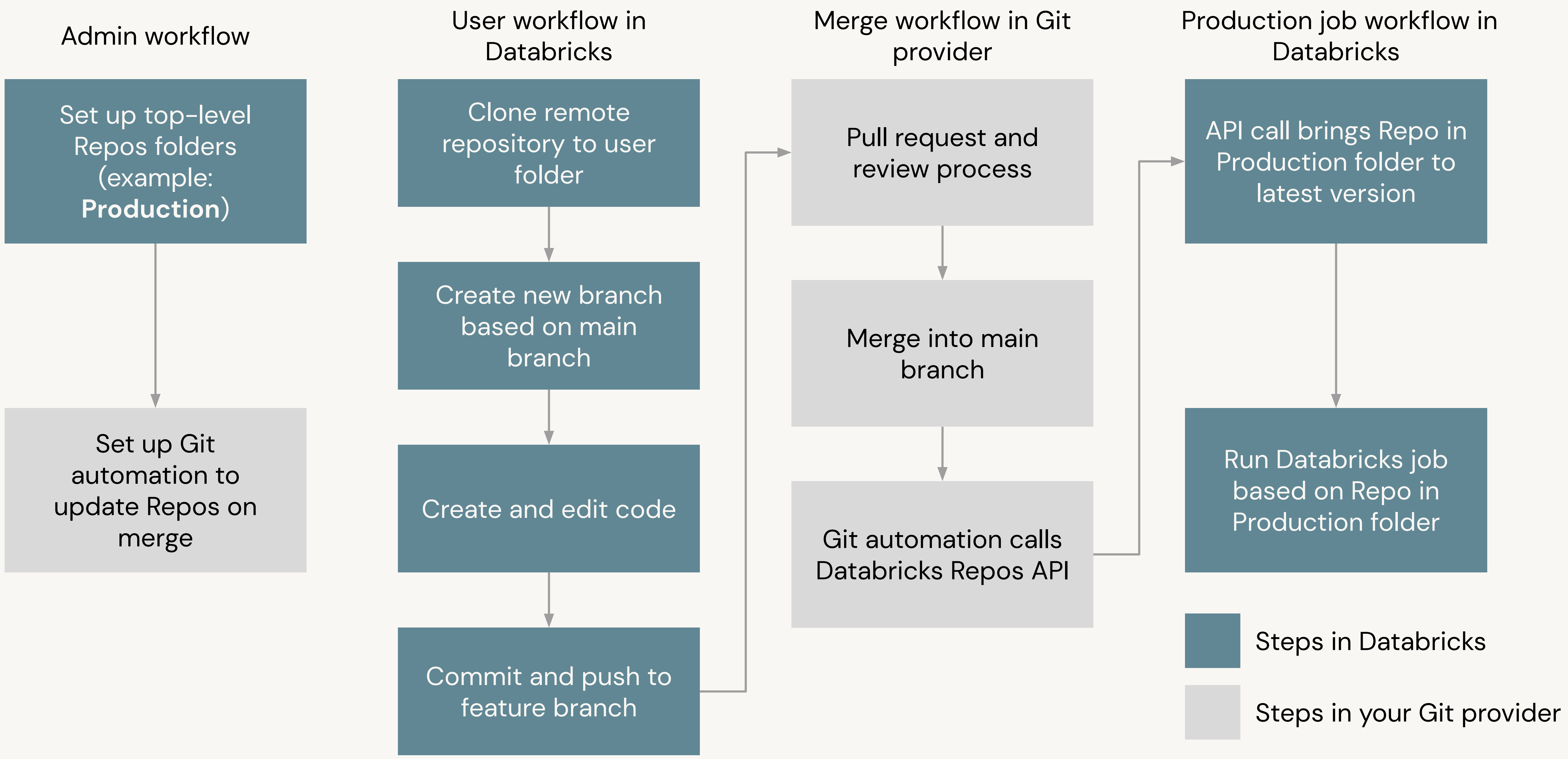
Git and CI/CD Systems



Repos Service

CI/CD workflows with Git and Repos

Documentation


Admin workflow
Set up top-level Repos folders (example: **Production**)
Set up Git automation to update Repos on merge
User workflow in Databricks
Clone remote repository to user folder
Create new branch based on main branch
Create and edit code
Commit and push to feature branch
Merge workflow in Git provider
Pull request and review process
Merge into main branch
Git automation calls Databricks Repos API
Production job workflow in Databricks
API call brings Repo in Production folder to latest version
Run Databricks job based on Repo in Production folder
Steps in Databricks
Steps in your Git provider

DE 1.2: Databricks Notebook Operations

Attach a notebook to a cluster to execute a cell in a notebook

Set the default language for a notebook

Describe and use magic commands

Create and run SQL, Python, and markdown cells

Export a single or collection of notebook

DE 1.3L: Get Started with the Databricks Platform

Rename a notebook and change the default language

Attach a cluster

Use the %run magic command

Run Python and SQL cells

Create a Markdown cell

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