

Breakdown of **Connect-Kubernetes** Execution Environment

Overview

This document outlines the relationship between the operating systems, execution layers, and components involved when using the **Connect-Kubernetes** command within the DATA420-25S1 environment.

Component Breakdown

Component	OS / Layer	Notes
PowerShell	Windows (MADS Desktop)	You launch it directly
Connect-Kubernetes	PowerShell script	Talks to Kubernetes API
Kubernetes Cluster	Linux-based (cloud backend)	Where your Jupyter container runs
Jupyter container	Linux (e.g., Ubuntu)	Where Spark/Python executes

Explanation

The **Connect-Kubernetes** command is executed within the Windows-based MADS Desktop using PowerShell. This command acts as a client interface to the cloud-hosted Kubernetes cluster. Although the command runs locally on Windows, it connects to a backend system where containers are orchestrated on a Linux-based Kubernetes environment.

The actual Spark and Python computations are carried out within a Linux container, which is started and managed via Kubernetes once **Start-Jupyter** is called.