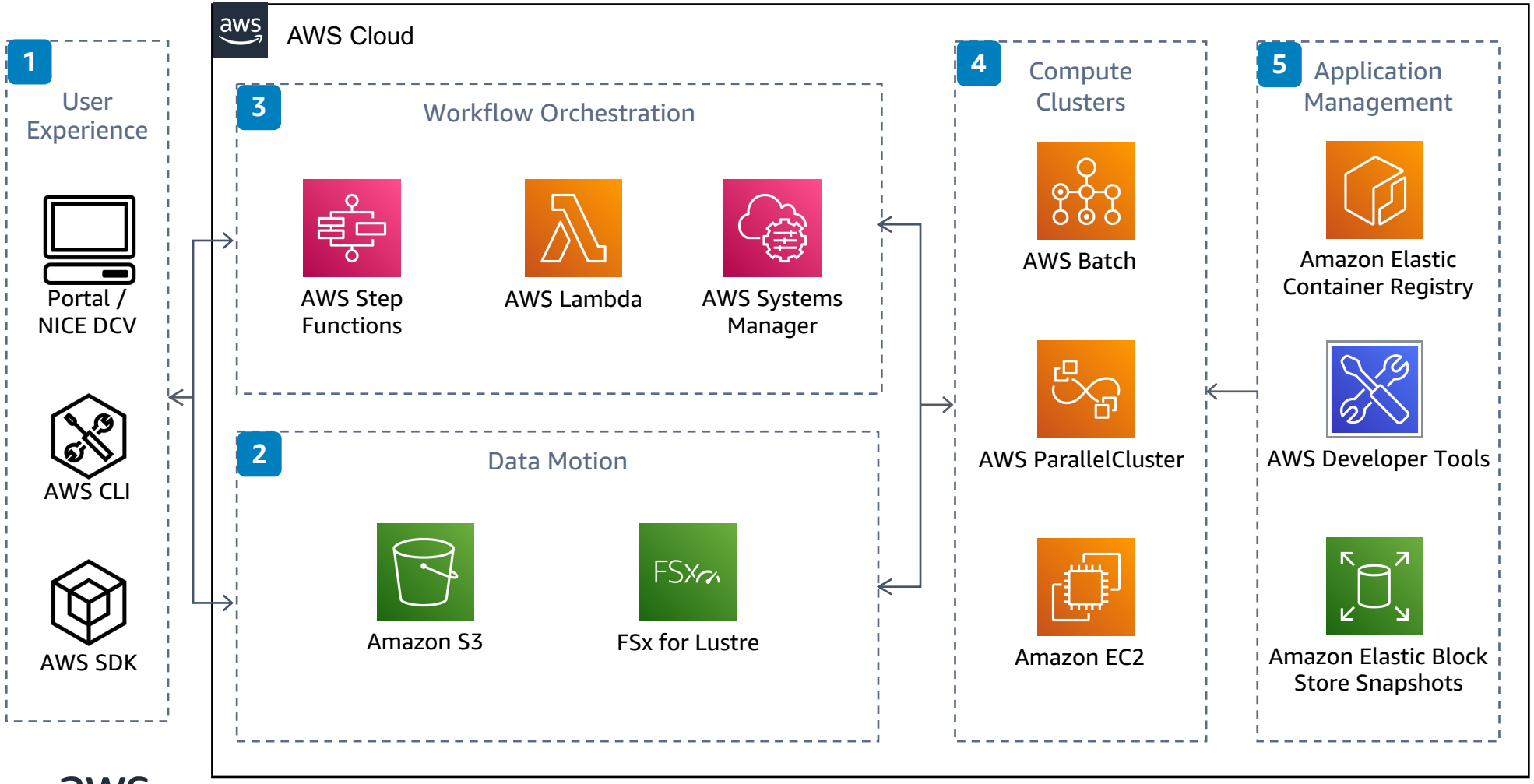
High Performance Computing on AWS

Deploy and burst a suite of high performance computing (HPC) cases to the cloud directly from the desktop.



1. Users deploy HPC cases with one of the AWS SDKs or the **AWS Command Line Interface (AWS CLI)**. Users can interface directly with the cluster through **NICE DCV**.

2. Data is staged both to and from AWS with **Amazon Simple Storage Service (Amazon S3)**. **Amazon S3** offers low-cost, reliable storage while interfacing directly to **Amazon FSx for Lustre** for a fully managed, high-performance storage.

3. Serverless services manage case workflow. **AWS Step Functions** provides workflow management and orchestrates other services, such as serverless compute with **AWS Lambda**. **AWS Systems Manager** can be used for operational management of compute clusters.

4. **AWS ParallelCluster**, **AWS Batch**, and custom-made clusters lie at the core of the HPC infrastructure, each with access to high-performance **Amazon Elastic Compute Cloud (EC2)** instances connected by a high performance network with an optional **Elastic Fabric Adapter**. Cost optimization with **Amazon EC2** is achieved with payment-model choice and environment right sizing.

5. Manage applications with a consistent, versioned, and repeatable framework. **AWS Developer Tools** accelerate software development. Installed software can be stored in containers or snapshots, depending on the compute cluster.

Reviewed for technical accuracy September 1, 2021

AWS Reference Architecture