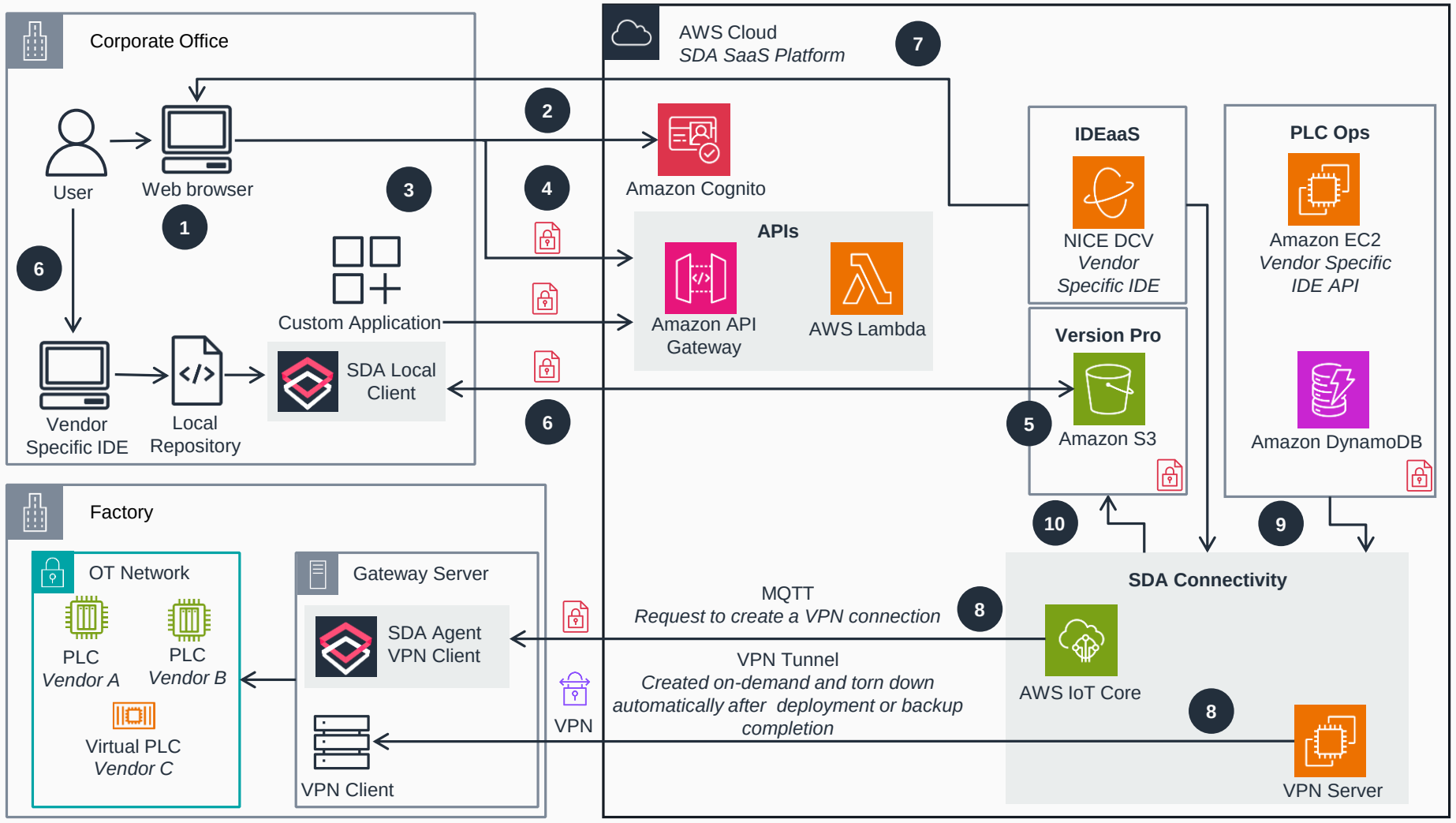
Guidance for Automation Software Management with Software Defined Automation on AWS

This architecture diagram demonstrates a highly secure and scalable multi-tenant SaaS approach for industrial control systems management.



1. A web-based console enables you to manage your automation controllers in a unified, secure, vendor-agnostic interface.
2. Authenticate with **Amazon Cognito**. Manufacturers have full control over setting project-level permissions per user. They can also enable temporary access for third parties to perform changes on a specific project.
3. All actions in SDA are available through private REST APIs powered by **Amazon API Gateway** and **AWS Lambda**.
4. SDA encrypts all data in transit and at rest.
5. SDA Version Pro provides secure storage, versioning, and traceability of PLC source code changes backed by **Amazon Simple Storage Service (Amazon S3)**.
6. The SDA local client provides near-real time code check-in, check-out, and synchronization, establishing the cloud as the single source of truth, even for on-premises engineering Integrated Development Environments (IDE).
7. You can stream specialized engineering IDEs running on **Amazon Elastic Compute Cloud (Amazon EC2)** instances using **NICE DCV** directly in a web browser to create and edit projects and commit new versions to the SDA Version Pro repository.
8. SDA connectivity uses Message Queuing Telemetry Transport (MQTT) to establish a short-lived, on-demand virtual private network (VPN) connection to a gateway running SDA Agent VPN Client. These connections happen through **AWS IoT Core**.
9. Secure connectivity enables seamless deployment of projects to remote PLCs from various vendors with SDA PLC Ops (API) or the SDA IDE as a service (IDEaaS) graphical user interface (GUI).
10. SDA PLC Ops provides code integrity checks and backup of PLCs, on demand or on a recurrent scheduled basis. SDA PLC Ops is backed by AWS services, such as **Amazon EC2** for vendor-specific installations and **Amazon DynamoDB** for metadata storage.

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AWS Reference Architecture