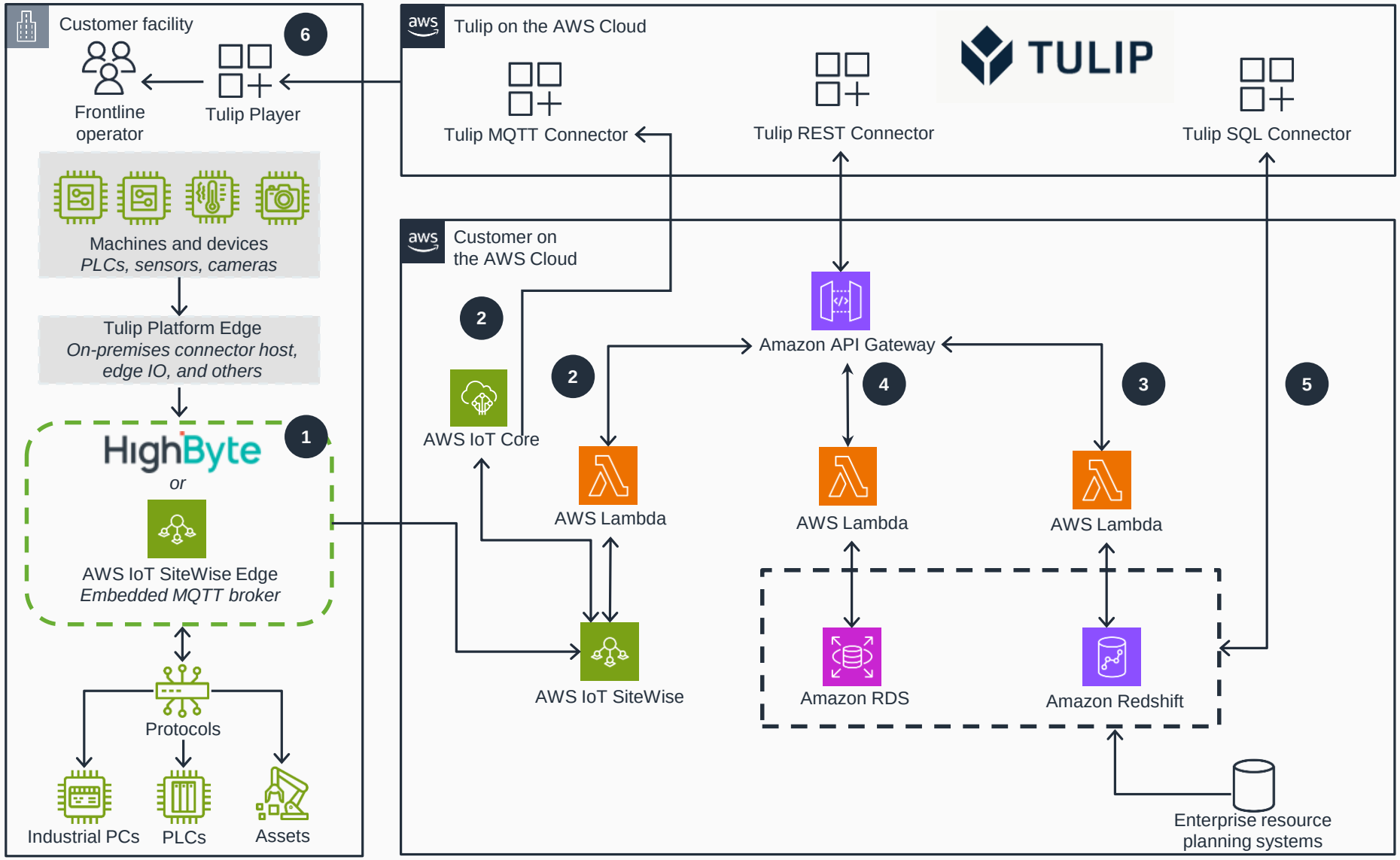
Guidance for Integrating Industrial Data Fabric with Tulip on AWS

This architecture diagram illustrates how customers ingest sensor data into AWS and Tulip to address daily management and maintenance work instructions. This slide shows Steps 1-4.



1. Connect to factory floor data sources through **AWS IoT SiteWise Edge** using its embedded MQTT broker. **AWS IoT SiteWise Edge** is tightly integrated with AWS IDF Partner solutions including Litmus, EasyEdge, Belden/Cloud Rail, and Siemens Industrial Edge to securely publish data to **AWS IoT SiteWise**. Alternatively, for industrial historians and other data sources, use HighByte Intelligence Hub to publish models and data to **AWS IoT** SiteWise. Tulip Edge devices, such as Tulip Edge IO, connect to various field devices including barcode scanners, Andon systems, torque drivers, cameras, printers, pick-to-light systems. The devices scale and write the data to a variety of systems that include the **AWS IoT SiteWise Edge** embedded MQTT broker or HighByte Intelligence Hub MQTT broker.

2. Tulip connects to **AWS IoT SiteWise** through its REST connector or MQTT connector. The REST connector reads historical data from **AWS IoT SiteWise** and writes computed results to it through **Amazon API Gateway** and **AWS Lambda** functions. Tulip's MQTT connector can send near real-time data to **AWS IoT Core** in the customer's AWS account, which then writes to **AWS IoT SiteWise** through **AWS IoT Core** rules.

3. Tulip uses its REST connector to retrieve and write back data into **Amazon Redshift** through **API Gateway** and **Lambda** functions. **Amazon Redshift** stores weekly data for production, quality control equipment and maintenance, inventory management, and operational metrics. The **Lambda** function performs extract, transform, load (ETL) operations before sending the data to Tulip.

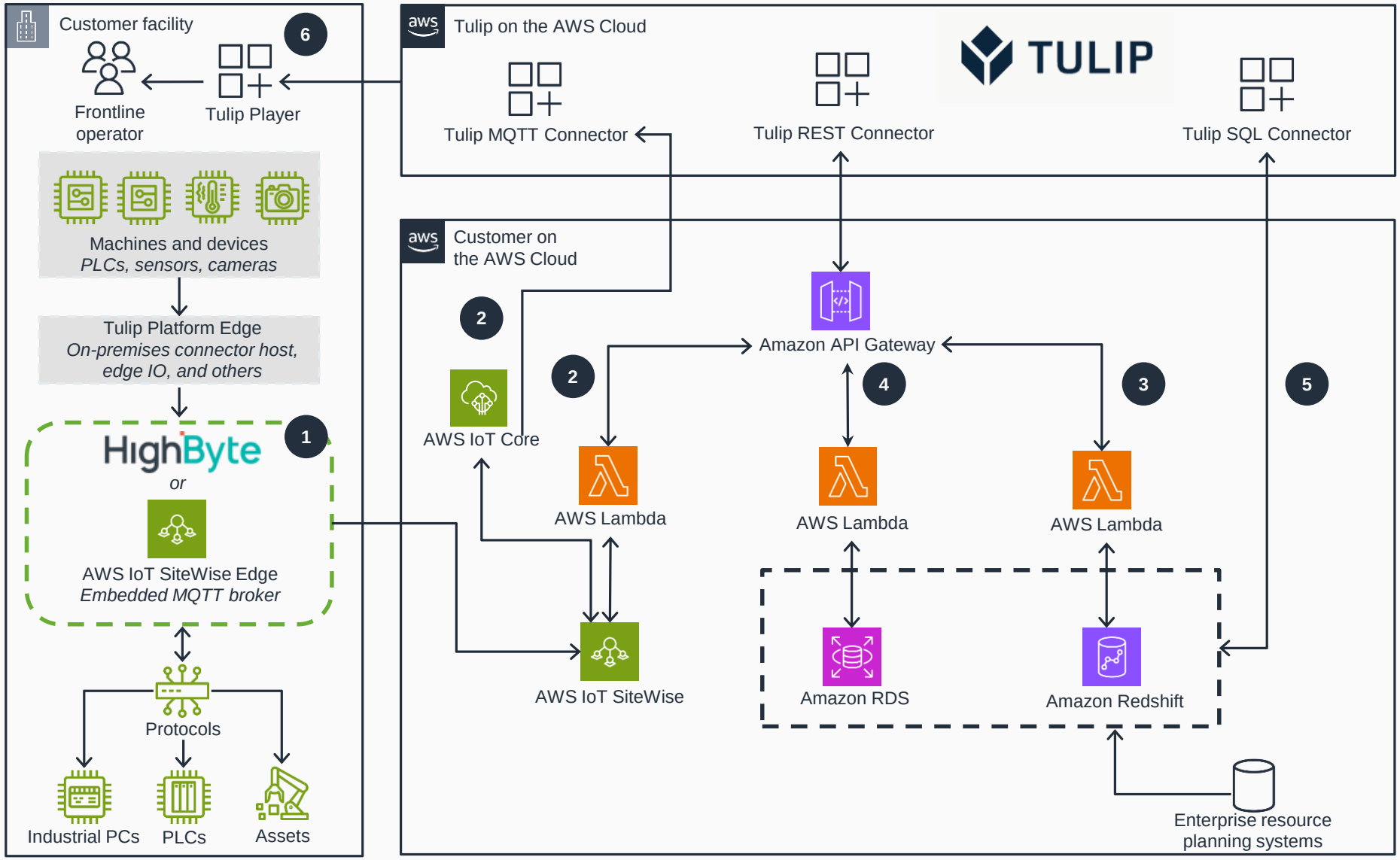
4. Tulip can send data to **Amazon Relational Database Service (Amazon RDS)** in the customer's AWS account through its REST connector using **API Gateway** and **Lambda** as intermediaries.

Reviewed for technical accuracy March 24, 2025

AWS Reference Architecture

Guidance for Integrating Industrial Data Fabric with Tulip on AWS

This architecture diagram illustrates how customers ingest sensor data into AWS and Tulip to address daily management and maintenance work instructions. This slide shows Steps 5-6.



5 Alternatively, where no transformations are required, Tulip SQL Connector retrieves and writes back data into **Amazon RDS** and **Amazon Redshift** tables.

6 Contextualized machine and performance monitoring apps can be built in the Tulip Platform using the data from **AWS IoT SiteWise**, **Amazon RDS**, and **Amazon Redshift**. Operators can access these applications using Tulip Player.

Reviewed for technical accuracy March 24, 2025

AWS Reference Architecture