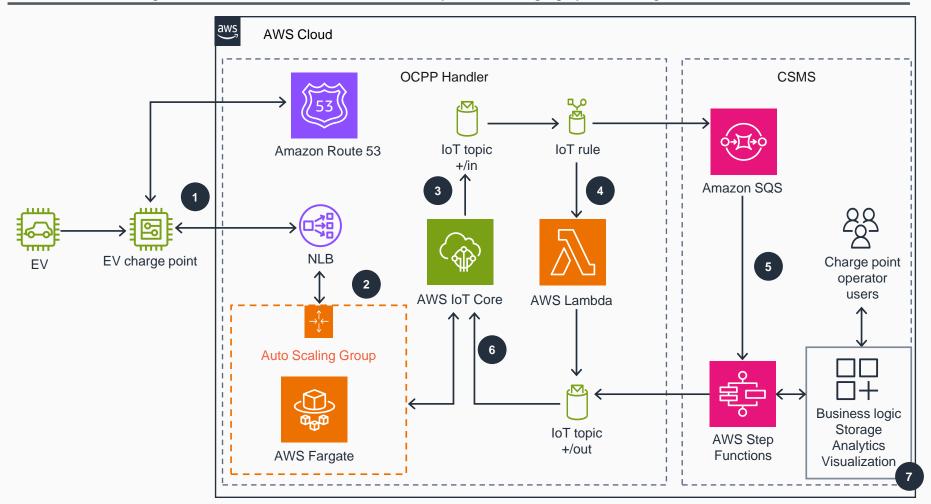
Guidance for Modernizing Electric Vehicle (EV) Charging on AWS

This architecture diagram shows how to build and modernize your EV charging system using AWS IoT Core.



- The EV arrives and connects to the charge point. The customer authenticates to initiate charging.
- The charge point performs a DNS lookup and connects to the resolved OCPP endpoint through a **Network Load Balancer (NLB),** which redirects the connection to a containerized OCPP Handler instance running on **AWS Fargate**. The OCPP Handler authenticates the charge point and establishes a bi-directional WebSocket connection.
- The OCPP Handler application establishes a bi-directional Message Queuing Telemetry Transport (MQTT) connection with AWS IoT Core using the charge point's Thing ID as its identifier. OCPP messages received from the charge point are published to an MQTT topic identified by the charge point ID and the topic path "/in".
- An IoT rule subscribes to specific MQTT messages (for example, Heartbeat) that are passed to and handled by an AWS Lambda function for auto-responses. Another IoT rule subscribes to all MQTT messages that include the topic path "/in" and places the message payload to an Amazon Simple Queue Service (Amazon SQS) queue.
- AWS Step Functions is invoked by the Amazon SQS queue, which orchestrates the interpretation of the message payload and execution of the appropriate business logic in the CSMS based on the OCPP message payload.
- OCPP messages from the CSMS are published as MQTT messages to the charge point's "/out" topic. The OCPP Handler subscribes to the "/out" topic and forwards the OCPP responses over the WebSocket. The charge point receives and acts on the OCPP response, initiating power delivery.
- Telemetry and metrics from the charge point are added to the appropriate data stores. Analytics and visualizations can be performed against this data. Charge Point Operator administrators can access a web-based user interface portal to monitor system health, view data, or initiate configuration and firmware changes.