

Workflow based on Azure IoT Edge

1. **Device Connectivity:** Leaf devices connect locally to IoT Edge gateway using protocols like MQTT, HTTP, or Modbus.
Leaf devices send telemetry to the edge.
2. **Edge Runtime Management:** IoT Edge runtime on gateway manages and runs modules (containers) for processing data locally.
Edge runs your custom logic, analytics, or routing modules.
3. **Local Data Processing:** Modules process telemetry data in real-time (filtering, aggregation, enrichment).
Data is processed and prepared at the edge.
4. **Cloud Communication:** Processed data is sent securely to Azure IoT Hub for cloud ingestion.
Data is pushed upstream for cloud analytics or storage.
5. **Cloud Processing & Storage:** Azure Functions or Stream Analytics process data; Cosmos DB, Blob Storage, or Data Lake stores data long term.
Cloud services handle further analysis and durable storage.
6. **Visualization:** Azure Web Apps or dashboards visualize real-time and historical data.
Users view processed telemetry via web interfaces.
7. **Device Provisioning & Authentication:** IoT Edge authenticates and onboard leaf devices using pre-provisioned credentials.
Secure onboarding ensures trusted device communication.