Edge computing explained: when to process at the edge and when in the cloud

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Edge computing processes data close to where it is produced instead of sending everything to a distant data centre. The question is rarely edge or cloud, but which work belongs where.

TL;DR The short version

- Edge computing processes data near where it is produced; the real question is which work belongs at the edge and which in the cloud.
- Use the edge for millisecond decisions and to avoid sending raw streams, and the cloud for storage, analytics and model training.
- A common split does time-critical work at the edge and sends summaries to the cloud, but more sites mean more hardware to secure and update.

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Reasons to process at the edge

- **Latency:** a decision that must happen in milliseconds cannot wait for a round trip.
- **Bandwidth:** sending raw video or sensor streams is costly; send results.
- **Resilience:** the site keeps running if the link fails.
- **Privacy:** keep raw data local.

Reasons to use the cloud

- Large-scale storage and analytics across many sites.
- Training models and fleet-wide reporting.
- Easier management and elastic capacity.

A common split

Do the time-critical work and first filtering at the edge, and send summaries and exceptions to the cloud. Design for disconnected operation, and for catching up when the link returns.

Costs to plan for

More sites mean more hardware to install, secure, monitor and update. Count that operational load before choosing the edge.

> Related credential: IoT & Embedded Systems Practitioner. Explore the exam facts and syllabus.

Sources and further reading

1. IICTP. IoT & Embedded Systems Practitioner credential page. iictp.org/certifications/iesp.

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