



Beyond the data center and the cloud

The latest edge devices are rugged, portable and adapted to environments with intermittent connectivity



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WE EXPECT THE NUMBER of connected devices to reach nearly 45 billion by 2025, gathering close to 80 zettabytes. Unfortunately, sending that growing amount of data to the cloud for processing is not always the best option due to bandwidth limitations and cost concerns. Many government systems are also not connected to the cloud and need to process data locally.

Edge technology evolved to meet those challenges by bringing the advantages of cloud closer to the edge. Business applications enabled by edge computing include autonomous delivery, machine control, environmental monitoring, fleet vehicle diagnostics, vision-based analytics and defect detection.

Flexible, purpose-built edge solutions

Edge computing is particularly beneficial in two situations: when a great deal of data needs to be migrated to the cloud for storage but there is little or no bandwidth and when data needs to be collected and acted on quickly at the edge (e.g., autonomous vehicles and drones).

Amazon Web Services (AWS) developed the devices in the Snow Family to work in nontraditional, disconnected or intermittently connected environments, such as remote or austere locations and all manner of commercial, industrial, transportation and military use cases. You don't need any data center space, and any control plane action, such as provisioning, logging or monitoring, can be performed from the AWS Management Console.

AWS Snowcone is ruggedized, secure and purpose-built for use outside a traditional data center. It has eight terabytes of usable storage and weighs just four and a half pounds. Its small form factor makes it the right fit for tight spaces or situations where portability is a necessity – for example, in backpacks for first responders or on drones.

AWS Snowball comes in two options. Snowball Edge Storage Optimized devices provide both block storage and Amazon Simple Storage Service (Amazon S3) compatible object storage along with 40 vCPUs. They are well-suited for local

storage and large-scale data transfer.

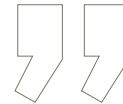
In addition, Snowball Edge Compute Optimized devices provide 52 vCPUs, block and object storage, and an optional GPU for use cases such as advanced machine learning and full-motion video analysis in disconnected environments.

Agencies can execute compute applications at the edge and ship the device to AWS for offline data transfer, or they can transfer data from edge locations using AWS DataSync. The devices can also be clustered together to build larger temporary installations.





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Generating insights at the edge

The National Geospatial-Intelligence Agency turned to AWS devices because it needed to capture and process data while disconnected from the cloud. NGA compiles and moves a massive amount of data around the world – for example, maps of the entire ocean floor. In one year, NGA ingested more than 12 million images and generated more than 50 million indexed observations, 75 percent of which were

derived from automated algorithms. NGA officials estimated that they would need 8 million analysts to manually process the ever-growing images the agency captures.

They needed a fast solution at the tactical edge to support the military and intelligence leaders who rely on the agency's data and insights, so NGA implemented AWS Snowball Edge with AWS IoT Greengrass to automate imagery analysis using machine learning. Now commanders have the ability

to ingest, discover and exploit data via a common repository that can be shared across teams.

That's just one example of how agencies can use rugged, flexible edge devices to collect data and generate insights where and when it makes the most sense for them. ■

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with AWS Snowcone and Snowball Edge

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