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AER002

Satellite updates: Extend edge processing software to space

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Why do customers want to apply space edge services to their data?

- Connect satellite ground segment(s) to cloud and hybrid edge
- Develop space edge software to enable on-orbit analysis on customers' space vehicle
- Move analysis off of custom software onto cloud services
- Enable software and model updates at the speed of the cloud

Today we will demonstrate how easy satellite configuration changes can be when AWS services run on your satellite!

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It’s the services that matter!



www.aws.com



www.dorbit.space



www.unibap.com

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Space edge customer use cases/benefits



Reduced downlink

- Only downlink the most valuable data/information
- Thin data (i.e., cloud cover, obstructions)
- Generate insights for downlink instead of transmitting raw data
- Isolate and only transmit info of interest (change detection, isolate object detection)



Low latency processing

- Process data closer to sensors or payloads to generate insights sooner
- Respond to events when there isn't time to wait on ground operations



Improved autonomy

- Operate in denied environments
- Offload critical applications like generating new tasking without the ground in the loop



Software defined satellites

- Process data on customer platform with their sensors or payloads and generate NRT insights
- Create and transfer classified products and insights on AWS processors
- Recycle AWS instance and processor to wipe data (similar to Amazon EC2)

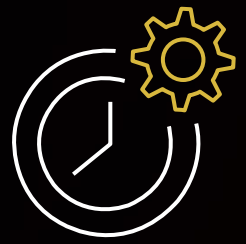
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Customers want the same AWS experience on the earth and on-orbit



Same reliable, secure, and high-performance infrastructure



Same operational consistency



Same services and APIs



Same tools for automation, deployments, and security controls



Same pace of innovation as in the cloud

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Satellite on-orbit update demonstration

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On-orbit AWS edge processing benefits



Pace of innovation and services

- Use the same AWS APIs familiar to ground software developers
- Run AI/ML models on space platforms
- Run advanced algorithms like sensor fusion
- Execute containerized applications
- Trigger serverless compute jobs



Mission software flexibility

- No longer manage low-level abstraction from the hardware
- Port existing software applications from ground to space
- Reuse software between missions
- Update mission software and configurations without impacting critical C&DH/FSW



Operational and tool consistency

- Manage and automate terrestrial and space deployments with the same tools
- AWS security and infrastructure management built-in
- Set and manage access permissions across space and ground
- Sync data between space and ground VPCs

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Summary

- Showed you can securely connect your ground VPC to your space processor
- Showed a space processor ping
- Execute commands from the ground on the space processor
- Set up an AWS IoT Greengrass deployment on a satellite processor
- Deployed a Hello World program to the space processor
- Changed the Hello World program configuration on the space processor
- Performed continuous integration/continuous deployment directly on a space processor

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Thank you!

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