



AWS SECURITY

5 ways a secure cloud infrastructure drives innovation

Inspire confidence and activate creativity with
AWS infrastructure and security services



Table of contents

Introduction	3
5 ways a secure cloud infrastructure drives innovation	4
1. Moving fast, staying secure	4
2. Focusing on user outcomes	6
3. Increasing agility	8
4. Managing and minimizing risk	10
5. Optimizing resources	12
How AWS helps organizations innovate securely	14
• Build, run, and scale on the most secure infrastructure	15
• Protect your application data	16
• Improve security at every level	17
• Drive speed and agility with AI and automation	18
Next steps	19

INTRODUCTION

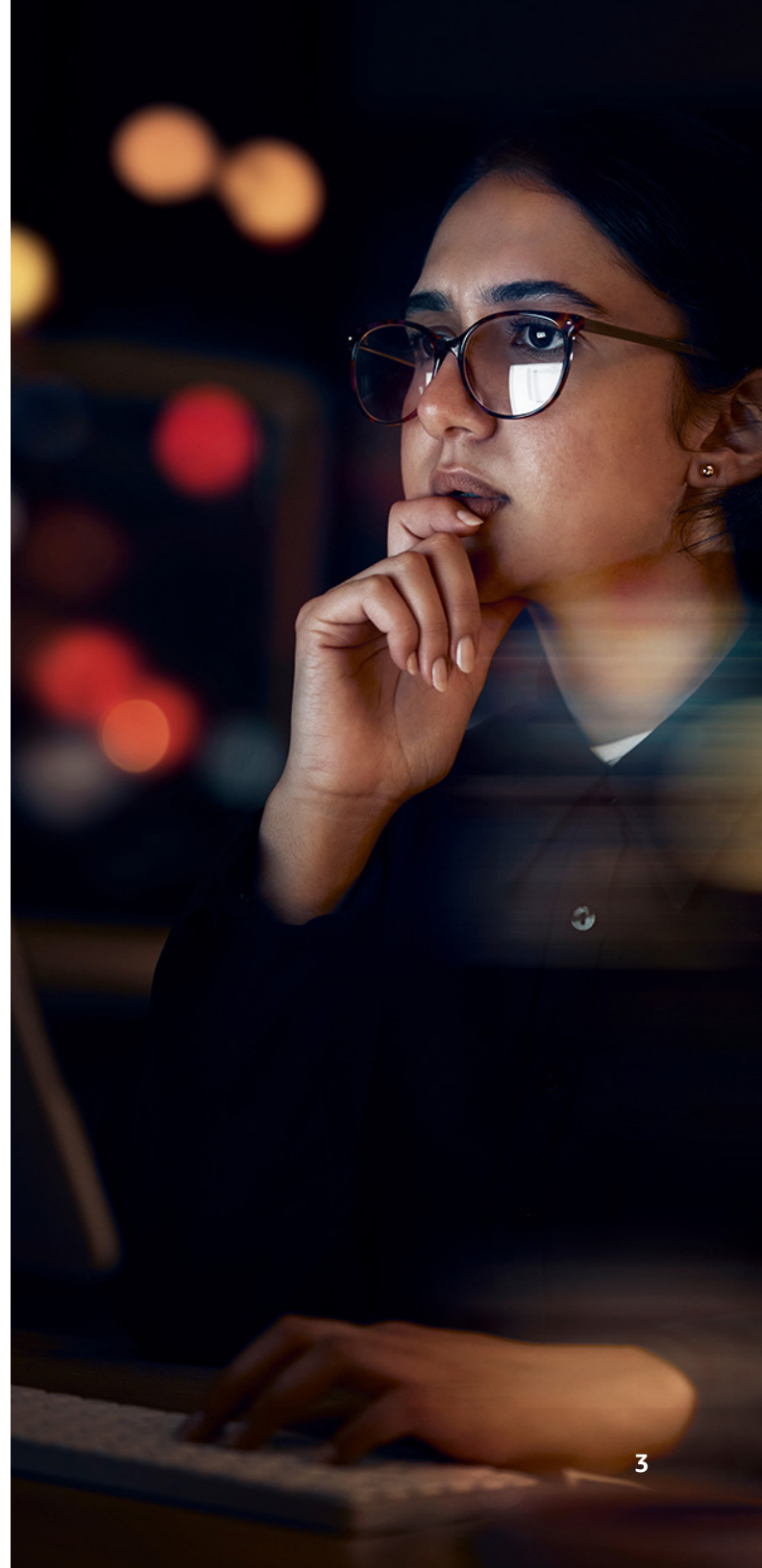
Reinforce a culture of innovation with a commitment to secure infrastructure

Even in times of economic uncertainty, organizations need to continue innovating to drive differentiation and competitive advantage. Innovation allows organizations to discover those operational efficiencies and new streams of revenue. Many factors can affect the ability to innovate quickly and at scale, and they can vary according to size and industry. But one element stands universally critical: security.

Modern organizations must move fast and experiment, but do so in a secure way from the start. Yet traditional development processes put security at the end. This can create the impression that security is a bottleneck or barrier to innovation.

Building a proactive security strategy on top of a secure cloud infrastructure means integrating security into the innovation process from the start. Over time, security can catalyze, foster, and reinforce a culture of innovation that continuously improves production, quality, agility, risk management, and resource optimization.

Driven by a proactive security strategy and built on a secure, scalable infrastructure, organizations can spark innovation that helps them succeed in today's economic climate—and thrive as the future unfolds.



5 ways a secure cloud infrastructure drives innovation

In this section, we will explore success stories that demonstrate how your organization can accelerate innovation with secure cloud infrastructure.

1 Moving fast, staying secure

Trusted, resilient cloud infrastructure provides the secure guardrails that allow your teams the freedom to move faster, which can lead to shorter production cycles. Building securely should be the path of least resistance—with no trade-off between security and speed.



Veridos accelerates time to market using Amazon API Gateway

Veridos America (Veridos) provides state governments a Division of Motor Vehicles platform where drivers can access license and registration renewals. Drivers take care of these and other DMV services from the comfort of home on a DMV@Home platform on AWS serverless architecture.

Using the AWS Service Creation team, Veridos designed the architecture six months faster than they otherwise would have. They scaled from zero to full capabilities in just a few days and met stringent Federal Risk and Authorization Management Program and other compliance needs at the same time. The new service saved \$500,000 and is slated to expand to other states.

[Read the full success story ›](#)



“Using AWS Lambda, we were able to build all these features for states and for users because we don’t have to spend time doing all these non-value-added things.”

Kevin Freiburger, Senior Director of Product Development at Veridos

UK DVSA saves money on secure authentication

The **United Kingdom’s Driver and Vehicle Standards Agency** (DVSA) provides authentication services to around 150,000 organizations for driving tests, vehicle safety management, and operator licensing. DVSA runs these services on an AWS serverless architecture.

Using **Amazon Cognito**, DVSA implemented a new authentication solution six weeks faster than they otherwise could have. They seamlessly migrated 140,000 user accounts to the new system and now meet stringent government security and compliance requirements at the same time. The new Amazon Cognito service saved £137,000 per year and is enabling faster software releases across DVSA’s services.

[Read the full success story ›](#)



Driver & Vehicle
Standards
Agency

“We’ve seen at least a 30 percent reduction in software release time. Amazon Cognito fits very well into our architecture and our layout, so it made adoption simpler.”

Shaun Hare, Principal Developer, Digital Services at DVSA

2

Focusing on user outcomes

By building on a secure cloud infrastructure, you can help mitigate security events, automate protection, and strengthen the security of your applications—enabling application owners to focus on what is important for their customers. This can lead to less downtime, better user experiences, and a higher quality bar for your products and services.



JDRF securely shares Type 1 diabetes research with Amazon Redshift

JDRF International, the leading global type 1 diabetes (T1D) research and advocacy organization, is using AWS to drive life-saving medical innovation. By addressing the challenge of collecting and harmonizing siloed data in T1D research, JDRF designed the Diabetes Data Platform (D2 Platform) Project to curate and publish this data into a research store.

Using technology like **Amazon Redshift**, the D2 Platform creates a comprehensive, scalable, and secure registry of diabetes data collected from various sources, fostering collaboration among researchers, clinicians, and stakeholders. This powerful platform enables secure data sharing, leading to clinically impactful research, focusing on key questions concerning T1D, such as patient demographics, timing of diagnoses, and effective treatments.

With AWS satisfying security and data privacy requirements, JDRF can concentrate on coordinating research efforts and translating findings into actionable insights for decision makers and healthcare institutions. By enabling collaborative research on a global scale, the D2 Platform is poised to make significant strides in T1D research, screening, and treatment, ultimately improving the lives of patients worldwide.

[Read the full success story >](#)



As the winner of the AWS IMAGINE Grant in 2020, JDRF received the necessary funding, AWS Promotional Credit, and expert guidance to bring their D2 Platform to fruition.

[Read more about AWS IMAGINE Grants >](#)

3

Increasing agility

A secure cloud allows your organization to innovate and move with agility and availability to meet ever-changing user demands, economic conditions, and threat landscapes. With the right mix of secure infrastructure and cloud-based services, you can continually help enforce your security controls by automating infrastructure and application security checks and enabling faster, safer testing and deployment.



TriByte uses AWS to help medical students learn effectively online

TriByte was the technology partner for Jaypee Brothers Medical Publishers, a trusted education resource for the medical community. Jaypee tasked TriByte with creating a learning management system (LMS) to offer a highly engaged learning experience for medical students. Using AWS, TriByte created the platform with custom workflows and integrations with an ecommerce business portal, and insights in user behavior through detailed analytics.

TriByte reduced costs for their customer by 30–40 percent and allowed them to scale to meet business goals. Medical students can now download and work offline and access flexible learning workstreams that meet them in the middle of their hectic schedules. The platform was built on LAMP architecture with inbuilt video features, with video stored and delivered through the **Amazon CloudFront** Content Delivery Network (CDN). Encrypted HTTP Live Streaming (HLS) is used to make delivery secure. During assessments and live classes, concurrency will rise from between 20,000 to 50,000 users in a short span of time. TriByte uses **Amazon EC2** Auto Scaling to scale up and down based on load conditions.

TriByte also developed and deployed a new product offering based on the platform that enables SMS and email functionality within the platform and offers a dashboard accessible to customer stakeholders to manage analytics and harness new insights about customer use.

[Read the full success story ›](#)



“At TriByte, we are confident in the power of Amazon Web Services to support our growth, as the services provided by AWS are engineered with reliability, security, and scalability at the forefront of their design.”

Seethaprasad Mandikel, CEO & Founder at TriByte

4

Managing and minimizing risk

Innovative cloud solutions can help automate tasks in novel ways, reducing human configuration errors and simplifying how your security team collaborates with developers and operations teams. Among other benefits, this helps improve risk management by empowering you to create and deploy code faster and more securely.

For example, by employing technologies like ML, your cloud provider can enable you to discover, classify, and protect sensitive data—automatically and continuously.

If you work in a hybrid environment, you should prioritize the choice of information management and security tools built to integrate with the cloud. This allows the cloud to act as a seamless and secure extension of your on-premises environments.



University Francisco De Vitoria enhances security, governance with private data lake

Universidad Francisco de Vitoria (UFV) is a private university based in Madrid, Spain. UFV has four core data sources within its new AWS data lake: the leading academic management system in Spain, a learning management system, customer relationship management and cloud computing software, and an on-premises data source. A common, automated workflow prepares and moves data from all of these sources into a new AWS data lake, resulting in more scalability, data availability, security, and performance. The university also generates reports in near real time.

The architecture is governed by **AWS Lake Formation** permissions, which make data available for authorized users. UFV monitors the quality of its data, regulatory compliance and cybersecurity using AWS services within the data lake. It's adapting to Spain's National Security Scheme using **AWS Config**, a service that continually assesses, audits, and evaluates the configurations and relationships of resources on AWS, on premises, and on other clouds.

To take advantage of the value of its data lake, the university is exploring advanced data analytics on AWS, such as machine learning and artificial intelligence. It hopes to generate powerful insights that will create a better university experience for everyone.

[Read the full success story ›](#)



“The university enjoys unified access to data across its campuses and can generate reports in near real time. In the future, we will have many people who are experts in obtaining reports. The most important thing is that, now, all the information in the university is in the same place at the same time on AWS.”

José Antonio Marcos, Chief Information Officer at UFVs

5

Optimizing resources

By reducing costs for infrastructure and storage and allowing your teams to redirect technology resources previously dedicated to infrastructure management, you can make better use of those resources. With secure, cost-efficient access to powerful infrastructure and compute services at AWS, you can optimize your resources further through advanced analytics and AI-powered solutions.



NOAA accelerates customer onboarding and automates key processes with AWS

The National Oceanic and Atmospheric Administration (NOAA) Office of the Chief Information Officer (OCIO) Service Delivery Division (SDD) provides a range of IT services to internal NOAA customers such as the National Weather Service, National Ocean Service, the Office of Oceanic and Atmospheric Research, and the National Environmental Satellite, Data, and Information Service (NESDIS), among others.

To serve these customers more effectively, the OCIO SDD migrated key business applications to the cloud. NOAA now uses Enterprise Platform as a Service (ePaaS), an AWS-based cloud framework to provide hosting and development services for internal OCIO SDD customers. The framework:

- Includes a landing zone that automates OCIO SDD customer onboarding
- Allows OCIO SDD customers to create and manage catalogs of IT services
- Offers a pipeline as a service capability to automate feature release pipelines for fast updates
- Provides secure connectivity using existing NOAA technologies

Two NOAA critical applications migrated to AWS using this new framework: the Foreign National Registration Service and the NOAA Staff Directory. Both applications are optimized to so NOAA could quickly move their on-premises Oracle database to Amazon RDS for Oracle. In addition, an instance scheduler controls resource costs by automatically configuring start and stop schedules for all Amazon instances.

[Read the full success story >](#)



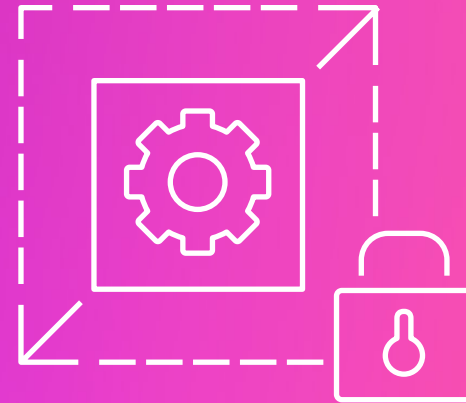
“With this solution, we’ve eliminated the duplication of services. Everything from security controls to naming conventions is already in place, so customers can get up and running very quickly.”

Stefan Leeb, Enterprise Cloud Services Program Manager at NOAA OCIO SDD

How AWS helps organizations innovate securely

Secure cloud infrastructure is only part of the innovation equation. In this section, we will explore how AWS can help you design and implement a layered, proactive security strategy that inspires confidence and activates creativity.

Build, run, and scale on the most secure infrastructure



By choosing AWS, you inherit cloud and network architecture built to help satisfy the most security-sensitive organizations. From built-in capabilities, such as default encryption at the physical layer, to fully isolated regional infrastructure partitions, AWS is architected to be the most secure environment to build, run, and scale applications in the cloud.

Leading organizations trust AWS to help them secure their data, protect their reputations, and mitigate risk, because we're continuously innovating to develop powerful infrastructure that remains reliably secure—even as the threat landscape evolves.

AWS infrastructure features that strengthen your security include:

AWS Nitro System: Enjoy built-in security that continuously monitors, protects, and verifies hardware and firmware across the underlying foundation for the next generation of **Amazon Elastic Compute Cloud (Amazon EC2)** instances.

AWS Nitro Enclaves: Create additional isolation to protect and securely process highly sensitive data within Amazon EC2 instances—while significantly reducing the attack surface area.

AWS Graviton Processors: Run cloud-native applications with enhanced security, always-on memory encryption, dedicated caches for every vCPU, and support for pointer authentication—while enjoying the best price performance on Amazon EC2.

Protect your application data



AWS helps our customers meet zero trust requirements, implement data security policies, encrypt data, and monitor and audit data—while maintaining data ownership.

With AWS, you control your data by determining where it is stored, how it is secured, and who has access to it. We enable fine-grained security policies and layered encryption to isolate your data in transit, in use, and when stored. And AWS continuously raises the bar on privacy safeguards with services and features that allow you to implement your own privacy controls, including advanced access, encryption, and logging features. We prohibit—and our systems are designed to prevent—unrequested remote access by AWS personnel to your data for any purpose, including service maintenance. The only exceptions are when our access is required to prevent fraud and abuse or to comply with the law.

AWS infrastructure features that help protect your data include:

Amazon Simple Storage Service (Amazon S3) Storage Lens: Receive actionable recommendations to apply data protection best practices and optimize costs while gaining organization-wide visibility into object storage usage and activity trends.

Amazon CloudWatch: Observe and monitor resources and applications running on AWS, on premises, or in other clouds to detect anomalies, perform root cause analysis, set alarms, and take automated actions.

Improve security at every level



AWS enables you to further enhance security—and stay ahead of new and evolving threats—with the ability to add additional layers of protection quickly, efficiently, and at scale. Use a wide range of AWS services and features to filter unauthorized traffic, rapidly detect threats and misconfigurations, and remediate issues quickly or automatically.

AWS services that enhance your security include:

AWS Network and Application Protection: Enforce fine-grained security policies at every network control point with services that inspect and filter traffic to help prevent unauthorized resource access.

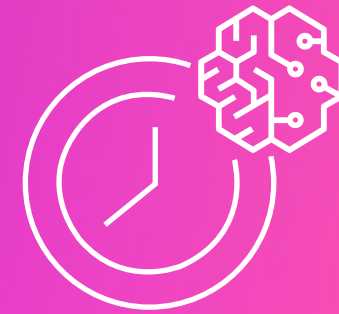
AWS Shield: Boost application availability and responsiveness with managed DDoS protection.

AWS WAF: Protect your web applications from common exploits and bots that can affect availability, compromise security, or consume excessive resources.

AWS Network Firewall: Deploy network firewall security for your virtual private clouds (VPCs) and define firewall rules that provide fine-grained control over network traffic.

Amazon GuardDuty: Protect your AWS environment with continuous monitoring of your AWS accounts and workloads for malicious activity.

Drive speed and agility with AI and automation



AWS provides organization-wide controls that automate infrastructure and application security checks to continually enforce security and compliance controls. Customers can then implement automated reasoning tools to mathematically prove the highest levels of security.

AWS services that can help drive agility include:

Amazon GuardDuty: More accurately isolate and alert suspicious user behavior with predictions powered by ML.

Amazon Inspector: Through deep semantic analysis of your application code, use this service—which features machine learning models and automated reasoning—to help identify code vulnerabilities and provide guidance you can use as part of remediation.

Amazon Detective: Automatically generate a narrative of an issue helping to bring a broader perspective and more security knowledge to the user.

NEXT STEPS

Start innovating securely with next-generation infrastructure

Throughout this eBook, we've highlighted the importance of tying meaningful innovation to reliable infrastructure security. Driven by proactive security strategies and building on secure, scalable infrastructure, organizations like TriByte, DVSA, NOAA, and Veridos have enabled the innovation culture that helps them adapt and succeed in today's unpredictable, ever-changing economic climate.

Start innovating securely with AWS to unleash greater innovation across your organization.

Learn more about AWS infrastructure security ›

Discover the ways AWS can help you focus on secure innovation with more than 200 fully featured services, including serverless and ML capabilities. [Take advantage of the AWS Free Tier](#) and get free, hands-on experience with AWS services.