# AWS outage exposes growing vulnerabilities of hyper-centralised cloud infrastructure



Amazon Web Services (AWS) has confirmed that its systems have returned to normal after a massive 15-hour outage that disrupted a vast array of internet services worldwide. The failure, centred on AWS's US-EAST-1 data centre in northern Virginia, triggered chaos across industries, affecting payments, websites, apps, and online platforms that heavily rely on AWS infrastructure.

The incident began early on October 20, 2025, and was fully resolved by 6 p.m. Eastern Time, according to Amazon's health dashboard. Engineers started to see recovery within three hours, but the restoration process remained slow and uneven, with some services continuing to deal with backlog processing after the main fault was fixed. Amazon has promised a detailed explanation of the outage in due course.

The root cause was attributed to a malfunction within a subsystem monitoring the health of AWS's network load balancers inside its Elastic Compute Cloud (EC2) internal network. This triggered a Domain Name System (DNS) failure that blocked access to DynamoDB’s API, cascading through numerous essential services. The reach of the outage was vast: over 11 million user issues were reported, with disruptions hitting household names like Snapchat, Reddit, Zoom, Venmo, Netflix, Disney+, Robinhood, Coinbase, as well as Amazon’s own services such as Ring and Alexa. Even educational platforms like Canvas were affected, leaving students at institutions like Ohio State University and the University of California, Riverside unable to access assignments.

In the UK, Lloyds Banking Group customers faced payment difficulties, and the HMRC website was taken offline, highlighting how critical industries were directly impacted. Financial platforms, social media, gaming, streaming, and e-commerce sectors all experienced significant interruptions, underscoring society’s increasing reliance on a concentrated infrastructure dominated by a few cloud providers.

This was not AWS’s first major incident. The US-EAST-1 data centre region has been the site of similar large-scale outages in 2017, 2020, 2021, and June 2023. Previous disruptions have shown how the company’s infrastructure, while vast and technically advanced, remains vulnerable to cascading failures. Industry experts have cautioned that the centralisation of cloud infrastructure creates single points of failure, worsening the impact when problems arise.

Jake Moore, global cybersecurity adviser at ESET, stated that the outage “once again highlights the dependency we have on relatively fragile infrastructures,” a sentiment echoed by BBC technology reporter Shiona McCallum, who noted the increasing pressure on cloud services due to growing demand. Cornell University computer science professor Ken Birman pointed out that many companies relying on AWS have not invested adequately in protection systems or reliable backups, urging firms to bolster their resilience to avoid business paralysis during outages.

The outage also reignited debate over the risks inherent in dependence on a few dominant cloud providers. AWS commands about 30 percent of the global cloud infrastructure services market, far ahead of Microsoft and Google Cloud. Despite the disruption, Amazon’s stock price rose 1.6%, indicating strong investor confidence in the company's overall market strength.

Looking ahead, experts like Bob Venero, CEO of Future Tech Enterprise, warn that as artificial intelligence workloads grow within enterprises using public clouds, outages like this are likely to become more frequent. Venero predicts an increase in cloud service interruptions as AI capabilities expand, a concern aligned with AWS’s recent multi-billion-dollar investments to build AI-focused data centers worldwide, including $20 billion in Pennsylvania and $11 billion in Georgia announced in 2025.

The outage exposed the ripple effects across interconnected services: even those that did not go offline experienced increased latency and elevated error rates, diminishing the user experience. Applications that rely on AWS’s databases, message queues, or serverless functions reported timeouts and errors, highlighting the risks businesses face when critical systems depend too heavily on a single cloud infrastructure.

While AWS has worked to restore services promptly, the incident serves as a wake-up call to the digital ecosystem about the vulnerabilities lying beneath its foundational infrastructure and the importance of building more robust, distributed, and resilient systems.

### 📌 Reference Map:

* Paragraph 1 – [[1]](https://www.ibtimes.co.uk/back-normal-aws-outage-resolved-after-causing-worldwide-disruption-1749019), [[4]](https://www.reuters.com/business/retail-consumer/amazon-cloud-outage-online-services-hit-recovery-uneven-2025-10-20/), [[7]](https://www.creativehives.co/aws-outage-2025-causes-impact-recovery/)
* Paragraph 2 – [[1]](https://www.ibtimes.co.uk/back-normal-aws-outage-resolved-after-causing-worldwide-disruption-1749019), [[5]](https://www.axios.com/2025/10/21/aws-outage-amazon-cloud-service-websites-back), [[7]](https://www.creativehives.co/aws-outage-2025-causes-impact-recovery/)
* Paragraph 3 – [[2]](https://www.reuters.com/business/retail-consumer/amazons-cloud-unit-reports-outage-several-websites-down-2025-10-20/), [[3]](https://apnews.com/article/654a12ac9aff0bf4b9dc0e22499d92d7), [[4]](https://www.reuters.com/business/retail-consumer/amazon-cloud-outage-online-services-hit-recovery-uneven-2025-10-20/)
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* Paragraph 6 – [[1]](https://www.ibtimes.co.uk/back-normal-aws-outage-resolved-after-causing-worldwide-disruption-1749019), [[3]](https://apnews.com/article/654a12ac9aff0bf4b9dc0e22499d92d7), [[4]](https://www.reuters.com/business/retail-consumer/amazon-cloud-outage-online-services-hit-recovery-uneven-2025-10-20/)
* Paragraph 7 – [[1]](https://www.ibtimes.co.uk/back-normal-aws-outage-resolved-after-causing-worldwide-disruption-1749019), [[6]](https://www.crn.com/news/cloud/2025/cloud-outages-will-increase-more-and-more-due-to-ai-usage-after-aws-outage-rocks-over-1-000-companies-says-tech-ceo)
* Paragraph 8 – [[7]](https://www.creativehives.co/aws-outage-2025-causes-impact-recovery/), [[6]](https://www.crn.com/news/cloud/2025/cloud-outages-will-increase-more-and-more-due-to-ai-usage-after-aws-outage-rocks-over-1-000-companies-says-tech-ceo), [[3]](https://apnews.com/article/654a12ac9aff0bf4b9dc0e22499d92d7)
* Paragraph 9 – [[5]](https://www.axios.com/2025/10/21/aws-outage-amazon-cloud-service-websites-back), [[1]](https://www.ibtimes.co.uk/back-normal-aws-outage-resolved-after-causing-worldwide-disruption-1749019)

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## Bibliography

1. <https://www.ibtimes.co.uk/back-normal-aws-outage-resolved-after-causing-worldwide-disruption-1749019> - Please view link - unable to able to access data
2. <https://www.reuters.com/business/retail-consumer/amazons-cloud-unit-reports-outage-several-websites-down-2025-10-20/> - On October 20, 2025, Amazon Web Services (AWS) experienced a significant global outage that disrupted numerous websites and applications, including major platforms like Snapchat, Reddit, Zoom, Venmo, and Amazon's own services. The root cause was traced to a malfunction in a subsystem monitoring the health of AWS's network load balancers within its EC2 internal network. The incident originated at AWS's US-EAST-1 region in northern Virginia, a site previously linked to similar disruptions in 2020 and 2021. The outage affected businesses and users worldwide, highlighting the risks of heavy reliance on a few cloud providers. While AWS restored normal service by late afternoon, some services continued dealing with backlog processing. Over 4 million users reported issues, and at least a thousand companies were impacted. Despite the chaos, Amazon's stock rose by 1.6%. ([reuters.com](https://www.reuters.com/business/retail-consumer/amazons-cloud-unit-reports-outage-several-websites-down-2025-10-20/?utm_source=openai))
3. <https://apnews.com/article/654a12ac9aff0bf4b9dc0e22499d92d7> - A major global internet disruption occurred due to a massive outage of Amazon Web Services (AWS) on Monday, October 20, 2025. The outage, which began early in the morning and lasted until 6 p.m. Eastern, disrupted a wide range of online services including social media apps, video games, financial platforms, streaming services, and even educational tools. Amazon cited problems with its Domain Name System (DNS), which is vital for converting web addresses into machine-readable IP addresses, as the cause. More than 11 million issues were reported from services such as Snapchat, Netflix, Disney+, Robinhood, Coinbase, McDonald's app, and popular games like Roblox and Fortnite. Amazon's own services, including Ring and Alexa, were affected. Students at institutions like Ohio State University and the University of California, Riverside were unable to access assignments due to outages in educational platforms like Canvas. Cybersecurity experts confirmed the complexity and interdependence of modern internet infrastructure, highlighting society's reliance on a few major cloud providers such as Amazon, Google, and Microsoft. Though not caused by a cyberattack, this outage underscored the vulnerabilities in centralized web architecture and mirrored past AWS failures from 2017, 2020, 2021, and 2023. ([apnews.com](https://apnews.com/article/654a12ac9aff0bf4b9dc0e22499d92d7?utm_source=openai))
4. <https://www.reuters.com/business/retail-consumer/amazon-cloud-outage-online-services-hit-recovery-uneven-2025-10-20/> - On October 20, 2025, Amazon Web Services (AWS) experienced a major cloud outage, primarily affecting its US-EAST-1 data center region in northern Virginia. This disruption interfered with a wide array of online services across sectors including finance, social media, gaming, e-commerce, and education. The issue stemmed from a Domain Name System (DNS) problem that blocked access to DynamoDB’s API due to failures within AWS’s Elastic Compute Cloud (EC2) internal network. The outage impacted popular services like Amazon, Prime Video, Snapchat, Reddit, Venmo, Lyft, Fortnite, and Duolingo. Despite being gradually resolved, this incident highlighted the fragility of global digital infrastructure. AWS has suffered previous outages, notably in June 2023 and December 2021, also centered on its US-EAST-1 region. AWS, serving over a million customers monthly, reported $30.9 billion in revenue in Q2 2025, underlining the scale and critical role of its infrastructure in powering the modern internet. ([reuters.com](https://www.reuters.com/business/retail-consumer/amazon-cloud-outage-online-services-hit-recovery-uneven-2025-10-20/?utm_source=openai))
5. <https://www.axios.com/2025/10/21/aws-outage-amazon-cloud-service-websites-back> - Amazon Web Services (AWS) announced on Monday evening that its cloud services had returned to normal following a widespread global outage that disrupted thousands of websites. However, AWS noted that some services were still handling a backlog of messages. This incident marked the largest internet outage since a previous major disruption caused by CrowdStrike, which had grounded flights, halted banking services, and shut down platforms such as Snapchat, Reddit, Duolingo, and Coinbase. The outage has highlighted concerns about the fragility of the global economy's digital infrastructure. ([axios.com](https://www.axios.com/2025/10/21/aws-outage-amazon-cloud-service-websites-back?utm_source=openai))
6. <https://www.crn.com/news/cloud/2025/cloud-outages-will-increase-more-and-more-due-to-ai-usage-after-aws-outage-rocks-over-1-000-companies-says-tech-ceo> - AWS cloud outage hits major airlines, large banks, popular streaming services and applications Monday morning due to a Domain Name System issue. 'AWS outages are just going to continue to increase, especially as we see more AI capabilities being introduced into the enterprise,' says Future Tech Enterprise CEO Bob Venero. AWS experienced one of its largest outages in the early morning hours Monday that shut down a massive number of services—including its data service DynamoDB and EC2—as well as popular internet sites like Reddit and Snapchat, affecting well over 1,000 companies. Bob Venero, CEO of Future Tech Enterprise, Fort Lauderdale, Fla., No. 76 on CRN’s 2025 Solution Provider 500 list, said he is seeing a 'tremendous' amount of public cloud repatriation to colocation and on-premises as customers get more savvy about the risks associated with the public cloud. Venero predicted there will be increased outages going forward with increased AI usage. 'There are going to be more and more of them,' he said. 'They are just going to continue to increase, especially as we see more AI capabilities being introduced into the enterprise.' AWS, the $124 billion Seattle-based cloud company, is pouring billions of dollars into building new AI-focused data centers across the world that will be filled with AI infrastructure that power AWS services. For example, just in 2025, AWS committed to spending $20 billion to ramp up its AI-focused data center infrastructure in Pennsylvania, as well as $11 billion in Georgia. AWS is the largest cloud company on the planet. The company owns 30 percent share of the global cloud infrastructure services market, followed by Microsoft at 20 percent share, then Google Cloud at 13 percent share as of the second quarter of 2025, according to data from Synergy Research Group. 'It’s up to the customer to decide how much risk they want,' said Venero. 'That is why we believe in on-prem and colocation that can avoid some of the risk associated with being in the hyperscaler public clouds.' ([crn.com](https://www.crn.com/news/cloud/2025/cloud-outages-will-increase-more-and-more-due-to-ai-usage-after-aws-outage-rocks-over-1-000-companies-says-tech-ceo?utm_source=openai))
7. <https://www.creativehives.co/aws-outage-2025-causes-impact-recovery/> - AWS reported by about 6:35 AM ET that 'most AWS service operations are succeeding normally now,' but work was ongoing toward full resolution. While root cause details remain limited publicly, some reporting indicates the disruption may have been linked to backend capacity or subsystem issues in the US-EAST-1 region. The outage affected a wide range of services, including Amazon EC2, S3, DynamoDB, and RDS, as well as AWS Lambda, CloudWatch, API Gateway, and Route 53. The centralisation of internet infrastructure, particularly in AWS's US-East-1 region, created a single point of failure risk, leading to widespread service disruptions. The outage also highlighted the cascade effects throughout dependent services, as apps relying on AWS databases, message queues, or serverless functions experienced timeouts or errors. Even when services didn't fully go down, increased latency and elevated error rates degraded user experience. ([creativehives.co](https://www.creativehives.co/aws-outage-2025-causes-impact-recovery/?utm_source=openai))