



# Network connectivity for healthcare workloads in the cloud

Elevating National Health Service  
(NHS) workloads by unifying network  
connectivity between  
on-premises and the AWS Cloud





## AWS in healthcare

The Amazon Web Services (AWS) healthcare mission is to enable access and delivery of person-centred care in order to improve outcomes and lower costs by accelerating the digitisation and utilisation of healthcare data. Our aim is to help the National Health Service (NHS) and its partners develop cloud strategies to achieve more with less, modernise technology, and digitally transform back office and clinical services.

## Seamless NHS data mobility through Cloud Network Connectivity

In the digital age of healthcare, the National Health Service (NHS) faces a pressing challenge that has far-reaching implications: the issue of network connectivity and cloud integration. As healthcare systems strive to provide efficient and patient-centric services, seamless access to critical data and applications has become paramount. Currently, the NHS has grappled with intermittent network outages, data silos, and limited scalability, hindering its ability to deliver optimal care.

By harnessing AWS services, the NHS can achieve robust network connectivity, streamlined data sharing, and enhanced scalability through the cloud. This synergy between healthcare and technology holds the promise of a more connected, efficient, and responsive NHS, ultimately leading to improved patient outcomes and experiences.



## Benefits of AWS cloud networking services

Get the broadest and deepest set of networking and content delivery services in the world with AWS. Run applications with the highest level of reliability, security, and performance in the cloud.

### Most Secure.

Meet the most stringent security requirements in the world with AWS networking capabilities. Ensure the confidentiality, integrity, and availability of your data through 24/7 infrastructure monitoring.

### Highest network availability.

Maintain the highest availability levels for your mission-critical workloads using the AWS Region/Availability Zone (AZ) model. Industry analysts recognise the AZ model as the recommended approach for running enterprise applications requiring high availability.

### Consistent high performance.

Run your healthcare workloads using the highest throughput and lowest latency cloud network. Use the AWS network to provide your patients with faster, more responsive applications.



## A complete cloud network and connectivity portfolio

In the intricate landscape of UK healthcare, it is imperative for data security and connectivity to work seamlessly by default. Amazon Web Services (AWS) cloud networking services stands steadfast with a set of capabilities for safeguarding NHS organisations digital networks and data flow. The AWS suite of networking services for protection, scaling, and accessibility, enables NHS organisations to blend security, dedicated network connectivity, central network operations, and the extension of NHS networks to remote healthcare workers. This architecture not only forges a defense against cyber threats but also lays the foundation for heightened operational efficiency, allowing the NHS to embrace a future where patient care and data integrity remain a high priority, regardless of physical boundaries. These AWS Networking services include:

### AWS Security Hub

Centralized AWS service for monitoring and improving cloud security posture.

### AWS Web Application Firewall (WAF)

Web application firewall protects against online threats and attacks.

### AWS Shield (DoS Protection)

Managed DDoS protection safeguarding web applications from cyberattacks.

### AWS Route53 (DNS)

Scalable domain name system service for efficient internal and web routing.

### AWS Site to Site VPN

Securely connects on-premises network(s) to AWS cloud infrastructure.

### AWS Client VPN

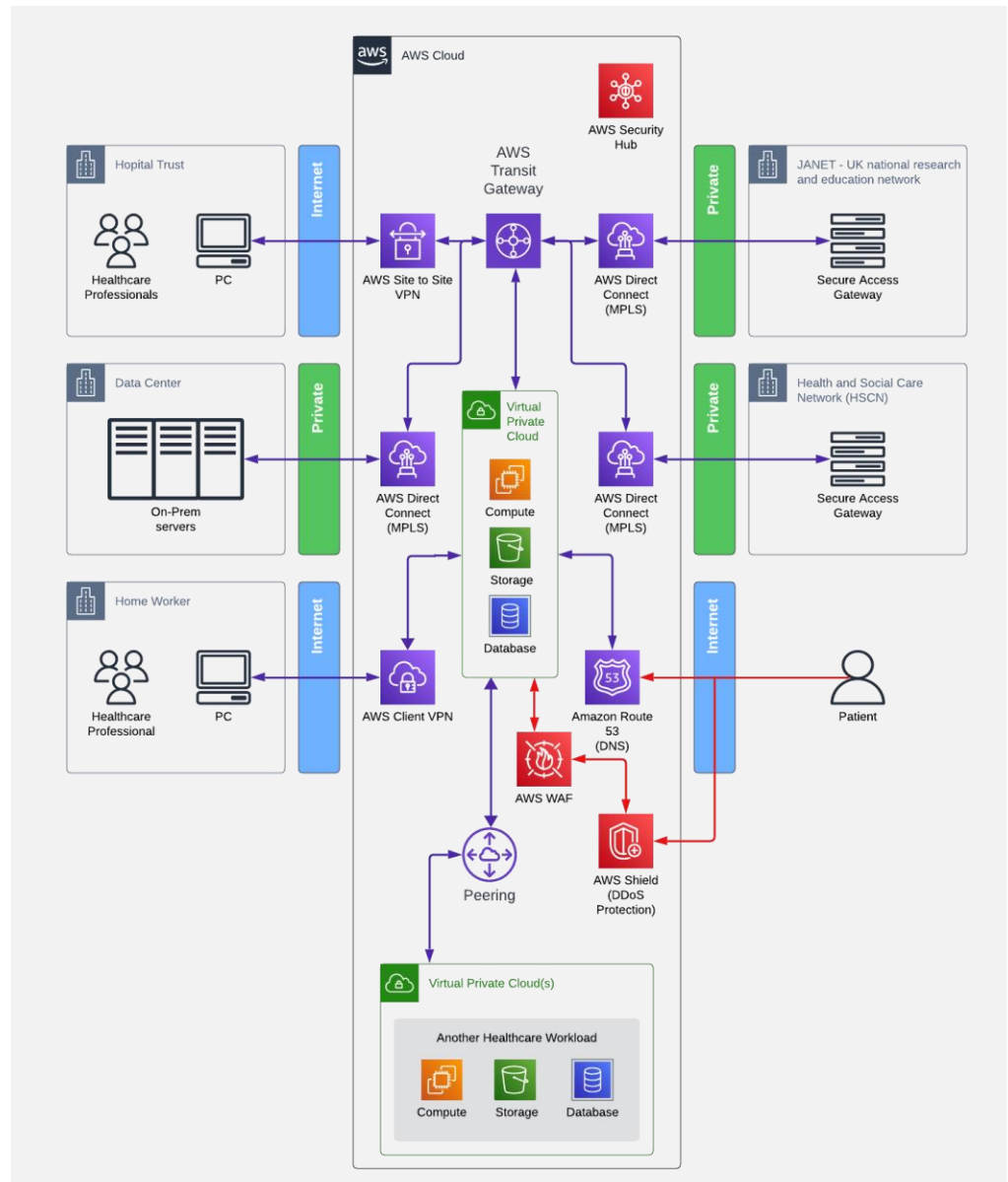
Securely access AWS resources from remote locations using VPN.

### AWS Direct Connect (MPLS)

Dedicated network link for fast, reliable cloud connections.

### AWS Transit Gateway

Central hub for simplified and scalable network connectivity.



For NHS organizations, embracing AWS networking managed services signifies an invaluable leap towards efficient operations, availability and robust security. These managed services not only save time and costs by relieving the burden of infrastructure management but also introduce a centralized visibility that can transform the healthcare landscape. By entrusting the intricacies of networking to AWS professionals, NHS teams can focus on core healthcare tasks, optimise resource allocation, and swiftly respond to innovation needs. This centralized approach fosters a comprehensive view of network activities, enabling proactive threat detection, real-time monitoring, and streamlined compliance enforcement. As a result, NHS organizations can navigate the digital realm with heightened confidence, harnessing AWS's expertise to deliver seamless, secure, and patient-centered care.



## AWS Connectivity Bundle

The connectivity bundle offers a list of no-cost activities that can be implemented over a short timeframe. These activities are designed to align with NHS organisation resource commitments. The list is not exhaustive but rather aims to address a key business risk or current concern of the customer (also known as a "quick win"). These activities do not require any commercial agreements to be in place and are aimed to provide NHS organisations with advanced knowledge and understanding on how to define, plan and deliver the right outcome prior to any commercial activity.

### Step 1

**Understand the challenge:** AWS team to meet with key customer stakeholders; the current connectivity arrangements and governance requirements to understand the customer workloads and future requirements to initial data discovery of data bandwidth requirements.

### Step 2

**Dive deep with an AWS led discovery workshop:** with the AWS account team and technology specialists to dive deep on the future operating state and connectivity requirements; create a target network architecture for AWS to include landing zone, centralised governance and automation.

### Step 3

**Learn and be curious about AWS storage and transfer services:** Build knowledge and capability; direct connect; Site-to-Site VPN, HSCN; transit gateway.

### Step 4

**Build a AWS landing zone:** Build AWS landing zone, centralised controls and account vending with baked in connectivity to meet customer requirements. Engage partner to establish private connectivity links if required (HSCN)

### Step 5

**Now, go build:** Engage operational partner such as Amazon Managed Services to support the run and maintain of network security and operations.

No cost AWS offering

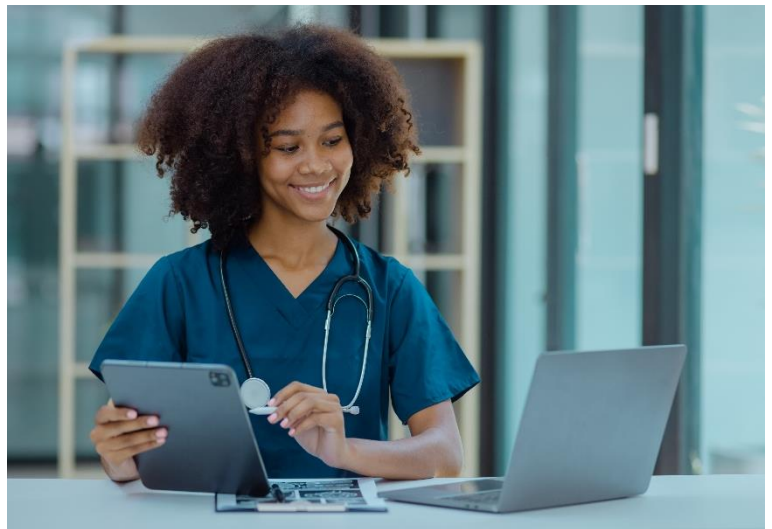
AWS Proserve or Partner

## AWS NHS Data Egress Waiver (NHS DEW)

Sometimes it's hard to know how much sending data will cost, and that can be tricky for your budgets. We want to make it simple for you to use AWS without worrying about extra costs. Before, some people were choosing other options that cost more, just because they knew how much it would be. With the NHS DEW program, you can adopt or maintain AWS cloud workloads and not stress about network egress charge forecasting.

AWS has listened to customer feedback and taken steps to remove this concern, by offering a wider range of NHS organisations a data egress discount. AWS customers may be eligible for waiver of egress charges under this program if they are a:

- **NHS Trusts**
- **Integrated Care Systems (ICS's)**
- **Arms Length Body (ALB's)**



If you use AWS cloud services within your NHS organisation AWS account, we'll give you a discount on the charges when you send data from AWS to the Internet or over the Health and Social Care Network (HSCN) or Scottish Health Protection Network (SHPN). This helps you save time forecasting budgets and savings of up to 15% of the total of what you spend on AWS services each month.



# AWS Partner offerings for NHS customers

One significant advantage that AWS partners bring to the table is the availability of no-cost offerings to customers. These no-cost offerings are designed to enable businesses to explore and adopt solutions on AWS cloud services more effectively without incurring any upfront expenses. Through these initiatives, AWS partners offer a range of valuable resources, such as workshops, training sessions and proof of concept support, to assist customers in understanding how AWS can address their unique requirements.

Partner	Offering
Splunk	Splunk and Cysiam join forces to offer a free risk assessment to support NHS trusts in addressing organisational risks. The free risk assessment service offered by Splunk and Cysiam will empower NHS Trusts to evaluate their existing security measures, identify potential weaknesses, and proactively address any vulnerabilities that could compromise patient data, critical systems, and the overall integrity of healthcare services. By leveraging cutting-edge technologies and industry-leading cybersecurity methodologies, this joint initiative aims to equip NHS Trusts with the knowledge and insights needed to strengthen their security posture and protect the valuable assets they safeguard.
TrendMicro	Trend Micro offers NHS customers a 30-day free trial of Cloudone Conformity and cyber security assessment sweep services. The easy integration into your AWS workloads is a 2-3 minute activity and assisted by experts. The outcome is that NHS organisations gain visibility over the Shared Responsibility Model with concise compliance reports for AWS resources. The tool ensures total security for cloud builders and DevOps pipelines, supporting various critical use cases like cost optimization and performance efficiency within AWS. The Cloudone Conformity application also detects dangerous configurations and produces a heatmap if its findings with guided steps and fix them using CLI, GUI, or Cloud Formation scripts. Full API integration is available, and additional solutions can be explored through Trend Micro's partnership with AWS.





## Consulting Services

AWS Competency Partners offering consulting services have demonstrated deep AWS technical expertise and proven customer success in specialised areas across industry, use case, and workload.

Solution partner	Solution overview
Accenture	Accenture is a leading, global professional services company that provides an end-to-end solution to migrate to and manage operations on AWS. Accenture's staff of 700,000+ includes more than 40,000 trained who hold more than 30,000 AWS Certifications.
CloudScaler	We design, build, operate, and support world-class AWS platforms. We take a structured approach, deploying highly resilient and scalable infrastructure, and applying a control framework that meets the highest regulatory and industry standards. Cloudscaler will help you implement a cloud operating model that works.
CirrusHQ	CirrusHQ are your leading, cloud managed and professional services partner for AWS. We work globally with commercial, public-sector and not-for-profit organisations to enable IT transformation, competitive advantage and new ways of operating using AWS. We are your experts in cloud strategy, architecture, migration, devops and 24x7 operational management and cost reduction of your cloud services.
IBM	IBM's breadth and depth of portfolio of proven solutions cater to hybrid cloud requirements especially with end to end management of public cloud services. The tiered service model and uniquely integrated brokerage platform, help organizations to choose services that are designed specially for cloud with native tooling for zero touch operations, cognitive delivery through analytics and automation, and digital experience.
Kanios	At Kainos we use technology to solve real problems for customers, overcome big challenges for businesses, and make people's lives easier. We build strong relationships with customers and go beyond to change the way they work today and the impact they have tomorrow. We've been delivering award-winning IT services, consulting and software solutions for over 30 years employing over 3,000 people.
TCS	Tata Consultancy Services (TCS) is an IT services, consulting and business solutions organisation that has been partnering with many of the world's largest businesses in their transformation journeys for the last fifty years. TCS offers a consulting-led, Cognitive powered, integrated portfolio of IT, Business & Technology Services, and engineering.
Redcentric	Redcentric is a managed IT service provider that help organisations succeed. Redcentric's AWS consulting services span the complete cloud lifecycle from AWS Well Architected reviews, building tailored environments, on-going management and optimisation of your AWS workloads to help you realise significant cost savings, improve the performance of your applications and eliminate security risks.
Lumen	As a technology leader and solutions provider, Lumen delivers hybrid networking, cloud connectivity, and security solutions globally. Connect, migrate, manage, and modernise leveraging 450,000+ global fiber route miles, 2,200+ on-net data centres and 170,000+ on-net enterprise buildings supported by world-class professional services.
Cloud Gateway	Cloud Gateway offers a hybrid cloud connectivity platform (PaaS) which securely connects anything on your estate to cloud and internet.



## AWS Networking technology solutions partners

### Controls and Guardrails

In networking, control involves managing operations according to guidelines, while guardrails set protective boundaries, collectively ensuring efficient, secure, and compliant network functionality.

Solution partner	Solution overview
Aviatrix	Aviatrix, the pioneer of Intelligent Cloud Networking™, optimizes business-critical application availability, performance, security, and cost with multicloud networking software that delivers a simplified and consistent enterprise-grade operational model in and across cloud service providers.
Cisco	Cisco brings to cloud a comprehensive portfolio of software, infrastructure, integrated solutions, and services that enable organizations to design, plan, accelerate, and de-risk your cloud initiatives, securely expand your private networks, protect cloud identities and deploy, manage and optimize applications.
Checkpoint	Checkpoint is a leading cybersecurity company providing comprehensive solutions to safeguard businesses from cyber threats. Their offerings include advanced threat prevention, network security, cloud security, and mobile security solutions. Checkpoint's innovative technologies protect organizations networks worldwide from evolving cyber risks and attacks.
Cutover	Cutover's Collaborative Automation platform standardizes and automates technology operations processes such as recovery, release and migration across your enterprise to increase efficiency and reduce risk. Bridge the gap between your teams and technology with automated runbooks.
Divvy Cloud by Rapid7	Rapid7 is a leading provider of security data and analytics solutions that enable organizations to implement an active, analytics-driven approach to cyber security. Our solutions empower organizations to prevent attacks by providing visibility into vulnerabilities and to rapidly detect compromises, respond to breaches, and correct the underlying causes of attacks.
Palo Alto Networks	Palo Alto Networks helps customers accelerate cloud migration initiatives with inline and API-based security offerings that complement native AWS security features. VM-Series prevents threats and stops data loss for workloads and containers on AWS. Prisma Cloud enforces policy, configuration and compliance from build phase through run phase. Cortex XSOAR automates response to security incidents.
Trend Micro	Trend Micro is a global leader in cybersecurity, helping make the world safe for exchanging digital information. With 30+ years of security expertise, global threat research, and innovation, Trend Micro enables resilience for customers by providing security for digital transformation. Automated, flexible and all-in-one security: Trend Micro simplifies cloud security for customers.

## Security Operations

Security operations in networking encompass monitoring, threat detection, and incident response. This proactive approach ensures network integrity, shielding against cyber threats and vulnerabilities to maintain seamless operations.

Solution partner	Solution overview
Aqua	Aqua's cloud native application protection platform protects applications across their entire lifecycle, from code to production, and secures their underlying orchestration infrastructure. Aqua delivers run-time protection and workload security for Amazon ECS, Amazon EKS, Fargate, and Lambda and comprehensive, ongoing validation and risk assessment of AWS account configurations and settings.
CrowdStrike	CrowdStrike fits in with the shared responsibility model of cloud security by enabling customers secure their workloads and data 'in the cloud'. CrowdStrike is cloud-delivered next-generation endpoint protection platform with unified next-generation antivirus, endpoint detection and response (EDR), IT hygiene and a 24/7 managed hunting service — all delivered via a single lightweight agent.
Fortra (Formerly Alert Logic)	Alert Logic provides managed detection and response (MDR) solutions that integrate security technology, human analytics, and responsive communication to provide high quality, cloud-optimized security services. Alert Logic's cloud-native technology and team of security experts protect organizations 24/7 to ensure they have the most effective response to resolve whatever threats may come.
Logz.io	Logz.io offers four products: Log Management compatible with ELK, Infrastructure Monitoring based on Prometheus, Distributed Tracing based on Jaeger, and an ELK compatible Cloud SIEM. These are offered as fully managed, integrated cloud services designed to help engineers monitor, troubleshoot and secure their distributed cloud workloads more effectively.
Palo Alto Networks	Palo Alto Networks helps customers accelerate cloud migration initiatives with inline and API-based security offerings that complement native AWS security features. VM-Series prevents threats and stops data loss for workloads and containers on AWS. Prisma Cloud enforces policy, configuration and compliance from build phase through run phase. Cortex XSOAR automates response to security incidents.
Tenable	Tenable® is the Exposure Management company. Approximately 43,000 organizations around the globe rely on Tenable to understand and reduce cyber risk. Tenable extended its expertise in vulnerabilities to deliver the world's first platform to see and secure any digital asset on any computing platform.
Trend Micro	Trend Micro is a global leader in cybersecurity, helping make the world safe for exchanging digital information. With 30+ years of security expertise, global threat research, and innovation, Trend Micro enables resilience for customers by providing security for digital transformation. Automated, flexible and all-in-one security: Trend Micro simplifies cloud security for customers.
Splunk	Splunk helps make organizations more resilient. Leading organizations use our unified security and observability platform to keep their digital systems secure and reliable. Organizations trust Splunk to prevent security, infrastructure, and application issues from becoming major incidents, absorb shocks from digital disruptions and accelerate digital transformation.
Sumo Logic	Sumo Logic is an industry leading cloud-based machine data analytics service. We help our customers gain instant insights into their growing and complex pool of machine data. Proactive analytics improve reliability of mission critical applications with visibility across DevOps, IT ops and compliance and security environments. The analytics engine is powered by Pattern Detection.





## Observability

Monitoring and observability in networking provide essential insights into network performance, traffic patterns, and potential issues. These practices empower efficient troubleshooting, preemptive maintenance, and informed decision-making, ensuring a resilient and responsive network infrastructure.

Solution partner	Solution overview
AppDynamics	AppDynamics is the Application Intelligence company. With the AppDynamics App iQ Platform, enterprises get real-time insights into application performance, user performance and business performance so they can move faster in an increasingly sophisticated, software-driven world.
Datadog	Datadog is a monitoring service for cloud-scale applications, bringing together data from servers, databases, tools and services to present a unified view of your entire stack. Datadog is a SaaS-based data analytics platform that enables Dev and Ops teams to work collaboratively to avoid downtime, resolve performance problems, and ensure that development and deployment cycles finish on time.
Dynatrace	With advanced observability, AI, and complete automation, our all-in-one platform provides answers, not just data, about the performance of applications, the underlying infrastructure, and the experience of all users.
New Relic	New Relic is a leading cloud-based observability platform built to create more perfect software. The world's best software and DevOps teams rely on New Relic to move faster, make better decisions and create best-in-class digital experiences.
Splunk	Splunk helps make organizations more resilient. Leading organizations use our unified security and observability platform to keep their digital systems secure and reliable. Organizations trust Splunk to prevent security, infrastructure, and application issues from becoming major incidents, absorb shocks from digital disruptions and accelerate digital transformation.

## Get started

To get started contact your [AWS account team](#) to learn more on how we can:

- Support you on your cloud journey
- Understand your technical landscape
- Build your Cloud Business Case
- Identify the best procurement route for your Trust
- Identify quick wins and initial migration opportunities

## AWS resources

- [Guidance for NHS Trusts Adopting AWS Cloud Services](#)
- [AWS Networking](#)
- [AWS for Health](#)
- [AWS Partner Network](#)

## Get in touch

Email: [aws-uk-healthcare@amazon.com](mailto:aws-uk-healthcare@amazon.com)