# Deployment of Secure Data Environments (SDE) on the AWS Cloud

This is an introduction to SDE's on Amazon Web Services (AWS) Cloud for the National Health Service(NHS) Organisations

# 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.

# What is a SDE?

Healthcare and life science organisations are reinventing how they collaborate, make data-driven clinical and operational decisions, enable precision medicine, and decrease the cost of care. The safe, secure and appropriate utilisation of healthcare data is critical to these outcomes.

SDE's provide authorised researchers with controlled remote access to data for analysis, preventing commonplace sharing and dissemination of healthcare data for research. SDEs log and monitor user interactions then data extracted is cleared of personal identifiers and finally assessed before removal. SDEs meet a wide range of use cases and can have broader scope than a Trusted Research Environment (TRE), a term commonly used to encapsulate similar functionality.

SDEs are not limited by data type. They can include multi-modal datasets including Electronic Health Records (EHR), pathology, genomics, and medical imaging. They can operate at a single or multi-institutional level; nationally, regionally, or locally.

The NHS is deploying an interoperable system of SDEs including sub national SDEs across England. AWS supports NHS organisations by designing and deploying SDEs that meet NHS data and infrastructure interoperability standards, and can be deployed through flexible, repeatable infrastructures.

## Trusted Research Environment and Enclave for Hosting Open Original Science Exploration (TREEHOOSE)

The Health Informatics Centre, The University of Dundee, and  AWS delivered a cloud-based TRE solution, TREEHOOSE. The solution is self-service and built to secure and analyse sensitive data, delivering flexible tools and technologies enabling research to be conducted at scale. The secure enclave solution enables researchers to intuitively execute protected intellectual property code inside a containment mechanism, breaking silos between data owners and code owners

The TREEHOOSE project is one of the nine projects funded by UKRI under the DARE UK (Data and Analytics Research Environments UK) program, to inform development of novel and innovative national data research infrastructure.

# The AWS Cloud adoption pathway

We understand the route to cloud adoption and maximising its benefits can be difficult to navigate. Wherever you are in the journey, we have packaged a tailored set of offerings specific to NHS Trusts, to give you simple, actionable steps and demonstrate the value of the AWS Cloud and deployment of SDEs.

Support is available from both your AWS account team and our extensive healthcare AWS Partner Network (APN) to help you achieve your business objectives through native services, or Partner solutions built on AWS. Together, we can provide the right resources, skills development, potential funding, and credits to support the AWS Cloud adoption.

# Routes to deploying Secure Data Environments (SDE) on AWS

| AWS Partner solutions | AWS solutions | AWS services |
|---|---|---|
| Software products, SaaS or managed services built on or integrated with AWS to developed, owned, maintained, and supported by AWS Partners. | Trusted Research Environment (TRE) on AWS is a self-service research solution to help secure and analyse sensitive data, to deliver a set of flexible tools and pre-built templates to conduct research at scale. | Whether you're looking for compute power, database storage, content delivery,or other functionality, AWS has services to help you build sophisticated applications with increased flexibility, scalability and reliability. |

Buyer ⟵——————————————⟶ Builder

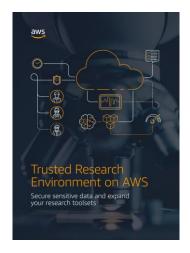# Trusted Research Environments (TRE's) on AWS

Trusted Research Environments (TRE) on AWS can be customised and combined with other AWS tools and AWS Partner solutions to support the deployment of NHS SDEs that meet NHS specifications. TRE on AWS is an open-source, self-service research solution to secure and analyse sensitive data, it also includes core components, such as, Data lakes, virtual research environments, data ingress and egress applications, and leverages the AWS security model and a broad range of AWS tools.

TRE on AWS has been developed based on customer requirements and recognised frameworks including the UK Data Service Five Safes Framework.


Trusted Research Environment on AWS
Secure sensitive data and expand your research toolsets

**Safe data:** Data is treated to protect any confidentiality concerns.
**Safe projects:** Rsearch projects are approved by data owners for the public good.
**Safe people:** Rsearchers are trained and authorised to use data safely.
**Safe settings:** A SecureLab environment prevents unauthorised use.
**Safe outputs:** Screened and approved outputs that are non-disclosive.

# 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 AWS Cloud business case
- Identify the best procurement route for your NHS Trust
- Identify quick wins and initial migration opportunities

# AWS resources

- Trusted Research Environment on AWS
- Guidance for NHS Trusts Adopting AWS Cloud Services
- Cloud Adoption Framework
- AWS for Health
- Healthcare Solutions
- Migration Acceleration Program (MAP)
- Landing Zone Accelerator for Healthcare
- Find an AWS Partner

# Get in touch

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