



SOFTWARE DEVELOPMENT

Using AWS to manage and deliver a global LMS

Delivering content to thousands of users, simultaneously, all over the globe.



The Brief

The brief was all about expanding an LMS to allow for more users, operational excellence and increased security and reliability.

Learners can now participate in online training, book classroom training sessions and work towards their accreditation all from one central portal. Each learner also has their own unique personalised curriculum, plus access to a training library with extra content for learning, much of which is video based.

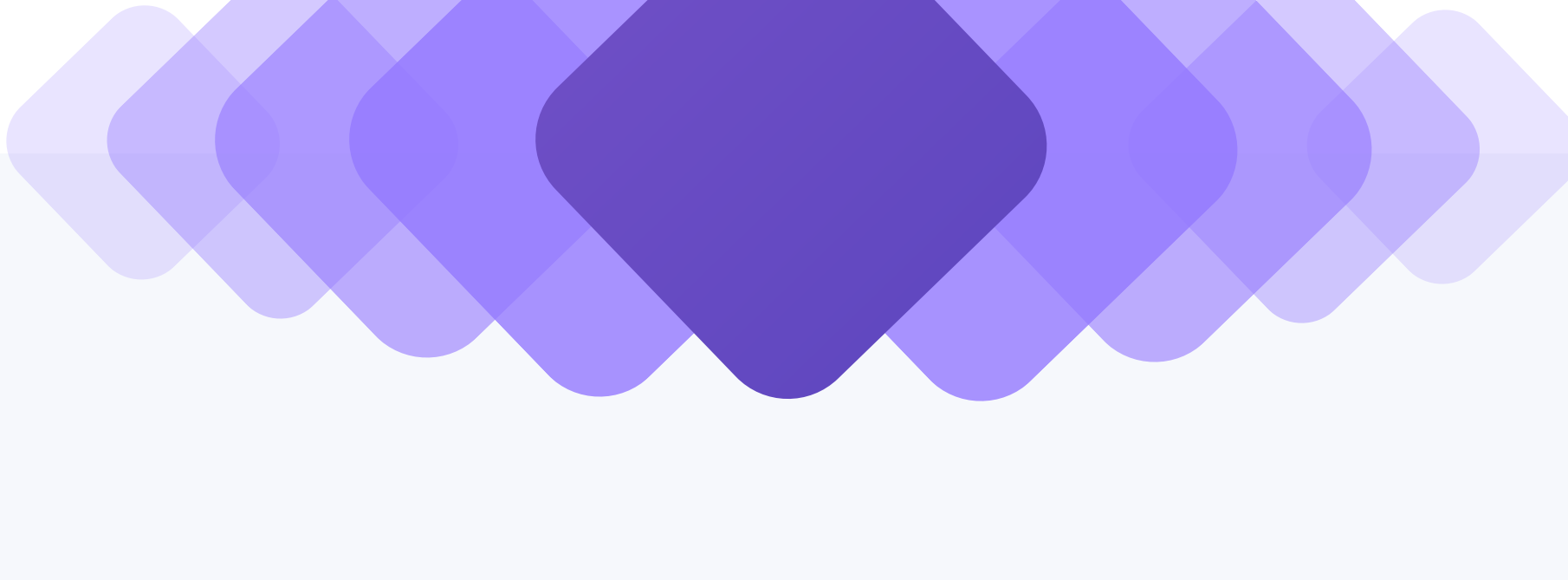
“The brief presented numerous challenges, including running instances all over the world, as well as routing and syncing the content correctly”

says Christian Backlund, Head of DevOps.

“AWS allows us to streamline and automate processes and monitoring with their suite of powerful industry-leading services.”

Backlund worked alongside our Co-CEO Matt Wicks to drive the AWS solution architecture that now allows many thousands of users to quickly access the training content required, with the client benefitting from the speed to market and cost-effective way of maintaining a network.

“Our client previously used on-premises data centers to host its web properties, all of which had different technologies and processes” says Backlund “Our work over the last 3 years has been to update and improve the system as a whole.”



Why Amazon Web Services?

We've been an AWS partner for 4 years. Our priorities when choosing a platform for this solution included scalability, a global infrastructure and constantly developing technology. "We've been an AWS partner for a long time which means we grow with them. They have a vision of the cloud which is exciting, dynamic and far ranging, and allows us to expedite our process - but much more than that - it allows us to have a vision of technology that would have been unthinkable even a few years ago" explains Wicks.

"We had two goals for the AWS migration; deliver a common technology platform for websites with regional content delivery architecture, and build a holistic data architecture which maximises the speed and transfer of content to the end user and data about usage and progression back to the system."

Previous solutions couldn't cope with the load, and bandwidth limitation issues were common. By leveraging Lambda and Cloudfront we've been able to utilise many of the key features including those that didn't even exist at the very start of this project, such as Glue for an ETL process and ElastiCache for highly adaptive caching.

Building to scale gave us a primary advantage by using AWS, we could complete load testing and manage a large number of users. Using some very specific tools allows us to move and manipulate data, perform actions when files get uploaded all while giving us multiple levels of redundancy, resiliency and scaling.

The Key AWS Features We Used

- S3 – one of the key benefits of S3 is how it works like an FTP, plus the likelihood of losing files is incredibly low. The data that we store in S3 is incredibly redundant.
- Cloudfront - Hanging cloudfront off of S3 allows the content to go out from cloudfront which provides security benefits such as generating one time URLs.
- Managing cached services in AWS - this allows us to pull out data that's regularly required and stored to save time for the end user.
- RDS that we hang all databases on is a managed service so we don't need to worry about maintenance of instances.

All of these tools make it easier for us to achieve our goals on a global scale. AWS provides the ability to be flexible when managing the servers, it's flexible in terms of both cost and capacity, whilst allowing global access to the content.

Why The Virtual Forge?

Anita Kelly, the Lead Project Manager who works on site delivering the project, puts the success down to **“The amazing team involved and our CTO Matt has been the pinnacle to continued relationships through his technical knowledge and stakeholder management”**

She goes on to say **“The project has been collaborative, focusing on the client needs and commitment to the business, we've educated in our ways of using Agile delivery which allows us to develop and deliver short phases of work allowing us to respond to change quickly.”**

With a delivery team that spans the EU and US the variety of skills involved in delivering this project are vast and include designers, front and back end developers, testers, data analysts, project managers and solution architects.

“AWS listen to their users and provide new solutions based on feedback to improve their service and product offerings,” says Backlund. **“We really enjoy the rapid rate of innovation from AWS and how we can apply this to solutions for our clients.”** Wicks adds, **“It's exciting to work with companies that continue to innovate, matching the ideas and vision we have for our clients.”**

The Benefits

The benefits since moving to AWS have been widely felt, including:

01. More users can access the system.
02. Operational excellence - the ability to run and monitor systems to deliver business value and improve processes and procedures.
03. Security - the system information is protected since data is set at all layers of the infrastructure, including dynamic tools to provide feedback on the latest security vulnerabilities to pre warn us of suspicious activity.
04. Reliability - running instances across multiple availability zones, but in a cost effective fashion which can run in tandem or activate dynamically according to system load ensures resiliency at all times.
05. Performance Efficiency - AWS allows systems to run only when used, whilst not compromising on reliability or security.
06. Cost Optimisation - the ability to avoid or eliminate unwanted costs. Not only does this help the live system, but also enables cost effective development and testing environments which can be activated and deactivated as required without the need of multiple expensive on-premise servers in place for load replication.