

endjin helps OceanMind fight illegal fishing and human trafficking with Microsoft Azure



Challenge: OceanMind's on-premises servers limited their scale

OceanMind's mission is to identify illegal fishing operations around the world for authorities – to achieve this, they needed a plan for scaling beyond the capacity of their on-premise solution.

Solution: beginning the migration to Microsoft Azure with the help of endjin

OceanMind worked with Microsoft partner endjin to begin reengineering their solution for the cloud, vastly increasing their potential for scale, security, and speed.

Results: a blueprint for global alerts in near-real-time

With endjin's support, OceanMind now has a blueprint for analyzing billions of datapoints in near-real-time with Microsoft Azure, setting the stage for them to identify illegal fishing faster than ever before.

Historically, humanity has not been great at protecting our oceans. [One out of every five fish sold](#) – worth a staggering \$23.5B USD – is illegally caught, and [nearly 80 percent](#) of our fish stocks are being fished at their maximum sustainable level or beyond. Not only is this behavior putting entire species of fish at risk, it threatens the entire oceanic ecosystem – an ecosystem that's critical for producing the oxygen we breathe every day.

But, it's the ocean – it's vast. Its incredible size makes it very difficult for the authorities to detect and identify suspicious fishing activity fast enough to stop it. At least, it was, until OceanMind came along.

Protecting the oceans with technology

OceanMind is a UK-based non-profit dedicated to ending illegal fishing and protecting the oceans. Unsurprisingly, many illegal fishing operations also engage in other criminal activities such as human trafficking and the plundering of marine heritage sites, so the more illegal fishing operations OceanMind can help stop, the better.

OceanMind's approach is simple on paper but complex in practice: use AI and billions of data points from around the world to identify illegal fishing operations for the authorities. By developing AI models to replicate the work of human intelligence analysts, OceanMind could scale their impact while keeping costs manageable. With such a huge goal and a very small team, OceanMind knew they had to be efficient, but scaling their on-premises solution to meet the growing global challenge would have required a significant investment in hardware and personnel to manage it. Additionally, OceanMind's on-premises servers had their own limitations – OceanMind had to process data in batches, could only analyze data for specified locations, and had to pay very high operating and maintenance costs to keep the servers running. While OceanMind's on-premises IT was an impressive solution with many valuable capabilities, it was not an efficient platform to scale their impact globally – to reach their goal of near-real-time, world-wide analysis, OceanMind knew they would have to migrate their operation to the cloud.

Selecting a cloud and finding a partner

When it came time to select a cloud provider, OceanMind carefully assessed their options and then selected Microsoft Azure due to its reputation for scale, reliability, and security. Because OceanMind works closely with governments and law enforcement agencies from around the world, maintaining compliance with data regulation laws was critical. Thankfully, Microsoft Azure boasts over 90 compliance certifications, over 50 of which are specific to global regions and countries, making it the ideal cloud provider for international operations like OceanMind.

To facilitate their migration to Microsoft Azure, OceanMind partnered with endjin: a UK-based consultancy with deep expertise in Microsoft Azure, Data, AI, and solving complex software engineering problems. As a Microsoft partner with gold competencies in the Microsoft Partner Network for Cloud Platform, Data Platform, Data Analytics, and DevOps, endjin helps small teams achieve big things. Naturally, with this blend of skills and experience, they were an ideal partner for OceanMind's global ambitions and cloud migration.

Making the transition to the cloud

To kickstart OceanMind's digital transformation, endjin applied their usual iterative delivery process, identifying and addressing potential risks

early on. They also provided the evidence, documentation, and other materials needed for OceanMind's development team to ramp up and participate in the migration. Because endjin works with their partners remotely, they were easily able to coordinate OceanMind's various stakeholders, ranging from data scientists in Cambridge to analysts and developers in Oxford.

Because of their sizable data processing platform and numerous machine learning models, OceanMind's migration was challenging. To meet their needs, endjin helped them reengineer their 65-server, on-premises solution for Microsoft Azure. By leveraging the latest zero allocation memory features of the C# programming languages, endjin was able to increase OceanMind's data processing from seven thousand messages per second to over seven million. By deploying that into Microsoft Azure PaaS and other serverless products, OceanMind was able to improve reliability and significantly reduce capital costs.

OceanMind's new solution leverages numerous Microsoft Azure services including Azure Data Factory, Azure Data Lake, Azure Functions, Azure API Management, Azure DevOps, Azure Application Insights, Azure Key Vault, and more. Alongside endjin, Microsoft also supported this migration via the [AI for Earth Grant](#), a dedicated Customer Success Manager, and support from additional product groups including Microsoft Azure Functions and Cosmos DB.

"Migrating services to the cloud presents an opportunity to improve the flexibility, capacity, reliability, and cost-effectiveness of your systems. Drawing on our deep experience with Microsoft Azure, we helped OceanMind do more than just move their existing system off-premises—we helped them migrate to a cloud-native architecture, tuned to exploit their world-leading expertise in analysis of international shipping and illegal fishing. Only with this kind of careful alignment of an application's unique requirements with what cloud platforms can offer can the benefits of migrating to the cloud be fully achieved."

— Ian Griffiths, Technical Fellow, endjin

Seeing results today and planning ahead for tomorrow

With help from endjin and Microsoft, OceanMind has taken the first step towards a fully cloud-enabled solution: designing a blueprint for digital transformation. As of July 2020, OceanMind is already using the cloud to aid data ingestion and analysis – looking ahead, they plan on using it to power their entire solution.

OceanMind's updated cloud-based architecture also makes it easy for them to leverage the full suite of Microsoft Azure services, including AI models, for more advanced processing capabilities. It has also greatly reduced their data processing and storage costs, as well as the time they spend on server maintenance.

With Microsoft Azure, OceanMind's data is more secure than ever, protected by strict security boundaries, least privilege access controls, and industry-leading regulatory compliance.

Finally, the cloud offers OceanMind the scale required to fulfill their mission of tracking illegal fishing around the world in near-real-time. Before the cloud, OceanMind's infrastructure was capable of supporting regional authorities and governments as they policed their territorial waters and economic zones, enforcing both federal and regional laws. With the cloud, OceanMind will be able to generate alerts for the entire global fishing fleet in near-real-time,

totaling more than 30 million data points daily, resulting in a 200% increase in knowledge generation from their previous solution. By developing a blueprint for full-scale Microsoft Azure adoption, OceanMind and endjin have taken a key step towards making illegal fishing a thing of the past.



“The challenge with fisheries, particularly on the global scale, is the sheer amount of data. This...really has been a game changer for our organization. In the past we've been very batch oriented, so we've only had a limited scale that we've been able to apply to the problem. Now we can get more results, more quickly, and save our analysts time.”

— Nick Wise, CEO, OceanMind