Met Office

A NEW DAWN

Met Office safeguards millions of daily forecasts with scalable mainframe environment designed by Computacenter and IBM

OBJECTIVE

The Met Office collects around 200 million weather observations a day, which power a range of public forecasting services, commercial products and mobile apps. To ensure this data can be served up 24x7, the Met Office utilises a highly available and scalable mainframe environment. Increased demand for weather intelligence and the deployment of a new supercomputer prompted the Met Office to embark on a mainframe upgrade.

SOLUTION

The Met Office partnered with Computacenter and IBM to design and deploy a mainframe platform that could support future growth. Computacenter assisted with the technical build and pre-installation checks to safeguard business continuity. The new environment, which includes two mainframes with a total of 44 cores and 200 terabytes of attached storage, combines a range of IBM and open source technologies and will support a range of new Met Office applications and initiatives.

OUTCOME

With more than 35 per cent additional mainframe capacity, the Met Office can process greater volumes of weather data in a shorter timeframe. This not only safeguards the delivery of millions of daily forecasts and briefings, but supports future growth. As well as increasing operational agility and efficiency, the mainframe upgrade has reduced total cost of ownership.

SERVICES
- Enterprise Compute
- Design & Build

USER EXPERIENCE
- Richer forecasting data
- Better quality of service

BUSINESS IMPACT
- Greater scalability and efficiency
- Lower operational costs

BUSINESS OUTCOME
- Enables growth

> Without accurate and timely weather information, everything from commercial flight schedules to emergency rescue operations can be disrupted.
>
> **Martyn Hunt,**
> **Mainframe Technical Lead,**
> **Met Office**

40 production services hosted on mainframe

OBJECTIVE

Forecasting for a brighter future

When the UK's Met Office was founded in 1854, it mainly provided forecasts for ocean-going ships. It now offers weather-related products and information to a wide range of commercial sectors – from transport and retail to energy and defence – as well as the general public.

"Every day, our weather and climate forecasts help people make better decisions," explains Richard Bevan, Head of IT Infrastructure and Operations at the Met Office. "We help organisations save lives, reduce costs, meet schedules and encourage growth. We want to transform weather intelligence into a tool that drives greater business performance in today's digital world."

To provide this intelligence, the Met Office needs to capture a massive amount of weather data from around the world. Every day, it collects more than 200 million weather observations – from mountain tops and coastal resorts to orbiting satellites.

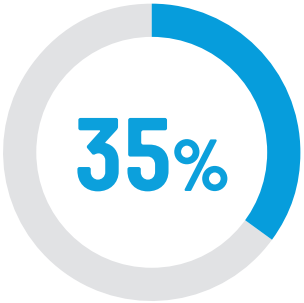
Weathering the data storm

To continue to advance weather and climate science, the Met Office needs to be able process greater data volumes in shorter timeframes. In 2015, it embarked on a £97 million government-backed project to deploy a new supercomputer, 13 times more powerful than its predecessor. From March 2017, it will be able to perform more than 23,000 trillion calculations per second.

The supercomputer calculations are passed to post-processing and distribution systems on an IBM mainframe, which are then packaged into millions of tailored forecasts and briefings every day. "The mainframe is at the heart of our operations," explains Martyn Hunt, Technical Lead for the Met Office's mainframe team. "Any issues with performance can have a direct impact on the availability of the services we provide. Without accurate and timely weather information, everything from commercial flight schedules to emergency rescue operations can be disrupted."

With mobile apps changing how people consume weather information and creating huge spikes in demand during severe weather conditions, mainframe capacity and performance has to be optimised 24x7. "The volume and variety of forecasts has increased," says Richard." We used to update our website twice a day, now it's every hour."

To cope with increased demand and support the deployment of the new supercomputer, the Met Office needed to upgrade its IBM mainframe environment. "The mainframe was often running flat out, which impacted our ability to deliver up data for some customer services," explains Martyn. "We also wanted to be able to support new workloads and business initiatives, which would require extra capacity."



increase in mainframe capacity

SOLUTION

More scalable mainframe environment

The Met Office had already partnered with Computacenter for a previous mainframe upgrade. Following a tender response via a government framework, Computacenter was also selected to assist with this latest project. As Martyn confirms: "Computacenter is an important IT partner for the Met Office. They understand our unique requirements and have a strong relationship with IBM."
Planning for the upgrade began in August 2015, with Computacenter, IBM and the Met Office working together to build and prove the technical design. As well as delivering additional capacity, the new mainframe environment needed to be able to support the deployment of an application that will de-couple the data used for modelling and forecasting services.

"Drawing on our mainframe and open source expertise, we helped the Met Office design a solution that can support new applications and digitalisation initiatives, and scale to meet future demand," explains Neil Eke, Solutions Sales Director at Computacenter.

The new platform is based on two IBM z13 LinuxOne mainframes and IBM hybrid storage systems, and will eventually include IBM Wave for virtual server management.

"Installing a new mainframe platform is complicated, especially when it supports such critical services," explains Martyn. "Computacenter helped us work through the massive pre-implementation checklist to mitigate the risks and safeguard business continuity."

The new environment, which includes 44 cores running Red Hat Enterprise Linux operating system and 200 terabytes of attached storage, went live in May 2016. Following the latest successful implementation, Computacenter received an IBM Beacon Award for the Most Innovative Client Experience on z System.

Computacenter helped the Met Office take advantage of the latest advancements in IBM's adoption of open source technologies as well as a flexible commercial model that will support future growth.

"By helping the Met Office bring together various solutions, we were able to create a client experience that will benefit millions of individuals and organisations across the UK," comments Brian Say, an Enterprise Solution Specialist at Computacenter.

> The new mainframe has enabled a step-change in our IT. By partnering with Computacenter, we were able to accelerate and de-risk the implementation, and meet our strategic goals.
>
> **Richard Bevan, Head of IT Infrastructure and Operations, Met Office**

OUTCOME

Smarter and faster weather services

The Met Office has increased its mainframe capacity by more than 35 per cent, which means it can process greater volumes of data in a shorter timeframe.

It has already migrated more than 15 applications and 120 Oracle databases to the new mainframe environment. The databases were consolidated on the Met Office's previous generation of mainframes as part of an earlier engagement with Computacenter.

The Met Office plans to migrate a number of additional applications, open source databases and workloads to the new environment, including its file transfer hubs, which are currently hosted on disparate server clusters.

ABOUT THE MET OFFICE

The Met Office is the UK's National Meteorological Service. As a world leader in providing weather and climate services, it employs more than 2,000 people at 60 locations around the globe. The Met Office operates the Public Weather Service and National Severe Weather Warning Service. It provides millions of tailored forecasts and briefings every day.

"Just one of the applications hosted on the mainframe transfers hundreds of gigabytes an hour," explains Martyn. "With the new mainframe, we can continue to deliver forecasts to customers based on ever increasingly large datasets."

The Met Office's data archive is already 50 petabytes, and growing by up to 100 terabytes per day. It's estimated the archive will reach 500 petabytes by 2020.

The new platform will also help the Met Office achieve its long-term ambition of reducing the dependency between its supercomputing capabilities and downstream systems. "We can now decouple upstream science from downstream customer services, which will improve quality and reliability," confirms Martyn.

As a result, the Met Office will be able to ensure that critical weather-based services, such as Hazard Manager, are available when they are needed most.

Hazard Manager helps local authorities and the emergency response community deal with incidents that are caused or influenced by the weather. For example, it was used to access crucial information during the flooding in northern England in winter 2015.

Sunny outlook

The investment in the new mainframe will contribute to the continued delivery of social and economic benefits by the Met Office to the UK economy, which were estimated at £30 billion over the next 10 years in a recent review. For example, better forecasting for adverse weather conditions could enable airport controllers to plan for disruption and allow flight path optimisation to reduce fuel consumption.

"With greater compute power and capacity, we'll be able to deliver better forecasts and advice to businesses, government organisations and the general public, which will result in more informed decisions," explains Richard. "Thanks to improved science and increased computing power, today's four-day forecasts are as accurate as one-day forecasts were 30 years ago."

As well as increasing operational agility and efficiency, the mainframe upgrade has reduced total cost of ownership. "The new mainframe has enabled a step-change in our IT," says Richard. "By partnering with Computacenter, we were able to accelerate and de-risk the implementation, and meet our strategic goals."

> Computacenter helped us mitigate risk and safeguard business continuity.
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> **Martyn Hunt,**
> **Mainframe Technical Lead,**
> **Met Office**

MORE INFORMATION

To find out more about our mainframe services and read more customer case studies, log on to **www.computacenter.com**