

Government

Saving lives with fast, accurate weather prediction

National Center for Meteorology –
Kingdom of Saudi Arabia

The National Center of Meteorology delivers earlier, more precise warnings of severe weather events with a Lenovo supercomputer powered by 3rd Gen Intel® Xeon® Scalable processors, protecting people and property from harm.

Powered by



Lenovo

1

Who is the National Center for Meteorology – Kingdom of Saudi Arabia?

Based in Jeddah, the National Center for Meteorology (NCM) was established with the approval of the Saudi Arabian government. Its mission is to provide high-quality weather and climate services that protect people's lives and livelihoods, and support development efforts in the Kingdom of Saudi Arabia.

NCM incorporates best practices around the study of the atmosphere, atmospheric phenomena, and atmospheric effects on the weather, within a modern and flexible framework.

المركز الوطني للأرصاد
National Center for Meteorology
المملكة العربية السعودية



2

The Challenge

Climate change is driving extreme weather around the world. In the Kingdom of Saudi Arabia, this is mainly characterized by flash floods, sand and dust storms, and drought. Severe weather events like these pose a risk to people, animals, and infrastructure. Organizations such as NCM help mitigate this risk by delivering early warning of serious weather events, allowing government and public sector institutions to take measures to minimize the impact.

Alongside this critical work, the center also provides weather predictions to organizations in almost every sector to help with decision-making. For example, construction companies can complete projects faster and retailers can boost sales by incorporating weather data into their planning processes.

As a result, NCM found its services in high demand, and recognized that customer expectations for the timeliness and precision of its predictions were rising. In response, the center decided to update the high-performance computing (HPC) infrastructure it uses to run weather and climate models to produce its predictions. As these models become increasingly complex they demand more computing power, so NCM sought to enhance its predictive capabilities by putting more powerful IT resources at its HPC specialists' disposal.

“Our HPC infrastructure must keep pace with our weather models, which are becoming more resource-intensive all the time. To ensure that we could bring vital weather insights to our customers sooner and with greater accuracy, we initiated an HPC refresh.”

Mohammed Al-Amri

National Center for Meteorology – Kingdom of Saudi Arabia

Choosing Lenovo **time** **after time**

Following a public tender process, NCM selected Lenovo to replace its aging HPC infrastructure with a powerful solution featuring a cluster of approximately 200 Lenovo ThinkSystem SD630 V2, SR630 V2, and SR670 V2 servers—all powered by 3rd Gen Intel® Xeon® Scalable processors—and Lenovo Distributed Storage Solution for IBM Spectrum Scale (DSS-G). The proposal also included Lenovo services for implementation, training, and on-site warranty support, plus meteorology applications development.

“Lots of vendors responded to our tender, and Lenovo emerged as the best option by far,” says Al-Amri. “On both technology and financials, Lenovo outshone the competition. Lenovo also demonstrated that they understood our goals and have their own specialist expertise in weather modeling.”

Hardware

Lenovo ThinkSystem SD630 V2
Lenovo ThinkSystem SR630 V2
Lenovo ThinkSystem SR670 V2
Lenovo Distributed Storage Solution for IBM Spectrum Scale (DSS-G)
3rd Gen Intel® Xeon® Scalable processors

Software

IBM Spectrum Scale

Services

Lenovo Professional Services

NCM chose to work with Lenovo again on another project, expanding the implementation to support a new flood warning system. The new solution added 360 compute nodes, 6 GPU nodes, and 3 PB of Lenovo DSS-G storage. Lenovo provided two on-site engineers for three years, and connected NCM with two partners: Weather & Marine Engineering Technologies P.C. (WeMET) and researchers at Connecticut University.



“The quality of Lenovo’s partner network is one of the key reasons we choose to work with them. Together with WeMET and Connecticut University, we’re developing a unique forecasting system for flash floods, one of the main hazards facing Saudi Arabia.”

Mohammed Al-Amri

National Center for Meteorology – Kingdom of Saudi Arabia

3

Results

Using its Lenovo supercomputer, NCM can run more complex models faster, which enables it to generate weather predictions with greater accuracy and speed. By alerting customers to severe weather events sooner, NCM gives them sufficient time to roll out measures that minimize harm to people, animals, and infrastructure.

“Incidents like flash floods are becoming more frequent in Saudi Arabia, causing death and destruction,” comments Al-Amri. “With help from Lenovo and its partners, we’re harnessing the latest HPC technology to enable early warnings, so that organizations and individuals can minimize the impact of extreme weather.”

Working with Lenovo partners, NCM is pushing the boundaries of weather modeling to enable unprecedented insight. The center can better service customers who depend on its insights to drive more effective and efficient operations.



550 nodes and counting in an easily scalable solution power fast, accurate weather modelling



Helps save lives and livelihoods by driving better preparation for extreme weather events



Enables public and commercial organizations to boost efficiency by incorporating weather insights into planning



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“With help from Lenovo, we’re teaming up with some of the leading weather experts in the world. We are continuing to increase the resolution and timespan of our simulations to produce better results. Lenovo ensure that we always have the right resources to reach our goals—whether that’s in terms of technology or expertise.”

Mohammed Al-Amri

National Center for Meteorology –
Kingdom of Saudi Arabia

Why **Lenovo**?

As NCM continues to advance its weather modelling, it can easily and cost-effectively scale the Lenovo solution to provide more processing power.

The center has also built a strong relationship with the Lenovo team and takes advantage of the Lenovo partner network, helping it to preserve its position at the leading edge.





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“One of the few things that humans have no control over is the weather. That makes preparing for what the weather has in store essential to our safety and prosperity—we help do that, supported by Lenovo technology.”

Mohammed Al-Amri

National Center for Meteorology – Kingdom of Saudi Arabia

How do you enable earlier, more precise weather warnings?

Helping to protect people and property from harm
with Lenovo and Intel® technology.

[Explore Lenovo HPC Solutions](#)

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