CASE STUDY

The Weather Channel
Takes Forecasting to a
Higher Level
with Moab®

03 Apr 2007 22:57 GMT / 03 Apr 2007 06:57 PM EDT

The
Weather
Channel
weather.com
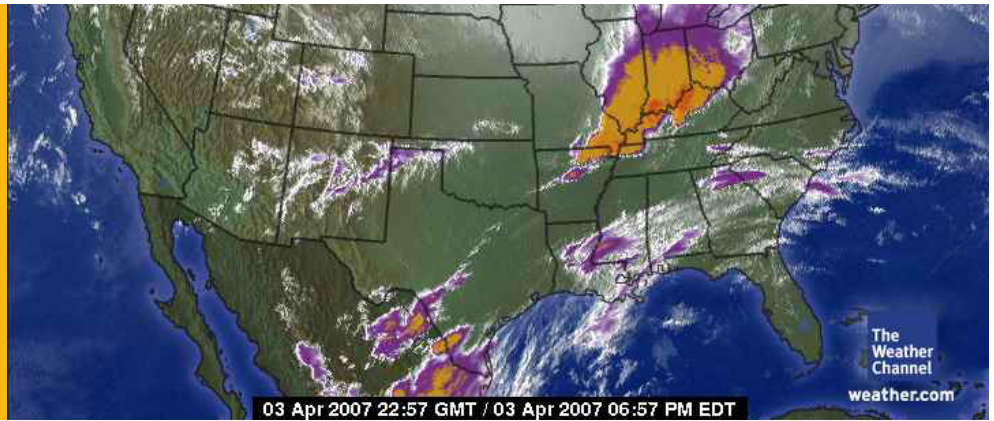
KEY FACTS

Overview

The Weather Channel (TWC) uses an internally developed application for weather prediction and reporting. The HiRAD system extrapolates the weather at 1.9 million points of interest in the United States.

Challenge

TWC wanted HiRAD to increase data output from the 10,000-data-point level up to 1.9 million observations while staying at the 5-7-minute-per-cycle mark.

Solution

The Weather Channel selected Moab Cluster Suite® from Adaptive Computing (formerly Cluster Resources) to run its memory-intensive application.

Results

Moab® allows The Weather Channel to specify exactly when it wants a calculation to run, how often, and on which hardware—in an easy-to-use manner. This fine-grained control lets administrators extract the maximum value from their clusters.

Adaptive COMPUTING

The **Weather Channel** SM

OVERVIEW

The Weather Channel (TWC) uses an internally developed application for weather prediction and reporting. The application collects and combines data from approximately 1,700 observation sources, along with radar information and other meteorological facts from unmanned sources, such as buoys. Using a sophisticated algorithm, synthetic observations are extrapolated for all the points in between; it does this in 5-7 minutes.

TWC is working to improve weather predictions with a high-powered supercomputer that runs its innovative weather-prediction algorithm, called High Resolution Aggregated Data, or HiRAD. An HP ProLiant DL385 cluster using two dual-core AMD Opteron CPUs per node with 16 gigabytes of RAM per CPU calculates data using the HiRAD system to extrapolate the weather at 1.9 million points of interest in the United States.

CHALLENGE

The Weather Channel wanted the information from the initial 1,700 observation sources to be combined with all other ancillary data to generate 1.9 million observations (as opposed to the 10,000 observations available from HiRAD at the time) in the same time span of 5-7 minutes. This meant the final collective observations would be no more than about 1.5 miles (2.5 km) apart, allowing TWC to report on weather and climate conditions such as rain, cloud level, wind speed, and temperature to within 2 degrees of actual. Additionally, the IT team needed to use commoditized hardware; in 2005, the team began building system-support architecture for this undertaking.

Moab has been rock solid since the beginning . . . We set it up and it drives itself.

Dorren Schmitt
Senior UNIX administrator for
The Weather Channel

As the project advanced, the IT team needed software for scheduling and parallel processing, compute clusters, batch processing, and more.

SOLUTION

The Weather Channel selected Moab Cluster Suite® from Adaptive Computing (formerly Cluster Resources) to run its memory-intensive application. The calculations utilize 97% of the cluster's CPUs and 98% of the RAM.

To run these complex calculations without consuming all of the administrators' and developers' time, TWC employs Moab's event policy engine—a tool used to automate administrative tasks—to monitor and command the system to run calculations three times an hour, 365 days a year.

RESULTS

Moab allows The Weather Channel to specify exactly when it wants a calculation to be run, how often, and on which hardware. Such fine-grained control lets TWC administrators extract the maximum value from their clusters.

"Moab has been rock solid since the beginning," said Dorren Schmitt, senior UNIX administrator for The Weather Channel. "It kicks off beautifully like clockwork, requiring no human intervention, unlike so many other schedulers. There weren't many environments out there that allowed us to do this level of automation, where we set it up and it drives itself."

"Cluster computing is providing supercomputing performance to organizations that want access to considerable computing power but don't have a big IT budget," added Bruce Toal, director of marketing for the high-performance computing division at HP. "HP is working with partners like Adaptive Computing to provide solutions that allow customers to tackle larger, more difficult problems than ever before."

TWC's situation is unique in that it is assimilating a collection of live weather data that are normally used separately and apart from each other to create a single integrated and nearly continuous field of information. Rather than guessing the local weather based on reports from observation points typically found only at nearby airports or military bases, interested parties now have accurate information for specific points of interest, such as Dodger Stadium, for instance.

"We designed Moab to take the burden off administrators," Dave Jackson, CTO of Adaptive Computing, said. "Moab's event policy engine empowers administrators by letting them set policies that define exactly what they want to have happen. Moab automatically enforces these policies, letting administrators put their clusters on auto pilot and freeing them to work on more pressing projects."

According to Schmitt, Moab has allowed The Weather Channel to create an automation that runs with almost no human intervention—three times an hour, 24 hours a day, 365 days a year. In the course of production, TWC has created more than 2 million tiles in approximately one year. Said Schmitt, "Moab allows the IT team to do all their specs in a config file in terms of when we want the run, how we want the run to proceed, who the user will be, and how often it runs."

BUILDING ON SUCCESS

The Weather Channel increased its CPU count in 2007 by 75% to accommodate new projects. The benefits that Moab offers to the overall integrity and efficiency of the system have contributed significantly to the ongoing success enjoyed by The Weather Channel. TWC augmented its number of Moab licenses to accommodate this increase in the number of nodes and continues to add Moab licenses as projects are added to the cluster's workload.

HP is working with partners like Adaptive Computing to provide solutions that allow customers to tackle larger, more difficult problems than ever before.

Bruce Toal
Director of Marketing
HPC Division at HP

To learn more about how Moab technology can improve HPC, data center, or cloud computing, contact us—

North America, Latin America, Asia-Pacific . . . .+1 (801) 717-3700
U. S. toll-free. . . . . +1 (888) 221-2008
EMEA (Europe, Middle East, Africa) . . . .+44 (0) 1483 243578
Email . . . . info@adaptivecomputing.com
Web site . . . . www.adaptivecomputing.com

Adaptive COMPUTING

Unify Context > Apply Policy > Act Intelligently