# AccuWeather.com crunches more and more data to produce personalized customer forecasts while reducing its need for electrical power and tech support

DELL
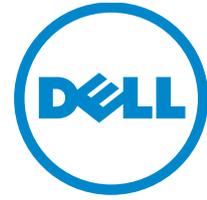
- Backup/Recovery/Archiving
- Clustering
- Consolidation
- Power & Cooling
- Virtualization
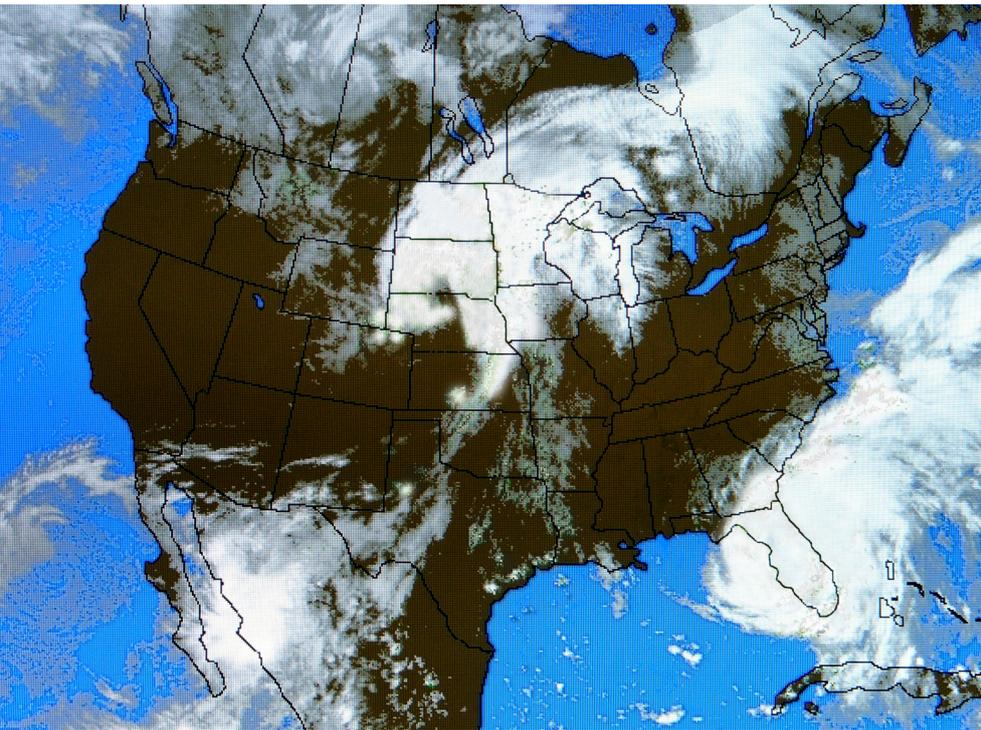
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Steven Smith, CIO, AccuWeather, Inc.

ACCU WEATHER®

Customer Profile

Company:	AccuWeather
Industry:	Arts, Entertainment and Media
Country:	United States
Employees:	400
Web:	www.accuweather.com

Business Need
Producing localized weather forecasts every hour for 2.7 million locations worldwide is a data-intensive business. As successful forecast provider AccuWeather, Inc. grew, the company encountered challenges of increased space, power and cooling requirements for its legacy server environment.

Solution
The company consolidated its legacy servers onto a combination of Dell™ PowerEdge™ servers, all with Intel® Xeon® processors. Supported by Dell EqualLogic™ PS series SANs, the company's new IT infrastructure includes a VMware® cluster of 150 virtual machines, saving AccuWeather space, power and a lot of IT staff time.

Benefits
- 4- to 6-fold increase in server performance compared with previous generation
- 50% less power consumption by each blade server
- 40% average CPU utilization rate, up from 13%
- 70% projected average CPU utilization rate after virtual machines are moved to blade servers
- 38% less IT staff time spent on tech support
- 87% faster rollout of application testing environment (2 hours vs. 2 days)
- 6-fold increase in size of development and testing environment
- 80% reduction in time spent on storage administration
- Less than 1 hour to install and configure Dell EqualLogic SAN

Although we spend much of our time in climate-controlled buildings, modern Americans are fascinated with the weather. A couple centuries ago, local weather patterns directly affected whether families could put food on their table. For most of us today, the typical storm raises questions no more serious than whether to pack an umbrella for the morning commute. Still, as predictive technologies improve, our interest in meteorology balloons.

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This trend helps explain the rapid growth of AccuWeather, Inc. The company, based in State College, Pennsylvania, produces localized forecasts and severe weather alerts for print and online publications, for radio and television broadcasts, and for direct distribution to companies and individuals. More than 125 million Americans receive an AccuWeather-generated forecast each day. The company's Web portal alone receives as many as 18 million daily hits, with major spikes during severe weather.

Coping with a storm of data

WeatherData Services, Inc., an AccuWeather subsidiary, sends commercial clients advance notifications about potentially problematic storms, even when their facility is not part of a National Weather Service warning. And AccuWeather mobile services provides location-based forecasts for every major mobile manufacturer worldwide, powering literally tens of millions of devices.

Generating forecasts as localized as these, in the volume that AccuWeather does, requires vast data stores. Providing weather products and services on leading-edge communications tools also requires a flexible environment for software development. "We're growing by leaps and bounds, both domestically and globally," says Steven Smith, AccuWeather's CIO. "We need to have an IT infrastructure that is capable of supporting extremely fast growth."

For AccuWeather, when it rains data, it pours. And when it pours, the company works with Dell. "Based on our rapidly accelerating growth, it's hard to know exactly what the configuration of the data center is going to look like next year," Smith adds. "But our relationship with Dell gives us some tricks up our sleeve in terms of serving our customers better in the future."

Solving space and power problems

AccuWeather has used Dell servers for years, but for most of that time Dell was one of several vendors to stock the firm's State College data center. When that data center began to face challenges to space, power and cooling, the company looked to broaden its relationship with Dell.

Technology at Work

Services

Dell™ Support

Hardware

Dell Chassis Management Controller

Dell PowerEdge™ M610 blade servers with Intel® Xeon® 5520 processors

Dell PowerEdge M1000e modular blade enclosure

Dell PowerEdge R900 servers with Intel Xeon E7330 processors

Dell EqualLogic™ PS6000E, PS5000E and PS5000XV iSCSI SANs

Software

Dell EqualLogic Auto-Snapshot Manager/VMware Edition

Microsoft® Windows Server® 2008 and 2003

Microsoft Windows® XP and Windows 2000

Red Hat® Linux

VMware® ESX™ Server

"We wanted a partner that would work with us," says Smith. "And we found that in Dell. We collaborated with Dell to brainstorm potential solutions to our problems." Together, AccuWeather and Dell came up with a plan to dramatically reduce the data center's consumption of space, power and IT staff time by migrating to virtual machines on efficient Dell PowerEdge servers.

AccuWeather began replacing its older servers with Dell PowerEdge M610 blade servers with Intel Xeon 5520 processors, housed in a Dell M1000e modular blade enclosure. The company also deployed a VMware ESX cluster of 150 virtual machines on six Dell PowerEdge R900 rack-mounted servers with Intel Xeon E7330 processors connected to three iSCSI SANs: a Dell EqualLogic PS5000XV SAS array, and EqualLogic PS5000E and PS6000E SATA arrays. Together, the SANs provide about 20 terabytes of shared storage.

The virtual machines run everything from databases to Web servers to back-end business systems. High-performance applications such as SQL Server run on the SAS array, while lower-impact applications and development servers run on the SATA arrays. VMware Virtual Disk (VMDK) images of the virtual machines are stored on the SANs, and Dell EqualLogic Auto-Snapshot Manager/VMware Edition software leverages native VMware technology to create hypervisor-aware, SAN-based snapshots of virtual machines, helping to simplify data management and enhancing backup and recovery.

"We've really come to rely on the pricing and reliability of Dell equipment," says Christopher Patti, AccuWeather's director of technology. "Dell has become our preferred technology partner. Dell offers simplified, one-stop shopping."

Staying put, saving money

"By replacing our older servers with much more efficient equipment, we've saved a lot of space in our data center," explains Patti. "Because of the Intel 5520 processors, the Dell PowerEdge M610 blades are giving us four to six times the performance, in a much smaller form factor, compared with our prior-generation servers." For future hardware purchases, AccuWeather is considering

increasing processing power even further by deploying Dell PowerEdge R910 servers with Intel Xeon 7500 series processors and PowerEdge blade servers with Intel Xeon 5600 series processors.

"We've probably saved five racks' worth of space by introducing the blades," Patti says. "Now we're doing a lot of high-density computing in a much smaller area—and doing so cost effectively, thanks to the M610 blades." Previously, the company's server utilization rate averaged around 13 percent. Running virtual machines on the PowerEdge R900 servers has bumped that rate up to around 40 percent. When the company moves the virtual infrastructure onto the blade servers, Patti expects the utilization rate to jump as high as 70 percent.

AccuWeather is also saving substantially on energy and cooling. "The blades are much more efficient than regular rack-mounted systems as far as power consumption is concerned," says Patti. "We're saving 50 percent on each one that we buy. Plus, they're much more efficient in their cooling needs—we're not pumping out as much heat." In fact, a recent study found that the Dell PowerEdge M610 server and Dell EqualLogic storage have a 32.5 percent performance-per-watt advantage over the HP ProLiant BL465c server blade and HP StorageWorks EVA 4400 storage.[1]

New testing environment in less time

The extra room in the data center allows for a development environment that is six times larger than it was before, and when developers need a new server for testing, IT can respond much more quickly. "We can spin up a virtual machine in 30 minutes," says Patti. "In the physical world, putting in a piece of hardware, loading the operating system, running the cable and putting it in the data center would have taken as long as two days. Now we can give our developers a test environment in less than two hours."

For a company that differentiates itself through software innovations, this 87 percent faster rollout of testing environments improves the viability of the business as a whole and accelerates time to market for

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new solutions. "Our developers are dreaming up and building the next generation of applications and services that AccuWeather will offer," says Smith. "Now they can thoroughly test an application from the database tier to the business logic tier to the application tier because it's so easy to create a virtual file server, database server and application server. This improves the quality of our products."

A SAN in less than an hour

AccuWeather's combination of Dell servers, Dell EqualLogic SANs and virtualization is saving tremendous amounts of IT staff time. In addition to rolling out testing environments more quickly, the company has reduced time spent on storage administration by 80 percent, and it's saving five figures a year by eliminating calls to external storage experts. "The EqualLogic SANs are incredibly easy to use," Patti says. "We can very quickly create a point-in-time snapshot, do all our work on it, upgrade it and then roll it out to production. A major system upgrade that would have previously taken three people a week can be done by our server administrator in one day."

The initial installation of the arrays was also simplified. "Everyone says the move to EqualLogic takes minutes rather than weeks," Patti reports. "That's hard to believe, but it's true. Our guys were able to rack-mount a SAN, fire it up, go through some GUIs and attach a few cables, and in less than an hour they had the storage attached to a server. The EqualLogic deployment is 100 percent as advertised."

38% More time for innovation

Adding a new blade takes the IT staff just two hours, whereas rolling out a previous-generation rack-mount server took two days. Dell Chassis Management Controller (CMC), a hardware and software solution that AccuWeather uses for remote management of the blades, saves the company an average of two hours with every server deployment. All in all, the four people dedicated to server and network administration have reduced their technical support activities by 38 percent—from 80 percent of their time to about 50 percent.

"Our systems operations folks used to spend a lot of time doing patching, installation, regular vanilla-type stuff," Patti says. "Now they're involved in infrastructure decisions, in creating ideas. We've freed up a third of their time toward innovation."

More important, now IT staff members can cross-train on multiple products. Patti explains: "Before, we had to have a server person. We had to have a network person. We had to have a storage person and a backup person. Now one person on our core IT support staff is able to pick up where the other person left off. Dell has truly delivered on its corporate strategy of IT efficiency by producing products that are user-friendly to administer."

[1] Source: Principled Technologies, Inc., "Virtualized online transaction processing (OLTP) workload performance comparison of end-to-end solutions," a March 2009 report commissioned by Dell.

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