Sunny days ahead for AccuWeather thanks to HP Converged Infrastructure

AccuWeather improved runtime performance by 20 percent by upgrading its OpenVMS environment with HP Converged Infrastructure including HP Integrity blades.

“With HP Converged Infrastructure you can install Integrity blades and ProLiant blades in the same c7000 enclosure using the same Virtual Connect modules. You can use the same SAN infrastructure for both environments. It’s easy to manage and requires little power and space.”

Chris Patti, Director of Technology, AccuWeather, Inc.

**Objective**

Replace the aging storage and servers running its forecasting system, based on the HP OpenVMS operating system.

**Approach**

Deploy an innovative solution that required minimal code revisions and enabled the hardware to be replaced in stages to reduce capital requirements and service downtime.

**IT improvements**

- Reduce application runtimes by 20 percent
- When fully deployed, replace seven racks of Alpha and VAX servers with six Integrity blades, reclaiming 20 percent of total data center capacity
- Reduce power and cooling costs for the forecasting solution by 95 percent
- Transfer management of the forecasting solution hardware to server team enabling the AccuWeather OpenVMS team to focus on value-added programming tasks

**Business benefits**

- Improve customer service with more frequent weather updates
- Ensure continued production of business-critical forecasting data

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Just talking about the weather

“If you don’t like the weather in (insert your city, state, or country here), wait five minutes.”

Sometimes attributed to Mark Twain, this quote, or variants of it, appears to be universal across cultures. People have a fascination with the weather and always want to know when it’s going to change.

AccuWeather is famous worldwide for its weather forecasts. Many of us grew up watching AccuWeather reports on nightly newscasts. We can still get AccuWeather information from television, newspapers, and the radio, but now many of us also turn to AccuWeather.com or mobile apps to check the weather at our own convenience.

AccuWeather provides weather information 24 hours a day, seven days a week, 365 days a year. It has customers around the world who depend on its weather forecasts to plan business logistics, decide when to close schools, or just to schedule a picnic.

A critical update

Because AccuWeather’s business is based on creating and serving data, the IT department plays a critical role in the company. The entire forecasting engine runs on an OpenVMS cluster that runs all of the custom software the company’s meteorologists use to create forecasts for the whole world. After the data is ready for consumption, it is moved to Microsoft® SQL Server databases to be fed to the company’s Internet and mobile applications.
The company had installed the OpenVMS platform 25 years ago and it was showing its age. It had 31 nodes, consisting of a mix of HP Alpha and VAX servers. “We have technology from all different generations,” explains Chris Patti, Director of Technology at AccuWeather. “Parts were getting hard to find and we had to hire a third-party vendor for support. We faced a business risk that we wouldn’t be able to keep the servers running at some point.” AccuWeather was also running an older HP EVA 5000 SAN that had long ago reached the end of its support.

But the IT team faced issues beyond just keeping the equipment running. Not all of the Alpha servers could run the latest versions of OpenVMS, so it had a variety of software versions dating back to OpenVMS version 6.2. The equipment also required a lot of floor space, power, and cooling. “It was a very large deployment, and it was hard to manage,” says Patti. “We weren’t getting the performance from these big machines that took up a lot of power and a lot of space in the data center.”

Looking to the experts

AccuWeather briefly considered moving the forecasting solution from OpenVMS to something else, but didn’t find any solutions that would justify the cost. “OpenVMS has been a solid platform for a long time. The clustering capabilities are excellent, especially the way the cluster is tied to centralized storage,” says Patti. “We also use queuing to run batch jobs to deliver data to our customers. OpenVMS makes it easy to provide our customers a fault-tolerant solution.”

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AccuWeather turned to HP for advice on how to upgrade its hardware. “HP took the time to understand our solution and came up with a great solution based on HP Integrity blades,” says Patti. AccuWeather liked the HP Integrity BL860c i2 server blade solution because it could keep using OpenVMS. In addition, the blades could be installed in the HP BladeSystem c7000 enclosure, so they were not tied to OpenVMS-specific hardware. “With the HP c7000 enclosure, you can install an Integrity blade and then put ProLiant blades next to it. You can use the same SAN infrastructure for both environments. It’s all contained and requires little power and space,” explains Patti.

Using Integrity servers meant that AccuWeather could migrate gradually, because the new Integrity servers could be integrated into the existing OpenVMS Alpha cluster. “We can purchase and install one blade per year and gradually transition the environment,” says Patti. “We didn’t have the capital required to replace the whole solution at once. HP came up with a very constructive solution to what looked like a very difficult situation for us.”

For networking, AccuWeather chose HP Virtual Connect modules for the enclosures, the HP Virtual Connect 8 Gb 20-port Fibre Channel module and the HP Virtual Connect Flex-10 10 Gb Ethernet module. The Virtual Connect Fibre Channel modules connect to an HP P6300 EVA and the Virtual Connect Flex-10 modules connect to a 10 Gb Ethernet network.

Clearing up the air

AccuWeather began the migration process at the end of 2010, a few weeks after it installed the first Integrity blade. The idea of migrating the code from the Alpha to the Integrity servers was daunting. “We had millions of lines of custom code built up over 25 years across hundreds of programs,” explains Patti. “HP provides tools that make the process very straightforward. At the end of the day it has not been a large effort. We only require one person to work on the code changes and we’ve only had to change about five percent of the code.” AccuWeather took advantage of HP OpenVMS migration software for HP Alpha server systems to HP Integrity Servers (OMSAIS) to review the code and make recommendations for changes to meet best practices.

AccuWeather has now installed three Integrity blades in two c7000 enclosures and has moved all of its core software onto the blades. “We have already moved the core programs that are producing data and responsible for most of the CPU needs,” says Patti. “Only data delivery applications are still running on the Alpha servers.”

Getting the SAN set up was more complex because AccuWeather wanted it to interface with the Alpha nodes as well as with the Integrity servers. “Because of the challenges configuring the SAN for multiple systems, we took advantage of HP Technical Services, who set up the SAN very quickly,” says Patti. “HP provided volume shadowing software so that we could move all of the nodes to the P6300 in one night.”
With its core applications on the Integrity blades, AccuWeather has seen a 20 percent increase in performance as measured by a decrease in runtime. “That increase is big for us because many of our weather models take a long time to run. The quicker we can get it completed the quicker we can get it out to our customers,” says Patti. “Because we now deliver our weather data faster, especially warning data, mapping, and even current conditions, we provide greater value to our customers.”

The P6300 SAN has also played a role in the improved performance. “We expanded our storage capacity from 10 TB up to 43 TB, and we’ve seen about a 50 percent drop in average disk latency,” notes Patti. “It’s been great. We have accelerated our infrastructure so we can achieve better business results.”

With the three Integrity blades in place, AccuWeather has retired 22 Alpha and VAX servers and reduced its OpenVMS cluster to 12 nodes. “Consolidation has been a key benefit, because we are using at least 50 percent less power. When we retire all of the Alpha servers, we should save about 95 percent of the power and cooling costs.”

A bigger benefit has been recovering data center rack space. “We are talking about seven or eight racks of equipment that can be replaced by six blades,” continues Patti. “We will recover 20 percent of our data center space. We’re growing our business tremendously, but our server footprint is actually shrinking.”

AccuWeather has a small staff that manages the OpenVMS environment. Most of its staff focuses on the new media lines of business.

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By moving to HP BladeSystem and the P6300 SAN, the team has shifted the support of the OpenVMS hardware from the OpenVMS team to the server administration team. “Now our OpenVMS admin’s focus is with the software. He can spend all of his time completing the migration and continuing to add innovation to the platform.”

AccuWeather also used its new HP equipment to solve challenges with its VMware environment for its Windows® and Linux servers. “Our SQL Server clusters were having problems with their networking equipment. They were losing their heartbeat signals and didn’t know which was the master,” explains Patti. “It caused downtime and affected the website.”

Because AccuWeather was seeing great performance from the HP BladeSystem and Virtual Connect solution, it decided to purchase some HP ProLiant BL460c server blades and move the Windows clusters to the HP equipment. “We tried HP Virtual Connect and HP blades and we haven’t had a problem since,” says Patti. “Our previous solution struggled, whereas the HP product was rock-solid and battle tested in large data centers.”

AccuWeather has since moved all of its clusters onto the HP equipment, including some Red Hat Enterprise Linux clusters.

Expanding the solution to include these VMware clusters has provided AccuWeather with significantly more value from its HP equipment. “We can now really see the benefits of Virtual Connect. We have cut time to install equipment 90 percent because we don’t have to set up cabling or communications equipment,” says Patti. “We can set up two HP servers in the time it took us to set up one on our previous solution.”

“We are also using the P6300 with our VMware cluster. That’s been a big win because this SAN is not just for legacy technology with VMS,” says Patti. “We love the fact that we can carve it up this way and use it for more than just one purpose.” With just one storage system, management and backups have become much easier.
Customer solution at a glance

**Hardware**
- HP BladeSystem c7000 enclosure
- HP Integrity BL860c i2 server blade
- HP Integrity BL870c i2 server blade
- HP ProLiant BL460c server blade
- HP Virtual Connect 8 Gb 20-port Fibre Channel module
- HP Virtual Connect Flex-10 10 Gb Ethernet module
- Brocade 8 Gb SAN Switch for HP BladeSystem
- HP P6300 Enterprise Virtual Array System
- HP B/24 SAN Switch
- HP 6120XG Blade Switch
- HP X3800sb G2 Network Storage Gateway Blade

**Software**
- HP Integrated Lights-Out (iLO) Management
- HP Virtual Connect Enterprise Manager
- HP C for OpenVMS
- HP C++ for OpenVMS
- HP Fortran for OpenVMS
- HP P6300 Business Copy software
- HP Command View EVA software
- HP Storage Essentials Software Suite
- Microsoft SQL Server 2008
- VMware ESX 4.3

**Operating Systems**
- HP OpenVMS I64 Version 8.4 for Integrity servers
- Microsoft Windows Server 2008 R2
- Red Hat Enterprise Linux 6.2

**Network Protocols**
- 10 Gb Ethernet
- 8 Gb Fibre Channel

**HP Services**
- HP P6300 Disk Array Installation and Startup Service
- HP Enhanced Implementation Service for SANs
- HP Enhanced Network Installation and Startup Service for HP BladeSystem switches
- HP 5 year Support Plus 24

Sunny skies ahead

AccuWeather has some unique IT challenges because its forecasting data is so central to its business model. Working with HP, it created a mission-critical solution based on HP Integrity blades and an HP P6300 SAN to help ensure the forecasting system would continue to perform reliably for many years to come. Because the Integrity blades are part of the HP BladeSystem, AccuWeather was able to leverage this initial investment in its c7000 chassis to expand the deployment with HP ProLiant blades to host its entire VMware environment. Looking to the future, AccuWeather sees its investments in HP equipment continuing to grow.