



*“Our CEO wanted a robust BlackBerry Enterprise environment up and running within three months. We did it with VMware. It is in service around the clock and is never allowed to stop. Normally you’d call that ‘7 days and 24 hours availability,’ but with an application of this importance, we say ‘8 days and 25 hours.’ BES runs transparently on VMware virtual machines, with the same functionality and configuration as on physical servers. Actually, it’s even better than running BES on physical servers, because we have automatic high availability: if something goes wrong with one host, the VMs running on it automatically restart on other hosts in about a minute. We have very few support issues with our applications running on VMware—and I can’t remember any with BES. Plus, there have been no performance issues at all. In fact, a message generally gets to your BlackBerry before it arrives in Lotus Notes.”*

— Dirk Holzwarth  
Team Leader, Alstom’s VMware Infrastructure Management Center

**KEY HIGHLIGHTS**

**Challenge**  
Build a reliable and flexible BlackBerry Enterprise Server (BES) configuration from scratch in three months

**Solution**  
VMware Infrastructure enables the fast development of a dependable, secure and cost-effective infrastructure for BES

## Alstom

Alstom is a global leader in equipment and services for power generation and rail transport. Based in Paris, France, the company employs around 76,000 people in more than 70 countries worldwide. Alstom is known for cutting-edge technology such as its high-speed trains, but its virtualized IT infrastructure also breaks new ground in terms of efficiency and responsiveness to user requirements. VMware software is the platform of choice at Alstom, which by mid-2008 was running about 2,000 virtual machines: approximately 1,500 in northern Europe, and another 250 each in southern Europe and the U.S.

One of the most important applications Alstom runs on its extensive VMware Infrastructure is BlackBerry Enterprise Server (BES). BlackBerry devices have become an essential tool for keeping employees in touch and informed. They are a vital part of the workday for thousands of employees across the globe, including also Alstom’s CEO.

“We were given three months to build a Global Blackberry Service,” remembers Dirk Holzwarth, team leader of Alstom’s VMware Infrastructure Management Center. The reason for that short timeframe was a problem with the mobile service that Alstom was using at the time. Holzwarth knew that the only way to meet that aggressive timeline was with VMware Infrastructure. And by April 2007, he and his team met their three-month deadline—which he maintains wouldn’t have been possible if they’d been using physical servers instead of virtual machines.

“Without VMware, we would have needed to procure a set of new physical servers, and then find space in our crowded data center,” he explains. “Finally, we would have needed to test all those physical hosts—since after all, our CEO would be directly affected by any failures. All that would have easily added months to our tight project schedule. But VMware Infrastructure allowed us to provision new VMs—fully configured and ready to be loaded with BES—in a matter of hours.”

Based on the success of that initial implementation of 400 users, more were added over time. “We knew that 400 users would never be the end of the discussion, so we wanted our BES platform to be highly scalable,” Holzwarth says. “VMware Infrastructure gave us the flexibility we needed.” Using VMware Infrastructure, he and his team were able to rapidly increase the capacity of the BES deployment by transparently adding resources to existing BES virtual machines and rapidly provisioning new VMs when needed.

As of summer 2008, there were approximately 2,200 Alstom employees from more than 40 countries whose BlackBerry devices were supported by a more robust and manageable infrastructure thanks to VMware technology. “The only difference between our first implementation and the one we have today is that we’ve added multiple BES instances by provisioning copies of the original virtual machines and a second HP ProLiant DL385 dual-core server,” Holzwarth says. The company plans to have 4,000 users on BES by 2009. “As we continue to add users, if we discover that those two hosts aren’t enough, we’ll add a third host and then we’ll have no problem,” he adds.

## VMWARE AT WORK

VMware Infrastructure 3 Enterprise, featuring:

- ESX 3.0.2
- VMotion
- High Availability
- Distributed Resource Scheduler (DRS)
- VirtualCenter

## DEPLOYMENT ENVIRONMENT

- ESX 3.0.2 running on 26 HP ProLiant hosts
- Mission-critical applications running in production in virtual machines include BlackBerry Enterprise Server R4.1.5, Lotus Notes and Citrix
- Guest operating systems: Windows 2003 (Enterprise and Standard), Windows 2000 (Enterprise and Standard)

*“These days, people know that virtualization works, that’s no longer a question. The big news is really the application manageability and availability benefits associated with virtualization, and that was the major reason we invested in VMware Infrastructure. It’s not just about saving money on hardware, but also about simplifying things like application provisioning, maintenance, high availability and disaster recovery. It’s just easier to get things done with VMware. Thanks to VMware, my wife and kids see me more often.”*

— Dirk Holzwarth  
Team Leader, Alstom’s VMware  
Infrastructure Management Center

As Holzwarth explains, there are four key components to BES: the BlackBerry server itself, the attachment server, the routing server and the SQL Server with all the configuration information. At this stage the two hosts devoted to BES are running roughly 20 virtual machines: about a dozen housing BlackBerry servers, two VMs for the attachment servers, two more devoted to the routers and one VM hosts the SQL Server. “We use about one server per 200 users, but our servers are VMs, not physical boxes,” he says. “Our BES servers are resource intensive, but they work very well on our dual-core hosts, which have about 32 GB of RAM each.”

VMware Infrastructure tools like High Availability and VMotion ensure that BES and Alstom’s other mission-critical applications run smoothly. “Using VMotion has become part of our daily operations,” Holzwarth reports. In the past, routine maintenance meant downtime and sometimes, dissatisfied users. But with VMotion, Alstom’s IT staff can keep systems in shape without bending users out of shape. In fact, employees usually don’t notice when VMotion moves an application they’re using to another VM for maintenance or upgrades.

Now that VMware Infrastructure is the platform of choice at Alstom, it’s the cornerstone of some ambitious plans. “We’re developing a global disaster recovery strategy based on VMware,” Holzwarth explains. By the end of this year, he and his team hope to come up with a plan that will ensure that if a data center goes down in one country, its applications will start running on VMs in another location.

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## Results

- In the past year, roughly 14 million mails have been synchronized and transmitted between mail servers and BlackBerry devices using BES running on VMware
- BES service uptime is greater than 99.9 percent
- Increased reliability and availability thanks to VMware capabilities like VMotion, HA and DRS. In case of failure, virtual machines restart in less than 60 seconds.
- Eliminated downtime for hardware maintenance
- Reduced the time required to provision new BES instances to about 15 minutes
- Simplified overall application administration, freeing up busy administrators to focus on more strategic activities

