Geismar Chemical Facility Implements Virtualization Technology Improving Efficiency and Availability

“By using virtualization technology we are able to improve not only the efficiency and availability of our enterprise resources and applications, but our IT administrators can focus on innovation instead of the time it takes to manage our conventional servers. We look towards the future when we can build an entire virtual infrastructure scaling across hundreds of interconnected physical computers and storage devices.”

John McIlwain, Principal Automation Engineer, Honeywell Specialty Materials

Benefits

Looking for a way to downsize its infrastructure and maintenance costs, while also reducing power consumption at its Geismar, Louisiana facility, Honeywell Specialty Materials successfully applied virtualization technology at this plant on the banks of the Mississippi River. Virtual computer systems were initially used for off-line testing and development. However, once the success of this project was realized, the plant’s Operator Training System (OTS) was also virtualized and deployed in a production environment.

In addition to the Off Process Development and OTS system, all four of their Honeywell Profibus Suite Advanced Process Control (APC) applications were installed on four virtual servers. Their associated maintenance and development applications were added on two additional virtual computers. All six Virtual Machines (VMs) were then loaded on a single physical server running VMware vSphere virtualization platform.

Now into its second year, these controllers have been successfully operating in a true virtual environment experiencing some of the many benefits of virtualization technology including:

- Improved efficiency and availability of its enterprise resources and applications
- Saving on hardware set up and engineering effort since virtualized systems are less expensive to deploy
- Increased ease of use with virtual platforms that are easily configured and cloned
- Simplified system maintenance
- Enabled users to be more assertive by performing unlimited tests since virtual systems can easily roll back to earlier snapshot
- Virtual computers can be modified, copied and replaced quickly and easily just like normal software files
- Minimal security requirements and low risk environments enabled greater flexibility for testing and development
Background
Honeywell Specialty Materials, based in Morristown, N.J., has about 9000 employees and 38 manufacturing facilities worldwide. It is a leading manufacturer of high-performance specialty materials, including fluorine products, specialty films and additives, advanced fibers and composites, intermediates, specialty chemicals, electronic materials and chemicals, and technologies and materials for petroleum refining.

One of four strategic business groups within Honeywell International, Honeywell Specialty Materials was founded in 1920 as Allied Chemical & Dye Corporation. Allied joined with the Signal Companies in 1985 to form AlliedSignal. The new corporation had critical mass in three areas: aerospace, automotive and engineered materials. In 1999, AlliedSignal and Honeywell Inc. merged to create a $24 billion per year global company providing technical and product leadership across a wide range of industries.

The Honeywell Specialty Materials Geismar facility, located on the Mississippi River, approximately 60 miles west of New Orleans, encompasses several hundred developed acres devoted to manufacturing various chemical products, including HFC-245fa, a non-ozone depleting blowing agent used in the production of rigid foam insulation; HFC-125, a non-ozone depleting refrigerant; Aclon™ resin; and hydrofluoric acid.

Challenge
Honeywell Specialty Materials had recognized the inherent benefits of virtualization technology early on. The company saw it as an evolutionary process that started out small and grew, according to specific applications and the availability of proven technology. Initially the plant looked to “virtualize” its development environment but had to go through various stages at the site to truly understand the benefits of this technology and how best to implement it and where.

“We knew we wanted to implement virtual computer systems for our off-line testing and development, but we also wanted to look towards the future and figure out a way to employ this in a true production environment,” said John McIlwain, Principal Automation Engineer, Honeywell Specialty Materials, Geismar facility.

Solution
Honeywell Specialty Materials first applied virtualization technology on its existing R200 Operator Training System (OTS). Recent product qualification for virtualization makes it easier to upgrade and support on new Experion PKS and UniSim R400 software. The OTS also required additional security so that it could be connected to the plant business network and be more easily supported. The OTS consisted of two Honeywell Experion Process Knowledge System (PKS) servers, one Flex station, a UniSim simulation engine, and a UniSim instructor station.

"Within the virtualized OTS environment, the virtual Experion server functions just like a real Experion server—even the control strategies running in the VMs are identical to those on the plant floor,” continued McIlwain. “The virtual server mimics the I/O of the real system and allows the physical Experion servers to interface with the simulation system as if they’re talking to the real plant.”

"Based on our initial success of the OTS project, we took the next step in the evolutionary process—Platform Virtualization of online production systems utilizing Profit Suite APC applications,” continued McIlwain.

This work involved upgrading four Honeywell R220 Profit Suite controllers, installed on Experion application nodes, to R320 technology. It also included the installation of an Experion Flex Station with Profit Stepper, as well a utility server with data collections set up for Loop Scout, Alarm Scout and BGMAX. All of these applications were loaded inside of the VMware vSphere virtualization platform.

“The virtual Profit Suite APC applications have been performing on-line control for more than a year with almost no issues. By implementing virtualization systems and someday an entire virtualized infrastructure, businesses can realize the flexibility, availability and scalability to not only survive, but thrive, in today’s competitive marketplace,” concluded McIlwain.
Honeywell Specialty Materials Implements Virtualization Technology at Geismar to Improve Efficiency and Availability

More Information
For more information on how Honeywell’s solutions operate in a virtualized environment or any of Honeywell’s Products, Services, or Solutions, visit our website www.honeywell.com/ps, or contact your Honeywell account manager.

Automation & Control Solutions
Process Solutions
Honeywell

1250 West Sam Houston Parkway South
Houston, TX 77042

Lovelace Road, Southern Industrial Estate
Bracknell, Berkshire, England RG12 8WD

Shanghai City Centre, 100 Junyi Road
Shanghai, China 20051

SS-11-13-ENG
May 2011
© 2011 Honeywell International Inc.