

Stratus and VMware deliver mission-critical reliability for virtualized data center and quality control lab solutions

Purdue Pharma L.P. of Stamford, Connecticut is recognized for its pioneering research in managing chronic pain caused by cancer and other serious illnesses. Innovation is a priority for a pharmaceutical firm that focuses on pain-fighting treatments, and that drive extends to the information technology behind Purdue Pharma's operations. Facing challenges in two areas where Windows®-based servers were deployed — the data centers for corporate and manufacturing — the IT staff examined the commercially available options. The need for a “rock-solid” platform led to an approach that would be new to the company: Stratus® ftServer® systems, Stratus Technologies' ultra-reliable family of Intel® processor-based servers for Microsoft® Windows server environments.

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Director, Architecture  
Purdue Pharma L.P.

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### Consolidating on reliable servers

The number of Windows-based servers in Purdue Pharma's corporate data center had reached a point where the facility would soon be outgrown. The increasing server population also used power and cooling to an extent that almost consumed all of the existing capacity.

The IT staff set out to consolidate or virtualize Windows-based applications onto fewer servers. This significantly raised the requirement for server reliability in the data center. “When you have a lot of eggs in one basket, you need a very strong basket to put those eggs in,” Rayda notes.

The team selected VMware Inc's software, which in this case would permit up to 30 servers to be consolidated onto a single system. An ordinary standalone server was used to run a proof of concept, but the server and driver hardware weren't solid enough. A lack of reliability in third-party device drivers, which provide interfaces to server peripherals and communications lines, was causing the operating system to crash.

Experience prompted the IT professionals to resist clustering multiple servers to boost reliability. They knew a system administrator needed considerably more time to set up a cluster compared with a standalone server — if a single server takes an hour, a cluster may need a day. Worse yet, when there was a problem, they found that a cluster didn't always failover properly between servers.

Count On Stratus™



After reading about the fault-tolerant ftServer family and making a fact-finding visit to Stratus Technologies' headquarters, it became clear to Rayda and the rest of the team that ftServer systems could supply the high levels of system uptime and data integrity demanded by server consolidation and other essential applications.

The team viewed Stratus Continuous Processing® features as a three-pronged defense for the reliability and availability of mission-critical systems. The systems' lockstep hardware, failsafe system software, and ActiveService™ capabilities automatically benefit off-the-shelf Windows server applications. With uptime protection built in, ftServer systems have met or exceeded the computer industry's defining measure of 99.999% availability in real-world customer installations.

Purdue Pharma was especially pleased with Stratus Technologies' emphasis on device driver reliability. To counteract what can otherwise be a root cause of operating system instability, Stratus works closely with third-party suppliers to harden device drivers for ftServer systems and recommends that customers use only hardened drivers. Stratus has also worked with Microsoft to incorporate Stratus knowledge and expertise into Windows driver standards and recommendations.

### 24/7 uptime for QC

Compliance with the U.S. Food and Drug Administration's 21 CFR Part 11 rule mandates that all data associated with producing a pharmaceutical batch must be recorded, maintained, and accessible. Lose any part of that data, and a pharmaceutical maker may be compelled to destroy a batch that can be valued at more than a million dollars for a prescription drug.

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Associate Director, Plant IT  
Purdue Pharma L.P.

"A lot of potential points for data loss exist in a lab because there are many different types of equipment involved in data collection — from HPLCs (high-performance liquid chromatography systems), to PDAs (Photo Diode Arrays), to 486 detectors — and you do not need the data-collection server to be one of the points of failure," observes Matthew Flood, associate director, plant IT at Purdue Pharma.

He explains that the QC lab application runs 24/7 while a batch is being processed, running for lengths of 16, 24, or 36 hours a run. A server outage during this critical run could result in data not being captured, which could require the company to fail the entire batch or start the run over again.

Success with consolidating Windows-based servers on ftServer systems in the data center would encourage Purdue Pharma to choose the fault-tolerant servers for data collection in its lab facilities. The pharmaceutical manufacturer reviewed this decision carefully, in part because three or more months may be needed to qualify a data-collection application. Says Rayda, "Replacing a laboratory system is not a quick matter; you want to make sure that you make a solid choice."

At this writing, Empower™ HPLC software from Waters Corporation is being qualified for use in the QC laboratory. Stratus ftServer systems will run the embedded Oracle® database that stores the data collected during drug sample testing.

Also being implemented on the Stratus ftServer platform is Wonderware IndustrialSQL Server™ plant historian software, which will acquire and store data from manufacturing equipment such as tablet presses, mixers, and environmental controls (temperature and humidity).

### Availability as prescribed

Having achieved the availability level necessary to support the Windows server virtualization, Purdue Pharma currently runs five ftServer systems in its data center. These are capable of replacing more than 100 physical servers when fully loaded. The savings will repay the company's investment in fault-tolerant servers many times over. Purdue Pharma also expects to benefit from the ftServer systems being deployed in its QC lab.

Mission-critical applications that may emerge in the years ahead include radio frequency identification (RFID) tracking of medication bottles, a step the pharmaceutical industry is considering to foil drug counterfeiters. The firm's IT team believes the ftServer systems show promise for future applications. "When a vendor can demonstrate the rock-solid reliability we need in a Windows environment, that is compelling," Rayda notes.

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