Whirlpool deploys virtualization, cuts server footprint with IBM and SAP

Overview

- ***The Challenge***
  To make the most of a major data-centre consolidation exercise and increase operational efficiency and performance, Whirlpool needed to increase the utilization of the hardware environment for its SAP applications.

- ***The Solution***
  Replaced 30 servers with just five partitioned IBM System p5 570 machines, using Advanced POWER Virtualization to handle changing workload dynamically.

- ***The Benefits***
  Faster, easier server provisioning; real-time workload management increases operational efficiency; fewer physical servers saves space and reduces energy costs; virtualization ensures optimal utilization of hardware resources.

- ***Key Solution Components***
  Industry: Manufacturing
  Applications: SAP R/3 Enterprise, SAP Advanced Planning and Optimization, SAP Customer Relationship Management, SAP Business Information Warehouse, SAP Enterprise Portal
  Hardware: IBM System p5™ 570
  Software: IBM AIX® 5.3, IBM DB2®

Whirlpool Corporation is the largest manufacturer and distributor of household appliances in the world. With annual sales exceeding US$12 billion, the company employs around 68,000 people in 50 sites globally. Following a major data-centre consolidation exercise, Whirlpool Corporation is deploying IBM Advanced POWER Virtualization technology to optimize the performance and flexibility of its SAP solutions.

Consolidation for improved TCO

With an average of barely 20 per cent utilization across its SAP server landscapes, Whirlpool Corporation wanted to drive more throughput from its significant investment in server hardware. The company also aimed to increase the flexibility of resource allocation and reduce the delay and costs associated with deploying new physical servers for each new business requirement.

Starting with its North America (NA) instances of mySAP software, Whirlpool Corporation is migrating systems to the latest IBM System p5 hardware, featuring Advanced

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POWER Virtualization. By virtualizing the existing SAP servers and running them in Logical Partitions (LPARs) under IBM AIX® 5.3 on five p5-570 servers, Whirlpool Corporation is phasing out twenty p615 and p520 servers. When the NA migration is complete, the European instances will be moved to the same p5-570s, releasing a further eleven p615 and p520 servers.

Robert A. Gamso, Senior Principal Systems Architect at Whirlpool Corporation, comments: "Replacing up to 30 servers with just five p5-570s will generate significant cost-savings in hardware acquisition and maintenance, administration, networking, power and cooling."

Autonomic demand management

The production and test environments for mySAP software are striped across the five p5-570 servers. A graphical monitor will be introduced to show the changing workload on the servers in real time. This will help Whirlpool Corporation to determine which different workloads will fit best together on the physical servers, for optimal utilization of the available resources.

Says Gamso, "With virtualization on the IBM System p platform, we can match up systems with different demand profiles – for example, systems serving different time-zones – and run them together on the same physical hardware.

"Exploiting shared processor pool LPARs we assign a number of CPUs to each LPAR, and rank the LPARs by relative importance. LPARs can share CPUs, and the POWER5 Hypervisor can borrow CPU power from less important or idle LPARs to boost the performance of busy LPARs where necessary at times of peak load."

Since System p5 servers can automatically manage the distribution of the available server resources in a highly dynamic manner, they can even out load peaks within the LPAR pools by redistributing compute power, continuously reallocated at sub-second time resolution. For example, compute cycles from non-production SAP software instances are used as

buffers when production partitions need them. As a consequence, Whirlpool Corporation's system sizing no longer depends on absolute peak load requirements, which results in smaller and less expensive servers for comparable workloads.

Improved utilization with better performance

Handling SAP software load peaks by utilizing spare resources in real-time has another effect, that overall system utilization increases significantly, since CPUs are not handled in silos but as a resource pool. If allowed, LPARs experiencing peak demand can potentially occupy all the pooled CPUs, which provides improved performance when compared with LPARs using fixed CPU boundaries.

Says Gamso, "Virtualization enables us to get more work out of our physical resources. Our goal is to achieve 70 per cent utilization. In the long term, going from 20 to 70 per cent utilization will mean a significant drop in hardware acquisition costs.

"In addition, our monitoring software for SAP is priced on a per-CPU basis, so the reduced number of CPUs for our SAP software environment will produce cost savings."

Whirlpool Corporation has also introduced the virtualization concept to one of its database servers, another p5-570 system. This is now running three different databases (two separate instances of MaxDB, plus Oracle and DB2) in four LPARs.

Higher flexibility

As workload changes on SAP production systems, Whirlpool Corporation can simply refine the rules for workload distribution.

"Server provisioning is also much easier and faster when you deal with virtual rather than physical servers," says Gamso. "The possibility of creating Micro-LPARs sized at one-tenth of a physical CPU on the fly will allow us to spontaneously react on requirements for additional SAP test systems, etc."

He concludes, "With Advanced POWER Virtualization on the IBM System p platform, we can configure AIX to manage workload dynamically across our SAP environments. The operating system can automatically shift processing power from one environment to another at peak times, for better performance and availability."

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