UP CLOSE  

CUSTOMER: Polaris Industries  
HEADQUARTERS: Medina, Minnesota  
BUSINESS: Manufacturer of snowmobiles, all-terrain vehicles, motorcycles, related accessories and garments, and more  
CHALLENGE: Discovering why a job was running longer than anticipated  
SOLUTION: Using Midrange Performance Group’s Performance Navigator to pinpoint the job lag, decrease storage use and spec out new systems  
HARDWARE: Three IBM Power Systems 740s and three IBM Storwize V7000 storage devices  
SOFTWARE: Midrange Performance Group’s Performance Navigator, Infor XA and Vision Solutions’ ITERA Availability  

Reposted with permission from IBM Systems Magazine, Power Systems edition
Systems administrators can have head-scratching moments when trying to discover why some jobs are running longer than they should. Issues such as processor performance, the amount of available memory and disk latency are often pointed out as the culprits.

And in some cases, this is correct. All or some of these can indeed have an impact on job runtimes, with, for example, a job started at 10 p.m. running well into the next day because processors aren’t up to the task of pushing it through in a timely manner. This, of course, has several ramifications, including lagging computing performance during the workday and, perhaps more notably, key information not getting to decision makers when they expect and need it.

Processor upgrades and increased memory and storage allocations may address some of these issues. Unfortunately, throwing additional performance-enhancing solutions at these problems may be only stopgap measures—and expensive ones at that. Other, more mundane issues may in fact be causing job lags.

Keith Livingood, IBM i senior administrator with Polaris Industries, discovered this when a key job began running longer than it should have. Using tools from Midrange Performance Group (MPG), he was able to quickly and accurately determine the exact cause of the problems without adding processors, memory or storage to manage the issue—and saved a great deal of money while doing so.

Pretty Well Covered

Once most widely known for its snowmobiles, Polaris now offers a broad range of products. It manufactures all manner of all-terrain vehicles, such as the RANGER and RZR side-by-side off-roaders, motorcycles (including the Victory, Slingshot and Indian brands), and even on-road electric/hybrid vehicles. It also has a line of nonmotorized products that encompass any number of related parts, garments and accessories as part of its PG&A business.

Headquartered in Medina, Minnesota, it has manufacturing facilities in the U.S and Mexico. It recently opened an additional manufacturing plant in Poland that serves all of Europe, where demand for its products has recently grown.

To help handle this increased diversity and growing market share, Polaris has three IBM Power Systems* 740s, two of which are running Infor XA software to manage its manufacturing activities. One is located in Medina, another in Roseau, Minnesota, and the third in Poland. The company plans to upgrade one of the 740s to a POWER8* server later this year.

Each of the three is individually connected to an IBM Storwize* V7000 virtualized storage system, and the Medina and Roseau tape libraries and boxes act as disaster recovery systems for one another.

“We back up each system to a virtual storage library, and then every night we replicate the entire saves to the other location’s...
library. In Poland, we also backup to a virtual storage library and replicate the entire save to the Medina Power Systems server,” Livingood says. “We also replicate production partitions between boxes, using iTERA Availability from Vision Solutions to copy the production PG&A side of the business to our main Infor XA production box in a different partition and our main Infor XA production partition to the production PG&A system in a different partition. We’re pretty much covered when it comes to backups and disaster recovery.”

**Thumbs Up**
Polaris was also covered when it came to running jobs—until one of them inexplicably began taking 400 minutes to complete, significantly longer than what it had taken in the past. It created a cascading effect, with subsequent processes running past the expected termination time of 6 a.m. As a result, critical reports and jobs, including the transmittal of FTPs to vendors, were delayed.

Somewhat flummoxed by this increase in job runtime, the company’s IT department tried several workarounds, including moving some jobs from one queue to another. Although this did address some of the issues regarding job delays, it wasn’t an ideal solution. The company wanted to clearly identify and rectify the problem.

It rooted around its stable of administrative tools and found one that it had on hand but was not using to its fullest potential: MPG’s Performance Navigator. “I had exposure to it at other companies, so I went to our manager, Mark Haanpaa, and said, ‘We have this tool; there’s so much that can be done with it and I think it would be beneficial for us if we brought someone in from MPG to help educate us on how to use it,’ ” Livingood recalls.

Haanpaa gave the thumbs up to this proposal, and Polaris contacted MPG to suggest an in-house training session. MPG sent a representative to Polaris to conduct a two-and-half day briefing explaining in more detail what the tool was and the capabilities it could provide.

During the briefing, Livingood mentioned the long-running job, and the MPG representative used Performance Navigator to look into it. As it turned out, some 70 percent of the 400 minutes the job was consumed by journaling, or as Livingood describes it, “journal thrashing.” Already having an open ticket with IBM regarding this issue, Livingood contacted IBM with a description of what was happening and was presented with a possible solution—journal caching.

A separately chargeable IBM feature, this tool allows users to bundle or cache journal entries in main storage before writing them to disk. “Instead of sending one record at a time, it bundles and sends them in groups. So based on the results we got from that Performance Navigator report, we decided to spring for the journal caching feature, and that job went from 400 minutes back to 100, which was a pretty big difference. The average now is around 140 minutes, 150 minutes, but even that’s still pretty significant.”

As a result, processes and reports are no longer being delayed, vendor FTPs are going out as scheduled and reports are getting into the hands of decision makers as expected. Notably, the correct diagnosis of the issue negated the need for the company to deploy additional processors, extra memory or expanded disk space, saving the company a great deal of money.

**A Huge Return**
Since the MPG training session, Polaris has found other beneficial uses for the Performance Navigator tool. For example, another job was consuming a great deal of CPU. Livingood initially thought it might be

---

**By employing IBM’s journal caching feature, Polaris was able to save a great deal of money, says Keith Livingood, the company’s IBM i senior administrator.**
originating from Infor XA, but after running the MPG solution, he discovered that it was instead coming from a module in another software package. Realizing the company didn’t use that module, Livingood simply turned it off, thereby saving valuable CPU resources.

In another case, the company was concerned about how quickly disk space was filling up, with 75 percent of it consumed—and that number only poised to increase. Realizing this was untenable, it ran a Performance Navigator feature call File Reorg Analysis. This tool allows users to scour disk to determine if, for instance, deleted files are still consuming space.

“This feature reads your entire system and returns reports that may indicate your top-20 files have deleted records in them, and if you reorg them, you’ll gain so much space back. We had one file out on the system that had more than 60 million records that were deleted and zero records that were actually active. This was consuming 5 to 10 gigs of disk. As soon we did a reorg on that, we got that disk back, which was huge. I now run that once every couple of months and clean up anything that has thousands of deleted records in it,” Livingood says.

Another Performance Navigator feature, the What If, has become equally valuable, especially since Polaris decided to replace one of its 740s with the new, more powerful POWER8 system. In essence, users input information about their current hardware models, including how many processors they have turned on, into What If. The tool allows users go back in time find certain periods that are busier than others.

They can then use the solution to trend their machines out for a specific amount of months or
years to determine how they will perform based on anticipated amounts of growth. Once the results are in, users can add processors to accommodate for that growth or spec out new systems to ensure they’ll meet or exceed performance requirements. This came in handy when Polaris was in talks with its hardware vendor, VIS of Minnesota, about the POWER8 system. Initially, they all thought eight processors would be enough to handle upcoming growth. But after using What If, it became clear that 12 would be more suitable, even if all of them weren’t immediately activated.

“I brought our business partners back in and showed them the tool. I said, ‘So here you go, guys. This is where we’re currently at and this is where we’ll be with the POWER8 with x number of processors, trended out three years from now.’ They were like, ‘Wow. Yeah, we need to have more processors.’ Granted, you’re not paying for this additional capacity until you turn the processors on, but it allows us to grow into that equipment and get more life out of it,” Livingood remarks.

**Enormous Paybacks**

Many companies have run into issues with jobs running longer than they should, and discovering why can be a complicated task. But with tools such as Performance Navigator, the causes can be quickly spotted and rectified, as in the case of Polaris. Although the tool had been gathering dust on the company’s systems, a simple training session quickly cleaned it off.

And as Livingood explains, the payback can be enormous. “We got our nightly processes back in order with the Performance Navigator and journal caching, reclaimed disk space with File Reorg Analysis and spec’d out our POWER8 with What If,” he says. “Without those tools, we’d still be scratching our heads and wondering how to best deal with these issues.”

Jim Utsler is a senior writer for IBM Systems Magazine and has been covering technology for more than 20 years.