



Championship IT

The Business of Enhancing the Performance of the F1 Car

For those who haven't had the experience, it is difficult to describe the adrenaline rush created by the roar of 20 engines simultaneously revving to 18,000 RPM at the beginning of a Formula One race. Experienced by hundreds of thousands of on-site fans and watched by an average of 600 million television viewers per event, the high-pitched

By Patrick E. Spencer

whine and acceleration of Formula One cars reverberates across the spectator stands and into the airwaves.

However, simply getting to the starting line—let alone putting together a winning championship season or even racing to the winner's circle in a Formula One race—requires a high-performance team with seamless integration across all functions. It also calls for laser-like

focus, unwavering fortitude, and constant innovation, not to mention a top-notch IT team.

A completely new race

Graeme Hackland has seen the highs and lows of Formula One over his 12-plus years in Formula One—from several seasons near the bottom of the standings to winning both the driver's and constructor's championships in 2005 and 2006. When he joined Benetton Racing in 1997, IT was not a critical part of the team's success. "We had large systems for CAD and big UNIX-based workstations," Hackland recalls. "The IT organization was focused on maintenance and keeping the lights on." Innovation and integration with the business were not major drivers. "We perhaps had a few laptops

that traveled the world with the race team. And race data could fit onto a floppy drive. There was really little reliance by the business on IT.”

This changed in 2002 with the acquisition of Benetton Racing by the Renault F1 Team. Everything from design, to manufacturing, to simulation, to the dynos for testing the gearbox and engines, to telemetry, to car performance is now reliant on IT. “IT was under the finance department in 1997,” Hackland remembers. “Today, I am a member of the senior management team.”

Indeed, Hackland argues that IT and the business are not separate entities but rather are intertwined. “IT cannot be treated in isolation from the business,” he says. And Symantec Business Critical Services serves as one lever in helping Hackland to connect IT and the business. “Our Business Critical Services account manager understands our business and has pinpointed technology solutions on a number of occasions that address real pain points.”

In addition, Hackland has leveraged Symantec Consulting Services, including a Symantec Foundation Risk Management Assessment in 2008. “We were able to gain insight into the business and its risk tolerance across different fronts,” he says. “The assessment allowed us to engage our senior management team in a way in which we hadn’t ever done before. It helped us to focus our budget and resources on the highest business priorities.” Seeking to reengage with senior business leaders, Hackland had Symantec Consulting Services perform another assessment in 2009.

After serving six years as IT manager, with a CTO-like charter focused on IT infrastructure and day-to-day IT operations, Hackland was named CIO of the Renault F1 Team in July. “Our previous CIO really helped groom me for the position and make the transition to the role of CIO,” he says. As CIO, Hackland is much more focused on the business, and he promoted

A Winning Formula: A 12-Year Partnership

Twelve years ago Symantec signed a partnership agreement with Benetton Racing, which became the Renault F1 Team in 2002. Graeme Hackland had just arrived as a Novell administrator, IT was relatively insignificant to the larger success of the team, and no Symantec technologies were in use. Much has changed in 12 years: Hackland is now the CIO, IT is a critical business driver, and 15-plus different Symantec technologies and services are in use.

Accelerated data growth

Data center technologies play an important role in helping the Renault F1 Team to maintain peak racing performance, and Hackland and his team leverage various Symantec solutions. The initial Symantec deployment dates back about 10 years, when they standardized backup and recovery on Veritas NetBackup. And while operating systems, server platforms, and storage systems have changed over the years, backup and recovery have remained the same. “NetBackup provides us with the ability to evolve our IT environment and to integrate new technologies without swapping out the underlying infrastructure,” Hackland notes.

NetBackup has scaled to support accelerated data growth: about three years ago the Renault F1 data store had reached 80 terabytes; today, it is at 500 terabytes and rapidly growing, with projections of 10 or more petabytes in a couple of years. Yet, despite an accompanying upwards spiral in backup volumes, which skyrocketed from 24 terabytes in 2006 to 120 terabytes a month today, Hackland has been able to avoid adding backup administrators; as has been the case since NetBackup was deployed 10 years ago, one IT administrator still manages all backup and recovery.

“Of course, backing up data doesn’t mean anything if we cannot retrieve it,” Hackland says. As such, the Renault F1 Team began backing up data to different storage systems based on recovery time objectives. The team was able to reduce storage costs through a segmented

backup strategy to disk and tapes. And the ability to backup data to disk and tapes using NetBackup allows the Renault F1 Team to use one centralized solution.

High performance cluster

The size and complexity of the Renault F1 Team’s server environment grew over time to a point where total cost of ownership became a problem. As high availability is a critical requirement for the Renault F1 Team, with many systems required to deliver virtually 100 percent uptime, Hackland and his team maintained a clustered environment across their data center environment. At the time, however, each server platform and operating system had its own proprietary clustered solution. As a result, Hackland lacked a centralized view across his server environment and valuable time was spent managing each of the different silos.

In 2004, after consulting with his Symantec Business Critical Services account manager, Hackland sent a member of his IT staff for Veritas Cluster Server training from Symantec Education Services. “He came back and built the first cluster and never turned back,” Hackland says. “Centralized management—whether Linux, Microsoft Windows, or UNIX—provides real benefits. We don’t need IT staff with skill sets in clustering with Veritas Cluster Server. Whereas before, we often had to get external third-party consultants to help with any adjustments.”

Leveraging the N+1 technology of Veritas Cluster Server, Hackland and his team migrated from an active-active clustered architecture to one consisting of multiple nodes. The hardware, software, and maintenance savings Hackland and his team achieved equated to hundreds of thousands of dollars. “We would need at least one-third more servers without Veritas Cluster Server,” Hackland says.

In addition, Hackland and his team realized an unexpected benefit from

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Veritas Cluster Server when they migrated to a new data center. All of the equipment had to be moved from the old data center to the new one. Rather than shutting down all IT services for two or three days, Hackland and his team, upon the advice of Business Critical Services, incrementally migrated systems over to the new environment by failing services to other nodes, powering off nodes, and physically moving them all without any downtime. "This was extremely beneficial," Hackland reports, "and it was not something we anticipated originally when we implemented Veritas Cluster Server."

Overhauling email

Email became a pressing issue for the Renault F1 Team in 2004. "Forty percent of our workforce is mobile, and they work away from the factory on a regular basis," Hackland reports. "Our original infrastructure was designed for 120 users, and we had more than 450." The system experienced constant downtime, thus preventing the Renault F1 Team from communicating internally and externally. "It was a real productivity drain."

With these challenges in mind, Hackland elected to overhaul the email infrastructure, migrating to Microsoft Exchange and architecting for high availability with Veritas Cluster Server. Previously, it was not unusual for end users to have mailboxes of four gigabytes, which impacted system performance and consumed valuable email storage space. Hackland and his team also spent many hours—often days—rebuilding as many as 15 end-user mailboxes a year. They looked at different email archiving solutions and elected to deploy Symantec Enterprise Vault. "Enterprise Vault gives our end users an archive, yet not a separate application," Hackland says. "They are now able to search and retrieve emails on their own."

They also sought to address messaging security issues. "We had spam levels of 70 percent," Hackland recalls. This was creating

productivity issues for end users and IT staff alike. The Renault F1 Team implemented a Symantec Brightmail Gateway appliance. "We plugged it in and switched it on and overnight 70 percent of our incoming emails were eliminated," he says.

By this past summer, however, the volume of incoming spam had grown to 90 percent of total email. "We were wasting a lot of network bandwidth, and we wanted to avoid purchasing additional capacity," he

by end users since their last time in the office was typically lost.

"With NetBackup Desktop and Laptop Option, even with latency at the track, we're going to lose at the very most the last hour of data," Hackland says. "The solution improves the productivity of the IT staff as well as protects valuable company data."

Bumper-to-bumper security

When Symantec acquired Veritas, Hackland and his team added

“When Symantec technology became critical to our business, that is when we needed Symantec Business Critical Services.”

— Graeme Hackland, CIO, Renault F1 Team

says. Hackland and his team thus added MessageLabs Hosted Email Security. "We eliminated somewhere in the vicinity of 350,000 emails each week from hitting our network; it was a real, tangible savings."

Notwithstanding, the team opted to retain the Brightmail Gateway appliances for a second layer of protection against malware and viruses as well as content filtering. "Formula One is a highly regulated industry," Hackland says, "and we need to ensure not only that our intellectual property isn't sent outside of the company, but that we do not receive intellectual property from other teams."

Portable data protection

At about the same time Hackland and his team overhauled their email infrastructure, they also approached their Symantec Business Critical Services account manager for advice on how to shorten the time to rebuild laptops and desktops. Every year, they would experience 15 to 20 instances where laptops became corrupt or were dropped and broken, and it took an average of two days to retrieve data and rebuild each system—and data created

Symantec AntiVirus for client and data center endpoint security. Then, seeking to lower their IT risk exposure while driving various operational efficiencies, Hackland and his team consolidated and upgraded to Symantec Endpoint Protection last year. Components they deployed include antivirus, antispayware, device control, and firewall. "We have staff traveling all of the time, and they require access wherever they are," Hackland notes. "We're now in the process of adding endpoint encryption for the 40 percent or so employees who travel all of the time."

The team also uses Symantec Critical System Protection as an added layer of security in the data center environment and Symantec DeepSight Alert Services to proactively monitor the threat landscape and manage patches and updates accordingly.

To monitor and manage compliance with internal IT security policies, Hackland and his team rolled out Symantec Control Compliance Suite. "Symantec Control Compliance Suite helps pinpoint situations where we are out of compliance with different policies. It enables us to be more efficient and effective in protecting our computing environment." ■

Graeme Hackland,
Chief Information Officer,
Renault F1 Team



two members of his previous team to assume responsibility for the IT infrastructure and IT operations, respectively.

Core IT components— availability and data

Availability is one of the key business requirements for Hackland and his team. Systems and data must be available virtually 100 percent of the time—trackside and factory side. Specifically, in addition to two dedicated technical centers in Enstone, United Kingdom, and Viry-Châtillon, France, the Renault F1 Team manages a mobile IT infrastructure that it must pack up 17 times between March and November and move to a different garage somewhere else in the world. “It is almost like a traveling circus,” Hackland quips. “We have very hostile environments—extreme cold and heat, humidity, wind, and dust.” To meet high availability requirements in the data center, Hackland and his team rely on Veritas Cluster Server, which is used across all operating systems—Linux, Microsoft Windows, and UNIX.

Data management is another critical area. “Formula One is a highly regulated industry, and we must retain data for three years,” Hackland says. Many of the team’s IT systems and requirements are very similar to those of manufacturers and financial institutions, according to Hackland. “But there is often a greater need for business intelligence and the need to look at data from multiple sources,” he explains. “Protecting this information and getting access to it in a timely manner is critical for us.” Hackland standardized backup and recovery on Symantec 12 years ago, and he has never looked back.

New IT designs

Last year, to provide the Renault F1 Team with ready access to virtually

all types of information, Hackland and his team developed a customized strategy system that provides engineers with a single view of data across multiple sources and allows them to input their data in real time. The solution impacts nearly every operational aspect, including race-day decisions such as when a pit stop should be taken and where the cars are projected to finish in a race. “All of this data previously resided on separate systems, and we lacked a single view and ability to input from a centralized console,” Hackland says. “We delivered a tool to the team that enables them to make the car faster.”

Another important initiative for Hackland and his team this past year was the formation of a computational group. As physical testing of the car in-season is no longer allowed due to Formula One regulations, simulation is increasingly prevalent. Instead of physical models, the Renault F1 Team uses virtual models for most testing. “None of us had ever built anything like it before,” Hackland notes. “Indeed, we had to build a brand new data center to host the supercomputer.”

The “greening” of F1

Formula One is dedicated to the greening of its sport, and Renault is committed to the greening of its vehicles. At the same time, the Renault F1 Team is focused on reducing its carbon footprint. “Many

A Winning Team: The Renault F1 Team

History: Renault F1 Team was formed in 2002 with the sole purpose of winning the FIA Formula One World Championship with a 100 percent Renault car

Constructor’s Championships: 8 (six during the 1990s and consecutive championships in 2005 and 2006)

Driver’s Championships: 2 (2005 and 2006)

Employees: 550+

IT Staff: 30+

Website: www.renaultf1.com

people, when they think of Formula One and green, immediately associate the fuel burnt during each race,” Hackland points out. “But as a matter of fact, that works out to just two or three percent of our total carbon footprint.”

Beyond various green initiatives in the manufacturing environment over the past couple years, the Renault Team built a new data center located in an underground bunker. “Our new data center is 25 percent more efficient than our previous environment and is an important step forward in making

▶ Business Critical Services— Both Strategic and Tactical

The Renault F1 Team first engaged Symantec Business Critical Services in 2001 and renewed the three-year contract in 2004 and again in 2007. “When Symantec technology became critical to our business, that is when we needed Symantec Business Critical Services,” Hackland says. “Our operations move around the world, and we cannot afford to have a technology vendor tell us that they will get back to us on Monday. We needed a support organization that will follow us wherever our operations might be.”

The benefits of the relationship with Symantec Business Critical Services have been proven time

and time again over the years. For example, the Renault F1 Team uses Symantec Business Critical Services for upgrades and refreshes of current Symantec technology deployments. “We rely on Symantec Business Critical Services to help ensure that our upgrades are successful,” Hackland says.

Yet the relationship with Symantec Business Critical Services is focused on more than just tactical initiatives. “They are part of my IT group,” Hackland says. “It is a very tightly coupled relationship. Whenever we consider new IT initiatives, we bring those to Symantec Business Critical Services for their guidance, helping ensure there are no unexpected issues.”

Green IT a focal point for our team,” Hackland reports.

Green IT encompasses more than the next-generation data center for the Renault F1 Team, and Symantec is playing an important role. Multiple-node clustering for all of its data center servers using N+1 clustering technology in Veritas Cluster Server allowed Hackland and his team to slash the number of servers they are using by at least a third.

The Renault F1 Team is also realizing tangible power savings by shrinking email storage requirements.

Single-instance archiving and data compression using Symantec

Enterprise Vault reduced the Microsoft Exchange data store by approximately 50 percent. A hybrid messaging security solution using Symantec Brightmail Gateway and MessageLabs Hosted Email Security eliminates 90 percent of incoming email by cataloging it as spam.

Podcast



Check out the Executive Spotlight Podcast with **Graeme Hackland** at go.symantec.com/hackland

Beyond these initiatives, Hackland is also looking at using Symantec NetBackup PureDisk in conjunction with technologies from Network Appliance, the preferred storage vendor for the Renault F1 Team. “Deduplication of our storage environment will be important in the coming year,” he says.

The right pit crew

Last year, when the Renault F1 car was underperforming, the technical director refocused the entire company on improving its performance. Other initiatives were put aside. The rapid turn in direction produced immediate results: the team accumulated 39 points over the past five races, including two first place finishes and one second place finish. “I hadn’t seen anything like it before,” Hackland notes.

This change in focus included the IT team. “We were well into an IT service management project,” Hackland remembers. “We put it on hold and went to each of the departments and asked them what we could do to help them add per-

formance to the car. Every department and team working together, including IT, really turned around the season.”

Because of situations like this, Hackland and his team look to technology providers to help them innovate and develop IT solutions that ultimately improve the performance of the car—and Symantec has increasingly played that role over the past 12 years. “It’s really about providers understanding both our business and technology requirements and working with us to develop solutions that address those needs,” Hackland concludes. “There are so many successes that we’ve had over the past 12 years—and we’re expecting to have many more in years to come.”

And if he and his team have anything to do with it, with the assistance of Symantec and other technology providers, the first car you see hurling down the straightaway towards the finish line during the next Formula One race will bear the insignia of the Renault F1 Team. ■

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▶ Rapid Acceleration with Symantec

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