

Nexsan 10 Minute Case Study



Racing Certainty

How SATABeast Helps Honda Racing F1
Stay Ahead

Quick Summary

With the Honda Racing F1 team now generating and handling massive volumes of data in pursuit of on-track success, it urgently needed a new storage strategy to match its rapidly escalating ambitions. The solution that turned its wheels was Nexsan's SATABeast.



“We’re talking about several hundred megabytes of download at a time, coming off the cars. It’s a massive task to manage that data and make it available to everyone who needs to analyze it. And it has to be done at warp speed.”

Matt Harris, Technical Computing Manager, Honda

THE WIND TUNNEL

The state of the art wind tunnel at the Honda Racing F1 Team’s Operations Centre in Brackley, Northants (UK) was built to effectively provides the Honda Racing F1 Team with an in-house ‘test track’ — a fully automated, fully instrumented testing facility able to accommodate one of the team’s full-size RA106 race cars. The tunnel can generate a wind speed of 80 metres per second (the equivalent of 180mph), driven by the 5.3m diameter fan and its 16 rotating and 27 static blades, and is powered by a 2263kW electric three-phase induction motor, generating 43560N.m of torque at 495rpm. The rolling road is also capable of running at 80 metres per second.

Formula One rule-makers continue to restrict the number of days that a team may test at a circuit, wind tunnels and computer simulations will become even more important.

A wind tunnel is a stylized version of what happens in the real world. The car is held still, while the road and the air are moved. The car can be tested at an angle to road and at an angle to the wind. This allows the aerodynamicists to measure the affect of cross winds and the yaw rate — what happens when the car corners.

BACKGROUND

Being a winner is something that holds no mystery for Honda. A pedigree that boasts a remarkable 71 Grand Prix victories and 11 FIA Formula One World Championships — six Constructors’ and five Drivers’ titles — bears ample witness to the company’s prowess on what is one of the world’s toughest sporting stages.

And whilst world-beaters, no matter how outstanding, cannot expect to stay at the top forever, the ultimate measure of their success is how hard they are prepared to battle to regain their crown. Honda demonstrated its commitment to returning to the pinnacle of motorsport by becoming the 100% owner of the Honda Racing F1 Team at the beginning of 2007, clearly stating its ambitions to win in Formula One again.

Certainly, a visit to the team’s Operations Centre in Brackley, Northants, provokes no sense of Honda’s past achievements weighing heavily on the present works team. With a quick and reliable car in the RA106, and two experienced race drivers in Rubens Barrichello and Jenson Button, the team is working towards attaining the consistency of performance on which real success is founded.

To achieve this, the right equipment is essential in every aspect of the business. The IT team is no exception to this and is working flat out to support the additional energy and investment that is going into the organization.



THE BEAST UNLEASHED

SATABeast from Nexsan is an extreme density, energy efficient storage array designed to meet the challenges of the most demanding storage environments. Featuring both Fibre Channel and iSCSI connectivity, SATABeast provides unmatched flexibility along with enterprise-class features, performance and proven reliability.

- Employs Nexsan's revolutionary AutoMAID™ [Automatic Massive Array of Idle Disks] energy-saving technology, reducing power consumption and operational costs.
- Supports standard high performance RAID implementations as well as back up, VTL [Virtual Tape Library] and archiving applications.
- Utilizes dual RAID engines on each SATABeast controller to provide extremely high throughput across 42 spindles.
- Offers high availability features including continuous background integrity scans to ensure drive health and data accessibility.
- Each component is fully redundant and hot swappable with each controller featuring full cache coherency to maintain data integrity — even in the event of a power loss.

THE CHALLENGE

The drive for F1 supremacy — and recent changes in the way Formula One is regulated — has seen a surge in data-intensive off-track activity within the sport. This is embracing everything from the gathering of telemetric information to wind tunnel analysis; from racing simulations to computational fluid dynamics; from image and video libraries to environmental data management. At the Honda Racing F1 Team, video data capture alone is expected to top 7.2TB by the end of this year.

"We are capturing vast quantities of data from all of these activities," says IT director, David France. "In some instances, as we carry out detailed analysis after each race, the volumes of data we are dealing with have doubled or even trebled."

As a result, one area where the Honda Racing F1 Team has been coming under enormous pressure is in the management and storage of its data. "We're talking about several hundred megabytes of download at a time, coming off the cars," explains technical computing manager Matt Harris. "It's a massive task to manage that data and make it available to everyone who needs to analyze it. And it has to be done at warp speed."

"Every year, someone brings out newer versions of software that enables us to perform testing and analysis that much better and faster," says Harris, "and the file sizes this generates get correspondingly larger."

The scale of the challenge can be seen just by looking at two such areas of endeavour — computational fluid dynamics (the computerised modelling of airflows) and the opening of the Honda Racing F1 Team's full-scale wind tunnel. Offloads of data coming from the cars alone have shot up from 100-200MB to 800MB-1GB per car."

THE SOLUTION

As part of its commitment to harnessing ground-breaking technologies that will help to squeeze every last drop of extra performance from its cars, the Honda Racing F1 Team has chosen Nexsan's SATABeast — a high-capacity Serial ATA-based storage system — as the power behind its data storage strategy. Working with channel partner NCE Computer Group on SATABeast's deployment, Nexsan has so far provided 21TB of raw disk storage capacity, in the form of 42 500GB SATA drives, integrated into the SATABeast architecture.

THE RACE FOR THE PERFECT DEVICE

The Honda Racing F1 Team pitted SATABeast against other products at the assessment stage – and also against true fibre channel disk and iSCSI attached storage – but it was Nexsan's solution that left a lasting impression. "Once we'd settled in our minds what the right architecture was that would work best for the team, SATABeast came straight to the top of the pile," adds David France.

Harris describes SATABeast as "*the perfect device* for what we wanted. We've also been able to connect it into our SAN environment without any problem, so we can pick and choose what data we put on to which particular type of storage. Also, the management of SATABeast is so simple that anyone can do it. Even for our new users in IT, who've never really been involved in storage before, it's a matter of a few clicks and everything is done for them, delivering the data that's needed quickly."

With the previous proprietary storage system, it was clear that the team was quickly running out of disk space, no matter how its IT department configured or used the available capacity. Discussions began with Nexsan, which gave the team a SATABeast to try out. "That was it really," states Harris. "Here was a solution we knew we could expand on into the future and that wasn't going to end up being an admin. overhead. Also, with SATABeast, we were able to move from 'islands of storage' to a 'continent of storage' and it gave us the flexibility to buy that extra capacity on our own terms – when it was needed and at a favorable price, when needs changed."

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David Frances, IT Director, Honda

With the Honda Racing F1 Team rapidly outgrowing its previous storage architecture, SATABeast — as part of a totally revamped data storage infrastructure — has helped to give the team a new lease on life. Now the team has a tiered storage solution that will meet all of its data requirements well into the future. F1 regulatory changes that have limited the number of days on which actual physical testing of a car can be carried out. So how do you improve your car, if it can't be done in the 'real world,' so to speak? You do it by computer.

RIGHT ON TRACK

"We need to ensure that the data generated is safe, secure and accessible by all, transparently and without interruption, should there be a failure," states France, who says additional Nexsan boxes will be utilized to help distribute and synchronize the flow of information, along with technology from DataCore Software — to support F1 team activities on and off the track, including CAD/CAM, development and performance monitoring of the RA106 race cars, plus the everyday use and analysis of still images and video footage.

As for Nexsan's system itself, the 'beast' definitely lurks on the inside, for externally the system is compact, sleek and stylish. More importantly, France describes it as low maintenance and utterly reliable. "It just sits in its data storage world and handles everything we throw at it. We let it get on with the job, accommodating all of the data we're producing. Our users have been moving around masses of information of late, particularly relating to video analysis where you can't afford to have any bottlenecks, and they've been astonished at the speed they get using SATABeast."

"Prior to implementing our new tiered storage solution, people were often complaining about poor performance and capacity, because the limitations of the old system caused constant interruptions and were hampering their ability to get the job done. However, the SATABeast is performing so well, those issues don't arise any more. The very best storage systems are the ones that you don't realize are there. And that's where we are with Nexsan." □

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About Nexsan

Nexsan Corporation is a leading provider of energy-efficient, long-term storage systems. Nexsan delivers secure storage appliances and modular, capacity-optimized disk-storage systems for a broad range of applications including fixed content storage and archiving, email, medical imaging, compliance and litigation support, disk-based backup, digital video security, and rich media.

Nexsan's solutions are the choice of small and medium-sized companies as well as large global enterprises and major governmental agencies around the world who are seeking cost-correct, high density storage solutions. Founded in 1999 and based in Thousand, Oaks, Calif., Nexsan sells its products exclusively through a select global network of VARs, OEMs and system integrators. For more information, please see the company's website at www.nexsan.com.



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