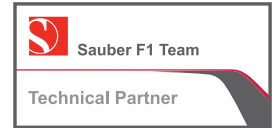




Executive Summary

Sauber F1 Team: Innovation at 200 mph



0.001 Seconds: The Difference Between Winning and Losing

Formula One race cars are built for one thing: speed. The sport combines extreme sports and the highest levels of technology to produce some of the fastest, most advanced race cars in motorsports.

Competition is fierce. Only the top 10 in each race score points toward the world championship title. A position change in the world championship can imply a multi-million rise or drop in prize money. Sometimes more than 12 out of 24 cars are within 1 second of each other during qualifying rounds. A mere millisecond—0.001 seconds—can mean the difference between victory and defeat.

Each time it's on the track, the Sauber F1 Team collects and analyzes large amounts of data, searching for any opportunity to innovate and improve car design and racing strategies. The team relies on its NetApp® storage foundation and other state-of-the-art technologies to make improvements to the car on the track, between races, and throughout the off-season.

At the racetrack, a FlexPod® system, featuring industry-leading technology from NetApp and Cisco, allows the Sauber F1 Team to analyze data from the car's 100 sensors. As the car races at speeds up to 220 mph, engineers at the track analyze the data in real time, coaching the driver to help him get the most performance out of his car. Depending on the course and the conditions, that might mean braking later or accelerating earlier out of a corner. "If the FlexPod fails during the race," says Giampaolo Dall'Ara, Head of Track Engineering at Sauber Motorsport AG, "we would be completely blind. You'd go back in time to when the driver was doing it alone."

Between races, on-track testing is not allowed, so the Sauber F1 Team relies entirely on its data. The team uses NetApp MetroCluster™ software at its headquarters to manage and analyze data from the track, acquired through computational fluid dynamics calculations, and wind tunnel testing. Weather and track conditions vary at each race location, so the team uses the historical data, testing, and simulations to design what is effectively a new car for each race. The 99.999% availability of MetroCluster gives the team nonstop access to the data it needs to find that one-millisecond advantage.

As a privately funded team, the Sauber F1 Team competes against teams with more resources and higher funding. But with NetApp, the Sauber F1 Team is leveling the playing field and laying the foundation for an agile data infrastructure that will help keep them competitive for years to come. This has been the Sauber F1 Team's best season in years. After just 13 races, the team had already more than doubled the number of world championship points it earned in 2011. "We have been punching above our weight," explains Monisha Kaltenborn, CEO and Team Principal of Sauber Motorsport AG, "and by improving our agility we have managed to stay competitive."

"Reliability Is Absolutely Paramount"—The FlexPod Platform

The FlexPod platform is more than just the Sauber F1 Team's mobile data center. It plays such a pivotal role that it's like a member of the team.

FlexPod's mobility, size, and high level of integration make it less expensive to ship compared to more traditional solutions and it can be set up and managed by one IT engineer at the racetrack. But it's the reliability of the system that's truly vital.

"Reliability is absolutely paramount," explains Magnus Frey, Head of IT at Sauber Motorsport AG. "Without the system at the racetrack, almost nothing would happen. We would not even be able to safely start the car."

Each season, the FlexPod platform travels with the team roughly 100,000 miles, operating from 19 different countries around the world. Along the way, it faces extreme conditions, which can go from freezing temperatures in the air to 100° Fahrenheit on the ground. [Continued >](#)



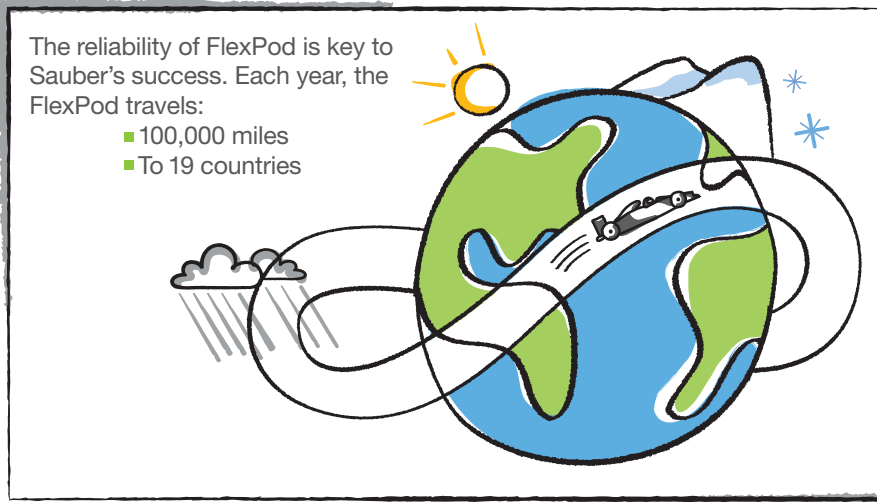
"We have been punching above our weight, and by improving our agility we have managed to stay competitive."

Monisha Kaltenborn
CEO and Team Principal
Sauber Motorsport AG

"Reliability Is Absolutely Paramount" (Continued)

Nearly every time the platform goes to Malaysia, the 100% humidity makes it similar to operating in a sauna. It gets bounced around in transit. And even getting reliable power can be a challenge. But it always delivers.

Once it is on the ground, the FlexPod platform always starts at the push of a button. "We put a lot of stress onto the system," Frey says. "Reliability is very important, and you get that with FlexPod."



Innovation at 200 Miles per Hour

As Formula One regulations change, they pose new challenges for the Sauber F1 Team's engineers and create new requirements for IT. With storage efficiency technologies from NetApp, the Sauber F1 Team was able to:

- Accelerate innovation—with fewer IT staff.
- Cut the footprint and power consumption of its mobile data center by 50%.
- Complete all major IT refreshes during a two-week period with zero downtime.

To learn more about how Sauber leverages the agility enabled by its NetApp systems, read the [technical case study](#) by Magnus Frey, Head of IT at Sauber Motorsport AG.

About Sauber F1 Team

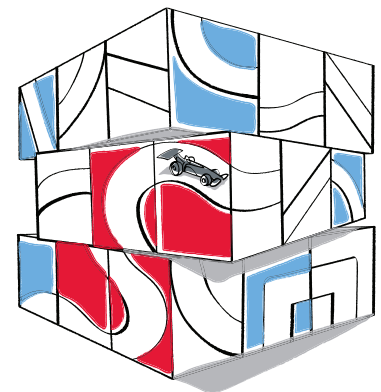
The Sauber F1 Team competes in Formula One racing, a March-to-November seasonal circuit of 20 three-day practice/qualifying/race events at race tracks in 19 countries around the world. Sauber Motorsport AG, headquartered in Hinwil, Switzerland, employs some 300 designers, engineers, and support staff. Another 100 full-time employees of suppliers and service providers in the region depend for their livelihood on the company founded in 1970 by Peter Sauber. In 2012, the Sauber

F1 Team marked its 20th season in the Fédération Internationale de L'Automobile (FIA) Formula One World Championship. www.sauberf1team.com

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