



Chip Ganassi Racing goes faster with Dell



Customer profile



Company	Chip Ganassi Racing Teams
Industry	Sports/Entertainment
Country	United States
Employees	290
Web site	chipganassiracing.com

Challenge

Chip Ganassi Racing Teams is committed to using technology to gain a competitive advantage across the various motorsports series they participate in: NASCAR, INDYCAR and GRAND AM. It sought a partner that could provide solutions for all its technology needs, from servers and storage to high-performance computing (HPC) and trackside mobility solutions.

Solution

The team deployed Dell servers, storage, laptops, workstations and switches to help it run advanced simulations to improve performance. Using the end-to-end solution, drivers and crew can access vital information to help them win.

Benefits

- Able to run advanced simulations to improve performance
- 20-fold faster deployment of new applications
- 75% reduction in physical hardware footprint (1.5 racks vs. 6)
- 60% reduction in data center power and cooling costs
- 5-fold faster stress analysis for vehicle components

Application areas

- Disaster Recovery
- End-User Computing
- HPC
- Mobility
- Networking
- Server Consolidation
- Server Solutions
- Virtualization

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Steve Lauletta, President, Chip Ganassi Racing Teams

Chip Ganassi Racing Teams (CGR) is in the business of winning. With revenue almost entirely dependent on securing sponsorship dollars, CGR's NASCAR, INDYCAR and GRAND AM teams must stand out from the competition every day at the track, or risk running out of the fuel that keeps it a viable contender.

When it comes to technology, CGR can't afford to lag behind. Competitive advantage is often achieved in small margins that translate to big wins, so the ability to quickly analyze interactions between driver, car, tires and track is paramount. "We use technology every day to gain a competitive advantage over other teams," explains Steve Lauletta, president. "Chip Ganassi has always believed in staying on the leading edge, so it's really at the heart of our business. And nearly all of the technology we use comes from Dell."

A race against time

That heart almost stopped beating when a fire damaged CGR's Charlotte, North Carolina data center. "We weren't as prepared as we should have been from a disaster recovery standpoint, but luckily we were able to turn to our technology partner, Dell, to help us recover," says Lauletta.

Data from 40 soot-covered servers had to be salvaged. "The reaction time from Dell was tremendous," says Lauletta. "We called them on a Sunday night, and by Monday they were on site working with our IT staff to get servers back up and running and convert them to Microsoft Hyper-V virtual machines. Now, instead of 40 physical servers drawing power and cooling resources, we have two Dell PowerEdge R810 host servers running 40 virtual machines. And we have an identical configuration in our Indianapolis data center, so if anything like this ever happens again, we will be able to fail over systems within a half hour instead of being down for three days."

Server virtualization also brings green benefits. "By removing 38 physical servers from the Charlotte data center, we've reduced power and cooling costs by at least 60 percent," Lauletta estimates. "We went from 6 full racks of equipment to 1.5 racks."

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Chip Ganassi Racing Teams*

Technology at work

Services

Dell™ Support Services
– Dell ProSupport™

Hardware

Dell EqualLogic™ PS6010E and PS6010XV
iSCSI SANs

Dell Latitude™ E6520 and E6420 laptops with
Intel® Core™ i7 and i5 processors

Dell Latitude XT3 tablet PCs

Dell OptiPlex™ 790 desktop PCs with Intel Core
i5 processors

Dell PowerConnect™ 8024F 10-Gigabit
Ethernet switches

Dell PowerConnect 7048P Gigabit
Ethernet Switches

Dell PowerConnect 7024P Gigabit
Ethernet Switches

Dell PowerConnect J-SRX240, J-SRX100
services gateways

Dell PowerConnect W-650 wireless
network controller

Dell PowerConnect W-AP175 and W-AP105
wireless access points

Dell PowerEdge™ R810 rack-mount servers with
Intel Xeon® processors, E7 family

Dell PowerEdge R710 and R510 rack-mount
servers with Intel Xeon processors, 5600 series

Dell PowerEdge M610 blade servers with Intel
Xeon processors, 5600 series

Dell PowerEdge M1000e modular
blade enclosure

Dell PowerVault™ TL2000 tape library

Dell Precision™ T7500 workstations with Intel
Xeon processors, 5600 series

Dell Uninterruptible Power Supplies (UPS)

Mellanox QDR InfiniBand interconnect

Software

Aruba OS 6.1 operating system

Juniper Networks Junos® operating system

Microsoft SQL Server 2008®

Microsoft® System Center Data
Protection Manager

STAR-CCM+

Windows® 7

Windows Server® 2008 R2 with Hyper-V™

Windows HPC Server 2008 R2 Suite



Accelerating recovery 144-fold

The 144-fold improvement in CGR's recovery time objective (RTO) is made possible by the built-in Auto Replication capabilities of Dell EqualLogic PS6010E and PS6010XV virtualized iSCSI SANs.

"It was amazing how simple it was to implement the EqualLogic replication between our Indy and Charlotte facilities," says Norman Gottschalk, vice president of information technology, Chip Ganassi Racing Teams. "The user-friendly interface allowed us to quickly define the partners and policies and feel confident in the reliability of the replication."

Enhancing data protection

Data protection has improved as well. The Charlotte data center now backs up Indianapolis, and vice versa. In addition to SAN-level snapshotting and replication, CGR uses Microsoft System Center Data Protection Manager to back up data to disk on a Dell PowerEdge R510 server, and also to a Dell PowerVault TL2000 tape library. The new architecture is protected by Dell UPS systems. "We now have peace of mind that we can access the data we need when we need it, no matter what catastrophe might occur," says Lauletta.

"Backing up systems is something all IT departments are faced with on a daily basis, but until you live through a real-life disaster, sometimes you do not appreciate the true value of the data," adds Gottschalk. "We now have redundant-redundant backup solutions and replicated environments that are geographically dispersed. Our current backup retention policy allows us to recover any piece of data within the past 90 days from either physical site, making our environments truly independent."

Core network traffic for servers and storage is handled by Dell PowerConnect 8024F 10-Gigabit Ethernet switches, while Dell PowerConnect 7048P switches provide Power-over-Ethernet (PoE) to CGR's phone systems and connectivity to the client systems. To provide WAN access control, firewall, content security and threat visibility,

EGR uses Dell PowerConnect J-SRX240 and J-SRX100 services gateways.

Where the rubber meets the road

A major benefit of server virtualization is that CGR can deploy new applications and services quickly, without waiting for new hardware. "Things happen fast in our business, and we need to be able to react and take immediate advantage of opportunities that could allow us to maximize our competitive advantage," says Lauletta. "For example, there could be a new simulation program that comes out that we need tomorrow. Virtualization gives us that flexibility."

Virtualized applications will contribute to better racing performance this season. "It is not uncommon for the racing engineers to need to implement new technology at race speed; after all, they are used to going 200 miles per hour," says Gottschalk. "A recent example is the new vehicle engine and strategy application we implemented shortly before the race season began. Using our virtualized environment, we were able to provide them with the highly available, redundant environment they needed within 24 hours. All of this took place without the need for purchasing, receiving or build-out. Prior to our revitalization efforts with Dell, this would have taken almost three weeks to completely implement."

Advanced simulations with HPC

To better understand how its cars perform under various conditions, CGR recently deployed a high-performance computing (HPC) cluster based on Dell technology. The compute nodes are Dell PowerEdge M610 blade servers with Intel Xeon processors, 5600 series, housed in a Dell PowerEdge M1000e modular blade enclosure. A Dell PowerEdge R710 server acts as the head node. Connected via a low-latency Mellanox QDR InfiniBand interconnect, the HPC solution will support computational fluid dynamics (CFD) research using STAR-CCM+, a popular CFD application.

"We'll be able to gain better insight into external aerodynamics, combustion and free

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surface flow," says Lauletta. "Being able to conduct advanced simulations using HPC is a major competitive advantage for us this year, and we couldn't have done it without Dell."

Workstations built for speed

When engineers at CGR's race shop analyze racing data to identify potential performance improvements and design parts for the cars, they use Dell Precision T7500 workstations with Intel Xeon processors, 5600 series. Designed for maximum scalability and performance on complex multithreaded applications, the T7500 features massive memory capacity for handling enormous data sets with ease.

"Computational problems in vehicle dynamics require fast processors, lots of RAM and the need to solve many simulations at once," says Manuel Daskalos, vehicle dynamics engineer. "Our Dell Precision T7500 workstations fill those needs. A batch that would have required days to run on a single-core machine completes in a few hours or minutes on our T7500s."

Adds Kevin Finney, design engineer:

"Performing stress analysis on components and assemblies seems to be trivial for the Dell Precision T7500. The time required to solve a model of a common suspension component went from 15 minutes to less than 3 minutes. Time savings like this allow for more iterations, so we can deliver our team the most effective components for winning races."

Staying in perpetual motion

At the racetrack, technology plays as critical a role as in the data center and race shop. Crew members use Dell OptiPlex 790 PCs to display information received from the track, as well as Dell Latitude E-series laptops attached to sensing equipment that reads information on everything from shocks to brakes. To improve efficiency, CGR

purchased Dell Latitude XT3 tablet PCs for track-side engineers and to replace iPads at the track.

"Previously, we were using iPads to display timing and scoring data to the drivers during practice," says Gottschalk. "After numerous visibility complaints and usability issues, we replaced the iPads with Dell Latitude XT3 tablets. The drivers have found the larger screens and the pen stylus to be much more user friendly, especially since they are wearing thick fireproof gloves, a helmet and a thick visor. Furthermore, the wireless cards in the XT3s in our typical saturated environment are much more reliable than the iPads."

Adds Lauletta: "When we have a practice session before a race, we only have an hour, so we're fine-tuning everything as quickly as possible. We've got a car on the track, guys in the garage, a driver in the car and an engineer at the hauler looking at timing and scoring. So having an engineer be able to run from the car to the pit lane to the hauler and still have the data he needs at his fingertips is really, really important because the time is so valuable. Fractions of a second could move you from being a first-place car to a fifth-place car."

Keeping communication flowing

When the Ganassi NASCAR team arrives at a racing event, it joins many other teams, all using wireless communications. If signals get dropped, the team loses valuable information. "This is specific to NASCAR, and it's one of our biggest challenges," says Lauletta. "There are 43 cars in a NASCAR event, and all of the people have radios. So there's an amazing amount of wireless traffic trying to get information to everybody. If we drop a signal during practice when information needs to go to the crew chief, we're at a competitive disadvantage."

Once again, CGR reached out to Dell. "Our Dell account manager came to a few races to get a feel for our challenges firsthand," says Lauletta. "He recommended a mobile, wireless LAN based on the Dell PowerConnect W-Series."

Based on technology from Dell Partner Aruba Networks, the PowerConnect W-Series is designed to prioritize bandwidth based on demands in a dynamic network, enabling potentially thousands of reliable wireless access points to deliver anywhere, anytime access to information. The solution consists of a Dell PowerConnect W-650 wireless network controller and rugged Dell PowerConnect W-AP175 wireless access points for outdoor use, as well as W-AP105 wireless access points for use inside trailers.

"Imagine a football field with over 250 access points visible to end users," says Gottschalk. "This is an extremely saturated environment, and your competition, the media, the track and race fans are all fighting for the same air time. With the PowerConnect W-Series, we were able to eliminate client disruptions even in this nightmare of an environment. We can now guarantee the engineers and drivers network access anywhere within our track footprint with confidence."

A winning partnership

As CGR begins this year's racing season, confidence is high. "I think we're really going to start to see the results of our investment in Dell technology this season," says Lauletta. "It's going to be a huge factor in contributing to what we do on the racetrack. Everyone in our organization is able to access information and utilize that information to make our cars go faster, which is ultimately how we deliver value to our sponsors. It's been an impressive partnership with Dell, and it just continues to get better and better."



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