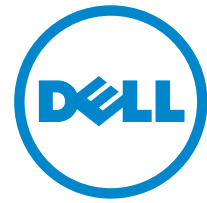


# TornadoVideos.Net reduces field failure rate to zero with rugged Dell laptops



- Mobile Computing
- Windows 7



"We put our laptops in the most extreme conditions on the planet, which is inside the heart of a tornado. The Dell XFR laptops we used this year seemed to thrive in these harsh conditions—they're great."

*Reed Timmer,  
Extreme Storm Chaser,  
TornadoVideos.Net*

## Customer Profile

Company:	TornadoVideos.Net
Industry:	Science
Country:	United States
Employees:	12
Web:	<a href="http://www.tornadovideos.net">www.tornadovideos.net</a>

## Business Need

The storm chasers at TornadoVideos.Net (TVN) were going through approximately five laptops each tornado season due to the extreme conditions the hardware was exposed to. Each failure impacted research and delayed the team. TVN wanted a rugged, military-grade laptop that could withstand the forces at work near the base of a tornado.

## Solution

The team switched to Dell™ Latitude™ XFR rugged laptops with Intel® processors running Windows® 7 and made it through an entire season with no failures to date, while also benefiting from faster and more reliable video rendering in the field.



## Benefits

- Zero failures experienced to date with Dell XFR rugged laptops
- Eliminated capital expenditures for spare laptops
- 10-20 hours a season directed back into research previously spent recovering from laptop failures
- Able to take advantage of more research opportunities
- Improved reliability with solid-state disk drives (SSDs)
- 50% performance improvement for video rendering

When we're in the path of a tornado, most of us want to get out as quickly as possible. Not Reed Timmer and Chris Chittick. They're extreme storm chasers—a couple of guys from Michigan who grew up fascinated by the violence that Mother Nature can unleash.

“A lot of people think that you get done storm chasing and then you're done working, but the reality is you get to your hotel room, and then you have to upload video to the different news outlets and evaluate the next day's forecast models. Having a reliable laptop that you know isn't going to crash is comforting.”

*Chris Chittick,  
Extreme Storm Chaser,  
TornadoVideos.Net*

“I've been obsessed with weather ever since I was five years old,” says Timmer. “I used to be deathly afraid of thunder and lightning, but then it turned into intense curiosity, and I'd watch the Weather Channel 14 hours a day. As soon as I got my driver's license, I got a 1985 Plymouth Reliant and took that storm chasing in Michigan. Then I decided to follow my passion and study meteorology at the University of Oklahoma in 1998, and 12 years later I'm still storm chasing.”

Currently living in Norman, Oklahoma—the epicenter of the world for tornado research—Chittick and Timmer have filmed three seasons of the popular Discovery Channel show Storm Chasers. Their heavily modified vehicle, called the Dominator, has bulletproof glass and armor and is built to withstand the forces near the base of a tornado's core.

“For scientific purposes, it's important to record wind speed and direction, as well as other meteorological data, right near the base of the funnel,” Timmer explains. “Because the wind right at the ground is what causes the loss of life and property, and there's a big mystery as to just how fast those wind speeds can get. Some computer models show that wind speeds could be 400 miles per hour or more inside there, but they've never been measured directly in the field until now. With the Dominator, we can get really close to the base of the funnel—sometimes inside.”

#### Putting laptops to the test

Timmer and Chittick have seen firsthand the devastation tornadoes can have on communities and families. Their company, TornadoVideos.Net (TVN), employs 12 people and represents a

network of about 100 storm chasers who work tirelessly to record data that will help science better understand tornadoes, their behavior and movements. The website hosts videos of storm chasers' work, a disaster relief support network, and sells apparel and other items.

In the field, the storm chasers use laptops to record data and edit video. A roof-mounted radar provides the data feed to record vertical wind speeds, while horizontal winds are measured by an anemometer on the roof of the Dominator. A dash-mounted, heavy duty digital camera records video as a backup in case the other cameras fail.

“We put our laptops in the most extreme conditions on the planet, which is inside the heart of a tornado,” says Timmer. “There are intense pressure falls that can be 1 to 200 millibars, and we live in about 1,000 millibars, so that's substantial. We had a guy in the back seat who ruptured his ear drum from the intense pressure drop. We have measured 200 mile-per-hour vertical winds inside an EF4 tornado in Minnesota with our radar. It was a mile wide and we were inside it. Paint was peeling off the back of the vehicle.”

#### Technology at Work

##### Hardware

Dell™ Latitude™ E6400 XFR rugged laptops with Intel® Core™ 2 Duo processors

##### Software

Windows® 7

"We open the windows in driving rain, hail, and the wind is always blowing dirt and debris into the vehicle—usually all over our equipment," Chittick adds.

In conditions such as these, consumer-grade equipment tends to fail. The team was going through around five laptops each season, and each failure had an impact on research. "You would think we'd have spares, and sometimes we did, but more often than not, we'd be done for the day," says Chittick. "We'd go to a Best Buy in the morning and buy another, which cost us valuable time and money."

### A rugged revolution

Dell suggested the team try [Dell Latitude E6400 XFR](#) rugged laptops with Intel processors. Built for tough environments, the Latitude E6400 XFR includes Dell's exclusive Ballistic Armor™ Protection System to meet or exceed real-world and military standards (MIL-STD-810F), and is ready out of the box to withstand pounding rain, extreme temperatures and accidental drops. With reliable, high-performance solid-state disk drives (SSDs) for primary storage and PrimoSeal™ technology for enhanced protection against blowing dust and liquid, the XFR turned out to be just what the storm chasers needed.

"We were a great test case for the Dell XFR laptops, because our vehicle acts like a vacuum cleaner," Timmer explains. "We're usually driving over dirt roads, and all the dust gets sucked inside the vehicle. It can get so thick that it can be difficult to breathe, and we have destroyed a number of laptops due to overheating from dust clogging up the filters. The Dell XFR laptops we used this year seemed to thrive in these harsh conditions—they're great."

### Zero failures with Dell

The team used the Dell XFR laptops during the intense third season of Storm Chasers and experienced no failures, even inside the tornado's vortex. "We're spending less time on

PC issues and more time on research," says Timmer. "When we had laptop failures in the past, it slowed us down, and we would spend several hours reinstalling all of the software we use to evaluate forecast models to find tornadoes."

Over an entire season, 10 or 20 hours directed back into research might not seem like much, but it matters greatly in opportunity cost. "A delay of five minutes can cost us a tornado out in the field, because most tornadoes are relatively short lived on the ground," Timmer explains. "If we make one mistake on the road or our equipment fails, that can cost us an opportunity, and you never know when there's going to be another tornado. There could be a drought after that, so it's important to have everything in working order."

TVN has now eliminated capital expenditures for spare laptops. "We'll be saving money by purchasing Dell XFR laptops in the long run since they don't fail," says Timmer.

### 50% performance improvement for video rendering

In addition to durability, the TVN team is also benefiting from improved performance, thanks to the powerful Intel processor, 64-bit [Windows 7](#) operating system and superior random read capabilities of the SSDs.

"The solid state hard drive is a big deal for us," says Chittick, who is responsible for editing video clips in the field to post quickly on YouTube or distribute to breaking news media. "We've experienced a 50 percent performance improvement for video rendering compared to our previous laptop. I can render a five-minute clip in about seven and a half minutes instead of waiting 10 minutes. In the field, that time matters."

The durability of the SSDs, which have no moving parts, is saving Chittick the frustrating experience of having a laptop crash in the middle of an editing or rendering session. "Having such a

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*Reed Timmer,  
Extreme Storm Chaser,  
TornadoVideos.Net*



reliable laptop saves time even after the chase is over," says Chittick. "A lot of people think that you get done storm chasing and then you're done working, but the reality is you get to your hotel room, and then you have to upload video to the different news outlets and evaluate the next day's forecast models. You can be up until four in the morning, and having a reliable laptop that you know isn't going to crash is comforting."

### Setting the standard for storm chasing technology

TVN is currently in talks with Dell about how the companies can work together to offer a data protection solution that combines TVN weather intelligence with the built-in data replication capabilities of Dell EqualLogic™ virtualized storage.

And with the Dell XFR rugged laptops, Timmer and Chittick can think less about technology and more about "Dominating the Storm."

"It's important for our laptops to perform their best during a tornado intercept because that's when we're collecting data, and that's when the data is most valuable," Timmer concludes. "Our research projects revolve around being able to collect the data inside tornadoes, or else there's no reason to drive into a tornado. These laptops have experienced the most extreme weather on the globe and are taking storm chasing to the next level—I'd recommend the Dell XFR series to anyone who requires reliable computing and data protection in harsh environments."



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