

## Case study

# Brain Farm Digital Cinema

HP Z Workstation with HP Z Turbo Drive eases 4K workflows



### Industry

Media & Entertainment

### Objective

Overcome technology challenges of high-resolution 4K digital cinema workflows

### Approach

Deploy HP Z Workstations with Samsung-powered HP Z Turbo Drive SSDs

### IT matters

- Help cut time to transcode media in half
- Play 4K DPX at full resolution in real time, 30 to 50 megs per frame
- Obtain more than 900 Mbit/s with a single drive; 1,800 Mbit/s with paired drives
- Speed rendering to reduce editor wait times
- Ease grading and finishing, color correction

### Business matters

- Meet customer demand for fast 4K turnaround, exceptional quality
- Enhance editors' efficiency, creative flow
- Cut costs through incremental but consistent staff time savings
- Potential to avoid time and cost of using out-of-house post-production facilities



**“When working at 4K resolutions, hard drive and storage performance are key. The HP Z Turbo drive delivers astonishing power and speed at lower cost.”**

– Danny Holland, post-production supervisor, Brain Farm

**BRAIN FARM**  
DIGITAL CINEMA

Brain Farm Digital Cinema, an award winning entertainment and production company based in Jackson, Wyoming, creates unforgettable film, TV, digital and commercial content for customers and is recognized for their impeccable quality. Brain Farm relies on the fast and powerful HP Z Workstations with Samsung-powered HP Z Turbo Drive SSDs to streamline production of some of the most stunning digital cinema ever seen.

## HP recommends Windows.

Working with a backdrop of the Teton Range, the Brain Farm team of approximately 30 “filmmakers, production experts, musicians, storytellers, athletes, and tech ninjas” work united by one mission: to use innovative techniques that bring inspiring stories to life. Brain Farm customers, ranging from the National Geographic Channel to Red Bull Media House, also hold something in common: they expect the high quality of 4K with the fast turnaround generally only possible with lower-resolution projects.

“For us to be able to work with ultra high definition formats and make sure we’re getting really amazing imagery, we need the horsepower of something like the HP Z Workstation.”

— Chad Jackson, head of production, Brain Farm



HP Z Turbo Drive featuring Samsung M.2 PCIe SSD technology

To meet these customer demands—and to unleash its own creativity—Brain Farm turns to the breakthrough power of HP Z Workstations. “Our clients demand the same speed out of a 4K post-production workflow as they did with less-intensive projects,” says Chad Jackson, Brain Farm’s head of production. “We need to get the footage back to the studio and get into an edit. If we can cut two days out of that process by using the HP Z Workstations with HP Z Turbo Drives, and get into post-production faster, it saves us time and money while giving our customers better service.”

### Samsung PCIe SSD technology

Built for high-end computing and visualization, HP Z Workstations with HP Z Turbo Drive combine professional graphics with advanced processing power, memory, and internal storage capacity. The HP Z Turbo Drive is based on Samsung M.2 PCIe SSD (Solid State Drive) technology and offers up to 2x the performance of SATA SSDs and more than 6x the performance of SATA HDDs at a price comparable to SATA SSDs.<sup>1</sup> Previously, Brain

Farm used standard 3.5 inch hard drives as well as some SATA SSDs.

The HP Z Workstations with HP Z Turbo Drive “just blows them out of the water,” says Danny Holland, Brain Farm post-production supervisor. Eliminating the file storage bottlenecks typically associated with extremely large files speeds performance dramatically. “The biggest thing I can do now that I couldn’t before is to play back 4K DPX files at full resolution in real time—no half, no quarter—without any kind of stutter-y playback,” Holland says. “That requires a lot of storage speed, and we get that on the HP Z Workstation without having to spend hundreds of thousands of dollars on a fast-array system. The HP Z Workstations also are easy to set up, almost plug-and-play.”

Brain Farm has two HP Z820 Workstations and four HP Z840 Workstations, configured with Microsoft Windows 7 Professional 64; Intel® Xeon® 10-core Processors; NVIDIA® Quadro® K6000 graphics; 64 gigs of RAM; and HP Thunderbolt™ Cards for fast connectivity. For some HP Z840 Workstations, Brain Farm chose 1 TB SATA SSD internal storage; on others it chose a 512GB HP Z Turbo Drive or a dual 512GB PCIe SSD configuration striped together.

“It’s the first time I have seen 4K play in real time in our studio.”

— Danny Holland, post-production supervisor, Brain Farm

“The HP Z Turbo Drive is basically an SSD that’s PCI based, so it goes in one of your slots, for us in a Z820 or a Z840,” Holland says. “When I first plugged in two Z Turbo Drives, striped them together and ran a speed test, I was amazed. We get phenomenal performance with read/write speeds. We get upwards of 900 Mbit/s with a single drive and upwards of 1,800 Mbit/s with paired drives. We’re reaching that point where we can start doing 5K and 6K playback, full resolution DPX files playing back in real time.” Obtaining comparable performance from traditional disk drives, he adds, would require 12 or 16 paired drives costing perhaps tens of thousands of dollars. “You’re saving a ton of money.”

## HP recommends Windows.



### Streamlining high-resolution workflows



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“Making a digital film is a three-phase process,” Holland explains. Filmmakers capture raw footage in the field using high-resolution cameras—4k, 5k, even 6K. These master files are so large they must be converted—transcoded—to codec format for editing—cutting and moving clips, and rendering. Finally, the film is connected back to high-resolution media to create the 4K final product, color graded and finished to ensure every pixel is perfect.

“The HP Workstation with HP Z Turbo Drive opens doors in rendering, color-correction, and output. It saves us time and money, and allows us to better serve our customers.”

—Chad Jackson, head of production, Brain Farm

“Transcoding, editorial, grading and finishing are the three main ways we’ll use the HP Z Workstations,” Holland says. “The HP Z Turbo Drive helped cut the time it takes to transcode to codec format in half,” he adds. A film editor using Adobe® Premiere Pro is

working with HP Z Turbo Drives as cache locations for blazing-fast rendering.

“It keeps an editor in the flow if you’re not having to wait as long for renders,” Holland says, adding that, “cutting a five-minute render down to one minute adds up to significant time and cost savings over the months. At the final grading-and-finishing phase, the speed and power of the HP Z Turbo Drive will allow Brain Farm to avoid the expense and travel time of using an outside post facility in Los Angeles or New York City.”

“The HP Z Turbo Drive opens a lot of doors for us. We are capable now of taking a project from start to finish without having to go out-of-house,” Holland says. “That increases our margins and our capabilities when we’re bidding on projects—and definitely plays into the business case.”

### HP ZBook Workstations support workflow

Brain Farm’s end-to-end processes leverage the broad portfolio of HP solutions. In the field, filmmakers use the HP ZBook 15 and ZBook 17 Mobile Workstations, with Thunderbolt connectivity for fast backup, editing, and file sharing. “They’re again really powerful machines for any kind of transcode needs that we might have, or on-the-fly editing,” Holland says.

## Customer at a glance

### Application

Commercial Digital production and post-production

### Hardware

- HP Z820 Workstation
- HP Z840 Workstation
- HP Z Turbo Drive featuring Samsung M.2 PCIe SSD technology
- HP ZBook 15 Mobile Workstation
- HP ZBook 17 Mobile Workstation
- HP DreamColor Z27x Professional Display
- HP StoreEver MSL 6480 Tape Library

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At the studio, Brain Farm uses 12 HP DreamColor Z27x Professional Displays, which handle 4K content with 10-bit color. “You get a ton of real estate with the 27-inch diagonal model, and it’s got amazing color accuracy. We have them in all of our edit bays, and that helps us know from one edit bay to the next that everything looks exactly as it should,” Holland says. The HP StoreEver MSL 6480 StoreEver Tape Library has been pivotal in automating long term archiving and storage of hundreds of terabytes of uncompressed material.

In addition to breakthrough technology, one of the main advantages Brain Farm gains from working with HP is ongoing commitment, Holland says. “We’ve developed a close relationship in communicating our needs and learning about the HP product roadmap for meeting the types of challenges we face. It’s a very two-way street, and that’s a pleasure as well as a significant business advantage.”

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