



## NVIDIA MAXIMUS PROPELS BANDITO BROTHERS' FILM POST-PRODUCTION INTO REAL TIME

BANDITO BROTHERS  
CASE STUDY

With its action-packed, gritty, and cutting-edge approach to media production, Bandito Brothers is at the forefront of a new generation of filmmakers redefining the audio-visual studio of the future. This full-service media company creates, produces, manages, and distributes films, advertisements, musicals, and branded entertainment that all share a common style: authenticity.

The trademark Bandito Brothers style shines through in its recent film "Act of Valor" – with its breakthrough concept of featuring active-duty Navy SEALs in a major motion picture – as well as Hot Wheels commercials that make viewers believe they are watching full-size racing cars instead of small toys.

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To create its stunning action sequences and you-are-there realism, Bandito Brothers uses a number of different formats and camera types. Blending these formats into a seamless and believable whole means that Bandito Brothers is always pushing the envelope of the latest visual and 3D technologies. In particular, Bandito Brothers relies on Black Magic DaVinci Resolve color correction software and Cinnafilm's Dark Energy (Tachyon and Texture Manager modules) to add film grain to digital video images. With the Bandito Brothers' recent addition of the NVIDIA® Maximus™ platform to its workflow, the studio is now able to get the full value from its crucial and compute-intensive software applications as well as work faster and more cost-effectively than ever before.



"We are an action adventure house focused on telling incredible stories with a heart," said Jacob Rosenberg, Chief Technology Officer (CTO), head of post-production, and a partner at Bandito Brothers. "The Maximus technology lets us work with and view our post-production processes in real time at full resolution, which was not possible previously. As a result, we can make changes on the fly, finish in minutes what used to take hours, and boost the quality of our final output. In just the short time we've been using it, the Maximus platform is already improving the productivity of our staff as well as our bottom line."



### Challenge

Bandito Brothers has long been convinced of the benefit of using high-end workstations that have both powerful CPUs as well as NVIDIA Quadro® GPUs. Even so, they faced both performance and price/performance challenges.

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In all its projects, Bandito Brothers’ colorists use DaVinci Resolve to get the most from original raw footage, working their magic to make the final color beautiful and to make the on-screen scenes really pop. Other post-production artists in the studio use Dark Energy to retexture the noise imprint of digital video files, giving a film-grain look to video footage. These massively compute-intensive processes, so crucial for Bandito Brothers’ new-generation films, required an equally new-generation approach to the underlying technology driving audio-visual post-production.

“Before we had the Maximus platform, we had to transfer Resolve files to a dedicated workstation to do color correction,” said Lance Holte, Bandito Brothers’ Senior Director of Post-Production. “Even with the dedicated system, once a colorist added seven or eight effects, the system could not play back corrections in real time. It meant adding an effect or two, waiting for the system to render the effects, checking the results, and continuing like this until the colorist was satisfied – and then repeating it all, over and over again, for additional effects and for each new shot.”

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In its old workflow, strict color deadlines often forced Bandito Brothers colorists to color shots at lower resolutions, because there wasn’t enough time to color at full resolution. Speed was an even greater issue with the Dark Energy software, with playback as slow as 3 to 7 fps (frames per second) for “de-noising” video files to add a film-grain effect. At that rate, it took the Bandito Brothers artists an hour and a half to properly texture and render one minute of video footage.

“Our goal is always to play back in full resolution whenever possible, but our previous set-up allowed us playback at only half or quarter resolution, at best,” said Holte. The inability to do full-resolution real-time playback for color correction and digital video texturing was adding time, frustration, and costs to Bandito Brothers’ operations. It also caused some painful quality issues, when something missed in low resolution became all too obvious when viewed later at full resolution.

### Solution

Recently, Bandito Brothers added the NVIDIA Maximus into its workflow. The Maximus technology combines the industry-leading, professional 3D graphics capability of NVIDIA Quadro GPUs with the parallel-computing power of the NVIDIA Tesla™ C2075 companion processor.





The Maximus platform, enabling a truly revolutionary level of compute-intensive multitasking within a single desktop system, is ideal for new-generation studios like Bandito Brothers. Its parallel-computing power lets the filmmakers work in real time on both compute- and visual-intensive processes on a single workstation. And combining the Tesla and Quadro cards means that the Maximus platform can deliver the performance the studio needs, incredibly cost-effectively.

Bandito Brothers began with three Maximus configurations; the one used most often for Resolve and Dark Energy is an HP Z800 workstation with one Quadro 2000 card and two Tesla C2075 cards.

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Since implementing the NVIDIA Maximus platform, Bandito Brothers can now achieve real-time, full-resolution playback cost-effectively with both its Resolve and Dark Energy applications. The Maximus platform – specifically an HP Z800 workstation with a Quadro 2000 and a Tesla C2075 card – also enables real-time playback speeds for Adobe Premiere Pro video editing software, even at high resolutions when working with raw RED footage and with mixtures of RED, Canon, and Arri Alexa files.

“We never thought we could achieve real-time playback so affordably,” said Rosenberg. “The ROI of the Maximus system was clear to us the first time we put it through its paces.”

The real-time playback does not carry any performance penalties, either. “With the Maximus system, no matter how many colors or modes or effects our colorists throw at a scene, they still get real-time playback,” said Holte. “One of our colorists tried really pushing the system – adding twice as many effects as we’d ever need to use at one time – and the system performed great. In fact, the colorists are so happy with the new Maximus systems that they fight over who gets to use them next.”

“With real-time playback, we can look at the color correction or noise texturing of a scene at full resolution, decide if we like it, and either change it or move on to the next scene immediately,” said Rosenberg. “This means we can work much faster than before, completing tasks in minutes that used to take us hours.”

The studio employs some high-end colorists and digital artists. Now that colorists can work with raw video files directly off the studio’s main server, their preparation time is slashed. Added to the 10% to 50% faster render time in Resolve, colorists can work faster and generate more projects in the same amount of time, which contributes to increased revenues and profits for Bandito Brothers. Their bottom line is also improved because the studio has time to take on more contract work for customers

The Maximus platform also is responsible for enhancing the creativity of the Bandito Brothers’ artistic staff. “Everything we do, we can see the results without waiting and without the complicated tools we used to need,” said Rosenberg. “As a result, it’s easier to creatively develop shots and creatively develop the look we’re going after.”

That look – the authentic, high-impact, often adrenaline-soaked visual style that characterizes Bandito Brothers projects – will continue through upcoming projects such as a documentary film on daredevil skateboarder Danny Way,



directed by Rosenberg, as well as movies directed by Bandito Brothers partners and "Act of Valor" directors and producers Scott Waugh and Mike "Mouse" McCoy.

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"NVIDIA is one of a handful of technology companies that we've aligned with strategically, which has been awesome for us as a company," said Rosenberg. "They really listen to us, and they do things that make a real difference for us and how we're able to work. The Maximus platform is a perfect example. Allowing us to see the films we're working on in real time, and at full resolution, increases the quality of our end deliverables, boosts our throughput so we can take on more projects, keeps our staff productive, and helps us make more money through our higher quality and faster turnaround."



#### **NVIDIA® MAXIMUS™ TECHNOLOGY**

For the fastest media workflow, Maximus technology combines NVIDIA® Quadro® and Tesla® GPUs to deliver both high-performance graphics and parallel processing. This is a truly unique technology that helps transform video editing, effects, animation, rendering, and media-creation workflows by allowing multi-GPU processing in a single workstation on one or more applications.

To learn more about NVIDIA Maximus, go to [www.nvidia.com/maximus](http://www.nvidia.com/maximus)

