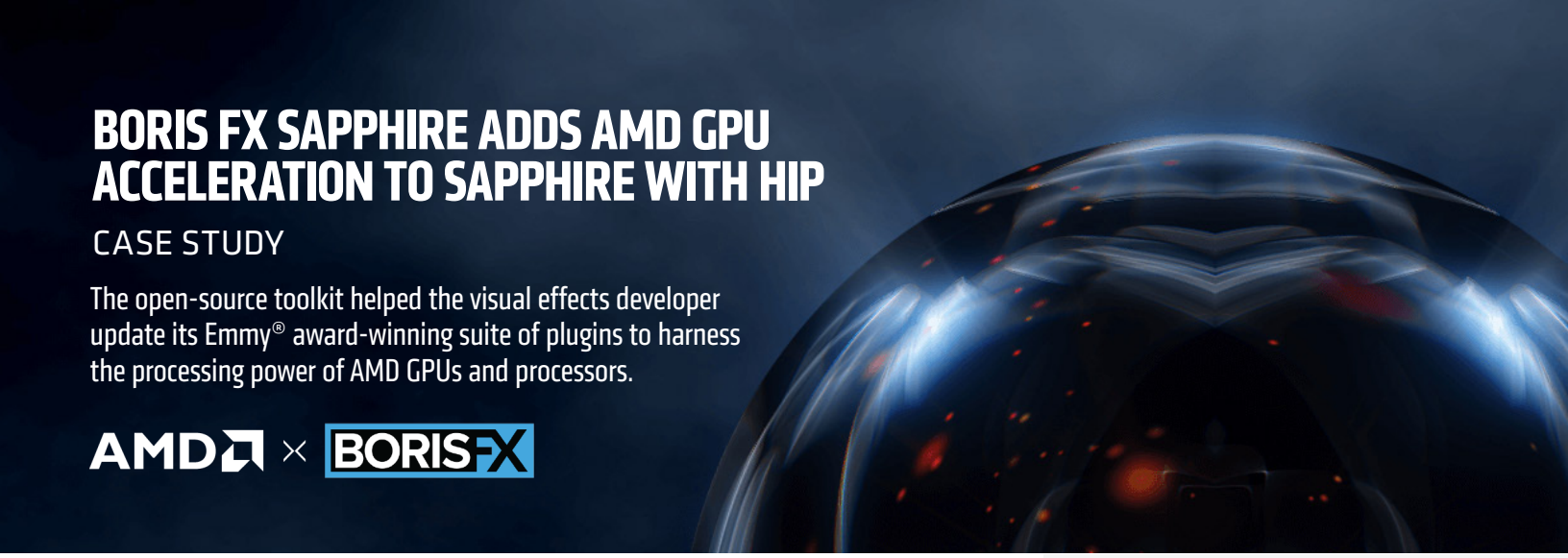
BORIS FX SAPPHIRE ADDS AMD GPU ACCELERATION TO SAPPHIRE WITH HIP

CASE STUDY

The open-source toolkit helped the visual effects developer update its Emmy® award-winning suite of plugins to harness the processing power of AMD GPUs and processors.



Boris FX is one of the leading developers of plugins for post-production professionals, known worldwide for flagship products like Sapphire, its Emmy® Award-winning suite of plugins for compositing and video editing software. For over two decades, Sapphire has been used to create visual effects for film, broadcast and music videos, from the Lord of the Rings movies of the early 2000s to many of today's most popular Netflix shows.

But Sapphire presented Boris FX with a technical challenge. The GPU code used to accelerate over 80% of Sapphire's effects was originally written using the proprietary CUDA® API, only supported on NVIDIA processors. Boris FX wanted to give users the freedom to choose a wider range of hardware, such as powerful, affordable AMD Radeon™ PRO GPUs and AMD Ryzen™ AI Max PRO processors but, as a small team, could not afford to create and maintain a separate code base in order to do so.

HIP LETS DEVELOPERS SUPPORT AMD GPUS WITHOUT WRITING CODE TWICE

The solution was HIP: the Heterogeneous-Compute Interface for Portability. Unlike previous workflows, like using the OpenCL™ API to support GPU computing on non-NVIDIA hardware, the HIP open-source toolkit enables developers to port existing CUDA applications to run on AMD processors without the need to create a second code base.

Once an AMD engineer had used HIP to create a prototype of the Sapphire code that ran on both NVIDIA and AMD hardware, Boris FX was able to develop a final version using the AMD branch as a reference, with AMD providing technical advice when requested.

> **"HIP is a good tool to have in your toolbox. Converting the Sapphire code base to run on AMD GPUs was easier than the initial CUDA conversion."**
> Larrisa Supnik, Lead Software Engineer, Boris FX

Although Sapphire contains over 200 separate plugins – and even entire applications like its lens flare designer and effects and transition builders – a single team member was able to complete the work in under 24 months. AMD GPU acceleration becoming available to the public in May 2025, with the release of Sapphire 2025.5.

On Windows, Sapphire now supports both professional workstation GPUs from the AMD Radeon™ PRO W7000 Series and Radeon™ PRO W6000 Series, and the integrated graphics in the new AMD Ryzen™ AI Max PRO processors.

CUSTOMER
Boris FX

INDUSTRY
Media & Entertainment

CHALLENGES
Increase customer choice by updating the popular Sapphire visual effects plugins to support AMD hardware

SOLUTION
Use AMD's Heterogenous-Compute Interface for portability (HIP) to update the existing CUDA code base to support GPU acceleration on AMD GPUs and processors

RESULTS
Boris FX completed the work in under 24 months, with a single developer working part-time on the project. On average, Sapphire runs 30% faster on AMD GPUs than on the CPU alone, and some effects are up to 400% faster

AMD TECHNOLOGY AT A GLANCE
HIP API and kernel language

AMD Radeon™ PRO W7000 and W6000 Series GPUs

AMD Ryzen™ AI Max PRO Series processors

HIP LETS SOFTWARE USERS HARNESS THE POWER OF AMD PROCESSORS

The work enables Sapphire users to take advantage of the raw compute power of AMD processors to speed up day-to-day workflows.

"In our tests, on average, Sapphire effects run around 30% faster on the GPU than the CPU, but some effects are up to 400% faster," says Boris FX Lead Software Engineer Larissa Supnik. "Effects like RackDefocus that involve heavy math operations really benefit from a powerful GPU, but even staple effects like blur and glow, which are already fast on the CPU, are even faster on the GPU."

Sapphire users also benefit from the high memory capacity of high-end workstation GPUs like the AMD Radeon™ PRO W7900. Its 48GB of RAM makes it possible to fit much larger projects into graphics memory for processing: essential for artists working with high-resolution footage.

"For HD work, the CPU is blazing fast, but when you get to 4K images and beyond you need a powerful GPU," says Brian Fox, Boris FX's Chief Marketing Officer and Product Manager for Sapphire. "We have customers who are mastering projects in 8K and experimenting with 12K."

HIP LETS STUDIOS TO CHOOSE THE PIPELINES THAT WORK FOR THEM

Boris FX has a philosophy of promoting customer choice. They have enabled customer choice by using HIP to enable Sapphire to support a wider range of processors for GPU acceleration.

"The projects our users work on run the gamut from feature films and reality shows to social media projects," says Fox. "We want to let them decide what's right for their individual pipelines. We don't want to tell them that they have to use a specific graphics card."

Fox summarizes the appeal of AMD processors to Sapphire users as performance, price, and flexibility. "No one wants to be locked into a specific solution, and performance on AMD professional GPUs is always attractive, as is the cost".

"Customers tell us they want more choices when they're figuring out their budgets," agrees Supnik. "They want to be able to look at all of the options and decide which one's best for them."

AMD AND HIP: A WINNING CHOICE FOR SOFTWARE DEVELOPERS

Thanks to HIP, Boris FX was able to convert Sapphire to run on AMD hardware in less than two years, despite its small development team, the demanding nature of the VFX projects on which the software is used, and the complexity of the Boris FX GPU code base.

This work enables Sapphire users working on broadcast and movie projects the freedom to choose from a much wider range of production hardware, including both desktop systems with powerful AMD Radeon™ PRO workstation GPUs, and laptops with cutting-edge AMD Ryzen™ AI Max PRO processors.

> **"We want to let our users decide what's right for their individual pipelines. We don't want to tell them that they have to use a specific graphics card."**
> Brian Fox, Sapphire Product Manager and CMO, Boris FX

"Different users have vastly different needs, so we've always wanted to give them all of the options," says Fox. "In today's post-production world, you want to be on the side of the customer, and on the side of choice."

As well as HIP itself, and the affordable power of AMD hardware, Boris FX praises the support that it received from AMD during the conversion process, with an AMD engineer on hand to answer technical queries.

"AMD was an amazing partner for us," says Fox. "They fit into our world really nicely, and I think that's one of the main reasons the project was successful."

ABOUT BORIS FX

Boris FX creates award-winning video editing, visual effects, motion graphics, and photography plugins used by over one million broadcast, streaming, and feature film professionals worldwide. Integrating tightly with video software from Adobe, Apple, Avid, Autodesk, Blackmagic Design, Foundry, and other leading developers, its products have been used on the most celebrated films and shows of our time, including Star Wars, Avatar, Black Panther, the Harry Potter series, Game of Thrones, Stranger Things, and The Mandalorian. For more information, visit the Boris FX website.

ABOUT AMD

For more than 50 years AMD has driven innovation in high-performance computing, graphics, and visualization technologies. Billions of people, leading Fortune 500 businesses, and cutting-edge scientific research institutions around the world rely on AMD technology daily to improve how they live, work and play. AMD employees are focused on building leadership high-performance and adaptive products that push the boundaries of what is possible. For more information about how AMD is enabling today and inspiring tomorrow, visit the AMD (NASDAQ: AMD) website, blog, LinkedIn, and X pages.

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