Intentional Future-Making at ATEC Designs New Media Experiences That Shape the Way We Live, Work, and Play

Supported by Panasas High-Performance Storage, ATEC at the University of Texas at Dallas Develops the Next Generation of Media and Entertainment Professionals

SUMMARY

CUSTOMER
School of Arts, Technology, and Emerging Communications (ATEC) at the University of Texas at Dallas

SIZE
1,800 students at the Bachelor's, Master's, and doctoral levels

LOCATION
Dallas, Texas

INDUSTRY
Higher Education

CHALLENGE
- Teach students to bring together arts and sciences to shape technologies for the future
- Process and render huge volumes of data needed for computer animation
- Prepare students for professional careers in media and entertainment by training them to use professional tools

SOLUTION
- High-performance computing technology that supports data-intensive rendering projects
- Group and individual read/write access for students and instructors
- Rapid rendering enabled by distributed workloads and efficient processing of huge data volumes

RESULTS
- 30% increase in student productivity by using HPC storage
- Increased administration efficiency through intuitive user interface
- Enhanced student creativity by simplifying HPC storage
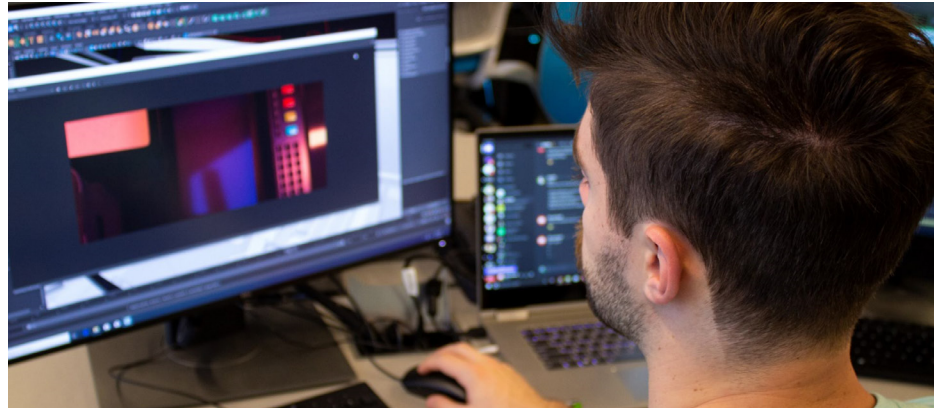
"Every six to 12 months, it seems that render practices and technologies change, increasing our file sizes. Panasas storage provides the scalability and high-speed processing necessary to finish even the most complex projects in a timely way"

Todd Fechter
Professor
School of Arts, Technology, and Emerging Communications (ATEC) at the University of Texas at Dallas

Emerging technologies are changing the way we live, work, communicate, and play. To make meaningful contributions to this new world, students need training to imagine, predict, and create innovations that address challenges that create a better future. A future that we all want to live in. That's where the School of Arts, Technology, and Emerging Communications (ATEC) at the University of Texas at Dallas excels.

Founded in 2015, ATEC helps students become Intentional Future-Makers – people who bring different skills together to thoughtfully and responsibly create technology for the world of tomorrow. One of the first universities to merge computer science and engineering with creative arts and humanities, ATEC encourages a "maker culture" to learn by doing. A popular program within the School, animation and games brings together students from different degree paths to tell engaging, innovative stories in beautifully rendered digital images.

This media requires powerful computer technology to handle data-intensive processes such as rendering graphics with finely detailed geometry, texture, lighting, and shading. For example, a two-minute short film can require the processing of terabytes of data. In the program's early days, ATEC students would render one frame at a time on numerous computers in the animation lab, often overnight. As the technology's complexity grew, the time-consuming process began to interfere with courses and prevent students from finishing their films before the end of each semester.

To increase compute performance and allow students to work more productively and creatively, ATEC decided to deploy a dedicated render farm. At the university level render farms are uncommon, but school executives felt it would best prepare students for professional careers. "I talked to many different production studios, and they were all using high-performance computing (HPC) storage solutions that provide exceedingly fast render speeds," says Sandy Farrar, Associate Dean of Operations.

The Power to Render New Innovation

While evaluating potential storage solutions, Farrar consulted with the head of one local production studio who recommended Panasas for its performance, cost, and manageability. She spoke with another large university and was impressed by their experience using Panasas to process petabytes of data – with only a part-time system administrator, at an affordable cost.

ATEC deployed a 250-terabyte Panasas ActiveStor® data storage system to support their render farm for the program. ActiveStor utilizes the Panasas PanFS® parallel file system to support direct and parallel data flow to the render farm's 24 Red Hat Enterprise Linux blades. If the render farm is at 100 percent capacity, the render wrangling software also can send renders for processing to Windows machines in ATEC classrooms.

"Having the render farm supported by high performance storage allows students the freedom to do what they want with lighting and compositing software," explains Peter McCord, Assistant Professor of Instruction. "If we didn't have the render farm, we couldn't execute all of our current projects. Panasas ActiveStor high-performance technology helps ATEC students create amazing things."

High Performance for Greater Productivity

The unparalleled speed and reliability of the Panasas solution helps ATEC students work more productively. "Every six to 12 months, it seems that render practices and technologies change, increasing our file sizes," says Professor Todd Fechter, area head for the animation and games program at ATEC. "Way back when, if you rendered an image, it was just the image. Now we render each image as about 100 layers of information, and each layer is adjustable in a composite. That demands more resources to facilitate the sheer size of these files."

HPC storage from Panasas offers high-speed processing that supports data-intensive projects. Fechter estimates that students now have one-third more time to work on their projects, because they no longer have to wrangle each image computer by computer. More efficient project rendering allows students to finish even the most complex projects in a timely way.

Streamlined Administration and Maintenance

ActiveStor data storage is easy to manage and administer. Professors share class lists with the systems administrator and architect Jeff Smith, who assigns read/write access to each student. In classes where students work on projects together, they and their instructors can jointly access storage assigned to them. Advanced students working on their own are assigned storage only they can access.

Smith applied soft and hard quotas to the raw storage in ActiveStor. "When a soft quota is reached, Panasas sends me an email," he says. "If the system reached a hard quota, which has never happened, it would stop writing to that volume. In the five years we've used this system, individual file sizes have grown significantly. Having the storage space to accommodate that growth helps us to handle more complex workloads and larger files."

Previously part of university IT, Smith was familiar with EMC Isilon and Dell Compellent storage tools. "The Panasas user interface and intuitiveness exceeds those products," he says. "Once I assign the students to their storage resources, ActiveStor is pretty much hands off for me for the rest of the semester."

Increased Storage Flexibility

The flexibility of ActiveStor frees ATEC from the restrictive conditions of most HPC storage solutions, enhancing student creativity in a professional working environment that prepares them for their future.

Because the solution distributes workloads, students can use the render farm for both classwork and individual projects without worrying about running out of storage. "Instead of just creating static images, students can quickly create full 360-degree turntables or short films," says McCord. "In the past, that would have been impossible because we would have run out of computer resources. Now I can give my classes more creative assignments because I know they have the disk space to do the rendering."

ATEC's ability to offer a professional render farm makes it a favorite of students and faculty. When recruiters from companies like Pixar, DreamWorks, and Disney come to campus, they're impressed with what students have created. "The bar to get into this industry is high," says Fechter. "The use of Panasas storage technology helps students create images that demonstrate the quality of our program to prospective employers."

The render farm is also a great recruiting tool for new faculty members. "It's easy to show people that we have the caliber of tools they need to produce their own work," he adds. "There's no doubt that's helped us land a couple of new faculty members."

Technology for New Horizons

To meet growing demand, ATEC is planning to deploy a new Panasas solution with 490 TB of data. By doubling its storage, the school will be able to explore new uses for the system, such as advanced applications including data visualization or design.

Most importantly, ActiveStor will help ATEC address growing data needs – whether introduced by new technology applications or the needs of students, faculty, and staff members. Creating the future through imagination, research, and creative practice is a challenge. With Panasas, ATEC will have the HPC storage it needs to support its community's most inspiring big ideas.