CASE STUDY: SUB-SEVEN

MEDIA AND TELEVISION PRODUCTION HOUSE

"Our main problem was finding old footage. You'd often look at editor's desks and there would be stacks of drives piled up everywhere. If we didn't put a label on the hard drive, or if for some reason it was mislabeled, then we would have to go through at least 30 hard drives to find the footage."

- Chance Chancellor,
Production Manager at Sub7

THE STORAGE CHALLENGES

As a full service media and production company, Sub7 was steadily racking up an incredible amount of media that needed to be produced, stored, and easily managed. Since its inception in 2011, Sub7 continued to grow in the media industry and so did its digital video footage - a little more than half a petabyte. They had growing pains keeping up with all this media; their current solution was unwieldy and used removable direct access storage (DAS).

CHALLENGE: LACK OF ORGANIZATION

Without a centralized storage solution, Sub7 found that finding footage quickly became a challenging and daunting task. Many hours were wasted hunting down media files that were scattered across hundreds of external hard drives. The company estimates it spent roughly 10 work days per year searching for old footage, which is time that could have been spent filming and editing.

"Sometimes we would run into a situation where one of the drives was mislabeled, and then we would have to go through about 100 hard drives to find it. That's a lot of wasted time for our editors."

- Chance Chancellor,
Production Manager at Sub7

This meant that Sub7 wasted almost 5% each year looking for footage. While they never lost any footage, they estimate that losing footage could have cost them more than $50,000 to replace.

CHALLENGE: LACK OF DATA CAPACITY AND PERFORMANCE

As video resolution standards continue to climb from 1080p to 4K and above, greater storage capacity and faster data transfer speeds become essential in order to edit or stream these large audio and video files. To keep up with ballooning media files, Sub7 invested in excess storage capacity. The result was many half-utilized external hard drives, which was not a cost-effective solution.

"You can never actually reshoot all of our stuff because sometimes the footage we need only happens certain times of the year. Some of our footage would be impossible to replace if we were to lose it."

- Chance Chancellor,
Production Manager at Sub7

The company initially invested roughly $80,000 on hundreds of hard drives. Each hard drive had 2 to 4 terabytes of storage capacity and was set up in a RAID1 configuration. Soon the company was investing in new hard drives every few months, but the drives could not keep up with the ever evolving video and audio technologies on the market. According to Sub7, the drives became obsolete after only a couple years, and could no longer keep up with their throughput demands.

Another issue the company faced was wasted time due to the slow read and write speeds of the drives. According to Sub7, they were bottlenecked by slow external hard drives, which had average read and write speeds of 100MB/s and 190MB/s. It was the lack of organization, poor drive performance, and many other data management issues that prompted Sub7 to search for a more sustainable storage solution.

"Our shows started to require more storage capacity, and soon we could no longer store an entire 22 minute episode on one 2 TB hard drive."

- Chance Chancellor,
Production Manager at Sub7

WHY SUB7 CHOSE THE TRUENAS® Z30

Sub7 knew they needed a better storage solution and began researching the various types of enterprise storage that were available. The project lead at Sub7 remembered using FreeNAS® in college and was happy with its flexibility and stability. Sub7 began browsing for more information on FreeNAS and came across iXsystems on social media.

The company continued to research and compare other storage solutions against the TrueNAS Z30 storage array from iXsystems. They concluded that the enhanced performance and scalability of the TrueNAS Z30 met all of their storage at a competitive price that fit their budget.

"We knew the data requirements would continue to increase, so that's when we decided we had to incorporate a permanent solution."

- Chance Chancellor,
Production Manager at Sub7

Working with sales engineers who were knowledgeable about the ZFS file system also played a major role in the company's purchase. The sales team worked with Sub7 to create a top quality system that was customized to meet all of their storage needs and budget requirements.

The volume configuration they chose for their system was a RAIDZ2 of 7-disk vdevs, which is not the fastest set up, but speed was less important to the media house as they were not running databases or VMs. Their priorities were to maximize storage capacity and redundancy.

"iXsystems is very responsive and accommodating of our needs, even when our needs shift or are atypical. Other vendors' prices were 5-10% higher, while providing less hardware and the possibility of increased licensing costs as we added storage or users."

- Chance Chancellor,
Production Manager at Sub7

TRUENAS PROVIDES THE REQUIRED DATA CAPACITY, PERFORMANCE, AND INTEGRITY

Capacity

Aside from offering the lowest cost per TB, the increased capacity, performance, and advanced ZFS features included with the TrueNAS Z30 also contributed to the company's investment. The TrueNAS Z30 provides Sub7 with hundreds of terabytes of Tier I file storage for their Media and Entertainment video projects. This allows the company to expand their storage capacity as they grow.

Snapshotting and replication were two major ZFS features that attracted Sub7 to the TrueNAS Z30. Before investing in an enterprise storage solution, Sub7 used more of a traditional backup method where they manually duplicated the data, which was expensive and inconvenient.

Sub7 now backs up daily using a combination of instant point-in-time snapshots on TrueNAS and archiving to two LTO-6 tape drives using BRU Producer's Edition software for macOS. Currently, if the team were to lose any files or data, they would be able to rollback to a previous snapshot, and only lose a day's worth of work versus losing everything.

"When we bought the TrueNAS, we knew we'd get our money back in two and a half years, which is a very good return on investment."

- Chance Chancellor,
Production Manager at Sub7

Performance

Since implementing the TrueNAS Z30 system, keeping up with their production demands is no longer an issue for the broadcast company. Multiple editors access the TrueNAS Z30 system at any given time, and no performance issues have been reported.

In the past, if more than one editor wanted to work on the same footage they would have to wait four hours for 2 TB of data to transfer. Now multiple editors can access the footage in minutes, as they only need to duplicate the 20MB project file.

Compared to the external hard drives the company was previously using, the high performance cache devices provide 120% faster write speeds and 300% faster read speeds. The TrueNAS Z30 dual-port 10 GbE network cards provide 20 Gbps throughput, further contributing to exceptional data transfer speeds and bandwidth.

"For backups we'd keep one hard drive at the office, and copy the information onto another hard drive that would be at an offsite location. So every hard drive we used for footage, we doubled up on, which drove up costs substantially."

- Chance Chancellor,
Production Manager at Sub7

Integrity

Before moving to TrueNAS Z30, Sub7's file storage method did not ensure file integrity. Having hundreds of unorganized drives meant that many of the older drives sat on shelves for years. Since these drives were not maintained or backed up on a regular basis, editors found that when they did try to access their data, the files were often corrupted.

The TrueNAS Z30 detects file corruption using checksums and the self-healing ZFS file system automatically repairs file errors. This ensures data integrity and avoids file corruption issues.

CONCLUSION

Since integrating the TrueNAS Z30 as their centralized storage solution, Sub7 has eliminated hours spent looking for lost footage. They have also shaved off time that used to be spent waiting for files to transfer. Before, if more than one editor wanted to work on the same project, they would have to wait several hours for the footage to duplicate from one hard drive to another.

"We are seeing at least a 100% decrease in time needed to manage media and consolidate shows. Now we have more time to devote to editing instead of watching progress bars go by."

- Chance Chancellor,
Production Manager at Sub7

With the TrueNAS Z30, multiple editors can work on the same footage simultaneously. The performance of the TrueNAS Z30 is significantly faster; it only takes 2 hours to transfer 3 TB of footage from an external hard drive to the TrueNAS Z30. Before, the editorial team would have to wait 8 hours to transfer the same amount of data. This means that they can produce videos quicker and at a lower cost.

The company also reduced their storage TCO by no longer having to acquire external hard drives. Sub7 spent $80,000 on external hard drives, but they kept losing money as the drives became obsolete after only 3 years. Now they are using TrueNAS, a hybrid storage array that has a much longer life expectancy, and they are making a return on their investment.

The TrueNAS Z30 offers Sub7 a cost-effective, reliable, and manageable storage solution that requires minimal overhead. Now Sub7 has more free time to do what they do best -- capturing and sharing rare and exotic footage from some of the remote locations on the planet.

"Having high performance SSD cache devices has really sped things up. We've never hit a bottleneck. We are now getting sustained writes of 220MB/s and reads of 575MB/s. We can now ingest media and transfer to the server at significantly faster rates."

- Chance Chancellor,
Production Manager at Sub7

"Knowing that we could keep the footage checksummed from the moment it left the camera to the point it reached the TrueNAS Z30 was a big relief. It is comforting to know that we can leave our data on our TrueNAS for long periods of time and it won't be corrupted when we try to access it again."

- Chance Chancellor,
Production Manager at Sub7

ABOUT SUB7

Sub7 is a full service media production and branding company that specializes in documentary television series and brand-building national commercials.

Sub7 was created to bring the very best of outdoor television out of the wilderness and into the living room. However, from the beginning we realized that a successful production does not start with cameras and end with the final cut. Our clients expect more. Whether your product is on a store shelf or your brand is shown in a weekly timeslot, Sub7 has the resources and experience to create and manage your entire brand through television, print, and web.

Sub7 believes no project or location is impossible: New territory is meant to be explored. Argentina, Kenya, Tunisia, Azerbaijan, rugged Alaska, and the warzones of Iraq and Afghanistan all have their stories. We would welcome the opportunity to develop your next TV series, commercial, or brand. We do not shy from the demands of the chase to the top. We are accustomed to it. The chase is what leads us to take the best equipment to the most remote locations on the planet. Whether your production puts you in the Arctic tundra of Sweden, the deserts of Mexico, or at home in a studio in the States, we hope you will consider Sub7.

ABOUT IXSYSTEMS

iXsystems is a pioneer in building innovative storage solutions and enterprise servers for a global marketplace based on open technology. With decades of expertise, many contributions to Open Source communities, and stewardship of leading Open Source projects, iXsystems has become the leader of innovative storage and server solutions for the global open technology market.

Thousands have come to rely on the iXsystems approach to doing business. Headquartered in Silicon Valley since its founding in 1996, its consultative approach and dedication to customer service, support, and technological contributions never wavers and builds the foundation for a new era powered by open technology.