

The Great Healthcare File Migration

ARA Migrates Radiological Images to the Cloud



Two powerful trends are conspiring to force files out of the data center. Relentless data growth combined with the desire for high performance flash arrays is making IT organizations rethink their file storage strategy. Files are being driven out of the data center and they are heading to the cloud. The data center of today is faster, more efficient and, as a result, thinner than ever.

Flash storage arrays provide an ideal foundation for the IO-hungry workloads of hypervisors but the problem with files is one of scale and cost. A typical organization experiences 30% or more year-over-year compound growth in their file data. The problem is particularly acute in file heavy industries such as design, engineering, media and medical.

Todd Thomas, CIO at the Austin Radiological Association (ARA), illustrates this point when he shows their projected file growth. ARA is one of the largest medical imaging centers in the country. They perform over a million exams annually. The chart below shows the file footprint for

just mammography. Today mammograms take about 7 terabytes of storage but that footprint is expected to double by the end of the year. Not only are there more files but the files are getting much larger as imaging moves from 2D to 3D.

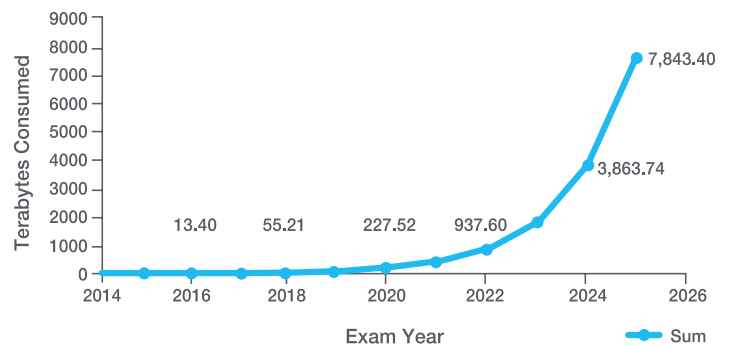


Figure 1: Projected storage consumption of digital mammography: 2D, 3D

Although flash is becoming more affordable every year, it is no match for the rapid expansion in the file footprint. The widespread adoption of server virtualization drove the proliferation of SAN. This has been quickly followed by a demand for higher and higher performance from SAN. The data center wants to be all virtual. Virtualization improves the efficiency in the data center by making workloads more fluid. Power can be dialed directly into where it is needed rather than having to over spec hardware only to find out later we needed bigger hardware. As more server-class workloads break away from the underlying hardware, disk-I/O becomes the bottleneck for hypervisors to be able to handle heavier workloads. Pain in the IO path has caused a slew of flash vendors to appear out of nowhere and in a few years conquered the once unassailable mission critical application workloads belonging to the Goliaths of the storage industry. Vendors like Pure Storage, SolidFire, Tegile and Nimble Storage have pioneered the use of data de-duplication in flash in order to make the technology more affordable. At last the all-virtual data center seems within reach. The last obstacle is files.

A successful transition to an all-virtual data center is predicated on being able to afford the premium that flash storage commands. Enlightened IT organizations are taking a two-prong approach that consists of moving all of their server workloads to flash while pushing files to cloud-based NAS. The cloud makes NAS bottom-less, backup-less and much more affordable than anything built to run exclusively inside the data center. The cloud is a giant data replication machine operated at a global scale by the likes of Amazon, Apple, Google and Microsoft. The new way to store files uses synchronization to periodically update a master copy of every file and file version in these massive stable backends. Nasuni packages the stability and scale of the cloud into appliances that fit neatly into the expectations for performance that exist in the modern data center.

This two-prong approach to storage is no different than what has been happening to consumer laptops. Almost every new laptop worth having today ships with flash storage. Flash is faster, more reliable and less power hungry than a spinning hard drive but it is also smaller and more expensive. As a result there are fewer files in a laptop. Think of all that music being streamed instead held hostage inside your laptop. Apple recently introduced Photos, a whole new application for storing pictures. The exciting new feature: your pictures are actually stored in the Apple cloud, not your laptop. By removing photos from laptops, Apple hopes to sell faster, thinner and more affordable laptops. Apple will also be making it easier and less risky for anyone to dump that old laptop because there is no real data in it. The master photo library stays in the cloud.

The great file migration is underway. The combined effect of continued file data expansion with a shift towards high performance arrays has caused organizations to adopt cloud NAS as a way to handle their file capacity needs. Nasuni Enterprise File Services has the additional benefit of storing the files outside the data center, free from the limitations of traditional storage. This approach not only simplifies hardware refreshes but ensures that the files are safe no matter what happens at the data center. The problem with files is one of scale. The cloud is practically infinite. Files migrating to the cloud is inevitable.