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Spaced Out

Need PACS storage? Follow these seven steps to an affordable, reliable choice.

Need PACS storage? Follow these seven steps to an affordable, reliable choice.

By Jacob Farmer

The data storage industry is littered with three-letter acronyms that are supposed to simplify the language of data storage technologies. But it's never clear how or why these technologies address the needs of picture archiving and communications systems (PACS) storage.

What you end up with is another three-letter acronym: FUD (fear, uncertainty and doubt). The FUD factor drives PACS purchasers to fall victim to overpriced, highly proprietary storage solutions offered by top-tier information technology (IT) vendors.

By adhering to the following seven considerations, you can purchase PACS storage without blowing your budget or compromising your health care mission.

1. Storage devices. Do not use the same storage device as your facility's main data center. This may seem counterintuitive since the trend in IT is to consolidate vendors for better purchasing power. But the reality is that storage management requirements for enterprise data centers are very different from those of PACS.

Enterprise data centers need so-called storage area networks (SAN) and network-attached storage (NAS) platforms to manage the diversity and complexity of their dozens or hundreds of servers. Your IT department may pay a premium for management tools and service options.

In a PACS environment, all you need is reliable bulk capacity—essentially a big bucket to put your image files in. As long as you save two live copies, you will never compromise reliability.

2. File servers. NAS is also known as a "file server appliance." A file server is merely a computer that stores files centrally and shares them over a network. Nearly any mainstream file server will work with your PACS and DICOM servers. Pick a platform supported by your IT department or one for which you have resources.

3. Direct-attached discs. PACS databases should be stored separately from bulk images. The least expensive, simplest and most reliable approach is to use "direct-attached" disks that install in your server. If your IT department offers SAN storage, use it for the databases, but remember not to pay the premium for SAN storage for your images.

4. Hard drives. Two types of hard drives suitable for PACS storage are Serial ATA (SATA) and near line (NL) drives. They come in capacities as high as 500 gigabytes (1/2 terabyte). One word of caution: All SATA and NL systems are not created equal. Be sure to check references and make sure you are buying a reputable brand.

5. Tape systems. There are two ways to approach tape backup for PACS. One is to use a system based on an "incremental forever" paradigm. After an initial backup, you only have to save new images to tape. This allows for a relatively small management system. The only catch is, in the event of a disk device failure, you would need to wait for data to restore before it becomes available.

The other, more costly approach is to use a tape-based archive system as the second copy. In this case, a computer server with a small amount of disk space and dedicated library acts as a conventional file server. In the event of a disk failure, images can be retrieved off the tape without having to restore them to disk.

6. Meeting HIPAA. There are many uncertainties about exactly what the Health Insurance Portability and Accountability Act (HIPAA) requires for data storage, but one thing is clear: You have to keep a second copy of data off-site. If budget allows, get two disk systems and a tape system. This may sound cost prohibitive, but if you take advantage of low-cost storage devices, it's possible to spend less than you would pay for SAN or NAS systems from big-name vendors.

7. Saving power. A new technology to watch out for is massive array of idle drives. MAID will enable drives to power down when not in active use. Some MAID systems will reduce power entirely and spin it back up instantly when called back into action.

Most priors in your PACS system sit idle month after month while the disks are spinning, consuming electricity and generating heat. MAID will allow you to pack more disk storage into a smaller space and save a fortune in power and cooling expenses.

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