Technologies Compared

This document contains an overall comparison of smartDAX technology and other technologies. It covers:

About Comparing smartDAX

The smartDAX is a complete digital archiving system. That means that it is an integrated system (total end to end solution) for archiving. It is therefore not just a bundle of hardware and software and can not be compared 1 to 1 with any other technology that separates the development of hardware and software.
In the next section, this will be explored in detail

smartDAX Unique Characteristics

- smartDAX is network attached. This means that you can place the smartDAX anywhere in the network without distance limitations (like you would have with SCSI jukeboxes).
- smartDAX is upgradeable and extendible. This means that you can add more smartDAX units to your network and they still will perform as one big drive on the network. Also when you have f.i. 20 smartDAX machines or more. DAX Archiving Solutions has installations with 14 smartDAX units operating as one single network drive.
- smartDAX represents itself on the network as a normal drive letter or mount point, just like a big hard disk on the network.
- smartDAX is complete transparent. This means that users access individual files NOT individual media (CDs/DVDs). This also means that users can save and retrieve files like they are used to. Any user can also make their own directories (folders) like they are used to. Just click, drag and drop. A directory can consist of any number of files and a directory can have any size (NOT limited to size of media, CD 650MB, DVD 4.7GB).
- smartDAX is a single vendor system. This means that support issues are always solved by one party. There can be no discussions between software or hardware issues. You can all leave it with one company.
- With smartDAX you do not need to install any software, not on the file server and not on user workstations. Management is done through a normal web browser.
- smartDAX uses all open industry standards. This means when you take out a CD or DVD from the smartDAX you can read it in a normal CD or DVD drive. In the smartDAX only standard drives are used, not special expensive modified drives.
- smartDAX works cross platform. You can connect to Windows, UNIX and Apple (including resource forks) systems. Most other systems only support one operating platform (mostly windows).

smartDAX vs. Jukebox Archives

- Jukebox vendors only sell a hardware box. It is nothing more than a robot with disc slots and a SCSI bus. A lot of those jukebox vendors have some kind of management software bundle deal.
- The problem with those bundles that customers often face, is that the jukebox vendor does not want to take responsibility for the software and the software vendor does not want to take responsibility for the hardware. If there is a problem (and there quite often is) the customer is left in the middle with the problem. And it does not get solved. In the prepress & publishing market this is killing. The prepress & publishing industry is heavily data dependent for their production. Please imagine what happens if the jukebox stops and the newspaper cannot get their advertisements and images retrieved. If that happens a quick solution is necessary. There are a number of - mirrored - smartDAX configurations at newspapers.
- All regular jukeboxes are SCSI attached, not networked. Some jukebox vendors sell the jukebox with a workstation on top of it or build in, but that is not the same.
  The disadvantage of a SCSI jukebox is that the server or workstation needs to be close because of the length limitations of SCSI cables. Another disadvantage is that you cannot extend your archive with multiple SCSI jukeboxes under one drive letter. To one server or workstation you can add 2 or maybe maximum 4 jukeboxes. Basically as soon as you add more then 2 SCSI jukeboxes you will get performance problems. Every SCSI jukebox asks for multiple SCSI addresses. 1 address for the robot and 1 for every CD/DVD drive. So on one SCSI bus you can connect a jukebox with a maximum of 6 drives (7 SCSI addresses per single SCSI bus). If you install a 2nd server or workstation with jukeboxes then you will not have 1 network drive anymore but multiple. The benefit of creating large archives with multiple smartDAX boxes under one drive letter is that it works perfectly together with all kinds of software. The operating system does not see the difference between smartDAX and a hard disk, so software neither also. This means if you have a database writing lots of data to the archive the database needs one data path to store files. With SCSI jukeboxes the data path would need to change for the different jukeboxes. Databases often cannot handle that. In SCSI jukeboxes the directory size is limited to the size of the media (for CD 650MB). So your database would need a whole set of directories to find the data. In most cases this does not work. With smartDAX it does!

Summary of technical issues
With a SCSI jukebox you are:

- not flexible in where to place the jukebox
- not able to easy extend your archive with more jukeboxes under the same drive letter
- not able to create directories as big as you like
- not able to work easily with large databases
- not really able to use it as a real network drive.

Price Comparison other jukeboxes:
If you want to compare price between smartDAX and other systems then you need to add:

- the competitor jukebox price
- a high performance workstation with every jukebox
- jukebox control software. Most times you pay for this software per number of media CDs/DVDs for instance a 200CD license. With smartDAX 700 you will have an unlimited infinite license.
- integration and consultancy hours.

smartDAX vs. Hard Disk 'archives'

If you want to compare a smartDAX archive and an archive on Hard Disk based systems like RAID, the you should first consider that:

- Hard disk are very suitable for on-line data, data which you use every day and still is being edited.
- On-line storage on HDD is not archiving because it is not suitable for long term storage. Hard disks will crash one day and will be replaced every few years anyway (data needs to be transferred then).
- It doesn't really make sense to put data that you use only a few times a year on a hard disk spinning around all the time.
- Hard disk data needs to be backed-up every day.
- Hard disk data is magnetically stored so can easily be damaged.
- If the hard disk system did crash and it is a large system (0.5Tb and more) it will take ages to restore from backup tape.

If you compare prices between smartDAX and an archive on Hard Disk you should add (for the hard disk);

- cost of hard disks including redundancy,
- the RAID controller (hardware or software)
- a backup device for the HDD archive (like a tape drive or robot including software and media).
- Gardner reports show that management of hard disk systems costs as much as 5 times the amount of the initial investment per year.

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smartDAX vs Tape 'archives'

If you want to compare a smartDAX archive and an archive based on tape systems you should consider that:

- Tape systems are very suitable for daily backups because you can overwrite them every time and you can write data to it very fast.
- Tape systems are not suitable for long term archiving mainly because;
- tape is a magnetic media and easily can be damaged my electromagnetic radiation
- data on tape will fade in time so you need to check and refresh data on a regular basis
- tape will wear out in time, so will not be usable anymore after a certain period of time

Data retrieval from that tape:

- Retrieving files from a tape archive is quite slow because the drive needs to wind the tape first. This disadvantage gets especially annoying when a lot of individual files needs to be retrieved by several users. Waiting times can go up till several minutes.

If you want to compare a smartDAX archive with a tape archive you should add (for the tape system):

- a tape jukebox/robot
- management software (sometimes very expensive)

Conclusion

When you add these prices in the mentioned comparisons you will see that the total cost is comparable with smartDAX or a lot more, but then you still don't have the smartDAX benefits.