

Re: Promise VTRAK SAN box

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Darren K. Murray wrote:

Thank you for the detailed explanation. If I understand you correctly, since the file system only exists on the SAN client, if I were to remove one of the disks from the SAN appliance and install it in a PC, I would not see files and folders. All I would see is a jumble of raw data.

You wouldnt even see that much if you used an ordinary file system type utility. The only way you would see anything would be to use a raw block based utility or something like dd.

This would not be the case with a NAS appliance because the disks inside the NAS box are formatted with a file system such as FAT, NTFS, etc. Therefore if the NAS controller died, one could still remove the physical disks, install them in a PC and gain access to the stored data.

Wrong.

Simple nas devices might use something like windows with ntfs with disks lain out as simple drive letters. Or Linux with ext2/ext3 file systems, or similar. Even a simple nas device might use a proprietary or very limited operating system with a file system optimized for storage.

Larger nas devices use multiple disk controllers and multiple arrays. Yes, it is possible to move those devices, but only if you move them to something that understands the exact structure and format of the data and you also move the metadata that describes the exact layout of the data as it existed inside that NAS device. For all practical purposes, this could be done on those nas architectures where the metadata and raw device layout is contained on the physical devices, or you also moved the hardware that contained similar info in non-volatile format.

Thanks again for the info and the quick response.

Lon Stowell wrote:

Re: Promise VTRAK SAN box

Darren K. Murray wrote:

Hello all,

I am new to SAN technology and I have what may be a dumb question but here goes (first a little background):

My understanding is that one of the main differences between NAS and SAN is the location of the file system. NAS appliances have an embedded OS with 2 or more hard disks formatted with a file system such as NTFS. Network access to the disks is done using a file-level protocol.

A NAS device has as many disks as it needs to provide the storage it offers at the performance level it offers. This can range from a value of one disk to literally thousands. To be picky, it could mean no disks at all, using some other form of non-volatile storage.

The internal file system of the NAS device is essentially a black box to the NAS client. The NAS client cannot directly access the file system on the NAS device, it must use a file sharing protocol to do so, for example CIFS [windows file and printer sharing] or NFS or for most larger NAS devices both at once.

The OS of the NAS device may be imbedded or it may not. Again, the OS or knowledge of the OS is off limits to the NAS client.

The protocol is not file level, it includes authentication protocols as well as mounting and unmounting and may include network locking.

SAN appliances such as our Promise VTRAK have a bank of hard disks connected to the network through an iSCSI controller. A server on the network runs an iSCSI initiator to connect to the SAN appliance. It mounts the drives, creates a LUN through which Windows (or whatever OS) can "see" the storage as a drive letter. Communication over the network takes place at the block-level.

My question is: with a SAN, where does the file system actually reside?

The file system exists only in the SAN client. A SAN device only provides logical disk blocks to the client. The client is totally responsible for any data or file systems put on that SAN device.

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In other words, if I had the VTRAK configured as JBOD ie. 15 individual logical drives (no RAID), could I remove one of the hard drives, put it in a PC and see the files? Or does the server somehow create a "virtual file system" meaning that the only way to access the data on the disks is via the server?

Thank you in advance for any clarification that could be offered.

Note: The SAN or NAS device may have its own operating system. That operating system is for managing the SAN or NAS device...not providing operating system services to the clients. The operating system inside the SAN or NAS device might be windows based, unix/linux based, a variety of realtime operating systems, or totally proprietary to the vendor.

Inside the SAN or NAS device, the data or locks may be scattered all sorts of internal arrays either for data protection, data redundancy, or performance or all of the above.