

# INTERLAB

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## NLE *None Linear Editor* RIGHT CHOICE IN STORAGE

### Introduction:

Storage in Postproduction is representing a significant part of over all investment, and represents the most fragile point. Even if the NLE creates you job, storage holds it and if it breaks, hours of work are gone.

Today we have a wide choice of options; the problem is to choose the right one corresponding to your needs. In this documents we will try to expose simple facts.

### History:

In the high Tec industry it is the storage that grew the most, from 1GB top end storage available in 1992 we are reaching 200GB disks.

Physical size went from 5.25” full size disks, to 3.5” enclosures for all capacities.

The price is decreasing significantly in 1992 a 1GB disk coast was around \$6.000.

Today, we can get a 120GB disk for around 160\$! But the reliability is not really increasing that much. 1999 was the year of the speed, RAID-0 and striping was the king.

Today, in video storage security is becoming an important point same as sharing data.

### Today's requirements:

NLE is becoming a part of a system, where other devices are taking place, such as Sound work stations, Fxstations, pear to on-air or DVD packaging.

Even if your system is a stand-alone unit you will need to interconnect soon or late with a sound station or an effect station.

Who says sharing means material sharing NOT RISK sharing. Any normal person would reject a video network without redundancy. Up to now price was an issue same as emerging technological standards.

Today we have Gigabyte Ethernet and Fiber Channel. SSA and networked SCSI joined FC or are gone.

NLE needs a redundant storage; ready to join an eventual SAN (Storage Area Network) this next step can be crossed any time.

So it is the reason why when you are buying today a storage or you get FC/SAN ready, or you buy the cheapest box you can and trash it when you will get to the next step. But this box needs still to be redundant and supported, this obliges the use of high-end equipment, not necessarily cheap.

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## Possible solutions

### SCSI :

Standard on all high end devices, you have the option to connect a wide range of devices, independent drives, or RAID striped drives with LVD-2 you can reach up to 100MB/s sustained data flow with or without redundancy (*RAID-3 or RAID-5*). Note that all attempts to network SCSI were a disaster, logging on and off a machine part of the network makes the all system unstable.

Advantage:

- Coast effective
- Simple

Disadvantages:

- Not sharable with other users
- Not up-gradable
- Not platform independent

SCSI + Gigabyte Ethernet: The idea is to combine advantages of SCSI with the speed and versatility of Ethernet. The bandwidth of Ethernet, even in Gigabyte Ethernet is not an online device suitable for video dataflow, note that it could work for sound. This path can solve the inter-operability between units, by copying material from one end to the other, to make it available for other NLE or other devices on the net.

This could be a nice path, when moved material between stations is limited to sound files, some graphics and EDLs.

This becomes a draw back when it comes to share video material in quantity and need of big data flow. Ethernet is not designed to handle that kind of traffic. Collisions make 1Gb networks theoretical, real performances are closer to 100Mb Ethernet.

Advantage:

- Coast effective
- Simple
- Sharing data between multi-platform systems MAC/PC/Unix
- Manageable rights

Disadvantages:

- Not real-time access
- Not upgradeable to FC
- Need to copy files before playout
- Maintenance of versions of clips upstream & downstream
- Increase of volume of stored data

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## **Fiber Channel (FC):**

First, FC is a communication protocol nothing to do with fiber optics, FC is a shell able to host SCSI, ATM or Ethernet inside of transmitted packets. FC has been designed to transport big volumes in an unpredictable environment. It can be scaled from point to point up to wide SAN network.

In point to point dataflow is about the same as SCSI. Then to hold this dataflow it is a matter of building the network architecture to meet dataflow requirements. To build networks we now have:

- A stable FC standard
- FC boards, hubs, switches
- FC storage
- General support of FC hardware by major OS; Linux, W2K, Unix, OSX

It is affordable, the FC storage is just a bit more expensive than SCSI, FC boards are available for 1500\$ and price of switches are falling.

So if a single user goes for an FC storage he needs an FC host adaptor, cable and the FC storage. If he wishes to expand, he can get a FC switch, sharing software and he can start sharing material.

### Advantage:

- Future prove
- Simple
- Sharing data between multi-platforms
- Rights manageable
- Multi stream
- Video Material is not related to a particular workstation
- Centralized storage

### Disadvantages:

- Coast
- New experience to acquire

Examples of direct FC application in Editing:

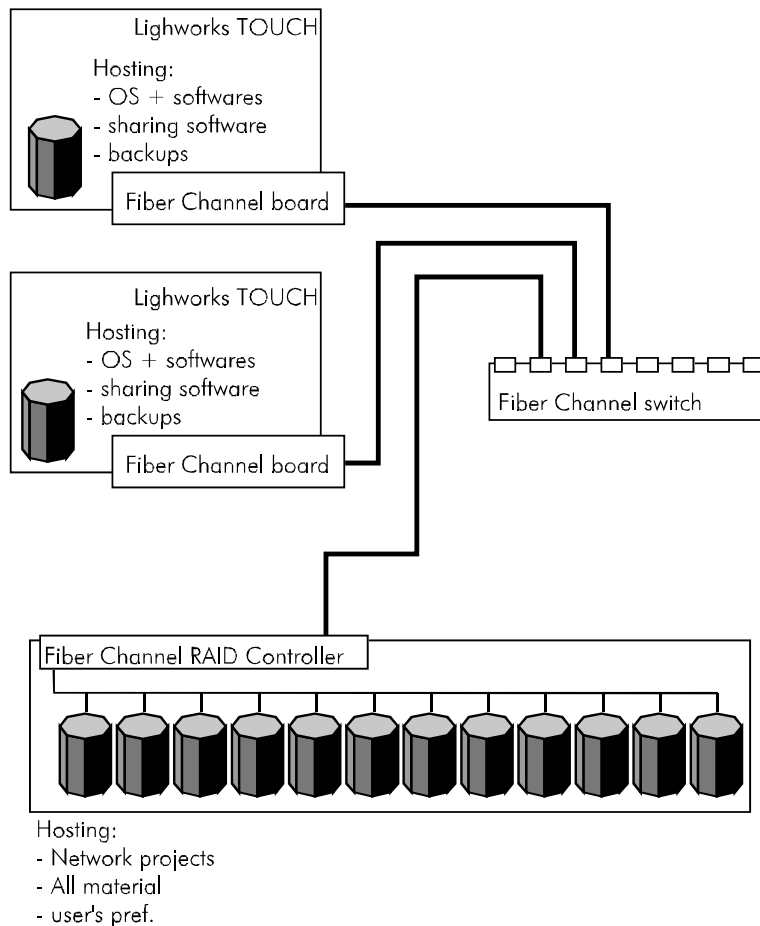
## **FILM editing with “TWINS”:**

Typically, editor and assistant editor works alternatively on the same machine, one during the day the other during the night. By building a 2 seats configuration, made of 2 NLE and one shared storage, SAN can improve; work flow, provide better user

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comfort and develop assistant / editor synergy. The data rate for 2 system playing 2 video streams at the time is far away below over all bandwidth.



## B/ POST PRODUCTION and BROADCAST

In those area, needs are about the same, we can see from 2 up to 10 NLEs, 1 or 2 audio work station, telecine, export unit, this can be VTR, DVD or On air.

Early network projects like GVG/Tektronix was promoting was closed black boxes connected in FC together interfacing with the “real world” via SDI and matrix routers. Thomson came with the first really opened system; Netstore. We need to clarify what means “open”, Open network starts with an open format; AVI, QuickTime, WAV or BWF. Published and documented. Then, open access, via any standard entry point.

Today we have the chance that almost all manufacturers at least interface to those format, some are natively using them. From there, networking makes sense.

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It is necessary to keep focus, before expanding to a wide area network, See where you will take advantage of it, to avoid spending fortunes.

Editing is a place where currently 10 hours of material comes in, to make a 30mn program. Editing is scheduled on 4 days and after one week job is not done. In this area storage requirement is high and editing room occupation is difficult to manage. Especially when recorded material is related to a particular editing room. SAN storage can be an answer to many exploitation issues:

- Insuring storage security, flexible and availability.
- Possibility to concentrate VTRs machines to optimize their use.
- Scale storage space and anticipate storage requirements.

As long as data format is generic, we can expect audio feed under WAV native from entry points, video feed coming from Telecine, merging via databases into NLE.

From there sky is the limit...

Rev.1.1 - David  
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