



# Warren Miller Entertainment Takes Storage to New Heights in Digital Video

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# **GWH&a**

**GW HANNAWAY & ASSOCIATES**



9th and Pearl St, Downtown Boulder, Colorado

## Company History



Started as an imaging lab in 1975 by  
Wyndham Hannaway

Helped develop digital film recording

Built custom systems for every format of  
imaging and video

Developed software to help automate image  
processing for Hollywood studio's and  
government agencies

Specialized reseller for film and video  
systems

Worked with Warren Miller Entertainment for  
over 20 years





## Personal Experience



10 years with GW Hannaway & Assoc.

Specializing in film and video Post Production deployments

SAN solutions for high bandwidth performance

Creating collaborative workflows with centralized storage

Apple certified for Pro Video and Xsan

Active Volunteer with the National Ski Patrol

That's my daughter Ellie in the picture!

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## SAN Deployments



INVESCO Field @ Mile High

Pepsi Center

Bonnier Productions

RE/MAX University

GAIAM Productions



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## Company Profile

For over sixty years, Warren Miller Entertainment has ventured to the planet's extremes, capturing the world's greatest athletes as they push the limits of human ability

The most successful outdoor series in the history of film

The impact of the Warren Miller brand has spanned generations, influenced lifestyles, and created a worldwide following like no other



© Tom Evans



## Post-Production Workflow Timeline

### Prior to 1989

All editing was done on a 16mm flatbed and Moviola. Warren Miller personally tours cities using 16mm film projector

### 1989

Started using 3/4" video work print (3/4" video cassette with visible key codes) edited on the Strassner Video Editing System and then sent an EDL to a negative cutting house.

### 1999

First year to stop making film prints; mastered straight to video and projected the movie with video projectors. SD video edited on a Media 100 edit system. Approx. 600GB of storage

### 2004\*

First year to go High Definition, direct attached Fibre Array on Final Cut Pro Work Station

### 2006\*

Adopt Xsan Files system with centralized 2Gb/s storage with 4 FCP Work Stations

### 2010\*

Upgraded old 2Gb/s Xsan RAID System to an 8Gb/s Xsan with a 24TB Dot Hill RAID array.



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## SAN Deployment Details

2004

“Higher Ground” is the first feature length action sports movie project in HD. Single Final Cut Pro workstation with 2Gb direct attached fibre channel array.

2006

Storage is increased to 6TB and a SAN is deployed. Xsan allows 4 workstations to access all media. Single workstation is used for online edit of feature.

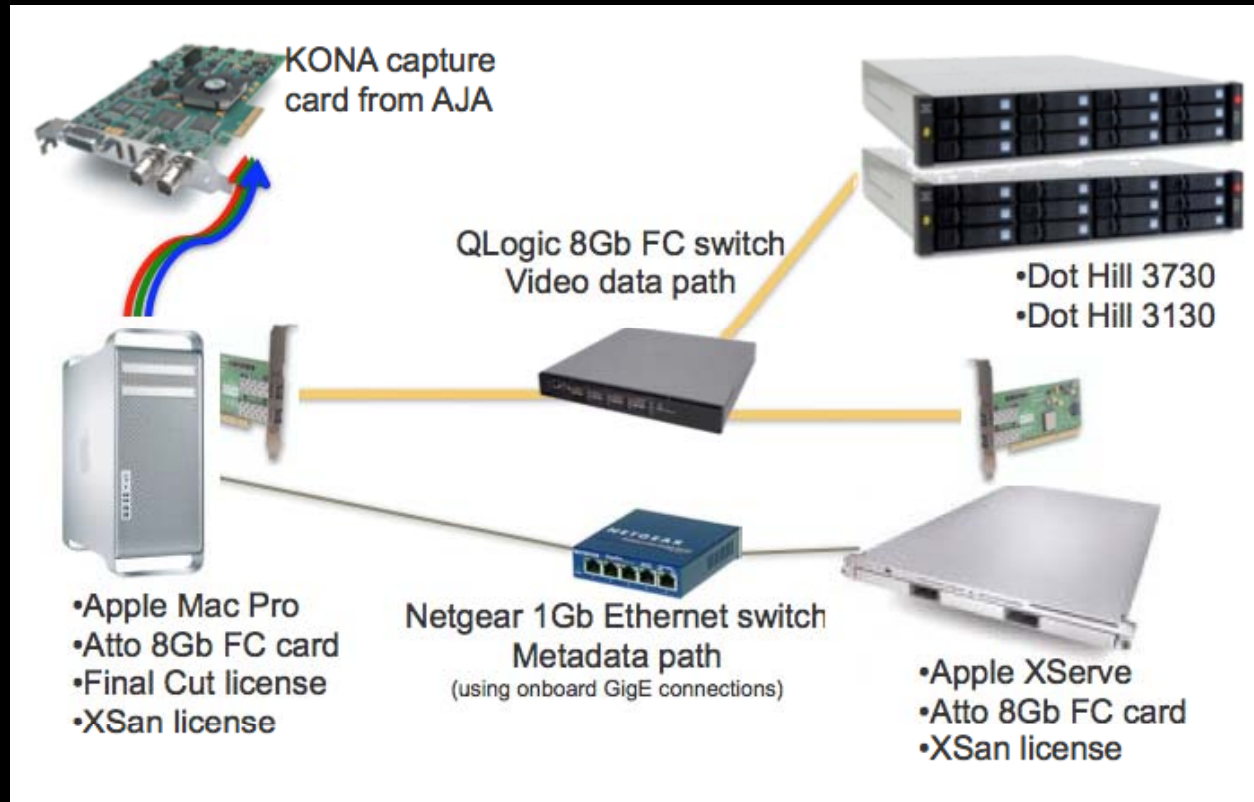
2010

2Gb SAN Replaced by 8Gb SAN Using dotHILL 3730 with Qlogic SANBox 5800





# 8Gb Fibre Channel end-to-end



# Video Bandwidth Requirements

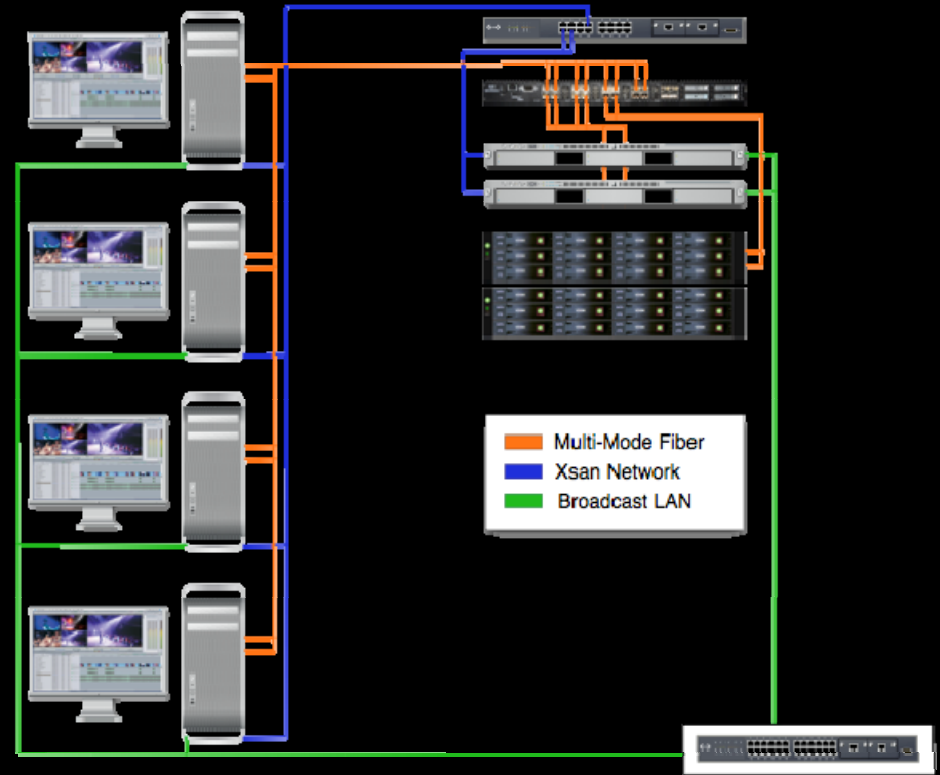
<b>Format</b>	<b>Resolution (width X height)</b>	<b>Frame Rate (fps)</b>	<b>Data Rates (MBps)</b>	<b>Storage Capacity/Hour (GB)</b>
SDTV (NTSC, 4:2:2, 8-bit)	720 X 480	29.97	21.0	75.6
Blu-Ray Disc (Compressed)	1920 X 1080	24	4.56	16.4
HDTV (1080p, 4:2:2, 8-bit)	1920 X 1080	24	149	536
Digital Cinema 2k (4:2:2, 10-bit) RGB	2048 X 1080	24	199	716
Digital Cinema 4K (4:4:4, 16-bit) RGB	4096 X 2160	24	1,274	4,586
Ultra-HDTV	7680 X 4320	60	3,233	11,640



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Edit Suite 4



SAN



“Wintervention” Trailer 2010



Helps Take Warren Miller to New Heights with Storage Solutions

Q&A



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