

The Challenge of Videotape Migration and Preservation

Migrate – Manage – Market

As forward-thinking content owners, broadcasters and media operations move to file-based infrastructures, they all face the challenge of converting their vast videotape archives into digital formats. Motivation for this transition varies but is typically based around some recognized value (cultural, historical or monetary) in these legacy video tape assets and the urgent necessity to preserve and also repurpose them in an efficient manner.

For most, the required time and costs to digitize content have been significant barriers to any migration effort. Those who attempt manual migration projects soon find that this approach is too slow and too expensive to sustain. Even teams working in shifts around the clock may take years to complete this daunting task. In the meantime, valuable historical, cultural and creative programming remains at risk as the videotape archive inevitably deteriorates. Automated migration is the only viable strategy, and DIVAsolo from Front Porch Digital is the only proven end-to-end solution.

Combining best-of-breed migration, content storage management (CSM) and media asset management (MAM) solutions into a single, turnkey package, DIVAsolo reduces the upfront complexity and human resources needed to ensure effective and efficient migration and reuse of legacy videotape assets.

Videotape Migration and Digital Preservation

The DIVAsolo solution uniquely combines the necessary building blocks to enable accelerated and cost-efficient migration of the largest video archives. Providing a direct migration path from legacy videotape to protected high-density LTO-based data tape in a multitude of parallel generated formats guarantees long term accessibility and protection of these valuable assets. Add to this near immediate desktop browse access to the captured metadata and frame accurate proxies via the included MAM system and you are assured a level of access to these valuable assets never before possible for aging video tapes sitting on a shelf.

DIVAsolo includes the following:

SAMMA Solo™: The world's first semi-automated videotape migra-

tion solution, which enables high volume encoding and metadata collection to be done in an efficient and cost effective fashion.

DIVArchive™: The world's leading content storage management (CSM) solution providing a scalable centralized content repository for all file-based assets regardless of format, size or type with direct and proven interfaces into all leading broadcast devices, nonlinear editing platforms, MAM solutions and broadcast control systems.

DIVAdirector™: An intuitive browser-based media asset management (MAM) application that allows users to search, browse frame accurate proxies and fully manage migrated content from any desktop computer.

By combining these innovative technologies along with all the necessary server and storage hardware, Front Porch Digital empowers content owners to move to a highly scalable, dynamic and protected asset infrastructure and to permanently eliminate the burden of videotape access while ensuring long-term preservation.

The Choice of Encode Formats Made Easy

DIVAsolo helps make this decision simple by offering a range of wrapper and essence format choices targeted at different migration applications. These range from mathematically lossless JPEG2000 for preservation, MPEG2 and DV for editing, and WMV, H.264 and Flash for proxy viewing. Because the DIVAsolo system can simultaneously generate multiple essence formats in real-time, the system can achieve tremendous time savings by migrating multiple formats at the same time with no need for post migration transcoding or processing.

Migration, Movement and Management of Valuable Assets

As any format videotape is loaded into a VTR connected to the migration engine, the DIVAsolo solution automatically cues the tape and performs a sequence of automated steps to migrate the content:

- Video/audio content is ingested into multiple file-based formats simultaneously, in realtime, with source timecode preserved throughout
- Metadata is collected on a frame-by-frame basis detailing the health and quality of the videotape for later analysis and reference

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- Alarms are raised if any problems are encountered during the ingest process relating to video/audio levels, tape dropouts, RF levels, etc. and can be used to halt the ingest process if desired
- Shot lists are automatically generated for the content in realtime during the migration period based on advanced black, silence and freeze frame detection
- High resolution content is automatically moved to nearline spinning disk and then to high density LTO data tapes within an automated robotic library included as part of the solution
- Low resolution proxy versions of the content generated during the migration process are moved along with the metadata to the Web-based MAM system for desktop access
- Once complete, the next videotape can be immediately loaded and the process repeats

The Value of File-Based Content Storage Management

DIVAsolo leverages the power of the DIVArchive CSM system to provide seamless and limitless storage and protection of these encoded assets – now and long into the future. The solution combines RAID5 protected spinning nearline disk and a generous amount of LTO-based data tape storage in a fully robotic library. Also part of the solution is an infinite amount of offline storage allowing data tapes to be ejected from the robotic library and placed on a tape shelf while their content is still actively tracked by the system.

With little or no human intervention required, DIVAsolo guarantees migration to newer data tape formats at rates many times faster than realtime. You no longer need to concern yourself with the shelf life of old media or its quality degradation as content can simply be migrated to newer technologies as the need arises. This allows you to increase both your storage density and performance.

In addition to the storage and management of migrated videotape assets, the same DIVArchive solution can also be used in tandem to support regular transmission operations with direct interface to all leading video server and automation systems providing significantly more overall value.

Accessibility – The Key to the Solution

DIVAsolo leverages the power of our own media asset management system, DIVAdirector, to enable easy access, directly from your desktop computer, to years of legacy content previously housed on dusty videotape shelves.

With full user access control, frame accurate, low resolution proxy browsing and a fully definable metadata model, users can easily search, browse and generate shot lists of migrated content. By adding optional timecode-based partial restore functionality to the underlying DIVArchive system, these segments can be restored to broadcast devices or editing systems for repurposing.

DIVAdirector also includes significant MAM functionality such as federated database connectivity, automatic keyframe/thumbnailed extraction, user-based content access control, automated metadata import, content automation, USB jog/shuttle wheel support and much more.

DIVAsolo Solution Components

Solo System

The Solo migration platform includes many key features and offers significant benefits over manual or traditional ingest solutions:

- Versatile parallel realtime multi-encoding engine
- Can handle videotapes in any original format including 1", U-Matic, Betacam, VHS, DV and many others
- Direct VTR control via Sony serial or Firewire control
- An intuitive user interface allowing simple load, cue and press go operations
- A single pass on the source videotape can create a preservation (master) version in uncompressed or lossless compressed format, a working (mezzanine) copy at medium compression plus a number of frame accurate low resolution proxy copies for online distribution and Web browsing
- Encoder supports many formats including uncompressed, JPEG2000, MPEG-2, DV, Flash, MPEG-1, Windows Media, H264, Quicktime or MXF wrappers
- Direct integration with Apple Final Cut Pro, Final Cut Server and Avid Interplay

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- Automatic monitoring of the ingest process, detection of source material issues (prolonged black, videotape drop outs, etc.) on a frame-by-frame basis
- Automatic frame accurate shot list generation based on black, silence, freeze frame and other conditions
- Dynamic metadata collection including all video and audio parameters on a frame-by-frame basis
- Generation of a continuous metadata report on tape encoding conditions as the migration is progressing
- Metadata viewing and analysis tools to ensure quick triage of previously migrated videotape assets based on graphical indicators

- VACP control for automation system interface
- DIVArchive API for MAM (or other) system control
- Object Transfer Utility for manual drag and drop archive and restore operations
- SNMP support for automated facility-wide monitoring

DIVArchive System

The DIVAsolo system includes all of the core features of the DIVArchive CSM solution and comes bundled with the following advanced features:

- Connectivity with up to four Solo migration platforms for automatic archive of all generated essence formats
- Unlimited media externalization support for near infinite data tape storage capacities
- Import/export support to allow movement of data tapes between DIVArchive systems regardless of their location
- Limitless integration into most leading video server and generic broadcast device platforms providing a true centralized content repository
- Storage Plan Manager (SPM) for automatic content replication and content lifecycle control
- Support for timecode-based partial restore for one high resolution essence format (uncompressed, JPEG2000, MPEG-2 or DV)
- Full nearline, archive and offline storage support in a single fully integrated platform
- Powerful Oracle powered database for robust asset tracking
- Interface directly into up to four Solo migration platforms for medium scale migration operations

DIVAdirector System

The DIVAdirector Web-based media asset management system provides the following advanced features:

- Easy-to-use interface through Internet Explorer with no software to install
- Five floating user licenses are included (expandable to 50)
- Dynamic user definable metadata model including binary metadata support
- Powerful metadata search tools including advanced full text search capabilities
- Frame accurate low resolution proxy browsing for all migrated assets
- Support for identification and retrieval of clips with noncontiguous timecode key for a large portion of legacy videotape material and unique to the Front Porch Digital offering
- Frame accurate shot list generation with direct Avid and Apple Final Cut Pro export
- Shot list sharing for project collaboration
- Timecode-based partial restore support on the associated high resolution content for simple repurposing directly from user created shot lists
- Partial-restore format auto-detection
- Built in security, user access control including content and resource filtering on a user group basis
- Automatic Solo migration metadata import
- Direct import of user generated metadata from legacy management systems

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- Automatic keyframe generation and thumbnail support
- Easy-to-use management of remote proxies

DIVAsolo Bundled Hardware

4RU Solo Migration Engine

- Analog and digital video/audio inputs
- Direct VTR control
- JPEG2000 hardware encoder board
- Multiresolution encoder board
- VTR RS422 control
- 1TB of cache storage

DIVArchive/DIVAdirector Server

- Single 2RU dual quad core server
- Mirrored system disks
- 3TB of RAID5-based nearline disk storage
- Dual GBE interfaces
- Redundant Power Supplies

Data Tape Robotic System

- 24 Slot Library
- Single LTO data tape drive
- SCSI direct connect to host server
- Single import/export slot for media externalization

Support and Warranty

- One-year hardware and software support included

DIVAsolo Optional Components

Additional Solo Engines

Up to four Solo migration platforms can be added to a single DIVAsolo package solution allowing for significant increase in migration throughput.

Onsite Installation and Training

Front Porch Digital can offer onsite installation, commissioning and training services as required. The DIVAsolo bundle is intended for easy installation and configuration can be handled by remote connection if onsite support is not required.

Automatic Analysis of Past and Future Performance

DIVaprotect presents your system administrator with information regarding the performance history of all drives and media as well as a forecast of their future performance. Detailed analytics are generated in realtime relieving the administrator of painstaking and manual analysis of the storage system.

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