

## WNED - Case Study



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### Overview

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#### *WNED-TV Design Goals*

- *Continue the transition to digital by adding a digital archive and content management system to work with existing Omneon video server and Sundance Digital automation.*
- *Better manage content in and out of the Omneon server.*
- *Be able to load Omneon server up to four days in advance of air play.*
- *Find a single vendor for the entire content management, cache, and archive systems.*

#### *The Masstech Solution*

- *The MassStore system—an end-to-end advanced nearline, archive and media life cycle management solution for professional broadcast environments, providing from 1,000 to 100,000+ hours of nearline and archive audio/video storage with full content management and tracking. System includes an IBM DS4100 disk array cache.*
- *Interface to the Sundance Digital Titan automation.*
- *Interface to the Omneon Spectrum broadcast video server.*
- *Interface to Spectra Logic T950 Broadcast Storage Library.*

#### About WNED

WNED-TV, Buffalo, NY, is a station of the member-supported Western New York Public Broadcasting Association (WNYPBA), whose mission is to provide high quality programming and services that enlighten, inspire, entertain and educate.

As part of that mission, WNED-TV is committed to producing quality programs for local and national broadcast with an emphasis on programming that highlights the treasures of the local region. Recent productions have included Fort Niagara: Struggle for a Continent, A New Zoo for Buffalo, Saving a Landmark: The Darwin Martin House, Polonia: Western New York's Polish-American Legacy, and the Emmy-award winning Reading Rainbow.

WNYPBA also includes WNED-HD, ThinkBright TV (Lifelong Learning), WNED-AM 970 the information station and classical 94.5/WNED.

The station leases some of its server space for Bridges TV, a Muslim Network, a channel not aired in Buffalo, but rather sent via fiber to New Jersey.

WNED-TV serves the greater Buffalo and Toronto, Ontario, Canada markets with its analog and digital broadcast channels. Its analog signal also reaches down to the southern tier of New York state.

On the digital side, WNED transmits one HD channel and 2 SD channels. The HD channel takes its feed from PBS. One SD channel is a simulcast of the analog channel.

The second SD channel is ThinkBright TV, a lifelong learning channel that brings a diverse range of health, educational, parenting, community, science, nature and documentary programming to homes and schools. This channel was funded through a \$2.5 million grant from the John R. Oishei Foundation to allow WNED to harness digital technology for this educational service, which WNED plans on taking state-wide.



## The Benefits

- Developed a more efficient workflow that allowed content to be ingested only once no matter how many times it was scheduled to air. Before the archive was installed, content had to be ingested each time it was needed for air.
- With the MassStore user interface and its XML interface to the Sundance Digital automation system, WNED can ensure that the Omneon video server does not get too full, and can better manage ingesting and deleting content on the server.
- Now programs can be loaded in the Omneon server four days in advance of being broadcast.
- Masstech provides a single point of contact for WNED should issues or questions arise about the entire archive and content management system. No finger pointing here. Masstech provides the solutions.

## The Need for an Archive and Content Management

WNED progressed with digital in a step-by-step fashion. In 2003 the station acquired a single Omneon Spectrum media server with 9 TB of storage. Prior to that the station was all taped-based. Now most of the programming on the SD channels (one of which is a simulcast of the NTSC channel) is fed from the server.

For its main channel, WNED doesn't simply take the PBS national feed and re-broadcast it at the time it's originally sent. Rather the station tailors its programming schedule for its unique American and Canadian audience with a mix of local and national programs.

Currently the station does not record HD on the video server—it just passes through the PBS HD programming—although it will be able to in the future.

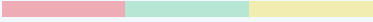
A Sundance Digital Titan multi-channel automation system was added in 2004, about six months after the video server. And in 2005, the station added the Masstech media life cycle management system and the Spectra Logic data tape archive system. The archive was supplied as a complete turnkey system, with The Systems Group serving as consultants.

In the years leading up to the purchase of the archive system, the Omneon server kept getting pretty full. The Omneon server with 9 TB can hold around 1600 hours, and according to Fred Grudzinski, Manager of Engineering Maintenance, WNED, ran about a year without the need for an archive.

When the Sundance Digital automation system was installed, with its three media pre-stations and Intelli-Sat for the automatic recording of satellite feeds, much more programming could easily be ingested into the Omneon server, which was also used for on-air playout.

Without an archive system, the server would have to be continually purged of program material soon after it played to air to free up space for the steady flow of new material. When previously played material was needed again, as is often the case with PBS stations, it had to be re-ingested, and sometimes even re-re-ingested. It was quite obvious that this was an inefficient way to operate.

The next logical step then was to install the Masstech media life cycle management system.



*“We wanted an end-to-end solution, where we would only have to talk to one person. And we wanted a cost-effective solution. Masstech provided both.”*

**Fred Grudzinski,**  
Manager of Engineering Maintenance,  
WNED-TV

## Masstech Provides Media Life Cycle Management and Archiving System

*Masstech provided WNED with a complete content management system that consists of the following:*

- An application server running Java based software for database interaction with a web based user interface.
- An additional datamover.
- An IBM DS4100 cache array.
- Interface to the Sundance Digital Titan automation.
- Interface to the Omneon Spectrum broadcast video server.
- Interface to Spectra Logic T950 Broadcast Storage Library using SAIT tape technology, with an ultimate capacity of 425 TB, and 50 TB initially installed.

## MassStore in the Workflow

### *Ingest*

In normal operations, ingest, content moving and content deletion is enacted through the Sundance user interface. Sundance Titan automation seamlessly communicates with the MassStore system by means of the MassStore XML interface. The protocol provides a means for the automation system to request content movements in and out of the video server.

## The Sundance Master Control

The Myers Information Systems ProTrack traffic system provides a four-day advance “pull-list” showing the upcoming schedules and also the history of shows that already aired. If programs are listed as having been played out, and they are not on the four-day advance pull list, then those programs are copied from the Omneon server to the archive, and then deleted from the video server to free up space for new material to be ingested.

Currently, material is erased from the video server about once a week, while new material is loaded in daily. MassStore monitors the Omneon video server for fresh or deleted content. Upon the availability of new content, it is entered into the active database.

MassStore also continuously tracks the content in the archive and cache, and with its powerful central database, provides an active picture of the location of all material in real-time. The MassStore system is capable of storing and uniquely identifying different formats of the same asset, which will come in handy when HD material is eventually stored on the Omneon server. MassStore allows for dynamic definition of the metadata associated with each asset and the data structure can be expanded at any point. Metadata fields can be defined with user-specific terminology at any point in the content capture process.

### Air Playout

The Sundance automation system, in addition to handling ingest, directly controls the playout from the video server, and coordinates the on-air broadcast stream.

For content movement out of the MassStore system, the Sundance system examines its currently loaded playlists and locates all content, by house number, that is not found on the video server. For each of these missing items, Sundance sends an XML request to Mass Store (via TCP/IP) to determine whether that missing item is available on nearline or archive storage.

The screenshot displays the MassStore web interface with the following sections:

- System Up Time:** 2006-03-16T15:18:01
- Web Users:** 2
- XML Users:** 0
- Proxy Engines:** 1
- Elapsed session time:** 00:00:50
- ARCHIVE INFORMATION:**

Archive	Instances	Hours	Media	Free	MaxBlock
ADIC	1	0.0	3	279.0G	95,367M
STORAGE...	38	1.25	5	1,547.0G	200,448M
PYTHON	101	0.50	1	448.0G	459,341M
SPECTRA...	0	0.0	0		
- TRANSFER QUEUE:**

To Archive	Queue Info	To Server
1	Copy Queue	0
0	Transferring	0
0	Rate(MB/S)	0
- STORAGE INFORMATION:**

Name	Instances	Hours	Free	Total
AVID	47	5:40		
FTP_MS_B	0	0:0		
FTP_PINNAC...	10	0:06		
FTP_PROFILE	5	0:02		
- OPERATOR ACTION REQUIRED:**

Sequence	Time	Operator Message	Action
17103-21	16:22:42	Create connection to LEITCH failed	Remove
16903-21	15:49:01	There is no Data Mover connected...	Remove
12603-16	18:22:30	Create connection to FTP_MS_A f...	Remove
10903-16	15:53:26	There is no Data Mover connected...	Remove
- SYSTEM MESSAGES:**

Source	Time	Type	Message	More
CMC:	03-22 09:03:48	INFORMATION	Connection (LEITCH) Created Successfully	More
CMC:	03-21 15:57:19	INFORMATION	Connection (LEITCH) Destroyed Successfully	More
DM MAN...	03-21 15:49:01	ERROR	There is no Data Mover connected to the specified endpoints: OMNEON : MASSSTORE	More
CMC:	03-21 15:45:38	INFORMATION	Connection (FTP_MS_A) Destroyed Successfully	More
CMC:	03-21 15:44:29	INFORMATION	Connection (OMNEON) Created Successfully	More

The MassStore system checks its content management database and if the item is available, MassStore lets Sundance “know” via XML. Sundance then issues another XML command to MassStore requesting that a copy of the content be made to the video server.

This item is added to the MassStore copy queue with priority status as defined by Sundance. Because the MassStore system manages the nearline and archive storage, the Sundance system does not have to initiate multiple copy requests, thus improving efficiency of the overall workflow.

### MassStore Web-based User Interface

While the item is copying from the nearline or archive storage to the video servers an operator can simply log into the MassStore web interface to watch the transfer progress of all items. Material copy requests can also be manually triggered via the MassStore web interface to facilitate non-automated restoration of content by authorized users.

While the MassStore graphical user interface is not usually used in day-to-day operations, WNED does use it to check the database as well as the contents of all of the storage devices.

Grudzinski said that the MassStore web interface is easy to use and is an invaluable tool for finding out what is on any given tape, or to check total inventory. Via the user interface, the MassStore system reports if the video server contains the item searched for, whether it is on nearline or archive storage, and if it is in the archive, on what tape or tapes. By automatically keeping this information up to date, the MassStore system is used as the central knowledge point for locating content.

*“We are pleased with the MassStore system, it operates without need for daily maintenance, archives automatically and allows us to reduce the amount of tape we use.”*

**Joe Puma**  
Director of Engineering  
WNED-TV

## Benefits

The installation of the MassStore system made it easier for WNED to manage content on its Omneon server. Now with the archive, WNED needs only to ingest material once, and not every time it was needed for re-broadcast. The archive also allows the Omneon server to be loaded with content four days in advance of air, providing not only a margin of safety, but a smoother workflow as well.

The MassStore web-based graphical user interface serves as the central point for easily locating content on all of the storage devices—Omneon server, cache, and data tape library archive.

And if WNED ever has a question about any aspect of the content management system, cache or archive, they just need to call one vendor—Masstech.



## Contact Information

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