2019 Survey Summary for
Storage in Professional Media and Entertainment

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Introduction

Digital storage plays a significant role in the professional media and entertainment industry. Digital storage for the M&E industry has demand characteristics often very different from typical IT storage because of the performance requirements of real-time video in capture, editing and post-production as well as distribution. On the other hand, the ever-growing archive of long-tail digital content and increasing digitized historical analog content is swelling the demand for cold as well as warm archives using tape, optical discs and hard drive arrays.

In January through May of 2019, Coughlin Associates, Inc. conducted a survey of professional media and entertainment professionals on various digital storage topics. The survey was broken down into several segments: content capture, editing and post-production, content delivery as well as archiving and digital preservation. The Society of Motion Picture and Television Engineers (SMPTE), Digital Production Buzz, Broadcast Beat, Post Magazine, Postperspective.com and other organizations assisted by soliciting survey participants. Since at least 2012 our survey sources have included more small facility professionals than large facility professionals due to our additional outreach through our survey partners.

Coughlin Associates wished to conduct the survey in order to discover new trends for storage in the industry and improve the accuracy of the company's annual report on digital storage for the media and entertainment industry. This summary contains some of the results from that survey and where appropriate we will compare the 2019 results from those of a similar survey in January to May 2018, January to May 2017, February to June 2016, March to May 2013, 2014 and 2015; May and June of 2012; February, November and December of 2010 and March of 2009.

Of the 152 people that started the survey, 146 completed at least some part of the survey (96.1%). All of the people surveyed worked with professional media and entertainment content. 96 were involved in content capture, 106 were involved in digital editing or post-production, 49 were involved in content distribution and 69 were involved in long term digital archiving or digital preservation.

Table 1 shows the percentage of survey participants in various professional content market segments and **Table 2** show the general locations of the survey participants. Note that the "other" category in Table 1 mostly included responses such as sports, education, social media, games, documentaries, webinars, promotional work, religion and audio production.

The following sections of this document give some of the results of the survey for each of the major survey sections described above. Note that the results given in this survey are representative of the full data but they are often a simplification of the more complex survey results. The full survey, including a more complete analysis of the survey results as well as some multi-factor dependencies is available from Coughlin Associates as part of the 2018 Digital Storage in Media and Entertainment report (www.tomcoughlin.com/techpapers.htm).

Table 1. Percentage of survey participants in content market segments.

TV Episodics	31.50%
TV Other	33.86%
Feature Film	23.62%
Short Features, Commercials and Trailers	40.94%
Corporate or Government Video	40.16%
Webcasts	30.71%
Games	7.09%
Other (please specify)	26.77%

Table 2. Survey participant locations.

US or Canada	71.4%
Mexico or Latin America	1.6%
Europe	19.0%
Africa	1.6%
Japan or Korea	0.8%
China or Rest of Asia	0.0%
Australia	5.6%
Antartica	0.0%

Content Capture

Professional video cameras are undergoing rapid evolution, driven by higher resolution content as well as multi-camera content capture, including stereoscopic virtual reality content capture. In addition, the physical storage media for professional cameras is undergoing rapid evolution as film and magnetic digital tape is impacted by the rapid file access convenience of hard disk drives, optical discs, and the ruggedness of flash-based solid-state storage.

Figure 1 shows the percentage of various recording media used by the 2019 survey recipients in professional video cameras.

Figure 1. Percentage of recording media in professional video cameras.

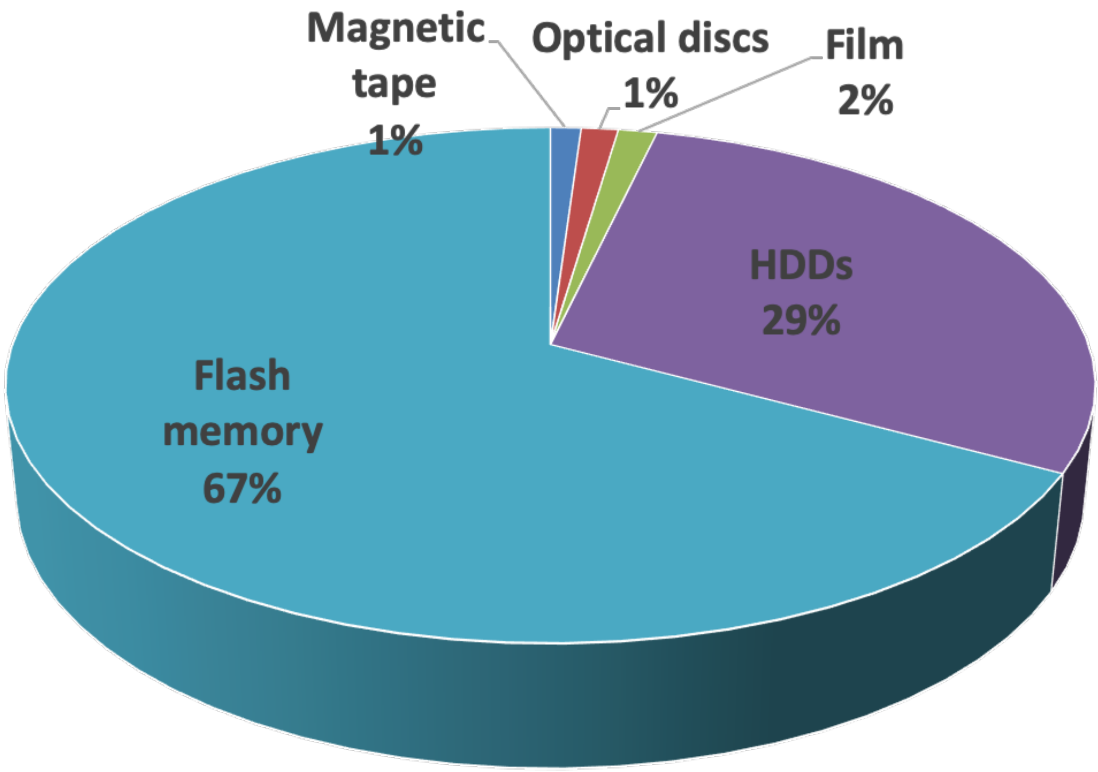


Table 3 compares the results from the 2009, 2010, 2012, 2013, 2014, 2015, 2016, 2017 and 2018 surveys with those from 2019. Flash memory is the clear leader in professional video camera media, increasing from 19% in 2009 to 66% in 2015, 54% in 2016, 59% in 2017, 56% in 2018 and 67% in 2019. Magnetic tape shows a consistent decline until about 2015, after which it bounces between 1% and 5%. Optical discs use between 2009 and 2016 bounced around between 7% and 17% and declined to 3% in 2017, 2% in 2018 and about 1% in 2019. Film shows a general decline with 15% usage in 2009 to 2% in 2016, much less than 1% among survey participants in 2017, up to 5% in 2018 and about 1% in 2019. The trend with declining film use follows the trend towards completely digital workflows.

Table 3. Comparison of Professional Video Camera Media Trends

Year	Magnetic Tape	HDD	Optical	Flash Memory	Film
2009	34%	23%	9%	19%	15%
2010	25%	22%	17%	28%	8%
2012	20%	22%	12%	44%	2%

2013	15%	18%	7%	59%	1%
2014	7%	24%	10%	57%	2%
2015	4%	21%	8%	66%	1%
2016	2%	34%	8%	54%	2%
2017	5%	33%	3%	59%	0.16%
2018	2%	35%	2%	56%	5%
2019	1.1%	29%	1.2%	67%	1.3%

Note that about 58% said that they used external storage devices to capture content from their cameras in 2016, 60.7% in 2017, 59.6% in 2018 and 58.0% in 2019.

In 2019 95.4% of the survey respondents that participated in this section said they reuse their recording media (compared to 91.5% in 2019, 94.1% in 2017, 93.4% in 2016, 89.9% in 2015, 93.3% in 2014, 84.5% in 2013, 86% in 2012, 79% in 2010 and 75% in 2009). In 2019 78.4% of respondents said they archive their camera recording media (compared to 83.0% in 2018, 78.6% in 2017, 75.0% in 2016, 73.6% in 2015, 74.2% in 2014, 81.4% in 2013, 85% in 2012 and 77% in 2010). Digital storage on tape, hard disk drives or flash storage allows reuse of media. It may be that more participants are copying their content onto a couple of media, where one is the archival media (this is likely based upon the percentage that reuse their recording media).

In the professional Media and Entertainment Survey we asked how much of the participants content was born digital and got the responses shown in **Table 4**. We included responses for the same ranges from the 2019, 2018, 2017, 2016, 2015, 2014, 2013, 2012 and 2010 survey. In 2019 87.4% said that over 80% of their content is created in a digital format vs. 83.4% in 2018, 85.7% in 2017, 83.0% in 2016, 85.3% in 2015, 81.1% in 2014, 75% in 2013, 80% in 2012 and 63% in the 2010 survey.

Table 4. Survey Question: What % of your Content is Born Digital

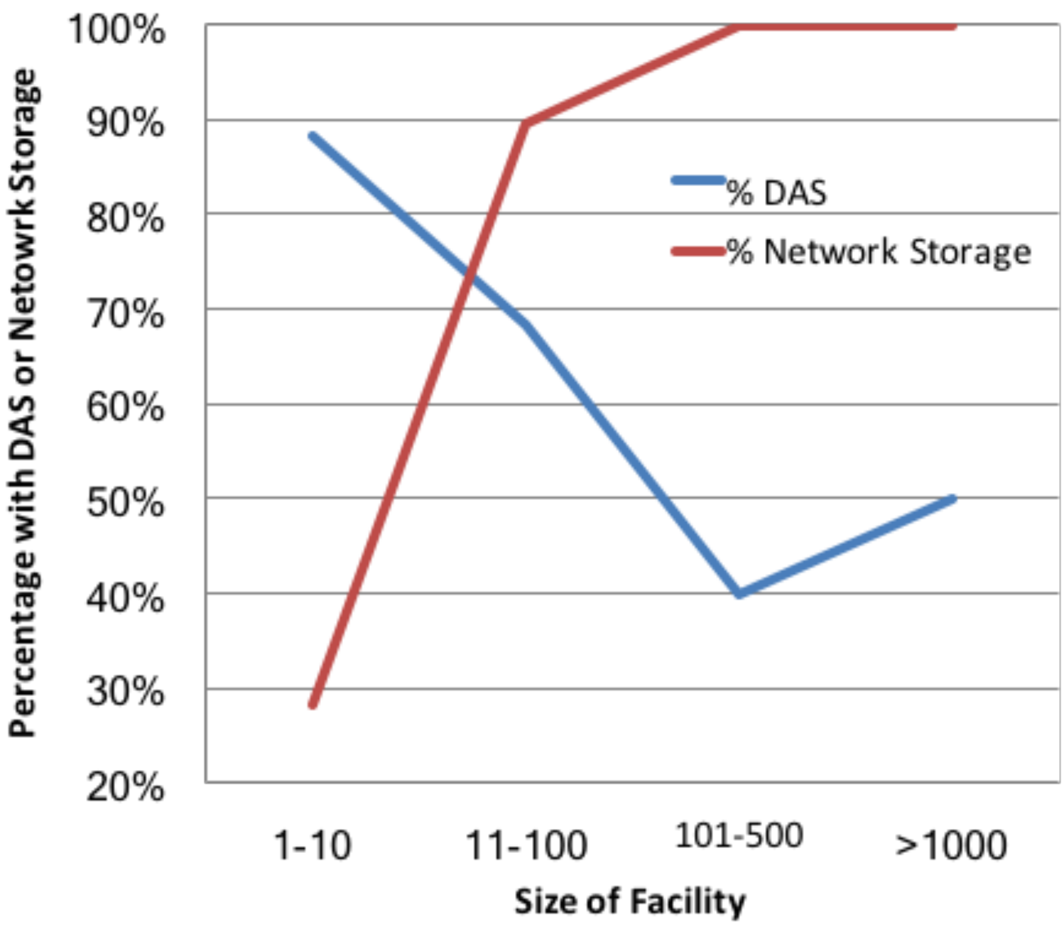
Percent Born Digital	**2010**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
<10%	3.9%	0.9%	1.1%	0.0%	0.0%	0.0%	1.2%	2.1%	0.0%
11% to 20%	1.3%	0.4%	0.0%	1.1%	1.6%	3.4%	0.0%	2.1%	2.3%
21% to 30%	3.2%	0.0%	0.0%	1.1%	1.6%	3.4%	1.2%	0.0%	0.0%
31% to 40%	3.2%	2.6%	1.1%	2.1%	1.6%	0.0%	0.0%	2.1%	2.3%
41% to 50%	5.2%	2.2%	3.3%	2.1%	0.8%	1.1%	3.6%	2.1%	2.3%
51% to 60%	5.2%	1.7%	2.2%	1.1%	1.6%	3.4%	1.2%	0.0%	2.3%
61% to 70%	5.8%	3.1%	6.5%	4.2%	1.6%	1.1%	0.0%	6.3%	1.1%
71% to 80%	8.4%	8.3%	10.9%	7.4%	5.7%	4.5%	7.1%	2.1%	2.3%
81% to 90%	16.1%	10.9%	15.2%	15.8%	7.3%	14.8%	13.1%	6.3%	11.3%
91% to	47.7%	69.9%	59.8%	65.3%	78.0%	68.2%	72.6%	77.1%	76.1%

100% %

Digital Editing and Post Production

Figure 2 shows that for the 2017 survey participants there were a general increase in the use of shared network storage (such as SAN or NAS), and a decrease in DAS storage as the number of people working in a post-production facility increases. The DAS storage in the larger facilities may be different than that used in smaller facilities and it looks like DAS use in larger facilities only declines to between 50-60%. In 2018 and 2019 the lower number of large facilities represented made it difficult to create a similar graph.

Figure 2. DAS vs. Shared Storage and Number of People in a Post Facility



When participants were asked about their use of direct attached and network storage in digital editing and post-production, the survey showed the following summary statistics in 2019 (compared to earlier surveys):

- 86.8% had DAS in 2019 (compared to 82.6% in 2018, 84.8% in 2017, 74.5% in 2016, 85.1% in 2015, 87.7% in 2014, 87.3% in 2013, 92% in 2012, 91% in 2009 and 83.8% in 2010)
  - 89.3% of these had more than 1 TB of DAS (compared to 81.0% in 2018, 86.7% in 2017, 89.8% in 2016, 89.1% I 2015, 86.5% in 2014, 88% in 2013, 78% in 2012, 96% in 2010 and 52% in 2009)
  - 1 to 50 TB was the most popular DAS size (77.4%)
  - 11.8% of these had more than 50 TB of DAS storage (compared to 12.1% in 2018, 18.7% in 2017, 17.4% in 2016, 18.5% in 2015, 22.3% in 2014 and 18.3% in 2013)
  - 0.0% had more than 500 TB of DAS storage (this was 3.5% in 2018, 4.0% in 2017, 2.9% in 2016, 8.4% in 2015, 6.9% in 2014 and 7% in 2013)
  - Most survey participants were not using flash memory in their post production DAS storage (although some did, this was an average of 7% in 2019)
- 57.0% had NAS or SAN (compared to 58% in 2018, 49.4% in 2017, 68.1% in 2016, 68.6% in 2015, 75.0% in 2014, 70.9% in 2013, 53.8% in 2012, 81% in 2010 and 2009—probably due to the addition of many smaller post-production facilities in the later surveys, (45%, 63.5%, 61.7%, 44.6%, 52.9%, 49.6%, 53.4% and 67% were in 1-10 people facilities in 2019, 2018, 2017, 2016, 2015, 2014, 2013 and 2012 respectively (compared to about 26% in 2010)
  - 45.6% had 50 TB or more of network storage in 2019 (compared to 57.5% in 2018, 65.8% in 2017, 57.4% in 2016, 52.1% in 2015, 49.4% in 2014 and 57.8% in 2013)
  - About 15.8% had more than 500 TB of NAS/SAN storage in 2019 (this was 15.0% in 2018, 13.6% in 2017, 15% in 2016, 17% in 2015, 11% in 2013 and 2014)
  - In 2012 about 48% had more than 16 TB of NAS or SAN (compared to 44% in 2009 and 58% in 2010)
- Many survey participants had considerable storage capacities in both DAS and NAS/SAN.

In the 2012, 2013, 2014, 2015, 2016, 2017, 2018 and 2019 surveys we asked whether survey participants used cloud-based storage for editing and post-production. In 2019 45.6% of responding participants said yes versus 47.5% in 2018, 41.9% in 2017, 23.0% in 2016, 30.2% in 2015, 25.6% in 2014, 24.7% in 2013 and 15.1% in 2012. In 2019 38.2% of the respondents said that they had 1 TB or more storage capacity in the cloud vs. 55.6% in 2018, 43.7% in 2017, 20.9% in 2016, 32.9% in 2015, 28.1% in 2014, 23% in 2013 and 26.7% in 2012. There seems a general trend to increased use of the cloud, probably to facilitate collaborative workflows.

Table 5 compared the 2009, 2010, 2012, 2013 2014, 2015, 2016, 2017, 2018 and 2019 survey results for distribution media used for proxies or completed editing work. Note that in the 2019 through 2012 surveys we added proxy distribution through the Internet as a response option. In 2014 through 2019 we included USB Flash Sticks.

Analog and digital tape showed a relative decline over the years with no analog video tape reported in 2017 through 2019. Surprisingly, optical discs are holding their own, perhaps due to the high number of optical drives connected to video displays. HDDs have grown up to 2017 and have been in the range of 44-54% since then. USB sticks had been about the same percentage from 2014-2016 but increased in 2017 and 2018 with a decline in 2019. Internet distribution was 87.2% in 2019, 76.9% in 2018, 81.6% in 2017, 30% in 2016, 29% in 2015 is now the dominant method for proxy distribution today (followed by HDDs, USB flash sticks and DVD discs).

Table 5. Proxy Distribution Media Trends

	2009	**2010**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Other	11%	17%	5%	5%	5%	4%	4%	7%	7.7%	6.9%
Analog video tape	10%	6%	2%	2%	1%	2%	1%	0%	0%	0%
Blu-ray discs	9%	11%	10%	12%	11%	8%	10%	27.6%	21.5%	21.6%
Digital tape	24%	18%	11%	11%	8%	7%	5%	5.7%	13.9%	7.8%
Hard disk drives	24%	25%	19%	22%	18%	20%	21%	44.8%	53.9%	48.0%
DVD discs	23%	23%	24%	21%	17%	17%	16%	48.3%	33.9%	36.3%
USB Flash Sticks					13%	13%	13%	36.8%	35.4%	29.4%
Through internet	NA	NA	29%	27%	27%	29%	30%	81.6%	76.9%	87.2%

Content Distribution

Distribution of professional video content has many channels. It can use physical media for getting content to digital cinemas or to consumers or it can be done electronically using broadcast, cable or satellite transmission; or through the internet or mobile phone networks. **Table 6** gives responses for the percentage of physical media used by the survey respondents for content distribution in 2019, 2018, 2017, 2016, 2015, 2014, 2013, 2012 and 2010 (for the 25, 17, 47, 27, 36, 35, 29, 82 and 62 respondents that used physical content distribution media in 2019, 2018, 2017, 2016, 2015, 2014, 2013, 2012 and 2010 respectively). Note that these are the average for the survey population giving their percentage for each physical media and do not and should not be expected to add to 100%. Digital Tape, DVD discs, HDDs, and Flash Memory are the most popular distribution formats and digital tape has become much less popular.

Table 6. Average Percentage content on physical media for professional content distribution

Media	2010	2012	2013	2014	2015	2016	2017	2018	2019
Digital tape	59%	34%	32%	20%	9%	33%	30%	55%	4%
CD or VCD discs	13%	18%	23%	4%	6%	19%	30%	2%	12%
DVD discs	48%	79%	67%	51%	63%	36%	66%	43%	52%
Blu-ray discs	18%	24%	10%	21%	18%	12%	18%	12%	28%
Hard disk drives	45%	51%	55%	52%	62%	64%	54%	56%	52%
Flash memory or SSDs	25%	24%	22%	28%	24%	26%	31%	48%	52%

Following are survey observations for electronic content distribution (such as video on demand).

- Average hours on central content delivery system was about 1,849 hours in 2019. In 2018 this was 1,241 hours, in 2017 this was 3,214 hours, in 2016 this was 2,174 hours, in 2015 this was 4,182 hours, in 2014 this was 1,142 hours, in 2013 and in 2012 this was 2,275 and 1,894 hours respectively. It was 700 hours in 2010 and 200 hours in 2009).
- There was an average of 114 hours ingested monthly in 2019 (this was 372 hours in 2018, 296 hours in 2017, 427 hours in 2016, 492 hours in 2015, 688 hours in 2014, 837 hours in 2013, 500 hours in 2012, 200 hours in 2010 and 150 hours in 2009). The 2013 and 2014 data is skewed high by some very high survey participants.
- In 2019 31.4% of respondents had more than 5% of their content on edge servers (this compares to about 42.8% in 2018, 35% in 2017, 38% in 2016, 43% in 2015 and 2014, 42% in 2013 and 24% in 2012)
- About 6.1% used flash memory on their edge servers in 2019 (this was 48% in 2018, 18% in 2017, 31% in 2016, 20% in 2015, 21% in 2014, 12% in 2013, 14% in 2012, 16% in 2010 and 20% in 2009)
- Note that in 2019 9.4% of survey respondents said that they used flash memory in their central delivery servers.

High-speed enterprise solid-state drives (SSDs) and other solid-state storage technology for edge content delivery appeared to be in the 20% range during the most recent survey years, until the 2019 survey.

Digital Archiving and Preservation

Today most new entertainment and media content is born digital and it is natural that this content should be preserved in digital form. This requirement places new demands on format preservation for long-term digital archives as well as management and systematic format refreshes during the expected life of a digital archive. In addition, the cost of analog content digitization and preservation in a digital format has gone down considerably and many digitization projects are proceeding apace. The growth of digital content archiving will swell the amount of content available for repurposing and long tail distribution. It will also swell the amount of storage and storage facilities required to store these long-term professional content archives and increase the need for new tools to find, use and preserve these assets.

Following are some observations from the professional media and entertainment survey on trends in digital archiving and content preservation. The ease of capturing and storing digital content has encouraged many facilities and organizations to store more of their raw captured content and even copies of all their distribution formats.

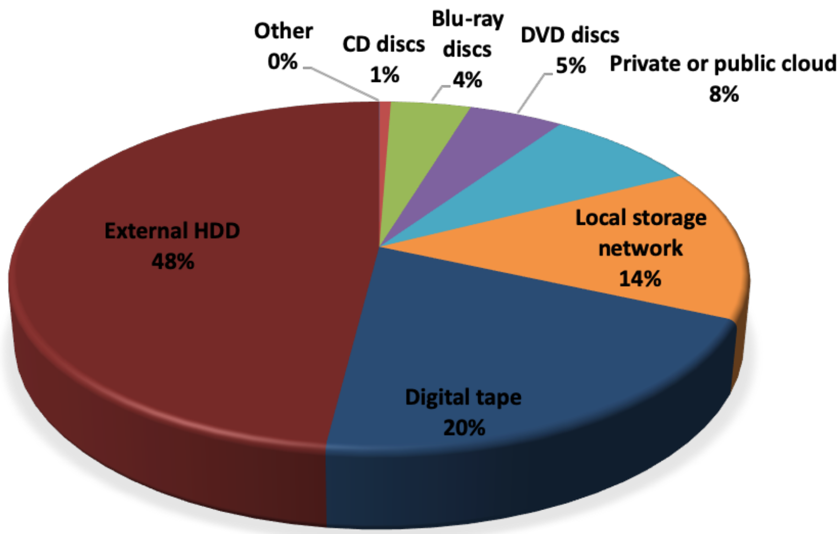
Detailed results from the 2018 survey are compared to the 2017, 2016, 2015, 2014, 2013, 2012, 2010 and 2009 surveys.

- 23.7% had >2,000 hours of content in a long-term archive in 2019 (compared to 31.6% in 2018, 32.4% in 2017, 41% in 2016, 34% in 2015, 41.9% in 2014, 43.8% in 2013 and 18% in 2012—note that there were fewer big archives in the 2017 and 2018 survey compared to 2016. This was 52% in 2010 and 44% in 2009,
- 76.7% archived all the content captured from their cameras in 2019 (this was 52.8% in 2018, 61.3% in 2017, 56.9% in 2016, 57.6% in 2015, 46.5% in 2014, 48.6% in 2013, 63% in 2012, 34% in 2010 and 40% in 2009)
- 70.0% archived copies of content in all of their distribution formats in 2019 (this was 75.7% in 2018, 67.7% in 2017, 54.0% in 2016, 62.6% in 2015, 69.4% in 2014, 56.9% in 2013, 71% in 2012, 57% in 2010 and 55% in 2009)
- 48.3% digitally archived all content captured from their dailies in 2019 (this was 54.0% in 2018, 40.3% in 2017, 35.9% in 2016, 46.2% in 2015, 44.3% in 2014, 37.7% in 2013, 40% in 2012 and 24% in 2010)
- 48.3% digitally archived all content captured from rough cuts in 2019 (this was 51.4% in 2018, 33.9% in 2017, 1.3% in 2016, 37.8% in 2015, 40.8% in 2014, 46.6% in 2013, 46% in 2012, and 23% in 2010)
- 36.7% digitally archived all content captured from their intermediaries in 2019 (this was 37.8% in 2018, 27.9% in 2017, 36.5% in 2016, 37.4% in 2015, 38.6% in 2014, 46.3% in 2013, 8% in 2012 and 30% in 2010)

- 52.6% of the respondents said that their annual archive growth rate was >6% in 2019 (this was 35.1% in 2018, 44.3% in 2017, 50.9% in 2016, 47.9% in 2015, 67.3% in 2014 and 65.3% in 2013).
- 11.7% added 1,000 hours or greater to their archive annually in 2019 compared to 24.3% in 2018, 24.5% in 2017, 31.3% in 2016, 26.9% in 2015, 35.1 % in 2014, 34.4% in 2013, 9.3% in 2012 and 39% in 2010. (The 2012 results were probably due to the inclusion of many smaller producers)
- About 8.4% had >2,000 hours of unconverted analog content in 2019 (compared to 18.8% in 2018, 18.2% in 2017, 28.6% in 2016, 32.6% in 2015, 33.3% in 2014, 24.2% in 2013, 18% in 2012, 54% in 2010 and 48% in 2009)
- In 2019 4.2% of participants had over 5,000 hours of unconverted analog content (this was 6.3% in 2018, 9.1% in 2017, 16.7% in 2016, 16.3% in 2015, 14.3% in 2014 and 3% in 2013)
- In 2019 54.1% of the survey respondents have an annual analog conversion rate of 2% or less (compared to 56.3% in 2018, 39.4% in 2017, 52.5% in 2016, 42.8% in 2015, 21.5% in 2014, 27% in 2013 and 56% in 2012)
- The average rate of conversion is about 4.2% in 2019 (this was 4.3% in 2018, 4.0% in 2017, 3.4% in 2016, 4.5% in 2015, 5.5% in 2014 and 5.4% in 2013). This is within the general range observed in 2012, 2010 and 2009)

Professional media and entertainment content was traditionally archived on film or analog videotapes. Today the options available for archive media to store digital content depend upon the preferences and existing infrastructure of digital archive facilities. **Figure 3** gives the percentage distribution of archive media used by the survey participants.

Figure 3. Percentage of Digital Long-Term Archives on Various Media



Among the survey participants External HDDs were the most common (probably due to a large number of smaller facilities participating) at 48% in 2019 compared to 54% in 2018, 40% in 2017, 23% in 2016, 28% in 2015, 18% in 2014 (the similar category in earlier years was labeled Hard Drives and was 31% in 2013, 28% in 2012, 24% in 2010 and 25% in 2009).

Digital Tape was the second most common storage media at 20% in 2019 compared to 25% in 2018, 25% in 2017, 49% in 2016, 40% in 2015 and 2014, 43% in 2013, 23% in 2012, 36% in 2010 and 33% in 2009).

For the 2019 through 2012 surveys we added archiving in a private or public cloud and found that 7.9% used a public or private cloud in 2019. 6% used a public or private cloud in 2018, 11% used a public or private cloud in 2017, 2% used a public or private cloud in 2016 while in 2016 this was 2%, in 2015 this was 5%, it was 4% in 2014 and 2013 (and 5% in 2012).

Disk Local Storage Networks were 14% in 2019, 8% in 2018 and 11% in 2017 (this was 16% in 2016 and 2015, 21% in 2014, 8% in 2013 and 12% in 2012).

Optical discs of all sorts were about 9.6% in 2019 (compared to 7% in 2018, 11% in 2017, 8% in 2016, 6% in 2015, 12% in 2014, 8% in 2013, 28% in 2012, 21% in 2010 and 23% in 2009).

For the “other” category we had 0.2% in 2019, 0.6% in 2018, 2% in 2017 and 2016 and 5% in 2015 and 2014 (compared to 6% in 2013, 4% in 2012, 19% in 2010 and 18% in 2009). Our survey looks like it is accounting for all the archive media used by our survey participants.

We are guessing that in the earlier surveys archiving on local or remote network storage was a significant part of the “other” archive methods. Presumably many of the HDDs used for archiving are in arrays for warm (near-line) archives and that storage in a local network or in the cloud is likely on hard disk drives as well (making likely HDD archiving about 70% of the total in 2019, 68% in 2018 and 62% in 2017, note though that there are now LTO tape-based cloud storage systems using tape so the HDD number could be a bit lower. These numbers are abstracted from the actual response distribution since many facilities may use one or more archive storage media.

Table 7 gives the average projected growth rate for these archive storage media based upon the 2019, 2018, 2017, 2016, 2015, 2014, 2013, 2012, 2010 and 2009 surveys. This data is a simplification of the complete results from the survey.

The growth rate of digital tape much less than that of hard disk drives if we include external HDDs, local network storage and most of the cloud storage. Hard disk drives, either in local storage systems and devices or through network and remote storage appears to be undergoing a significant growth spurt. Note though that there are LTO tape-based cloud archives now available on the market, so actual cloud archive storage will likely be split between tape and HDDs. It is also clear from the survey that there is a segment of this market that will continue to rely on optical media for digital archives.

Table 7. Simplified percentage growth rate of various archival media types.

	2019	2018	2017	2016	2015	2014	2013	2012	2010	2009
Digital Tape (%)	44.0	35.5	42.6	66.7	59.2	57.7	64.5	56.8	76.1	69.2
CD Discs (%)	18.0	9.7	14.9	21.7	17.1	12.5	12.9	20.1	56.6	63.5
DVD Discs (%)	28.0	22.6	25.5	28.3	26.3	18.8	21.0	34.5	32.7	32.7
Blu-ray Discs (%)	36.0	9.7	27.7	28.3	17.1	15.6	16.1	26.6	26.5	25.0
Hard Disk Drives (%)							48.4	69.8	21.2	26.9
Ext. Hard Disk Drives (%)	76.0	71.0	59.6	50.0	55.3	42.4				
Local Network Storage (%)	36.0	22.6	29.8	43.3	35.5	39.1	29.0	24.5		
A Private or Public Cloud (%)	32.0	29.0	25.5	28.3	30.3	23.4	19.4	17.3		
Other (%)	4.0	3.2	6.4	16.7	14.5	12.5	9.7	12.2	19.5	27.9

Some other observations from the archive and preservation section of the survey:

- About 40.7% never update their digital archives in 2019 (compared to 44.4% in 2018, 37.5% in 2017, 41.6% in 2016, 46.4% in 2015, 25.4% in 2014, 42.4% in 2013, 44% in 2012, 39% in 2010 and 41% in 2009)
- About 80.0% used different storage for archiving and working storage in 2019 (this was 77.1% in 2018, 80.0% in 2017, 76.2% in 2016, 77.4% in 2015, 77.9% in 2014, 81.8% in 2013, 71% in 2012, 77% in 2010 and 75% in 2009)
- About 51.8% copied and replaced their digital long-term archives every 10 years or less in 2019 (this was 50.0% in 2018, 60.7% in 2017, 49.2% in 2016, 45.2% in 2015, 67% in 2014, 47% in 2013, 50% in 2012)
- 52.9% said they would use a private or public cloud for archiving in 2019 while this was 65.7% in 2018, 41.4% in 2017, 38.1% in 2016, 43% in 2015 and in both 2014 and 2013 40% said that they would use a private or public cloud for archiving content

2019 DIGITAL STORAGE FOR MEDIA AND ENTERTAINMENT REPORT

This updated and expanded report is the fourteenth annual comprehensive reference document on this topic. The report analyzes requirements and trends in worldwide data storage for entertainment content acquisition; editing; archiving and digital preservation; as well as digital cinema; broadcast; satellite; cable; network; internet and OTT and VOD distribution. Capacity and performance trends as well as media projections are made for each of the various market segments. Industry storage capacity and revenue projections include direct attached storage, cloud (including object storage), real-time as well as near-line network storage.

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About the Author

Tom Coughlin, President, Coughlin Associates is a widely respected digital storage analyst as well as a business and technology consultant. He has over 37 years in the data storage industry with engineering and management positions at high profile companies.

Dr. Coughlin has many publications and six patents to his credit. Tom is also the author of Digital Storage in Consumer Electronics: The Essential Guide, which is now in its second edition with Springer. Coughlin Associates provides market and technology analysis as well as Data Storage Technical and Business Consulting services. Tom publishes the *Digital Storage Technology Newsletter, the Media and Entertainment Storage Report*, the *Emerging Non-Volatile Memory Report* and other industry reports. Tom is also a regular contributor on digital storage for Forbes.com and other blogs.

Tom is active with SMPTE (Journal article writer and Conference Program Committee), SNIA (including a founder of the SNIA SSSI), the IEEE, (he is past Chair of the IEEE Public Visibility Committee, Past Director for IEEE Region 6, President Elect for IEEE USA and active in the Consumer Electronics Society) and other professional organizations. Tom is the founder and organizer of the Annual Storage Visions Conference (www.storagevisions.com as well as the Creative Storage Conference (www.creativestorage.org). He was the general chairman of the annual Flash Memory Summit for 10 years. He is a Fellow of the IEEE and a member of the Consultants Network of Silicon Valley (CNSV). For more information on Tom Coughlin and his publications and activities go to www.tomcoughlin.com.