# Case Study – Automated Media Analysis

Services Sound & Vision Corporation, otherwise known as SSVC, is the preferred provider of entertainment and information to Britain's Armed Forces personnel and their families worldwide. Incorporating British Forces Broadcasting Service (BFBS) at their studios near Gerrards Cross in Buckinghamshire UK, they broadcast nine television channels 24 hours a day, into 17 different countries. These channels contain the most popular material from regular UK terrestrial and satellite channels, compiled into the BFBS format, plus their own programming such as the three-times-a-week news show, 'BFBS Reports', and Room 785. What makes SSVC possibly unique as a broadcaster is that all this material has to be made available at suitable time points in all of the destination countries. Hence a considerable amount of infrastructure is used to ensure the service personnel can see the programs at times to suit their work.

As much of the material is captured from other UK channels, it must be edited to suit their requirements. For example all program joins have to be replaced with new ones; all advertising has to be removed, and so on. There can be complex rights issues to resolve before any given material can be re-broadcast, sometimes taking months to achieve.

In 2006, SSVC upgraded their entire operation to become an entirely digital production and transmission centre for all their acquisition, editorial and transmission needs using the workflow shown below. The ingest servers are very flexible, and permit program editing to take place and the compilation of all playout material. Anything to be transmitted within the next few days is held on these servers. A large disk cache is used for programs to be transmitted over the next few weeks, whilst any material not able to be broadcast for some months is stored on tape.
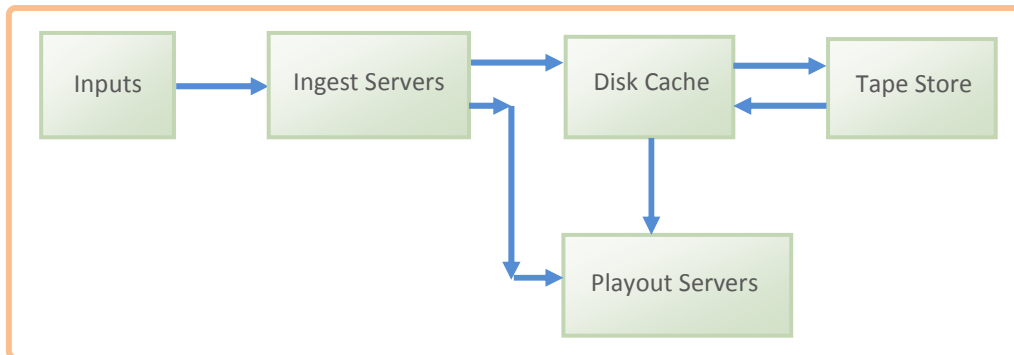

However, although the workflow seemed adequate, SSVC were getting a significant number of problems with their file based media. Black frames and audio mutes were the most common faults, and this meant that all clips had to be examined before broadcast. Employing a team of people to manually watch the volume of material being prepared for transmission would have been impracticable and the cost prohibitive. In any case, it is very easy to miss small faults that may perhaps only occur during a single frame, but such faults are still capable of causing system anomalies. The obvious answer was an alternative solution, involving automated content verification of their media. This would pick up all faults whether minor or major, with equal ease.

SSVC's requirements for this were actually quite simple. Besides finding a way to automate traditional QC checks, they also needed to check for the following:-

- Detection of coding faults

- Detection of black (and green) frames

- Detection of audio mutes and silences

- Faster than real time processing at SD resolution, as a significant archive of material already existed and needed to be tested, as well as the constant supply of new material.

- Although SSVC currently only have SD material, it is anticipated they will work with HD in the future. They may also work with formats designed for mobile devices and the web, so they needed a product capable of working in any format, not just traditional broadcast video formats.

- The files being checked must not be 'moved' through the file verification process. In other words, it was necessary that the original files could be flagged as 'good' or 'bad', without additional copies being made, potentially adding to the problem.

The revised workflow, once the file verification stage was added, looked like this.
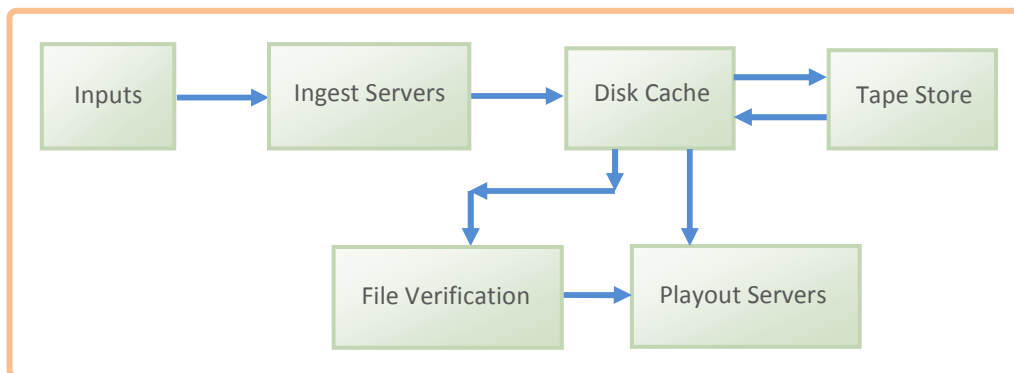
On initial investigation, these seemingly simple requirements were hard to meet. SSVC found several products capable of detecting coding faults, black frames, and audio mutes. However products from the market leaders had a variety of problems. Several products they investigated only managed real time performance for SD resolution. Not all products used XML based reporting allowing easy integration into any system, and almost all products had an insufficiently flexible reporting interface such that they reported a large amount of fault positives and unnecessary information. Some products could not even handle HD material, far less cover the requirement for web and mobile formats.

After much searching and product evaluations, SSVC came across the Pulsar product from Venera Technologies Ltd. After comprehensive testing, SSVC found that Pulsar met all their requirements, but in particular provided great flexibility in terms of reconfigurability, and produced extremely few false positives. As Pulsar is sold as a software product, SSVC were able to purchase their choice of leading edge hardware to run the software, and have consistently achieved file verification speeds greater that real time, with SD resolution files, plus they have a product fully compatible with all other formats should this be required in future. SSVC have found the level of support and responsiveness from Venera Technologies to be excellent, and are very confident that Pulsar will continue to meet their needs as these evolve in the future.