



SeaChange Vodcast®

On-demand content delivery rooted in real-world experience.

SeaChange's Vodcast Content Delivery solution is built on market proven technology that first supported the mission critical spot advertising industry. Leveraging existing satellite delivery infrastructures from a single uplink point, with receiver locations within a satellite transmission

signal, Vodcast enables the delivery of file based content to hundreds of locations simultaneously, across the country or around the globe, in a 'faster than real-time' delivery platform, thus reducing the distribution costs and streamlining schedules. With the widespread deployment of video-on-demand services around the globe, the Vodcast Content Delivery product was enhanced to distribute movies and other on-demand content, along with the associated metadata (XML content description, Poster art, ratings information, etc.). Today, the system is entrusted to handle a wide range of revenue generating content for television operators around the world.



VODCAST 3.5:

Optimized for High-Volume Content Delivery

Today the new Vodcast 3.5 reflects nearly a decade of market performance and SeaChange continues to expand features in anticipation of emerging requirements. Vodcast 3.5 includes options such as redundant fail-over system designs, invisible watermarking technologies for copyright protection, multiple metadata file support for a single VOD program, automated quality control features, and many advanced features to automate content distribution, while providing simple visual tools for monitoring the system, from end to end.

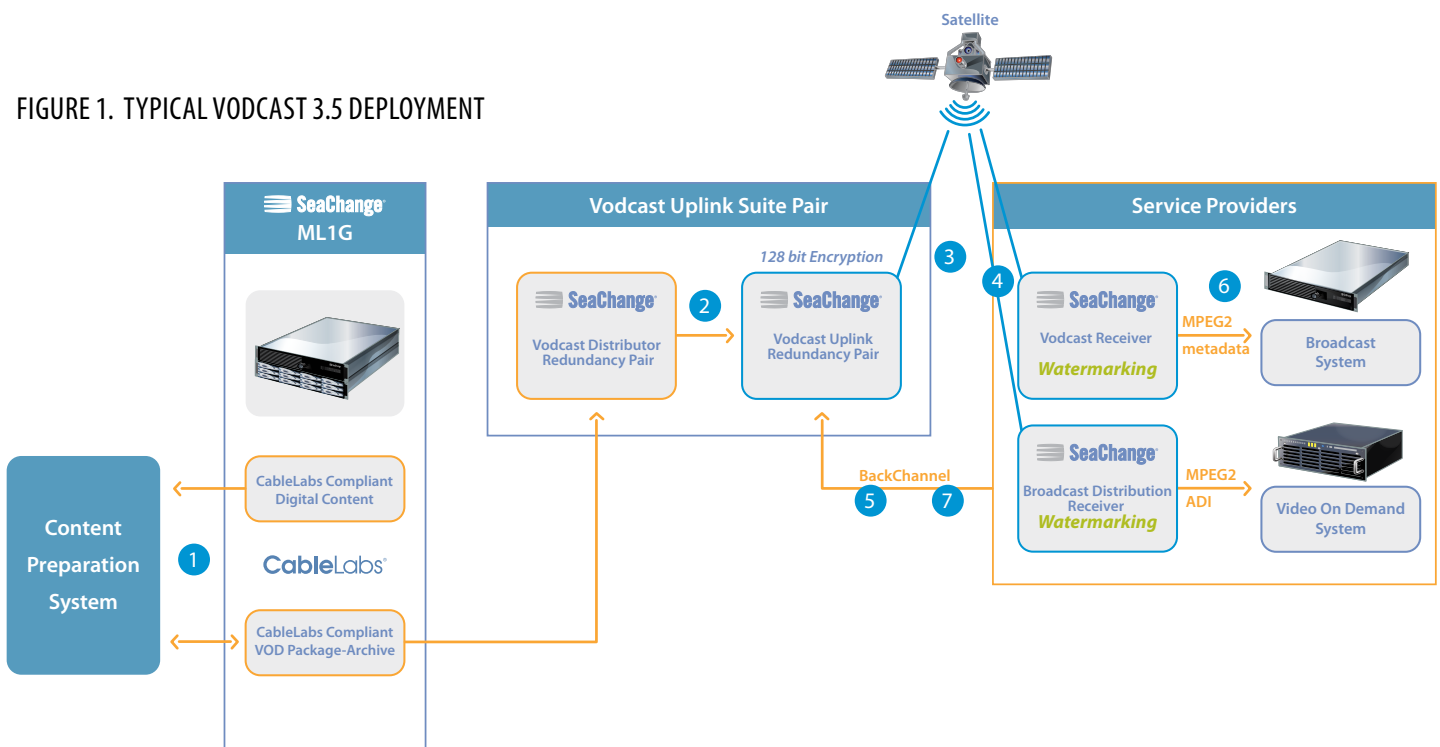
TRADITIONAL VODCAST DEPLOYMENT

Vodcast 3.5 is comprised of the Uplink Suite (pitchers for distribution from content origination sites, typically integrated with content preparation workflows) and Receivers (catchers distributed across VOD service provider networks). The simple Vodcast product architecture and workflow shown below details the delivery process from content preparation, shared storage and pitching by the Vodcast Uplink Suite to remote catcher locations within a network.

Vodcast 3.5 features have been developed with existing customer requirements in mind.

- Monitoring catcher status systemwide
- Pre-scheduled planning and estimated delivery detail information for scheduled deliveries
- Real-time delivery status, performance, and monitoring of content while in transmission
- Advanced file error control, which guarantees accurate and timely file transfer from one site to many
- Digital Watermarking to protect content propagation and to allow content tracking

FIGURE 1. TYPICAL VODCAST 3.5 DEPLOYMENT



Vodcast also supports specific options for processing within the pitcher and the catcher.

- 128 bit encryption
- Invisible watermarking
- Content assembly inside the catcher
- Automated quality control
- Comprehensive logging and activity reporting
- Complete, real-time viewing of system activity for all end users and operations personnel
- Extensive documentation providing proof of performance

WORKFLOW

(1) The Content Preparation System creates the VOD Package and exports the MPEG2 Asset and ADI xml file to MediaLibrary 1G (ML1G) by FTP or File Copy. And at the same time, there is a copy placed in the Vodcast Distributor's inventory.

(2) The Vodcast Distributor accepts the pitch schedule / delivery order, and uploads all required delivery packages to the Uplink, including the MPEG2 asset content files, ADI files, and an index file for the file list of that order. The Package is encrypted and prepared for distribution by the Vodcast Uplink.

(3) The Vodcast Uplink sends the encrypted content, in multiple small packets, through satellite according to the pre-defined satellite bandwidth profiles and pitch schedules.

(4) The IRD receives the individual small packets of data from satellite, and then passes each small packet onto the Vodcast Receiver, which receives the raw data, performs the error check and handling for each small packet,

re-assembles all packets into the Package, applies the decryption key, which was received on the back channel, applies the unique catcher ID as an invisible watermarking within the MPEG2 video (optional), performs a check sum test and MPEG2 scan (optional) to confirm a completed valid MPEG2 Package has been created. The catcher will then copy / store the file onto a shared file system at a specific location or folder, so that the local Video On Demand system can import the Package into the VOD server through the Asset Management Server (AMS). A copy of the package is kept on the catcher for an operator determined amount of time, so that QC and resubmission of Packages can be accomplished without having to re-pitch assets.

(5) The Vodcast Receiver sends the reception report to the Uplink Suite for notification that the content has been received. A real-time feedback of catcher performance is also available to the Distributor, so that real-time performance of the network can be monitored.

(6) The Vodcast Receiver checks the Package's type, and if it is a VOD Asset Package, it notifies the VOD system to import the asset via ADI protocol.

(7) Vodcast Receiver sends the results of the Package ingestion to VOD system to the Uplink Suite, for the asset delivery report.

CURRENT VODCAST HIGHLIGHTS

1. Any high speed, IP multicast network can be utilized for the forward channel distribution. Satellite delivery is the normal forward channel. Internet and Intranet can also be utilized.
2. Monitoring and reporting functions track each Package's status before transmission, during distribution, and upon receipt in the catcher. Specialty functions, such as the decryption status, ingestion result, etc., are reported to the distributor from each catcher, utilizing the internet based back channel. This enables real-time monitoring of the system health, which includes each service's running status, disk information, I/O performance, connection status with the local VOD server, and so on.
3. Deliver content using a pre-scheduled delivering window, with real-time delivery performance reporting based upon actual received bandwidth at the catcher sites.
4. Encryption of MPEG2 files with 128bit length key prior to distribution, and support to segment large MPEG2 files into multiple small files, which minimize the risk of information loss / theft during transmission.
5. Support bandwidth profiles, which do not require full time satellite channel for Vodcast content distribution.
6. Scheduled or booked Packages or tasks can be canceled, and or reprioritized up until the item is cued up as "next asset to pitch".
7. Conforms to CableLabs ADI1.0 and ADI1.1 specification.
8. Advanced ADI export features within the catcher include the ability to customize, per catcher site, ADI files that are supplied to the AMS.
9. Provided Graphical User Interface (GUI) for order entry, system management, transmission tracking, and reporting.
10. Redundancy of Vodcast Distributor and Uplink servers with failover functions, which enable seamless switching between the pair, should one of them encounter a performance problem. This avoids the failure of a content delivery due to a hardware issue at the uplink facility.
11. Includes optional features to add unique invisible watermarking to content received (MPEG2 and H264) at each individual catcher site, with a unique Asset / Catcher ID. With invisible watermarking, if the content is found on the black market, the content can be traced back to the individual catcher distribution path.



SeaChange International, Inc.
50 Nagog Park, Acton, MA 01720 USA
T 1.978.897.0100 F 1.978.897.0132
www.schange.com

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