

## vDCM Encoder

### Encoding and Transcoding of Live Video/Audio for Broadcasters and Video Providers

# Carry Out Best-In-Class Encoding and Transcoding



Synamedia's virtual Digital Content Manager (vDCM) Encoder is a software-based solution designed to encode or transcode live video and audio signals for traditional broadcast and IPTV as well as streaming video (adaptive bitrate HTTP). It supports a wide range of input and output formats and video/audio codecs. The highly flexible vDCM Encoder can run on-premises as a software-defined appliance or in a public or private cloud environment.

## Key Functionalities

### Extensive set of video/audio coding options for broadcast, IPTV and streaming distribution

- Uses unified converged architecture to cover both traditional transport stream video as well as streaming (adaptive bitrate) video
- Focuses on broadcast and broadband players
- Supports MPEG-2, MPEG-4 AVC, HEVC, AV-1, and VVC with constant and variable bitrates
- Supports statistical multiplexing
- Uses unique quality-controlled compression with variable bitrate
- Optimizes compression efficiency based on Synamedia's unique artificial intelligence compression algorithm
- Uses unique video quality objective measure technology (predictive VMAF)
- Offers extensive choice of high dynamic range (HDR) support
- Features low latency mode
- Matches video excellence and bandwidth efficiency to reduce delivery costs

### Flexible deployment models

- Deploys either as a software appliance or in the cloud
- Uses the latest CPU to optimize density and reduce costs

### Advanced operational efficiency features

- Utilizes intuitive drag-and-drop UI for lineup
- Features simplified user interface for fast setup (including for event setup)
- Enables configuration via XML files
- Includes per-channel graphics edition for logo insertion and banner animation
- Adjusts audio level and automated leveling between programs and across channels to comply with CALM act and EBU requirements
- Enables seamless ad insertion, local program insertion, and management of alternate channels

### Technical Advantages

- Support of large range of inputs
- State-of-the-art set of video and audio codecs
- Advanced rate control algorithms for broadcast and streaming
- Support of ad and program insertion
- Simple GUI for lineup configuration
- APIs for lineup configuration, splicing and switching management
- Rich monitoring toolset, including open APIs

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### Product Specifications

Compression Features	
Video Input and Output	<ul style="list-style-type: none"> <li>• Baseband (input only)</li> <li>• Baseband over IP</li> <li>• SMPTE2022-6 (input only)</li> <li>• SMPTE2110-10 / -20 / -21 / -30 / -40</li> <li>• NDI® (Network Device Interface) - <a href="http://ndi.tv/">http://ndi.tv/</a> (input only)</li> <li>• Transport stream</li> <li>• Adaptive transport stream</li> </ul>
Transport Protocols	<ul style="list-style-type: none"> <li>• SRT</li> <li>• RIST</li> <li>• Zixi</li> <li>• RTMP</li> <li>• HLS</li> <li>• DASH</li> <li>• TS over HTTP</li> </ul>
Video Codecs	<ul style="list-style-type: none"> <li>• VVC</li> <li>• AV-1</li> <li>• HEVC (H.265) 4:2:0 (8/10 bits) – up to 8k                             <ul style="list-style-type: none"> <li>• Up to ultra-HD: Main10, HT @ Level 5.1</li> </ul> </li> <li>• AVC (H.264) 4:2:0 (8 bits) &amp; 4:2:2 (8/10 bits) – up to Full HD                             <ul style="list-style-type: none"> <li>• Up to HP @ L4.0–L4.1</li> </ul> </li> <li>• MPEG-2 4:2:0 (8 bits) – up to HD                             <ul style="list-style-type: none"> <li>• Up to MP @ HL</li> </ul> </li> </ul>
Video Resolutions	<ul style="list-style-type: none"> <li>• 8k                             <ul style="list-style-type: none"> <li>• 4320p @ 25, 29.97, 50, 59.94</li> </ul> </li> <li>• Ultra-HD                             <ul style="list-style-type: none"> <li>• 2160p @ 25, 29.97, 50, 59.94</li> </ul> </li> <li>• HD                             <ul style="list-style-type: none"> <li>• 1080p @ 50, 59.94</li> <li>• 1080i @ 25, 29.97</li> <li>• 720p @ 50, 59.94</li> </ul> </li> <li>• SD                             <ul style="list-style-type: none"> <li>• 576i @ 25</li> <li>• 480i @ 29.97</li> </ul> </li> <li>• ABR Resolutions                             <ul style="list-style-type: none"> <li>• H.264/HEVC: ranging from 96x96 to 3840x2160 – from half to double of input frame rate</li> </ul> </li> </ul>
Audio Codecs	<ul style="list-style-type: none"> <li>• Dolby Atmos</li> <li>• MPEG-1 layer II</li> <li>• MPEG-1 layer III (MP3) (input only)</li> <li>• Advanced audio coding (HE-AAC-v1, HE-AAC-v2 and ACC-LC)</li> <li>• Dolby-E (input only)</li> <li>• Dolby Digital (AC-3)</li> <li>• Dolby Digital Plus (EAC-3)</li> <li>• Dolby AC-4</li> <li>• Support for mono–stereo multichannel</li> </ul>
High Dynamic Range (HDR)	<ul style="list-style-type: none"> <li>• SDR (BT.601/BT.709) conversion to SDR BT.2020, HLG DVB, HLG ATSC, HDR10, SL-HDR1, Dolby Vision</li> </ul>

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### Specific Features

Video Compression Processing	<ul style="list-style-type: none"> <li>• GOP: Static, hierarchical, and dynamic</li> <li>• Filtering</li> <li>• Motion compensated temporal filtering (MCTF)</li> <li>• Prefiltering to remove noise and macro-blocking artifacts from video sources</li> <li>• Support for de-interlacing</li> <li>• Inverse telecine</li> <li>• Aspect ratio: 16:9 and 4:3, AFD and manual control</li> <li>• Down conversion</li> </ul>
Metadata Processing	<ul style="list-style-type: none"> <li>• Closed caption support: CEA-608 and CEA-708 conversion</li> <li>• SCTE 104/SCTE 35 processing</li> <li>• VBI/VANC formats: WST, DVB-WST, WSS, OP-47, OP42, SMPTE-2031, SMPTE-2038, SMPTE-2016</li> </ul>
Statistical Multiplexing	<ul style="list-style-type: none"> <li>• MPEG-2, H.264, HEVC</li> <li>• UHD, HD, SD</li> </ul>
Multiplexing	<ul style="list-style-type: none"> <li>• Advanced multiplexing capabilities (see vDCM Multiplexer datasheet)</li> </ul>

### Operations

Redundancy	<ul style="list-style-type: none"> <li>• 1:1 IP interface backup</li> <li>• IP port mirroring</li> <li>• Input service and transport stream redundancy</li> <li>• Hitless merge for MPEG-2 transport stream input and for SMPTE2022-6 input (SMPTE-2022-7)</li> <li>• User-configurable triggers</li> <li>• 1:1 and N:M node redundancy</li> </ul>
Management	<ul style="list-style-type: none"> <li>• Handled by the Video Network Service Management System (see VSM datasheet)</li> </ul>
Monitoring	<ul style="list-style-type: none"> <li>• Integrated Grafana dashboards</li> <li>• Elasticsearch, Logstash and Kibana (ELK) stack support</li> <li>• Alarm notifications, including SNMP traps</li> <li>• Syslog</li> <li>• Easily controlled local web GUI</li> <li>• VSM support for line-up configuration, resource pool redundancy for hybrid setups (mix of hardware DCM and software Synamedia DCM), capacity modeling, and centralized monitoring</li> <li>• Fully documented open API allowing third-party component integration</li> </ul>

## Platform Support and Compatibility

### Deployment

Appliance	<ul style="list-style-type: none"> <li>• Different appliances available</li> </ul>
Private Cloud	<ul style="list-style-type: none"> <li>• Virtual machine and Docker container</li> </ul>
Public Cloud	<ul style="list-style-type: none"> <li>• Multi-cloud supporting all major cloud providers</li> </ul>