

### Feature Highlights

- Media Supply Chain Transcoder & Workflow Engine with Configurable Packaging
- Node-based, perpetually licensed capacity -and- Elastic, usage-based cloud service
- UHD High Dynamic Range Processing and cross conversion
- HDR support for Dolby Vision & HDR10
- Wide colorspace support (601, 709, 2020, P3/D65, P3/DCI) & conversion
- Comprehensive IMF support (App 2, App 2e, App ProRes, App DPP).
- Deploy and use in-cloud (perpetual nodes, SaaS, or elastic nodes in VPC) or on-premise
- Customizable Web-based Operator UI (Kiosk)
- AMWA AS-02 & AS-11 xN Support (including x8 and x9)
- ARD/ZDF MXF Profiles
- Ingest from common camera card formats from Panasonic, Sony, RED, Canon, GoPro
- Best-in-class image processing
- Consistently high-quality results for all codecs
- Unique interlace, progressive and framerate handling
- Embedded multi-channel audio, Closed Captioning and Ancillary data processing.
- Native file I/O support for CIFS/NFS/NTFS & AWS S3 (IAM AssumeRole or access/secret keys)
- Copy support to/from Google Cloud Storage and Azure Blob Storage
- File Transfer Acceleration vendor integration
- Quality Control vendor automation and result usage in transcode workflows
- Forensic Watermark vendor integration
- Service-based, 64-bit Transcode Engine
- Scalable across CPUs, GPUs and Networks
- Clearly defined, documented and extensible APIs
- Proven interoperability in multi-vendor environments

### Dalet AmberFin

Dalet AmberFin is a high quality, scalable transcoder with video/image, audio and subtitle/caption processing, media workflow and file packaging capabilities, driven by a powerful workflow engine.

Complex workflows to ingest, process, package and deliver assets can be designed and monitored in a highly intuitive web-based interface.

Whether you need a single application specific transcode or a large-scale enterprise-class media supply chain, Dalet AmberFin software is built upon unique technologies that ensure your media assets retain the highest quality from new media content to 4K resolutions and High Dynamic Range colors.

Dalet AmberFin is an API-first, service-oriented software platform that runs on cost-effective, commodity IT hardware or cloud/virtual machines that can adapt and grow as the needs of your business change and offers extensible rich APIs to ease integration in any environment.

#### New in this release:

- HEVC in TS supported for Input
- IMF App TSP 2121-4:2019 Support
- Multi-channel audio to stereo mixdown
- Cloud Transcoder service now launches in the region closest to the S3 bucket for the job
- Cloud Transcoder service now uses a GPU container host when required by the job

#### From previous recent releases:

- Cloud Transcoder stencils included in Workflow Engine
- AWS S3 access via IAM AssumeRole support
- Avid DNx SDK updated to 2.61
- Support RED (R3D) camera format for Kiosk parsing and transcoder input
- Kiosk – support of Galaxy Categories/Glossaries in Drop-Down Selectors on UI
- Support FFV1 for input and output
- Support AVC-Intra Class 200 for input and output
- Copy to/from block storage support for Google Cloud Storage within Workflow Engine
- IMF App DPP (SMPTE TSP 2121-1:2018) creation and consumption
- AmberFin Kiosk Workflow Based User Tasks
- P2 Cast Workflow Stencil
- HDR Framerate conversions for all resolutions
- HDR Metadata Support
- D65-P3 Colorspace Support
- IMF App ProRes (SMPTE RDD 45:2017) creation and consumption

### Available Transcode Nodes

AF.1500	Standard Node	Resolutions up to HD, 601 & 709 Colorspace, Standard Dynamic Range (SDR), RGB, YCbCr, Most Video Codecs
AF.1510	Advanced Node	Standard Node features PLUS Resolutions above UHD, 2020, P3/D65 P3 DCI Colorspace, High Dynamic Range (HDR) PQ, HLG, Dolby Vision, HDR10, JPEG 2000 and HEVC Video Codecs

### Supported Codecs, Wrappers & Packaging

Video & Image Sequence Codecs		Audio Codecs
DV/DVCPro/DVCProHD MPEG-1 Video MPEG-2 Intra/ Long-GOP D10 (IMX 30/40/50) H.263 (ASP) H.264 (AVC) Intra/ Long-GOP Panasonic AVC-Intra (Class 50/100) Panasonic AVC-LongG6/12/25/50 XAVC HD Intra/Long GOP XAVC 4K Intra CBG XAVC 4K Long GOP VBR MPEG-4 SStP Lite/SQ 4:2:2	AVCHD H.265 (HEVC) DNxHD DNxHR ProRes 422 Proxy/422 LT/422/422 HQ ProRes 4444/ 4444XQ JPEG 2000 Uncompressed Video VC-1 WM9 VP8 DPX, TIFF, PNG, BMP, JPEG, TGA	PCM MPEG 1 Layer 2 Audio Dolby D (AC-3, 5.1) Dolby E Uncompressed Audio AAC (HC/ LC)
Wrappers & Packaging		
MXF OP1a, AS-02, AS-11 xN, OP-Atom (including AAF reference) MXF XDCAM, P2, ARD/ZDF IMF App 2/2e IMF App ProRes (RDD 45:2017) IMF App DPP (TSP 2121-1) & TSP 2121-4 DASH, HLS Image Sequences (DPX/TIFF/ PNG/ BMP/ JPEG/ TGA) MOV (including reference) MP4		Transport Stream Program Stream System Stream Elementary Streams GXF LXF WebM WMV
Camera Card Formats (Requires Kiosk)		
Canon C300, C300 Mark I/Mark II, XF305 Generic AVCHD, Generic DCIM GoPro Hero3+ Black/Hero4 Silver/Hero4 Black RED (R3D)		Panasonic P2, P2 Extended Sony XDCAM EX/HD, CTB-1, CX91500, PDW (680, 700, 1500, F350, F800, HD1500, U1), PMW (150, 200, 350, 400, 500, EX/EX1R, EX3, F8, F55), PXW (F55, F57, FX9, X70, X200, Z90, Z280/V), XDB-1, XDS-PD2000, Alexa Plus

Orange: require add-on license or advanced transcode node. Green: require Pilot plus add-on license. See table on page 4 for detailed input/output conversions supported.

### Supported Caption/Subtitle Formats

		OUTPUT													
		608	708	WST	STL	SCC	IMSC 1.0	IMSC 1.1	SMPTE-TT	EBU-TT	DPTT	iTT	WebVTT	PNG	
INPUT	608	*	*			*	*		*						
	708		*												
	WST			*	*										
	STL			*	*				3rd Party		3rd Party	3rd Party	3rd Party	3rd Party	
	SCC	*	*			*	*		*	3rd Party	3rd Party	3rd Party	3rd Party		
	IMSC 1.0	*	*			*	*		*						
	IMSC 1.1							*							
	SMPTE-TT	*	*			*	*		*						
	EBU-TT	*	*			*	*		*						
	DPTT	*	*			*	*		*						
	iTT														
	WebVTT														
	SRT				3rd Party	3rd Party	3rd Party			3rd Party	3rd Party	3rd Party	3rd Party	3rd Party	3rd Party
	PAC				3rd Party	3rd Party	3rd Party			3rd Party	3rd Party	3rd Party	3rd Party	3rd Party	3rd Party
	CHK				3rd Party	3rd Party	3rd Party			3rd Party	3rd Party	3rd Party	3rd Party	3rd Party	3rd Party
	SUB				3rd Party	3rd Party	3rd Party			3rd Party	3rd Party	3rd Party	3rd Party	3rd Party	3rd Party
	890				3rd Party	3rd Party	3rd Party			3rd Party	3rd Party	3rd Party	3rd Party	3rd Party	3rd Party
XIF				3rd Party	3rd Party	3rd Party			3rd Party	3rd Party	3rd Party	3rd Party	3rd Party	3rd Party	
Cheetah				3rd Party	3rd Party	3rd Party			3rd Party	3rd Party	3rd Party	3rd Party	3rd Party	3rd Party	

Capabilities marked as 3<sup>rd</sup> Party require use of tools sold & supported by an external vendor (MediaMate) and service integration via the script stencil in the AmberFin Workflow Engine.

## Video/Image Processing Capabilities

Standard Capability	Available Add-On Capability
<ul style="list-style-type: none"> <li>High Quality Scaling (Sub SD to 4K)</li> <li>High Quality De-interlacing</li> <li>Advanced video bit rounding (reduces quantization artifacts/banding in a downscale operation)</li> <li>Nearest Frame Standards Conversion (24 fps to 25 fps, 3:2 pulldown correction for only frame drops or repeats)</li> <li>Cut/Splice Operations</li> <li>Logo/Bug Insertion</li> <li>Text Burn In</li> <li>Timecode Burn In</li> <li>Thumbnail Generation</li> </ul>	<ul style="list-style-type: none"> <li>Telecine Conversion (intelligent correction to native cadence for 3:2 content, including pitch correction on conversion)</li> <li>Advanced Motion Compensated Standards Conversion (Framerate Conversion)</li> <li>GPU-Accelerated Motion Compensated Standards Conversion (Tachyon)</li> <li>Forensic Watermarking (Nexguard, Nielsen Commercial Encoding, Teletrax)</li> </ul>

## HDR & Colorspace Capabilities

Standard Capability	Additional Capability Included with the Advanced Transcode Node
<ul style="list-style-type: none"> <li>BT.470/BT.601 (SD), BT.709 (HD)</li> <li>SDR (Gamma 2.4), Linear (passthrough only)</li> <li>Bi-directional conversions for all supported formats</li> </ul>	<ul style="list-style-type: none"> <li>Standard Capability plus BT.2020 (UHD), P3/D65, P3/DCI, ACES</li> <li>HDR10, Dolby Vision, PQ, HLG</li> <li>Bi-Directional Conversions: All supported colorspaces except ACES</li> <li>Uni-Directional Conversions: Any colorspace to ACES</li> </ul>

## Audio Processing Capabilities

Standard Capability	Available Add-On Capability
<ul style="list-style-type: none"> <li>Channel assignment &amp; grouping</li> <li>Sample rate conversion (including pitch correction)</li> <li>Audio channel summing</li> <li>Multi-channel (5.1/7.1) mixdown to stereo</li> </ul>	<ul style="list-style-type: none"> <li>Loudness Correction for ITU-R BS.1770-2/3 (ATSC A/85, EBU R128, FreeTV OP59 and ARIB TR-B32), including True Peak Correction</li> </ul>

## Media Analysis & QC Capabilities

Standard Capability	Available Add-On Capability
<ul style="list-style-type: none"> <li>AmberFin Media Analyzer</li> <li>Netflix Photon</li> </ul>	<ul style="list-style-type: none"> <li>Third-Party QC Automation (Tektronix Aurora, Tektronix Cerify, Interra Baton, Metaglug MXFixer, Nexidia QC, Venera Pulsar, Telestream Vidchecker)</li> </ul>

## File Transport & Storage Capabilities

Standard Capability	Available Add-On Capability
<ul style="list-style-type: none"> <li>Copy/Move/Rename/Delete</li> <li>NTFS/CIFS/NFS Watchfolder</li> <li>FTP Upload/Download</li> </ul>	<ul style="list-style-type: none"> <li>Accelerated Transfers (Aspera &amp; File Catalyst)</li> <li>Netflix Backlot Upload (Requires &amp; Included with Aspera Add-On)</li> <li>Object Storage (AWS S3, Azure Blob, Google Cloud Storage) – S3 offers native read/write, others require copy to/from block storage</li> <li>Avid Interplay Check-in</li> </ul>

## Core Management Functions

PILOT	Workflow Engine & Transcode Farm Controller	Enables BPM Workflow Design & Execution. Multi-instance and parallel task execution with boundary events and error management. Browser-based interface for configuration and monitoring. Transcode with Parameters XML & REST API. Fully configurable media & metadata packaging capability. Includes transcode farm topology and control. Includes Windows Desktop UI for transcode profile configuration.
KIOSK	Web Form UI	Fully configurable, browser-based, media-aware form UI, enabling submission of jobs (including metadata) to AmberFin's Workflow Engine for processing. Camera card aware, including maintaining spanned file content.

Format		Transcode	
		In	Out
AVI	DV/DVCPPro/DVCPProHD	●	●
	Uncompressed Video	●	●
MXF OP1a	Uncompressed Video	●	●
	JPEG 2000	H	H
	MPEG-2 Intra/ Long-GOP	●	●
	H.264 (AVC) Intra/ Long-GOP	●	●
	Panasonic AVC-Intra (Class 50/100/200)	H	H
	Panasonic AVC-LongG6/12/25/50	●	
	XAVC HD Intra/Long GOP	●	●
	XAVC 4K Intra CBG	H	H
	XAVC 4K Long GOP VBR	H	H
	MPEG-4 SSiP Lite/SQ.4:2:2	●	
	DNxHD	●	●
	DNxHR	●	●
	ProRes 422 Proxy/422 LT/422/422 HQ	●	●
	ProRes 4444/ 4444XQ	H	H
	DV/DVCPPro/DVCPProHD	●	●
	D10 (IMX 30/40/50)	●	●
	MPEG 1Layer 2 Audio	●	●
Dolby D (AC-3, 5.1)	●	●	
MXF XDCAM	XDCAM HD	●	●
	DVCAM	●	●
MXF P2	DV/DVCPPro/DVCPProHD	●	●
	Panasonic AVC-Intra (Class 50/100)	●	●
MXF OP-Atom (AAF)	DNxHD	●	●
	DNxHR	●	●
	DV 25/50	●	●
	IMX	●	●
	XDCAM HD	●	●
MXF AS-02	Panasonic AVC-Intra (Class 50/100)	●	●
	Uncompressed Video	●	●
	JPEG 2000	H	H
	MPEG-2 Intra/ Long-GOP	●	●
	H.264 (AVC) Intra/ Long-GOP	●	●
	D10 (IMX 30/40/50)	●	●
	DV/DVCPPro/DVCPProHD	●	●
Panasonic AVC-Intra (Class 50/100)	H	H	
IMF	App 2/ App 2e (JPEG 2000)	H	H
	App ProRes (RDD 45:2017)/ App DPP (TSP 2121-1)	H	H
MPEG-2 Transport Stream	MPEG-2 I frame	●	●
	MPEG-2 Long-GOP	●	●
	D10 (IMX 30/40/50)	●	●
	H.264/AAC	●	●
	AVCHD	●	●
	MPEG 1Layer 2 Audio, Dolby D (AC-3, 5.1)	●	●
	MPEG-2 Intra	●	●
	H.265 (HEVC)	●	
MPEG-2 Program Stream	MPEG-2 Long-GOP	●	●
	D10 (IMX 30/40/50)	●	●
	MPEG-1 Video		●
	MPEG 1Layer 2 Audio, Dolby-D (AC-3, 5.1)	●	●

Format		Transcode	
		In	Out
ABR	HTTP Live Streaming (HLS)		●
	MPEG-DASH (mp4)		●
Elementary Streams	JPEG 2000 (MJ2)	H	
	MPEG-2 Intra	●	●
	MPEG-2 Long-GOP	●	●
	D10 (IMX 30/40/50)	●	●
	MPEG-1 Video		●
	H.264 (AVC)		●
	H.265 (HEVC)		H
	DV/DVCPPro/DVCPProHD	●	●
	MPEG 1Layer 2 Audio	●	●
	Dolby D (AC-3, 5.1)	●	●
	WAV/BWAV	●	●
AIFF	●		
System Stream	MPEG1 Video + MPEG-1 Layer 2 Audio		●
QuickTime (MOV)	MPEG-2 Intra	●	●
	MPEG-2 Long-GOP	●	●
	ProRes 422 Proxy/422 LT/422/422 HQ	●	●
	ProRes 4444/ 4444XQ	H	H
	DNxHR	●	●
	XDCAM HD	●	●
	XDCAM EX		●
	D10 (IMX 30/40/50)	●	●
	DV/DVCPPro/DVCPProHD	●	●
	Uncompressed 10 bit/8 bit	●	●
	H.264 (AVC)	●	●
H.265 (HEVC)	●	●	
AAC	●	●	
QuickTime Reference	D10 (IMX 30/40/50)	●	●
	MPEG-2 I frame/ Long-GOP	●	●
	XDCAM HD	●	●
GXF	MPEG-2	●	
	DV/DVCPPro/DVCPProHD	●	
LXF	MPEG-2	●	
MP4	H.263		●
	H.264 (AVC)	●	●
	H.265 (HEVC)	H	H
	AAC (HC/ LC)	●	●
Windows Media	VC-1	●	●
	WM9	●	●
WebM	VP8		●
MKV	FFV1	●	●
R3D	RED	●	
3GPP	H.263		●
	H.264 (AVC)	●	●
Images	DPX (up to 16 bits)	H	
	TIFF, PNG, BMP, JPEG, TGA	TIFF	●

● = Resolutions to HD P = Proxy  
 ● = Resolution support beyond HD H = High Dynamic Range