

# mLIVE Densu io

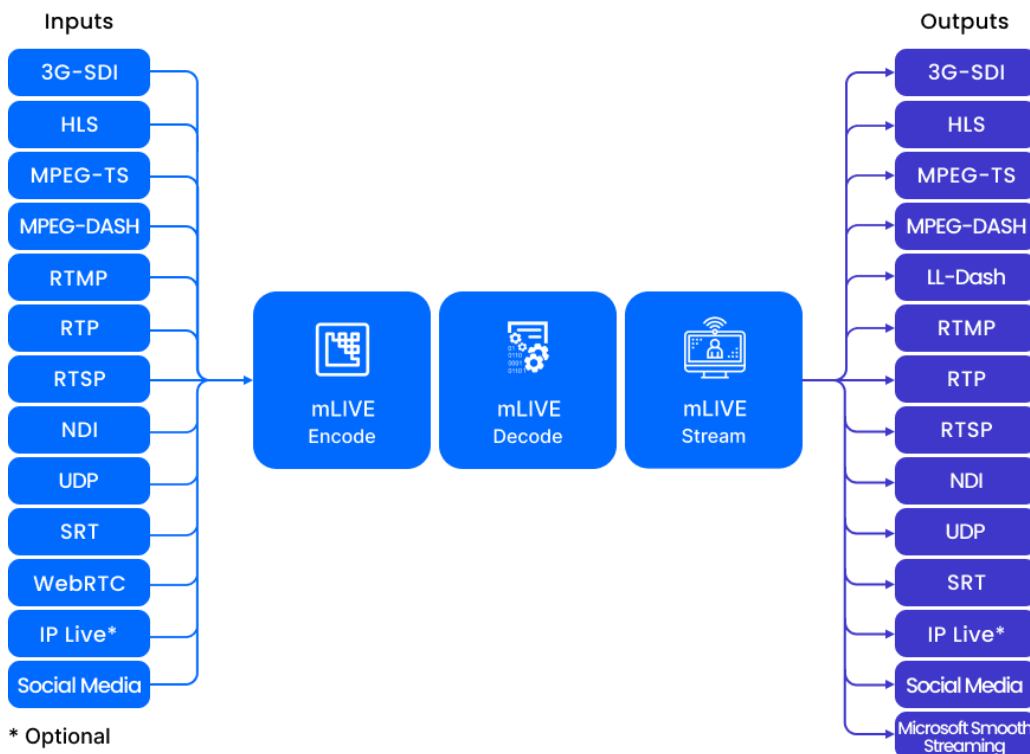


## Overview

mLIVE Densu io is a powerful and flexible dual-node compact appliance to manage all your live video streams in an integrated media production ecosystem.

It brings you unparalleled power and proven reliability, no matter the scenario. Broadcast live events, automate 24/7 channels playout, or distribute to OTT and social media effortlessly, no matter the source.

mLIVE Densu io supports simultaneous media operations that can be a combination of live video streams, file previews, live switching, and even intercom between different users.



## Highlights

- **mSWITCH** - Remote live switching and compositing
- **mTALK** - Audio communication between users
- Full featured local and remote user interface (includes quick control through touch screen)
- Encodes and/or decodes contents according to the destination format
- Multiple output resolutions for OTT
- Operation modes: manual and scheduled
- Ideal for multiple feeds of video contribution
- Social media sharing

## Specially Designed For

- Educational/Government
- Live Entertainment/Worship
- Corporate
- Sports
- Film/TV Studio/Scripted
- Post-Production
- Broadcast/Digital News
- OTT & Streaming
- System Integrators/Rentals

## Features

Features
<b>Timecode support</b>
LTC (SMPTE 12M)
VITC (SMPTE RP188)
Time of Day
<b>Multiple LIVE and simultaneous records</b>
Gang Capture operations
Independent workflow selection in Gang Captures
Flexible Gang Capture channel configurations / Choose which channels are present in the gang
Automatic Stream Control - Detect input streams and start recording automatically
Continuous live stream capture
Generate MP4 files as Fragmented MP4 via DCP Packager
Perform "Run after completion" scripts
Remove source assets after Job completion for all plain sources
Live Probing option
Stream with Closed Captions
Edit a Workflow directly from the Player
Input selection made directly from a dropdown list on the player
Option to start timecode recording from 00:00:00:00
Contribution Web Video Player - Aspect marker, Safe Area Marker, and Center marker
Player Overlay - Center Dot and Cross
Support for Active Format Description (AFD)
Medialoopster Integration in Capture operations
Medialoopster Integration in Batch Capture operations
<b>Operation modes</b>
Manual
Scheduled
<b>Clipnaming</b>
Drag and Drop support
"CreationDate" field can refer to a desired Time Zone
<b>Audio support</b>
PCM input and output support
Dolby E-AC-3, Dolby TrueHD, and DTS input support
Dolby-E Input and output support
DTS Coherent Acoustics (DCA)
Integration with Dante Audio Capture *Negotiated separately
PCM 96KHz support
Independent audio encoder for hires and proxy
Individually map your audio by output target
Audio downmixing & upmixing
Ability to mute proxy on the output
<b>Close captions</b>
CEA/EIA - 608
Support DVB-S captions in streams
Stream with Closed Captions
<b>Scheduler (Calendar View)</b>
Schedule a Record operation
Edit individual events
Allow editing of settings for each occurrence/repetition
Set the number of an event's repetitions
Check for collisions between events and repetitions
Placeholder when editing an occurrence name
Use pre-set naming templates
Send the assets to independent targets and multiple outputs
Establish a maximum capture duration
Configurable number of iterations when using maximum capture duration
Define events to be triggered on any day, on working days only or only on weekends
Set the Calendar Notion option to automatically adjust to daylight time
Edit the Start Time field after the first recording
Visualize scheduled events in a List View
Export activity events

## Features

### Signal error detection and related recovery actions

- Detect possible signal errors
- Detect possible drop frames
- Configurable capture resume methodology
- Automatic streaming (headless) - Restart capture after stopping/crashing or rebooting

### Live to Live

- Delete artifacts on abort
- Vizzi OTT Live Output
- Multiple resolutions check-in
- Support Time of Day in input streams (RTMP, MPEG-TS, RTP, SRT, RTSP, HLS, LLDASH, MSS, MPEG-DASH, CMAF)
- Variable Frame Rate Input
- Support IGMPv3 multicast
- Add possibility to change the transport stream segments duration

### MPEG-TS Support

- Capture of MPEG-Transport Streams
- Support of MPEG-TS program IDs

### NDI

- Native NDI output
- NDI audio and video synchronized mechanism
- NDI discovery mechanism
- Capture multiple NDI sources
- Time of day and embedded timecode options in NDI input

### RTMP

- RTMP recording with absolute timecode
- RTMP Push Mode in input and output
- RTMP Pull Mode in input and output
- Native RTMP listener capability
- Multiple audio channels in RTMP Output
- HEVC, VP9 and AV1 codec in enhanced RTMP/FLV

### SRT

- Input modes: Caller, Listener, and Rendezvous
- SRT listener mode as stream output
- Output modes: Caller and Rendezvous
- Stream ID support
- Configurable latency settings
- Configurable overhead bandwidth
- Configurable passphrase
- Monitoring input metrics

### WebRTC

- h.264 Support
- VP8 Support
- VP9 Support

### Burn-In Video options

- Graphic burn-in while recording

### mTALK

- Communicate via audio between two or more users
- QR code implementation
- WebApp (requires Android smartphone)
- Toggle Mode

### Analytics

- Integrate with Google Analytics and Tag Manager
- Enable or disable Analytics
- Keep track of menu events
- Receive video metrics
- Keep track of Job Control widget's events
- Keep track of Asset Explorer widget's events

### Improved security

- Support for Windows UAC
- Support for HTTP/HTTPS Ingress
- HTTPS (Hypertext Transfer Protocol Secure) for REST API
- Secure login
- User Impersonation

## Features

Token based authentication
Two-factor authentication
Remote services, system restart, and settings recovery features
Opt to "Keep me signed in"
Send a User Verification through email
Configurable password visibility in logs
<b>Hardware acceleration</b> *If Hardware is installed or available
Intel QSV
<b>General Purpose IN/OUT</b>
GPI triggers supported
GPO triggers supported
<b>Additional Highlights</b>
REST API - allows interaction with RESTful web services
Notify user upon connection lost with the Server
Manage via web interface or REST APIs for integration with automation system
Configurable quality and target latency of the preview stream
Logging - Add user information on flow actions
Logging - Structured Logging
Receive SMTP notifications via e-mail
Support an external Database
Microsoft Edge / Firefox / Safari and Chrome Support
<b>Unified Interface User Experience</b>
Configurable web interface access port
Embeddable Dashboards/Widgets
Web-Based Interface with video preview
Dashboards based experience where users can create their own personalized view
Dashboards presets for ease-of-use deployment
Create your own custom dashboard templates
Import and Export Users' Dashboards
Associate a single dashboard to multiple users
LDAP user authentication
User profile management
Users permissions control
Widget based modular interface
Lock/Unlock widgets permission
Choose between multiple interface themes (Midnight, Carbon, Dark or High contrast theme)
Touch screen mode
Monitoring - Advanced metrics
Multi Language Support
User tour
Show/Hide player overlays
Notifications of required actions needed to resume a workflow
Monitor Grouped Servers' activity in a Group Activity Widget
Remove the "quick edit" button from the Job Control Widget
<b>Multiviewer</b>
Define the quality and target latency of the preview stream
Ability to control to up to 4 players in a single dashboard
<b>Maintenance</b>
<b>Scheduler</b>
Reboot host or group
Export database (backup) as a scheduled task
Export logs as a scheduled task
<b>Activity</b>
Export last activity
Export all activity
Export activity from a date range
Clear all activity
<b>Logs</b>
Export logs
<b>Backup</b>
Export full backup - A full backup will create an archive of all the files and configurations
Import full backup

### Features

<b>Dashboards</b>
Export dashboards from one user or all users
Import dashboards
<b>Data</b>
Clean data usage
Clean assets, flows and notifications
Perform a Factory Data Reset
Erase all data and reset the system
Force clear cache

## Technical Specifications

### Supported Live Inputs

#### Inputs

<b>Live</b>	<b>SD/HD/FHD-SDI</b>
	SD-SDI (SMPTE 259M)
	3G-SDI (SMPTE 292M, SMPTE296M, SMPTE372M, SMPTE425M)
	<b>Streams</b>
	Video Content Hyperlinks
	HLS
	MPEG-TS
	MPEG-DASH
	RTMP (with support for HEVC / VP9 / AV1)
	RTP
	RTSP
	NewTek NDI
	UDP
	Haivision SRT
	WebRTC
	Zixi
	<b>Audio</b>
	Dante Audio *Negotiated separately
	<b>Social Media</b>
	Facebook
	Twitch
	X (Twitter)
	YouTube
<b>IP Live *Optional</b>	
ST2022-6	
ST2022-7	
ST2110-10, ST2110-20, ST2110-21, ST2110-30, ST2110-31	
ST2110-40	

### Supported Live Outputs

#### Outputs

<b>Live</b>	<b>SD/HD/FHD-SDI</b>
	SD-SDI (SMPTE 259M)
	3G-SDI (SMPTE 292M, SMPTE296M, SMPTE372M, SMPTE425M)
	<b>Streams</b>
	HLS
	Microsoft Smooth Streaming
	MPEG-DASH
	Low Latency Dash - LL-Dash
	NewTek NDI
	MPEG-TS
	RTMP (with support for HEVC / VP9 / AV1)
	RTP
	RTSP
	UDP
	Haivision SRT
	WebRTC

**Outputs**

<b>Live</b>	<b>Vizzi</b>
	Live Output
	<b>Social Media</b>
	Facebook
	Twitch
	X (Twitter)
	YouTube
	Vimeo
	<b>Multiple and Adaptive bitrates for the OTT</b>
	<b>IP Live *Optional</b>
	ST2022-7
	ST2110-10, ST2110-20, ST2110-21, ST2110-30, ST2110-31
	ST2110-40

**Formats**

**Output Formats**

**Output Video Formats**

H.264 1080p 8 - 12 Mbps High Profile
H.264 720p CBR - 6.5 Mbps High Profile
H.264 720p 5 - 7.5 Mbps High Profile
H.264 480p 2.5 - 4 Mbps High Profile
H.264 360p 1 - 1.5 Mbps High Profile
H.264 1080p 3 - 9 Mbps High Profile (Live)
H.264 720p 1.5 - 6 Mbps High Profile (Live)
H.264 480p 0.5 - 2.0 Mbps High Profile (Live)
H.264 360p 0.4 - 1.0 Mbps High Profile (Live)
H.264 240p 0.3 - 0.7 Mbps High Profile (Live)
H.264 1080p CBR 15 Mbps MAIN Profile
H.264 480p CBR 2.3 Mbps MAIN Profile
H.264 360p CBR MAIN Profile
H.264 432p CBR MAIN Profile
H.264 576p CBR MAIN Profile
H.264 720p CBR MAIN Profile
H.264 1080p CBR MAIN Profile
H.264 576p CBR - 3 Mbps MAIN Profile
H.264 720p CBR - 4 Mbps MAIN Profile
H.264 1080p CBR - 5Mbps MAIN Profile
H.264 15-30 Mbps MAIN Profile
H.264 WebRTC Baseline
H.265/HEVC 10 Mbps LGOP
H.265/HEVC 25 Mbps LGOP
H.265/HEVC 50 Mbps LGOP
H.265/HEVC 100 Mbps LGOP
NDI HX H.264 - High Profile
NDI HX H.265 - High Profile

**OTT Formats**

**Output OTT Formats**

H.264 1080p 8 - 12 Mbps High Profile
H.264 720p 5 - 7.5 Mbps High Profile
H.264 480p 2.5 - 4 Mbps High Profile
H.264 360p 1 - 1.5 Mbps High Profile
H.264 720p 1.5 - 6 Mbps High Profile (Live)
H.264 480p 0.5 - 2.0 Mbps High Profile (Live)
H.264 360p 0.4 - 1.0 Mbps High Profile (Live)
H.264 240p 0.3 - 0.7 Mbps High Profile (Live)
H.264 360p CBR MAIN Profile
H.264 432p CBR MAIN Profile
H.264 576p CBR MAIN Profile
H.264 720p CBR MAIN Profile

### Output OTT Formats

H.264 1080p CBR MAIN Profile
H.264 576p CBR - 3 Mbps MAIN Profile
H.264 720p CBR - 4 Mbps MAIN Profile
H.264 1080p CBR - 5Mbps MAIN Profile
H.265/HEVC 10 Mbps LGOP
H.265/HEVC 25 Mbps LGOP
H.265/HEVC 50 Mbps LGOP
H.265/HEVC 100 Mbps LGOP
H.265/HEVC LGOP 4:2:2

### Product Integrations

Stream	CDN's
Newtek NDI	Lumen
Haivision SRT	Fastly
Zixi	Akamai Technologies
Social Media	Microsoft Azure
Facebook	Cloudflare
Twitch	Limelight Networks
X (Twitter)	Amazon CloudFront
YouTube	BootstrapCDN
Vimeo	StackPath
Hypervisors	KeyCDN
Microsoft HyperV	Rackspace
VMWare ESX	Alibaba Cloud Content Delivery Service
Audio	CacheFly
Dante *Negotiated separately	Verizon

### Server Options

Features		Specs	
<b>System</b>	<b>Platform</b>	Densu 1U	
	<b>Video IO</b>	2x DeckLink miniDuo2	
	<b>Operating System Drive</b>	480GB	
	<b>Operating System</b>	Windows 10 Enterprise (LTSC)	
<b>Connectivity</b>	<b>Networking</b>	<b>1Gb Ethernet Port</b>	2
		<b>2.5Gb Ethernet Port</b>	2
	<b>Video</b>	<b>Display Port</b>	2
		<b>HDMI</b>	2
	<b>USB</b>	<b>2.0</b>	4
		<b>3.0</b>	8
	<b>HD BNC I/O</b>		8
	<b>Ref. In</b>		2
	<b>Live IP Port**</b>		2
	<b>LTC Input</b>		2
	<b>Audio Output</b>		2
	<b>Breakout Connector</b>		2
<b>Power Requirements</b>		Single 300W	
<b>Breakout Cable</b>	<b>RS422</b>	8	
	<b>GPO branch with 4 outputs</b>	2	
	<b>GPI branch with 4 inputs</b>	2	
<b>Other</b>	<b>Dimensions &amp; Weight</b>	1RU, 245x484x42.5mm (D, W, H), ~7Kg	
	<b>Delivery Packaging</b>	580x380x250mm (D, W, H), ~8Kg	
	<b>Temperature</b>	<b>Continuous Operation</b> 10°C to 32°C (50°F to 89.6°F)	
	<b>What is Included</b>	<b>Power Cable</b>	1x C13 to C14
<b>Other</b>		4x rack mount screws	

\*\* Not included by default

## Concurrent Media Operations

With mLIVE Densu io, it is possible to run different media operations simultaneously, thus guaranteeing a universe of distinct arrangements to meet the challenging day-to-day activities of media production companies.

Media operations include live video streams, file preview, live channel switching, and intercom.

mLIVE Densu io supports up to 4 media operations per node at the same time. Within this margin, you can combine the operations shown in the table below:

Concurrent Media Operations			
Live Video Streams	File Preview	Live Switch	Intercom
Up to 2 live channels per node	Up to 10 files preview	Up to 1 operation	Up to 1 operation

## Product

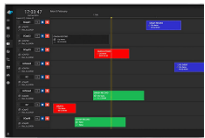
Part Number	Product	Description
mldnio	mLIVE Densu io	Compact dual-node encode/decode appliance of up to 2 combined media operations per node

## Available Options

Choose from the products below to customize the mLIVE Densu io according to your business rules.

### Production Tools

Tool for workflow orchestration.



#### mPLAN

Setup scheduled events not only from the standard scheduler but through a unique roll out view interface. mPLAN is a tool that maintains a single rollout view of all scheduled events, allowing the management of the ingests process very efficiently. It manages multiple scheduled events across a variety of recording platforms in a multichannel environment using router control cross-points.

Part Number	Product	Description
mpla8c	mPLAN	Scheduler & Router Control of up to 8 channels

**Note:** Adding optional features might affect the number of simultaneous operations.

### Add-ons

Output options to complement your workflows.

Part Number	Product	Description
s2ioiplk	IP live kit	IP media production infrastructure

**Note:** Adding optional features might affect the number of simultaneous operations.

### Plugins

Complement any media production and distribution workflow with turnkey plugins and extensions.



#### Screen-m

Quickly capture and deliver your screen contents to your production environment.

Easily record your screen in its entirety or choose one of the open windows. You can even enable the capture of a microphone and the mouse cursor to make it easier to explain any presentation.

Part Number	Product	Description
scpi	Screen-m plugin	Screen capture & Delivery

**Note:** Adding optional features might affect the number of simultaneous operations.

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