



# Morpheus & ICE Playout Solutions

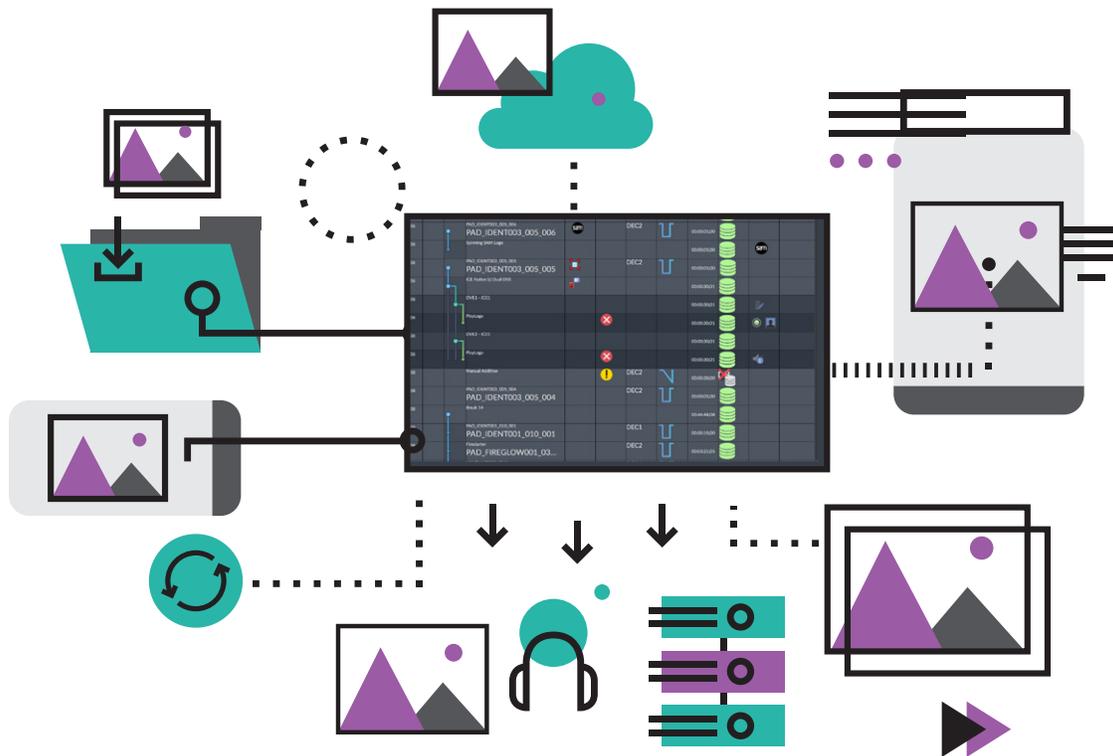
## Playout with the Masters

From simple playout operations to highly complex multichannel environments, Morpheus and ICE from Grass Valley offer flexible and reliable solutions to meet the demands of a shifting media and broadcast industry.

- Changing consumer behavior
- Technology advancements
- Increased demands on service flexibility
- Decreased ad revenue for traditional broadcast channels, but increased ad revenue opportunities for OTT and social media services

### KEY FEATURES

- SDI, IP and virtualized playout
- Superior feature set with no limitations
- Scales from one to hundreds of channels



Grass Valley is the most trusted name across the playout domain — worldwide, and we’re excited about the future and what we can achieve for our customers.

We know that no two businesses are the same. Our playout solutions are flexible enough to accommodate any style of operation. We work closely with our customers to help them deliver on their priorities for today’s demands and where they are looking to go in the future.

As a result, we make solutions that media organizations benefit from immediately and that also provide a clear migration path to the future of IP and pure software systems. Our playout portfolio clearly illustrates this unique market position:



Scalable scheduled ingest



Powerful multichannel playout automation



Sophisticated media workflow orchestration



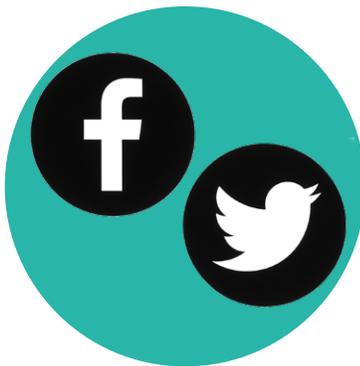
Schedule and media aware monitoring



ICE channel-in-a-box



Software-defined channels



Publishing to social media



24/7 worldwide support

# The Enterprise Solution: Morpheus

The most agile and powerful playout automation solution on the market today

Grass Valley has a long history in the development of automation solutions that are fit for purpose, regardless of the scale of a customer's enterprise, the range of content distribution platforms integrated within a business model and their plans for expansion. One of the biggest benefits of our playout lineup is its ability to deliver operational savings by increasing channel density. For example, in the past if a customer had a channel that needed to be transmitted in different languages, there was typically one operator for each of those channels, so each channel was broadcast individually. Now, with the sophistication offered by our playout portfolio, customers can drive all of those variants from one feed, which means a huge cost saving for our customers.

Key to this is our Morpheus playout system. Morpheus is a highly scalable, multichannel and multiscreen solution that supports a huge and ever growing list of third-party devices (including graphics and video servers) as well as our ICE channel-in-a-box solution.

- 99.999% reliability
- Uniquely flexible
- Lowers cost of ownership

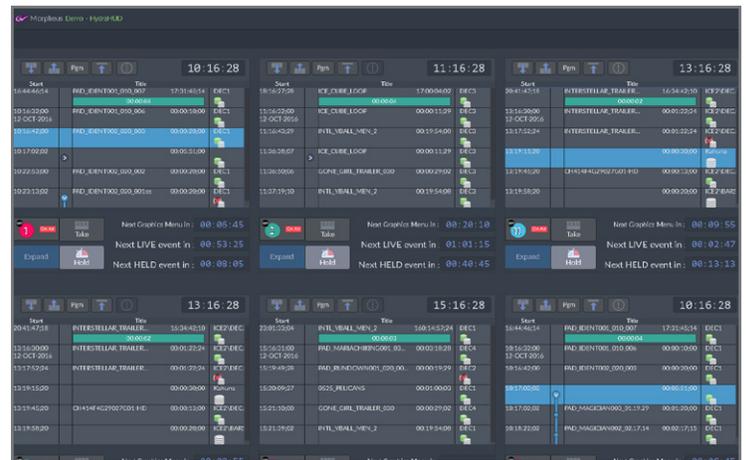
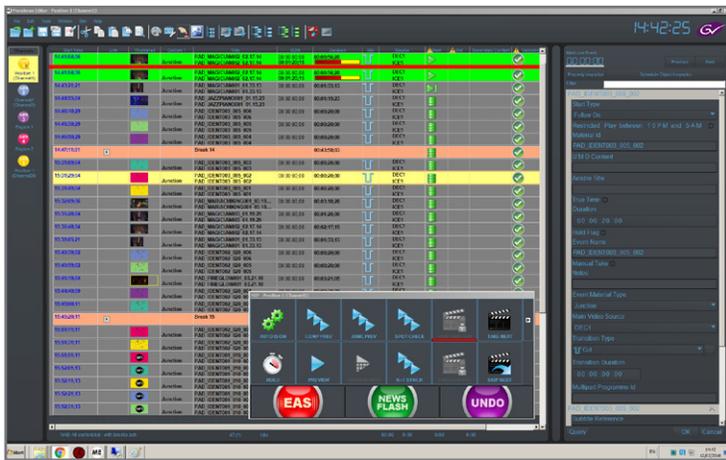
We currently have many thousands of Morpheus channels on air, and our customers range from the simplest, single-channel operations to our largest current customer installation of 250 channels across three sites.

Morpheus provides a range of features to support highly interactive channels that carry lots of live programming such as news and sports, with individual channels able to be optimized for the type of content they handle. Advantages of Morpheus include:

- The unique MediaBall technology goes far beyond the secondary event structures and macros of other systems
- The ability to easily adapt to changing on-air requirements through the life of the system, lowering the total cost of ownership
- Playlists can be intelligent, with business logic embedded in the event structures. This reduces the demands on scheduling, operators, and reduces on-air errors

Building upon the breath and depth of Morpheus within the market, we have developed a number of ways to buy Grass Valley playout solutions to precisely meet the needs of your playout operation. Off-the-shelf tiered functionality options, targeted & pre-configured packages as well as fully tailored and architected systems are available.

Grass Valley has also created a revolutionary new user interface for Morpheus called Morpheus UX, for more information see page 5.



# The Channel-in-a-Box Solution: ICE

The no-compromise channel-in-a-box that delivers proven reliability while reducing complexity and costs

Within Grass Valley's Morpheus ecosystem is our advanced channel-in-a-box, ICE. This flexible, scalable solution delivers automated channel playout, lets customers deploy revenue-generating services quickly, and is also ideal for disaster recovery installations so there's never a fear of being off air at any moment. The power of ICE lies in its unique combination of an extensive feature set coupled with the ability to reconfigure the platform for many applications. ICE's unique Flexicore technology allows the virtual signal paths within the functions of the application to be reconfigured; this can even be done dynamically under Morpheus control. ICE is fully capable of handling multiple concurrent variations of output: HD, SD, language variants, alternative distribution platforms and so on under the control of a single playlist.

## ICE Delivers:

- The most comprehensive feature set of any comparable product
- It dramatically increases efficiency while reducing complexity
- ICE is designed to integrate seamlessly with your existing environment, giving you the flexibility to work the way you want to work
- Perfect for a huge range of operations including single channel, multichannel, multiregion, delayed (+1,+3 etc) and multiplatform environments
- High quality, superior performance, and above all, reliable operation. Our customers constantly tell us it delivers greater than '5 nines' reliability

As the move to IP becomes reality, Grass Valley has evolved ICE to support IP video transport and bridge the gap from SDI. ICE IP is our hybrid SDI/IP channel-in-a-box solution. It uses H.264 video compression, and Grass Valley engineered it this way to give our customers a clear stepping stone when moving from SDI to IP. It includes all of the features of our SDI ICE. Rounding out our ICE line is ICE SDC, Grass Valley's pure software defined playout solution for virtualized IP playout. This software-only product truly leads the way in new generations of channel-in-a-box technology, as illustrated here:

## Benefits of ICE SDC include:

- ICE SDC realizes fully-featured broadcast channels with a pure software implementation, not just video server playout and a logo
- ICE SDC utilizes Morpheus and ICE technology to provide Grass Valley's industry leading reliability and compatibility
- Built on Grass Valley's IP Edge technology, ICE SDC forms part of a full IP standards based ecosystem for playout
- SDC allows you to realize full channel functionality in virtual and cloud infrastructure with completely deterministic and constant timing

What's unique to Grass Valley's ICE lineup is that it works directly with our Morpheus control layer, which means our customers never have to worry about operational changes. Under this single control layer, Grass Valley offers traditional SDI channel-in-a-box, software only channel-in-a-box, and hybrid/IP channel-in-a-box as well as traditional broadcast infrastructure, which clearly sets us apart from other channel-in-a-box vendors on the market.



# Transform Your Playout with Morpheus UX

The completely flexible user interface that will revolutionize your approach to playout automation

This ground-breaking new functionality for Morpheus and ICE offers tremendous benefits by allowing you to build precisely the type of user interface you need.

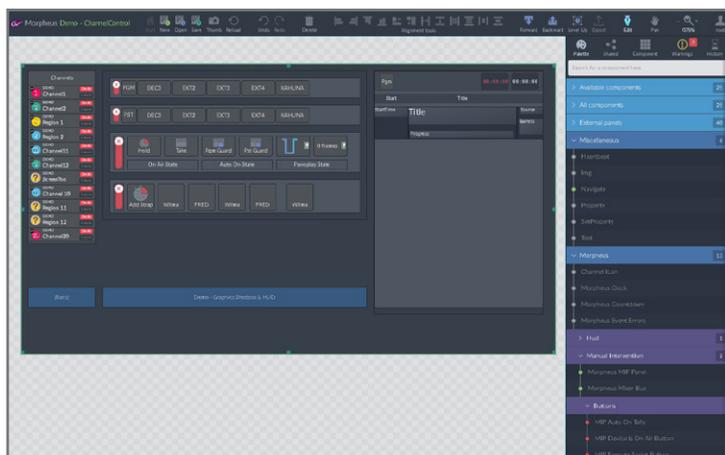
One size no longer fits all. What's required today is the ability to focus on events of significance — such as live events, or events with errors, rather than using up large amounts of screen space with 'green' events that are guaranteed to go to air.

Grass Valley's solution provides the tools to build user-defined panels, exactly appropriate for differing styles of playout operation and to build screens made of as many of these panels as needed.

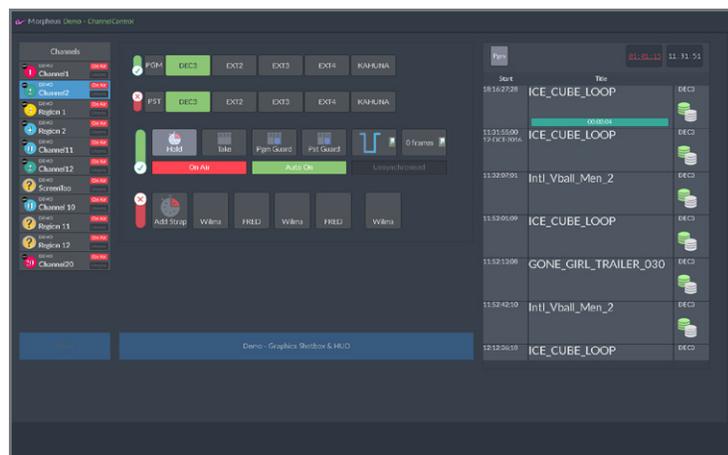
Rarely used functionality can be hidden away while functions that are required at the touch of a button can be front and center. Morpheus UX offers unparalleled functionality with the simple press of a button.

## Example Panel Types:

- For example, you may want a panel that just shows your upcoming live events
- Or create a screen for a supervisor who can see the next four events across 10 premium channels
- Plus add emergency control buttons to advance or pause the playlist for each of those 10 channels
- For live interaction, a complete master control mixer can be built with program bus cuts, DSK and DVE control. Of course it is fully interactive with the running playlist ensuring everything is contained in the automation asrun
- For further enhancement of live operations, why not build a 'shotbox' of graphics events to put to air immediately during live events?
- And of course, there is nothing at all stopping you building a traditional, fully featured list view with secondary events, event status and multiple countdown timers
- An extra benefit that this platform brings to operations is the ability to aggregate the control and monitoring of channels that have been split across multiple automation systems. This improves operational responsiveness when controlling remote disaster recovery systems



A master control panel being built in edit mode.



Example master control panel.

# Software Defined Solutions

Agile systems that can scale up and down rapidly and cost effectively are becoming increasingly attractive to broadcasters and media organizations. At the same time, solutions to satisfy the demands of proliferating distribution platforms have become essential. A practical resolution is to migrate from fixed infrastructure to software systems which run on commodity IT equipment.

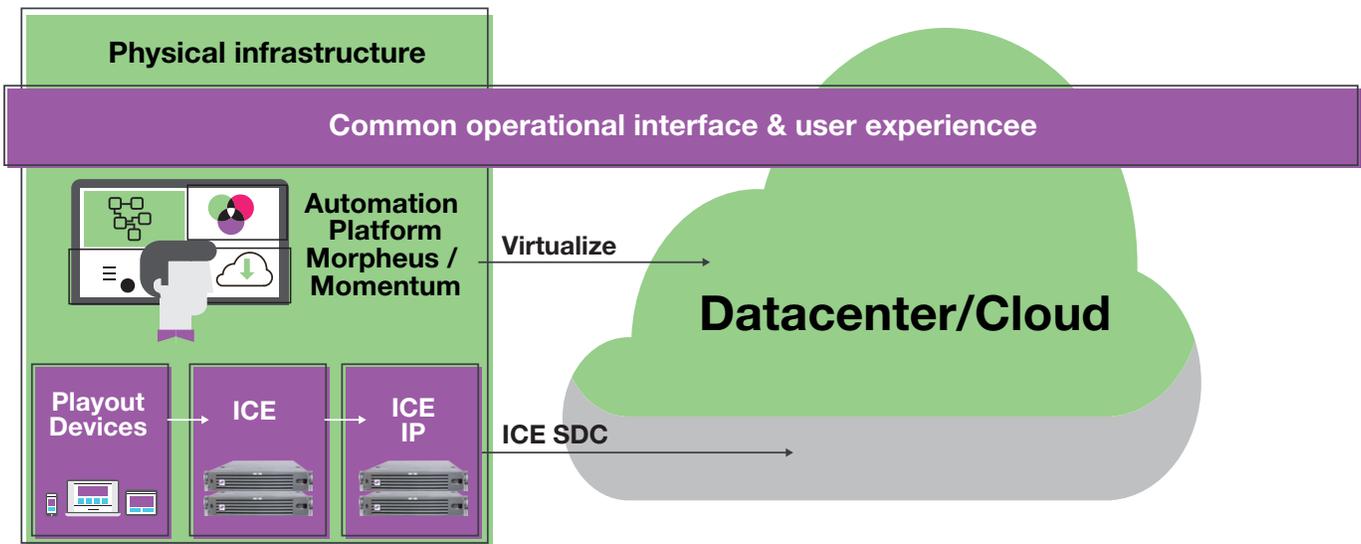
With broadcast and media companies' desire to move to increasingly flexible software defined systems and with IP standardization becoming a coming reality, broadcasters can now look at moving from a CAPEX to an OPEX model. Grass Valley is here to help you and your business as this is far from a one-model-fits-all scenario. We already have a thorough understanding of the many factors involved in shifting through a software defined, virtualized and hybrid SDI/IP world to pure IP. Broadcasters are now realizing the true value of migrating to such systems; far greater flexibility and ultimately cost alignment with revenues being the two that stand out.

## A smooth transition

How do customers begin to implement software systems and IP easily and affordably when they've already invested so heavily in conventional, non-IP technology?

Grass Valley's rich heritage in playout means we're uniquely positioned to help our customers move through these transitions smoothly. Grass Valley's playout solutions provide a future proof migration to IP playout and/or data-center/cloud deployment.

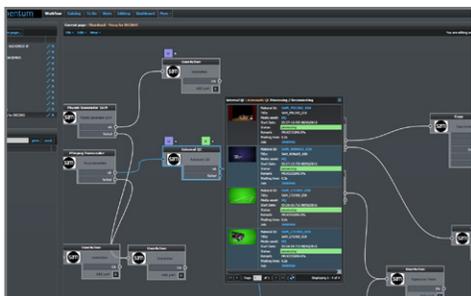
Morpheus provides a software architecture which can be virtualized and allows connection of traditional playout devices, ICE with SDI, ICE IP for a hybrid infrastructure and ICE IP. As a result the transition to a datacenter or IP environment operation can be achieved without changing the operational interfaces or core automation systems removing the need for re-training operational and engineering staff.



Future-proof migration to cloud and IP playout.

**ROUNDING OUT THE COMPLETE GRASS VALLEY PLOUT SOLUTION****Momentum, Media Orchestration**

One of the outstanding aspects of Grass Valley's playout portfolio is that it includes Grass Valley technology that doesn't fall into the traditional 'playout' sector of the market. It seamlessly integrates with other products in our portfolio, including Momentum — Grass Valley's workflow automation and media asset management tool. Momentum offers intelligent, flexible automation and control of every stage of the media chain, from ingest, cataloging, QC and editing to transcoding and multiplatform delivery of any content, any time, and to any device. Momentum is especially important for transcoding everything that's associated with media before or after it's played out to delivery. It's widely used across the playout industry today where the scale of media operations means optimized processing is a necessity.

**Control & Monitoring**

Another important aspect of our complete playout solution is Grass Valley's control and monitoring system, which offers full playout signal chain control and monitoring covering video, audio and ancillary data. Putting broadcasters in control of their entire signal chain, it brings human intelligence to automated broadcast monitoring, giving a true assessment of the value of the signal and enables centralized monitoring operations. ICE includes Media Biometric signature generation, so output signals can be automatically and interdependently verified for complete assurance. Grass Valley's control & monitoring and Media Biometrics technology help customers improve their operational efficiency and accuracy further condensing operations and channel count.

**Grass Valley IP Software Multiviewer**

Adding to this is our extensive multiviewer range, which is an important part of our playout lineup because it satisfies all the monitoring needs of our customers. Alongside our router-integrated multiviewers and standalone and modular multiviewers, Grass Valley is offering IP software multiviewers. Taking full advantage of the flexibility of IP in a software model, this is a new way of thinking. Providing an easy-to-read yet comprehensive monitor wall just became far easier with the ability to display both control and monitoring as well as multiple video feeds on a monitor wall using commercial off-the-shelf (COTS) hardware. We can show control & monitoring, Media Biometrics and Morpheus alerts, alongside video — without compromise. The flexibility and cost-effectiveness this provides increases operational efficiency.

Our focus at Grass Valley is about building relationships. Knowing that SDI currently dominates but that flexible software-only and IP are the way ahead, our goal is to mastermind products and technologies that serve an immediate purpose for our customers today and that also pledge a wise economic choice for them in the future.



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