



Don't Get Left Behind - Modernize Your Hospitality Video Delivery Now

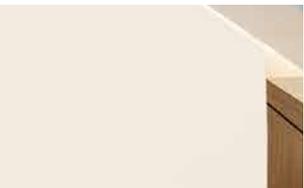
Drive Revenue Growth and Future-Proof your Hospitality and MDU Accounts



Why Upgrade Hospitality Networks Now?

A hospitality video site is a location where a service provider delivers video content to a property owner, who then makes that content available to its residents or occupants. Sometimes the consumers of that video are temporary – such as in hotels, motels, hospitals, sports bars, or luxury boxes at sporting venues. At other sites, viewers are more long-term in their relationship to the property owner, such as college dormitories, nursing homes, or assisted living centers.

Whether their stay is short or long, residents demand and expect a high-quality, flexible video viewing experience during their time on site. Property owners, in turn, seek opportunities to deliver perks and conveniences to differentiate from competitors; the availability of excellent video entertainment at these locations is a must.



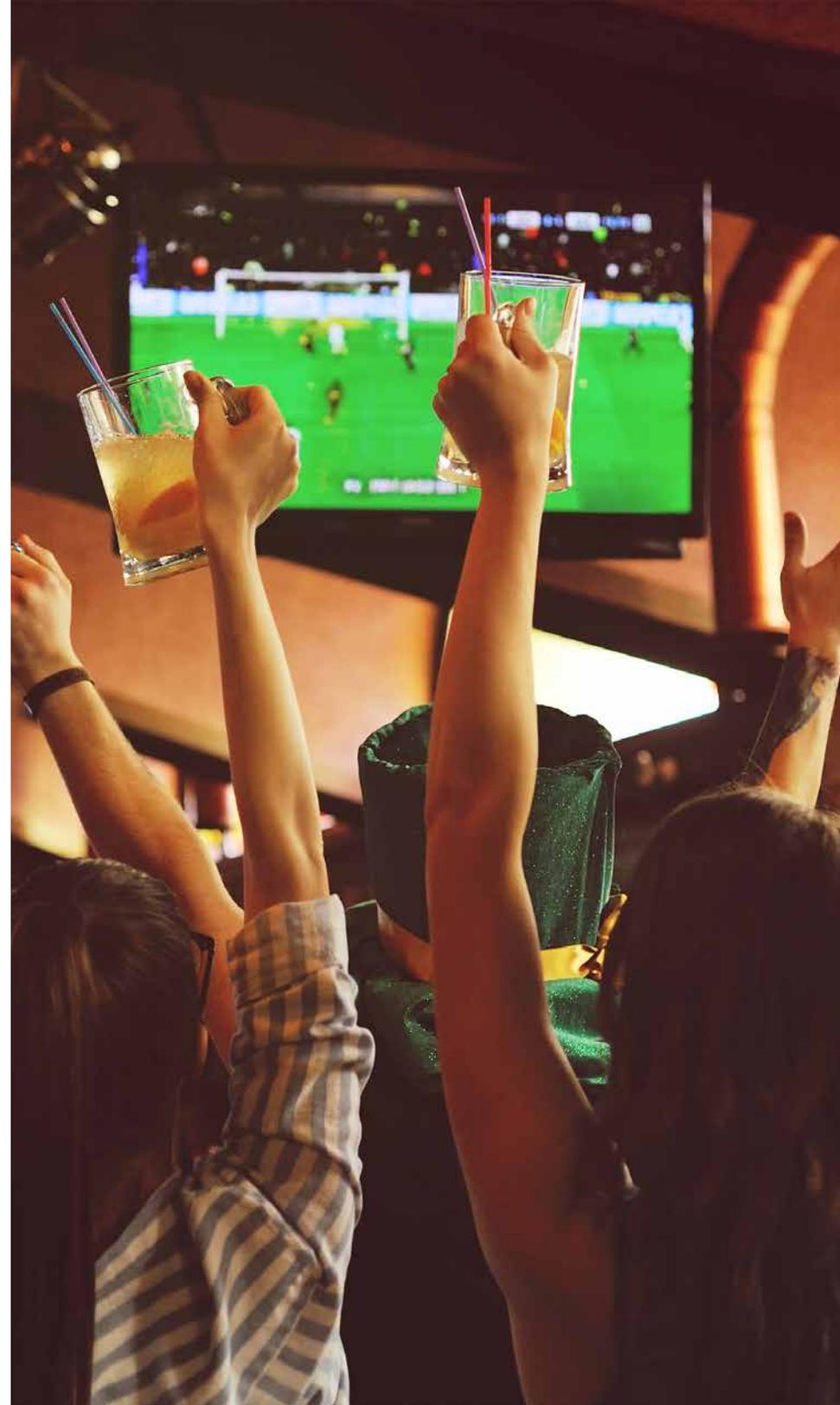
The Challenge:

Delivering the expected video experience profitably to these hospitality sites can be a challenge. Aging and inflexible platforms on-site often leave operators with limited ability to cope with increasingly complex delivery networks. Especially when considering the myriad of legacy customer premise equipment (CPE) types that must still be served. Not only do older solutions offer little in the way of preparing these sites for future higher-revenue services, like multiscreen delivery or 4K content, but many of these older platforms have reached end-of-life or end-of-support status. In addition, many of the underlying technologies that hospitality systems have deployed over the years are themselves reaching obsolescence, for example CableCARD.

An increasing risk of service failure, coupled with an inability to deal with future technology, suggests that the clock is ticking for many of today's hospitality video delivery platforms.

This whitepaper outlines the following:

1. The considerations operators must face when preparing to upgrade their hospitality service.
2. New technology and solutions available today that are ready to be deployed.
3. How to boost the overall efficiency and revenue generating potential of hospitality video networks.



A Glossary for Content Delivery to the Hospitality Site

As technology has evolved, hospitality video systems have become widely varied in their capabilities and configuration. This is due to:

- The transmission protocol and program offerings of the video service provider chosen by the property owner.
- The transmission facilities available at the hospitality site.
- The quantity and capabilities of in-room devices served.

The content below outlines the most common elements of typical hospitality systems, including options available for those elements.

Signal Format and Multiplexing

- **IP** – Video that is digitally converted and transported via IP packets over unmanaged networks. This would include single or multiple video streams transported from a video service provider to a hospitality site (also includes but is not limited to Over-the-Top (OTT) video over “public” internet links).
- **IPTV** – Tightly managed delivery of video content using Internet Protocol (IP) packets over a proprietary LAN or WAN. Widely deployed in subscriber-based telecommunications networks with higher speed distribution links to the end-users (such as a hotel room) via set-top boxes or other CPE.
- **DVB-S/S2 and DSS** – The three protocols for transmission of MPEG video streams by direct satellite systems in the US. These signals are usually converted to ATSC or QAM at the hospitality site, sometimes using equipment proprietary to the satellite provider.
- **8VSB** – Uncompressed RF modulation format for the ATSC digital television standard to transmit digital bits over-the-air by terrestrial broadcasters.
- **MPEG-2 or MPEG-4** – The two most common encoding and compression formats in use today for delivery of digital video over cable or satellite systems. Both are capable of delivering High-Definition Video. MPEG-2 uses more bandwidth, and therefore, the newer MPEG-4 is the preferred format for delivery to portable devices, such as cell phones, or for when storage or transmission capacity is limited.
- **HEVC** – High-efficiency video coding. This new video codec is up to 50% more efficient than MPEG-4.
- **SRT** – ‘Secure Reliable Transport’ is an open-source video transport protocol for high-quality, low-latency video delivery over the open internet.



A Glossary for Content Delivery to the Hospitality Site (continued)

Signal Processing Requirements on Site

- **Demultiplexing** or Demux – The separation of video streams. 8VSB streams, for example, contain multiple video streams, which must be separated into individual streams for delivery to television sets.
- **Decryption/Encryption** – Signals delivered to the hospitality site are typically encrypted to control piracy and unauthorized reception. They are then decrypted by the central video system at the hotel, and then re-encrypted for delivery to the individual rooms, as mandated by content owners. Some common encryption choices available include BISS, Pro:Idiom, and Verimatrix. The earlier CableCARD system is also in use at many hospitality sites. CableCARD decrypts the proprietary streams from a cable company at the hospitality site and was originally mandated by the FCC.

Delivery Requirements for In-Room Devices

- **QAM** – Most widely used delivery method to television sets with cable-ready QAM tuners.
- **Analog** – For delivery to older television sets without QAM tuners, and commonly used for exercise equipment screens.
- **IP** – IPTV delivery to compatible devices - set top boxes, set back boxes, and smart TVs.

Additional Considerations

Hospitality systems usually have additional requirements not needed by individual consumers in residential homes. Some examples include:

- A way to insert site-specific “channels” in the rooms to provide information about amenities at the hotel or the availability of services in the local community, such as restaurants and transportation.
- VOD or premium channel management and accounting.
- Customized Electronic Programming Guides (EPGs) - usually inserted on-site.





The Need to Upgrade

As advancements in video have unfolded, hospitality site owners and video operators have upgraded on-site delivery systems to varying degrees. However, there is a highly varied mix of in-room devices and content delivery platforms in use today at hospitality sites, much of it outdated and becoming unreliable. In addition, guests no longer wish to be constrained to only the television set in their guest rooms for video viewing. Patrons increasingly wish to consume video on hand-held devices anywhere on the property where they choose to roam.

Staying ahead of the changes in technology, coupled with changes in customer expectations, can be a daunting task, especially given that it is often uneconomical to change out everything at the site to the “latest and greatest” at every turn. Indeed, what is labelled state-of-the-art this week will be considered legacy equipment, or perhaps even obsolete, in a few short years.

When and how to upgrade these systems becomes dependent on a number of factors:

In-room CPE, Now and Planned

Key Considerations

- Serving a multitude of television set types - some older, some new, all with different features and capabilities
- What to do about set top boxes - numerous types and modulation requirements, but some may still be needed for content protection and Electronic Programming Guides (EPG's)

Encryption

Key Considerations

- CableCARD is now end-of-life, and compatible devices complicate the overall network with a great risk for point of failure
- MVPDs are no longer required to support CableCARD (FCC ruling in September of this year), and it is now possible to utilize industry-standard protection options like Pro:Idiom, BISS or Verimatrix

Existing On-site Platform

Key Considerations

- Old equipment might be end-of-life or end-of-support - spare parts or availability of service could be an issue
- Older systems may not have the flexibility to introduce multiple methods of connectivity such as running QAM and IP services out of the same chassis
- Some existing systems are bulky and large, always seeming to be "in the way" of the core business





Now and Planned

Key Considerations

- Existing physical connections, like coax or satellite, may be insufficient for the bandwidth or spectrum desired for the future
- The availability of high-speed internet to the site may affect options for upgrading
- Various modulation schemes may be an option, or there may be a reason to transcode at the site, in order to optimize available bandwidth
- Demultiplexing signals at the site may be required

Revenue/Profit

Key Considerations

- Delivering premium channels could help increase revenue but how easily can these be delivered to each site?
- If the VOD library could be on-site or “in the cloud” with the video provider, to save on management costs

“Future-proofing”

Key Considerations

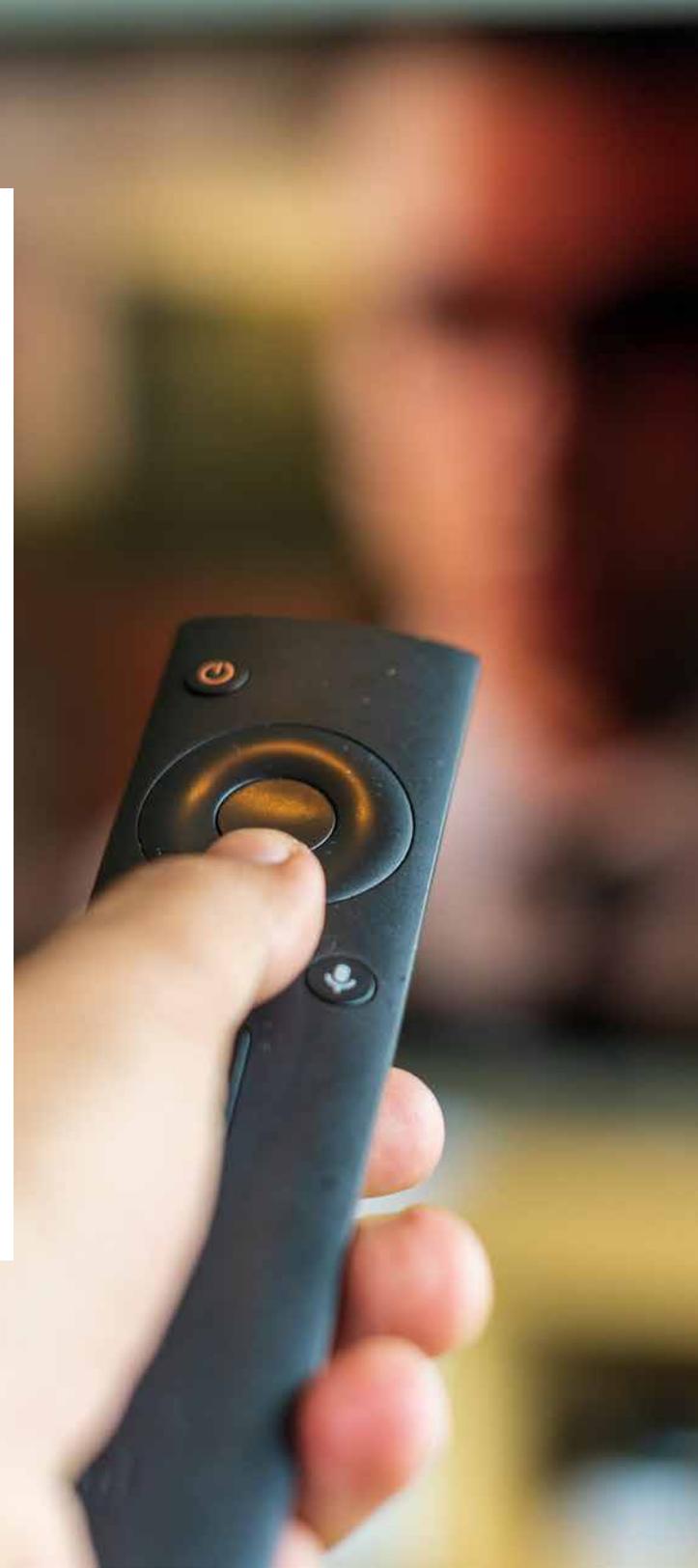
- The capability of the current platform to convert to all-IP delivery
- Ease of changing the lineup, adding local feeds, and adjusting the EPG

Such a mix of considerations suggests that, if a change or upgrade is planned for a hospitality site, extreme care must be taken to choose a flexible and future-proof platform - one which can maximize quality and revenue generation from legacy gear and provide a migration path to future capabilities.

The Case for All-IP Hospitality

Virtually every broadcaster, content owner, streaming service, and service provider has concluded that the future of video is all-IP. The runaway success of streaming services, such as Netflix, YouTube, and Disney Plus, as well as streaming devices like Roku, caught many in the pay TV industry by surprise. The trend away from linear multichannel, and toward on-demand streaming is both undeniable and irreversible. Many consumers today use either a cable company or a telephone company solely for high-speed internet service, and then subscribe to IP-based streaming services for all of their video, even local channels. Even the largest Pay TV provider in the country, AT&T, has apparently accepted this trend. Its flagship managed video service, AT&T TV, is an all-IP offering, while the company is actively trying to sell off its DirecTV business, having lost a total of 7 million subscribers since mid-2018. The company gave credit to all-IP AT&T TV for offsetting the continued subscriber decline at its struggling satellite service. Even the largest cable companies have plans to eventually migrate to all-IP delivery.

While total conversion to IPTV at a hospitality site may not be possible immediately, modernization of these networks and their platforms can and should be undertaken now, for a host of reasons:





1. Future-Proof your Network

Many of the benefits of an IP delivery network can be realized today and upgrading to an IP-capable and IP-ready platform will ensure readiness for even higher-revenue generating services. IPTV enables video delivery to multiple screens for hospitality patrons, and also allows an easier conversion to emerging 4K (or better) technology, like HEVC.

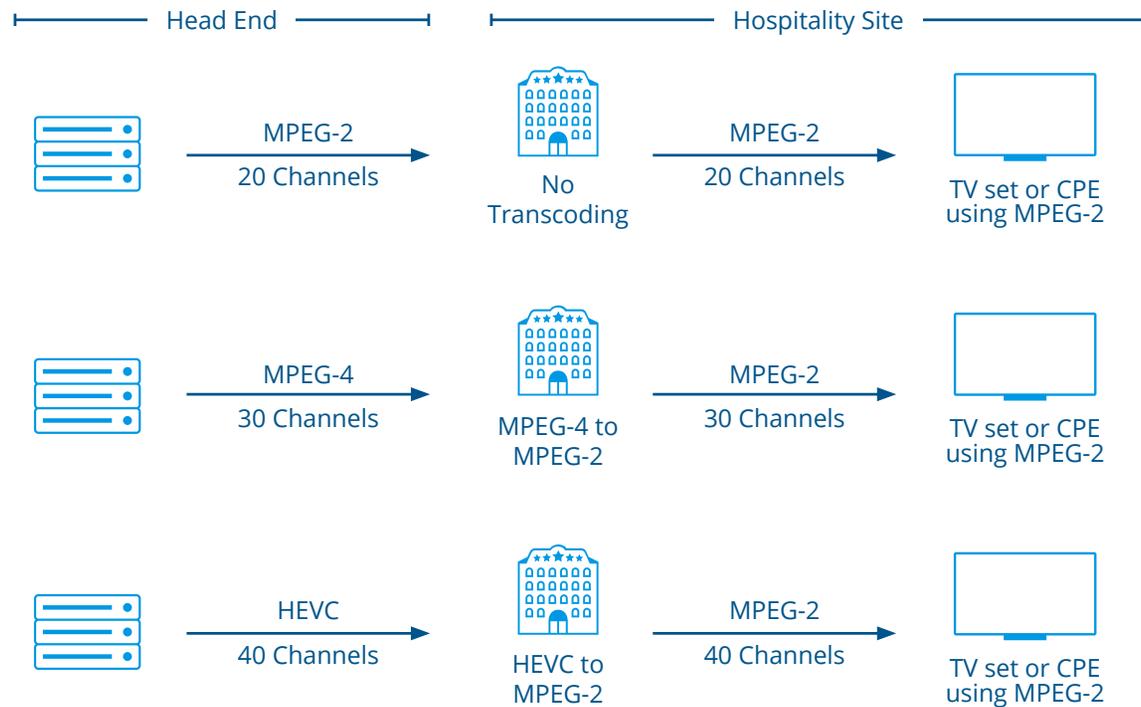
2. Optimize Bandwidth Usage

Numerous advances in video compression now require less bandwidth per stream and can provide capacity for more content within a given bandwidth. Transcoding highly compressed video at the hospitality site allows for better utilization of available bandwidth and can help increase revenue.

While MPEG-2 is often touted as a better core delivery protocol for HDTV, and many CPE devices still require support for MPEG-2, it does use more bandwidth per stream for transmission than MPEG-4. In addition, High Efficiency Video Coding (HEVC) is now available, which offers 25% to 50% better compression than MPEG-4, with the same level of video quality, or better video quality at the same data rate per stream. A hospitality platform that transcodes between HEVC, MPEG-4, and MPEG-2 provides better utilization of the available transmission bandwidth and frees up additional bandwidth to be used for data offerings, premium content, or VOD resulting in more revenue potential.

Optimize Bandwidth to Deliver more Services by Using a Higher Efficiency Codec

Compress video streams for transport from headend to hospitality site, then convert to MPEG-2 to ensure compatibility.



High Efficiency Video Coding (HEVC) offers up to 50% better compression than MPEG-4, with the same level of video quality



3. Upgrade to Non-Proprietary Content Protection

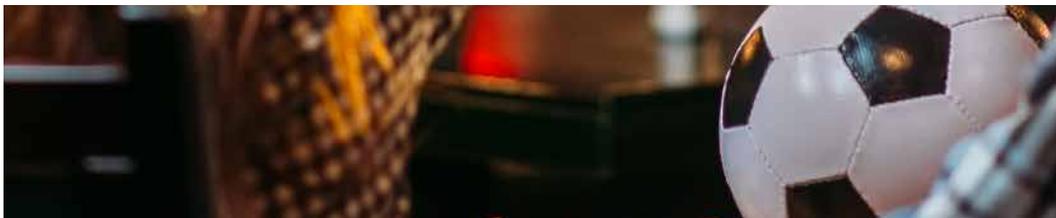
CableCARD is fast becoming obsolete and is no longer demanded by the FCC. However, content owners still demand that video signals traversing the internal networks of hospitality sites be encrypted to control piracy.

Television set manufacturers LG and Samsung have developed special encryption technology, embedded in all new sets they manufacture, which allows decryption of protected signals without the need for a set top box. LG's offering, Pro:Idiom, has now become the most widely used encryption/decryption technology in the hospitality industry.

An often-overlooked encryption technology is Basic Interoperable Scrambling System (BISS). BISS is an industry-standard encryption protocol often touted as an open platform encryption system. BISS can be used with numerous manufacturers and equipment types, and many hospitality sites employ BISS. BISS can replace CableCARD deployments and help operators easily migrate to IP networks.

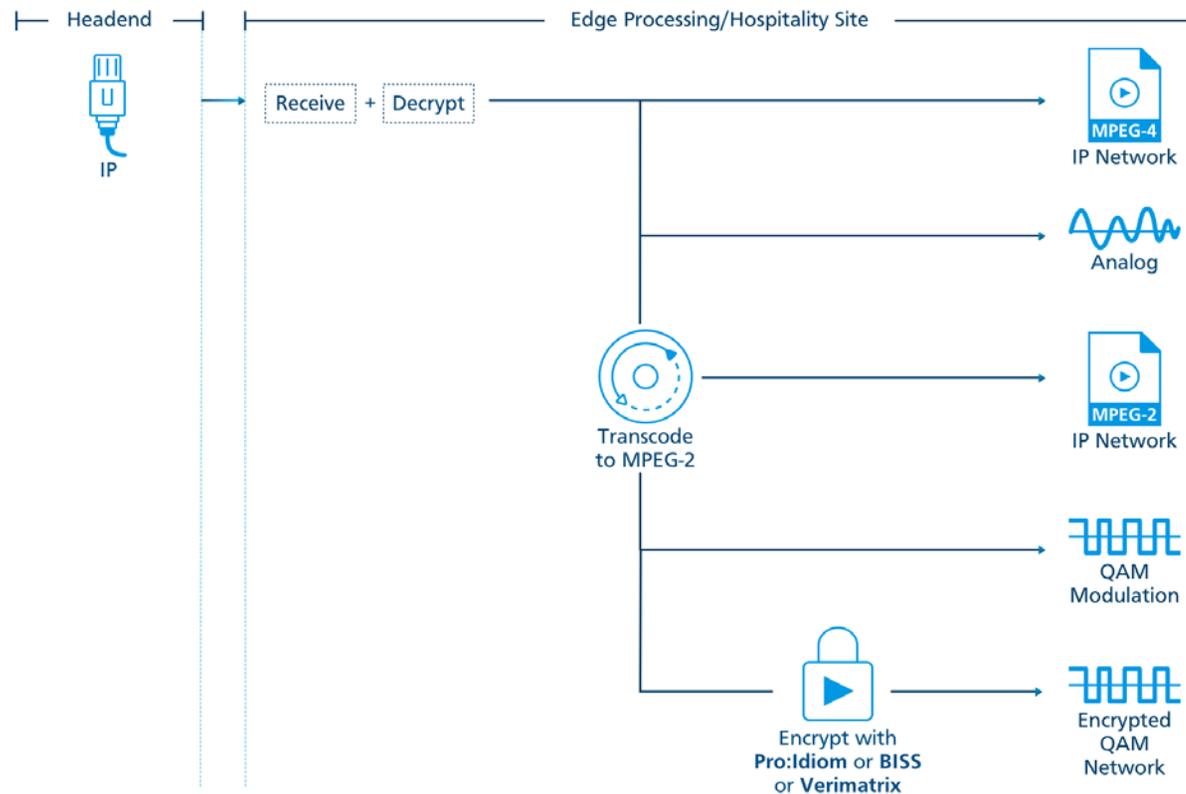
WISI has recently worked with a Tier 1 operator to deliver streams from a central headend to hospitality sites using the BISS encryption protocol. This operator uses BISS to encrypt bulk services that are targeted to large venues like sports stadiums and arenas, where the video will be presented in the clear at the venue but, by contractual agreement with the program provider, must be encrypted on the transport link.

Because BISS is an open standard, operators are likely have existing equipment to provide this encryption without expending much additional capital. These BISS-encrypted streams then transverse the network to the destination venue where they are received by WISI's Tangram High-Density Video Platform, which bulk decrypts the BISS streams at the edge and sends them out via IP. In some cases, Tangram modulates this IP output to QAM when the venue has a QAM RF distribution network.



Example Hospitality Workflow

Ingest IP sources. Bulk decrypt Verimatrix or BISS at the edge before outputting as Analog, QAM or IP. Optionally re-encrypt using Pro:Idiom or Verimatrix.



Bulk encryption/decryption options include VCAS Verimatrix and BISS. Samsung LYNK, Pro:Idiom, and AES-128 are other encryption techniques commonly used at hospitality sites.

Any new or upgraded hospitality platform will need to support one or more of these commonly used encryption techniques.

4. Scale your Reach with Delivery Over the Public Internet

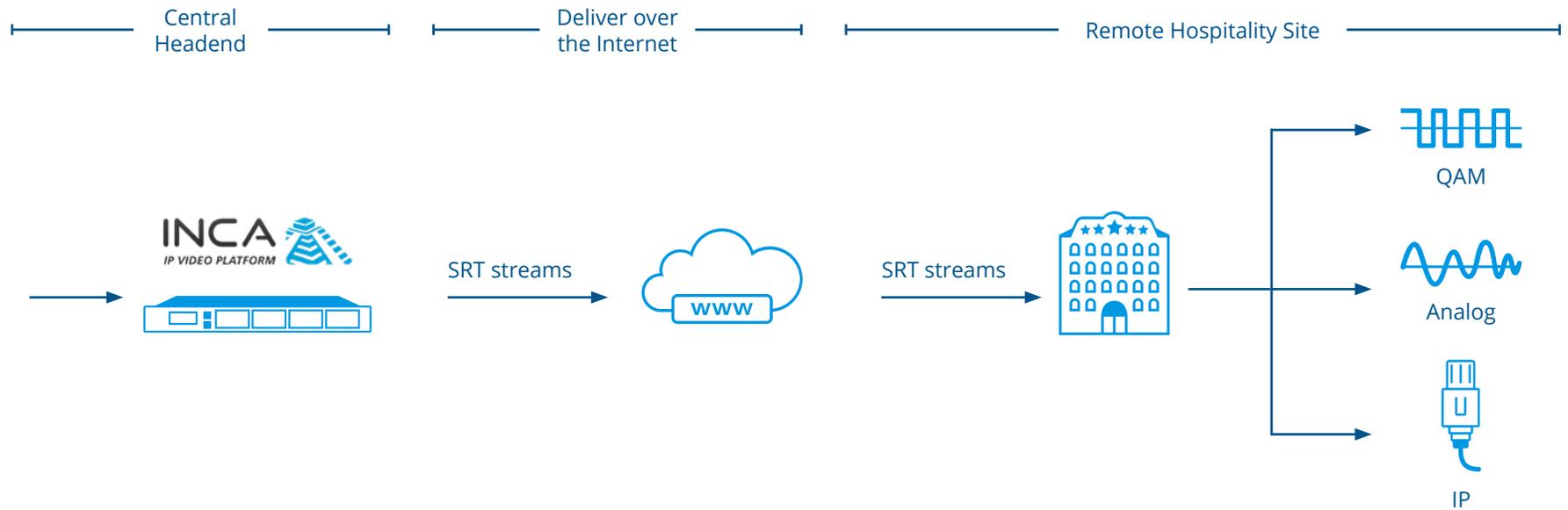
Operators can take advantage of the internet and use SRT to deliver high-quality, low-latency video direct to hospitality sites.

Secure Reliable Transport (SRT) is an open-source video transport protocol developed originally by Haivision. SRT employs sophisticated error correction and retransmission techniques to optimize latency and overall quality for video transport. SRT supports industry-standard AES encryption and allows the reliable transmission of HDTV signals over public internet links. For hospitality network service providers, SRT may allow a video service provider to compete for and win a hospitality site located in another carrier's service area, provided that a high-speed internet link is available to the site. Another application might be to temporarily serve a site, while a high-bandwidth physical connection is under construction. Other applications include local channel insertion into the hospitality site line-up, or a live camera feed located off-premise, such as a local sporting event or special occasion.



Serve New Hospitality Sites with SRT Video

Deliver video to hospitality sites outside your network. Deliver multiple formats simultaneously - output IP, analog or QAM from the same chassis.



SRT allows a video service provider to compete for hospitality sites located in another carrier's service area



5. Reduce Operational Costs

Vintage hospitality platforms are inflexible appliances that consume large amounts of space and power due to their age, design, and efficiency. These older systems are also noisy and often detract resources from the core business of renting rooms and taking care of patrons.

Important elements to prioritize when investing in a new IP platform:

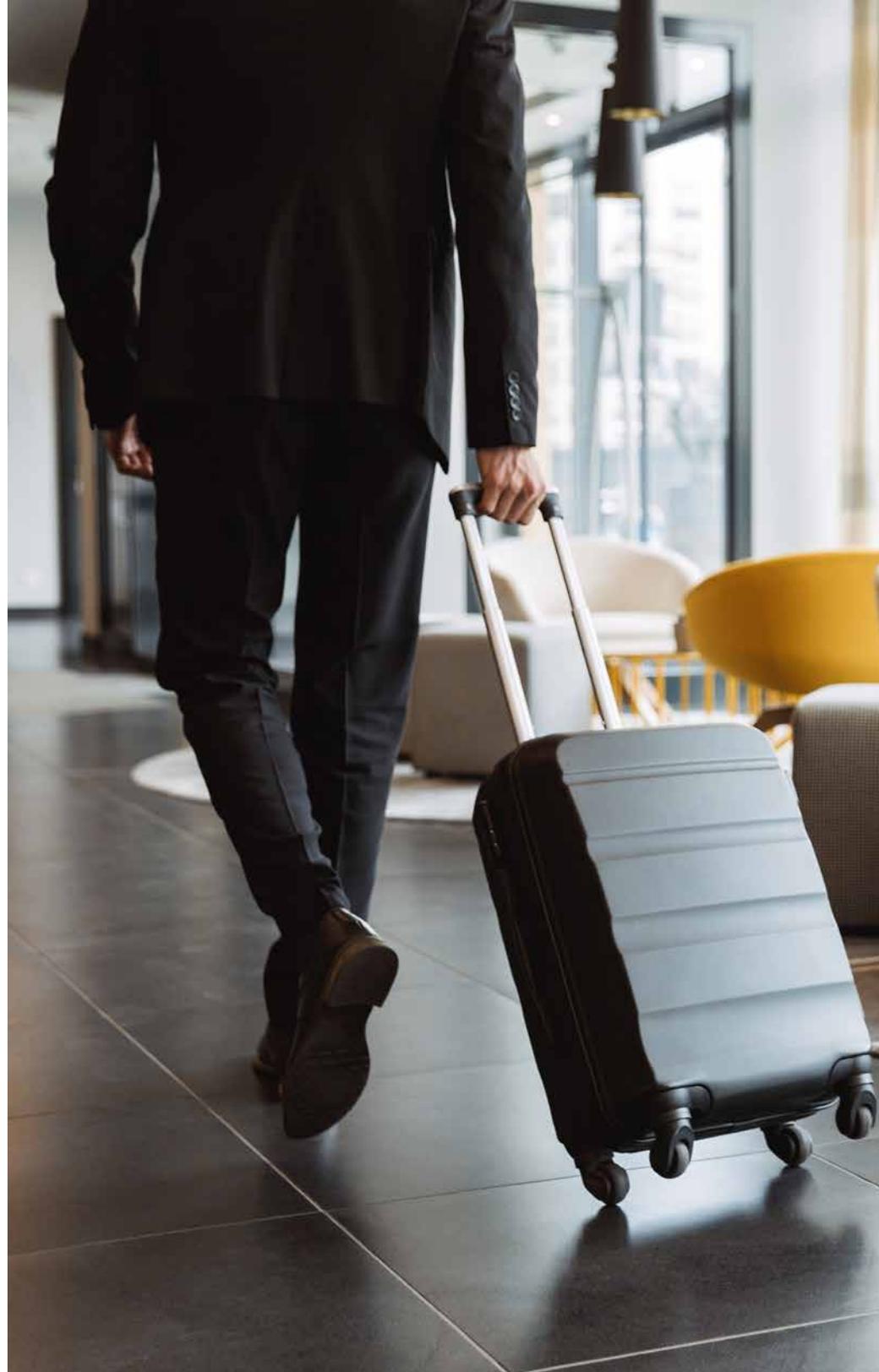
- Reduce rack space and power with a 1RU chassis which consumes only a fraction of the power of older systems.
- Consolidate multiple functions into a flexible, modular chassis and convert video streams to any format at the edge, per use-case. Deliver multiple formats simultaneously to output IP, analog or QAM from the same chassis.
- Extend the lifespan of expensive network and in-room equipment by utilizing platforms which can add new licenses to repurpose existing infrastructure.
- Decrease costs by increasing operational efficiency with centralized monitoring of the entire video network, from any location. Utilize troubleshooting with modern equipment that includes integrated analytics.
- Focus support resources on IPTV infrastructure for residential and hospitality video services.



6. Increase Revenue

Profits can increase if operators take advantage of efficiencies by having video services, pure data services or telephone services within the same spectrum or bandwidth. IPTV clients typically use MPEG-4 encoding versus the MPEG-2 encoding used on legacy QAM set top boxes. As a result, more content channels, and more high revenue channels can utilize the same spectrum in an IPTV deployment. Numerous methods, such as higher modulations, OFDM transmission, and Remote Phy with CCAP implementation can make data transmissions more efficient than legacy QAM video plant and can contribute to better use of the available spectrum.

In short, less bandwidth consumed by video leaves more for enhanced data service offerings to the patrons, potentially providing more revenue.



The WISI Solution for Hospitality Modernization

Upgrading and modernizing a hospitality network involves considering a host of factors. Because of the difficulty in predicting how technology and customer expectations may change over time, care must be taken to install a flexible, future-proof platform.

WISI's headend and edge video platforms enable operators to serve all types of hospitality networks. No matter how your existing network is set-up, WISI products seamlessly integrate and provide carrier-grade video delivery.

TANGRAM
HIGH DENSITY VIDEO PLATFORM



- ✓ Deployed at hospitality sites across the US with a Tier 1 video operator
- ✓ Modular platform can simultaneously output IP, analog, and QAM
- ✓ Encryption/decryption options for BISS, Verimatrix, Pro:Idiom and Samsung LYNK
- ✓ Low power consumption, AC or DC power options
- ✓ Multiplex and groom – provide lineup uniformity with easy PSI & PSIP manipulation

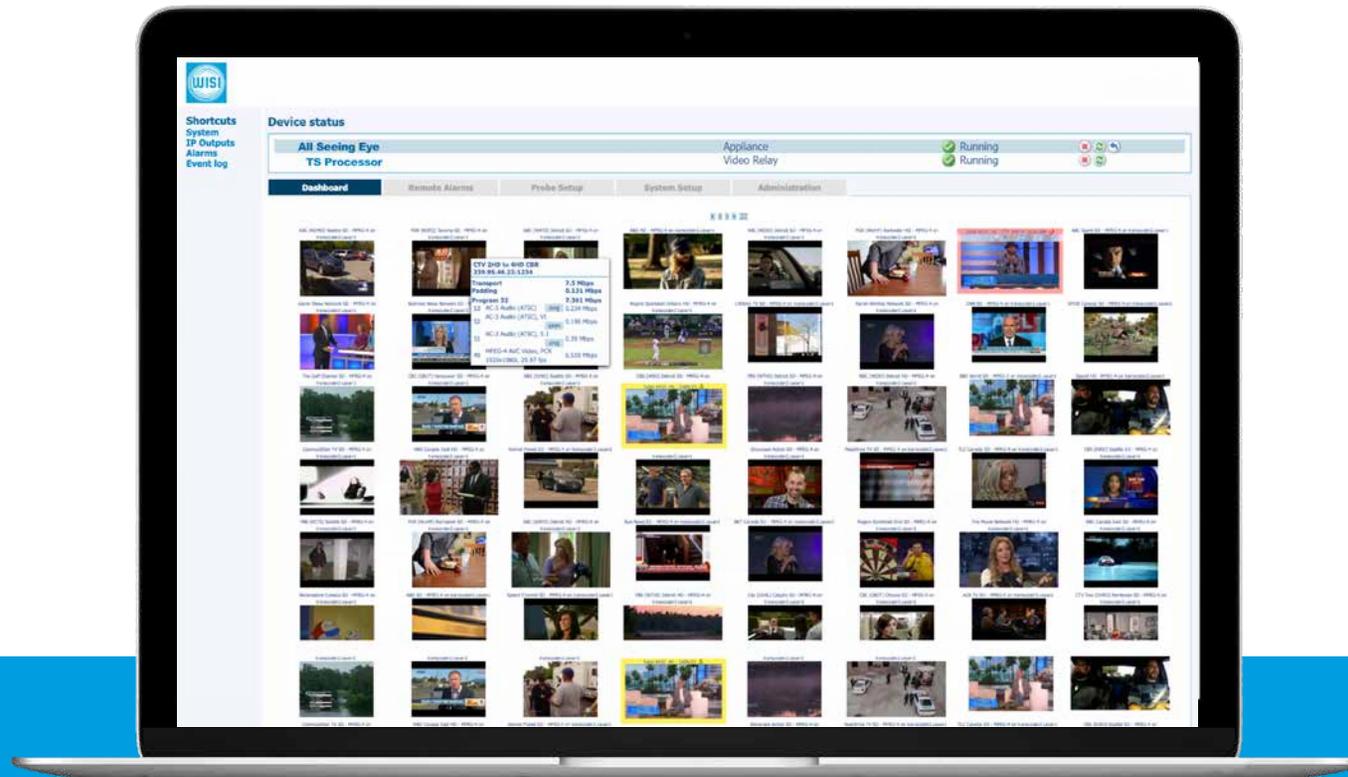
INCA
IP VIDEO PLATFORM



- ✓ Trusted video delivery solution, deployed globally with Tier 1 operators
- ✓ Transcode between MPEG-2, MPEG-4, and HEVC
- ✓ Output video as multicast IP, HLS playlists, or SRT
- ✓ Modular, flexible chassis with less than 200 W per chassis
- ✓ Increase visibility with VidiOS™ monitoring and management tools – includes video thumbnails & stream downloads

All Seeing Eye

- ✓ Award-winning IP visual video monitoring
- ✓ Central monitoring of hospitality sites
- ✓ Video thumbnail mosaic with visual highlighting
- ✓ Monitor locally and remotely using any web browser
- ✓ Compatible with the WISI's intelligent headend product family, including the Inca IP Video Platform and Tangram High-Density Video Platform

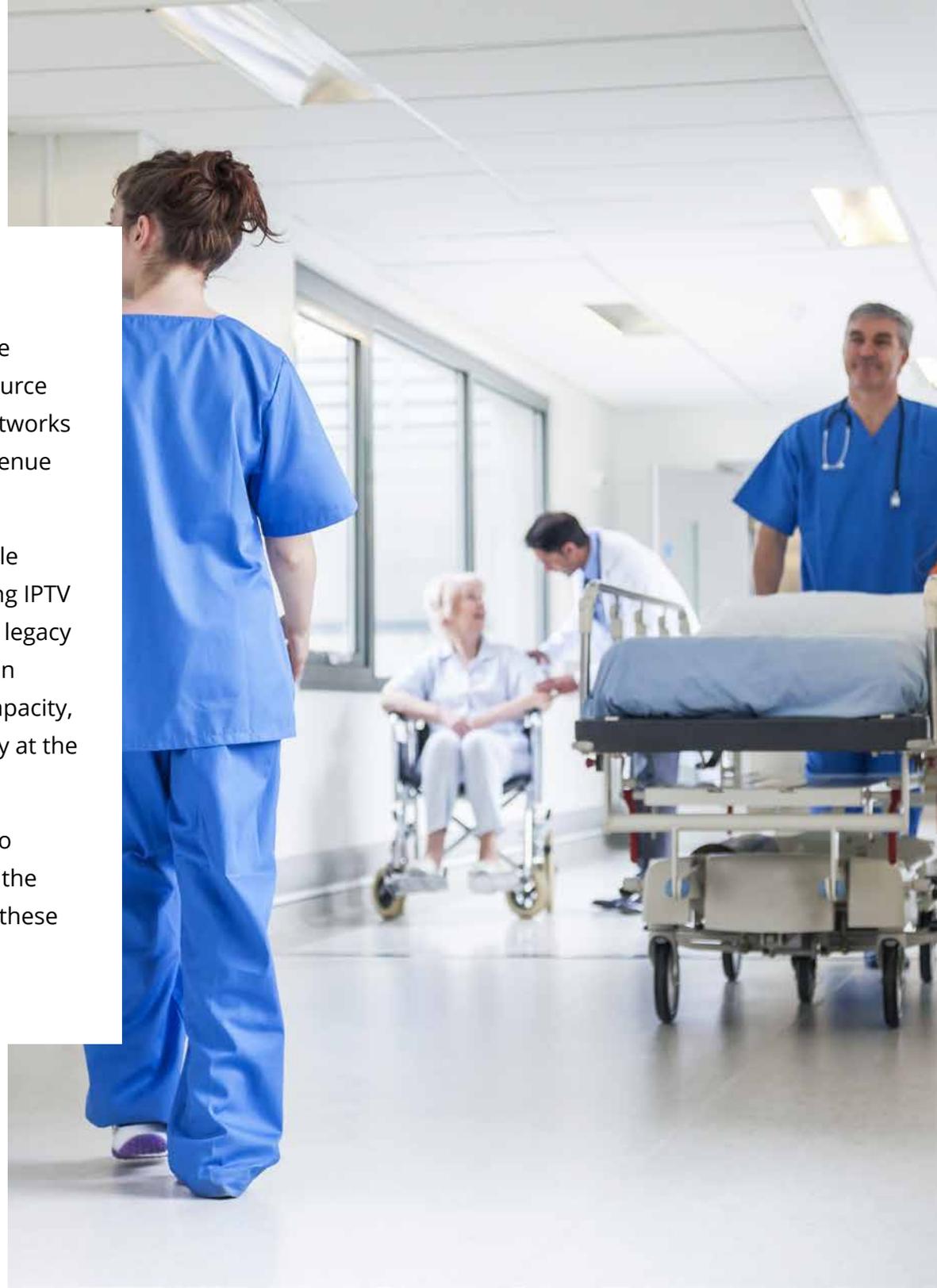


Summary

Hospitality networks are an important part of a service provider's overall market and can be a dependable source of video delivery revenue. Modernizing hospitality networks result in a more reliable service, more predictable revenue and it can provide a pathway to an all-IP network.

For sites where a full IP conversion may not be possible today, our recommendation is to prepare for delivering IPTV at the property in the future, while converting back to legacy today. This will enable operators to utilize compression technology like MPEG-4 or HEVC to save bandwidth capacity, while transcoding to whatever is best for that property at the edge.

The flexibility and modularity offered by the WISI video platforms are unmatched in the industry and provide the best vehicle available for upgrading and modernizing these sites today.



Rely on 100 years of Innovation



Our team is available to help you evaluate the numerous alternatives for upgrading your hospitality video network.

We can help you design and implement networks that acquire and process high-quality video signals from virtually any source, and in almost any format. In addition, our award-winning built-in monitoring solutions can provide you with more reliable operations and an attractive total cost of ownership.

Contact your WISI sales representative or visit <https://wisi.tv/contact> to get started.

We're here to help.

References:

1. <https://www.tvtechnology.com/opinions/the-future-is-here-moving-into-the-next-decade-with-all-ip>
2. <https://advanced-television.com/2015/12/15/futuresource-broadcasters-all-ip-by-2025/>
3. <https://advanced-television.com/2020/09/01/att-looks-to-sell-directv/>
4. <https://www.fiercevideo.com/video/at-t-scales-back-q3-video-sub-losses-to-627-000>
5. https://en.wikipedia.org/wiki/Hotel_television_systems
6. <https://en.wikipedia.org/wiki/CableCARD>
7. <http://ayksolutions.com/wisdom/iptv-what-is-it-and-what-are-the-benefits/>
8. <https://www.webnxs.com/blog/iptv-benefits-well-classification-iptv/>
9. <https://www.fcc.gov/document/fcc-closes-navigation-device-proceeding>
10. https://www.cisco.com/c/dam/global/en_uk/assets/pub_sector/housing_associations/papers/pdfs/papers_business_justifications.pdf
11. https://en.wikipedia.org/wiki/Digital_television_transition
12. <http://www.differencebetween.net/technology/difference-between-mpeg2-and-mpeg4/>
13. <https://www.fiercevideo.com/video/at-t-may-sell-directv-u-verse-and-at-t-tv-now>
14. <https://www.harmonicinc.com/insights/blog/migration-path-to-all-ip-infrastructures/>
15. <https://www.commscope.com/solutions/video-processing/all-ip-video/>