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TELEPROMPTING AND THE IP REVOLUTION

– TRANSFORMING WORKFLOWS

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1 Introduction

The Internet Protocol (IP) revolution is taking over communications and broadcast. In today's world of OTT networks, live streaming, and traditional broadcast studios, billions of customers worldwide have access to an unlimited supply of video content and can choose how and when they consume it – from their homes, on their computers or on their mobile phone or tablet. To keep up with the demand for quality, relevant content, broadcasters are turning to new advances in technology that allow more flexibility and speed in their workflow – and IP is the answer.

While video is reaping the benefits of IP technology – corresponding equipment in the broadcast industry, such as teleprompting systems, will also be required to innovate and adopt this change. In fact, prompting is a broadcast essential that often gets little attention. As the adage goes, *“it's the last thing that broadcasters think of but the first thing that's missed when it doesn't operate properly.”* Now, as the broadcast industry shifts to adopt IP infrastructure, there is a growing requirement for a considered and seamless IP prompting workflow. This technical paper will detail how an IP teleprompting workflow combines ultimate connectivity, flexibility, ease of use, and the reliability required for critical broadcasts.

2 The necessity of IP prompting

The majority of broadcasters around the world continue to use video cables within their infrastructure. With the limitations of SDI, there is a growing trend towards IP-only facilities as broadcasters see the benefits of this technology and are eager to capitalise on it. According to Adam Cox, Senior Analyst at Future Source, momentum is gathering. “IP adoption will be the biggest transition to occur in broadcast history. This is unlike previous transitions, such as the move from standard definition to high definition to 4K – which was all the same environment. The transition from SDI to IP is different because it's more than a technological transition, it's also a human transition and requires a revolutionary change in the industry's mind set. There is a general acceptance in the industry that IP is the future and 4K adoption is only one of the reasons for this.”

“The ability to use equipment and infrastructure remotely is hugely powerful”

“The transition to IP is occurring due to multiple reasons, including limitations of current workflows,” continued Cox. “But one of the issues with the current status of adoption is that most people are implementing IP the same way they would SDI. One of the key benefits of moving to IP is virtualisation. The ability to use equipment and infrastructure remotely is hugely powerful, but to achieve this, facilities need to design an architecture with IP in mind rather than using a traditional broadcast architecture with IP instead of SDI”

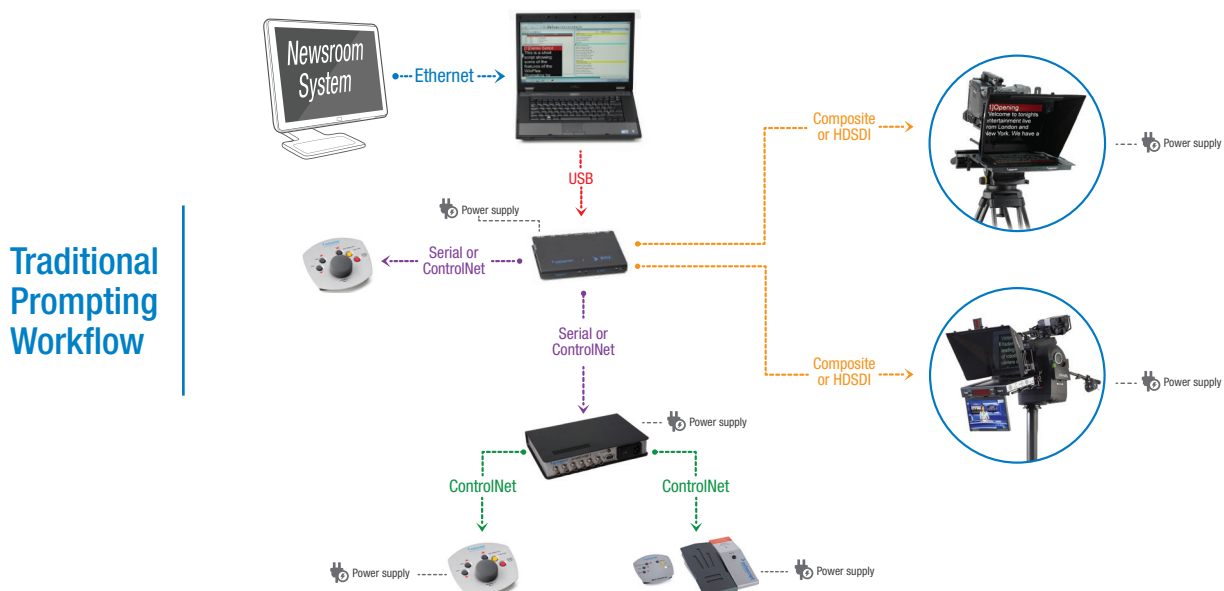
Early adopters, such as sports broadcasters, have the need and the financial means for ultra-fast and responsive live-remote production. Companies like outside broadcast specialists Game Creek Video, who recently announced that they are preparing their second IP-based truck, are paving the way for others to adopt IP more easily.¹ Lower cost of installation, simple and flexible integration, responsive workflows, the increasing availability of equipment and compatible advances are expected to drive the rest of the market over the next few years.

Due to these key drivers, there is a growing requirement for a considered and seamless IP prompting workflow. It makes sense that the best solution for modern prompting systems is to connect multiple devices via an IP network. As the new standard for all communication and distribution, IP will offer complete flexibility of content transportation, operational and capital expense cost reductions, and widespread availability to broadcasters. A fully IP prompting workflow ensures future compatibility, removes the need for video cables, allows devices to be located anywhere and enables fool proof redundancy solutions when required for critical broadcasts.

As the global leader and world’s most trusted teleprompting brand, Autoscript has developed an “Intelligent Prompting” system that will enable broadcasters to make this critical step forward and adopt a reliable, fully-IP teleprompting solution for the first time.

3 Integrating prompting into an IP infrastructure

Until now, prompting systems have tied broadcasters to the use of video cables and serial cables. High-end systems already include some IP connectivity – such as to connect the studio system to a remote newsroom for importing prompting text. However, these existing systems aren’t as user-friendly or end-to-end as they need to be. For their proprietary networks, studios are still using USB, serial, or video cables to connect the controllers to the prompting engine, while video connections are required to deliver the prompting output to a traditional monitor.

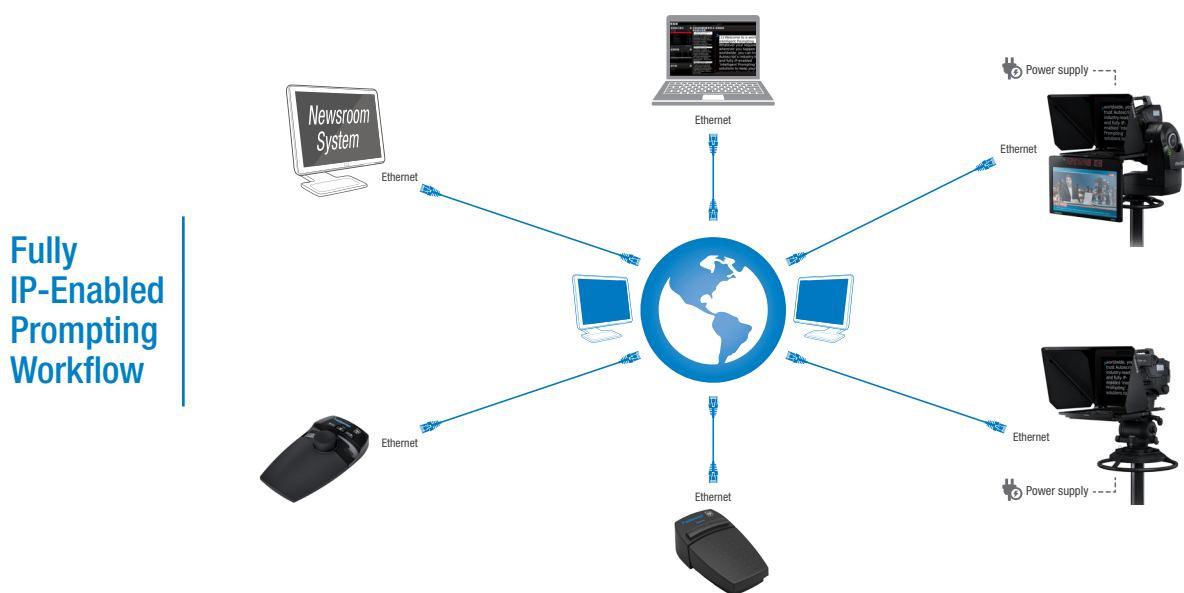


¹ SVG News, “IP Production Forum: Truck Vendors Ride Through Learning Curve of IP Adoption;” March 10, 2017

At first glance, video over IP might seem like an obvious solution to deliver prompting video to the monitor. However, video over IP also has a number of drawbacks – lack of bandwidth, latency issues, and synchronisation errors – before distribution standards are even considered.

To provide the simplest and most reliable solution, an IP prompting workflow must, therefore, avoid video over IP. Autoscript’s solution to this is to incorporate the intelligent scroll technology into every Intelligent Prompting monitor, enabling each monitor to generate the video output. This means that much less data is sent over the IP network and for the first time ensures that all of the monitors remain in constant communication with the master application. The result is on-going, perfect synchronisation and easier operation. Moreover, removing the traditional scroll box from the operator position makes this a much cleaner solution to support. With the new Intelligent Prompting system, there are no signal routing considerations, no A/B switches required for failover scenarios and no video standards issues, to name a few headaches recognisable to any broadcast engineer.

The Intelligent Prompting range has also integrated IP technology into the prompting infrastructure, including the use of Network Time Protocol (NTP) and Power over Ethernet (PoE). With a standard workflow, prompter clocks require additional time code generators and networks to produce linear time code (LTC) or Vertical Interval Timecode (VITC). By utilising NTP, Autoscript’s Intelligent Prompting range allows all devices on the network to be synced globally and reduces cabling. The integration of PoE to power the prompter controllers also removes excess power cabling. With less cabling, Autoscript’s IP prompting systems enable a simpler, user-friendly integration.



Of course, a truly seamless IP prompting system means more flexible integration since equipment setup is tied only to network availability. This simplifies many broadcast scenarios. For example, a fully-IP prompting workflow allows one operator to control the script in multiple locations and instantly switch

control to another operator anywhere in the world when necessary. This enables the broadcaster to pool resources instead of creating or maintaining independent prompting infrastructures. Likewise, IP connectivity provides powerful redundancy. A second master software application can be added to the system and seamlessly take over control if required.

The points above consider the prompting system in isolation, but taking a wider view of the production environment reveals other drivers for an IP prompting solution. There is the potential to integrate prompting more efficiently with other studio equipment if the prompting controls are connected via IP. This is the same medium, for example, as the Vinten FP-188 robotic pedestal that has four Ethernet output ports. Just one cable is needed to feed from the network into the pedestal to enable the control of the pedestal, head, camera and lens, and prompting. Installation doesn't get much simpler.

Vitec Group Research and Development Manager Keith Beacham believes Autoscript's future developments will have an increasingly important impact on general studio operation.

"Intelligent Prompting is the future to controlling an entire production"

"The script controls the speed of every show," explains Beacham. "By enabling communication between the prompting system and other studio functions such as camera automation, lighting, and sound, our customers can increase the accuracy and efficiency behind every production. Intelligent Prompting is the future to controlling an entire production. This is an important first step towards that vision."

4 Benefits for the user

Certain elements of IP prompting are already available. For example, with the QBox, Autocue users have the ability to "distance prompt" via a networked scroll box. Essentially, this means Autocue's Qbox users have the ability to set up their production in one location and control their prompters from a different location. Although the current equipment setup isn't seamless, that workflow alone has proven to be very beneficial for broadcasters covering large events or those looking to pool resources.

Adoption of a fully IP teleprompting system increases the benefits for users. Adding IP network connectivity direct to the prompt monitors and the controllers creates the seamless workflow that is currently missing. This workflow simplifies the response to short-term demand spikes, or to localise or globalise stories, as every prompting device is tied only to a network connection and, hence, is addressable on the broadcaster's IP network from anywhere in the world.

To completely leverage the fully IP prompting workflow, the technology and software must be easy to operate. To address this for Intelligent Prompting, Autoscript has introduced an updated version of their world-leading WinPlus teleprompting software. WinPlus-IP is an update that builds on familiar, existing procedures – such as shortcut keys and layouts – while including improvements to the software’s ease of use – such as clearer menu structures – and added functionality - such as device monitoring. By taking advantage of existing technology and adding features necessary to manage an IP workflow, the Intelligent Prompting solution ensures that broadcasters can immediately leverage their existing knowledge base without the downtime and errors associated with learning a new system.

Of course, the cabling benefits of IP are also true for IP prompting, if on a smaller scale. Using one standard Ethernet cable to connect all devices simplifies inventory. PoE can power an increasing number of devices to remove the need for, and the associated complication of additional power supplies. As such, Autoscript has integrated this into the HC-IP controller and offers a complete solution for individual users by including a PoE injector in the XBox-IP.

“broadcasters are increasingly looking to reap the cost benefits of utilising COTS hardware”

Looking for more cost-effective solutions for IP facilities, larger studios have started to purchase an increasing amount of commercial-off-the-shelf (COTS) IT hardware. Autoscript’s Product Manager Robin Brown clarifies how this trend is influencing their product development.

“We recognised that individual operators may not want to purchase 3rd party equipment, so a PoE injector is included in the XBox-IP for those working with a box and one controller. On the other hand, we noticed that broadcasters are increasingly looking to reap the cost benefits of utilising COTS hardware and so it made sense to allow these customers to take that route with a COTS PoE switcher for multiple controllers.”

Unquestionably, a fully IP teleprompting workflow must above all be reliable. No live broadcaster would doubt the critical nature of prompting. If the script fails on-air then the opportunity for the talent, and therefore the broadcast, to fail is high. In this case, redundancy fail-safes are key. While traditional measures still require time to manually transition from the failed PC to the mirror PC, Ethernet connectivity enables a seamless transition. Here’s a real world example: two PCs run the script, automatically keeping in sync; PC1 fails and so the connected controller and prompt monitors switch instantly to PC2. No more ad-libbing, no more embarrassing moments and no additional equipment needed. In fact, PC1 and PC2 don’t even need to be in the same location – just on the same IP network.

An IP prompting workflow is, therefore, responsive, flexible, cost-effective, and reliable.

5 Improving prompting beyond the IP workflow

Adding Ethernet connectivity into every device of a prompting system is a progressive development, demanded by the evolving structure of broadcast facilities. But there are other mechanical developments that are outstanding requirements from the market: weight reductions, simplicity of setup, ease of transport, are all on-going issues for broadcasters. As part of the innovative Intelligent Prompting development, Autoscript has sought to tackle these issues, too.

It's not unusual for Autoscript to innovate in this area. For example, the E.P.I.C. integrated prompting system has become the number one broadcast on-camera monitor in the world because of its unique design which combines a talent monitor hinged on the front of the prompter monitor.

Now Autoscript have moved to a single prompt monitor platform, encompassing the new EVO-IP high-bright and E.P.I.C. style prompters. The new slim, lightweight design is up to 32% lighter than the existing LED monitors.

Even the E.P.I.C. concept has been improved in the Intelligent Prompting system. The E.P.I.C. Talent Monitor is now detachable to give broadcasters the flexibility to upgrade the EVO-IP prompt monitor when required, and a 24" talent monitor is available to add to the EVO-IP 19" when a large feedback screen is required. The talent monitor is mounted using friction hinges to allow easy readjustment, and the drive electronics remain integrated into the main prompt monitor for improved weight distribution and reduced depth.

For flexible facilities, such as rental and Outside Broadcast (OB) crews who move and transport on-camera systems frequently, the simplification of the hardware setup is a major advance. Autoscript has taken the philosophy of "fewer parts and fewer processes" to produce a rail-based system with high stiffness, simple setup and quick release mechanisms for both the camera and the monitor/hood assembly.

The new, low profile carbon fibre hood, which encases the glass, is lightweight and rigid, and has been designed so that it folds down simply as one piece while securely protecting the glass for transport. Calculating the form factors of hundreds of camera/lens combinations, as well as the field-of-view envelopes of every common lens with focal lengths of down to 4.3mm has also enabled the pioneering development of a small lens opening with flexible O-ring to replace the old-fashioned gaping hole and large black cloth of traditional systems. The result of all these advances is a speed of setup reduction of up to 75% when compared to other leading on-camera teleprompter systems on the market.

“the most robotic friendly teleprompters on the market”

The combination of the monitor and on-camera hardware weight reductions is significant. Whether a broadcaster needs to add on-camera prompters to traditional supports, smaller robotic heads or a tracks system moving at speed, weight is crucial. Autoscript’s Intelligent Prompting on-camera systems are over 30% lighter and can be used without counterbalance.² This improves both payload issues and problems with excess movement at the end of transitions. “Our experience with Vinten robotic products has enhanced every stage of the development of the on-camera prompting systems,” explains Vinten Product Manager, Philip Dalgoutte. “The improvements to weight and stiffness significantly reduce oscillations at the end of robotic movements and make the Intelligent Prompting on-camera systems the most robotic friendly teleprompters on the market.”

Autoscript’s Intelligent Prompting system has taken every detail into account to make it both the most forward-thinking and user-friendly system on the market. This fine attention to detail includes the ergonomics of the hand controller, which will impact the ease of use for thousands of prompter operators on a daily basis. From providing a comfortable, neutral hand position, adequate wrist support and left or right handed operation, everything was considered to create a controller that is radically different to the options currently available.

6 Implications for existing systems

Of course, SDI architectures will be around for a long time yet and every facility will manage the transition to IP at a speed that fits their individual circumstances – assessing the cost/benefit ratio by considering operational requirements and the capital investment cycle. “Huge organisations take a long time to change and so what we expect to see, at first, are ‘islands of IP’ within wider organisations,” concluded Cox. “Eventually these elements will join together to create a complete IP workflow that will enable the broadcaster to fully benefit from the new efficiencies and possibilities that are opened up by IP.” Since IP networks deliver real benefits, hybrid stations will start to become increasingly common. However, if full IP-only facilities are only just a future aspiration, then IP prompting may seem surplus to requirements. It is, therefore, essential that new solutions can integrate with existing prompting systems.

In the case of Autoscript’s Intelligent Prompting solutions, users may choose to retain standard video monitors, taking HD-SDI signal out of an external XBox-IP as they do with any scroll box today. To benefit from the improved software application in an existing hardware setup, current Autoscript users will be able to purchase this to run with their XBox Ultra and controllers.

“Autoscript has always had a philosophy of creating equipment that can be used by everyone,” described Product Manager Robin Brown. “While fulfilling the need for a truly seamless IP workflow, we had to consider our hundreds of customers around the world and create scalable solutions for them at a price comparable with traditional equipment. Intelligent Prompting monitors will take HD-SDI input and are compatible with existing hardware and software.”

7 Conclusion

IP prompting workflows represent a revolutionary step forward for modern broadcasting, enabling users to work responsively and securely in the flexible environment that is evolving throughout the industry. By designing every component within the prompting system around an intelligent IP workflow, Autoscript has fulfilled its role in helping this critical broadcast component adapt for the acquisition of next-level, broadcast experiences. Intelligent Prompting is a completely scalable, IP prompting architecture that ensures benefits for users at any stage in their transition while also opening the door for continuous workflow improvements.

As a result, broadcasters now have access to a seamless IP prompting workflow that combines the connectivity, flexibility, ease of use and reliability required for the industry today. And perhaps equally as exciting, are the future possibilities to further enhance the workflow in years to come.

Welcome to a world of
Intelligent Prompting