

OB

4K UHD capable OB units are now commonplace, but while a few trucks have made the leap into IP, many operators are still adopting a wait and see approach. Jon Creamer reports

4K UHD outside broadcasts are no longer a rarity. Most of the major OB players are now capable of supplying a 4K OB production.

BT Sport and Sky's commitment to UHD in the UK is solid. If there was ever any doubt, it's clear now that 4K UHD production of big budget sports events will certainly not be a flash in the pan. "Without doubt UHD is set to become the standard for any high-end production," says Richard Yeowart, founder and CEO, Arena Television, a company that has several 4K UHD IP based OB trucks in operation. "Sport has tended to drive the market due to the higher budgets and need for bleeding-edge production techniques. As we also switch on extra features like HDR the viewers will start to expect more content to be available in UHD. UHD-HDR will really blow people away."

But while there are many 4K UHD capable OB units in operation in the UK and worldwide, few so far have been based on an IP infrastructure. 4K UHD trucks based on traditional SDI require a quad HD solution, which means a lot of extra cables compared to a standard HD truck and therefore a lot of extra weight and space headaches. An IP solution is therefore the key to making 4K UHD a more manageable workflow for OB, but there's been a little reticence among many about taking the leap into IP as operators wait for the manufacturers' standards to converge. "The reservations have largely centred around potential interoperability issues," says Stuart Hall, senior project engineer at Presteigne Broadcast Hire. "IPTV makes perfect sense, but at the moment there's an awful lot of edge conversion required for IP-based capture, transmission and delivery. Any conversion process may introduce latency issues, but once standardised IP connectivity is included in



Telegenic

4K/HD Trucks 3 HD trucks 4 Credits

UEFA Champions League Final 2017
Cardiff Host Broadcast Facilities HD and 4K, Open Golf 2017 Sky, Wimbledon 2017
NHK, BBC Six Nations 2017 **Contracts**
Sky Super League, Sky Prem Darts, Sky Boxing, BT Rugby Union Aviva Premiership, European Champions Cup, BT Boxing, BBC Six Nations, Autumn Internationals, Challenge Cup, National Theatre Live, RSC Live to cinema
Investments SAM Kahuna Mixers, 4300 cameras from Sony

CTV

UHD OB units 2 (a third ready this year); **HD OB units** 8 **HD server units** 3 **Fixed rig flypacks** 2 **'Mini' fixed rig flypacks** 2 **OB flypack** 1 **Contracts** The Open Championship, European Tour Golf for ETP, Cricket Sky Sports, PDC Darts Sky Sports, Premier League Football BBC Sport, London Marathon BBC Sport, The University Boat Race for BBC Sport. **One off specials** *The Jump*, *24 Hours in A&E*, *One Born Every Minute*, *First Dates*, *National TV Awards*, *BBC Music Awards*, *SPOTY*, *The Brits*, BAFTAs, Crufts. Badminton Horse Trials, V Festival.

Timeline

UltraHD 4K truck 4
HD trucks 4
RF trucks 2
Satellite trucks 2
VT trucks 1
HD flyaway kits 2
UltraHD 4K flyaway kit 1
Investments Purpose built IP 4K HDR Truck, RF1

Arena Television

UHD trucks 4 **HD trucks** 8 **VT trucks** 5 plus 10 support trucks; 2 flyaways; 7 helicopters; three business jets.
Credits *The Voice UK*, Rio 2016 Olympics and Paralympics, *Springwatch*, Glastonbury, *Sunday Night at the Palladium*, Festival of Remembrance, England Internationals, Premier League, FA Cup.
Investments £40m in IP-based UHD-HDR (£20m in 2016 and £20m in 2017).

NEP UK Ireland

HD/4K trucks 5 **HD trucks** 20 **Replay /edit trucks** 7 **SNG** 4
 Wide range of support and auxiliary vehicles. Two new trucks being built this year. Horse Racing with ITV Sport, French Open, Confed Cup, Wimbledon Championships, the WTA, IAAF World Athletics Championships, UK/British Athletics BBC. NEP UK is also delivering 120 Premier League Matches in UHD this season.



IPTV makes perfect sense but there's a lot of edge conversion required

STUART HALL
PRESTEIGNE

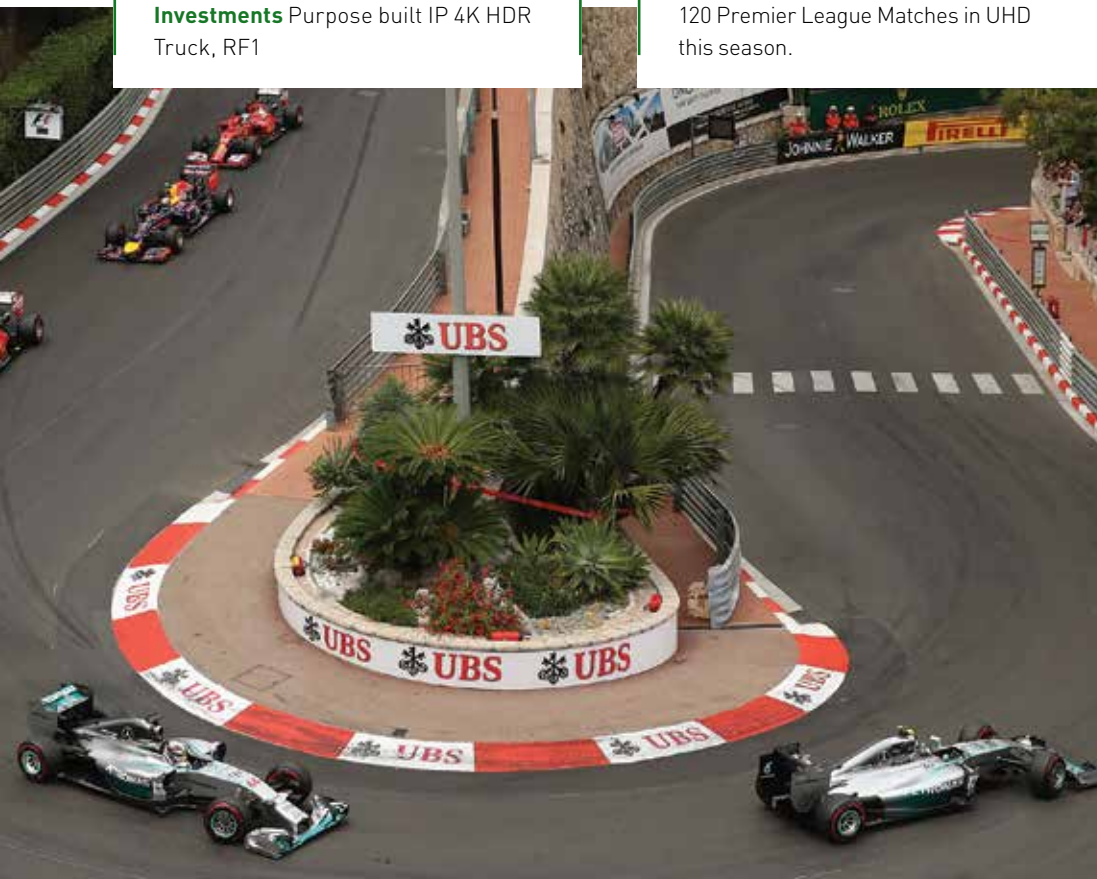
all relevant technology and we no longer have to do edge conversion, IP suddenly becomes something of a no brainer."

Gearhouse's systems integration manager, Martin Paskin, says that the demand for IP based trucks will still be low for the short term. "Those with IP trucks have them because the end customer has demanded them and the technology has been pushed to achieve that. On the whole people are still sticking to asking for SDI."

Arena's new trucks and Timeline's latest (launching this month) are built around an IP core, but they are still rare beasts. "The reasons around that are not just around the technology," says Paskin. "Is IP ready to be used? Yes. However, designing it, building it and maintaining it properly all become issues for both the systems integrators and the end users of the vehicles. There's a misconception that you take a switch off the shelf from your local IT supplier, plug in the IP connected devices and it all works. There's a lot of designing that goes in, a lot of configuration."

There's also an issue of skillsets. "There is a bit of a knowledge gap with the support engineers going out with the trucks," he says. Retraining is key. Not an issue for the Sky Sports and BT Sports of the world, but maybe for others. "The major companies are prepared to take the risk to a point. They can spend the money and the time doing it. They can train people up."

But all of this is short term. IP is now an inevitability. SMPTE 2110, the standard that all the manufacturers are working for their IP devices, is on the cusp of being officially ratified – possibly as early as this summer. And those that have already headed down the IP route say there is nothing to be afraid of. "UHD has gone mainstream and baseband systems are slowly but surely becoming a





The main change is the increase in IP technology used within an OB infrastructure

ANDREW MCKENZIE
CHIEF ENGINEER, FINEPOINT

legacy product as IP workflows continue to clock-up hundreds of hours of reliable broadcasting,” says Arena’s Yeowart. “The workflow is most definitely there. IP is not something to be shied away from. We now have a solid and proven glass-to-glass workflow that is more resilient and more flexible than the equivalent Quad-HD solutions. The technology is not only ready but in service day-in, day-out.”

Timeline’s new truck has also just launched this month with an Arista 100G switch at its heart and SAM IP infrastructure meaning it can deliver OBs simultaneously in uncompressed 4K UHD HDR and 4K UHD SDR. “We wanted to move into the large scale OB truck market and we wanted the same size as the biggest HD trucks with 32 cameras, lots of radio cameras and other sources and 12 servers all 4K and HDR and SDR,” says Timeline md, Dan McDonnell. “SAM announced their product was going to be ready in our time frame which meant that unlike other trucks built on a 10GB infrastructure we could build it on 100GB infrastructure using 100GB and 25GB interfaces which meant we could move from a compressed 4K format to uncompressed. If you’re going to build a premier truck to offer the best that OBs that can provide, uncompressed was a must.”

The final barriers to providing a 4K UHD OB with all the bells and whistles expected for an HD OB are now falling away. HDR is also ready to go. Timeline’s new truck simply has two identical SAM Kahuna mixers with the HDR signals out of the cameras going to one mixer and the SDR to the other. Anything done in the production area, a mix or the addition of graphics, happens simultaneously to the HDR and SDR outputs.

One complaint so far has been a lack of RF and replay solutions for 4K. At the moment the latency

Gearhouse Broadcast

4K trucks 1x USA and 1x Aus **HD trucks** 8 **flyaway systems** 18 **Credits**

Formula 1 for Sky Sports, Sky Italia and Sky Deutschland using OBPod flyaway, Australian Open, French Open, Wimbledon, US Open, ATP World Tour Tennis including ATP 1000 and ATP 500, *I’m a Celebrity* for multiple regions.

Investments 10x Simplylive Vibox all-in-one production systems, 14x SAM 4 Alchemist HD SDI standards converters; DYVI Live switcher panels and IP servers; OBPod flyaway upgrades; 50 Hitachi SK-UHD4000 4K cameras, 115 EVS upgrades

Video Europe

4K trucks 1 **HD trucks** 3 **VTR trucks** 1 **support trucks** 2 **4K flypack systems** 1 **HD Flypack systems** 2

Credits Football League contract for ITN, U23 Premier League & FA Cup football for Chelsea TV, De La Soul at the Roundhouse, Emeli Sande at Village Underground, BWF Badminton World Championships in Glasgow, X Japan concert at Wembley Arena. Film Premieres include *Rogue One: A Star Wars Story*, *Jason Bourne*, *Bridget Jones Baby*, *T2 Trainspotting* & *Suicide Squad*

Cloudbass

HD trucks 7 **Edit/VT vehicles** 4 **support vehicles** including: tenders, generator sets and runarounds

Recent clients Activision, Aurora, BBC, BT, Chelsea TV, Cyclevox, Eurosport, Everton FC, IMG, ITV Sport, Liverpool FC TV, Mentorn, MUTV, NBC Sports Network, Sky Sports, West Bromwich Albion

Presteigne Broadcast

Specialises in dry hire to OB companies.

Kit Sony-4300 4K cameras, Sony 2500 HD Cameras, Canon CJ12/CJ20/UK86 4K Lens, HJ24 Lens, HK14 Lens, RF and Audio

Credits Formula One, Rio Summer Olympics, World Cup, The Boat Race, Antiques Roadshow, 6 Day Cycling, BBC Sport, ITV, Sky, C4





If you're going to build a premier truck, uncompressed is a must

DAN MCDONNELL
MD, TIMELINE TV

through the system is around a second. That's okay for a helicopter shot but useless when cutting live action. So radio cameras at the moment are still in 1080p. That looks set to change though with manufacturers long promising a low latency 4K over RF solution.

Servers also need to catch up. "Every server at the moment is only a four channel device whereas an HD 1080p server is now 12 channels so you need a lot more servers" in a 4K truck, says Timeline's McDonnell. "That's why we've built our truck to take twelve servers. In the next 18 months though manufacturers will break through the problem of having more than four channels." Editing too can be problematic simply because 4K is a lot more information. It can be done but it takes longer but fairly soon editing in 4K will be no different to HD now.

IP also brings the possibility of remote production to the fore. The idea of sending all the signals straight back to a centralised studio for mixing and editing is an attractive idea for broadcasters looking to the bottom line and the costs of sending trucks and crews across the country.

But the jury's still out. The approach brings up a host of technical and production problems. Sending all those signals back to the studio requires a huge amount of bandwidth for instance although dedicated fibre at sport and cultural arenas goes some way to answering this problem. But outside of technical issues, there's been a backlash against the idea of not sending production teams to games, says Gearhouse's Paskin. "People want to go. They say they cannot feel what is going on and can't represent the game to their audience if they're not there." And technology can't change that.

Procam

Cine and 4K multi camera OB flypacked solutions, a mobile gallery vehicle and robotic rigs for OBs that don't require huge trucks

Credits The Who at Royal Albert Hall, *Celebs Go Dating*, *Let It Shine*

Televideo

4K trucks 1 HD trucks 9 Uplink units
2 Flyaway units 1 Streaming systems 6

Credits British Superbikes 2000-present day, ATP Tennis [British Eurosport], Premiership Rugby [Perform], *The One Show*, *Radio 1's Big Weekend*, Radio 1Xtra, BBC 6Music Festival, Radio 1 Ibiza 20, Radio 1 University Tour [BBC], Netball Superleague, National Badminton League, Bowls [Sky Sports], British Basketball League [BBC], Rugby League, football [Premier Sports]

Bexel

Kit Specialised broadcast solutions and production services including scalable flypacks, RF audio & communications, 4K and specialty broadcast cameras, EVS/edit workflows, graphics, and fibre integration. **Specialities** Sports, live events, reality/unscripted television, venues/stadiums, enterprise/corporate solutions **Credits** Rio Summer Games, Super Bowl, FIFA World Cup, Academy

Finepoint

Hired Vinten Osprey Elite, Canon C300 MKII, Canon 4K UJ90 box lenses, EVS XT3's, Vinten Vector 750 Kit

Credits IPL cricket, Grand National, Cheltenham Racing, *Gogglebox*, Rugby 6 Nations **Investments** Vinten Vector 750 Kit, Canon C300 MKII, Sony HDC-4300 channels, EVS XT3's 10 gig

