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In today’s broadcasting environments, different technologies such as cameras, production servers, editors, controllers, switchers, or automation systems must offer a higher level of integration for smooth and efficient workflow processes. Consequently, standard communication protocols have been developed progressively, so that these technologies can form a whole.

Seen as the central piece for many production workflows, XT/XS series servers have evolved from standalone ingest and replay to fully integrated platforms.

This paper intends to present the level of integration of EVS production servers; it suggests and demonstrates different workflow processes where EVS Instant Tapeless Technology fully interacts with the most popular control systems focusing on switchers, controllers, mixers, and automation systems to drastically improve the efficiency and the reliability of broadcasting operations.

**360° INTEGRATED SYSTEM**

Fast changes in broadcast and media production resulting from the merge of broadcast and IT systems have resulted in an acceleration of the replacement of video tape recorder by server and file-based systems with drastic impact on broadcasters organizations. However, the integration of these “best-of-breed” technologies with the existing and future infrastructures becomes essential to achieve effective gain of productivity promised by these systems. The communication is then required when multiple systems have to integrate to offer optimized processes and maximum operational benefits to the users.

To that end, all EVS production servers are optimized to integrate to multiple technology workflows.
XT/XS SERIES SERVERS: MASTERPIECES OF TAPELESS WORKFLOWS

The XT/XS series servers are true masterpieces in any production workflow acting as the backbone for media ingest, editing, browsing, and playout.

Thanks to their open architecture, EVS XT/XS series servers can be controlled by any type of production controllers allowing them to access and control their content such as clips, playlists, stills, graphics (with Key & Fill support), feeds, or loop clips as a moving background.

XT/XS series servers accept a vast range of remote control protocols, making it simple to integrate with most standard automation systems, controllers and switchers. Those protocols are:

- Harris VDCP
- Odetics
- Sony BVW75
- Thompson 35-XtenDD
- EVS AVSP

Switchers, controllers, linear editors, as well as other systems using one of these protocols can easily and transparently interact with EVS’ XT/XS series servers and control their content.

XT/XS series servers can also seamlessly integrate into existing workflows and playback content imported from multiple environments: graphics workstations, non linear editors or external drives (P2, XDCAM, etc.).

STANDARD PROTOCOL EXTENSION FOR ENHANCED CONTROL

In order to increase the level of integration of its servers, EVS engineering have developed a series of additional commands maximizing the control capabilities of the different supported protocols while respecting the syntax standard. These enhanced protocols have extended the number of common functionalities.

For example, Harris VDCP protocol extensions have been developed to allow VSN, PROBEL and AVECO systems control of the XT/XS series servers; Odetics protocol has been extended for LANCE controllers’ integration and ThomsonDD35 protocol has been modified for Liberovision and Red Bee Media graphics systems interface.
MULTIPLE INTEGRATED WORKFLOW SOLUTIONS

The information below is presenting a series of workflow scenarios in which EVS’ XT/XS series servers integrate with third-party control systems and editing tools. By allowing third-party systems to control EVS’ servers ingest and playout channels, one gives broadcasters extended production capabilities while benefiting from EVS reliable and instant tapeless technology. Each example intends to present the integration in each step of the end-to-end workflow:

> Live OB Production
> Studio Ingest and Edit
> Post-Production
> Playout

Typical workflows
EXAMPLE 1: LIVE OB PRODUCTION

> LiberoVision (DD35 protocol)

The XT[2]+ server is linked to a Multicam[LSM] remote controller, which allows instant replay, clipping and slow-motion replays; it is also linked to a LiberoVision Box, which communicates in DD35 with the XT[2]+ server.

The LiberoVision Box loads and plays out selected clips via the "DD35" control on the XT[2]+ channel, ingests the clips, builds a new clip with 3D effects and sends back a new clip with the effects. This transformed clip is ready to be inserted in any LSM operator playlist and played out from the XT[2]+ server.

> Grass Valley KayaK Switcher (VDCP protocol)

As with almost all switchers, the Kayak from Grass Valley is implemented with VDCP protocol. EVS has developed a new VDCP operating mode, called VDCP Fill & Key, to facilitate the F&K management (conforming to the standard VDCP protocol). This functionality allows the GVG switcher to control 2 channels instead of one with one serial link. This is particularly interesting due to the built-in Fill & Key clip association property. When the switcher loads a "Fill" clip automatically, the EVS server loads the associated Key clip in the second channel and manages the perfect synchronization of the 2 channels during the browsing and playout. This simplifies how the Fill & Key is constructed by transferring the simultaneous loading and playout tasks to the server.

The association F&K can be done by EVS’ IPDirector or by VDCP custom command. A default F&K association between clips is also based on Multicam[LSM] clip position (page/bank/clip/camera).

Operators create graphics, associate them, and the switcher loads them via VDCP Fill& Key to play them ganged with the effects. The same functionality exists in Odetics protocol F&K.

XT3 – Production Server

XT3 production server allows to record, control, and play media quickly and intelligently. Developed for the fast-paced environment of sports production, the XT3 has become a field-proven server for the most demanding workflows. The XT3 offers ingest up to 8 video channels, in any IN/OUT configuration, from any source, made instantly available for playback, live editing or for transfer to post-production. It offers loop recording process, in most popular codecs, instant response, native supports of multi formats and codecs and is fully scalable, expandable and upgradeable.
EXAMPLE 2: STUDIO INGEST AND EDIT

> Kahuna Switcher (AVSP PROTOCOL):
Snell implemented the EVS’ protocol (AVSP PROTOCOL) to gain total control over the production servers. The big advantage of this protocol is that multiple streams can be controlled by a unique RS422 serial link. From the Kahuna switcher, it is possible to re-trim the clips, load several clips, build playlists for more than one channel, and manage simultaneous broadcasts with guaranteed synchronization for complex effects.

> Lance Controller (Odetics protocol):
A Lance controller, implemented with the Odetics protocol, is linked to EVS production servers via RS422, and that can load any content of the ganged servers for continuous playout on plasma walls.

> DNF Controller (VDCP protocol):
DNF with VDCP protocol allows to launch any media – clip for a show.

XS – Production server for studio

The new XS video production server from EVS Broadcast Company guarantees a reliable and flexible transition to tapeless production in a studio environment. Built on the unique EVS loop recording, the new XS server is optimized for the recording of multiple audio and video feeds, as well as instant control and multi-channel playback operations.

Available with up to 6 channels, the new XS server offers multiple SD and HD codec configurations with native support, such as IMX, Avid DNxHD®, DVCPRO HD and Apple ProRes 422 for faster and easier media exchange with post-production.

XS can easily be managed with Insio and IPDirector, EVS’ studio software applications designed to fulfill a wide range of production workflows. XS can also be controlled by third-party tools, such as automation systems, linear or hybrid editors, switchers, and controllers.
EXAMPLE 3: POST-PRODUCTION

EditRec

EditRec is a new EVS server protocol that can be configured to control the server by a linear edit controller, such as the Sony BVE2000, BVE9100, the new Sony Plug In Editor switcher interface or the Editware Fastrack controller.

This new functionality completely replaces the Edit Recorder in a linear tape suite environment. The completed Edit is seen by the production server as a 'Cut' playlist, allowing it to be played from a single channel of any connected XT/XS series server on the XNet[2] network. The XT/XS series servers can so be used as a linear recorder but benefiting from non linear features such as the ‘undo’ command which can undo the last command in a second.

The diagram beside shows a basic configuration, using a single production server to provide 2 live recording channels, with instant replay on 2 play channels. During edits the servers can be controlled by the Edit controller, but can also be controlled by either a Multicam remote panel or an IPDirector to load and make clips as necessary. Hybrid facilities are also proposed to remove and add an edit in a non-linear way. The user can make last second changes in middle of his Edit.

> TLE Photron Timeline Editor(AVSP PROTOCOL) :

The Photron TLE edit suite, using the powerful AVSP PROTOCOL proprietary protocol produces non-linear edits with the XT/XS series servers’ feeds and plays out via another channel.
EXAMPLE 4: PLAYOUT

EVS is supporting VDCP protocol, the most popular protocol in the broadcast world, especially for the automation of the ‘ON Air’ management.

For example, with a Spotbox, which is an EVS production server that is only used to store clips and jingles – for playout, Harris automation manages the content of the server, creates the playlist, and manages the playout from the server.

<table>
<thead>
<tr>
<th>Name</th>
<th>Sony</th>
<th>DD35</th>
<th>Odetics</th>
<th>VDCP</th>
<th>AVSP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Creator</td>
<td>Sony</td>
<td>Thomson</td>
<td>Odetics, Inc</td>
<td>Louth Automation</td>
<td>EVS</td>
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<tr>
<td>Serial link</td>
<td>v</td>
<td>v</td>
<td>v</td>
<td>v</td>
<td>v</td>
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<td>Canals controlled by 1 serial link</td>
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<td>1</td>
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<tr>
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<td>38,4</td>
<td>38,4</td>
<td>38,4</td>
<td>115,2</td>
</tr>
<tr>
<td>Ethernet</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>Soon</td>
</tr>
<tr>
<td>Clip Create/load</td>
<td>x</td>
<td>Loading Create : custom EVS</td>
<td>v</td>
<td>v</td>
<td>v</td>
</tr>
<tr>
<td>Playlist construction</td>
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<td>x</td>
<td>v</td>
<td>(chaining 2 elements)</td>
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<td>Time line Construction</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>v</td>
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<tr>
<td>use</td>
<td>Transport command (Play, stop)</td>
<td>Simple use by switchers &amp; remotes</td>
<td>Simple use by switchers &amp; remotes</td>
<td>For playout by automation</td>
<td>From postproduction to playout</td>
</tr>
</tbody>
</table>

Table 1: Control protocols vs. functions
CUSTOMER SUPPORT & TRAINING

Our clients range from TV stations to video equipment rental companies and production houses worldwide. EVS’ key priority is to make sure that its clients keep performing at the highest possible level. We listen to our customers, identify operating workflows, anticipate needs, and suggest effective and reliable solutions, so that they in turn can offer top-quality productions to millions of TV viewers across the globe.

CUSTOMER SUPPORT

EVS is dedicated to making sure its products are functioning in a way that meets your needs and expectations. We offer technical support 24/7 from each of our regional offices, so you can rest assured that someone will always be available to answer any question that may arise.

All members of EVS’ technical support team are qualified technicians with a solid background in broadcasting. They understand your requirements and can provide you with the best solution available.

TRAINING

Do you want to learn how to operate EVS systems and applications or enhance your skills in using our tools?

EVS Training offers a series of courses on how to operate its products, taught in-house by industry professionals. Some of the training sessions are conducted by the EVS team via a Web interface, so that you get hands-on instruction even at a distance. EVS User Guides and technical documents are available free-of-charge on our Website.

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