PvAPI 1.28 – Release Notes

Additions

• EventCallbackPTP example code. Highlights usage of the camera IEEE1588 Precision Time Protocol feature.
• PvCameraForceIP function and ForceCamera example code. Function sets camera IP/subnet/gateway based on camera MAC address.
• SampleViewer now supports saving single images in .TIFF format

Changes

• Revamped .NET support.
• Supported QNX version is now 6.5
• Camera discovery mechanism improved.
• Increased the maximum number of adapters for a host (from 15 to 24).

Issues resolved

• Linux implementation of the API no longer relies on signals (libRT).
• PvCameraInfoByAddrEx() fails when API is in “no discovery” mode.
• PvCameraInfoByAddrEx() was not filling the camera’s Serial number.
• PvAttrIsAvailable() was not working as expected.
• Various minor bug fixes.

Current versions

<table>
<thead>
<tr>
<th>Component</th>
<th>Current version</th>
</tr>
</thead>
<tbody>
<tr>
<td>SampleViewer</td>
<td>1.28</td>
</tr>
<tr>
<td>IPConfig</td>
<td>1.0.0.1</td>
</tr>
<tr>
<td>FilterDriver Installer</td>
<td>1.24.15</td>
</tr>
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<td>1.24.15</td>
</tr>
<tr>
<td>PvAPI</td>
<td>1.28</td>
</tr>
</tbody>
</table>

Table 1: Current versions of PvAPI SDK
PvAPI 1.26 – Release Notes

Additions
• New Stream2JPEG sample code.
• New StreamWaitForFrameDone sample code.
• New C# .NET sample code.

Changes
• SampleViewer now display scrollbars in the camera list.
• Example code rewritten to be more robust and instructional.
• Removed examples (Snap, Threading, BatchTrigger, etc) containing non-ideal frame queuing mechanisms or acquisition modes.
• All examples updated to Visual Studio 2005 (Visual Studio 2010 for .NET).
• Removed frame queue size limitation (of 100 frames).
• Mac OS X support for PPC dropped and minimum requirement is now 10.5.

Issues resolved
• Marshalling issue with Pv.tAttributeInfo (.NET).
• PvNET’s calling convention causes PInvokeStackImbalance errors.
• PvUtilityColorInterpolate interpolates incorrect colors for border pixels.
• ImageLib crash when the frame buffer is bigger than necessary (considering the ROI and pixel format).
• SampleViewer (for Windows) incorrectly parsed some unsigned values (e.g. setting DSP to max value).
• PvMemoryWrite always returns 0 in pSizeComplete.
• PvCaptureQueueClear hangs if frames are queued while the call is underway.
• Filter Driver BSOD when closing a camera on Windows 7, when the tPvFrame structures used are not memset before being used.
GigE SDK 1.24 – Release Notes

Additions
- Attributes data type `Boolean` and `Int64` added, with supporting functions:
  - `PvAttrInt64Get()`
  - `PvAttrInt64Set()`
  - `PvAttrRangeInt64()`
  - `PvAttrBooleanGet()`
  - `PvAttrBooleanSet()`
- Frame’s ancillary data support (when supported by the camera)
- Ancillary data rendering in `SampleViewer` (overlay on the image, Windows only)
- `Mono12Packed` and `Bayer12Packed` TIFF export

Changes
- Removed “Force Mono” mode in `SampleViewer`
- Added sample-static compilation option to build any sample code against the PvAPI static library (all platforms but Windows)
- Removed sample code `StaticSnap`

Issues resolved
- Rare dead-lock situation when opening a camera that had been previously closed (in the same session)
- Minors tweaks and corrections
**GigE SDK 1.22 – Release Notes**

**Additions**

- Function `PvInitializeNoDiscovery()` was added
- New type `tPvCameraInfoEx` added, with supporting functions:
  - `PvCameraListEx()`
  - `PvCameraInfoEx()`
  - `PvCameraInfoByAddrEx()`
  - `PvCameraListUnreachableEx()`
- Support for camera events was added:
  - Types:
    - `tPvCameraEvent`
    - `tPvCameraEventCallback`
  - Functions:
    - `PvCameraEventCallbackRegister()`
    - `PvCameraEventCallbackUnRegister()`
- New Streaming driver parameters:
  - `GvspLookbackWindow`
  - `GvspResendPercent`
  - `GvspRetries`
  - `GvspSocketBuffersCount`
  - `GvspTimeout`
- New `PixelFormat` values:
  - `Mono12Packed`
  - `Bayer12Packed`
- The SampleViewer was updated to support:
  - Event channel
  - Serial Port terminal emulation
  - Rendering of Bayer/YUV formats without interpolation
- New sample code added: `EventCallback`

**Changes**

- Type `tPvCameraInfo` deprecated
- Functions deprecated:
  - `PvCameraList()`
  - `PvCameraInfo()`
  - `PvCameraInfoByAddr()`
  - `PvCameraListUnreachable()`
- Attribute impact string is now composed of the name of all the attributes that are impacted, instead of a list of path

**Issues resolved**

- Streaming performance improved
- Camera discovery
- Improved LAG support for GX cameras
GigE SDK 1.20 – Release Notes

Additions

• Registers read and write API calls added to .NET and Java wrappers
• Added –m switch to sample code CamAttr, to get the “impact” of a particular attribute
• Existing support for ARM (LE) processor merged in the Linux SDK (for device such as the TS-7800 by Technologic Systems, http://www.embeddedarm.com).
• Adapters bounding is now supported on Linux

Changes

• Attributes ExposureValue, GainValue, WhitebalValueBlue and WhitebalValueRed can now be written to when in Auto or AutoOnce mode
• Attribute WhitebalAutoOutliers was removed
• Category / Acquisition / Trigger was added to the impact of the attribute PixelFormat
• Attribute FrameRate was added to the impact of the attribute PixelFormat
• Attributes GainLevel and GainMode are set to volatile when in Auto or AutoOnce mode
• Sample code GetXMLFile was re-written to take advantage of the API PvMemoryRead() function

Issues resolved

• Fixed frames losses when running large CCD camera (e.g GE-4900) at low frame rate.
• Fixed issue occurring on Linux when the host computer had been running for an extended period of time (Segmentation Fault upon launching an application using the API).
• Fixed issue occurring on Linux for application making active use of SIGALRM.

Notes

• Vista User: PvCaptureAdjustPacketSize() determines the maximum packet size by sending out test packets of increasing packet sizes, up to the MaximumPacketSize function parameter (typically set to 8228). However on some Vista network card drivers, if the driver receives a test packet of size greater than what the network card supports, the driver fails, requiring you to manually disable and re-enable the adapter. The Intel Pro 1000 GT is known to do this, whereas the Intel Pro 1000 PT is fine. Other brands or models may also do this.
GigE SDK 1.18 – Release Notes

Additions
- New supported platform
  - Mac OS X (10.4 and up) for x86, ppc and x64
- Filter Driver
  - Vista x64 support (Signed driver)
- New sample code (for all supported platforms):
  - HardTrigger, shows how
- New API wrapper (for Windows, Linux and Mac OS X)
  - Java wrapper and samples code
- New attributes (limited to Firmware 1.32 and higher, specific to cameras that support set feature):
  - GainAutoMin
  - GainAutoMax
  - GainAutoTarget
  - GainAutoRate
  - GainAutoOuliers
  - GainAutoAdjustTol
  - GainAutoAdjustDelay

Changes
- To the sample code SampleViewer (in Windows):
  - Modified to be compatible with Visual Studio 2005
  - Moved the automatic packet size adjustment from the opening of the camera, to the start of the live view, in order to work-around a Vista issue.
- API functions PvRegisterRead() and PvRegisterWrite() performance was improved when used to read or write from multiple registers.

Issues resolved
- NDIS Filter driver was dropping packets in some particular conditions

Notes
- Java
  The Java folder contains a JNI interface to PvAPI, plus a set of samples. You will need to use the build.xml file located in each subdirectory to import the project within Eclipse. Each of the following samples: JListAttributes, JListCameras, JSnap, JStream, JThread, JThread3 need to have PvJPI in its build path. For convenience, the JNI dynamic library has been built and placed in the bin-pc folder. Each of the Java samples need in its Run/debug settings to have the following added to its VM argument: -Djava.library.path=/path/to/the/SDK/bin-pc/x86. The working directory will also have to be /path/to/the/SDK/bin-pc/x86.
- Mac OS X
  A route for 255.255.255.255 must be added to point to the adapter that will be plugged to the camera (or to the switch on which the camera will be). This can be done with the following command to be entered from within a Terminal:
  > sudo route -n add 255.255.255.255 169.254.42.97
  Where 169.254.42.97 is the IP (self-assigned or assigned by you) of the adapter on which the camera (or the switch) is plugged.
GigE SDK 1.16 – Release Notes

Additions

- New sample code (for all supported platforms):
  - CamMemory, read/write to camera user memory (Firmware 1.28 and up)
  - CamSetup, facilitates saving camera parameter settings to a text file as well as loading camera parameters from a text file to the camera
  - Threading3, similar to the sample Threading2 (enqueue 3 frames rather than 1)
- New sample code (for Windows only):
  - Snap for .NET
  - Visual Basic 6.0 wrapper and samples
- New attributes (limited to Firmware 1.28 and higher, specific to cameras that support set feature):
  - DefectMaskColumnEnable
  - DefectMaskPixelEnable
  - SyncInLevels
  - ModelName
- New API functions:
  - PvMemoryRead and PvMemoryWrite (see PvRegIo.h)
  - PvCaptureAdjustPacketSize
- New Pixel formats:
  - Bgr24
  - Rgba32
  - Bgra32
- New error code (Windows platform only):
  - ePvErrFirewall, returned when Windows Firewall is blocking the streaming port

Changes

- To the sample code SampleViewer:
  - Added exporting of camera parameters to a text file
  - Added call to PvCaptureAdjustPacketSize when opening a camera in master mode
  - Added ‘force mono8’ feature for rendering monochrome images on the host while streaming bayer8 from the camera
  - Supports saving of a frame to disk as Windows’ bitmap (BMP)
  - Supports rendering of frame with Bgr24, Rgba32 and Bgra32 pixel formats
- Sample code ListCameras now indicates if a listed camera is available or in use
- Attribute CameraName can now be edited to change the name of the camera

Issues resolved

- API function PvUtilityColorInterpolate was missing from .NET wrapper
- NDIS Filter driver didn’t support stream multicasting to several applications running on the same host computer.
GigE SDK 1.14 – Release Notes

Additions

- Additional platforms now includes:
  - Windows XP 64bit
  - Windows Vista 32bit
  - Linux 64bit (x64 only)
- New samples code (for all supported platforms):
  - DumpCamera, writes to a text file the value of all the attributes of a given camera.
  - GetXMLFile, retrieves the on-board XML file describing the camera’s registers.
  - ResetCamera, demonstrates how to use the low level camera’s registers access functions, by commanding the targeted camera to reset itself.
  - StreamPnp, demonstrates the use of the plug/unplug callback to stream from a camera recently detected.
  - Threading2, similar to the sample Threading but using the API function PvCaptureWaitForFrameDone() and a single frame for the streaming mechanism.
  - MultiStream, demonstrates the simultaneous opening and streaming from any number of cameras using a separate thread for each camera.
- New samples code (for Linux & QNX platform only):
  - AAViewer, a simple viewer using the ASCII ART library (see http://aa-project.sourceforge.net) for rendering.
- Multicasting of the stream from the camera is now possible on all supported platforms. The following attributes were added to support it:
  - MulticastEnable
  - MulticastIPAddress
- New attributes (Firmware 1.26 and higher and when supported by the camera):
  - AcquisitionAbort
  - AcquisitionFrameCount
  - AcqEndTriggerEvent, AcqEndTriggerMode, AcqEndTriggerDelay, AcqEndTriggerSoftware
  - AcqRecTriggerEvent, AcqRecTriggerMode, AcqRecTriggerDelay, AcqRecTriggerSoftware
  - BandwidthCtrlMode
  - DSPContinuousMode
  - and DSPContinuousLatency
  - IrisMode, IrisAutoTarget, IrisVideoLevelMin, IrisVideoLevelMax
  - and IrisVideoLevel
  - RecorderPreEventCount
  - StreamHoldCapacity
- New attributes (any Firmware versions):
  - StatFilterVersion (only on Windows platforms)
  - HeartBeatInterval
Changes

- Changing the `PacketSize` attribute after a call to `PvCaptureStart()` will now return `ePvErrBadSequence`.
- The API call `PvAttrRangeEnum()` will return `ePvErrBadParameter` if the supplied buffer is too small to accommodate the whole range.
- Sample code `SampleViewer` will now open the camera in `monitor mode`, if the camera is already open by someone else in `master mode`.
- The sample code `ListCameras` now displays the IP address of each detected camera.
- The attributes category `DSPSubregion` was renamed `DSP`.
- All the `Stats` attributes can now be read even if the camera was unplugged.
- Acquisition modes expanded (Firmware 1.26 and higher): `SingleFrame`, `MultiFrame`, `Recorder`.
- The attribute `StreamHold` was renamed `StreamHoldEnable`.
- The attribute `PacketInterval` was removed.
- The value `Armed` in attributes `SyncOutXMode` and `StrobeXMode` was renamed `AcquisitionTriggerReady` and the mode `Acquiring` was added.

Issues resolved

- Range of the ROI related attribute (e.g. `Width`) was not updated when a different configuration file was loaded after a change to the camera’s binning setup.
- Repeated calls to `PvCaptureWaitForFrameDone()` could lead to this function call never returning.
- Calling `PvCaptureQueueClear()` from a separate thread could lead to that call hanging.
- Saving Bayer16 image to TIFF in `SampleViewer` (Windows) was saving some garbage in the file.
GigE SDK 1.12 – Release Notes

Additions
- Added dialog to the SampleViewer to seek a camera by using its IP address (needed when connecting a camera through a gateway).
- Several new attributes have been added (Applies to cameras with firmware version 1.24 and higher):
  - MirrorX
  - AcquisitionFrameCount
  - OffsetMode & OffsetValue
- New enumerate values added to the attributes SyncOut1Mode and SyncOut2Mode when supported by the camera: SyncIn1, SyncIn2, SyncIn3 and SyncIn4.
- New enumerate values added to the Strobe Mode attributes (e.g. Strobe1Mode) when supported by the camera: SyncIn1, SyncIn2, SyncIn3 and SyncIn4.
- New enumerate values added to the attribute AcquisitionMode when supported by the camera:
  - SingleFrame
  - MultiFrame
- Added new sample code BatchTrigger for all supported platforms.

Changes
- The API and Filter driver now support on-the-fly changes of the Imaging settings (ROI, Pixel format) granted the en-queued frame buffers are large enough to accommodate for the increased amount of data. If it is not the case, the status of the frame will be set to ePvErrBufferTooSmall.
- Attributes SyncInGpiLevels and SyncIn1Mode were removed
- Some enumerates values of the attributes SyncOut1Mode and SyncOut2Mode were renamed:
  - Readout becomes FrameReadout
  - TriggerReady becomes FrameTriggerReady
  - Trigger becomes FrameTrigger
- Some enumerates values of the Strobe Mode attributes (e.g. Strobe1Mode) were renamed:
  - TriggerReady becomes FrameTriggerReady
  - Trigger becomes FrameTrigger
  - Readout becomes FrameReadout
- Attribute ConfigFileSave is now marked as “not available” (instead of “invalid”) when ConfigFileIndex is set as Factory. The API function PvAttrIsAvailable() shall be used to test for the availability of any attribute at any given time.
- In SampleViewer, the availability of an attribute is checked before allowing the user to edit it. An attribute value will always be read even if the attribute is not available.
- Change of the attribute PixelFormat value will trigger a refreshment of all the ROI attributes. Values will be corrected if they are out of range.
- Statistic attributes ElapsedFrame, ElapsedPacket and FramesRecovered were removed.
- All the statistic attributes were renamed to use Stat as prefix.
- The statistic attribute FilterDriver was renamed to StatDriverType and its range of values was changed to: Standard, Filter or Performance.
- Some attributes were renamed (only for firmware 1.24 and higher):
  - FixedRate becomes FrameRate
- SoftwareTrigger becomes FrameStartTriggerSoftware
- ExternalTriggerDelay becomes FrameStartTriggerDelay
- ExternalTriggerEvent becomes FrameStartTriggerEvent
- TriggerMode becomes FrameStartTriggerMode

- All DSP sub region attributes were renamed to use DSP as prefix.
- Some of GigE related attributes were renamed:
  - DeviceAddress becomes DeviceEthAddress
  - HostAddress becomes HostEthAddress
  - HostIP becomes HostIPAddress
  - DeviceIP becomes HostIPAddress
  - StreamBytesPerSec becomes StreamBytesPerSecond

Issues revolved
- API function PvCameraInfoByAddr() was returning ePvErrBadParameter when parameter pIpSettings was set to NULL.
- Sampleviewer on Windows was crashing when displaying the histogram with a Bayer16 based stream.
- tPvFrame’s field FrameCount was not set when using the Filter Driver on Windows.
GigE SDK 1.10 – Release Notes

Changes

• Latest GigE camera firmware (1.18 and higher) sends YUV data in the same format as DCAM camera, special handling isn’t necessary any longer. SampleViewer code has been modified accordingly.
• Threading sample code was modified to display more information on the image stream.
• ListAttributes, Threading and Stream samples were modified to accept the IP address of the camera to be used (using PvCameraOpenByAddr) as command line argument.
• The following sample programs were added:
  – BatchStream
  – CamAttr (Linux & QNX only)
  – Ping
  – NET (PvAPI wrapper in C#.NET)
• The following functions were added to the API (requires firmware 1.16 or higher):
  – PvCameraInfoByAddr()
  – PvCameraListUnreachable()
  – PvCameraOpenByAddr()
  – PvCameraIpSettingsGet()
  – PvCameraIpSettingsChange()
• On camera with firmware 1.20 (or higher) the following attributes were added:
  – ConfigFileIndex
  – ConfigFileLoad
  – ConfigFilePowerUp
  – ConfigFileSave

Issues revolved

• ePvErrDataMissing instead of ePvErrBufferToSmall was returned when a supplied buffer was too small to fit a frame.
• Requesting the value of the attribute PixelFormat when the camera was opened in Monitor mode was causing a crash of the application.
• Filter driver was not used when application was run from a non-Admin account (on Windows).
• Some frames were been missed when stopping/restarting the stream (when not using the filter driver) without closing the camera.
• The field ImageSize of the tPvFrame structure was not filled by the API when the frame was returned to the application.
• Attributes were not refreshed in the Linux SampleViewer when the impact of a modified attribute was “/”.

Notes

• CPU load on Windows platform was decreased by about 5%.
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