

## PCIe DVR RDK

The Stretch PCIe DVR Reference Design Kit (RDK) is a production-ready PCIe add-in card based on the revolutionary S6000 family of software configurable processors. The high-performance S6000 family gives the reference design the ability to encode 16 channels of D1 H.264, MPEG4, or MJPEG at 480fps. Leveraging the embedded video analytics of the Stretch Intelligent Encoder Software Development Kit (SDK), the RDK is able to adapt its frame rate, resolution, and encode parameters dynamically to optimize its performance to the requirements of the captured stream. The result is a high quality video encode with the lowest possible bit rate under all conditions, and, hence, the minimum consumption of valuable storage space.

The RDK was designed with system integration in mind, and has a comprehensive Application Programming Interface (API) giving OEMs the flexibility to change resolution, frame rates, and CODECs on a per stream basis. The rich API eases integration with DVR system software and accelerates time-to-market.

The RDK includes a host PC application to configure the functionality of the system. This software makes calls to the DVR card's API to set the parameters for video capture on all 16 channels, to select the desired resolution, frame rate, and CODEC, and to display the streams on the PC monitor. Regions of interest, blind, motion, night, scene change, and video loss detection, as well as built-in analytics can all be configured using the application programming interface (API). The API can also be used to set the scaling and tiling required to configure the on-board analog spot monitor.

Video preprocessing is included as standard on all 16 DVR channels, and includes de-interlacing, scaling, and chroma decimation, as well as insertion of privacy regions and on-screen display.

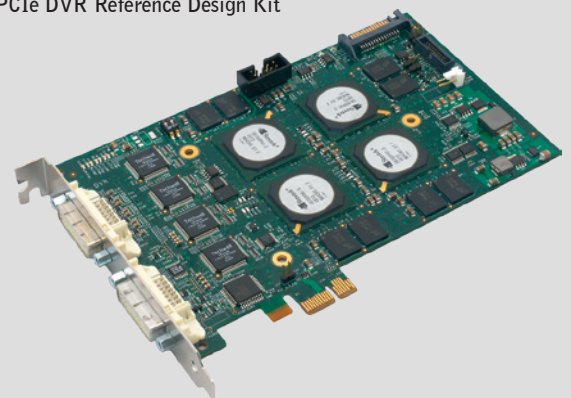
### STRETCH ADVANTAGES

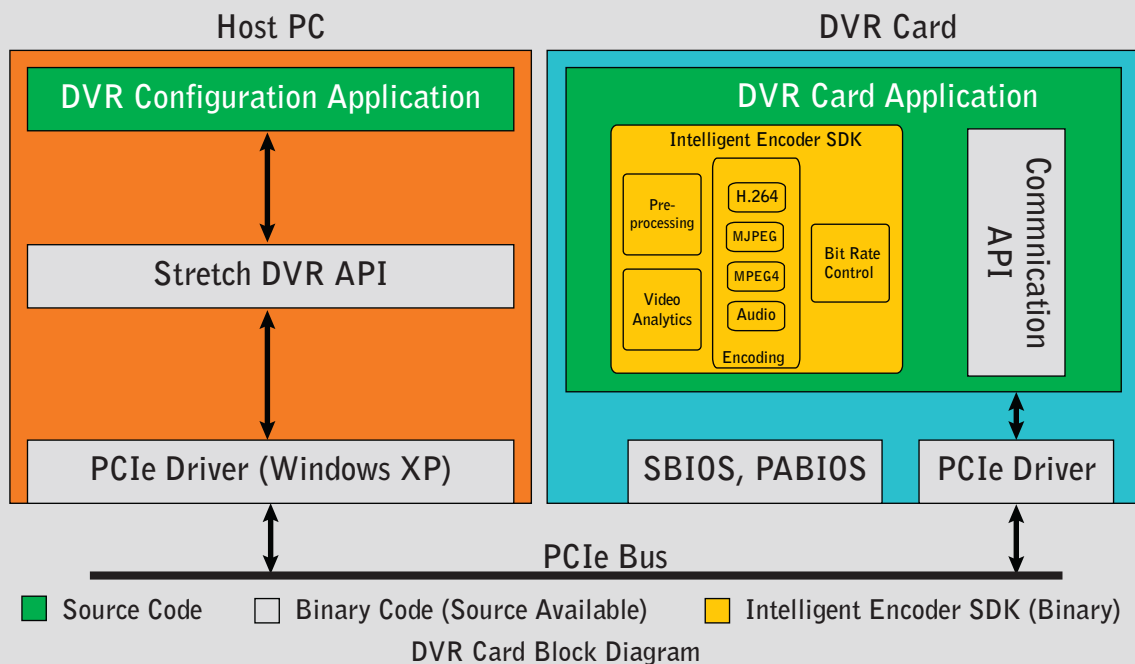
- > Cost-optimized 16 channel 480fps D1 H.264 encode in a single add-in card
- > Built-in analytics to drive dynamic selection of CODEC, resolution, and frame rate
- > Fast time-to-market with complete reference design
- > Software implementation for CODECs and interface flexibility
- > Feature-rich API for easy third-party software integration
- > Constant Quality encoding for efficient use of storage

### Key Features

- Stretch Intelligent Video Encoder
  - > 16 channels of D1 H.264, MPEG4, or MJPEG at 480fps
  - > 16 channels of G.711 audio encode
  - > Intelligent encode capability using built-in video analytics
  - > H.264 decoding
  - > Constant Quality encoding
- Intelligence
  - > Encode parameters changed automatically for optimum bit rate
  - > Privacy regions set in the video stream
  - > Blind, motion, night, scene change, and video loss detection for alarms
  - > Automatic adjustment of frame rate, resolution, and encode parameters
- De-interlacing of analog input streams
- PCIe interface
- Spot monitor output
  - > Digital
    - Line monitoring of all captured streams on PC over PCIe interface
- Eight alarm relay outputs and eight trigger inputs

PCIe DVR Reference Design Kit





The PCIe DVR RDK comprises the PCIe add-in card, a PC application to configure system functionality, and all the drivers required to interface the card to third-party DVR application software. The RDK can be supplied as either an Evaluation Kit (EVK) or in its full version designed to give OEMs all that is needed to manufacture and distribute products based on their designs.

The EVK can be used to benchmark performance or to develop customer-specific audio/video algorithms or applications. The kit includes an object code version of the Stretch Intelligent Encoder, including H.264, MPEG4, MJPEG, and G.711 encoders. The Intelligent Encoder version delivered with the EVK contains a video preprocessor that watermarks and de-interlaces the source video in preparation for encoding. Video analytic functions are included to direct video encoder configuration. This optimizes the encoded bit stream's bit rate to user-specified video quality and storage consumption requirements.

The EVK also includes source code for the DVR application running on the PCIe card and complete documentation of the APIs used to configure and use the supplied Stretch Intelligent Encoder. The source code can be adapted to meet specific customer requirements using the Stretch integrated development environment (IDE). Communication layers required to manage data transfer over the PCIe bus are supplied as pre-compiled utilities.

The host PC application includes all Windows drivers needed to connect the card in a PC environment. The DVR configuration application is supplied in source code form to provide a reference example of how third-party software can be interfaced to the card using the API library.

The full version RDK is intended to be a complete PCIe DVR kit with all materials needed to take the reference design to manufacture. It includes the contents of the EVK (with the encoder's evaluation version watermarking removed), plus add-in card design files.

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A distribution license for the Intelligent Encoder is also provided to allow OEMs to manufacture and sell their own designs based on Stretch's reference design kit.

#### Reference Design Kit Contents

- Sixteen channel D1 DVR PCIe add-in card
- Two cards for alarm and trigger capability (8 in and 8 out)
- Audio and video I/O cables
- Source code for the Stretch DVR application
- Object code for the Stretch Intelligent Encoder
- Windows and Linux drivers
- Host PC DVR configuration application source code
- Quick start and user's guides
- Schematics and PCB layout files (full version RDK only)
- License for distribution of the design and the Stretch Intelligent Encoder (full version RDK only)

#### Ordering Codes

- Evaluation Kit – HW-EVK-VRC6016
- Reference Design Kit – HW-RDK-VRC6016
- Integrated Development Environment – SW-LIC-IDE

#### Specifications

Inputs	16 channels D1 NTSC/PAL
	16 audio channels
	16 trigger inputs
Encode	16 channels 480fps H.264, MPEG4, or MJPEG
	16 channels G.711
Output	PCIe bus
	16 alarm outputs RS485 for PTZ
Video Processing	De-interlacing on all video inputs
	Scaling and tiling for spot monitor
	Privacy regions
Analytics	Blind, motion, night, scene change, and video loss detection

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