

# H.264 Encoder SDK

The VSS H.264 encoder offers an ideal software development kit for bringing real-time H.264 encoding to your video application. The SDK features a rich set of APIs—functions that have been optimized for the Stretch software configurable processors—allowing you to integrate an H.264 encoding solution that meets your exact specifications, and freeing up additional processing resources for your custom software.

The VSS H.264 encoder runs on Stretch's S5530 Video Development Platform.

## Stretch Accelerates H.264 Encoding

- H.264 Software Development Kit (SDK) from Vanguard Software Solutions (VSS)
  - › Real-time H.264 encoding
  - › Integrates easily into custom applications
  - › Stretch optimized

## Applications

- Video Surveillance
- Digital Video Recorder
- Network Video Recorder
- Media Servers

## Example Real-time Configurations

Resolution <sup>1</sup>	Supported H.264 Tools	
D1	Single Processor Baseline or Main profile, motion vector search subdivision 16 x 16, ¼ Pel accuracy, one reference frame	Dual Processor Main profile, motion vector search subdivision 16 x 16, 16 x 8, 8 x 16, and 8 x 8, ¼ Pel accuracy, intra-prediction on 16 x 16 and 4 x 4 on I- and P-frame types, two reference frames
½ D1 <sup>2</sup>	Main profile, motion vector search subdivision 16 x 16, intra-prediction on 16 x 16 for I- and B-frames, ¼ Pel accuracy, intra-prediction on 16 x 16 for P-frame types, 16 x 16 and 4 x 4 for I-frame types, two reference frames	
CIF <sup>2</sup>	Main profile, motion vector search subdivision 16 x 16, 16 x 8, 8 x 16, and 8 x 8, ¼ Pel accuracy, intra-prediction on 16 x 16 and 4 x 4 for I- and P-frame types, two reference frames, or two channels with motion vector search subdivision 16 x 16	

<sup>1</sup> D1 Resolution at 30 fps for NTSC or 25 fps for PAL

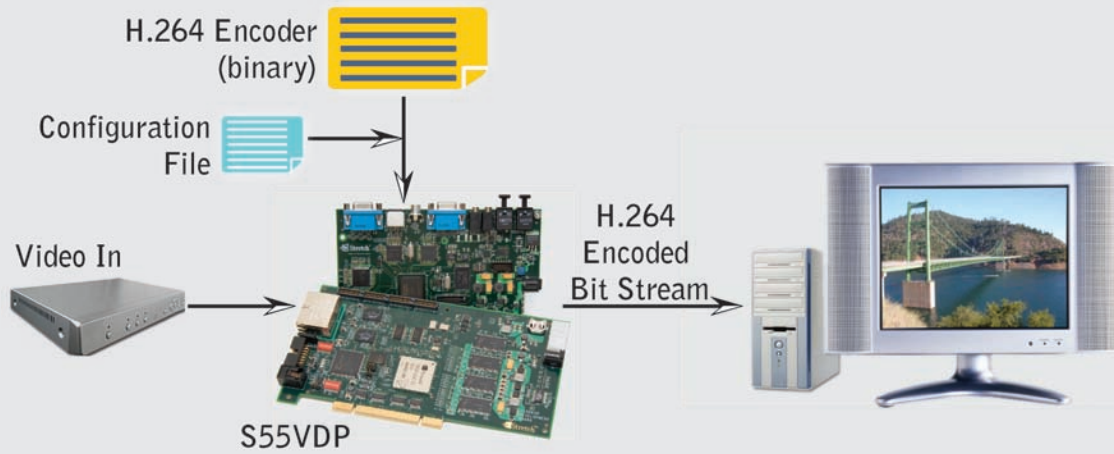
<sup>2</sup> ½ D1 and CIF tools require only a single processor

## H.264 Encoder SDK Flow

- › Customer application code written in C/C++
- › Call to encoder through an API
- › H.264 encoder file linked with customer application code



## H.264 Demonstration Platform



### H.264 Encoder SDK

- Single or Dual Processor Support
- Support for D1,  $\frac{3}{4}$  D1,  $\frac{1}{2}$  D1, CIF, and QCIF
- VSS H.264 Encoder Library
  - > H.264 baseline and main profiles
  - > Interlaced and progressive coding
  - > Motion estimation
    - Selectable accuracy: Full Pel,  $\frac{1}{2}$  Pel, and  $\frac{1}{4}$  Pel
    - Motion vector search subdivisions:  $16 \times 16$ ,  $16 \times 8$ ,  $8 \times 16$ , and  $8 \times 8$
  - > Intra-prediction
    - $16 \times 16$  modes 0, 1, 2
    - $4 \times 4$  modes 0, 1, 2
  - > Reference Frames
    - Up to four frames
  - > Deblocking in-loop filter
  - > VBR and CBR (with VBV) rate control
  - > Scene change detection
- Entropy Encoding: CAVLC or CABAC (External FPGA)

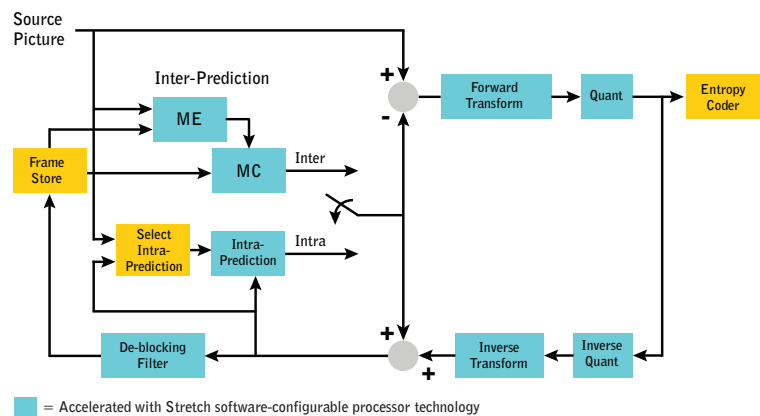
### Documentation

- Getting Started Guide
- Sample Encoder Application
  - > Source code and project files
- H.264 Encoder Functional Specification
- H.264 Encoder API
  - > Header file for customer applications

### Stretch Inc.

1322 Orleans Drive  
Sunnyvale, CA 94089  
tel 408.543.2700 • fax 408.747.5736  
www.stretchinc.com

- > Windows® help file format
- H.264 Encoder Configuration File Format
  - > Configurable parameters and options



H.264 Encoder Block Diagram

### About Vanguard Software Solutions



Vanguard Software Solutions is a leading provider of standards-based video compression technology. Compression standards known as AVC (Advanced Video Coding), MPEG 4 part 10, and H.264, realize previously unavailable compression rates that enable new video applications in products ranging from cell phones, PDAs, “video-iPods” through DVD-Rs, security, video production, and high definition television broadcast.

All information contained in this document is subject to change without notice. For more information, visit our web site at [www.stretchinc.com](http://www.stretchinc.com)  
© 2006, Stretch Inc. All rights reserved. Stretch, the Stretch logo and Extending the Possibilities are trademarks of Stretch Inc.

MK-H264K-0001-001