Extending VSIPL to other Precisions
Achieving improved performance with modern processors

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High Performance Embedded Computing (HPEC) Workshop
19-21 September 2006
Benefits of Extending VSIPL

• Significant improvements in operations per second can be achieved by use of integer precisions
  – Simple ADD/SUB instruction execute 2x operations compared to float

• COTS Software community benefits
  – VSIPL vendors cope with fixed-point issues
    • Dynamic range growth
    • Scaling issues
  – VSIPL users focus on system level issues
    • Floating-point versus fixed-point trades
    • parameters of SDR and OPS

• Integer operations of Signal Processing algorithms can readily be added to the VSIPL standard
Exploiting Benefits Requires Understanding Drawbacks

Figure 1. Test set-up for performance comparison of double-precision floating-point, single-precision floating point, and 16-bit integer FFT implementations.

Plot 1. Signal-to-distortion ratio for input signal power versus distortion power. Distortion is created by rounding and saturation in going from a high-precision format to one of lower precision.