Overview
There are several contenders for the best video compression method for surveillance. The leaders are H.264 and MPEG-4. H.264 video compression provides many advantages over MPEG-4. H.264 provides better video at a lower bitrate and this translates into less storage required. Infinova's V3000 series DVR's utilizes H.264 hardware video compression for high-quality video at reduced bit rates and disk storage size.

What is H.264?
H.264 is the next-generation video compression technology in the MPEG-4 standard. H.264 is also known as MPEG-4 Part 10 or MPEG-4 AVC (Advanced Video Coding). H.264 delivers excellent video quality across the entire bandwidth spectrum — from 3G to HD and everything in between (from 40 Kbps to upwards of 10 Mbps). H.264 should be considered the next level improvement in MPEG-4 designed for better video quality at significantly lower bitrates. H.264 is better than MPEG-4 "by its very design".

Practical Advantages
Given the same video input, H.264 has a great advantage over MPEG-4 in that bitrates for the same video can be 50% less than the MPEG-4 bitrate. But the video will look as good or better than the MPEG-4 video. H.264 provides significant savings in network bandwidth and storage costs.

Advanced Technology
There are many technical advances that not only reduce the bandwidth but also provide better looking video. Only a few are illustrated here.

- More advanced intra-prediction scheme for encoding I-frames. This scheme greatly reduces the bit size of an I-frame while maintaining a high-quality image by predicting smaller blocks of pixels within each macro-block in a frame.

- H.264 also improves block-based motion compensation used in encoding P- and B-frames. The high degree of flexibility in H.264's block-based motion compensation pays off in crowded surveillance scenes, where the quality can be maintained for demanding applications.

- H.264 also reduces the typical blocky artifacts seen in MPEG-4 by using an in-loop de-blocking filter.

H.264 Hardware vs. Software Encoding
For all of the advantages of H.264, it must be acknowledged that this is a more sophisticated compression method, and it requires more processing power to encode video with H.264 as compared to MPEG-4. For multiple video streams there really are no software based encoders that have the performance to provide surveillance quality video. Achieving full motion, high resolution multi-channel video recording requires hardware encoding to support a DVR with 16 channels at 30/25 fps frame rate, and at a resolution of 2CIF or 4CIF.

Infinova's V3000 series DVR does not use software based video encoding. Each set of 4 video inputs has a powerful dedicated processor chip just for the H.264 encoding. A 16 channel DVR has 4 dedicated processors that can be individually configured for the best possible video and the least amount of storage requirements.

Conclusion
H.264 is universally acknowledged as a superior video encoder for surveillance. Infinova's V3000 series DVR's have H.264 hardware encoders, executing the H.264 algorithms, providing the highest performance, best video and the smallest size storage requirements. Dual stream H.264 encoders allow for low bitrate network video monitoring while simultaneously supporting high resolution, full motion recording to the hard disks at higher bitrates.