

Notes on BiKal EyeSoft System Implementation

Guide to optimal implementation of EyeSoft on BiKal NVR's & Servers



Distributed System Deployment



- 1) **Specifying an NVR:** When specifying an NVR for a project, the following needs to be considered before choosing an NVR. Communicating your current & future needs to your account manager will result in the correct system being delivered.
 - a) Number of cameras, biggest impact on CPU utilisation
 - b) Type of Video, e.g. H.264, MPEG4, MJPEG (H.264 uses more CPU)
 - c) Resolution, e.g. CIF, VGA, 2CIF, D1, MegaPixel (next biggest impact on CPU)
 - d) Bandwidth available, local & remote capacity
 - e) Number of remote connections by client
 - f) **Important** Frame rate has 3rd biggest impact on CPU utilisation, e.g. standard 4fps for monitoring, 12fps for surveillance. 25fps is only required for high speed areas, e.g. identifying vehicles, sports etc.
 - g) **Video Analytics, Filters, Motion Detection, Remote Clients uses more CPU**
 - h) Storage requirements
 - i) Number of monitors required to effectively monitor all cameras
 - j) Other items to consider, especially for mission critical systems is power backup, UPS, redundant power unit, redundant hard drives.

Fact No: 03

“Your BiKal representative can help build a system to suit your project requirements.”

- 2) **NVR Requirements:** as a general rule, the below NVR's are specified to deliver 4CIF resolution at 30fps

4ch NVR

CPU: Pentium Dual Core 2.0Ghz
 RAM: 2GB
 Graphics: 64MB
 OS: XP/Vista/7 32bit
 Notes: 4ch D1 @30fps / 720p@12fps / 8ch CIF

8ch NVR

CPU: Core 2 Duo, 2.8Ghz
 RAM: 3GB
 Graphics: 256MB
 OS: XP/Vista/7 32bit
 Notes: 8ch D1 @30fps / 720p@12fps / 16ch CIF

16ch NVR

CPU: Core 2 Quad, 2.6Ghz
 RAM: 4GB
 Graphics: 512MB
 OS: XP/Vista/7 32bit
 Notes: 16ch D1 @30fps / 720p@12fps / 32ch CIF

32ch NVR

CPU: Xenon Quad, 2.8Ghz
RAM: 6GB
Graphics: 786MB
OS: XP/Vista/7 64 bit
Notes: 32ch 4CIF @30fps / 28ch 720p @ 12fps / 64ch CIF

64ch NVR

CPU: Dual Xenon Quad, 2.8Ghz
RAM: 12GB
Graphics: 1GB
OS: XP/Vista/7 64 bit
Notes: 64ch DCIF / 48ch 720p @ 12fps / 100ch CIF

These specifications theoretically leave enough computational power to run additional applications or increase capacity or performance of the surveillance system by 5%+/- . 64bit OS allows you to use more RAM.

Typically, the more cameras or remote clients you require, the greater the processing power and RAM you require. Machines that accommodate a greater number of cameras (128+) or a greater number of remote clients are achievable. Using Video Analytics also requires more processing power. A surveillance system that contains more than 42 cameras would benefit from being split between more than a single recorder for resilience and high performance.

“An NVR can also be use as just a recorder with multiple local & remote clients & monitors for live view and remote playback functions including remote alarm”

See Appendix A for system diagrams.

- 3) **Configuring System for Optimum Performance:** The NVR, Software and Cameras can all be adjusted to optimise performance and or increase capacity of the system. The following guidelines walks through some of the things you should look at to ensure your system operates efficiently & reliably:

Optimise Camera Settings

A camera does not need to operate at full capacity or default settings to deliver best performance. The following settings can be adjusted to maximise efficiency & reduce load on the surveillance system, (especially with BiKal Elite Network Cameras)

Resolution: VGA (640x480) or 2CIF (720x288) are adequate resolutions for recording. BiKal cameras have dual streams so a lower resolution stream can be used for live viewing or mobile phone access.

Quality: Normal to High setting is adequate for recording. Highest setting is also an option although not required.

Bit Rate Type: Variable Bit Rate (VBR) is best to maintain best bandwidth usage on the local network. If remote access direct to the camera is important then choose Constant Bit Rate (CBR)

Bit Rate: Default bit rate on EyeSoft is 512kbps (524288bps) which is high by any standard. Reducing the bit rate will improve CPU performance on NVR and increase remote video performance. For 2 MegaPixel Video, up to 1024k(1048576bps) is acceptable, for video at D1, up to 512k (524288bps) is acceptable, For video up to 2CIF or under, 256k (242144) is more than acceptable. For bandwidth restricted installations, even CIF resolution at 64kbps with BiKal Elite cameras can provide an acceptable image.

Frame Rate: Operating cameras at 25fps is often not useful unless used in areas where high speed motion takes place, such as roads. 12fps is an optimum setting for any public area where even medium speed motion takes place creating a balance between speed, lower bandwidth & storage requirements. 4fps is often recommended for areas where medium rate pedestrian traffic takes place, such as indoors like offices or areas under general surveillance but drastically increases storage and remote surveillance performance.

Optimise EyeSoft for Lower CPU Utilisation or Increase Capacity

EyeSoft includes a number of features to aid the management and performance of your system with flexible tools to maximise efficiency & usability. If you are using your own server as an NVR or need to increase capacity, try the following TIPS;

- Under 'Channel Settings > Capture Source TAB' under 'realtime decode' change to none. (mostly for BiKal Cameras) ** for storage servers only (no live display, use client)

- Under 'Channel Settings > General TAB, under Media Storage Type' Database recording feature is primarily for when you need instant playback for when the system is manned around the clock. Use ASF storage for lower file sizes, lower CPU utilisation and greater compatibility of video files with other PC's.

- When recording a large number of channels or using multiple remote clients for viewing video, You can use the NVR as a 'recording only server' to then improve server performance and increase number of remote clients turn off 'decode audio & decode video' in 'Channel Settings > General TAB. This will remove live pre-view on the recording server and utilise remote clients for viewing & playback. Filters & Motion / Analytics settings cannot be used on the recording server but can be used on the remote client.

- If viewing & recording video on the same server, you can further decrease CPU usage by going to 'General Settings' and use the slider on 'video preview priority' to low. This will have a light effect on latency on live video.

- To reduce CPU overhead further, BiKal Elite cameras have dual streams, you can set a low bandwidth stream e.g. CIF @ 8fps for live view, then use attach video in

'Capture Source TAB' for recording at D1 @ 25fps (turn decode off & assign recording stream in compression tab)

- To improve storage space & broadcast performance to remote clients, you can adjust the storage & broadcast parameters. In general, the default settings are good enough for full D1 video, but if you are using any setting below 720x288 (2CIF), you can reduce the default compression of 524288bps to 262144bps or lower. If you are not dependent on broadcasting video to remote clients, you can change CBR to VBR. Ensure your cameras match these settings also for best efficiency.

