The basic layout consists of a network IP camera, an Ethernet interface controller that provides network access, a memory module that facilitates data exchange between processor and other units, a flash memory controller, other specialized hardware units and ports for communication and programming (through a USB) and finally, a processing unit capable to perform real-time image acquisition and processing. A VGA display could be used to view the streamed video and images output of the camera.

The microcontroller receives input signals from the camera sensor through an Ethernet interface that converts it into acceptable formats (e.g., .raw, .bmp) and stores them in the memory module. The type of image compression plays an important role on hardware system requirements, such as memory units, data rate, external storage units, etc. This is because data must be compressed to a manageable data rate (e.g., streaming 512 × 512 pixel at least at 30 frames/second) that can be routed over the interface to the microcontroller.

Microprocessor

LAN/WAN ethernet

USB serial

Microconroller

Flash memory

Display unit

Host PC

Memory module

Ethernet controller

Flash contoller