## ► Standardized remote imaging based on GigE Vision technology

With the GigE Vision standard innovative network topologies for image acquisition became possible. Although the obvious way is to use cameras as image sources and computers as image destinations, there is no technical reason to limit the topologies to that method.

Using the Common Vision Blox tool CVB GigE Vision Server, a suitably equipped computer can be used as both, as an image receiver and as an image source. It acts like a GigE Vision and GenICam compliant image source with freely configurable features. The output data from the GigE Vision Server is compliant with the GigE Vision standard and is therefore compatible with any standard-compliant software solution on the processing computer. It is irrelevant to the processing computer whether it sees a real GigE Vision compliant camera on the network as an image source or a GEV Server acting as a camera with its individual properties.

Developers are free to define which features the simulated camera will provide. These individual features are not limited to usual camera properties, but can be any information that may be communicated between the server and the client application. Using the GigE Vision standard, the GEV Server communicates the properties to the receiver so that they can be used immediately without further adaptation. The CVB GigE Vision server provides a flexible, easy to use solution, as no knowledge of protocols or the detailed data structure is required.
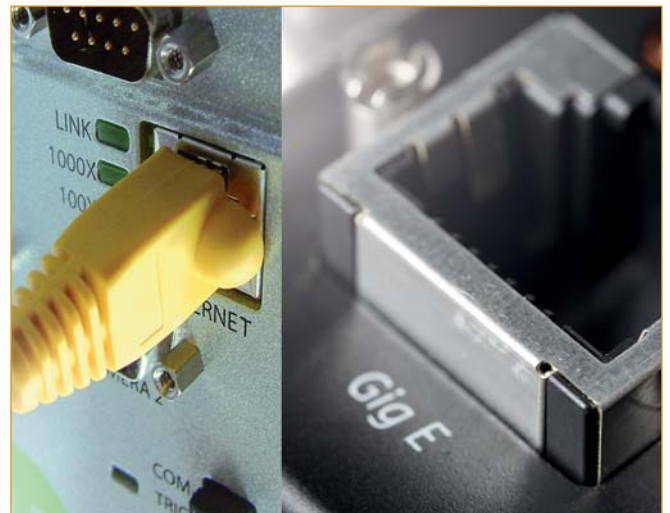
CVB GigE Vision Server opens up a wide range of new opportunities like full application remote control, distributed pre-processing and computing, or multicast transfers to multiple monitoring stations.

- Data transfer to multiple PCs via multicast
- High performance image streaming
- Low CPU load thanks to CVB filter driver technology
- Allows to define and simulate own camera features
- Spread image data to multiple streams
- Full remote configuration and control
- Perfect solution for distributed computing
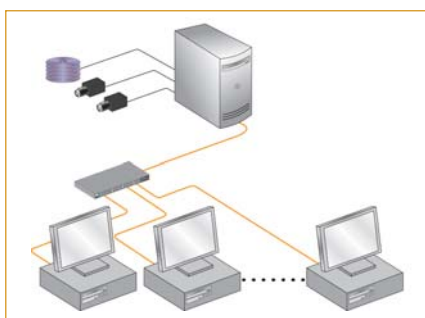
With the CVB GigE Vision Server images can be acquired from various sources and can be pre-processed before being distributed.
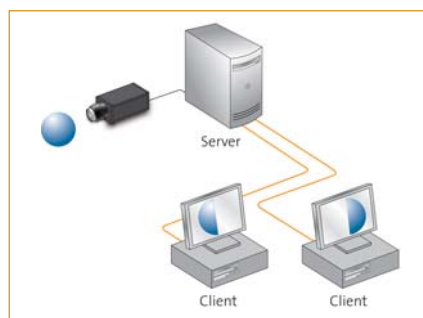
Images from one high resolution camera can be split into small overlapping parts and be distributed to several processing computer.
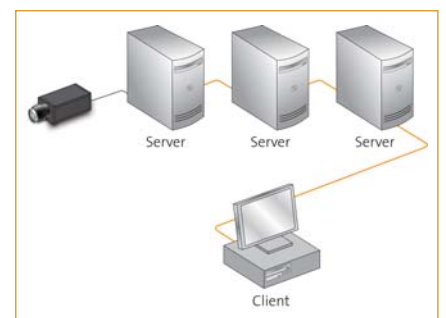
Image data is send to the server for pre-processing, from there it is transferred to the next server in the pipeline for different other preprocessing tasks.

STEMMER®
IMAGING

► CVB GigE Vision Server

► From simple to most complex applications

At its most basic level the flexible GEV Server sends out images from hard disc, system memory, camera or any CVB compatible acquisition hardware automatically via a network interface making use of the benefits offered by simplified Ethernet cabling. In this way GigE Vision cameras can be simulated alongside any CVB compatible imaging source. It is also possible to connect other acquisition devices to the GEV Server that are not based on GigE Vision technology, such as a CameraLink frame grabber for example.

The GEV Server is easily extendable also for more complex tasks such as distributed pre-processing of image data for any simulated camera at the source PC and distributing it to several specific processing computers via multicast technology. Customized remote control of the GigE Vision Server is provided by the freely configurable GenICam features found in CVB. Real distributed computing with minimum network load is fully supported using multicast on both, the client and the server.

► Total independence

Users benefit from the total hardware and software independence of the solution, as it is even possible to switch between a real camera and the GEV Server with its simulated camera without difficulty, as long as both only deliver the required properties. All communication between the GEV Server and the processing computer takes place exclusively via the standard GigE Vision protocol, without use of proprietry protocols or the need for additional cabling. All that is required between GEV Server and the evaluation computer is a Gigabit Ethernet connection. This means that cable length problems are also a thing of the past - particularly when using glass fiber network technology.

Example of a successfully installed application:
Five PCs equipped with the GigE Vision Server operate as a smart video switch which passes image data from 250 GigE Vision cameras to seven additional monitor PCs. Each of these PCs is able to display data from up to three cameras on the network. To achieve this, the five server computers use multicast mode to transfer data, in this case video streams, in parallel to several computers.
- Concurrent access to one camera with control management
- Pre-processing and compression
- Separate channels for streaming and control

Processing/Server   Viewing/Control

Manager
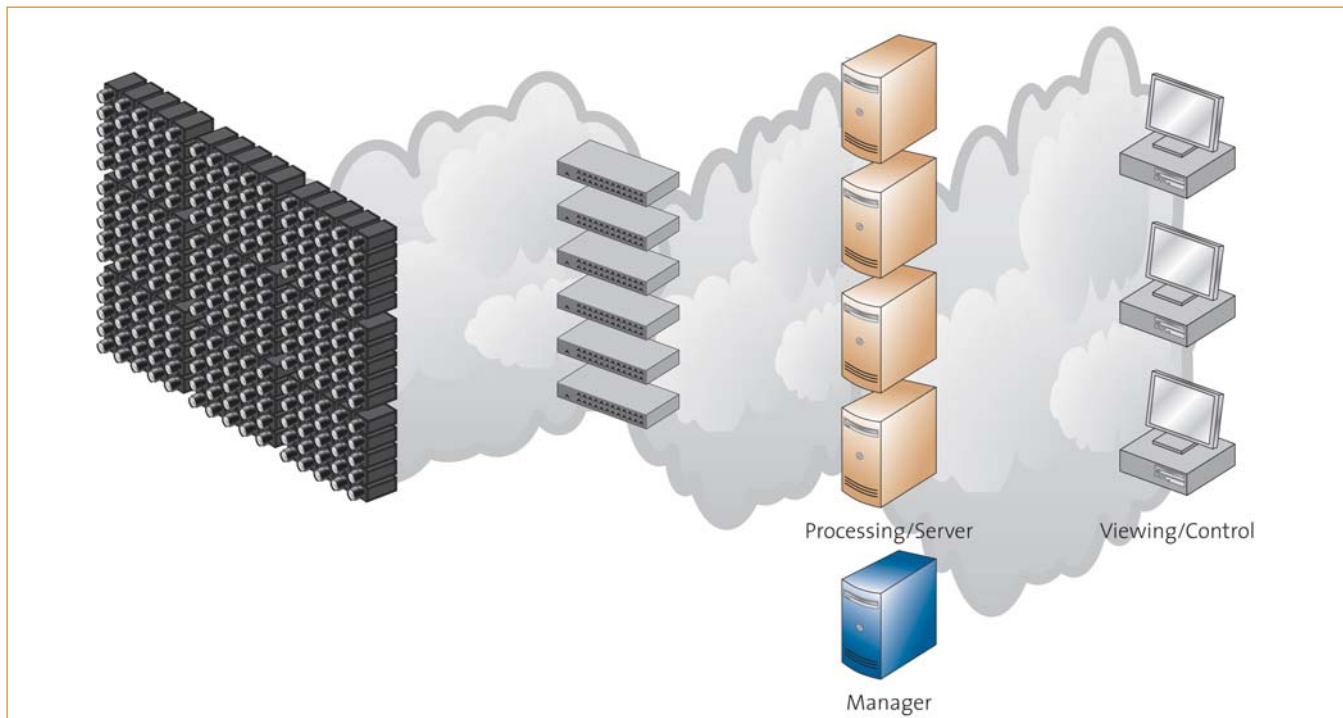
Massive multi camera application