Comparative Analysis

Video Analytics Architectures

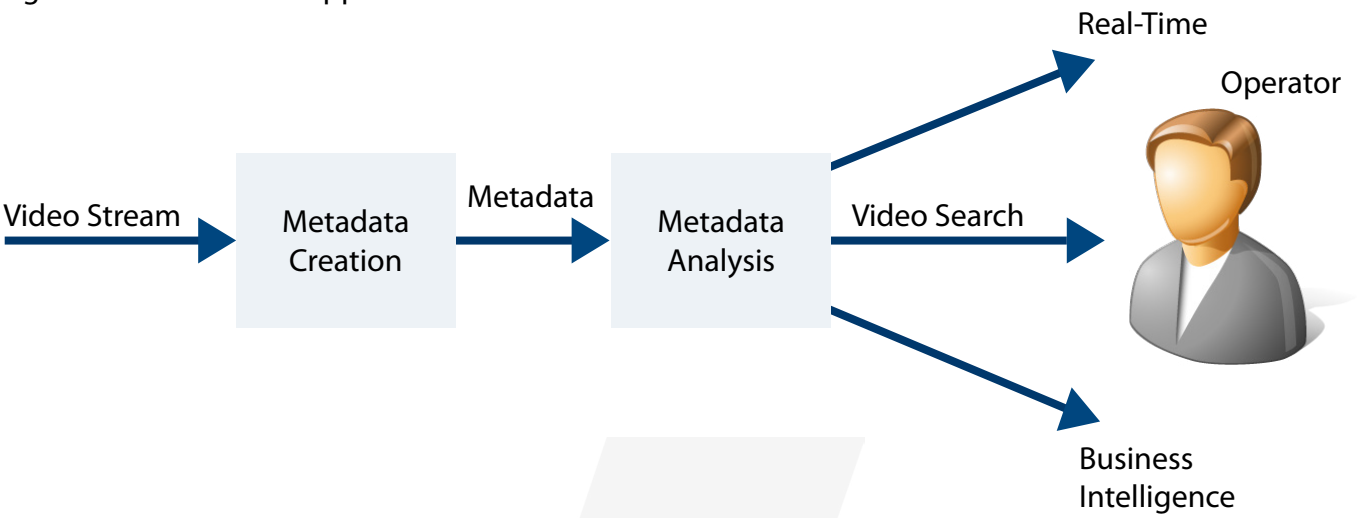
	Agent Vi's IPoIP™ (distributed) Architecture – Cloud-Based	Agent Vi's IPoIP™ (distributed) Architecture – On-Premise	Server-Based Architecture	Edge-Based Architecture
Video Analytics Architecture Description	Video analysis is distributed between the edge (camera or connected appliance) and a server (on-premise or cloud-based). Only low bandwidth "image features" are streamed to the server for further analysis.		Video is streamed to the server that runs the algorithms.	Algorithms run in the camera or connected appliance.
Detection performance	High Algorithms have access to raw video before compression, the architecture provides significant processing resources to enable high end image processing algorithms.		Medium – High Limited by quality of the available compressed video or by limited processing resources, or both.	Low – High Limited processing available in embedded environment. In some cases, a specific algorithm has been isolated and optimized to achieve high performance.
Feature set	High • Comprehensive range of capabilities including real-time detection, video search and business intelligence • No limit on no. and type of analytics features running on a camera • Support for fixed, PTZ and panoramic cameras • Ability to create inter camera detection scenarios		Medium – High • Some offer a variety of features • No. of features on a camera is usually limited • Most products do not offer PTZ / panoramic support • No inter camera detection scenarios	Low • Usually a small variety of feature types • No. of rules on a camera is typically limited to 1-2 • Some products offer PTZ / panoramic support • No inter camera detection scenarios
Scalability	Unlimited Infinite cloud computing resources can support any number of cameras.	High A server with a quad core processor can support up to 200 cameras running any combination of analytics features. Server capacity can easily be increased to thousands by adding additional processors or server machines.	Low A server is required for each 4 to 16 cameras.	High A server is usually required only for management and setup operations and can support a large number of cameras.
Bandwidth usage	Low Each camera uses an average bandwidth of 40-150 kilobits / second when performing analytics.		High When the server processes compressed video, typical network usage is 2,000 kilobits / second and higher.	Low Data is usually transmitted only when an event is detected.
Upgrade path	"Future Proof" All software updates and server expansions are handled by Agent Vi.	Since most new features are developed on the server side, there is little need to upgrade camera firmware when a new product version is released. Future increases in required processing resources are easily handled by adding an additional server.	Reasonable Software upgrades are relatively easy because of the server-based platform. Problems occur when a new feature requires additional processing resources and an existing server supporting 8 cameras can suddenly only support 6.	Problematic Each newly developed feature or bug fix requires firmware updates on the camera. In large installations this can become an issue. Newer algorithms requiring more processing resources may not be compatible with deployed cameras and may require hardware replacement.

Video Analytics Processing Architectures

Multi-tiered vs. Monolithic Approach

Monolithic VCA Approach

Agent Vi's Multi-tiered Approach



	Agent Vi's Multi-tiered Approach	Monolithic Approach
Flexibility	High	Low
	Highly detailed metadata provides the basis for a variety of applications.	Dedicated algorithm is optimized towards a specific purpose. Additional capabilities require new algorithms.
Running simultaneous applications	High	Hard
	Metadata is created once and is then used for various applications with minimal extra overhead for each additional application.	Each new capability requires a separate algorithm which significantly increases CPU and memory requirements for simultaneous applications.
Mix between real-time and offline	Easy	Hard
	Metadata creation is undertaken in real-time, metadata analysis can be undertaken in real-time or offline.	The entire algorithm is either executed on live video or on recorded video.