

**CASINO SOLUTION**



**NEXT-GENERATION VIDEO SURVEILLANCE SOLUTIONS**

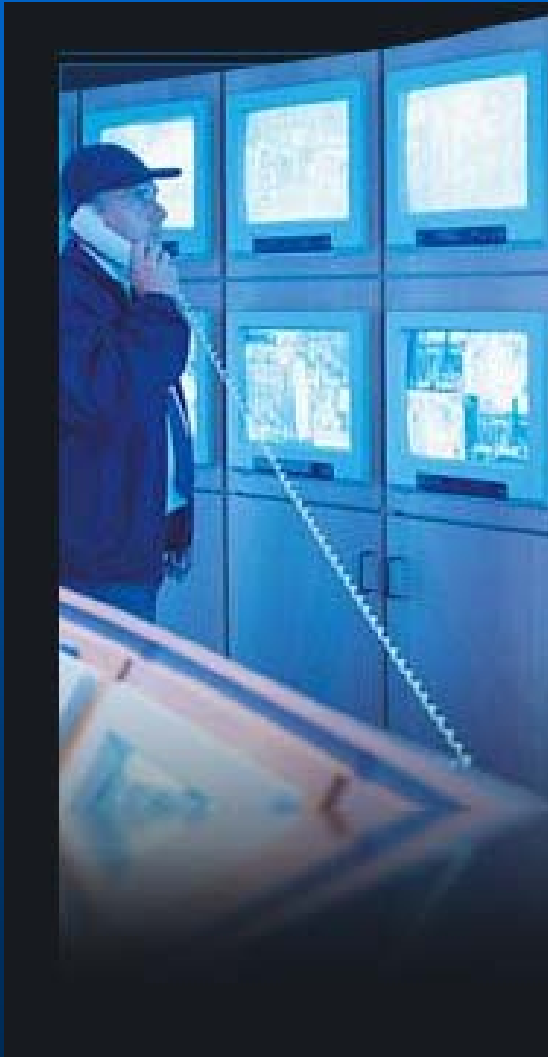


# Aventura Technologies

Headquartered in New York, with satellite offices globally (Las Vegas, Miami, Louisiana, United Kingdom, Hong Kong and China) Aventura Technologies, Inc., is a leading designer, developer, manufacturer and integrator of fixed and mobile high-end PC and embedded digital video surveillance solutions, biometric fingerprint access control, counter-terrorism solutions, and hardware and software products and peripheral solutions for gaming, government and enterprise.



# Why Aventura vs. The Competition



- Seamlessly integrates with virtually any matrix switcher
- 1/3 the physical space requirements of the competition
- If swapping out VCR's no additional space required
- If swapping out VCR's no additional power or air conditioning required
- Aventura ability to playback 16 cameras simultaneously selecting any camera from any DVR on any monitor fully synchronized
- Ability to view up to 64 cameras live on a single screen
- Ability to manage 3<sup>rd</sup> party software (incident reporting, POS, access control)
- Playback video based upon matrix camera number
- Playback cameras based upon pre-defined groups
- Aventura video retrieval time of archived data is 10x faster
- Aventura hardware encodes all video so virtually no CPU usage on live viewing
- Aventura hardware decodes all video so virtually no CPU usage on playback
- Ability to scrub video in forward or reverse
- Razor sharp images even in slow motion
- The industry's only 5-YEAR hard drive warranty
- Free Hot Spares so no downtime for maintenance
- The Only Company to custom design to customer spec
- **GUARANTEED REGULATORY APPROVAL**

# Why Aventura's H.264AVC vs. MPEG4/MPEG2

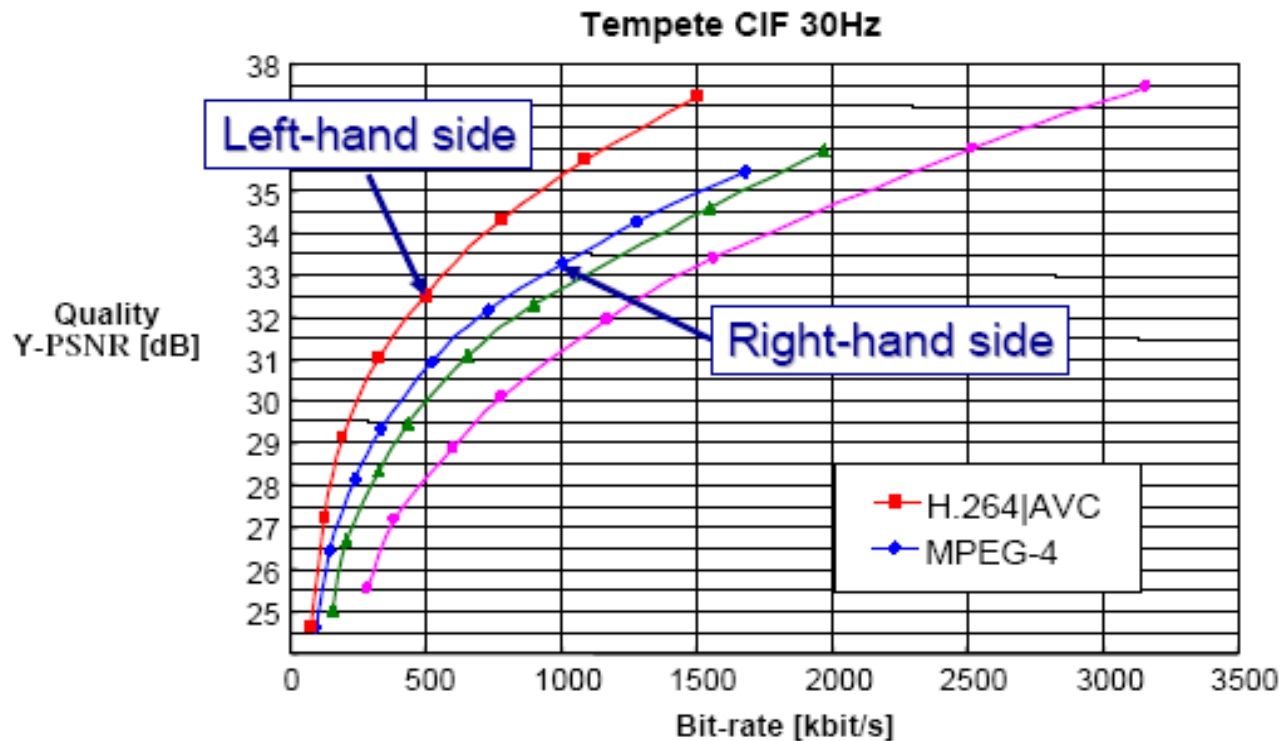


- Up to 40% Higher quality video images
- Up to 65% Savings on Hard Drive Space
- 50% or more reduction in bandwidth
- 3x Faster Downloads
- Re-Programmable DSP's (no obsolescence)
- Stable Images of Fast Moving Objects
- Distortionless Images on Frame-By-Frame Movement
- Newest Technology  
H.264 (2004) vs. MPEG4 (1999) vs. MPEG2 (1995)
- World's Only Complex Codec  
(deblocking filter, slice-based motion prediction, multiple reference frames, advanced interlace management, rate distortion optimization, weighted prediction, arithmetic coding, etc.)

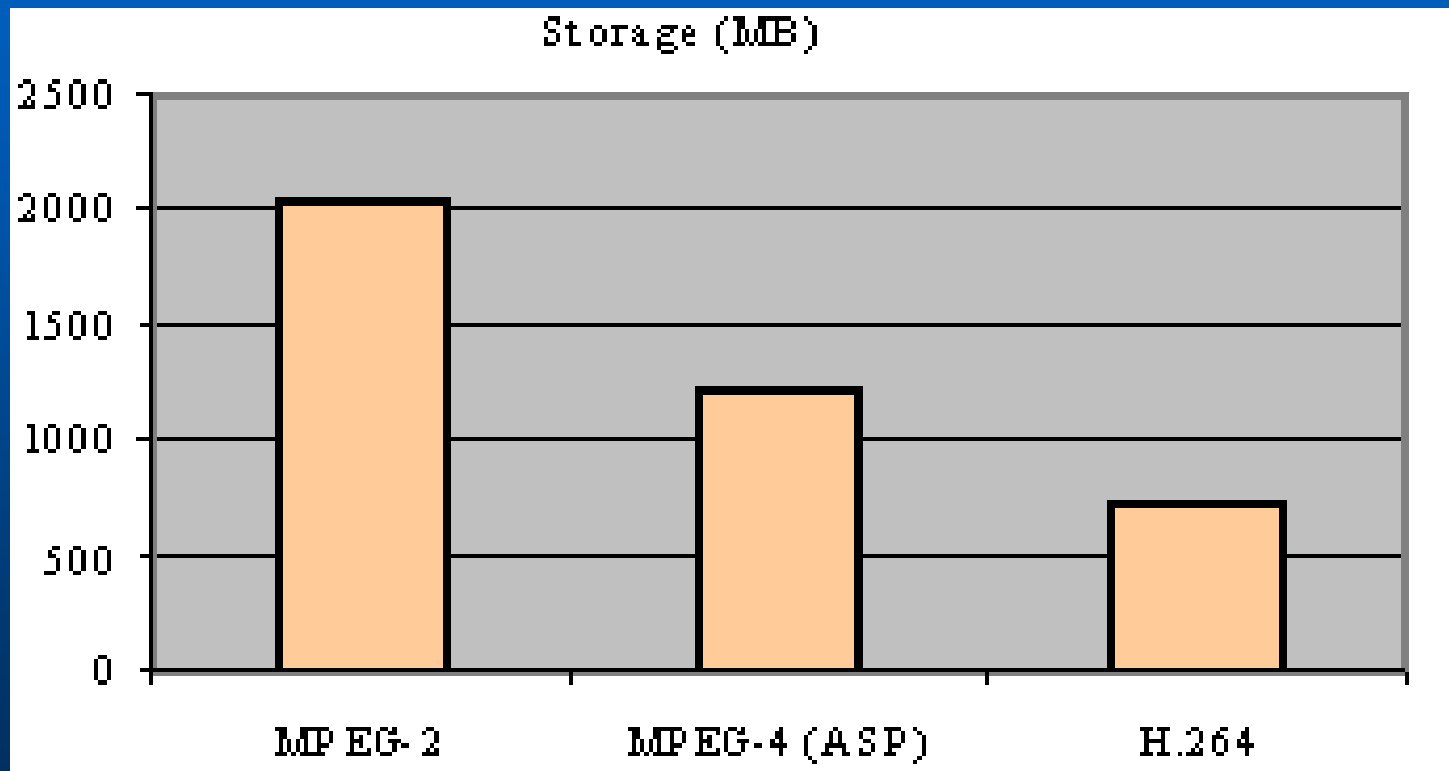


# Higher Quality Video

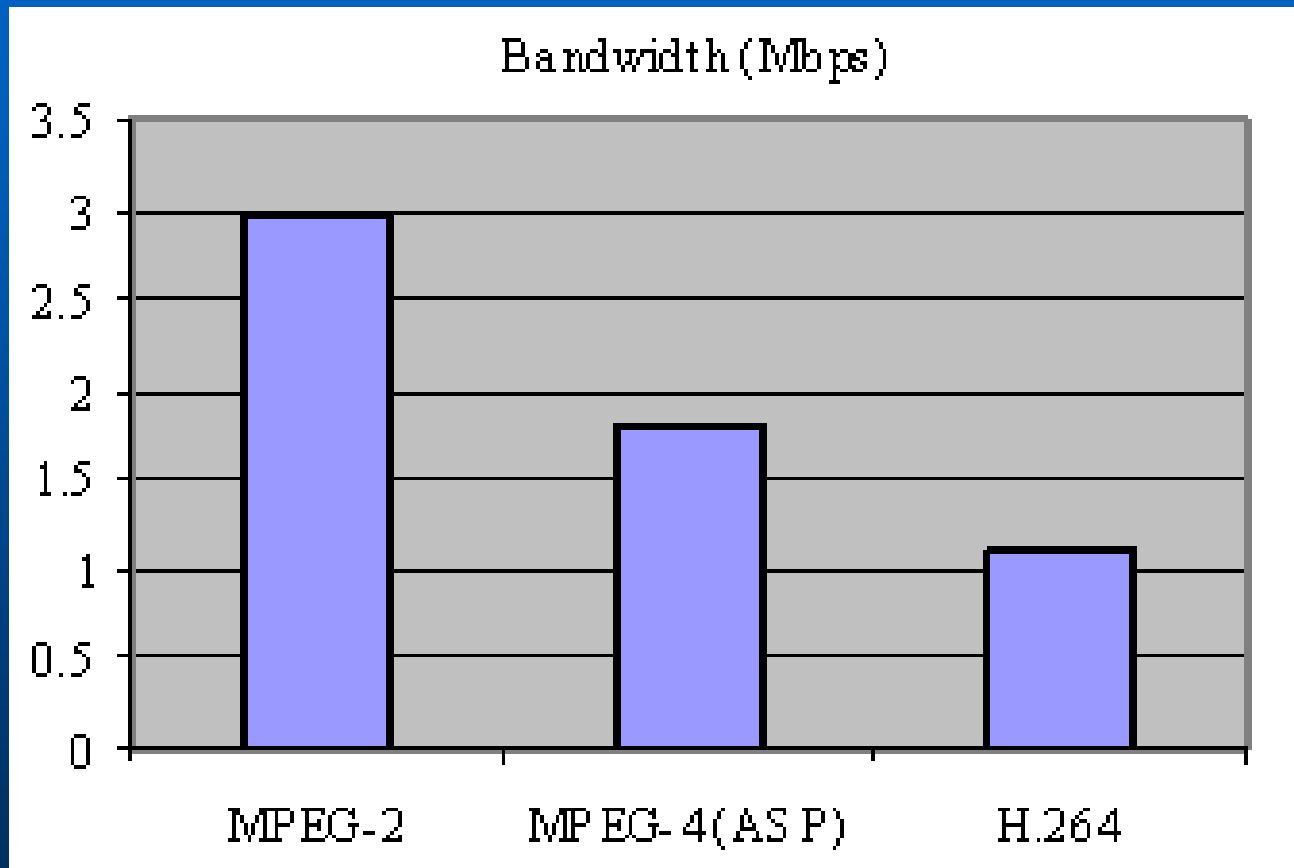
## Comparison to MPEG-2, H.263, MPEG-4



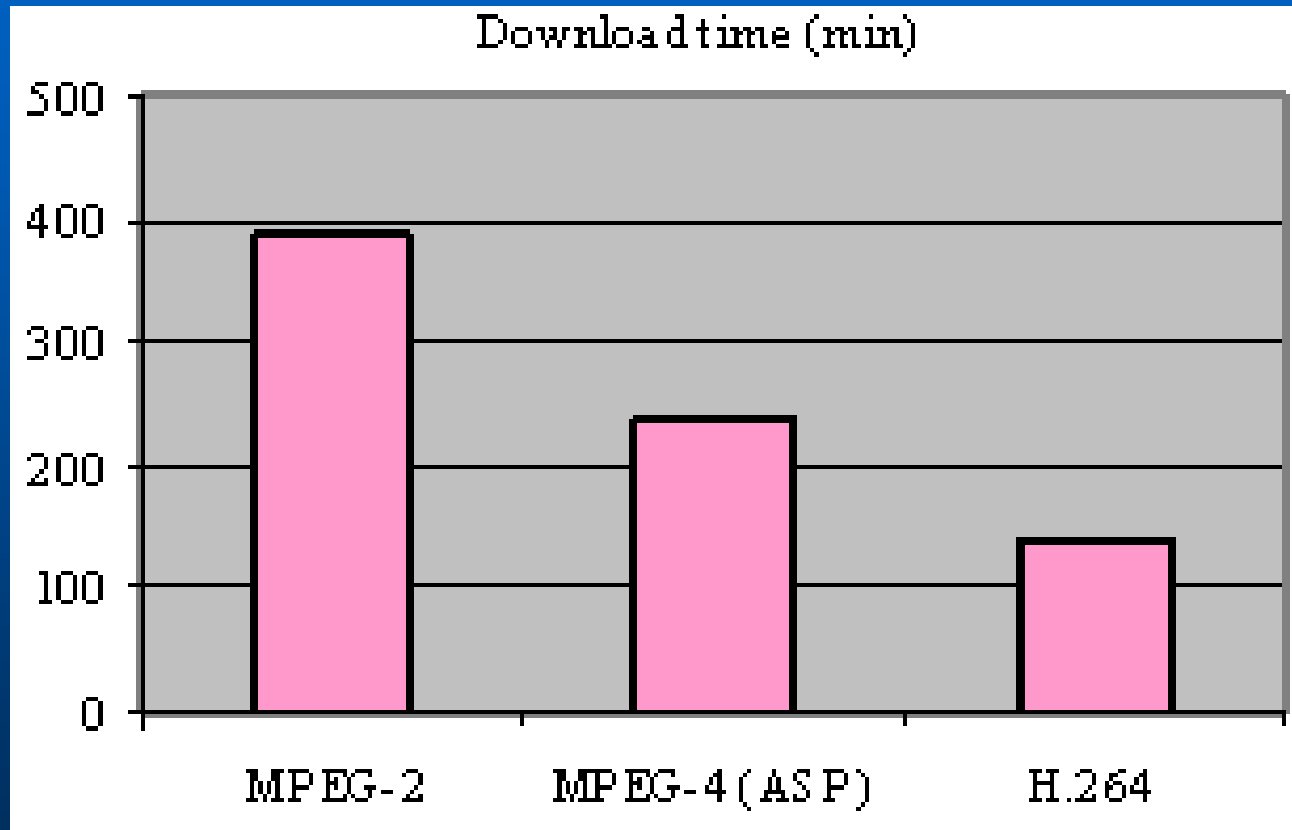
# Up To 65% Less Storage Space



# Up To 60% Reduction In Bandwidth



# Up To 3x Faster Downloads





# The Problems of MPEG2 & 4, H.263, Wavelet

- **Cannot stabilize fast moving images because of the architecture of the codec and underlying algorithm**

(creates mosaic effects or blotching because simple codecs cannot perform weighted prediction, use multiple reference frames, or use slice-based motion prediction)

- **Cannot provide multiple simultaneous high quality images efficiently on a single device without dropping frames or losing quality**

- (minimum number of channels of 4CIF 704 x 480 resolution video because the throughput required exceeds the PC's limitations, unless using separate encoders )

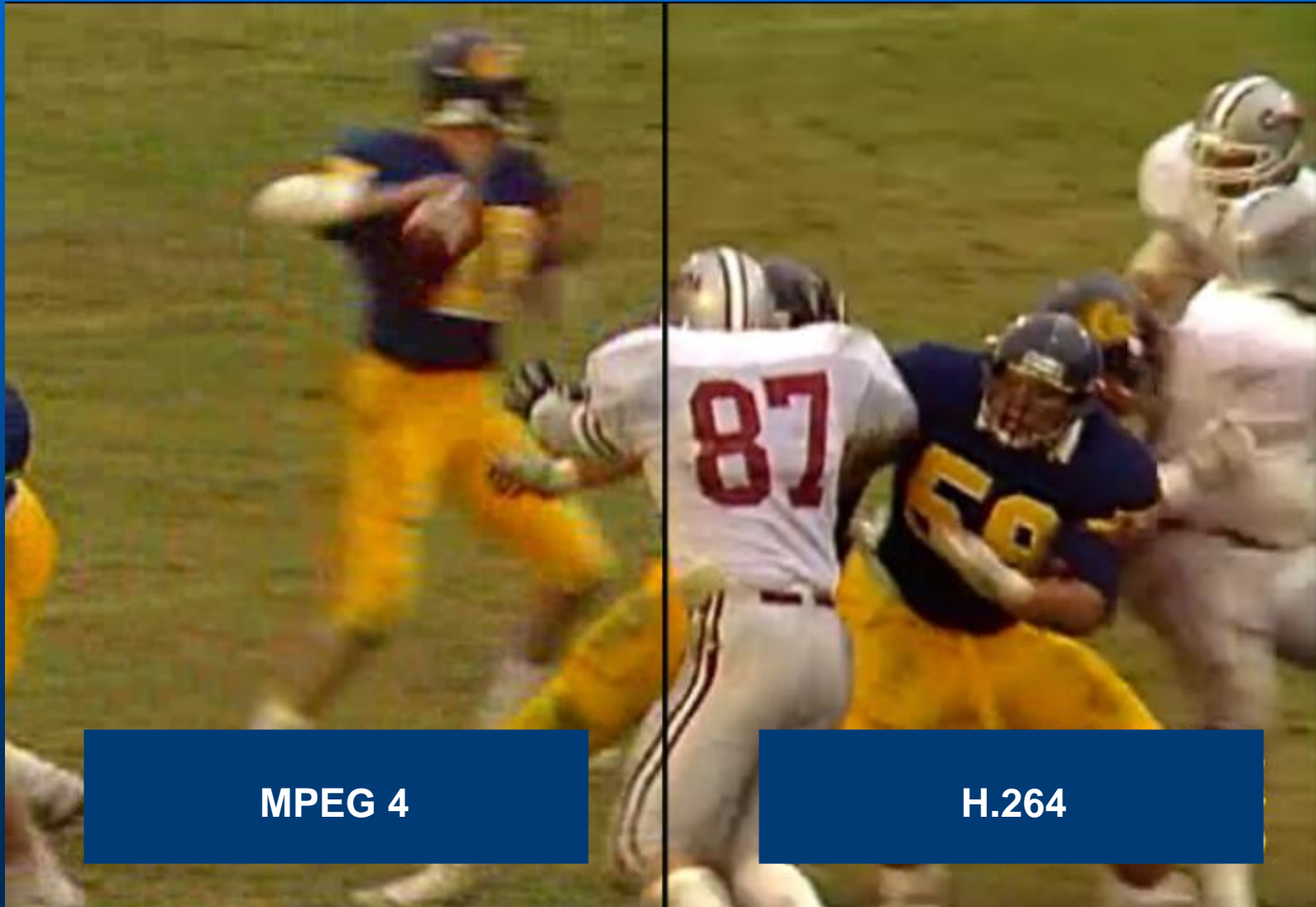
- **Cannot fully synchronize video and audio**

(audio and video cannot synchronize if using software compression or the sound card since separate streams are brought together through different components)

- **Video Codec was never designed for security**

(significant modifications have to be made to attempt to make older codecs usable but are still deficient regardless. The underlying algorithm used by MPEG2 and MPEG4 "*Huffman Algorithm*" dates back to the 1950's before any digital technology ever existed or was conceived)

# Stable/Focused High-Speed Images



**MPEG 4**

**H.264**

# Codec Architecture Comparison

		Standards		
		MPEG-2	MPEG4	Aventura H.264
Features	I, P, B-frames	✓	✓	✓
	Interlace	✓	✓	✓
	Coding	Huffman	Huffman	Huffman or Arithmetic
	Block size	fixed 16x16	fixed 16x16	variable down to 4x4
	¼ pixel		✓	✓
	GMC		✓	
	Loop Filter (aka deblocking filter)			✓
	Slice-based motion prediction			✓
	Multiple reference frames			✓
	MB AFF (improved interlaced management)			✓
	RDO (Rate Distortion Optimisation)			✓
	WP (Weighted Prediction)			✓
Switching pictures (for fast change channel)			✓	



- **Low Cost Per Channel**  
(Less Expensive than Last Generation Matrix or Competing Digital Systems)
- **Plug-N-Play**  
(Easy installation)
- **Factory Direct**  
(24/7 support from factory-trained engineers)
- **Factory Certification Program For Casino Employees**  
(employees trained on-site with annual refresher courses)
- **No Additional Physical Space, HVAC or A/C Required**  
(small footprint – 1/3 the size of the competition)



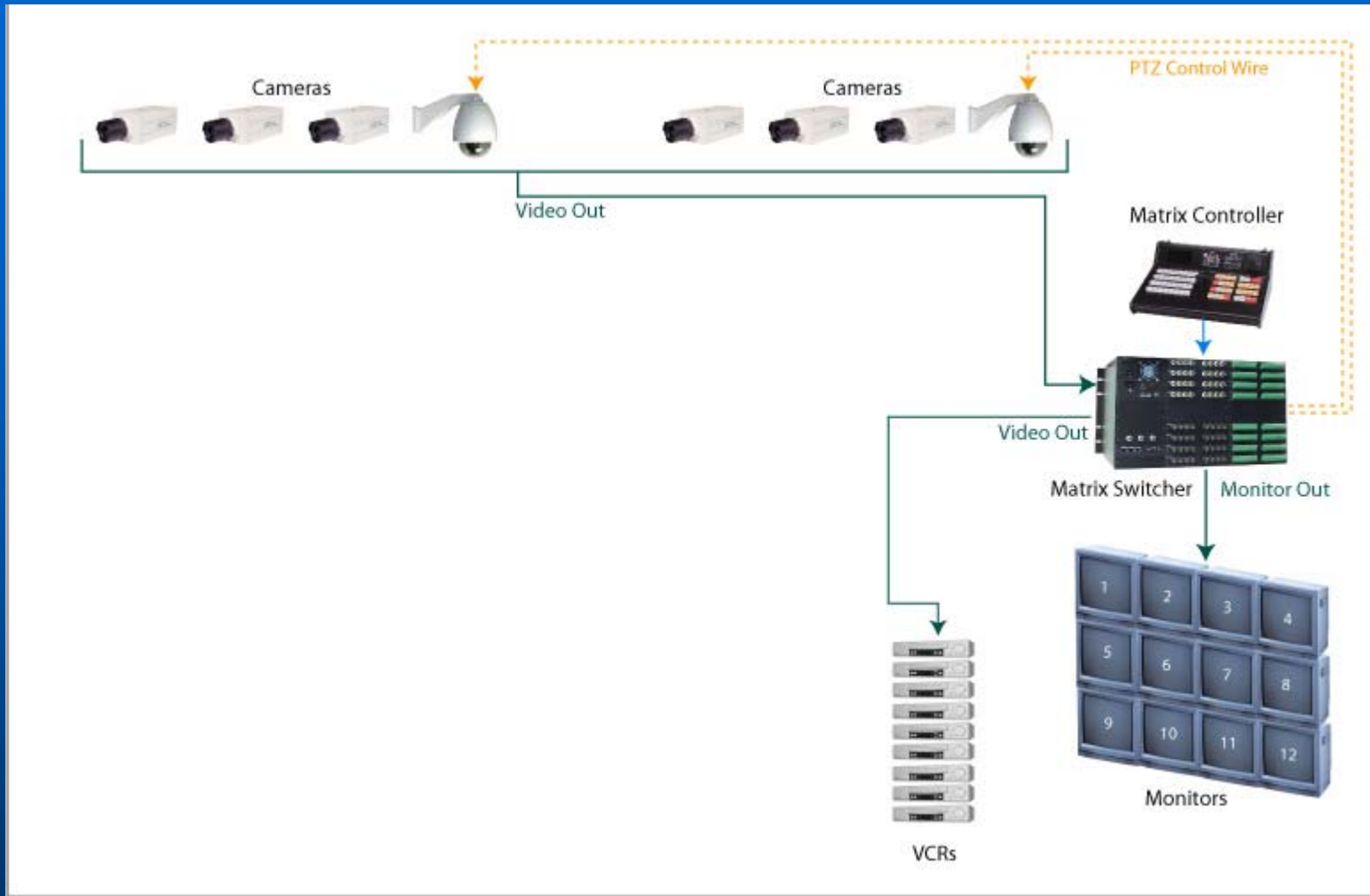
# How It All Works

The Following Slides Show The Installation Process

You may configure the control room as an:

- **Complete digital solution**  
or
- **Hybrid which allows you to continue to use your matrix switcher as well as the new digital solution**

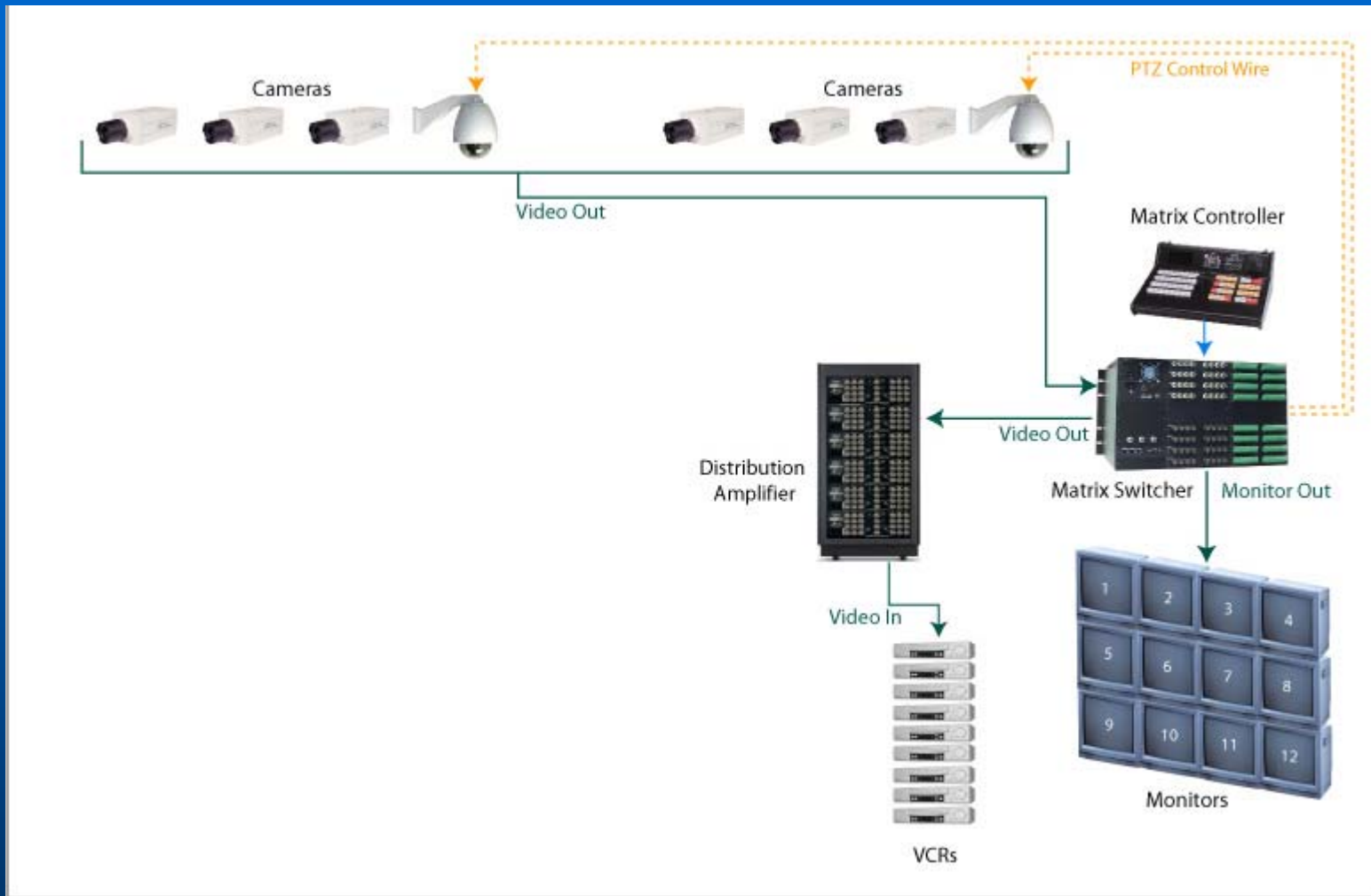
## Diagram 1 - Conventional Matrix Switching/VCR System



The above diagram represents a typical existing layout of a matrix switcher with VCR recording as can be found in most casinos. Some casinos may have additional quads or mux's connected to the VCR's or have distribution amplifiers in between the cameras and the matrix switcher

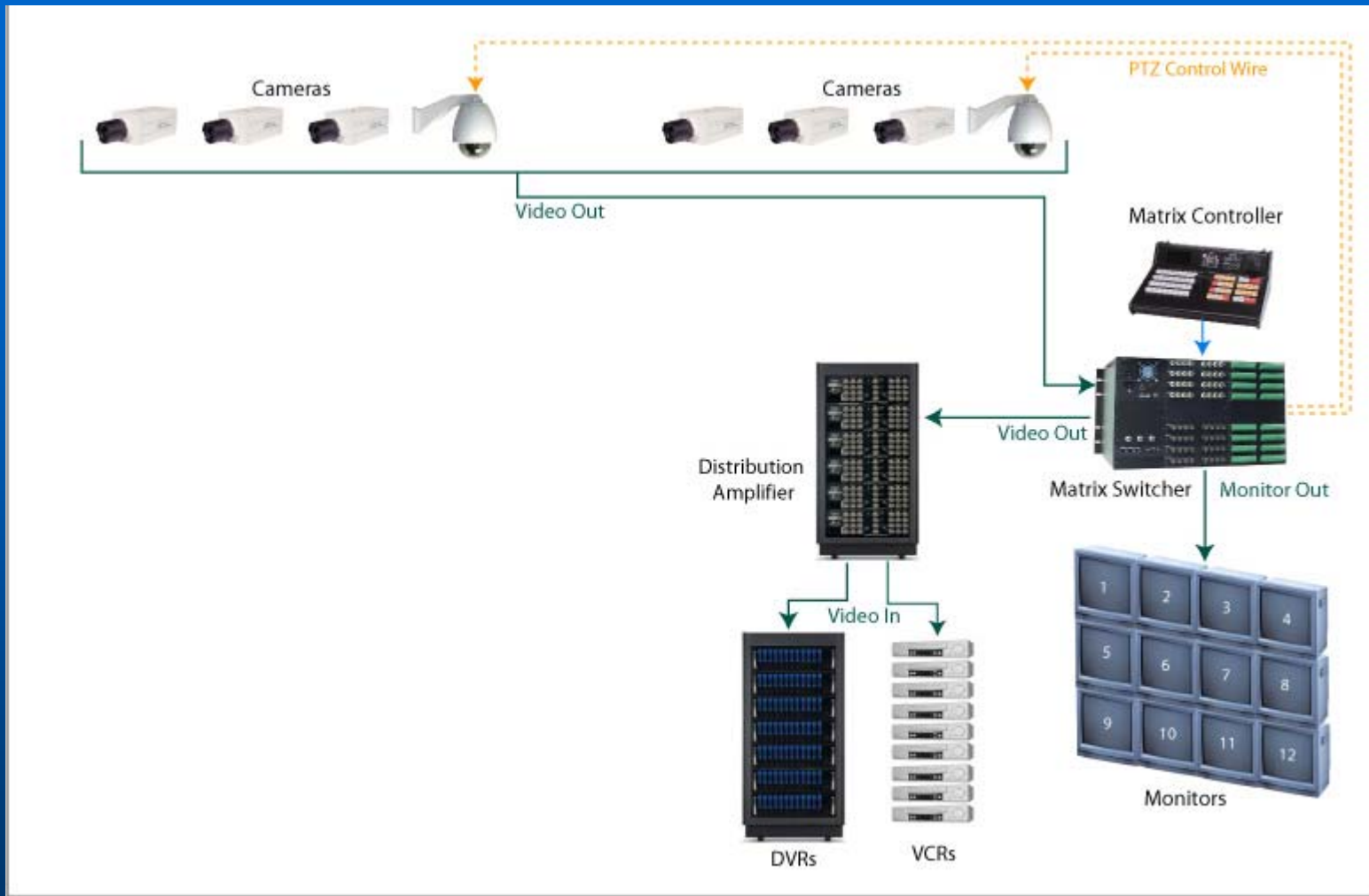


Diagram 2 – Distribution Amplifiers Installed To Provide Redundancy



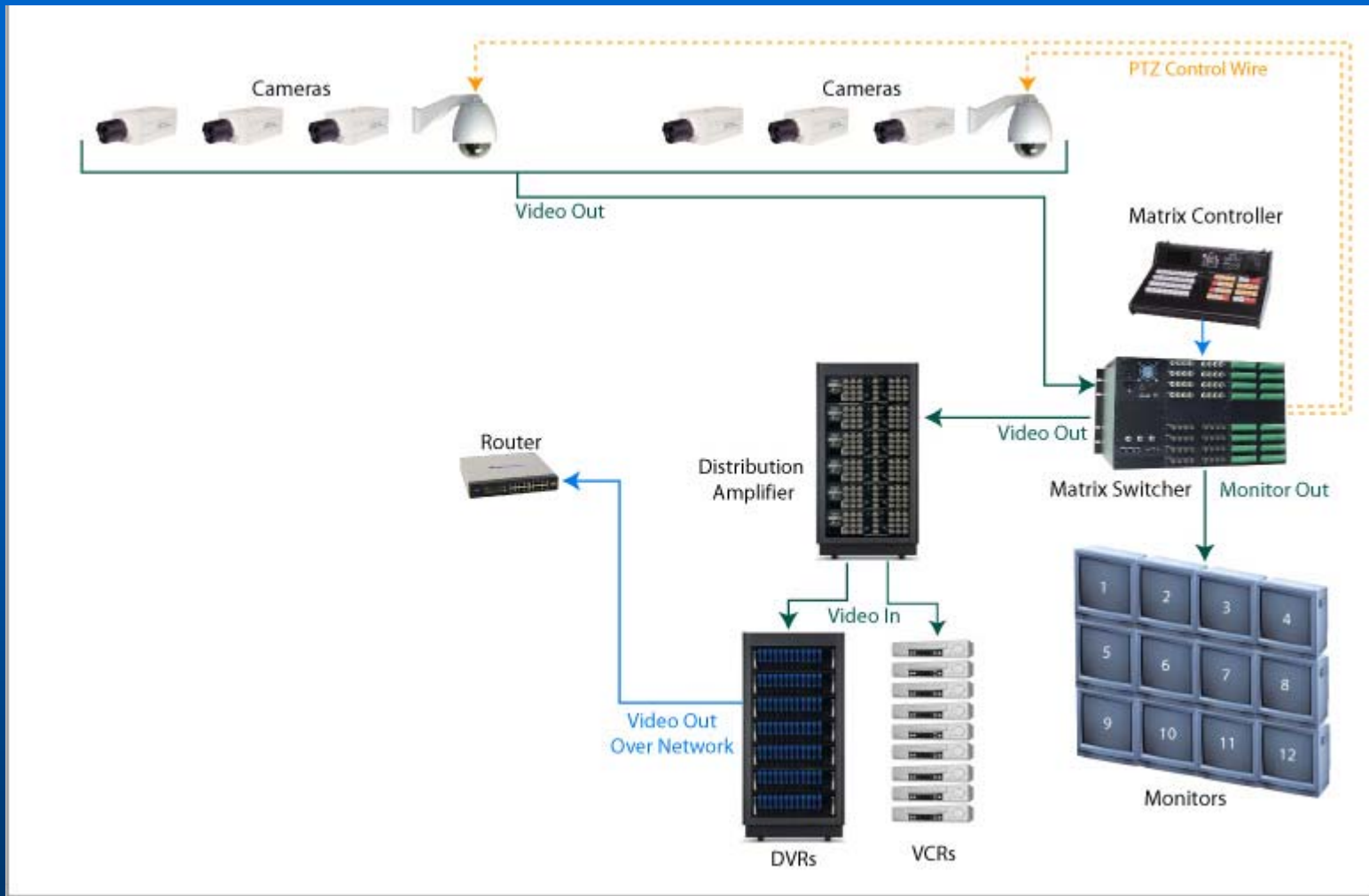
As a first step, 16-input, 64-output distribution amplifiers are rackmount installed in between the matrix switcher's video outputs and the VCR's video inputs; this provides additional video outputs so the DVR's can record the same cameras as the VCR's. It also insures that there is minimal downtime while the DVR's are being installed as the only downtime in the entire install process is the few seconds that a BNC cable is disconnected from the VCR video input and connected to the distribution amplifier's video output. Also, in this scenario only the failure of the historically reliable matrix switcher will stop the viewing of live video.

Diagram 3 – DVRs Are Connected To The Distribution Amplifiers



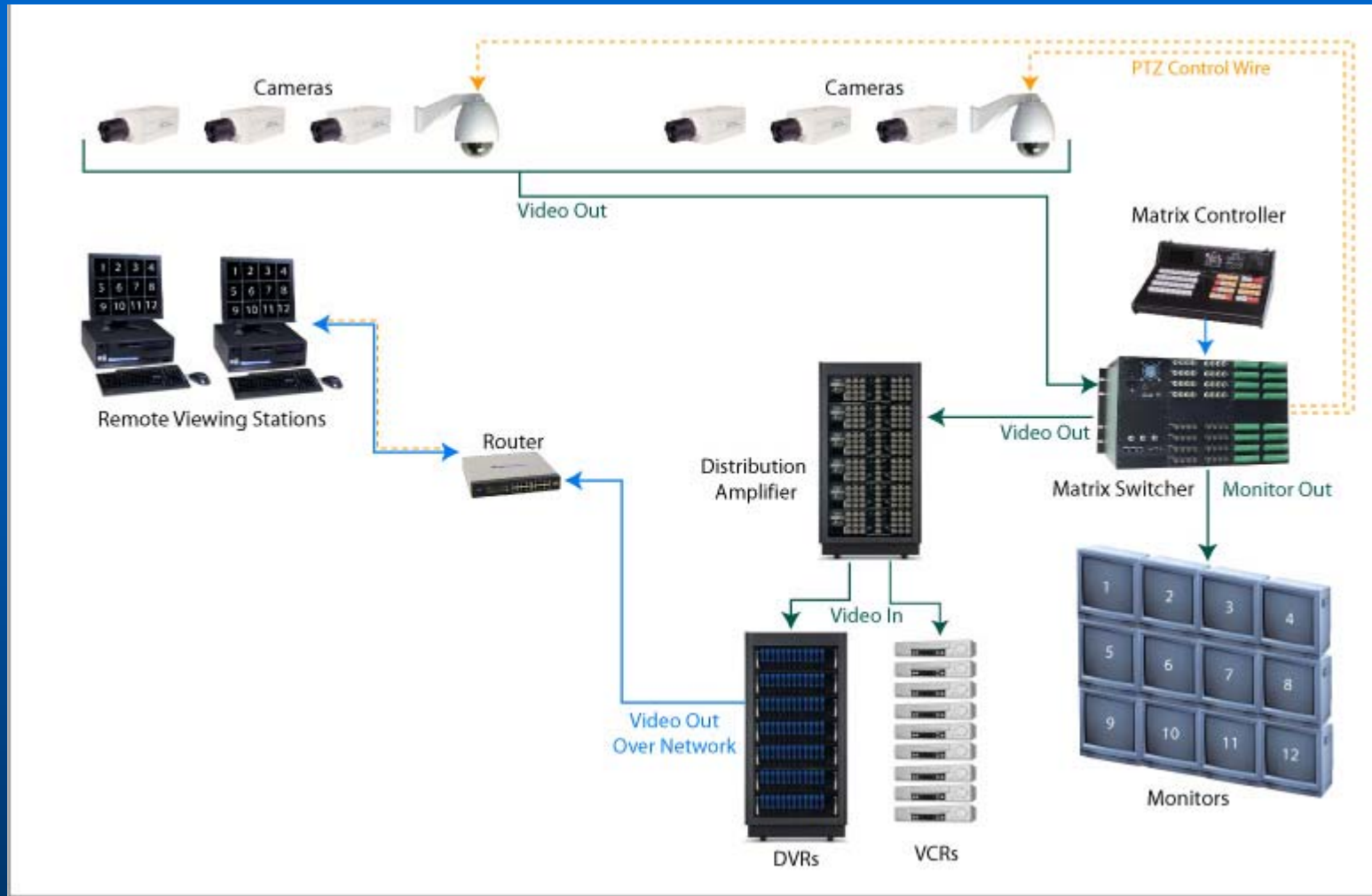
After installing the distribution amplifiers the DVR's are connected to the available video output ports of the distribution amplifier. This does not affect the operation of the VCR's or the matrix switcher in any way. We have now created a redundant system as the VCR's and DVR's are both recording during the test period.

Diagram 4 – Install Gigabit Router To Provide Network Connectivity



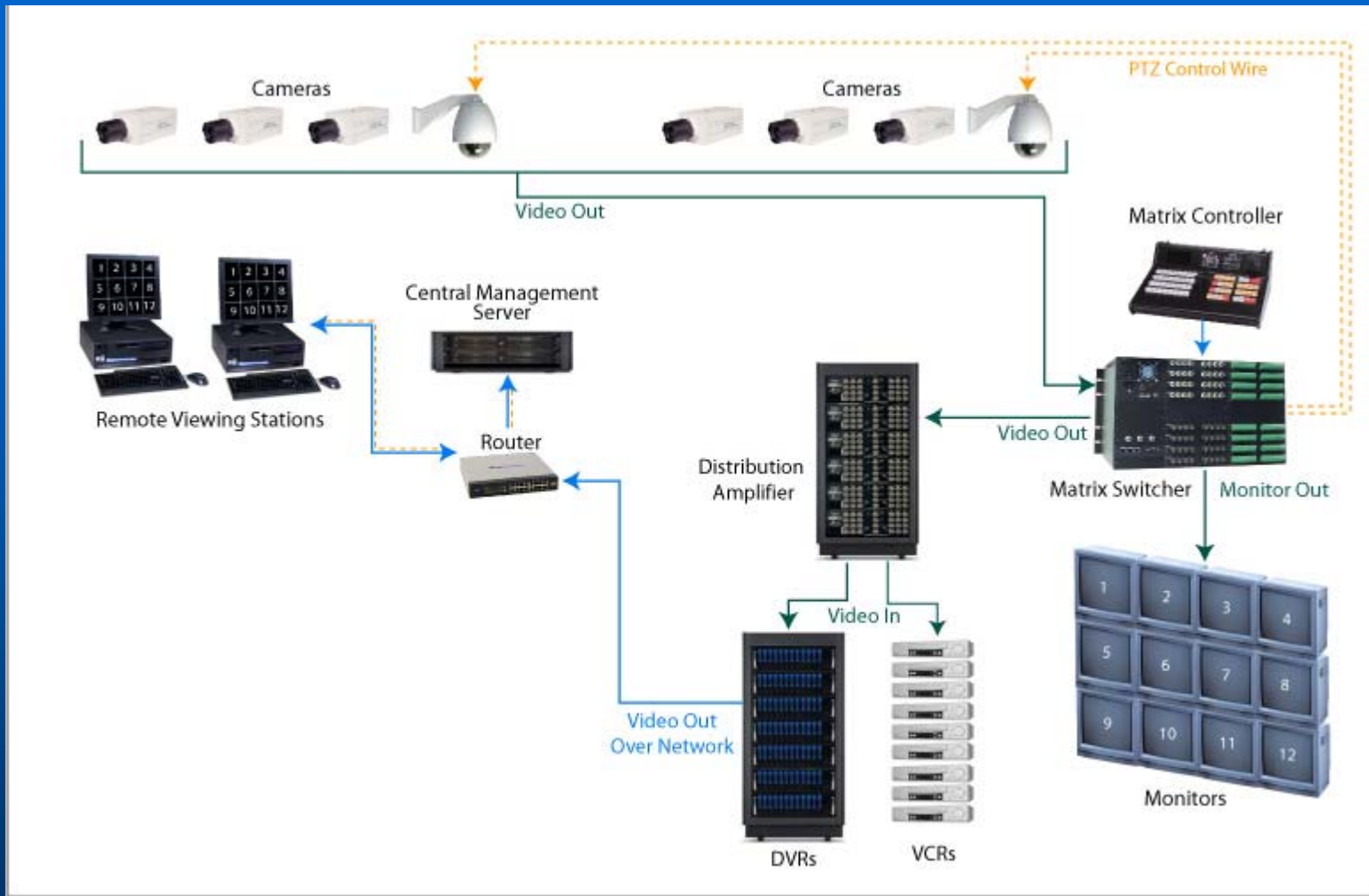
A Gigabit (1,000 Mbit) router is inserted to reside in between all of the network devices (video workstations, DVR's, incident archiving servers, POS servers, etc.) to be attached and controlled via the network. Gigabit routers are used, since video is bandwidth intensive and a standard 10/100 Mbit router will not allow sufficient throughput. Accordingly, all the cable runs between the devices is Cat6 or fiber to allow "true" Gigabit throughput.

## Diagram 5 - Connect Remote Viewing Workstations To Gigabit Network



Once the DVR's have been connected and network connectivity has been established, the viewing and playback workstations are connected to the Gigabit router. The workstations can now communicate directly with the all the DVR's. The workstation can simultaneously view, record and playback multiple cameras from any DVR all on a single screen. The workstation can also burn CD/DVD's and record multiple cameras from multiple DVR's all on a single disk fully synchronized

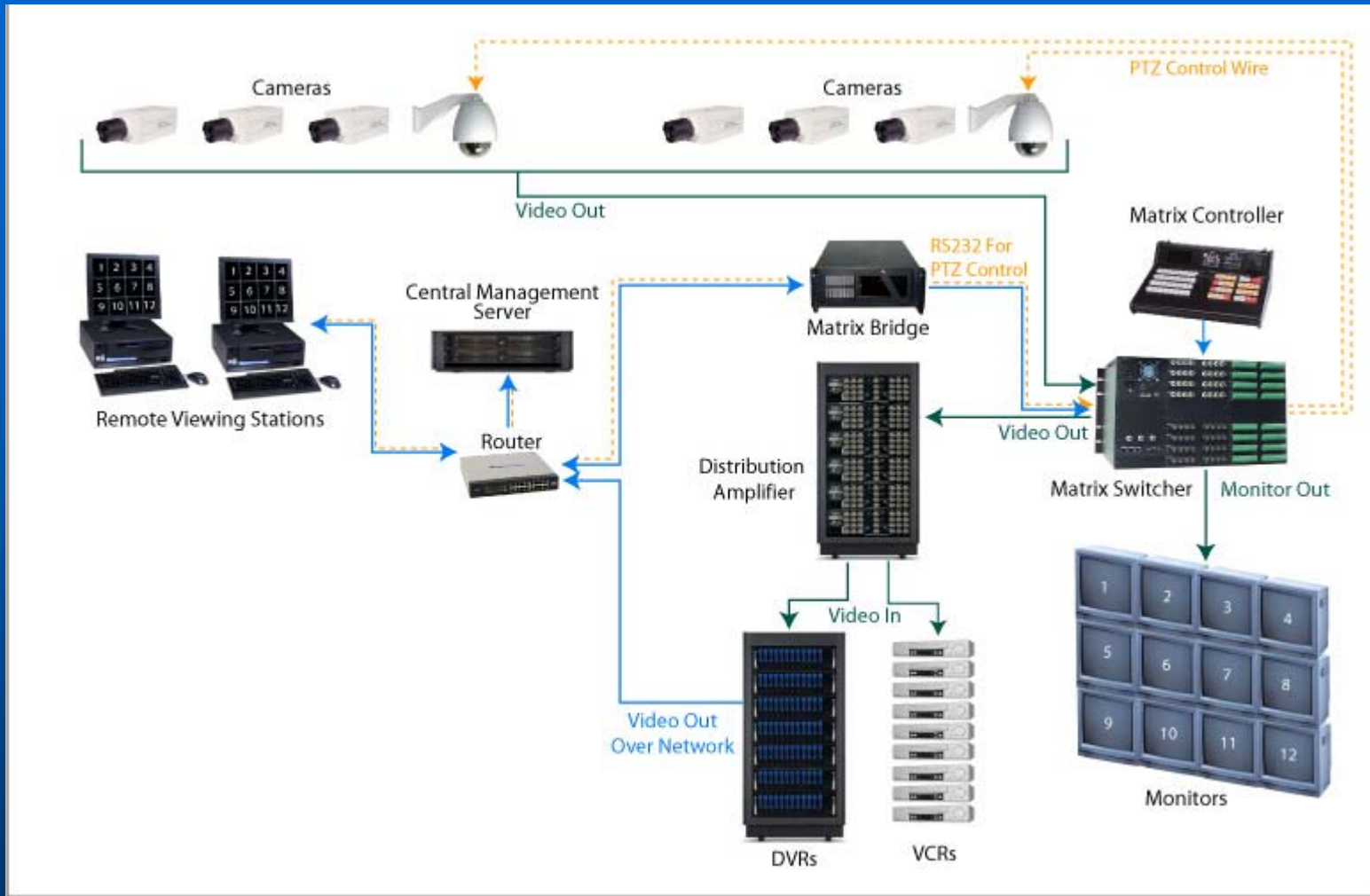
Diagram 6 - Central Management System Is Connected To Gigabit Router



The Central Management Server (CMS) manages and monitors all the DVR's, cameras and alarms. The CMS notifies the user of any problems and assists in the automatic system reconfiguration in the case of a system failure. In the unlikely event of a catastrophic DVR failure, the CMS can reconfigure the matrix switcher to send the video outputs attached to the failed DVR, to a hot spare DVR, using available video output ports of the matrix switcher, eliminating any possible downtime. In non-catastrophic failures, such as a hard drive (disk) failure, the DVR's **R**edundant **A**rray of **I**ndependent **D**isks (RAID), can rebuild itself using a global spare hard drive located in the DVR.



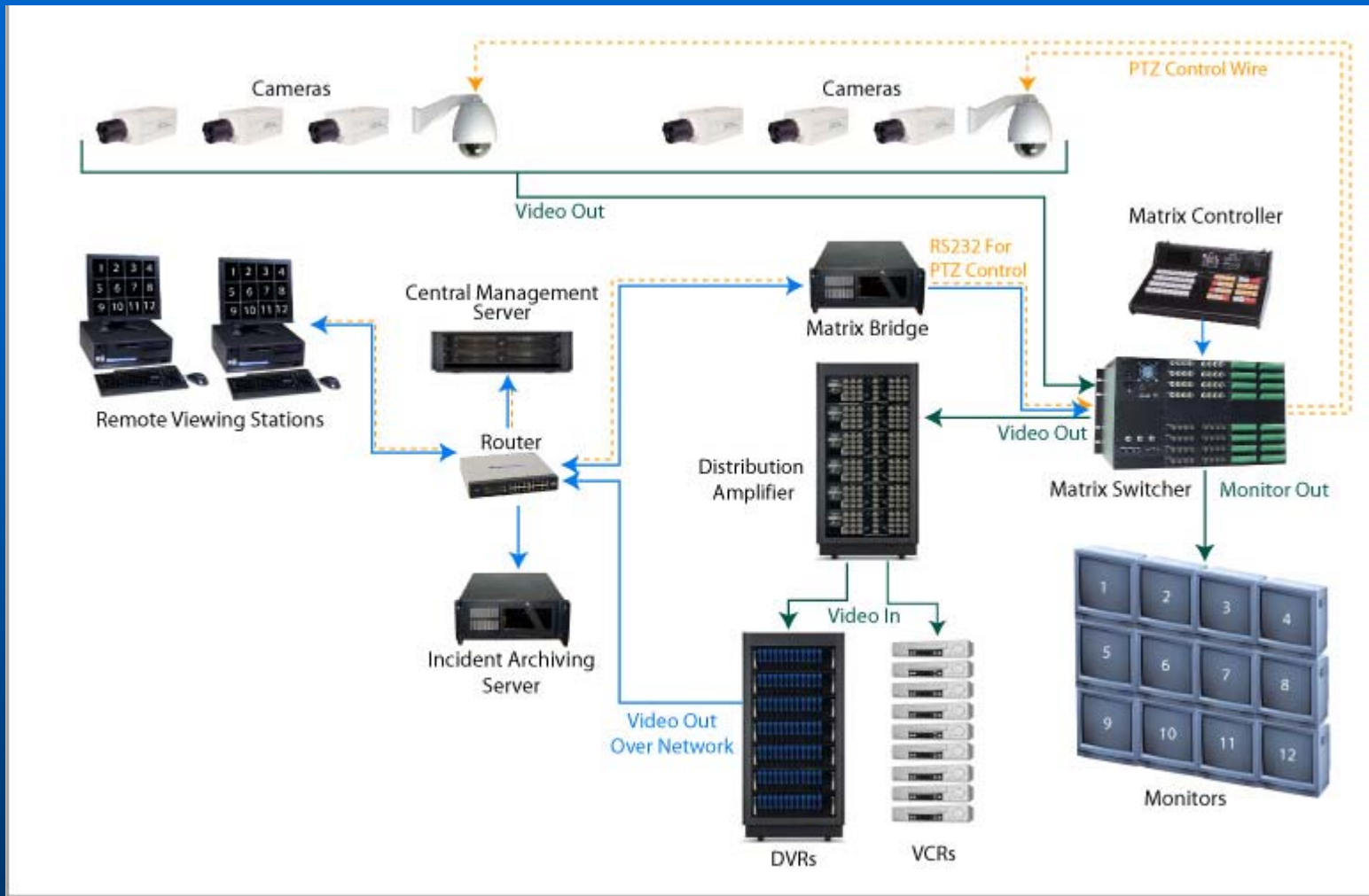
## Diagram 7 - Connect Matrix Bridge To Gigabit Router and Matrix Switcher



The Matrix Bridge is connected on one side to the Gigabit Router and on the other to the Matrix Switcher via RS232. When connected, the Matrix Bridge facilitates communications between the DVR's PTZ on-screen mouse controls and the Matrix Switcher PTZ controls. Both the Matrix Switcher and the DVR's can now control the PTZ's independently.



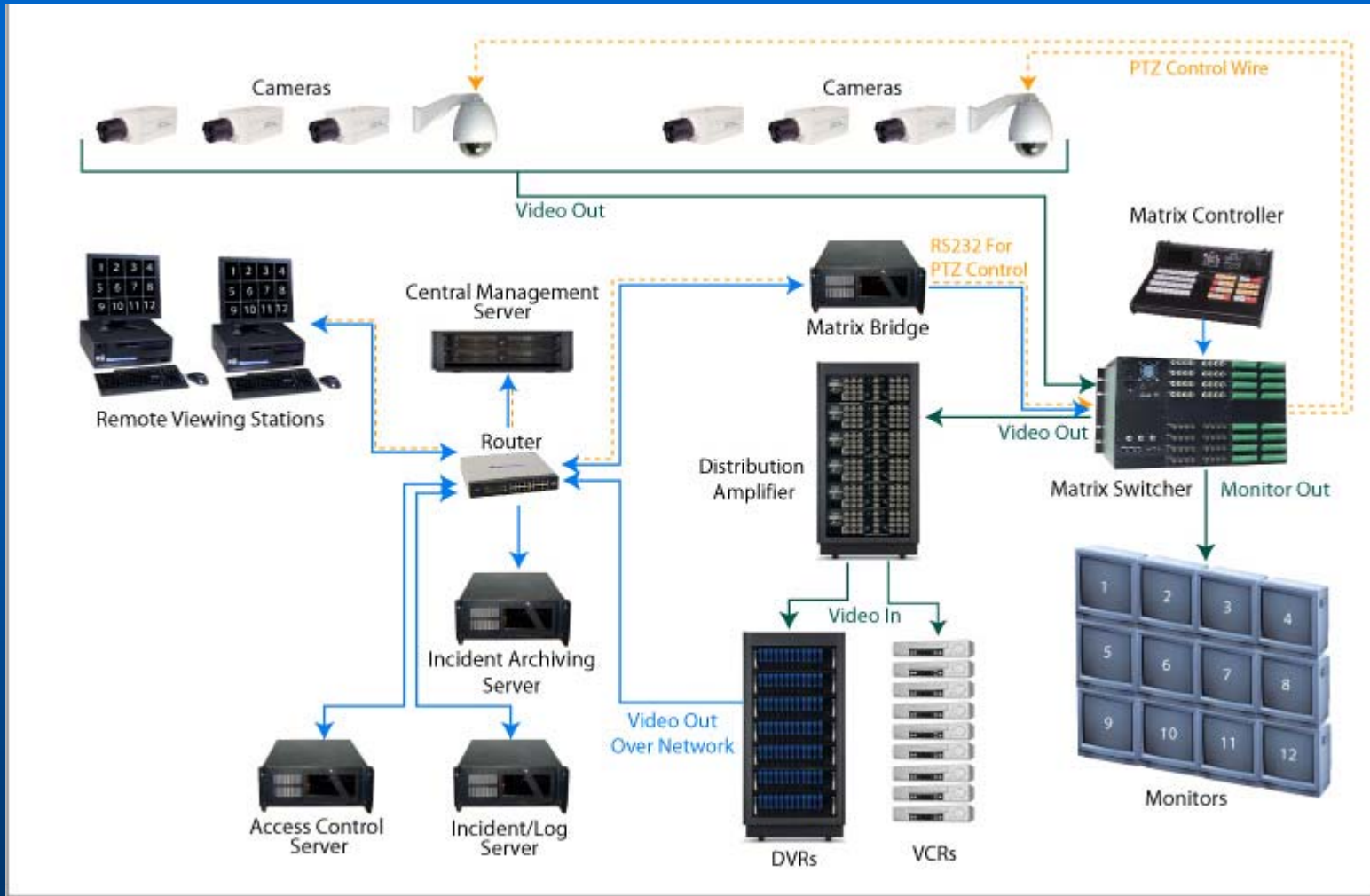
## Diagram 8 - Connect Incident Archiving Server To Gigabit Network



Evidence preservation is a very critical concern in any security application. The DVR's only usually store video for the limited period of time specified by the customer. As such, an external fault tolerant machine preserves the critical data such as incidents for indefinite periods of time. Copies can be burned to CD's, while the original is archived for future reference. The Incident Archiving Server is connected to the network so the video may easily transmitted and retrieved from the DVR, which contains the incident footage.

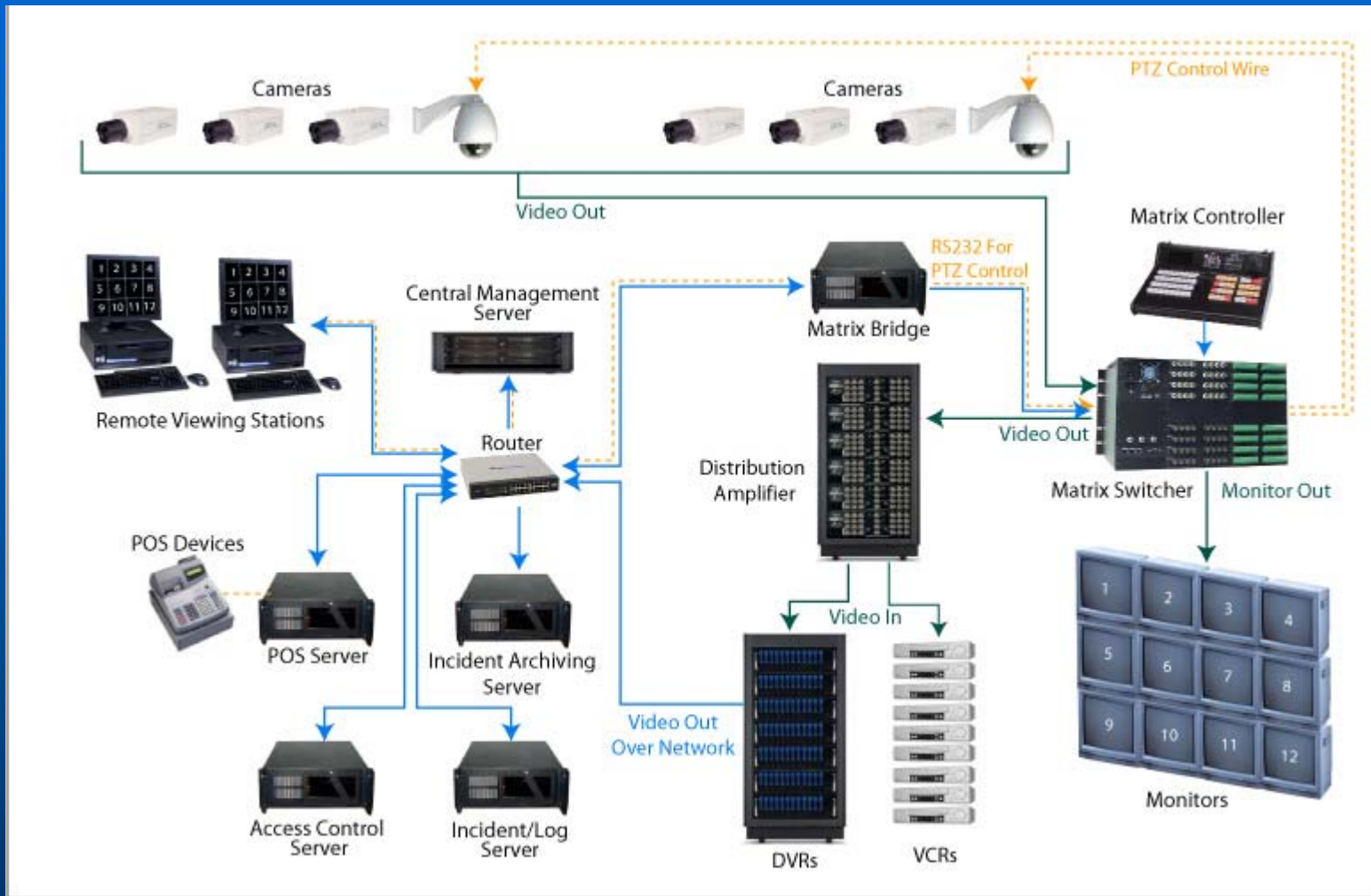


Diagram 10 - Connect Access Control Server to Gigabit Network



Aventura's enterprise video solutions can seamlessly accommodate many popular access control systems. The concept is to associate access control events with corresponding video via the DVR viewing workstation.

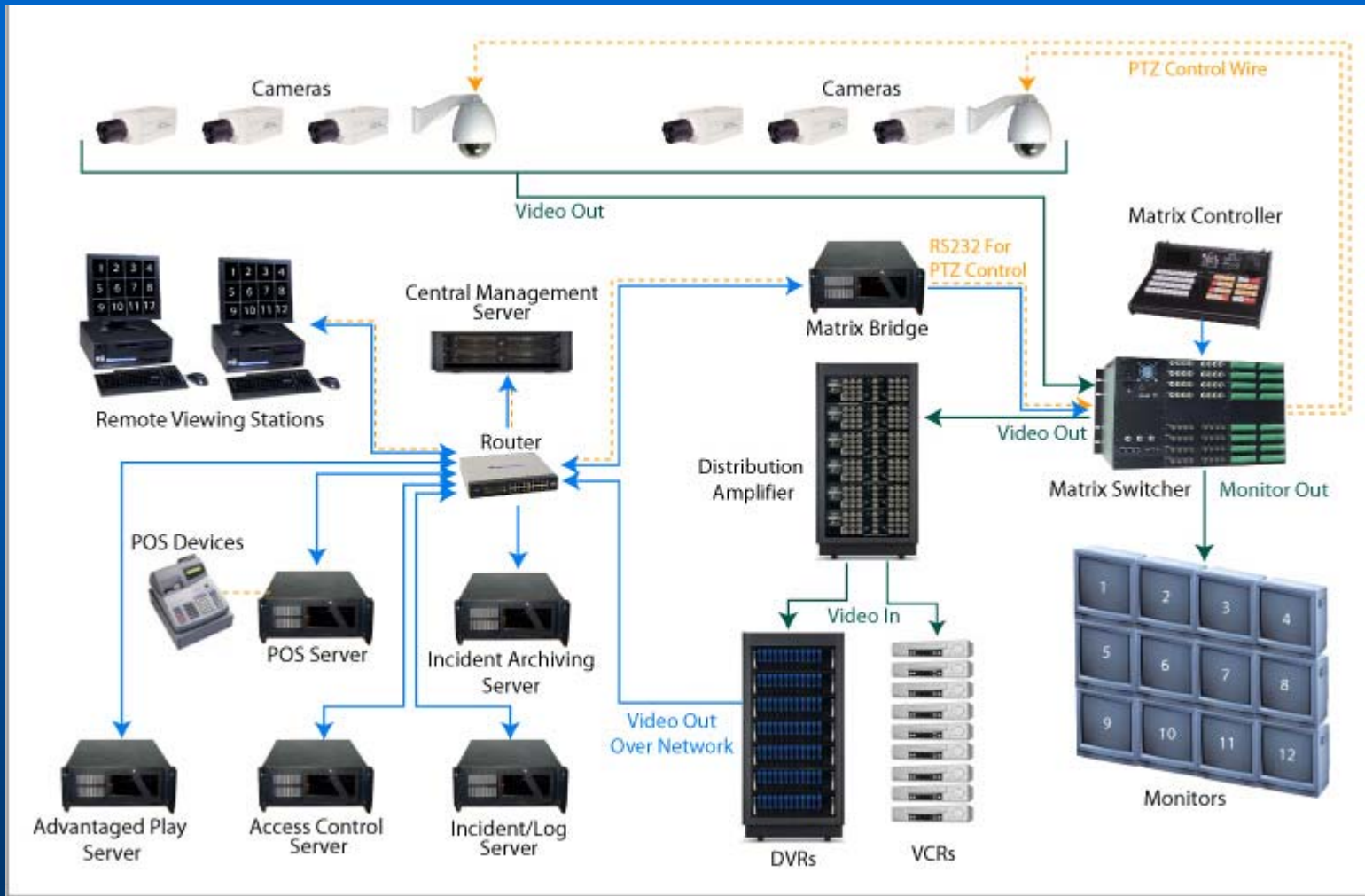
Diagram 11 - Connect POS Server to Gigabit Network



Aventura's enterprise video solutions can seamlessly accommodate many popular point-of-sale (POS) devices. The POS data is overlaid as text on the corresponding video stream. Advanced versions of the POS solution include being able to catalogue and search through POS data by user-defined criteria.

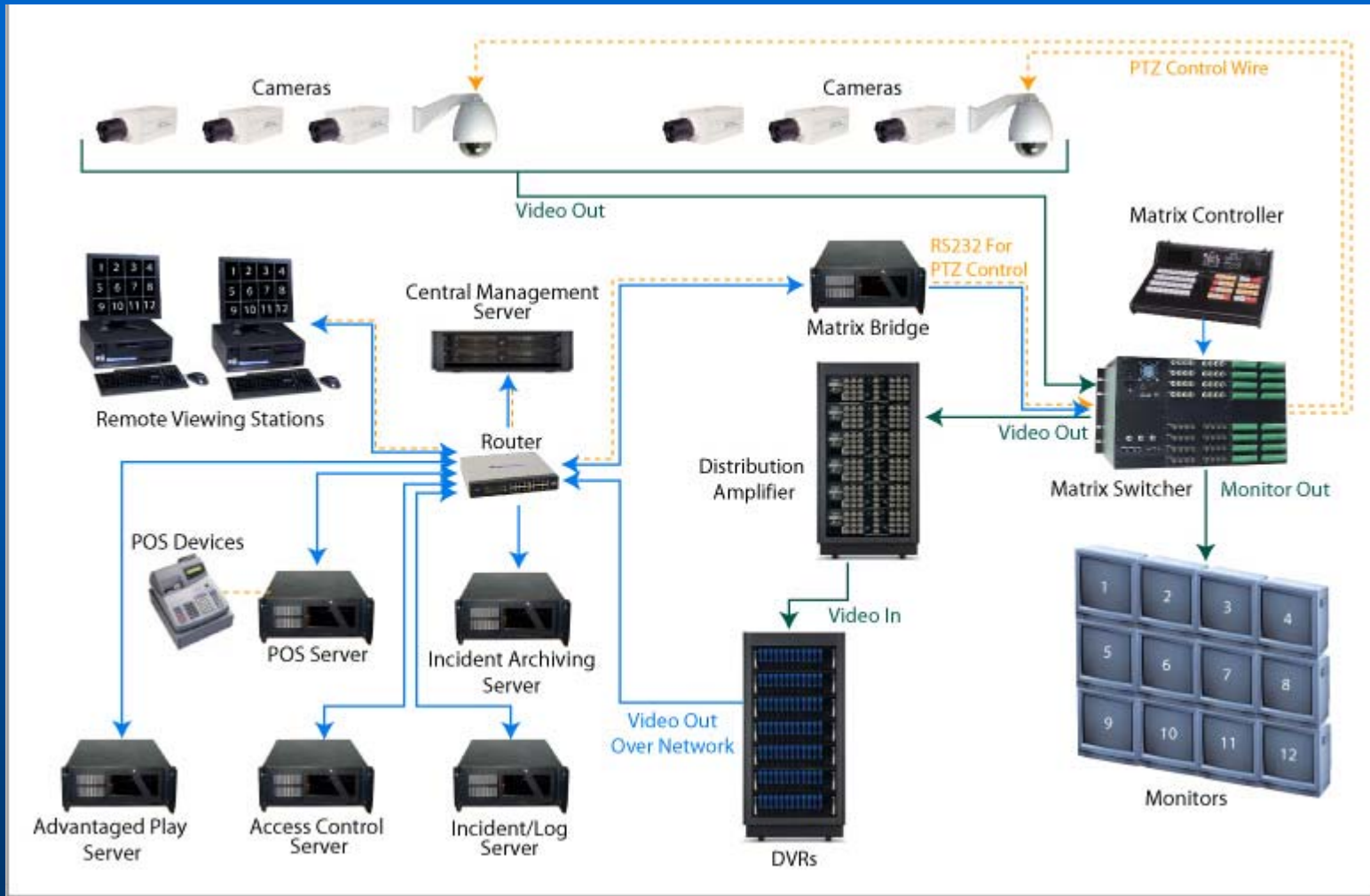


Diagram 12 - Connect Advantaged Play Server to Gigabit Network



Using the latest in imaging technology Aventura has created the industry's first real-time advantage play identification and monitoring solution. In real-time, the system can count cards and overlay text of the true count on the corresponding video. Alarms are established to notify operators when a shoe is "hot." The solution also monitors basic strategies, hole card play and missed payouts. The solution seamlessly integrates into the DVR system via the Gigabit Network.

Diagram 13 - Remove VCR's From The Racks



Once the system is up and running for a period of time, the VCR's may be removed without any interruption of the DVR system.