DVR INSTALLATION CHECKLIST

SDM's technology writer, Ron Nelson, outlines seven primary considerations technicians should have in order to provide their clients with a robust DVR installation.

By Ron Nelson, Contributing Technology Writer

Designing and installing digital video recording systems is much more complex than installing traditional VCR-based systems. This is due in large part to the greater flexibility and options that digital systems can offer. Many of these features are possible because digital recorders are built around a computer, either a typical desktop or custom-designed embedded processors. This additional flexibility requires that more time be spent in determining the needs of your client, both now and in the future, and in selecting the equipment. This checklist will assist you in designing and installing the most optimal DVR for your client.

1 SELECT CAMERAS.

As with traditional VCR installations the first step in designing a digital recording CCTV system is to determine the number of cameras that will be required and the type – color, black-and-white, day/night, and resolution/sensitivity. Once the number and type of cameras – plus their locations – have been decided, you have to determine what type of lens will be used – manual/auto-iris, focal length, sensitivity to light (F stop), and any PTZ functions.

After determining the number and type of cameras that will be needed for the installation, you should carefully consider any potential expansion requirements for the near future. This can be critical when using a DVR that has a fixed number of camera inputs. For example, if the system design incorporates 15 cameras and you select a 16-camera DVR, adding more than one camera will require that you either replace the DVR or install a second unit. This can become very costly and result in an unhappy customer. Typically network video recorders (NVRs) are not subject to this limitation.

2 SELECT CABLE TYPE.

Traditional coaxial cable is used for analog cameras and has distance limitations, typically 850 feet for RG-59U, 1,500 for RG-6, and 2,500 for RG-11.

Unshielded twisted pair (UTP) can be run more than one mile using special transmitters and receivers, although some camera manufacturers have camera models with built-in UTP transmitters.

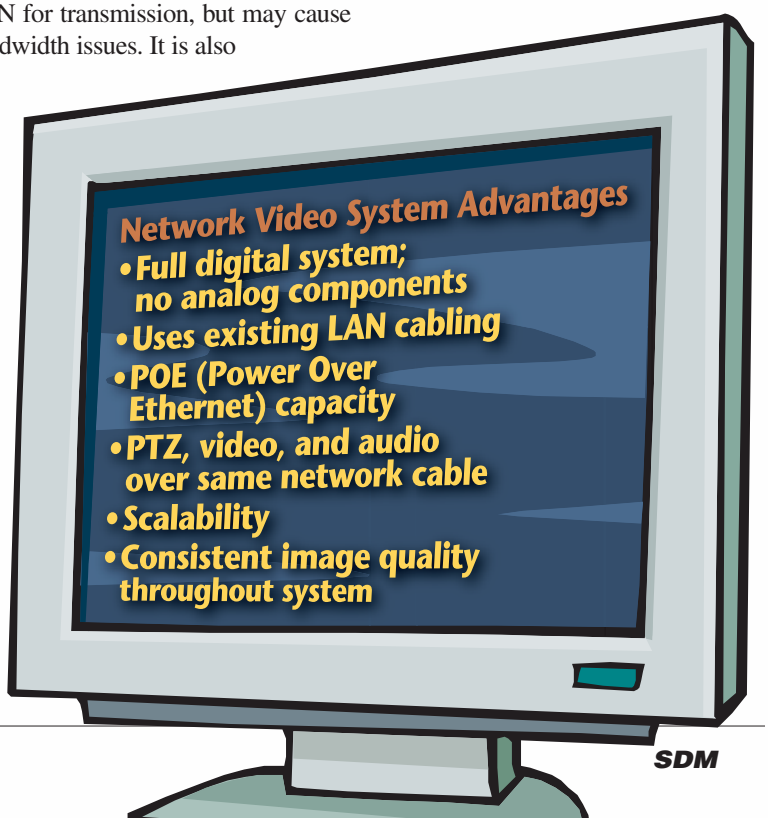
Network cameras require dedicated IP addresses and can use an existing LAN for transmission, but may cause bandwidth issues. It is also possible to connect analog cameras using a LAN by employing video servers (encoders and decoders), which convert the analog CCTV image to digital and then transmit the information over a LAN. Video servers are available in either single-camera or multiple-camera configurations.

Fiber-optic cable offers a high degree of immunity to interference and can transmit signals over very long distances, but does require transmitters and receivers.

RF transmission offers wireless connectivity, but has limitations due to the possibility of outside interference and is often limited to line-of-sight transmission.

3 CHOOSE DVR OR NVR.

DVRs are generally a good choice for small- to medium-sized installations or VCR system upgrades, while NVRs tend to be most suitable for large systems with a LAN. NVRs (network video recorders) offer the possibility of virtually unlimited cameras without the cost of running special cables.



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True network video systems offer many advantages over traditional analog cameras connected to a DVR, because they are fully digital using no analog components. Some of these advantages are the ability to use existing LAN cables with POE, (Power Over Ethernet), video, PTZ, and audio signals sent over the same cable; very high resolution with mega-pixel cameras; easy expansion/scalability; and the image quality is consistent throughout the system. They do, however, require significant bandwidth which may be a concern on slower networks.

SELECT STORAGE MEDIUM.

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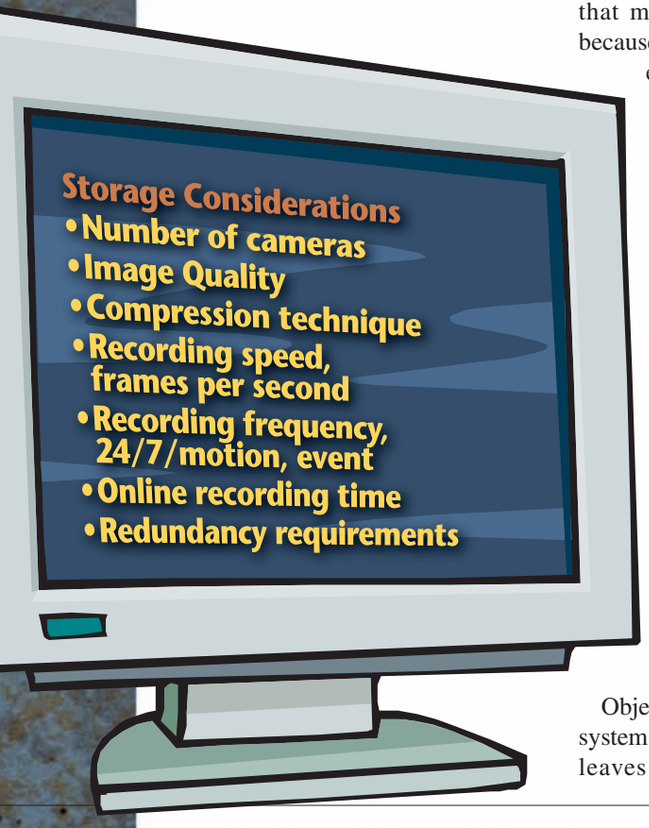
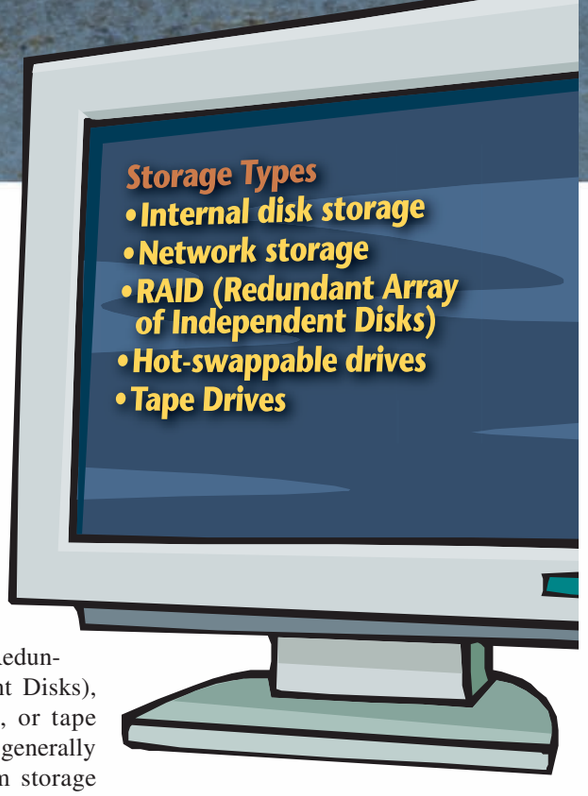
With VCRs the choice was basically whether to use a VHS or S-VHS tape. Digital recording opens up a whole new world of devices that can be used alone or combined to provide the desired online and offline archival storage time.



The size of the storage media depends upon the number of cameras, compression technique, image quality, frames per second, constant recording versus motion/alarm, and the desired storage time.

There are a number of options available for storage of digital video images. The basic types are on internal/external hard drives, hot swappable hard drives, RAID (Redundant Array of Independent Disks), network storage devices, or tape drives. CDs and DVDs are generally not suitable for long-term storage due to their limited storage capacity.

Remember that not all DVRs and NVRs support all of these storage technologies so you must exercise care when selecting the recorder type. To determine the size of your storage media you should use the calculator that most manufacturers provide, because the compression technique employed can dramatically affect the amount of space necessary to store video images.



CHOOSE SOFTWARE.

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In addition to network and internet remote viewing capabilities it is possible to have software that can use facial recognition or object tracking to enhance the security of the system. With facial recognition the system can be configured to alert the operator when a specific individual enters the scene or to search the stored images for identification of a specific person who has entered a given area. Object tracking software allows the system to alert an operator if someone leaves a package unattended or moves in a suspicious pattern. These powerful tools can greatly enhance the effectiveness of the operator monitoring the video surveillance system.

Another consideration is the installation of anti-virus software for traditional computer-based DVRs. Since these units may be connected to the outside world either through a LAN or the Internet, it is possible that they may be susceptible to viruses that affect standard computers. If you choose to incorporate anti-virus software, be aware that you also must set up a means to automatically or manually update the anti-virus software as new releases are made available by the manufacturer.

DETERMINE INPUT AND OUTPUT USAGE.

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Like traditional VCRs, digital systems may have a number of inputs that can be used to activate or change recording options and outputs to drive analog video monitors or connect to an existing security system to provide notification in the event of a system malfunction.

Some digital systems also offer automatic electronic notification of events and video e-mail. These messages can be sent to traditional e-mail addresses and, depending upon the manufacturer, even sent to wireless devices such as PDAs.

CONSIDER INTEGRATION POSSIBILITIES.

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The final consideration is what type of integration or remote access will be required. Some possibilities are LAN, Internet, dial-up communication, and interconnectivity to other systems such as access control. True software integration with access control systems, for example, can provide the user with displays of images either in real time or from history when an access event, such as "access granted/denied" or "door forced/held" occurs. Having virtually instant video images displayed on an operator's screen from the area that generated an event can be a great asset for the operator who is monitoring the system.

Connecting a DVR or an NVR to a customer's LAN will require a close working relationship with the IP manager to establish trust and to obtain the required network information such as static IP addresses. Many IT managers are very protective of their networks and may become concerned when an outside vendor wants to connect devices that will consume significant bandwidth. It is a good idea to have a meeting with the IP manager while you are designing the system so that you can fully explain the operation of the equipment and prevent any possible confrontations during the installation. ■

About the Author

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