Modular Digital Recording System
ENTERPRISE SURVEILLANCE FOR SENSITIVE ENVIRONMENTS
Synectics has over twenty years experience engineering, manufacturing and supporting enterprise security and surveillance systems for vital commercial and public spaces worldwide. To meet our customers’ ever-changing needs, Synectics has developed a wide range of analogue, digital and software products renowned for their reliability, flexibility and scalability. From city centers in the United Kingdom to oil refineries in the Mediterranean, container ships in Korea to bustling casinos in the US and Canada, Synectics’ security networks monitor, control, record, and integrate surveillance systems for some of the most secure and demanding sites on the planet.

The name “Synectics” reflects our non-proprietary development philosophy: “To blend diverse ideas, products and people together in order to creatively solve complex problems.” Utilizing our open interface to the best available technologies, we create “total” security solutions that are far more powerful than the sum of their otherwise isolated parts.

Like all Synectics products, our Modular Digital Recording System (MDRS) is designed for seamless integration, ease of use, ultra-reliable failover, superior picture quality, and outstanding value. In today’s world of intricate analogue, digital, multi-manufacturer, networked, hybrid solutions, the people that design and support your security system are just as important as the products themselves. From top to bottom, Synectics is made up of enthusiastic professionals with a common-sense approach toward technology and a genuine desire to help.

Efficiently recording, reviewing, and storing video is the cornerstone of integrated surveillance solutions. Synectics MDRS has the proven track record, robust feature set, and global service and support to protect both your sensitive areas and security investment.

Making Security Work Together
Synectics Modular Digital Recording System (MDRS)

Synectics’ MDRS is designed with scalability, flexibility and reliability in mind. The modular recording system supports one to thousands of analogue and/or IP cameras. It is designed to encode, stream and play back real-time, full frame (4CIF) MPEG2 or H.264 (MPEG4-10) motion-picture quality video to any number of operator review clients, and store video images for days, weeks or even months on redundant enterprise servers. Recording can be centralized across a LAN or distributed over a WAN, and function in a fully digital or hybrid analogue/digitally controlled CCTV environment. MDRS is also engineered with a practical IT infrastructure that simplifies user maintenance, with multiple layers of failover to eliminate single points of catastrophic failure. See the core MDRS components and relationships below:
Encoding

Synectics’ 8-channel and single channel video/audio encoders offer the most efficient, flexible and high quality analogue-to-digital image encoding available.

MDRS e8000 Encoder

Synectics e8000 1U modular encoder is the technological heart of the MDRS solution. The e8000 simultaneously encodes up to eight (8) independent channels of synchronized analogue video and audio, each at up to 30FPS NTSC (25FPS PAL) at full D1, 4CIF (720 X 480) resolution. Configurable for either broadcast quality MPEG2 or H.264 compression, the e8000 delivers stunning picture clarity with minimum data rates and storage. Operators can manually, or with automated event macros, adjust data rate, frame rate, and motion parameters to optimize image quality for high priority shots and/or minimize storage for less important areas or time periods.

The e8000 is engineered with end users in mind. Each of its encoder chips are mounted on individual, plug-and-play modular boards for fast, easy repairs and upgrades. The unit includes eight pass-through analogue outputs that eliminate MDAs and help facilitate a seamless transition from analogue to digital. Should an encoder fail, its colored power light is programmed to blink, helping your technicians quickly identify the faulty device.

Furthermore, non-IT-savvy techs will appreciate the ability to set encoder IP address by simply turning hex wheel dials on the e8000 back panel.

Capturing the best quality video, retaining it for required periods, and working within constricted budgets can be elusive objectives when selecting your recording solution. Synectics’ patented Time Lapse Later™ (TLL) technology can help. TLL presumes that video evidence is less likely to be reviewed as time passes. When a notable event occurs, a robbery for example, it is highly likely that you will know about and review it during the first 24 to 48 hours. With each additional day that passes, it becomes less likely that key recorded data will be retrieved for the first time. Therefore, TLL minimizes storage costs by making the highest quality (and most costly) video available when you are likely to need it most. TLL records real time (4CIF, 30FPS) for any period that meets your regulations and/or typical discovery cycle: for instance, one week. Thereafter, TLL automatically converts the 30FPS video to 10FPS and retains the smaller video file for extended periods. Later, TLL can condense again from 10FPS to 1FPS to save up to 70% of the original required storage. In summary, with TLL, real-time video is available for critical review periods and, at a fraction of the cost, reduced frame rate video can be retained for extended periods.

The e8000 connects directly to an MDRS Primary Storage Node (Ethernet to NIC), which insures that recording continues even if the video network fails. By eliminating colossal single points of failure, MDRS is the ideal solution for critical commercial, government and public surveillance applications.

Features:

- Broadcast-quality H.264 and MPEG2 Video
- Eight (8) Synchronized Audio/Video Channels
- 30FPS (25FPS PAL), D1-4CIF on Every Channel
- Eight (8) Looping Analogue Outputs
- RS485 Data Outs and Alarm Inputs
- 100Mbps Network Connectivity
e100 Edge Encoder

The compact e100 offers the same real time, broadcast-quality H.264, analogue-to-digital encoding power as the e8000, but is available in a low cost, single-channel form factor. Analogue camera streams can be locally converted to ultra-clear digital video and synchronized audio and then efficiently transmitted across any IP network for storage on a Network Video Recorder (NVR). Simple to use and install, the e100 extends the functionality and interoperability of a distributed IP surveillance and management system.

Its tiny size can be deceiving. In fact, the e100 is extremely powerful, flexible, and feature rich. From a single video source, the e100 produces dual digital streams to record and view at different data rates, saving valuable storage and bandwidth. This feature is invaluable when monitoring video across narrow data channels such as 802.11 or 3g wireless links. Each multicast or unicast stream supports video rates of 1 – 30FPS, with resolution up to D1, 4CIF (720 x 480), and data rates from 128K to 6Mbps with exceptionally low latency. The video carries a unique authentication code (for evidentiary purposes) to insure that your data has not been altered. Combine that with options like MicroSD and FlashRAID storage and an onboard analytics processor for object tracking, behavior recognition, etc. and you have an extraordinary surveillance value.

Features

- 1-channel, dual streaming H.264 Encoder
- 1-30FPS NTSC, 25FPS PAL
- Full frame, D1 4CIF resolution (720 X 480)
- Synchronized Advanced Audio Coding (ACC)
- Fast Ethernet 10/100 interface
- Unicast or multicast streaming
- Local storage for critical recording
- MicroSD card with FlashRAID™
- Video Motion Detection
- Alarm inputs and relay out
- USB and Serial Data port
- Authenticated audio/video at source
- Power over Ethernet (PoE) compliant
- Optional video analytics processor
Storage

MDRS digital video and audio are stored on Synectics’ Primary Storage Nodes, or PSNs. Available in 1U – 4-Drive (MicroSeries) or 2U – 12-Drive (ProSeries) configurations, Synectics’ enterprise video servers can simultaneously record and playback dozens of digitally encoded camera streams with 24/7/365 reliability.

ProSeries PSN
Built to perform under the most demanding recording requirements, Synectics’ ProSeries PSNs are engineered with server-rated components, up to twelve (12) hot-swap enterprise-class disk drives, and dual (2) redundant power supplies for maximum fail-over security and uptime. Storage arrays can be configured in RAID5 or RAID6, which insures data integrity and uninterrupted recording with up to two simultaneous drive failures. An optional Quad-NIC can also be specified for failover network connectivity. ProSeries PSN features include:

- Up to 12TB of video storage
- (12) Hot swap hard disk drives
- RAID5 or optional RAID6 protection
- Dual hot swap power supply units
- Optional quad-NIC for IP failover
- MD5 128 bit video authentication
- Enterprise-class server components
- Time Lapse Later™ compatible
- 19” rack mountable
- Efficient 2 RU form factor

MicroSeries PSN
For space and price-sensitive applications, the MicroSeries PSN offers unparalleled performance value. With up to 3TB of (net) RAID5 storage in a 1RU chassis, Synectics’ MicroSeries PSN provides a powerful, reliable, and scalable storage solution in an ultra-efficient chassis. MicroSeries PSN features include:

- Up to 4TB of video storage
- (4) Hot swap hard disk drives
- RAID5 storage array protection
- MD5 128 bit video authentication
- Enterprise-class server components
- Time Lapse Later™ compatible
- 19” rack mountable
- Efficient 1 RU form factor
Time Lapse Later

Each MDRS channel can be custom configured to record at a specified frame rate, image quality and retention period. This flexible per-channel configuration is unique to Synectics’ patented Time Lapse Later™ technology. Often, operators are forced to implement time-lapse recording (15 or 7.5 instead of 30FPS, for example) that compromises image quality to reduce DVR storage cost. These DVR savings are realized by sacrificing picture resolution, frame rates, retention periods, and/or full time recording in favor of motion-based recording. For critical environments, these cost cutting approaches can defeat the primary purpose of a professional surveillance system. That is, by reducing recording time and quality, operators end up with inadequate video for detection, identification and prosecution.

Therefore, rather than compromising video quality on all recorded data to save costs, Time Lapse Later™ (TLL) reduces frame rates on older video only. Since criminal activities are typically discovered in the first few days, TLL is designed to present 30FPS video during the critical “early” review period and then automatically reduce the video to 10FPS after day 3 or 4 (user definable). In other words, rather than settling for 10FPS for all seven days, TLL can deliver top quality 30FPS video for three days (when you are likely to need quality most) and 10FPS thereafter (when it is less likely to be used). Operators can define a recording plan that matches risk profiles of each camera, based on events or time, rather than compromising with a lowest common denominator strategy that gives you inferior video on every camera from day one.

Incident Management

The Synergy review environment allows operators to quickly and seamlessly gather video footage from multiple cameras and assign it to a new or existing “Incident.” Incident management is a standard, integrated feature of the SynergyPro™ software system that allows “auto tagging” of live or pre-recorded video footage, along with associated operator notes. Dubbed video footage and user comments can be copied to a separate server for long term storage and future reviews. Later, additional video clips, photos, supervisor notes, etc. can be added to existing incidents to build ongoing, comprehensive, historical case files.

Recorded events that operators want to retain for long term legal, insurance, criminal, and other evidentiary purposes are copied from PSNs to an Incident Locker. These robust servers act as central, secure storage cabinets for incident and evidence management. Video clips, snapshots, maps, user notes, and a vital chain of custody information is stored in a fully redundant RAID6 server and/or archived to LTO tape, DVD, CD, or USB portable drives to suit all storage and prosecution scenarios. Access is restricted by passwords so evidence can be tightly controlled by user or department. Dubbed video clips are linked with user-definable incidents that operators can search through by date, creator, incident type, perpetrator description, etc.

When used in conjunction with Synergy, the incident system produces auditable activity logs that track operator access, data added or removed, CDs burned, etc. Additionally, a unique 128-bit MD5 hashing authentication code is automatically created with every minute of video to insure incident video is original and unchanged. When incidents are burned to portable media, video can be played back on standard home DVD players or common Windows PCs without proprietary hardware or software.
Review Environment
SynergyPro™, Synectics’ award-winning video review software, gives operators instantaneous access to both live and recorded video from an unlimited number of local or remote cameras, a unified platform to control both analogue and digital CCTV environments, and the ability to integrate and present alarms from third-party POS, access control, fire and other control systems in an intuitive, map-based user interface. Common user functions are streamlined and automated, so operators can quickly access relevant information and respond immediately and accurately to critical situations. As you can see below, large “action” buttons (designed for optional touch screen operation) perform standard playback functions and ‘direct select’ menus make for a logical, practical, and uncluttered layout.

Much more than a simple DVR playback GUI, SynergyPro™ dramatically enhances your recording solution capabilities:

- Centralized evidence and incident management, database tracking, and customized reporting
- Standard map-based navigation with drag & drop icons for cameras, doors, alarms, etc.
- Automated “hot swap” failover protection with intelligent camera prioritization and seamless video retrieval
- Maximum security and control with user/group profiles that limit access to every feature in the system
- Instant video retrieval based on events from third-party Point of Sale & access control systems
- Reduced training and support with “touch & go” ultra-intuitive graphical user interface
- Control matrices, PTZs, and DVRs with a unified keyboard, navigator and touch screen interface
Cross view presents four cameras that geographically surround a main subject camera. Select an outlying camera and the associated cameras automatically appear around the new subject camera.

Select a time range that an object appeared or left a scene. Investigation mode divides the period into 16 equal intervals with before/after snapshots. Operators quickly narrow their search by clicking the image prior to the snapshot with desired footage. Smart & fast!

Instantly retrieve and review video within Synergy based on integrated Micros or Infogenesis POS transaction data. Search by register, transaction type, amount, operator, etc.

Normal, single camera view with touch screen, keyboard and joystick controls.

Independent or synchronized quad-view. Digitally zoom to any quadrant with single keystroke when using quads.

Independent or synchronized 5+1 view supports pentaplex operation for simultaneous record, playback, live, export, and copy from every camera.

Full screen view transforms the review client into a live/playback “spot” monitor.
Integration

Synectics MDRS with SynergyPro™ protects your capital investment by integrating and incorporating the analogue products of yesterday with the digital technology of today and the future.

Synectics’ device-agnostic command and control hardware and software solution links to industry leading analogue matrices, PTZ cameras, digital video recorders, point of sale, access control, fire, building management, telephony, and an ever-expanding list of third-party systems. Operator functionality can be fully IP-based with LCD review stations or a seamless blend of analogue and digital environments. Either way, observers can control analogue PTZs and video walls, monitor any type of alarm, and retrieve recorded video based on events generated from key CCTV and security systems, all from a unified, map-based, touch screen user interface.

By quickly and efficiently linking important alarms and data events to video, Synectics recorded video becomes much more accessible, valuable and useful.