



**Boundless Security Systems, Inc.**  
*sharper images with better access and easier installation*



## **A Fault-Tolerant, Survivable, Digital Video Surveillance System with Ultra Low Network Traffic and Long Storage Duration for Banks**

*Designed for the utmost image quality, reliability, survivability and accessibility  
because things go wrong at the worst possible times*



A deadly situation to avoid

Dec. 5, 2005

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## **Executive Summary**

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### **DVR-based Systems**

- **Often blurry recorded images**
- **Proprietary hardware has support problems**
- **Subject to single-point failures**
- **Limited storage capacity**
- **One video stream per camera gives limited investigation and monitoring capabilities**
- **Requires analog system for live viewing**
- **Network & Cyber security problems**
- **Requires external control of access control**



**cropped, highly magnified, blurry recorded image from other systems**



**cropped, magnified sharper recorded image from Boundless Security System**

### **Boundless Security System™**

- **Sharper recorded images**
- **Fault-tolerant + redundant = reliable**
- **Non-proprietary hardware throughout**
- **Low, video-on-demand, network bandwidth of DVR's with installation & scalability benefits of IP-based systems**
- **Seamless storage to 1 PB per network**
- **Multiple different digital video streams per camera simultaneously satisfy competing needs for image quality, storage, communications and display for investigations, monitoring and emergency response / first-responders**
- **Combined *virtual matrix switch*, and *virtual video processor* at each display device, enable viewing up to 96 live and recorded video streams at once on each PC/TV monitor, independent of all others**
- **Layered network- and Cyber-security**
- **Autonomous access control**

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## **Boundless' Corporate Profile**

- **Principals' extensive systems-level expertise**
  - Video security industry
  - Video digital signal processing
  - Mission-critical systems
  - Construction & telemetry of USAF communications spacecraft
  - Large-scale, central office telephone switching systems
  - Analyze and understand basic underlying principles in depth
- **Steve Morton, CEO, known for a child-safety device that uses biometrics and digital imaging**
- **Believes that device failures are a fact of life, and core system architecture should fix them**
- **Founded in Fairfield County, CT, 75 miles from NYC, in response to 9-11-01 terrorist attacks**

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## **Boundless' Broad Expertise Complements Its Systems Integrators'**

- |                                    |                                  |
|------------------------------------|----------------------------------|
| • <b>Biometrics</b>                | • <b>Internet Protocols (IP)</b> |
| • <b>Communications</b>            | • <b>LAN, WAN</b>                |
| • <b>Cyber Security</b>            | • <b>Mass-Storage</b>            |
| • <b>Design for Test</b>           | • <b>Optics</b>                  |
| • <b>Digital Signal Processors</b> | • <b>Parallel Processing</b>     |
| • <b>Hardware Design</b>           | • <b>Reliability</b>             |
| • <b>Human Factors</b>             | • <b>Software Design</b>         |
| • <b>Image Processing</b>          | • <b>Software Tools</b>          |
| • <b>Image Processor Chips</b>     | • <b>System Architecture</b>     |
| • <b>Image Sensors</b>             | • <b>Video Compression</b>       |

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## Boundless Security System™

### Has Many Uses in Banks

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Lobby, tellers and vault



Drive-up windows



Perimeters  
(LAN WiFi wireless)



Cash and check carriers  
(WAN wireless)



ATM's



Enable secure local  
Internet access to video  
for emergency response

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## Boundless Security System™

### Provides Better Recorded Images

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- Multiple different digital video streams per camera simultaneously, optimize use of live and recorded video for...
  - *investigations*<sup>†</sup> - full camera resolution, maximum clarity, 5 fps/camera (high data rate)
  - *monitoring*<sup>†</sup> - low and medium resolutions, medium clarity, 10 to 30 fps/camera (medium data rate)
  - *situation assessment*<sup>†</sup> - low resolution, 5 to 10 fps/camera (low data rate)
- Records all video all the time using efficient MPEG-4 without need to gate recording using motion detection, so no events are missed

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## **Boundless Security System™** <sup>7</sup> **Provides Superior Reliability**

- Fully distributed, edge-controlled, IP-based architecture and Boundless' **Storage Operating System™** avoid single-point system failures
- Flawless recording despite transient network and server overloads, and network-throttling
- Fault-tolerance and redundancy compensate in seconds for hard network and server failures
- **Physical Diversity Recording™** stores different streams from each camera in different locations for safety, to engineer network traffic, and to implement multiple network security zones

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## **Boundless Security System™** <sup>8</sup> **Provides Virtually Unlimited Storage**

- **Boundless' Storage Operating System™:**
  - avoids storage limits of any single disk partition, disk or storage server
  - provides virtually unlimited (to 1 petabyte) online disk storage via its expansion-on-the-fly architecture
  - provides **Physical Diversity Recording™**, storing different video streams from each camera in different physical locations on a network, *if desired*, for safety and to engineer network traffic and security
  - provides seamless, software-based, **storage virtualization** so that storage details are invisible to users
  - provides different storage retention policies for each stream for each camera for economy of storage and to facilitate different levels of access to the video

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## **Boundless Security System™** <sup>9</sup>

### **Improves Local and Remote Access**

		
Live and recorded audio / video at police stations	Live video on PDA or Cell Phone for first-responders	Live audio / video in police cars (WAN wireless)
		
Live video throughout facilities via LAN	Live and recorded audio / video / event data at headquarters and monitoring companies	

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## **Boundless Security System™** <sup>10</sup>

### **Provides Superior Video Access**

- **Virtual digital video matrix switch enables all users to view all live and recorded video streams**
- **Virtual video processor for each display device reduces display cpu needs for viewing...**
  - **investigations at 5 fps/camera**
  - **monitoring at 30 fps/camera with low latency**
  - **emergency response at 10 fps/camera over slow and congested, wired and wireless WAN links**
- **TiVo-like pause/step/play control of live video by every user to review incidents in progress**
- **Display dozens of video streams simultaneously on each HDTV monitor at full 1080i resolution**

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**Boundless Security System™** <sup>11</sup>

**Satisfies Diverse Video Imaging Needs**

- **Simultaneously and efficiently meets diverse live and recorded video imaging needs for:**
  - **investigations**, video with sharpest images is typically stored for long periods of time (3 months or more)
  - **monitoring and public awareness** using live video monitoring streams; bank HQ, branch and monitoring personnel can see trouble spots; video is typically stored for short periods of time (days) for economy
  - **emergency response by law enforcement** using PDA or cell phone for video streams via Cyber-secure Internet connection

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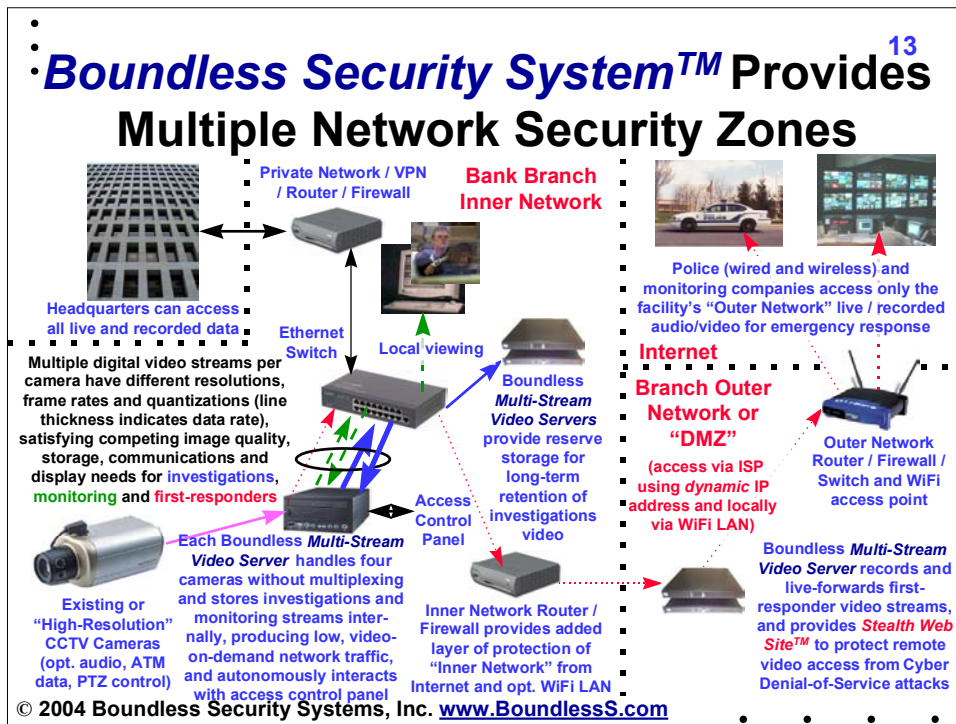
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**Boundless Security System™** <sup>12</sup>

**is Network-Friendly**

- **Provides low, video-on-demand network-bandwidth of DVR's with superior connectivity, access, expansion, reliability and ease of installation of IP-based systems**
- **Boundless' Multi-Stream Video Server provides multiple IP-video streams per camera, all of which can be stored internally, creating **NO** network traffic except when live/recorded video is accessed via the network**
- **Multiple streams/camera enable streams with lowest data rates to be used most of the time**

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- ## Boundless Security System™ Has Layered, Network and Cyber Security
- Boundless' *Physical Diversity Recording™* stores different video streams from a given camera in different servers in different locations on a network, enabling multiple network security zones to be implemented to increase security
  - Boundless' *Stealth Web Site™* technology protects the Boundless Security System™ from Cyber Denial-of-Service attacks and enables an inexpensive, safe connection to the Internet via an Internet Service Provider using a dynamic (not a static) IP address
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## ***Boundless Security System™***

### **is Easy to Build, Install and Maintain**

- **Non-proprietary hardware throughout avoids sole-source supply and maintenance problems, and provides many housings for versatility**
- **Connect to existing CCTV cameras and video cables to easily retrofit existing systems**
- **Takes advantage of congested Wi-Fi network segments and throttled network segments to simplify installation in large facilities & outdoors**
- **Drastically reduces cabling and installation cost when Boundless' *Multi-Stream Video Server* is located near cameras and access control panels**

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## **Conclusion**

**The *Boundless Security System™*...**

- **is designed as a *system*, not a component, and based on the premise that things go wrong at the worst possible time**
- **provides fault-tolerant, survivable, enterprise-class operation**
- **records better images and provides long-term storage of investigations video without storage limits of other systems**
- **uses non-proprietary hardware throughout, avoiding sole-source supply, expansion and maintenance problems**
- **combines low, video-on-demand network bandwidth of digital video recorders with superior connectivity, access, expansion, reliability and ease of installation of IP-based systems**
- **satisfies competing imaging needs for investigations, monitoring and situation assessment / first-responders**
- **provides Cyber-secure remote access to audio/video/events**
- **easily retrofits existing CCTV cameras and display systems**

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Surveillance System with Ultra Low Network  
Traffic and Long Storage Duration for Banks**

*Designed for the utmost image quality, reliability, survivability and accessibility  
because things go wrong at the worst possible times*

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Specifications are subject to change without notice.  
Some system features may be optional.  
Audio according to local statutes.*

*The End*

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