

Secure Video Surveillance System (SVSS)

Installation Presentation ABACC

**Mark Pinkalla
Pete Humphreys
Sandia National Laboratories**

Sandia is a multiprogram laboratory operated by Sandia Corporation, a Lockheed Martin Company,
for the United States Department of Energy's National Nuclear Security Administration
under contract DE-AC04-94AL85000.



Objectives

- **Describe the SVSS User Interface**
- **In-depth Software Architecture**
- **Discovered Issues**

Secure Video Surveillance System (SVSS) User Interface – Home Screen

SVSS Main - Windows Internet Explorer

http://172.19.251.6/SVSS/index.html

File Edit View Favorites Tools Help

SVSS Main

SVSS

Home Surveillance Alarm Video Video Log Alert Log System Status Video Clean-up

Secure Video Surveillance System

Select system functions by clicking on the buttons at the top of the page.

Home	Return to this page
Surveillance	Request inspection video
Alarm Video	Review video from system alarms
Video Log	Review system log entries related to surveillance video
Alert Log	Review system log entries related to alarms
System Status	Display system status information
Video Clean-up	Delete inspection and alarm video files

Copyright

[Camera 1 Live Feed](#)
[Camera 2 Live Feed](#)

Video Capture Active

This is the home page where the Inspector will start. From the buttons on the top of the page, all system functions are accessible.

Toward the bottom of the page, links are available to access live feeds from the cameras.

Secure Video Surveillance System (SVSS) User Interface

To begin an inspection, the Surveillance button is clicked from the Home Page. The Surveillance page is then displayed.

The screenshot displays the SVSS web application interface. At the top, a navigation bar contains buttons for Home, Surveillance, Alarm Video, Video Log, Alert Log, System Status, and Video Clean-up. The Surveillance button is circled in red. Below the navigation bar, the page title "Surveillance" is displayed. Underneath, there are two buttons: "Stop Video Capture" (circled in red) and "Start Video Capture". A message below these buttons reads: "Please stop video capture to enable creation of surveillance video." At the bottom of the page, the status "Video Capture Active" is shown. A callout box points to the "Stop Video Capture" button with the text: "The inspector will click the Stop Video Capture button to halt the collection of images from the camera ftp process."

Secure Video Surveillance System (SVSS)

User Interface – Begin inspection

Once the Stop Video Capture button has been clicked, the Inspector can enter a time no greater than 3 hours prior to the current time in the Enter Start Time box.

The screenshot displays the SVSS web application interface. At the top, a navigation bar includes links for Home, Surveillance (highlighted with a red circle), Alarm Video, Video Log, Alert Log, System Status, and Video Clean-up. Below this, the 'Surveillance' section contains two buttons: 'Stop Video Capture' and 'Start Video Capture'. Further down, there are input fields for 'Enter Start Time' (with a '(HH:MM)' format hint) and 'Enter Duration' (set to '120' with a '(minutes)' format hint), followed by a 'Set Start Time' button. A red horizontal bar at the bottom of the interface displays the text 'Stopping Video Capture'. The browser window title is 'SVSS' and the address bar shows 'Live Search'.

The Enter Duration box defaults to 120 minutes but a value ≤ 120 minutes can be entered by the Inspector.

Notice the red stripe, it will stay displayed as long as the ftp process is off.

Secure Video Surveillance System (SVSS)

User Interface – Inspection Time

SVSS Main - Windows Internet Explorer

http://172.19.251.6/SVSS/index.html

File Edit View Favorites Tools Help

SVSS Main

SVSS

Home **Surveillance** Alarm Video Video Log Alert Log System Status Video Clean-up

Surveillance

Stop Video Capture

Start Video Capture

Inspection video duration: 120 minutes

Enter Start Time 20:00 (HHMM)

Enter Duration 120 (minutes)

Set Start Time

Create Video file

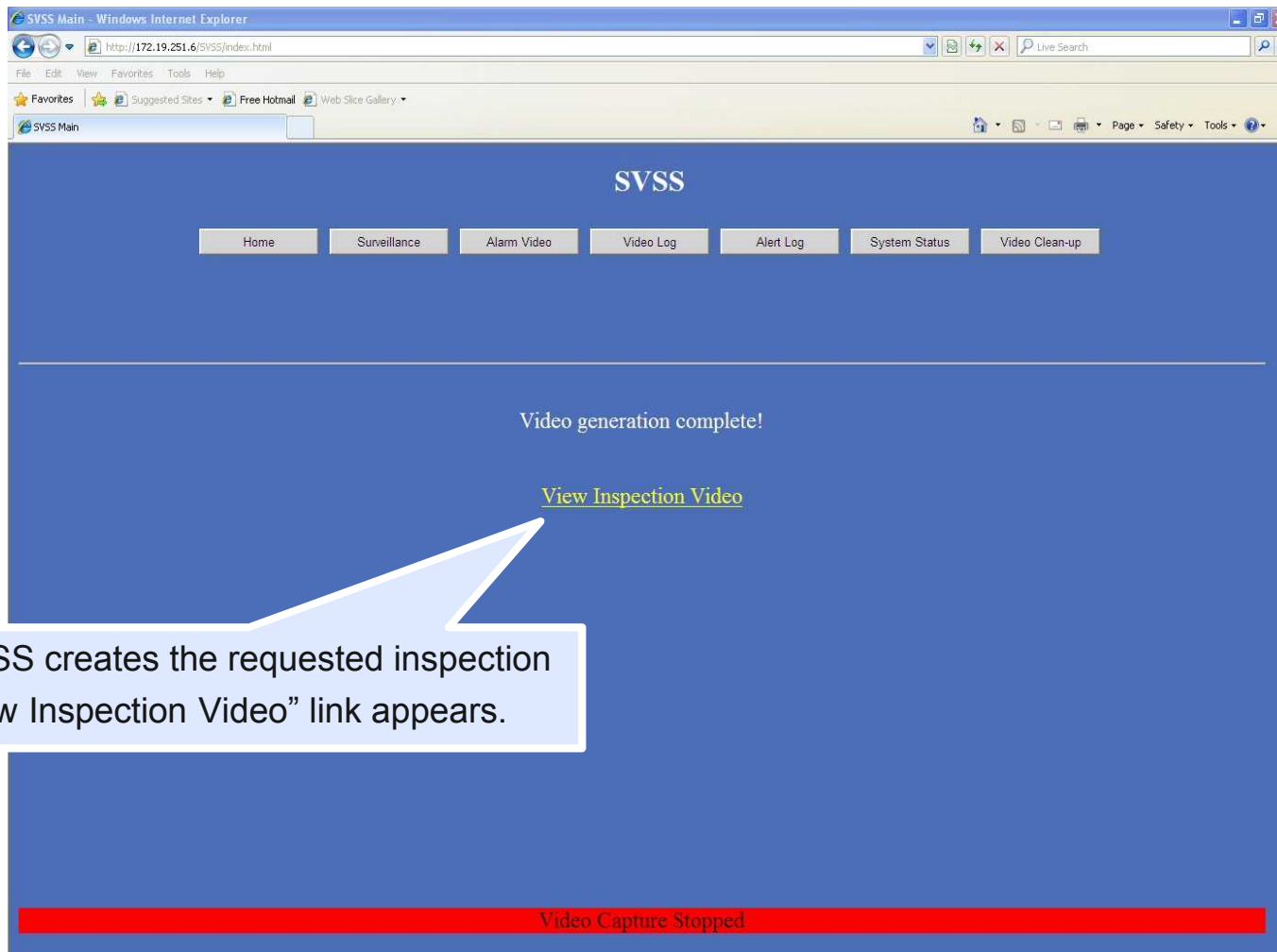
When the Start Time is correct, select the "Create Video file" button.

Once the Set Start time button has been clicked, the program verifies the entered time does not exceed the 120 minute max video length in the 3 hour viewable window rule.

When the rule is satisfied, the Create Video file button will appear. By clicking the Create Video file button, the video creation process begins.

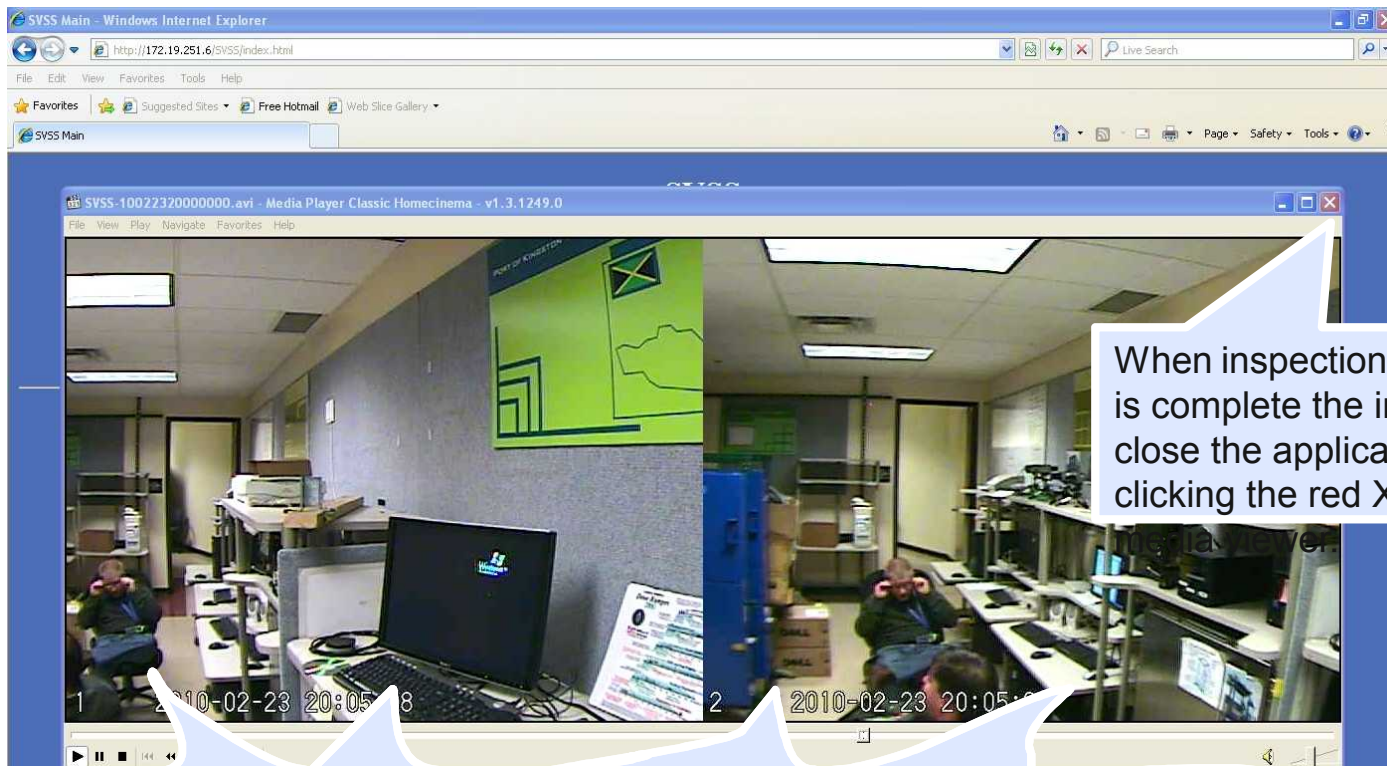
Video Capture Stopped

Secure Video Surveillance System (SVSS) User Interface – Video Creation



After the SVSS creates the requested inspection video, a "View Inspection Video" link appears.

Secure Video Surveillance System (SVSS) User Interface – Video Display



When inspection video review is complete the inspector will close the application by clicking the red X on the

Once the video link is double clicked, the media viewer application automatically launches and displays the Inspector video. The media viewer allows the Inspector to step through each frame or fast forward to the time of interest. SVSS combines the images from both cameras for simultaneous viewing of video time synced together. Each image will have a time stamp from the camera as well as number identifying the camera.

Secure Video Surveillance System (SVSS)

User Interface – Inspection Completed

After the Inspector closes the media viewer, the Surveillance button is clicked again to display the Surveillance page.

The screenshot displays the SVSS web application interface. At the top, a navigation bar contains buttons for Home, Surveillance (highlighted with a red circle), Alarm Video, Video Log, Alert Log, System Status, and Video Clean-up. Below this, the main content area is titled "Surveillance" and contains two buttons: "Stop Video Capture" and "Start Video Capture". A message below these buttons reads: "Please stop video capture to enable creation of surveillance video." At the bottom of the interface, a green status bar displays the text "Starting Video Capture".

SVSS

Home Surveillance Alarm Video Video Log Alert Log System Status Video Clean-up

Surveillance

Stop Video Capture

Start Video Capture

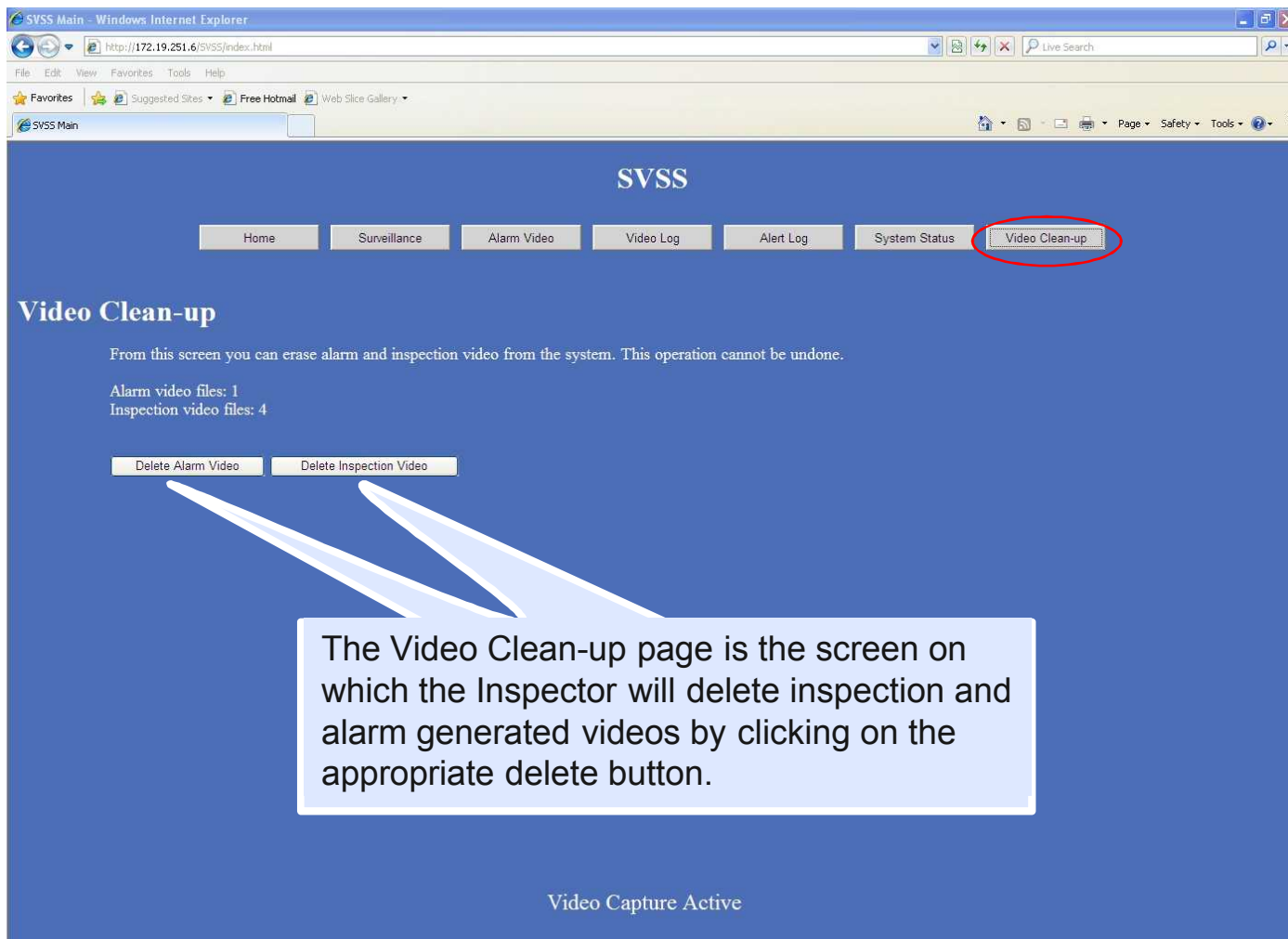
Please stop video capture to enable creation of surveillance video.

Starting Video Capture

The Start Video Capture button is clicked to begin the ftp process (image collection).

The green bar replaces the red bar until SVSS verifies the images are again being collected. Once SVSS confirms new images are being collected, the green bar goes away and displays "Video Capture Active".

Secure Video Surveillance System (SVSS) User Interface – Video Deletion



The screenshot shows a web browser window titled "SVSS Main - Windows Internet Explorer" with the address bar displaying "http://172.19.251.6/SVSS/index.html". The browser's menu bar includes File, Edit, View, Favorites, Tools, and Help. The toolbar shows icons for back, forward, stop, and search, along with a "Live Search" input field. The browser's status bar indicates "SVSS Main".

The main content area has a blue background with the "SVSS" logo at the top center. Below the logo is a horizontal navigation bar with buttons for Home, Surveillance, Alarm Video, Video Log, Alert Log, System Status, and Video Clean-up. The "Video Clean-up" button is circled in red.

The "Video Clean-up" section has a title "Video Clean-up" and a warning message: "From this screen you can erase alarm and inspection video from the system. This operation cannot be undone." Below this, it lists "Alarm video files: 1" and "Inspection video files: 4". At the bottom of this section are two buttons: "Delete Alarm Video" and "Delete Inspection Video".

A callout box with a blue background and white text points to the "Delete Alarm Video" and "Delete Inspection Video" buttons. The text in the callout box reads: "The Video Clean-up page is the screen on which the Inspector will delete inspection and alarm generated videos by clicking on the appropriate delete button."

At the bottom of the page, the text "Video Capture Active" is displayed.

Secure Video Surveillance System (SVSS) User Interface – Alarm Review

The screenshot shows the SVSS Main interface in a Windows Internet Explorer browser window. The address bar displays <http://172.19.251.6/SVSS/index.html>. The page has a blue header with the text "SVSS" and a navigation bar with buttons: Home, Surveillance, Alarm Video (circled in red), Video Log, Alert Log, System Status, and Video Clean-up. Below the navigation bar, the section "Alarm Videos" is displayed. A link "February 23 2010 20:31:31" is shown in yellow text. A blue arrow points from this link to a text box containing the following text:

Links to the videos created from camera housing tamper alarms will be posted on the Alarm Video page.

At the bottom of the page, the text "Video Capture Active" is visible.

Secure Video Surveillance System (SVSS) User Interface – Video Log

SVSS Main - Windows Internet Explorer

http://172.19.251.6/SVSS/index.html

File Edit View Favorites Tools Help

SVSS Main

SVSS

Home Surveillance Alarm Video **Video Log** Alert Log System Status Video Clean-up

SVSS Log

Select Language: English
Select a Style: default
Select Source: SVSS Frame Events
Select View: Syslog Fields

Search Show Events Statistics Help

Search (filter): Advanced Search (sample: facility:local0 severity:warning)

Recent syslog messages

Set auto reload: 60 seconds Records per page: Preconfigured Pages: < > << >>

Date	Facility	Severity	Host	Syslogtag	ProcessID	Message
Today 20:31:30			localhost	perminute_video.pl	16131	Syslog Missing frames detected: cam1=145 (2010-02-23 20:22:48) cam2=145 (2010-02-23 20:22:48) ...
Today 20:28:25			localhost	perminute_video.pl	14672	Syslog Missing frames detected: cam1=10 (2010-02-23 20:07:24) cam2=10 (2010-02-23 20:07:24) ...
Today 20:25:08			localhost	inspection_video	17763	Syslog Video capture started
Today 20:22:41			localhost	inspection_video	6927	Syslog Video capture stopped
Today 20:21:37			localhost	perminute_video.pl	11553	Syslog Missing frames detected: cam1=35 (2010-02-23 19:57:07) cam2=38 (2010-02-23 19:57:07) ...
Today 18:05:22			localhost	perminute_video.pl	20284	Syslog Missing frames detected: cam1=1 (2010-02-23 18:04:22) cam2=0 (n/a)
Today 16:57:23			localhost	perminute_video.pl	7913	Syslog Missing frames detected: cam1=0 (n/a) cam2=1 (2010-02-23 16:56:16) ...
Today 15:55:21			localhost	perminute_video.pl	29027	Syslog Missing frames detected: cam1=0 (n/a) cam2=1 (2010-02-23 15:54:25) ...
Today 14:05:21			localhost	perminute_video.pl	9061	Syslog Missing frames detected: cam1=0 (n/a) cam2=1 (2010-02-23 14:04:17) ...
Today 11:25:21			localhost	perminute_video.pl	12359	Syslog Missing frames detected: cam1=1 (2010-02-23 11:24:25) cam2=0 (n/a)
Today 06:43:20			localhost	perminute_video.pl	25798	Syslog Missing frames detected: cam1=1 (2010-02-23 06:42:20) cam2=0 (n/a)
Today 06:15:23			localhost	perminute_video.pl	20712	Syslog Missing frames detected: cam1=1 (2010-02-23 06:14:14) cam2=0 (n/a)
Yesterday 23:51:20			localhost	perminute_video.pl	12673	Syslog Missing frames detected: cam1=0 (n/a) cam2=1 (2010-02-22 23:50:17) ...
Yesterday 22:12:39			localhost	perminute_video.pl	26895	Syslog Missing frames detected: cam1=8 (2010-02-22 22:11:00) cam2=8 (2010-02-22 22:11:00) ...
Yesterday 22:11:46			localhost	perminute_video.pl	26851	Syslog Missing frames detected: cam1=48 (2010-02-22 22:10:12) cam2=48 (2010-02-22 22:10:12) ...
Yesterday 12:33:21			localhost	perminute_video.pl	18949	Syslog Missing frames detected: cam1=1 (2010-02-22 12:32:20) cam2=0 (n/a)
Yesterday 08:00:22			localhost	perminute_video.pl	1465	Syslog Missing frames detected: cam1=1 (2010-02-22 07:59:19) cam2=0 (n/a)
2010-02-21 21:32:39			localhost	perminute_video.pl	16468	Syslog Missing frames detected: cam1=6 (2010-02-21 21:31:00) cam2=6 (2010-02-21 21:31:00) ...
2010-02-21 21:31:46			localhost	perminute_video.pl	16423	Syslog Missing frames detected: cam1=47 (2010-02-21 21:30:13) cam2=47 (2010-02-21 21:30:13) ...
2010-02-21 16:19:21			localhost	perminute_video.pl	24497	Syslog Missing frames detected: cam1=1 (2010-02-21 16:18:31) cam2=1 (2010-02-21 16:18:31) ...
2010-02-21 00:13:22			localhost	perminute_video.pl	29449	Syslog Missing frames detected: cam1=1 (2010-02-21 00:12:33) cam2=0 (n/a)
2010-02-20 21:51:21			localhost	perminute_video.pl	3536	Syslog Missing frames detected: cam1=1 (2010-02-20 21:50:25) cam2=0 (n/a)
2010-02-20 21:27:41			localhost	perminute_video.pl	31642	Syslog Missing frames detected: cam1=38 (2010-02-20 21:26:00) cam2=38 (2010-02-20 21:26:00) ...
2010-02-20 21:26:51			localhost	perminute_video.pl	31350	Syslog Missing frames detected: cam1=12 (2010-02-20 21:25:48) cam2=12 (2010-02-20 21:25:48) ...
2010-02-19 21:23:41			localhost	perminute_video.pl	27730	Syslog Missing frames detected: cam1=11 (2010-02-19 21:22:00) cam2=11 (2010-02-19 21:22:00) ...

Video Capture Active

The Video Log records all actions pertaining to the images such as: detected missing frames, video capture stopped/started and deleting of videos.

Secure Video Surveillance System (SVSS) User Interface – Alert Log

Alert Log records: VPN pings, SVSS door tampers, temperature faults and camera housing tampers.

SVSS Main - Windows Internet Explorer

http://172.19.251.6/SVSS/index.html

File Edit View Favorites Tools Help

SVSS Main

SVSS

Surveillance Alarm Video Video Log **Alert Log** System Status Video Clean-up

Select Language: English
Select a Style: default
Select Source: SVSS info
Select View: Syslog Fields

Advanced Search
(sample: facility:local@ severity:warning)

Search Default Search Reset search Highlight >>

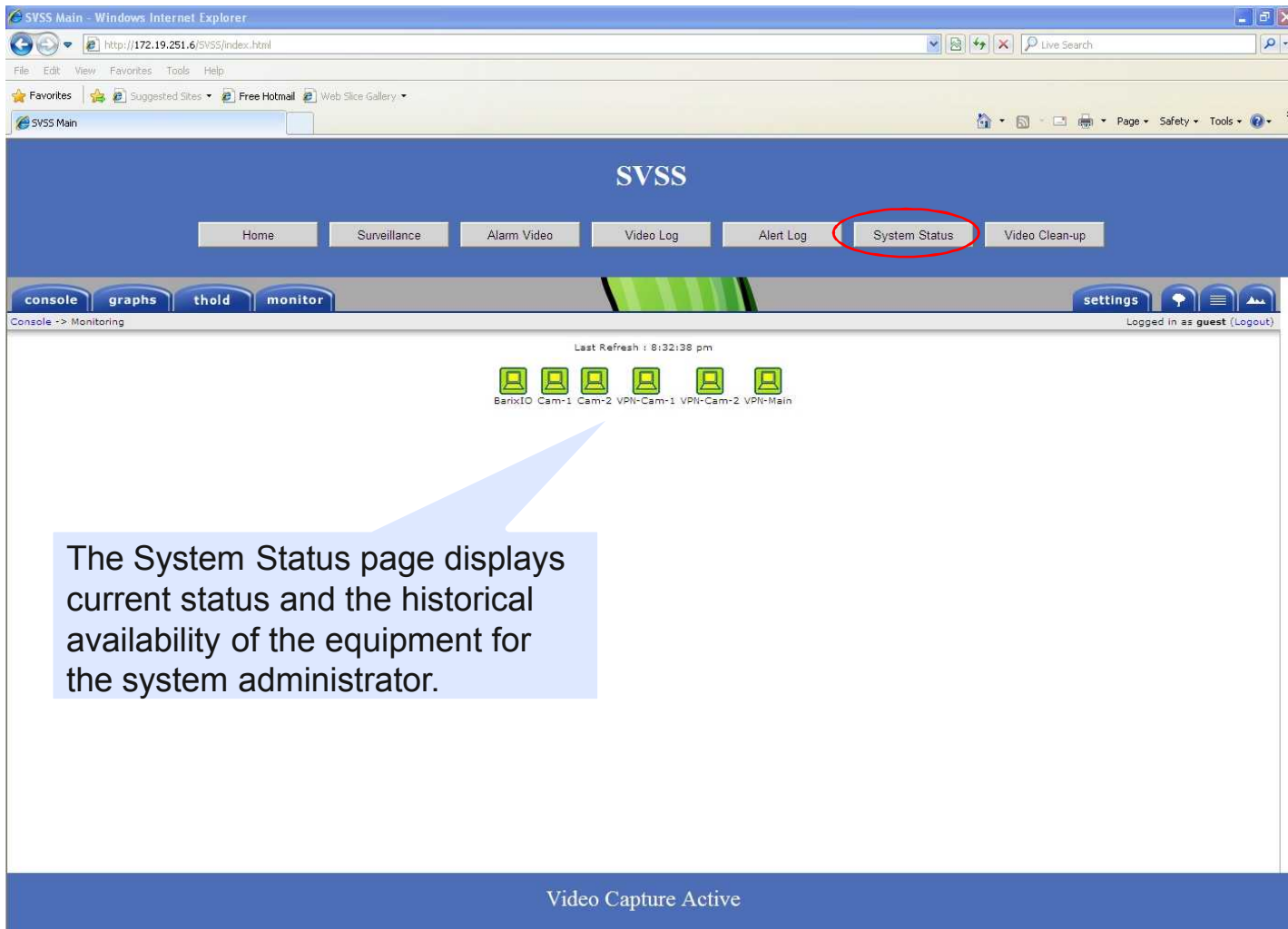
Recent syslog messages

Set auto reload: 60 seconds Records per page: Preconfigured

Date	Facility	Severity	Host	Syslogtag	ProcessID	Message
Today 20:31:26			localhost	redirect_alert.pl	16556	Syslog
2010-02-18 23:56:05			localhost	CactiTholdLog	19750	Syslog
2010-02-18 23:51:05			localhost	CactiTholdLog	18949	Syslog
2010-02-17 17:52:50			localhost	barionet-listener.pl	5505	Syslog
2010-02-17 17:52:49			localhost	barionet-listener.pl	5505	Syslog
2010-02-17 06:44:05			localhost	CactiTholdLog	23383	Syslog
2010-02-17 06:39:05			localhost	CactiTholdLog	22595	Syslog
2010-02-17 06:19:04			localhost	CactiTholdLog	18948	Syslog
2010-02-17 06:14:07			localhost	CactiTholdLog	17925	Syslog
2010-02-16 04:32:05			localhost	CactiTholdLog	28645	Syslog
2010-02-16 04:27:04			localhost	CactiTholdLog	27873	Syslog
2010-02-16 00:04:05			localhost	CactiTholdLog	11757	Syslog
2010-02-15 23:59:04			localhost	CactiTholdLog	10979	Syslog
2010-02-15 23:04:04			localhost	CactiTholdLog	762	Syslog
2010-02-15 22:59:04			localhost	CactiTholdLog	32414	Syslog
2010-02-15 21:24:05			localhost	CactiTholdLog	15145	Syslog
2010-02-15 21:19:04			localhost	CactiTholdLog	14367	Syslog
2010-02-15 11:32:05			localhost	CactiTholdLog	4601	Syslog
2010-02-15 11:27:04			localhost	CactiTholdLog	3788	Syslog
2010-02-15 06:12:06			localhost	CactiTholdLog	11261	Syslog
2010-02-15 06:07:04			localhost	CactiTholdLog	10487	Syslog
2010-02-15 01:52:05			localhost	CactiTholdLog	28233	Syslog
2010-02-15 01:47:04			localhost	CactiTholdLog	27459	Syslog
2010-02-14 22:12:05			localhost	CactiTholdLog	20765	Syslog
2010-02-14 22:07:03			localhost	CactiTholdLog	19957	Syslog

Video Capture Active

Secure Video Surveillance System (SVSS) User Interface – System Status



The screenshot displays the SVSS Main interface within a Windows Internet Explorer browser window. The address bar shows the URL <http://172.19.251.6/SVSS/index.html>. The interface features a blue header with the "SVSS" logo and a navigation bar with buttons for Home, Surveillance, Alarm Video, Video Log, Alert Log, System Status (highlighted with a red circle), and Video Clean-up. Below the navigation bar is a secondary bar with buttons for console, graphs, thold, monitor, settings, and a user status indicator showing "Logged in as guest (Logout)". The main content area displays a "Last Refresh : 8:32:38 pm" timestamp and a row of six green camera icons labeled BarixIO, Cam-1, Cam-2, VPN-Cam-1, VPN-Cam-2, and VPN-Main. A blue callout box points to the System Status page, stating: "The System Status page displays current status and the historical availability of the equipment for the system administrator." The bottom status bar indicates "Video Capture Active".

The System Status page displays current status and the historical availability of the equipment for the system administrator.



Secure Video Surveillance System (SVSS)

User Interface – System Status

Questions / Discussion



SVSS

Software Architecture

August 23, 2010



Secure Video Surveillance System (SVSS) Software Architecture

Software Functionality

- **Image Acquisition**
- **Tamper Event Handling**
- **State of Health**
- **Logging**
- **User Interface**

Secure Video Surveillance System (SVSS) Software Architecture

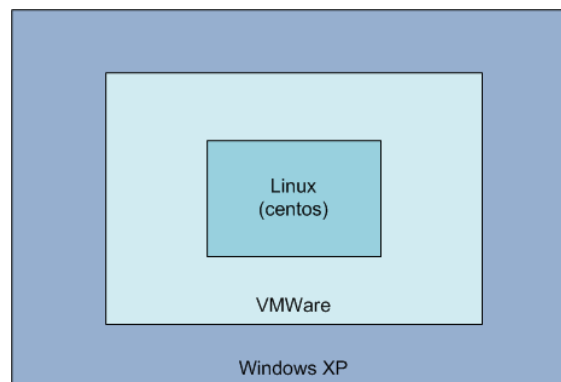
OS Components

● Windows

- User Interface

● Linux

- Camera interface
- Tamper event handling
- AVI construction
- Apache / PHP
- State of Health





Secure Video Surveillance System (SVSS) Software Architecture

Image Acquisition

•Periodic images

- Cameras send to linux ftp server
- Daemon script monitors FTP directories
- Once per minute, JPEG images are composed into one-minute AVI
 - camera images synchronized and displayed side-by-side
 - missing frames are logged
- Cleanup process runs once a minute to delete JPEG and AVI files



Secure Video Surveillance System (SVSS) Software Architecture

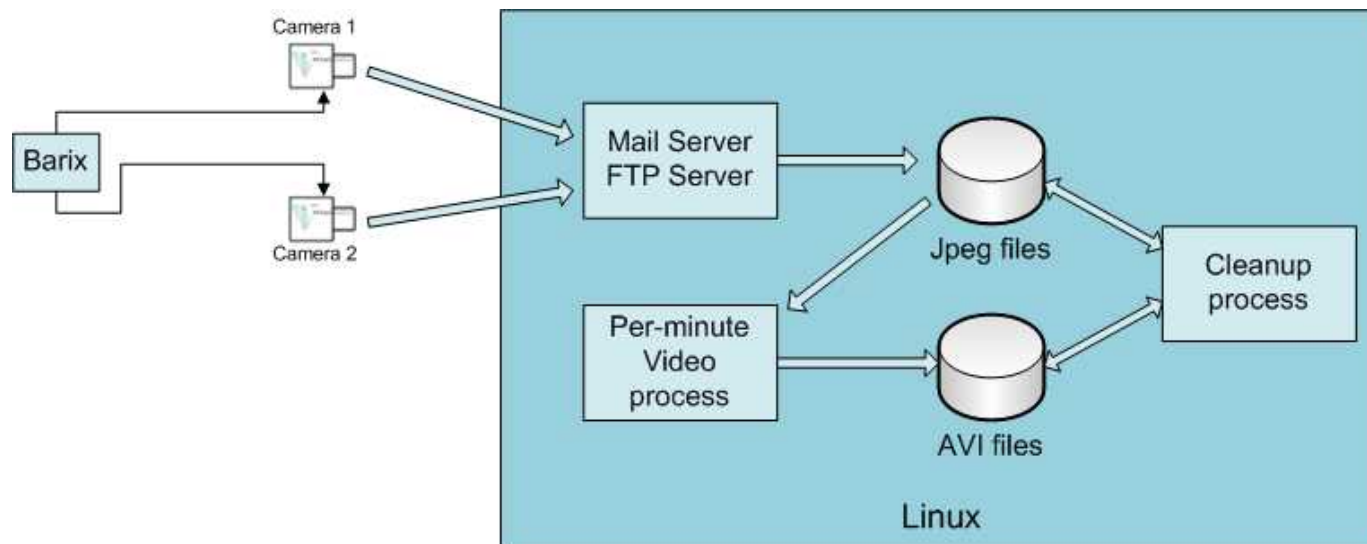
Tamper Event Handling

•Tamper events

- Tamper wired into cameras – cameras send email to linux
- sendmail mail alias invokes script that generates SNMP event
- Daemon script traps SNMP event and builds AVI of event video

Secure Video Surveillance System (SVSS) Software Architecture

Camera and Tamper Interface

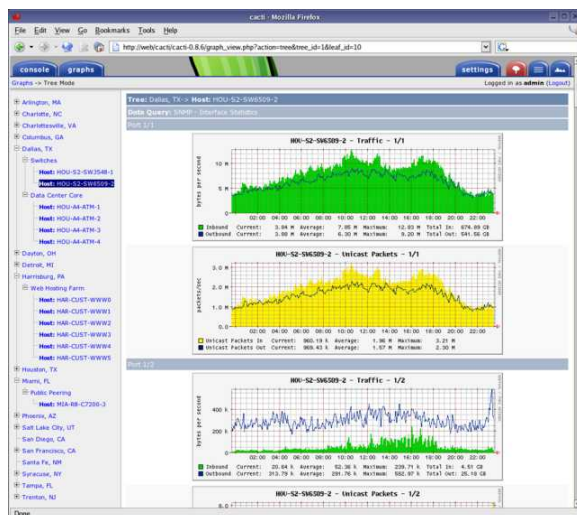


Secure Video Surveillance System (SVSS) Software Architecture

State of Health

- Cacti (www.cacti.net)

- Monitors component connectivity, system events
- mysql for data storage
- Apache web interface for user display



The screenshot displays the Cacti web interface showing a table of network statistics. The table has columns for 'Name', 'Status', 'Inbound', 'Outbound', 'Average', 'Max', and 'Min'. The table lists various network interfaces and their corresponding statistics.

Name	Status	Inbound	Outbound	Average	Max	Min
eth0	Up	1000000	1000000	1000000	1000000	1000000
eth1	Up	1000000	1000000	1000000	1000000	1000000
eth2	Up	1000000	1000000	1000000	1000000	1000000
eth3	Up	1000000	1000000	1000000	1000000	1000000
eth4	Up	1000000	1000000	1000000	1000000	1000000
eth5	Up	1000000	1000000	1000000	1000000	1000000
eth6	Up	1000000	1000000	1000000	1000000	1000000
eth7	Up	1000000	1000000	1000000	1000000	1000000
eth8	Up	1000000	1000000	1000000	1000000	1000000
eth9	Up	1000000	1000000	1000000	1000000	1000000
eth10	Up	1000000	1000000	1000000	1000000	1000000
eth11	Up	1000000	1000000	1000000	1000000	1000000
eth12	Up	1000000	1000000	1000000	1000000	1000000
eth13	Up	1000000	1000000	1000000	1000000	1000000
eth14	Up	1000000	1000000	1000000	1000000	1000000
eth15	Up	1000000	1000000	1000000	1000000	1000000
eth16	Up	1000000	1000000	1000000	1000000	1000000
eth17	Up	1000000	1000000	1000000	1000000	1000000
eth18	Up	1000000	1000000	1000000	1000000	1000000
eth19	Up	1000000	1000000	1000000	1000000	1000000
eth20	Up	1000000	1000000	1000000	1000000	1000000
eth21	Up	1000000	1000000	1000000	1000000	1000000
eth22	Up	1000000	1000000	1000000	1000000	1000000
eth23	Up	1000000	1000000	1000000	1000000	1000000
eth24	Up	1000000	1000000	1000000	1000000	1000000
eth25	Up	1000000	1000000	1000000	1000000	1000000
eth26	Up	1000000	1000000	1000000	1000000	1000000
eth27	Up	1000000	1000000	1000000	1000000	1000000
eth28	Up	1000000	1000000	1000000	1000000	1000000
eth29	Up	1000000	1000000	1000000	1000000	1000000
eth30	Up	1000000	1000000	1000000	1000000	1000000
eth31	Up	1000000	1000000	1000000	1000000	1000000
eth32	Up	1000000	1000000	1000000	1000000	1000000
eth33	Up	1000000	1000000	1000000	1000000	1000000
eth34	Up	1000000	1000000	1000000	1000000	1000000
eth35	Up	1000000	1000000	1000000	1000000	1000000
eth36	Up	1000000	1000000	1000000	1000000	1000000
eth37	Up	1000000	1000000	1000000	1000000	1000000
eth38	Up	1000000	1000000	1000000	1000000	1000000
eth39	Up	1000000	1000000	1000000	1000000	1000000
eth40	Up	1000000	1000000	1000000	1000000	1000000
eth41	Up	1000000	1000000	1000000	1000000	1000000
eth42	Up	1000000	1000000	1000000	1000000	1000000
eth43	Up	1000000	1000000	1000000	1000000	1000000
eth44	Up	1000000	1000000	1000000	1000000	1000000
eth45	Up	1000000	1000000	1000000	1000000	1000000
eth46	Up	1000000	1000000	1000000	1000000	1000000
eth47	Up	1000000	1000000	1000000	1000000	1000000
eth48	Up	1000000	1000000	1000000	1000000	1000000
eth49	Up	1000000	1000000	1000000	1000000	1000000
eth50	Up	1000000	1000000	1000000	1000000	1000000
eth51	Up	1000000	1000000	1000000	1000000	1000000
eth52	Up	1000000	1000000	1000000	1000000	1000000
eth53	Up	1000000	1000000	1000000	1000000	1000000
eth54	Up	1000000	1000000	1000000	1000000	1000000
eth55	Up	1000000	1000000	1000000	1000000	1000000
eth56	Up	1000000	1000000	1000000	1000000	1000000
eth57	Up	1000000	1000000	1000000	1000000	1000000
eth58	Up	1000000	1000000	1000000	1000000	1000000
eth59	Up	1000000	1000000	1000000	1000000	1000000
eth60	Up	1000000	1000000	1000000	1000000	1000000
eth61	Up	1000000	1000000	1000000	1000000	1000000
eth62	Up	1000000	1000000	1000000	1000000	1000000
eth63	Up	1000000	1000000	1000000	1000000	1000000
eth64	Up	1000000	1000000	1000000	1000000	1000000
eth65	Up	1000000	1000000	1000000	1000000	1000000
eth66	Up	1000000	1000000	1000000	1000000	1000000
eth67	Up	1000000	1000000	1000000	1000000	1000000
eth68	Up	1000000	1000000	1000000	1000000	1000000
eth69	Up	1000000	1000000	1000000	1000000	1000000
eth70	Up	1000000	1000000	1000000	1000000	1000000
eth71	Up	1000000	1000000	1000000	1000000	1000000
eth72	Up	1000000	1000000	1000000	1000000	1000000
eth73	Up	1000000	1000000	1000000	1000000	1000000
eth74	Up	1000000	1000000	1000000	1000000	1000000
eth75	Up	1000000	1000000	1000000	1000000	1000000
eth76	Up	1000000	1000000	1000000	1000000	1000000
eth77	Up	1000000	1000000	1000000	1000000	1000000
eth78	Up	1000000	1000000	1000000	1000000	1000000
eth79	Up	1000000	1000000	1000000	1000000	1000000
eth80	Up	1000000	1000000	1000000	1000000	1000000
eth81	Up	1000000	1000000	1000000	1000000	1000000
eth82	Up	1000000	1000000	1000000	1000000	1000000
eth83	Up	1000000	1000000	1000000	1000000	1000000
eth84	Up	1000000	1000000	1000000	1000000	1000000
eth85	Up	1000000	1000000	1000000	1000000	1000000
eth86	Up	1000000	1000000	1000000	1000000	1000000
eth87	Up	1000000	1000000	1000000	1000000	1000000
eth88	Up	1000000	1000000	1000000	1000000	1000000
eth89	Up	1000000	1000000	1000000	1000000	1000000
eth90	Up	1000000	1000000	1000000	1000000	1000000
eth91	Up	1000000	1000000	1000000	1000000	1000000
eth92	Up	1000000	1000000	1000000	1000000	1000000
eth93	Up	1000000	1000000	1000000	1000000	1000000
eth94	Up	1000000	1000000	1000000	1000000	1000000
eth95	Up	1000000	1000000	1000000	1000000	1000000
eth96	Up	1000000	1000000	1000000	1000000	1000000
eth97	Up	1000000	1000000	1000000	1000000	1000000
eth98	Up	1000000	1000000	1000000	1000000	1000000
eth99	Up	1000000	1000000	1000000	1000000	1000000
eth100	Up	1000000	1000000	1000000	1000000	1000000



Secure Video Surveillance System (SVSS) Software Architecture

Logging

•Linux syslog

- standard unix/linux logging mechanism
- used by processing scripts and daemons
- supports categories (i.e. script name) and priorities

•phpLogCon (www.phplogcon.org)

- web interface to syslog and SNMP trap data
- allows users to browse system events
- SVSS user interface separates out video log from other log entries



Secure Video Surveillance System (SVSS) Software Architecture

User Interface

- **Browser-based user interface – Internet Explorer**
- **PHP pages served by Apache in linux VM**
- **Inspection video**
 - PHP code stops/starts linux ftp server
 - Inspection video is created on the fly
 - PHP code concatenates 1-minute AVI files to cover requested period
- **Freeware video viewer displays AVI when complete**
 - Media Player Classic Home Cinema (mpc-hc.sourceforge.net)



Secure Video Surveillance System (SVSS) Software Architecture

Questions / Discussion



Secure Video Surveillance System (SVSS)

Issues



Secure Video Surveillance System (SVSS) Issues

- **Occasional missing inspection images**
 - **Linux system timing glitch**
- **Cameras can drain UPS battery beyond recovery**
 - **Solution - Remove battery and charge with trickle charger**



Secure Video Surveillance System (SVSS)

Questions/ Discussion