



ViM | Vehicle Information Management Software

User Guide and Instruction Manual

Version 2.1, Rev. A



Application Notes:

The ViM Server and Client Software uses authentication security practices to keep video clips and information safe from potential attacks through its web interface. The database and video files are stored in a central storage location defined by the server administrator. These files are not hidden or encrypted in any way. It is the responsibility of the network administrator to protect access to these files to prevent unauthorized tampering or deletion of critical ViM Server files.

The ViM Server software can download and monitor any events generated on the RoadRunner DVR's on the vehicles. This can include Driver Events, Accelerometer Events, Braking and Turn signal indicators. We recommend only capturing those events with critical information and those used for capturing video clips. Downloading all turn signal and brake events can create thousands of unneeded event entries and impact overall system performance.

For backup purposes, the system administrator should periodically back up the files located in the ViM Server folder including the ViM.db, ViM.db-wal, ViM.db-shm, ViM.properties, and the ViM.lic file. If saved, these files can be used to restore a system to repair a catastrophic event. In addition, all video files stored in the Storage Location folder should be backed up or secured using mirror or RAID technology.

Licensing process for the ViM Server:

1. Install the ViM Server on the target server hardware.
2. Install the ViM Client and enter the IP address of the Server.
3. Run the Client and fill out the System Setup.
4. On the Admin screen, click the License Menu
5. Cut and Paste the Machine ID into an email and send to sales@avt-usa.com with the following information:
 - Your Name
 - Company / Agency Name
 - Address
 - Telephone number and Email address

Once you receive a return email with the license number to enable your full license:

1. Run the ViM Client and login with an Admin level account.
2. On the Admin screen, click the "License" menu on the top bar of the screen.
3. Delete the information currently entered in the "License Key" field.
4. Copy and paste the provided license key number into the "License Key" field, then click "Update".
5. If successful, the "License Type" will highlight green and reflect the type of licenses purchased.
6. Click Close to exit out of the License Menu.

Please contact Apollo Customer Support if you have any questions at 1-888-AVT-USA1 (1-888-288-8721) or email to tech@avt-usa.com

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1.0 Introduction

1.1 Overview

Apollo Video Technology's Vehicle Information Management (ViM) Software is a modular application that provides management services for Apollo Video RoadRunner DVRs. ViM monitors each DVR and performs defined tasks when DVRs connect to the network.

There are currently three (3) ViM modules available, AutoClip, DVR Health, and Clip Management. A description of each module is provided in the following section (1.2). Each module requires one (1) base software license for each server and additional licenses for each vehicle. The base software includes the Get-A-Clip Software Utility, which includes licenses for an unlimited amount of vehicles.

The ViM server resolves a unique challenge in mobile video recording. DVRs turn on and off with the operation of the vehicles and they are not always in network range. This often complicates the ability to retrieve video when needed as the vehicle may be off or out of range at the most critical time. The ViM Server monitors the connection state of the DVR and downloads important information when the DVR is on and in network range. Using the AutoClip module, an operator can even request a video clip and have that clip retrieved the next time the vehicle establishes a network connection.

The ViM Server application manages all DVRs, stores all video and data files, and serves as a web interface for Client users. For the Client users, the ViM Client application provides full access and capabilities to the ViM Server for all levels of users.

1.2 ViM Modules

1.2.1 ViM AutoClip Module:

Featuring status reports, event logs, on-demand video clip retrieval and automated download of event video clips, the AutoClip module provides simple fleet-wide video management ideal for monitoring fleets of RoadRunner DVRs. The ViM Server automatically downloads important portions of video requiring immediate review or availability and saves video clips in Apollo Video's proprietary evidence-grade format. Clip-Copy video clips feature watermarking and encryption to ensure that video is authentic and has not been subject to tampering. Provided in an executable format, the file includes an embedded player, so there is no software required for viewing. Clip-Copy video clips also feature optional password

protection to prevent unauthorized viewing access.

1.2.2 ViM DVR Health Module:

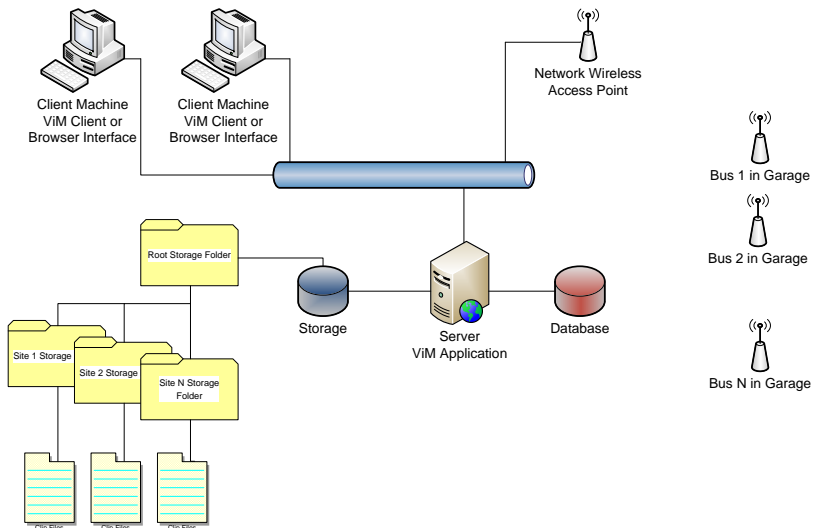
The DVR Health module provides automatic fleet-wide health monitoring and diagnostics of on-board video equipment. With the ability to instantly view, store, print reports or request video clips of DVR Health events for download, the DVR Health Module provides efficient management of video and fleet information with comprehensive and easy to use tools.

1.2.3 ViM Clip Management Module:

The Clip Management Module provides a Clip Management form in the Video Clip and Health Clip Log. A notes field allows the user to add information regarding the clip once they have reviewed it.

Figure 1: System Diagram

This system diagram outlines the components of an Apollo Video Technology Vehicle Information Management (ViM) configuration.



1.3 Server System Requirements

NOTE: For best performance, ViM should be installed on a

dedicated server or virtual machine.

1.3.1 Minimum:
Single Intel Core2 Duo 2.4Ghz
2GB RAM
2GB of free space for install only
Windows Server Standard 2008
100Mbs Network port dedicated
10GB for video storage*

1.3.2 Recommended:
Single Intel Xeon Quad Core 2.8Ghz
4GB RAM
5GB of free space for install only
Windows Server 2008 Standard R2 or later
1Gbps Network port
100GB for video storage*

***NOTE: Storage should be sized based on number of expected event clips per day, size of clips (impacted by resolution, refresh settings, number of cameras, etc.) and length of storage. Refer to page 46.**

1.4 Client System Minimum Requirements

Intel Pentium II 800MHz or faster
Windows XP, Vista, or 7
Internet Explorer 7.0 or later
512MB RAM
VGA with 64MB RAM and 1024 x 768 or better

1.5 Application Workflow

The ViM Server application manages the video information from multiple DVRs from a fleet of vehicles. Once the system is set up and configured, the information is managed through a typical workflow. The key attributes of the workflow are the temporary storage, long term storage, and grace period. The status of a video clip is classified as “New”, “Reviewed”, “Preserved”, “Delete Scheduled” or “Deleted”. A maintenance cycle is executed each day at 2AM server time to evaluate all database information and update or delete records according to the system settings.

1.5.1 Run Cleanup

The Cleanup task, which runs automatically at 2AM every day, goes through all the entries in the database and updates status and/or

removes old information. This is the task that “ages” the data. So if the Temp Storage Duration is 2 weeks, then the status of any Clips 2 weeks old is changed from “New” to “Delete Scheduled”. If the Grace Period is 3 days, then any Clips at “Delete Scheduled” will get deleted if 3 days old.

A manual “Cleanup” function is provided to allow an administrator to execute a maintenance cycle on demand. While this should never be necessary, it allows the administrator to manually execute a cleanup and then review the results immediately for confirmation.

Figure 2: Run Cleanup

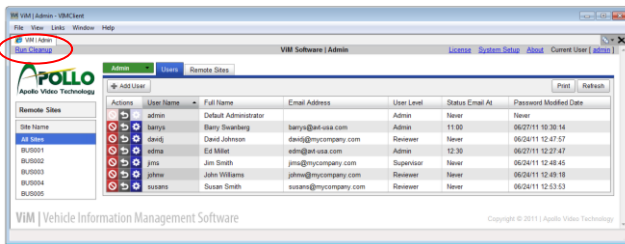
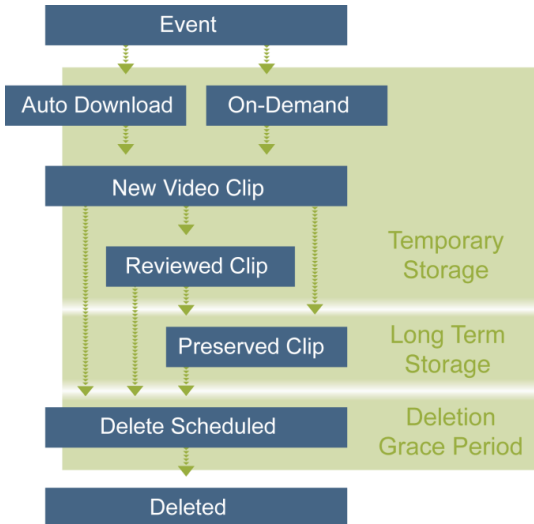


Figure 3: Video Clip Application Workflow Sample



1.5.2 Temporary Storage

Temporary Storage is defined as any clip that has a status of “New” or “Reviewed”. If the **Temporary Storage Duration** expires on a video clip classified as “New” or “Reviewed”, the system automatically changes the clip to a “Delete Scheduled” status. Clips with “Delete Scheduled” status can be easily identified and reviewed. If the clip should not be deleted, click the “Preserve” action to change the status to “Preserved” and the clip is saved for the Long Term Storage Duration. Only a Supervisor or Admin level user can manually mark a clip as “Delete Scheduled”. If a clip is not classified as “Preserved”, it is automatically deleted after the time duration for the **Temporary Storage Duration** and the **Deletion Grace Period** has passed. If a clip is scheduled for deletion, it is deleted after the **Deletion Grace Period**.

1.5.3 Long Term Storage

Long Term Storage stores any clip with a status of “Preserved”. Clips should be classified as “Preserved” if they must be retained for longer periods for evidence, training, or follow-up. Clips in Long Term Storage remain until the **Long Term Storage Duration** expires. At that time the clip changes status to “Delete Scheduled” and is subject to the **Deletion Grace Period**. If the clip is still required, it can be saved by a Supervisor or Admin user to an external location. Clicking the “Preserve” action again, returns the clip to Long Term Storage for another Long Term Storage Duration period.

1.5.4 Grace Period

The **Deletion Grace Period** provides a period of time for validation of a scheduled clip file deletion. If a clip status is “Delete Scheduled”, either manually or automatically, the **Deletion Grace Period** is intended to provide adequate time to change the status of that clip to “Preserved”. By providing this grace period, a Supervisor or Admin user can review clips with a “Delete Scheduled” status on a periodic basis and verify those clips are OK to be deleted. If a clip changes to “Delete Scheduled” due to the **Long Term Storage Duration** expiring, that clip can be saved to an external location by a Supervisor or Admin.

2.0 Installation

The ViM Software is provided on CD. If using the default user “LocalService”, verify this account has permission for “Log on as a Service”. Insert the CD into the server CD-ROM drive and follow the instructional prompts to guide you through the installation. The service automatically starts at the end of the installation. When upgrading from a previous version, the service must be stopped and restarted after installation for proper operation. Any open ViM Client applications should also be restarted.

2.1 ViM Server Application

The ViM Server application is installed on the server. It requires access to the data storage location for all video clip files. The ViM Server is lightweight, requiring less than 50MB of disk space for the application and is fully self-contained including the database management and web-server components within the application. No additional database or web-server applications are required and no additional licensing fees are incurred. The ViM Server uses TCP/IP port 9980 for the web interface and ports 8016, 8116, 8200 and 10019 for communication with the RoadRunner Digital Video Recorders.

2.2 ViM Client

The ViM Client is an application that works very much like a standard web-browser but with only the functions and capabilities required for interfacing with the ViM Server. The ViM Client should be installed on any workstation(s) requiring access to the ViM Server.

NOTE: A standard web browser may be utilized to access the ViM Software. However, all browsers may not be supported. The ViM Client is recommended to support all functionality.

3.0 System Configuration

Create the storage location folder on the server. Enter the path name into the “Storage Location” field on the System Setup screen. System Setup does not accept an invalid or nonexistent path name.

To configure:

- Launch the ViM Client.
- Log in utilizing the default user name “admin” and default password “password”. You are directed to the “ViM Software Setup” Screen.
- Create the storage location on the server (if you have not already done so) and enter the path name into the “Storage Location” field on the System Setup screen.
- Review settings and change as desired.
- Click “Save” when changes are complete.

NOTE: A valid file path is required to continue.

Figure 4: ViM Software Setup

The screenshot shows the 'ViM Software | Setup' window. At the top is the Apollo Video Technology logo. Below it is the instruction: 'Please take a moment to configure your ViM Server.' The configuration is organized into three sections:

- Server Parameters:** Includes a 'Server URL' field with the value 'http://10.32.221.18:9980'.
- AutoClip Parameters:** Includes a 'Storage Location' field with a file path, 'Event Log Retention Time' set to 12 months, 'Temporary Storage Duration' set to 15 days, and 'Long Term Storage Duration' set to 12 months. Each duration field has a dropdown menu and a small explanatory text below it.
- Deletion Grace Period:** Set to 7 days, with a small explanatory text below it.

At the bottom left, there is an 'Email Notifications' checkbox which is checked. A 'Save' button is located at the bottom center. The footer of the window contains 'ViM | Vehicle Information Management Software' on the left and 'Copyright © 2011 | Apollo Video Technology' on the right.

3.1 Server URL

Enter the URL of the ViM server in this location. This must include the protocol, hostname, and port (default is 9980). This URL is used in email notifications.

3.2 Storage Location

The user must specify the root path name of the folder desired for storing all video clip files for either temporary or long term storage. The Administrator is responsible for creating this root **Storage Location** and ensuring the ViM Server has access rights. If this folder does not exist, the ViM Server will not allow the Administrator to save the system setup parameters. The ViM Server software automatically creates subfolders within this root folder for each site added.

NOTE: The Administrator should ensure the location selected is on a storage device with adequate space to support the number and size of video clips expected based on the application setup. See "How to Calculate the Required Server Storage Size" at the end of this Manual.

3.3 Event Log Retention Time

This is a global parameter that determines how long the entries in the Video Event Log and Video Clip log are retained. Any entries in the Video Event Log older than specified in the **Event Log Retention Time** are deleted from the event log database.

NOTE: Events are deleted from the event log only if it does not have an associated video clip. That is, if no clip was ever downloaded for the event or if the clip was deleted.

3.3.1 Enter the desired storage duration (in months) for retaining the event log.

3.4 Temporary Storage Duration

Temporary storage is defined as storage for any video clip with a status of "New" or "Reviewed". The **Temporary Storage Duration** determines when a "New" or "Reviewed" clip is automatically moved to a "Delete Scheduled" status. This duration is calculated from the last time the clip was reviewed.

3.4.1 Enter the desired storage duration (in days) for retaining clips that are "New" or "Reviewed" prior to being scheduled for deletion.

3.5 Long Term Storage Duration

Long Term Storage is storage for any video clip with a status of "Preserved". Clips stored in Long Term Storage remain stored until the **Long Term Storage Duration** expires. At that time, the clip is scheduled for deletion.

This duration period is calculated from the time the last action was performed on the clip. A clip that is actively used is therefore preserved longer. It also allows a clip to be Preserved more than once, allowing for indefinite storage of the most critical video clips.

- 3.5.1 Enter the desired storage duration (in months) for retaining clips that are “Preserved” prior to being scheduled for deletion.

3.6 Deletion Grace Period

The grace period provides a period of time for validation of a scheduled file deletion. If a video clip is classified as “Delete Scheduled”, either manually or automatically after the **Temporary Storage Duration** period has passed, the **Deletion Grace Period** is designed to provide adequate time for users to change the status of that clip to “Preserved”. By providing this grace period, a Supervisor or Admin user can review clips with a “Delete Scheduled” status on a periodic basis and verify those clips should be deleted.

- 3.6.1 Enter the desired time duration (in days) for retaining clips that are classified as “Delete Scheduled” prior to being deleted.

3.7 Email Notifications

To enable Email Notifications, select the checkbox after the Email Notifications heading. This action also expands additional Email setup fields. Contact your System Administrator to determine the correct settings.

Figure 5: ViM Software Setup, Email Notifications

Email Notifications

SMTP Host

SMTP Port

Mail Protocol

SMTP Login

SMTP Password

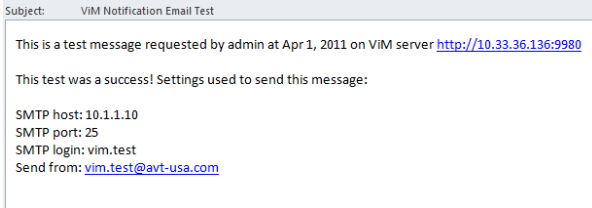
Send "from"

Email address users will see in the "from" field

- 3.7.1 **SMTP Host**
Provide the IP Address or URL of your email host.

-
- 3.7.2 SMTP Port
Enter the port address for the email server.
 - 3.7.3 Mail Protocol
Select the proper email protocol for your server from the drop down list.
 - 3.7.4 SMTP Login
Enter the user name to access your mail server
 - 3.7.5 SMTP Password
Enter the corresponding password for the email user.
 - 3.7.6 Send “from”
Enter the email address used as the source email for sending email notifications.
 - 3.7.7 Test Connection
Press the Test Connection button to test your email settings. A prompt will request a destination email address. After entering an address and selecting OK, a test email is sent.

Figure 6: ViM Software Setup, Email Notification Email Test



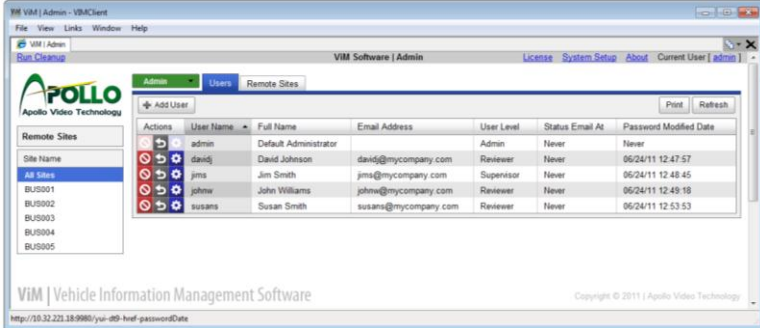
4.0 User and Remote Site Configuration

NOTE: Only Admin users have access to the Admin screens.

4.1 User Setup

The Admin User can add additional users by selecting the “Users” setup tab on the Admin screen. This displays a summary of users and their settings.

Figure 7: ViM Admin



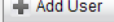
- 4.1.1 Click on the add user button  to open the “Create User” dialog box.

Figure 8: Create User

Create User X

User Name

First Name

Last Name

Email Address

Password Password Strength

Verify Password Display Text

User Level Reviewer ▼

Status Notification Never ▼

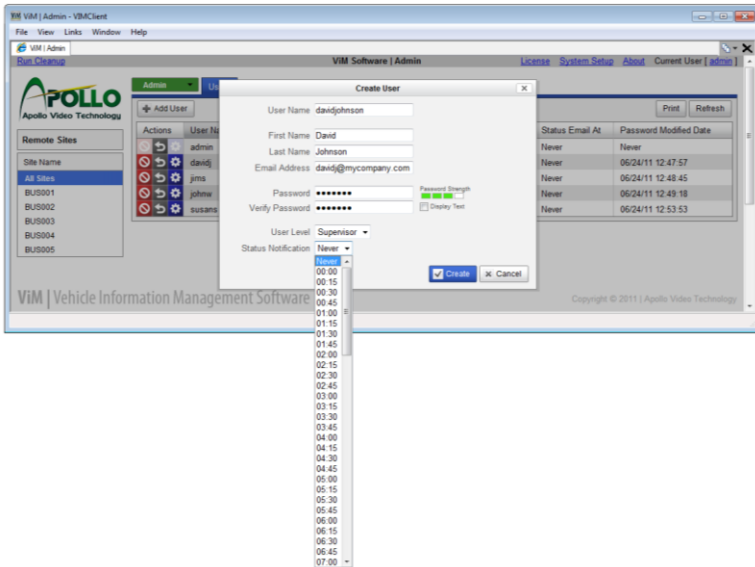
-
- 4.1.2 Enter the desired **User Name**.
NOTE: Each user name must be unique. User names are case sensitive and are forced to lower case.
- 4.1.3 Enter the user's **First** and **Last Name**.
- 4.1.4 Enter the user's email address
- 4.1.5 Enter the desired **Password**.
NOTE: Passwords must be at least 6 characters in length. Passwords are case sensitive. The Password Strength indicator provides feedback as to the level of security of the password. As an Administrator, you can use the Display Text checkbox to view the password in readable format to ensure proper setup.
- 4.1.6 Select the desired **User Level** from the following options:
- 4.1.6.1 **Admin:** An Admin user has access-rights to all features, functions, and administration of the ViM Server. The only restriction for Admin users is the review action (👁️) is not available from a standard browser. When using a standard browser, the Admin must click the download action (📄) to download video clips to the client machine for review.
- 4.1.6.2 **Supervisor:** A Supervisor user has rights to all features and functions of the ViM Server with the exception of the Admin screen that includes functions relating to User, Site, or System setup. The Supervisor cannot review video using the review action (👁️) from a standard browser. When using a standard browser, the Supervisor must click the download action (📄) to download video clips to the client machine for review.
- 4.1.6.3 **Reviewer:** A Reviewer user has rights to view all reports and status logs and to review video clips using the review action (👁️) when using the ViM Client. A Reviewer cannot utilize the download

action (📁) to save video clips on the local machine and cannot manually schedule clips to be deleted using the delete action (🗑️).

4.1.7 Status Notification

Select the time of day for the Status Notification email to be sent to this User.

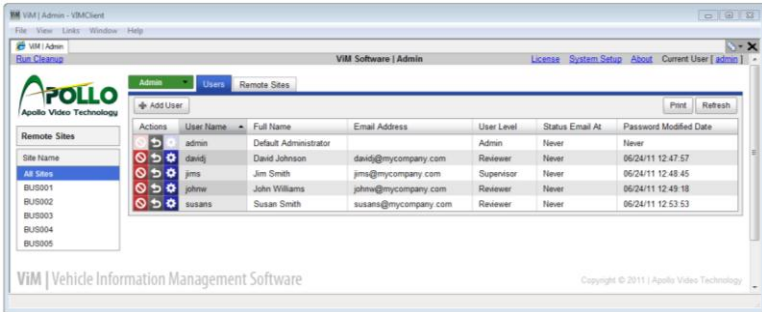
Figure 9: Create User, Status Notification



4.1.8 Click Create to save the new User.

4.2 Editing Users

Figure 10: Edit Users



- 4.2.1 To delete a user, click the delete action () located in the “Actions” field next to the desired user’s name.

NOTE: The Default Administrator cannot be edited or deleted. Admin users cannot delete or demote themselves.

- 4.2.2 To reset the password of a user, click the reset action () located in the “Actions” field next to the desired user’s name.

Figure 11: Change Password

Change Password

User Name

New Password Password Strength

Verify Password Display Text

- 4.2.3 To edit the user’s **First Name, Last Name, Email Address** or **User Level**, click the edit action () located in the “Actions” field next to the desired user’s name.

Figure 12: Edit User

Edit User

User Name:

First Name:

Last Name:

Email Address:

User Level:

Status Notification:

4.3 Site Setup

To add a site to the ViM Server, select the “Remote Sites” tab on the Admin screen. This displays a summary of sites and site settings, along with the number of Licenses remaining.

Figure 13: Remote Sites

ViM Admin - VIMClient

File View Links Window Help

Run Cleanup

VIM Software | Admin License System Setup About Current User | Admin

Admin Users **Remote Sites**

Add Site Licensed Sites: 5 of 5 Remaining 0 Post Refresh

Actions	Site Name	IP Address	DVR Model	Recall Period	Alarm-In Configuration
	BUS001	10.32.4.156	MRH4	7d	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
	BUS002	10.32.4.172	MRH8	7d	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
	BUS003	10.32.4.173	MRH8	7d	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
	BUS004	10.32.4.180	MRH16	7d	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
	BUS005	10.32.4.181	MRH16	7d	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>

Alarm-In 3 - BUS005 Events

ViM | Vehicle Information Management Software

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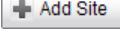
- 4.3.1 Click the “Add Site” button  to open the “Create Site” dialog. License status information is provided to the left of the “Add Site” button.

Figure 14: Create Site

Site Information

Site Name A unique name is required

IP Address

User ID

Password

DVR Model Type **MR8** Select "Other" if unknown

Recall Period **7** days Time period to search for events when the DVR connects

Alarm-In Configuration

	All	E	C	D	Pre-Event Time	Post-Event Time
All	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	0 m 2 s	0 m 5 s
1	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	0 m 2 s	0 m 5 s
2	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	0 m 2 s	0 m 5 s
3	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	0 m 2 s	0 m 5 s
4	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	0 m 2 s	0 m 5 s
5	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	0 m 2 s	0 m 5 s
6	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	0 m 2 s	0 m 5 s
7	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	0 m 2 s	0 m 5 s
8	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	0 m 2 s	0 m 5 s

Legend

E = Events
Events on this Alarm-In will be downloaded to the Event Log

C = Clips
AutoClips will be downloaded to the Clip Log

D = Duration
The duration of an event will be used in calculating the AutoClip length

Note: Events and Clips must be checked in order to edit Duration or the Pre/Post-Event Time for an Alarm-In

4.3.2 Complete Site Information

4.3.2.1 Enter a Site Name

NOTE: Each site name must be unique. We recommend utilizing the “DVR Name” for the “Site Name” for consistency.

4.3.2.2 Enter the IP Address of the DVR.

4.3.2.3 Enter the User ID and Password of the DVR at the assigned IP address.

4.3.2.4 Select the DVR Model Type of the DVR. If the model number is not known, simply select “Other/Unknown”.

4.3.2.5 Select the desired Recall Period

4.3.2.6 This setting determines the time period for downloading event logs and video clips once the DVR connects to the Network. If vehicles typically connect to the network every day, this time period should be kept short. For vehicles that may not connect each day, this period should be longer.

4.3.3 Complete **Alarm-In Configuration**

These settings define which (E)vents, (C)lips, and (D)urations are used as well as the length of a downloaded video clip for this site.

NOTE: Additional information on Alarm-In events is found in the DVR setup. (DVR setup is performed at the DVR or using RASplus software)

4.3.3.1 Check the (E)vent box to download the Alarm-In Event to the Video Event Log. This setting determines which events generated on the DVR are downloaded to the Video Event Log. Events may include driver events, accelerometer, turn signals, brakes, etc. Select the Alarm-In associated with those events.

4.3.3.2 Check the (C)lips box to download an AutoClip for this event to the Video Clip Log. This setting determines which events will automatically download video clips. If you configure to not have a video clip for a specific event automatically downloaded, the event is still listed in the Video Event Log and a clip can be requested manually.

NOTE: The specific cameras downloaded to a video clip are defined in the DVR setup by associating those cameras with the desired alarm input.

4.3.3.3 Check the (D)uration box to use the duration of the event when calculating the AutoClip length.

4.3.3.4 Enter the desired **Pre-Event Time** using the fields for minutes and seconds provided. This setting determines the time duration of recording prior to an event being triggered.

4.3.3.5 Enter the desired **Post-Event Time** using the fields for minutes and seconds provided. This setting determines the time duration of recording after an event being triggered.

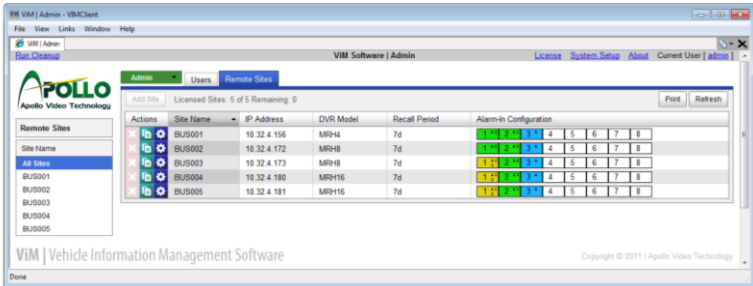
NOTE: The maximum clip length is 30


minutes. The clip parameter settings allow the user to select a longer clip length. The AutoClip is truncated automatically and tagged for notification.

4.3.4 Click  to save the new site.


4.4 Add Additional Sites, Edit a Site

Figure 15: Remote Sites



4.4.1 Using the Copy Site function, an Admin can quickly create sites with identical settings. To create additional sites with identical settings, click the copy action () in the “Actions” field next to the site you wish to “copy”.

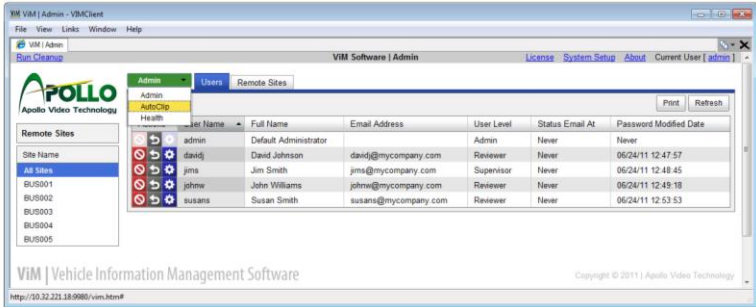
4.4.1.1 All fields are preset identical to the site being copied with the exception of the **Site Name** and **IP Address**. These fields are intentionally left blank as they must be unique. Using the Copy Site function, an Admin can quickly create sites with identical settings.

4.4.2 To Edit an existing site, click the edit action () in the “Actions” field next to the site you wish to edit.

5.0 AutoClip Operation

Once set-up is complete, click the “AutoClip” link to enter the main application interface.

Figure 16: AutoClip

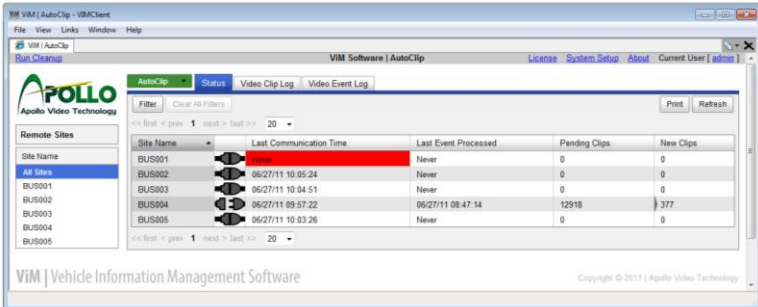


The “Status” tab displays by default with the Video Clip Log and Video Event Log tabs available for selection. This section presents each of those tabs.

5.1 Status

The “Status” tab provides a summary view of all Remote Sites, their connectivity, and Event/Clip processing.

Figure 17: AutoClip, Status




5.1.1 Site Name

The **Site Name** column identifies the site name of each DVR. This column can be sorted by clicking the header.

5.1.2 Connection Status

The Connection Status icons provide an indication of the availability of the DVR on the network.

 Indicates the DVR is “Available”

 Indicates the DVR is actively “Communicating”

 Indicates the DVR is “Not Available”

5.1.3 Last Communication Time

The data in this column displays the last time and date that the ViM Server was able to communicate with the remote site. To provide easy graphical indicators, this column provides a color coded status as time progresses from the last communication:

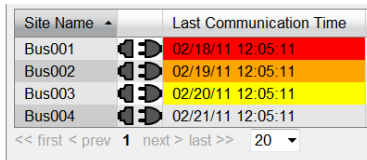
5.1.3.1 A **yellow column** indicates the remote site has not communicated for more than 24 hours.

5.1.3.2 An **orange column** indicates the remote site has not communicated for more than 48 hours.

5.1.3.3 A **red column** indicates the remote site has not communicated for more than 72 hours.

5.1.3.4 This column can be sorted by clicking the header.

Figure 18: Last Communication Time indicators



Site Name	Last Communication Time
Bus001	02/18/11 12:05:11
Bus002	02/19/11 12:05:11
Bus003	02/20/11 12:05:11
Bus004	02/21/11 12:05:11

5.1.4 Last Event Processed

5.1.4.1 The data in this column indicates the time and date of the last event processed. A processed event is one that has a clip downloaded. This column can be sorted by clicking the header.

5.1.5 Pending Clips

5.1.5.1 The numbers in this column indicate the quantity of events that are scheduled to have a video clip downloaded. After connecting to a remote site, the ViM Server downloads the new events and stores them in the Video Event Log. Based on

the setup parameters, it then schedules clips for downloading. This column can be sorted by clicking the header.

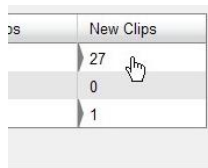
5.1.6 New Clips

5.1.6.1 This column indicates the number of video clips for each site with “New” status in the Video Clip Log. The user can utilize this column to determine how many clips need to be reviewed and how to prioritize sites for reviewing. This column can be sorted by clicking the header.

5.1.6.2 “Jump” cells

“Jump cells” are identified by the “jump” indicator on the left side of the cell. The cursor changes when the mouse pointer floats over a “jump” cell. “Jump” cells open a new view depending on the starting cell. On the Status view “jumping” from the “New Clips” column opens the Clip Log view with a filter applied showing the clips with a “New” status from the Site for that row.

Figure 19: “Jump” Cells

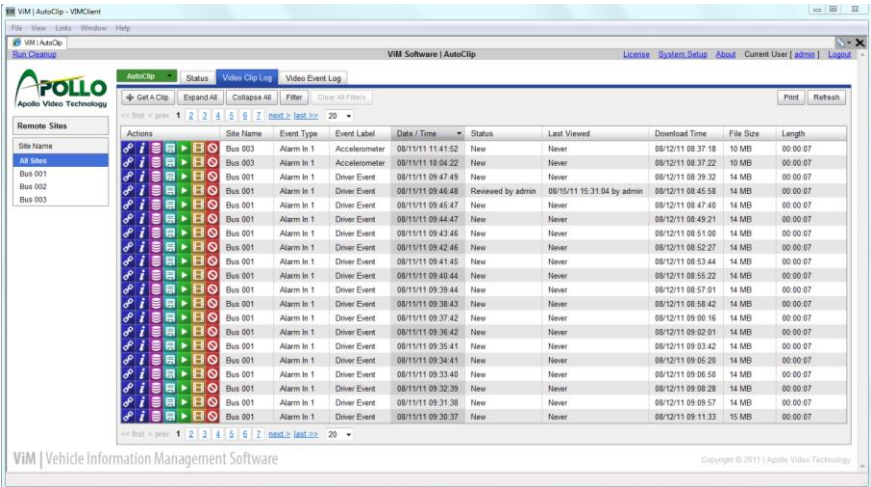


	New Clips
	27
	0
	1

5.2 Video Clip Log

The Video Clip Log presents all downloaded video clips and the ability to review and process clips.

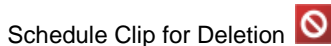
Figure 20: AutoClip, Video Clip Log



5.2.1 Actions

The **Actions** column provides buttons that can be clicked to view and manage the clips in the **Video Clip Log**.

5.2.1.1 Schedule Clip for Deletion



This action changes the status of the clip to “Delete Scheduled by <username>”, where <username> is the user who performed the action.

NOTE: This action can only be performed by Admin and Supervisor level users. Once a clip is scheduled for deletion, the clip file will be deleted after the **Grace Period** expires. Once the **Grace Period** expires, the clip file is deleted from the ViM Storage Location. The entries in the Clip Log and the Event Log are maintained and the Chain of Custody is still available until the Event Log Retention time expires at which time all information regarding the clip is removed.

5.2.1.2 Request Custom Event Clip


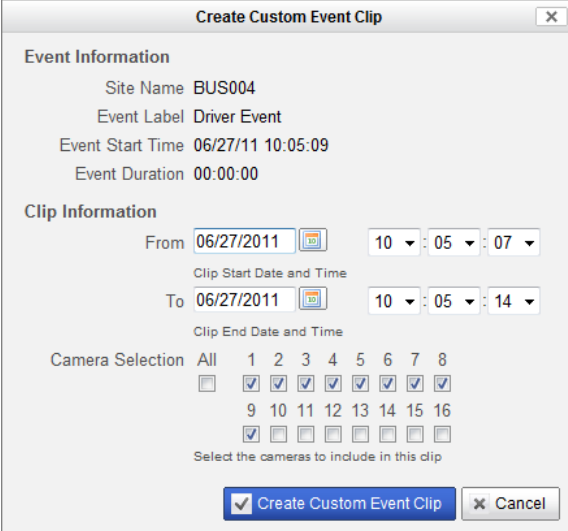
The **Custom Event Clip** action is accessible by all user levels from the ViM Client allowing the user to request a new video clip. A dialog box opens, allowing the user to change parameters like “From” and “To” times and select cameras for the Custom Event Clip. The “Site Name” and other parameters are automatically filled and not editable. When  is clicked, a new entry is made in the **Video Event Log** to track the progress of the new clip request.

Figure 21: Custom Event Clip



Create Custom Event Clip

Event Information

Site Name BUS004

Event Label Driver Event

Event Start Time 06/27/11 10:05:09

Event Duration 00:00:00

Clip Information

From 06/27/2011 10 : 05 : 07

Clip Start Date and Time

To 06/27/2011 10 : 05 : 14

Clip End Date and Time

Camera Selection All 1 2 3 4 5 6 7 8


9 10 11 12 13 14 15 16

Select the cameras to include in this clip

Create Custom Event Clip Cancel


5.2.1.3 Review Clip




The **Review Clip** action is accessible by all user levels from the ViM Client allowing the user to view the video clip. Depending on the size of the clip, it may take several seconds or even minutes to buffer the clip. The ViM Client indicates the process status at the bottom-left of the screen.


-
- 5.2.1.4 Download and Save Clip-Copy 
- This function allows a Supervisor or Admin level user to download a clip and save it to a file. The video clip can then be transferred to a CD or flash drive for submitting as evidence or for distribution to other personnel for training or archiving.

Clip Copy video clips feature watermarking and encryption to ensure that video is authentic and has not been tampered with. Provided in a Windows executable format, the file includes an embedded player, so there is no software required for viewing. Clip Copy video clips also feature optional password protection to prevent unauthorized viewing access.

NOTE: The ViM Server maintains a copy of the clip and tracks all Chain of Custody for the ViM Server copy. No Chain of Custody information can be gathered for the downloaded copy of the clip.

- 5.2.1.5 Preserve Clip 
- Clicking this action button, the ViM Server “preserves” the clip for Long Term Storage. The status shows “Preserved by <username>”, where <username> is the user who performed the action.

- 5.2.1.6 View Clip Management Form 
- This function opens the Clip Management form to allow for viewing or editing of the Notes field. The Expand All  and Collapse All  buttons at the top of the Video Clip Log can also be used to access these forms.

- 5.2.1.7 View Chain of Custody 
- Clicking this action button opens a new view displaying the Chain of Custody for the selected clip. The Chain of Custody records the entire life

cycle of the clip from initial download to final deletion. Click to return to the Video Clip Log.

NOTE: The entries in the Video Clip Log and the Video Event Log are maintained and the Chain of Custody is still available until the Event Log Retention time expires at which time all information regarding the clip is removed.

Figure 22: AutoClip, Chain of Custody Report

Action	User Name	Changed Status	Date/Time
Clip requested from BU0004	admin	Requested	06/20/11 18:06:17
Clip downloaded from BU0004	admin	New	06/20/11 18:06:34
Clip received	admin	Reviewed	06/20/11 18:09:59
Clip saved to local storage	admin	Reviewed	06/20/11 18:10:03
Clip preserved	admin	Reviewed	06/20/11 18:10:10
Clip reviewed	admin	Preserved	06/20/11 18:18:20

- 5.2.2 **Site Name**
The information in this column identifies the name of the **Remote Site** where the clip originated.
- 5.2.3 **Event Type**
Identifies which type of event generated the clip.
- 5.2.4 **Event Label**
The **Event Label** is the label programmed in the DVR associated with the source of the event. For example, "Alarm In 1" is often labeled "Driver Event".
- 5.2.5 **Date/Time**
The date and time the event occurred on the Remote Site.
- 5.2.6 **Status**
Current status value of the clip is "New", "Reviewed", "Preserved", "Delete Scheduled" or "Deleted".
- 5.2.7 **Last Viewed**
The information in this column provides the username and

time of the last time the clip was reviewed or downloaded.

5.2.8 Download Time


The time the ViM Server downloaded the clip from the remote site. This data can be used to monitor or optimize system performance.

5.2.9 File Size

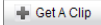
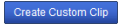
This identifies the size of the Clip file.

NOTE: Larger files take longer to review and download.

5.2.10 Length

This identifies the length of the clip in HH:MM:SS format. All clips are a maximum of 2GB or 30 minutes. Any clips that were intended to be larger or longer are indicated with a truncation symbol .

5.2.11 Get-A-Clip

The  button allows the user to request a fully Custom Clip from any Remote Site configured on the ViM Server. Choose the “Site”, the “From” and “To” times and the cameras to be downloaded in the custom clip. When  is clicked, a new entry is made in the **Event Log** to track the progress of the new clip request.

A user can request Custom Clips from multiple sites with the same date and time settings. This may be useful as a system check to get a small clip from many sites and verify camera aim and performance. It may also be useful to download clips from several sites that may have been in the same location to gain further evidence surrounding an event.

Figure 23: Create Custom Clip

5.3 Video Event Log

The Video Event Log displays all of the events downloaded from the remote sites by the ViM Server. Only those events enabled in the System Setup are tracked by the ViM Server. The **Video Event Log** may contain events that did not automatically have a clip downloaded.

Figure 24: Video Event Log

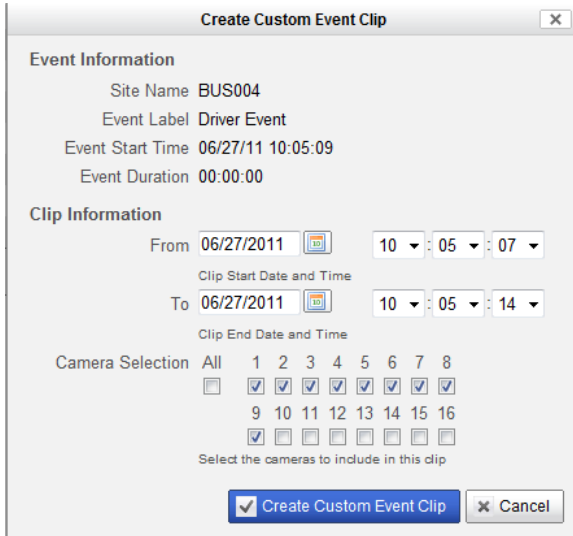
Site Name	Event Type	Event Label	Date / Time	Duration	Clip Status
BUS004	Alarm In 1	Diner Event	06/27/11 09:50:00	00:00:00	Downloaded
BUS004	Alarm In 1	Diner Event	06/27/11 09:54:00	00:00:01	Downloaded
BUS004	Alarm In 1	Diner Event	06/27/11 10:03:07	00:00:01	Downloaded
BUS004	Alarm In 1	Diner Event	06/27/11 10:02:07	00:00:00	Downloaded
BUS004	Alarm In 1	Diner Event	06/27/11 10:01:00	00:00:01	Downloaded
BUS004	Alarm In 1	Diner Event	06/27/11 10:00:00	00:00:00	Downloaded
BUS004	Alarm In 1	Diner Event	06/27/11 09:59:05	00:00:00	Downloaded
BUS004	Alarm In 1	Diner Event	06/27/11 09:58:04	00:00:01	Downloaded
BUS004	Alarm In 1	Diner Event	06/27/11 09:57:03	00:00:01	Downloaded
BUS004	Alarm In 1	Diner Event	06/27/11 09:56:02	00:00:00	Downloaded
BUS004	Alarm In 1	Diner Event	06/27/11 09:55:02	00:00:01	Downloaded
BUS004	Alarm In 1	Diner Event	06/27/11 09:54:02	00:00:00	Downloaded
BUS004	Alarm In 1	Diner Event	06/27/11 09:53:01	00:00:00	Downloaded
BUS004	Alarm In 1	Diner Event	06/27/11 09:51:30	00:00:01	Downloaded
BUS004	Alarm In 1	Diner Event	06/27/11 09:50:59	00:00:00	Downloaded
BUS004	Alarm In 1	Diner Event	06/27/11 09:49:58	00:00:00	Downloaded
BUS004	Alarm In 1	Diner Event	06/27/11 09:48:57	00:00:01	Downloaded
BUS004	Alarm In 1	Diner Event	06/27/11 09:47:57	00:00:00	Downloaded
BUS004	Alarm In 1	Diner Event	06/27/11 09:46:56	00:00:00	Downloaded
BUS004	Alarm In 1	Diner Event	06/27/11 09:45:55	00:00:01	Downloaded

5.3.1 Request Custom Event Clip

The **Custom Event Clip** action is accessible by all user

levels from the ViM Client allowing the user to request a new video clip. A dialog box opens, allowing the user to change parameters like “From” and “To” times and select cameras for the Custom Event clip. The “Site” and other parameters are automatically filled and not editable. When [Create Custom Event Clip](#) is clicked, a new entry is made in the **Event Log** to track the progress of the new clip request.

Figure 25: Custom Event Clip



Create Custom Event Clip

Event Information

Site Name BUS004
Event Label Driver Event
Event Start Time 06/27/11 10:05:09
Event Duration 00:00:00

Clip Information



From 06/27/2011 10 : 05 : 07
Clip Start Date and Time
To 06/27/2011 10 : 05 : 14
Clip End Date and Time

Camera Selection All 1 2 3 4 5 6 7 8

9 10 11 12 13 14 15 16

Select the cameras to include in this clip

Create Custom Event Clip Cancel

- 5.3.2 **Site Name**
The information in this column identifies the name of the **Remote Site** where the clip originated.
- 5.3.3 **Event Type**
Identifies which type of event generated the clip.
- 5.3.4 **Event Label**
The **Event Label** is the label programmed in the DVR associated with the source of the event. For example, "Alarm In 1" is often labeled "Driver Event"
- 5.3.5 **Date/Time**
The date and time the event occurred on the Remote Site.
- 5.3.6 **Duration**
The duration column identifies the length of the alarm. If "Duration" is configured in Site Setup for the corresponding Alarm-In number, a downloaded clip will include the Pre-Event time, the Post-Event time, and this Event Duration. Clips for Events marked with the truncation symbol  are truncated.
- 5.3.7 **Clip Status**
The Clip Status displays the state of an associated clip. Events with "Pending" Clip Status are scheduled to have a clip downloaded. Events with "Downloaded" Clip Status have a clip ready in the Video Clip Log. Events with "Not Scheduled" Clip Status are not configured to have a clip downloaded. The user can click the Get-A-Clip action () to initiate "on-demand" downloading of the video clip. If a video clip cannot be downloaded from a Remote Site, "Failed" is displayed.
The Clip Status cells may also be "jump cells". If a clip or clips are associated with an Event, the jump cell will switch to the Clip Log with the filters set to list just the clips associated with that event.

5.4 Controls

Each "tab" (**Status**, **Video Clip Log** and **Video Event Log**) has a set of controls to filter, print, refresh and view the information presented. Most columns can be sorted by clicking the header. In addition, the user has the following controls.

5.4.1 Remote Sites List

The Remote Sites list on the left provides a quick filter function. Click on the site name and only entries pertaining to that site are presented.

Figure 26: AutoClip, Video Clip Log

The screenshot shows the Apollo Video Technology interface. On the left is a 'Remote Sites' list with 'All Sites' selected. The main area displays the 'Video Clip Log' table with columns for Site Name, Event Type, and Event Label. The table contains 12 rows of data for 'BUS004' with 'Alarm In 1' events.

Site Name	Event Type	Event Label
BUS004	Alarm In 1	Driver Event
BUS004	Alarm In 1	Driver Event
BUS004	Alarm In 1	Driver Event
BUS004	Alarm In 1	Driver Event
BUS004	Alarm In 1	Driver Event
BUS004	Alarm In 1	Driver Event
BUS004	Alarm In 1	Driver Event
BUS004	Alarm In 1	Driver Event
BUS004	Alarm In 1	Driver Event
BUS004	Alarm In 1	Driver Event
BUS004	Alarm In 1	Driver Event
BUS004	Alarm In 1	Driver Event

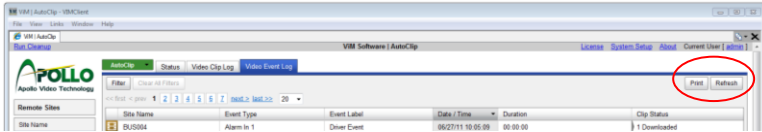
5.4.2 Filter

The Filter function provides a method for reducing the information presented. Filter options vary based on the tab selected; however each tab features a date selection and allows for filtering by specific data.

Figure 27: Filter Settings Example

The 'Filter Settings' dialog box shows options for Site Name (All Sites), Event Type (All Events), Date (with calendar icons), Duration (with 'to' separator), and Clip Status (All Statuses). Buttons for 'Reset', 'Filter', and 'Cancel' are at the bottom.

Figure 28: Print and Refresh



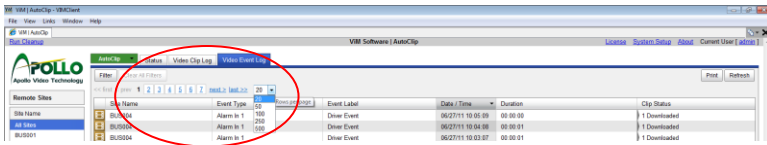
5.4.3 Print

By clicking **Print**, the data in the current view is transmitted for printing. By default, only items viewed on the current page are printed. To change the number of printed rows, change the Row Selection. On the Status view, to print all information select "All" for the number of rows.

5.4.4 Refresh

Click the Refresh button to ensure the data is current.

Figure 29: Paging and Row Selection



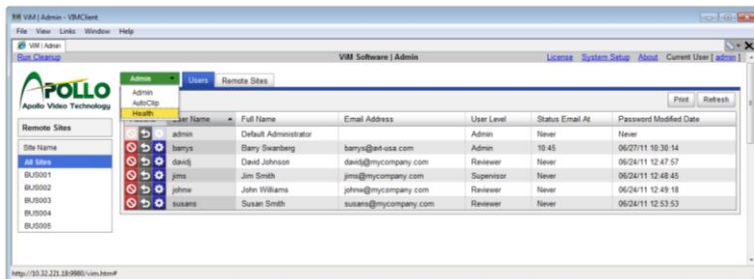
5.4.5 Paging and Row Selection

Page controls allow the user to advance through all of the entries listed. Row Selection allows the user to select the number of rows displayed on each page.

6.0 DVR Health Module Operation

Click the “Health” link to enter the DVR Health Module interface.

Figure 30: DVR Health Module

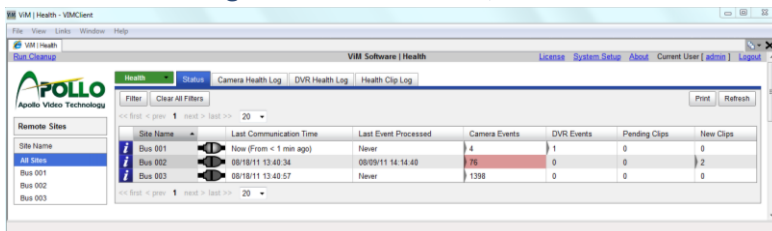


The “Status” tab displays by default with the Camera Health Log, DVR Health Log, and Health Clip Log tabs available for selection. This section presents each of those tabs.

6.1 Status

The “Status” tab provides a summary view of all Remote Sites, their connectivity, and Event/Clip processing.

Figure 31: DVR Health, Status




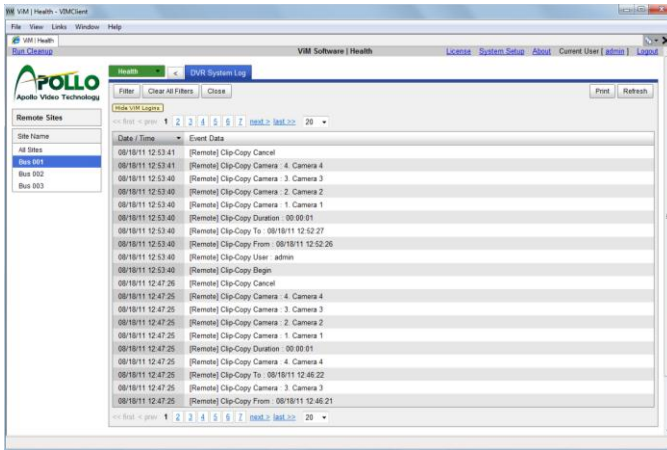
6.1.1 System Log icon : Opens the DVR System Log view for the selected Site.

Figure 32: DVR Health, DVR System Log




6.1.2 **Site Name:** The **Site Name** column identifies the site name of each DVR. This column can be sorted by clicking the header.

6.1.3 Connection Status

The Connection Status icons provide an indication of the availability of the DVR on the network.

 Indicates the DVR is "Available"

 Indicates the DVR is actively "Communicating"

 Indicates the DVR is "Not Available"

6.1.4 Last Communication Time

The data in this column displays the last time and date that the ViM Server was able to communicate with the remote site. To provide easy graphical indicators, this column provides a color coded status as time progresses from the last communication:

6.1.4.1 A **yellow column** indicates the remote site has not communicated for more than 24 hours.

6.1.4.2 An **orange column** indicates the remote site has not communicated for more than 48 hours.

6.1.4.3 A **red column** indicates the remote site has not communicated for more than 72 hours.

6.1.4.4 This column can be sorted by clicking the

header.

Figure 33: Last Communication Time indicators

Site Name	Last Communication Time
Bus001	02/18/11 12:05:11
Bus002	02/19/11 12:05:11
Bus003	02/20/11 12:05:11
Bus004	02/21/11 12:05:11

<< first < prev 1 next > last >> 20 ▾

6.1.5 Last Event Processed

The data in this column indicates the time and date of the last event processed. A processed event is one that has a clip downloaded. This column can be sorted by clicking the header.

6.1.6 Camera Events

The numbers in this column indicate the quantity of Video Loss¹ and Video Blind² events that occurred based on the date filter. A red highlight indicates cameras are currently in a Loss or Blind state. A yellow highlight indicates the error has been cleared. This column can be sorted by clicking the header.

6.1.7 DVR Events

The numbers in this column indicate any other DVR Health related events. This column can be sorted by clicking the header.

6.1.8 Pending Clips

The numbers in this column indicate if any clips have been requested but not yet downloaded. This column can be sorted by clicking the header.

6.1.9 New Clips

The numbers in this column indicate the number of clips available that have not been reviewed. This column can be sorted by clicking the header.

¹ If the DVR cannot detect an electrical signal from an enabled camera, it will report a Video Loss.

² Video Blind is reported if the camera is obscured or obstructed, indicating that the DVR is getting a valid signal from the camera, but the image received is either all black or all white.

6.2 Camera Health Log

The Camera Health Log presents all camera related issues within the date range specified. The count indicates the number of times a camera event has occurred during the specified date range. A yellow highlight indicates the condition has been cleared. A red highlight indicates the condition persists. Any cell with a number can be clicked to present a list of Camera Events for that site and camera.

Figure 34: DVR Health, Camera Health Log

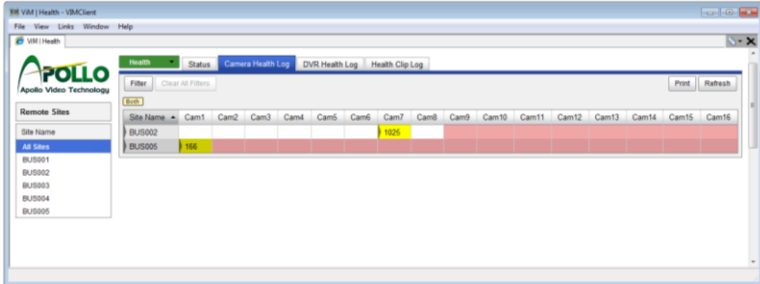
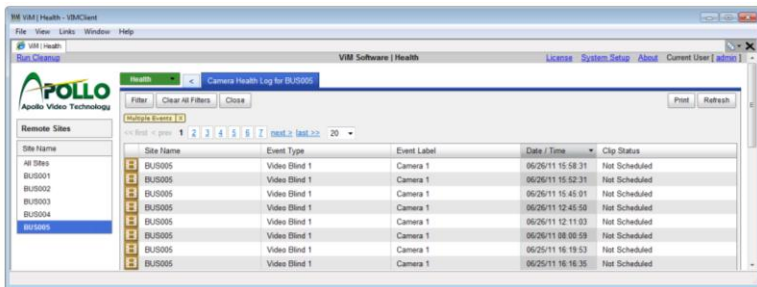


Figure 35: DVR Health, Camera Health Log for BUS001




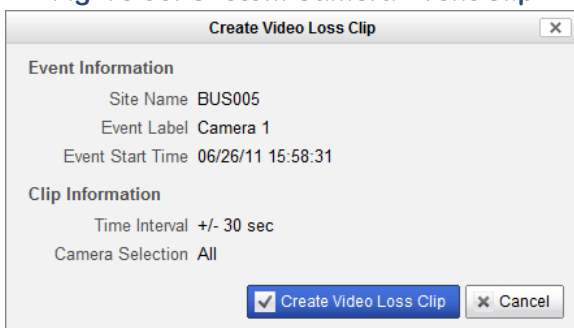
- 6.2.1 Request Custom Event Clip 
- The **Custom Event Clip** action is accessible by all user levels from the ViM Client allowing the user to request a new video clip. A dialog box opens, presenting the user with a fixed set of clip parameters for a Video Loss or Video Blind clip. When **Create Video Loss Clip** is clicked, a clip request is made. This is displayed as a Pending Clip on the Status page until the clip is downloaded. The Clip will then be found in the Health Clip Log.

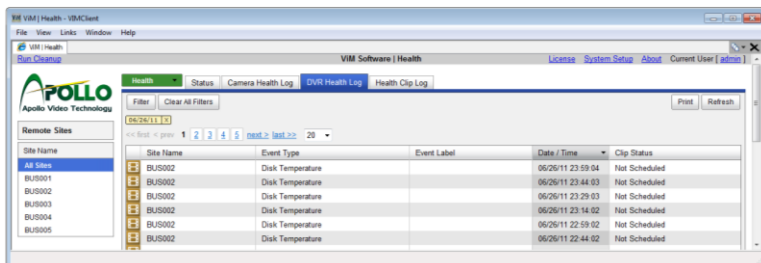
Figure 36: Custom Camera Event Clip



6.3 DVR Health Log

The DVR Health Log presents all DVR related issues in a table format.

Figure 37: DVR Health, DVR Health Log




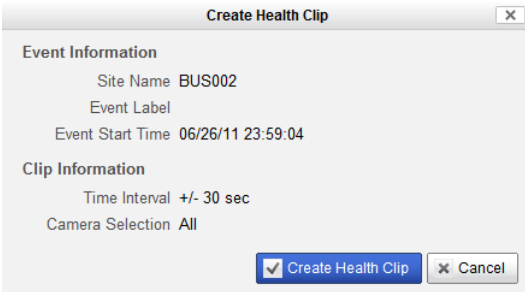
- 6.3.1 Request Custom Event Clip 
- The **Custom Event Clip** action is accessible by all user levels from the ViM Client allowing the user to request a new video clip. A dialog box opens, presenting the user with a fixed set of clip parameters for a DVR Event. When **Create Health Clip** is clicked, a clip request is made. This is displayed as a Pending Clip on the Status page until the clip is downloaded. The Clip will then be found in the Health Clip Log.

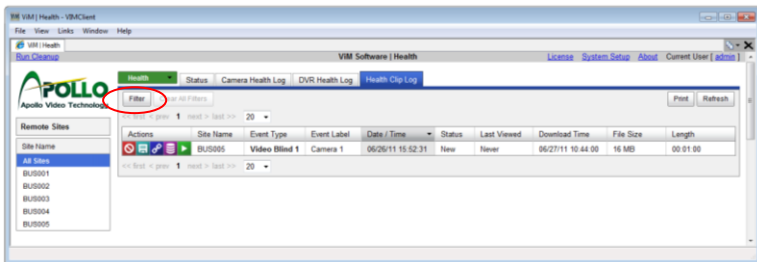
Figure 38: Custom DVR Event Clip



6.4 Health Clip Log

The Health Clip Log presents all downloaded Health Module video clips and the ability to review and process clips.

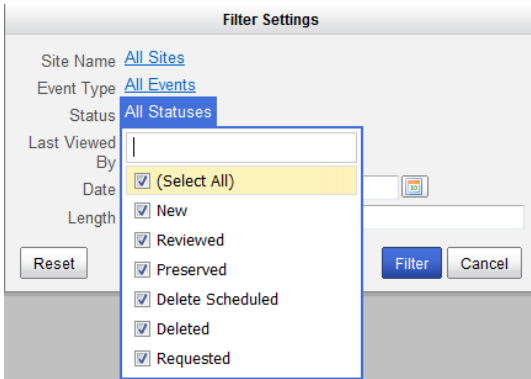
Figure 39: DVR Health, Health Clip Log



- 6.4.1 The Filter function (circled in figure Figure 39: DVR Health, Health Clip Log) provides ways to reduce the information presented. Filter options vary based on the tab selected;


however each tab features a date selection and allows for filtering by specific data.

Figure 40: Filter Settings Example



6.4.2 Actions


6.4.2.1 The **Actions** column provides buttons that can be clicked to view and manage the clips in the **Health Clip Log**.

6.4.2.2 Schedule Clip for Deletion 
This action changes the status of the clip to “Delete Scheduled by <username>”, where <username> is the user who performed the action.

NOTE: This action can only be performed by Admin and Supervisor level users. Once a clip is scheduled for deletion, the clip file will be deleted after the **Grace Period** expires. Once the **Grace Period** expires, the clip file is deleted from the ViM Storage Location. The entries in the Clip Log and the Event Log are maintained and the Chain of Custody is still available until the Event Log Retention time expires at which time all information regarding the clip is removed.

6.4.2.3 Review Clip 

The **Review Clip** action is accessible by all user levels from the ViM Client allowing the user to view the video clip. Depending on the size of the clip, it may take several seconds or even minutes to buffer the clip. The ViM Client indicates the process status at the bottom-left of the screen.

6.4.2.4 Download and Save Clip-Copy 

This function allows a Supervisor or Admin level user to download a clip and save it to a file. The video clip can then be transferred to a CD or flash drive for submitting as evidence or for distribution to other personnel for training or archiving.

Clip Copy video clips feature watermarking and encryption to ensure that video is authentic and has not been tampered with. Provided in a Windows executable format, the file includes an embedded player, so there is no software required for viewing. Clip Copy video clips also feature optional password protection to prevent unauthorized viewing access.



NOTE: The ViM Server maintains a copy of the clip and tracks all Chain of Custody for the ViM Server copy. No Chain of Custody information can be gathered for the downloaded copy of the clip.

6.4.2.5 Preserve Clip 

Clicking this action button, the ViM Server “preserves” the clip for Long Term Storage. The status shows “Preserved by <username>”, where <username> is the user who performed the action.


6.4.2.6 View Clip Management Form 

This function opens the Clip Management form to allow for viewing or editing of the Notes field.

The Expand All  and Collapse All  buttons at the top of the Video Clip Log

can also be used to access these forms.

6.4.2.7

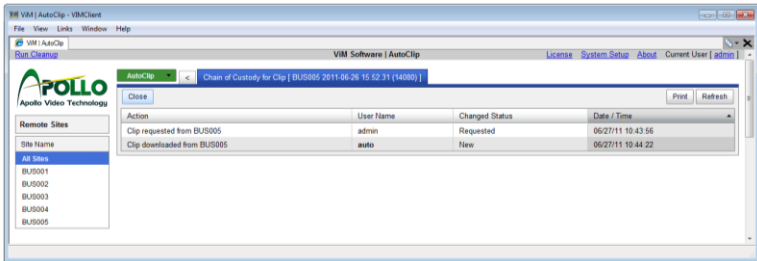
View Chain of Custody 

Clicking this action button opens a new view displaying the Chain of Custody for the selected clip. The Chain of Custody records the entire life cycle of the clip from initial download to final deletion.

Click to return to the Video Clip Log.

NOTE: The entries in the Health Clip Log are maintained and the Chain of Custody is still available until the Event Log Retention time expires at which time all information regarding the clip is removed.

Figure 41: DVR Health, Chain of Custody Report



6.4.3 Site Name

The information in this column identifies the name of the **Remote Site** where the clip originated.

6.4.4 Event Type

Identifies which type of event generated the clip.

- 6.4.5 **Event Label**
The **Event Label** will display the camera associated with the source of the event. For Example, a “Video Loss 1” event will have the Camera label from Camera 1 of the DVR.
- 6.4.6 **Date/Time**
The date and time the event occurred on the Remote Site.
- 6.4.7 **Status**
Current status value of the clip is “New”, “Reviewed”, “Preserved”, “Delete Scheduled” or “Deleted”.
- 6.4.8 **Last Viewed**
The information in this column provides the username and time of the last time the clip was reviewed or downloaded.
- 6.4.9 **Download Time**
The time the ViM Server downloaded the clip from the remote site. This data can be used to monitor or optimize system performance.
- 6.4.10 **File Size**
This identifies the size of the Clip file.
NOTE: Larger files take longer to review and download.
- 6.4.11 **Length**
The length of all DVR Health module clips is set to 1 minute.

For assistance, contact technical support toll free at: 888.288.8721 (425.483.7100) or email: tech@avt-usa.com

Calculating the Required Server Storage Size

The following calculation can be used to determine the estimated server size required based on individual fleet size and settings.

Step 1: Temporary Storage Requirements:

- A: Quantity of vehicles in the fleet
- B: Expected percentage of vehicles with events per day
- C: Size of video clips (in MB)
- D: Temporary Storage Duration + Grace Period (in number of days)

$$\text{Temporary Storage (in GB)} = \frac{(A \times B \times C \times D)}{1,000}$$

Example: A Transit Agency with 250 vehicles expects that 10% of the fleet will have events each day with an average video clip size of 300MB each. They would like to configure the ViM Server with 30 days of Temporary Storage and 7 days for the Grace Period (37 days total). **Their temporary storage requirement is 278GB.** $((250 \times 0.10 \times 300 \times 37)/1,000 = 277.5)$

Step 2: Long Term Storage Requirements:

- E: Percentage of clips, fleet-wide, saved to Long Term Storage
- F: Long Term Storage Retention Period

$$\text{Long Term Storage (in GB)} = \frac{(A \times B \times C \times E \times F)}{1,000}$$

The transit agency expects they will save 50% of video clips to Long Term Storage with the ViM Server configured with the Long Term Storage duration of 365 days. **The agency's long term storage requirement is 1,400GB.** $((250 \times 0.10 \times 300 \times .50 \times 365)/1,000 = 1368.75)$

Step 3: Total Storage Requirements:

$$\text{Total Storage} = (\text{Temporary Storage} + \text{Long Term Storage}) \times 1.25^*$$

The agency's Total Storage requirement is 2,100GB or 2.1TB. $((278 + 1,400) \times 1.25 = 2097.5)$

*We recommend adding a 25% margin to ensure adequate storage

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