ALL TRAFFIC SOLUTIONS

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SmartApps Web-Based Management

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SmartApps Introduction

SmartApps Browser Based Interface

The SmartApps Browser Based Interface operates all ATS signs. The SmartApps interface is used whether you connect to the signs with the cellular link, or with a Bluetooth or USB cable using ATS Assist. SmartApps let you manage equipment settings, record and report on speed data, map your signs and locations, receive alerts for low battery, speed events and tampering and take pictures with the internal camera.

SmartApps with a Bluetooth or USB link: When using SmartApps locally, you can access and modify the sign settings, download traffic data and images, analyze traffic data and review images.

SmartApps Remote Management Service: The SmartApps service expands the options for programming one or multiple speed displays or message signs from a central location. This option allows full programming and download capabilities via the Internet. All the apps can be purchased as the Traffic Suite.

- **Equipment Management** saves time by allowing online management of multiple signs from a central location. Monitor the sign, change messages and settings from a central location.
- **Reporting** manages your traffic data so you can create comprehensive reports to help solve traffic problems. Reports allow for comparison of locations to identify problem locations or provide data on locations that are compliant. The system retrieves data from the signs with radar automatically, manages the data and provides reports to optimize your speed enforcement efforts
- **Mapping** lets you manage equipment visually on a map, manage your locations, see where you have data and see where there are current alerts.
- **Alerts** provides notifications for tampering, low battery, high-speed violation, and low-speed congestion to your email or phone via SMS.
- **Image Management** provides pictures from the unit based on speed events, tampering or regular interval awareness images.
- **Premier Care** is an extended warranty which also provides for a lower cost for vandalism repairs. It ensures that your unit is always running at its best with real time monitoring.

Quick Start Guides

Quick Start - Create a message with SmartApps on PC

To display a message on an instALERT or SpeedAlert using SmartApps with a cellular remote connection or with a local USB or Bluetooth connection

Log into SmartApps

Open the SmartApps interface by going to www.apps.alltrafficsolutions.com If connecting remotely, log in with user name and password. If connecting locally, first install and run ATS Assist. See the information sheet that came with the unit for download instructions for ATS Assist. Connect the message sign to the PC with a USB cable or through Bluetooth. Go to www.apps.alltrafficsolutions.com and log in by clicking the *Work Offline* button that will be available when ATS Assist is running.

Create the message

Click the *Messages* tab, and create the desired message and save it on the server if connected remotely or on the PC if connected locally. Either *Edit* an existing message or *Add* a new message.

Select sign to receive message

Go to the *Equipment Management* tab and click *Settings* for the sign to receive the message. There may be multiple signs available under *Remote Equipment* for selection for remote systems. For locally connected signs, select the sign under *Equipment connected to PC*.

Select the message to be displayed

On the Settings *Messages* tab, move the new message that you created in the Messages tab from the *Messages on Server* or *Messages on PC* list to the *Messages on Equipment* list by highlighting it and using the right arrow button. Preview any message by clicking on the message to highlight it and the clicking the *Preview* button below the list that contains the message. Once the message is moved to the *Messages on Equipment* list, select this message in the *Active* dropdown menu as the active message.

Apply message

For all systems, click the *Apply Now* button in the top right corner to send the message to the sign. Locally connected signs will change almost immediately. For locally connected signs, there is also a *Display Now* button on the *Message Preview* tab. Remotely connected signs will change the next time the sign calls into the server for setting updates. This can be up to 15 minutes, depending upon where the sign is in its call-in cycle.
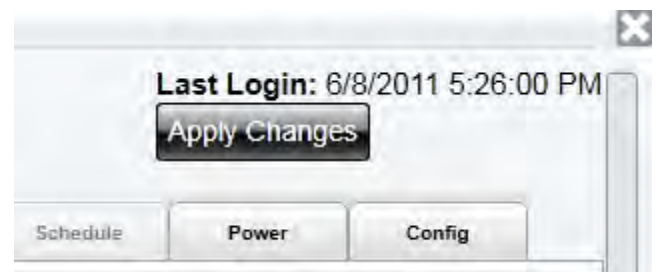
Quick Start: Setting up a Speed Display with Smart Apps

Log in to SmartApps website

Open remote management at apps.alltrafficsolutions.com. Log in with your user name and password.

Set up the location in the server where the sign will be placed

Set up a location on the *Setup-Locations* tab. Click new location, fill in the requested information and *Save*. Road/Group lets you group multiple addresses on one road or in a neighborhood together.

Move sign to server location

Go to the *Equipment Management* tab and click *Move* for the sign that requires the settings change.

Set Move location and update settings

In the move dialog, select the new location that was created, and select *Pending Move*. Check *Assign new settings* and enter the desired display settings. Click *Apply Changes*.
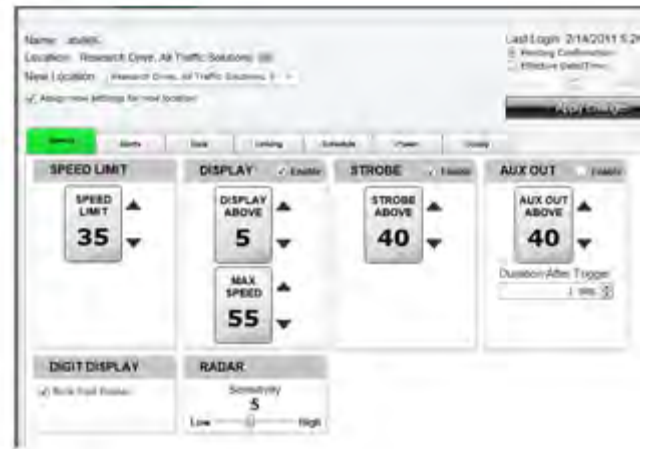
Mount the sign and tell the server that it has "Moved"

Mount the sign at the designated location in the field and turn it on. Initiate the Move Sign function by holding the speed limit and display settings buttons on the unit at the same time. This will make the sign call in, get the new settings and start to assign recorded data to this location.

SmartApps Overview

SmartApps - Subscribed and Unsubscribed Operation

When to use SmartApps online or offline

SmartApps is the All Traffic Solutions browser based interface used to manage all ATS products and a department's traffic safety program. The subscription SmartApps service provides online browser-based remote equipment management through the included cellular connection. The service also includes mapping of equipment and data locations, remote alerts and imaging and reporting on all collected data. If equipment is not subscribed to the SmartApps service, the SmartApps interface is still used with a local connection to change settings and messages on equipment and to view discreet traffic data files downloaded from the unit. The unit is connected to the PC locally using ATS Assist and a USB cable or Bluetooth. All equipment can be upgraded to the SmartApps service. Call All Traffic Solutions for more information.

There are three ways to use the interface:
1. SmartApps Remote Management with Internet connection: Use SmartApps service to manage equipment remotely over the internet with full SmartApps functionality. Sign in to apps.alltrafficsolutions.com to get started.
2. SmartApps Local/Offline Management with Internet connection: Use SmartApps without a subscription to change sign settings and analyze discrete data files.
3. SmartApps Offline Management without an Internet Connection: Use SmartApps to change sign settings and download data in the field without an internet connection.

SmartApps Remote Management with Internet connection

To manage equipment remotely, sign in with the user's email address and password. The PC is connected to the unit over the internet with a cellular link. ATS Assist is not needed unless message or data files are being synced from a PDA.

SmartApps Local/Offline Management with Internet connection

Offline usage is used for equipment settings functions when the PC is connected to the unit with a USB cable or Bluetooth connection, and for creation of reports from data downloaded from the sign using the PDA, USB cable or Bluetooth connection. To work offline, click the Work Offline button. The browser based interface communicates with the connected device through ATS Assist, a plug-in that allows the browser to talk to the PC and the unit. To see the Work Offline button, ATS Assist must be running before the apps site is opened in the browser. If it is not present, close the apps site, open ATS Assist and reopen the Apps site. There is no user name or password required.

To run SmartApps in the field where the PC may not be connected to the internet, a local copy of SmartApps must be installed. For more details see the next lesson - SmartApps Offline Usage.

SmartApps - Local Operation with ATS Assist

Using SmartApps Offline

SmartApps is the All Traffic Solutions browser based interface used to manage all ATS products and a department's traffic safety program. The subscription SmartApps service provides online web-based remote equipment management through the included cellular connection. The service also includes mapping of equipment and data locations, remote alerts and imaging and reporting on all collected data.

If equipment is not subscribed to the SmartApps service, the SmartApps interface is still used with a local connection to the sign to change settings and messages on equipment and to view discreet traffic data files and images downloaded from the unit. The unit is connected to the PC locally using ATS Assist and a USB cable or Bluetooth. All equipment can be upgraded to the SmartApps service. Call All Traffic Solutions for more information.

There are two ways to use the SmartApps interface:
1. SmartApps Remote Management with Internet connection: Use SmartApps service to manage equipment remotely over the internet with full SmartApps functionality. Sign in to apps.alltrafficsolutions.com to get started.
2. SmartApps Local/Offline Management with Internet connection: Use SmartApps without a subscription to change sign settings, analyze discrete data files and review collected images.

This section focuses on the local connection. For instructions on the complete SmartApps Service, see the SmartApps Web Based Managment instruction manual.

ATS Assist

ATS Assist is used when SmartApps is used locally on the unit without a subscription. It is used to connect a PC to a sign to change settings and download traffic data with SmartApps using a USB cable or wireless Bluetooth.

Many of SmartApp functions operate the same regardless of the connection type - whether cellular (subscription) or locally. Others operate differently with the remote cellular capability. Only the SmartApps subscribed remote services are available over the remote cellular link. These include Mapping to manage equipment geographically, Alerts for high speeds, low battery, Imaging Alerts, System Dashboard, Remote messaging and Remote servicing. These functions can be enabled at any time. Contact All Traffic Solutions for more information.

Install ATS Assist

Download and install ATS Assist. See the information sheet included with your sign or Contact ATS for the download url internet address.
As soon as the url address is entered in the browser the program will download to the PC. Double click on the program and follow the prompts to install ATS Assist on the PC.
If there are any problems with the installation go to the resource page for help troubleshooting PC install issues. Go to
https://docs.google.com/a/intuitivecontrols.com/document/pub?id=1bEI5zKTMqgOpuSH5hsoQMkIcP0zCJYisicV

Connect PC to Sign with USB Cable

Attach the sign to the computer's USB port using a USB cable. The mini USB connector receptacle is on the speed display units above the control panel.

Connect PC to Sign with Bluetooth Wireless

With the Bluetooth enabled PC, right click the bluetooth icon to see the available menu options and select *Add A Device*.
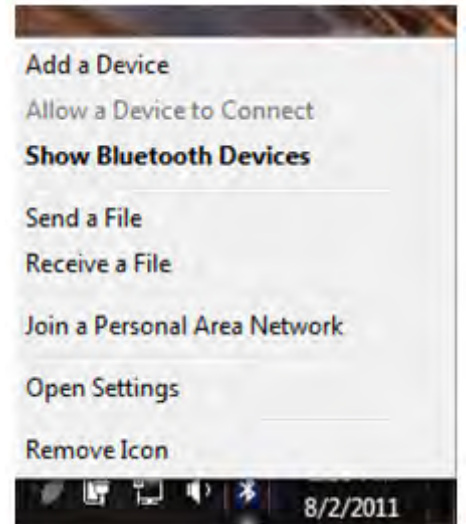
Connect PC to Sign with Bluetooth Wireless - Pair Devices

Power on the sign to be paired with the PC. The sign should appear in the search box. Once it does, click *Next*.

Connect PC to Sign with Bluetooth Wireless - Enter Pairing Code

Select the option to enter the device's Pairing code and click *Next*. In the next screen, type in **ATS** (case SENSITIVE) and click *Next*.
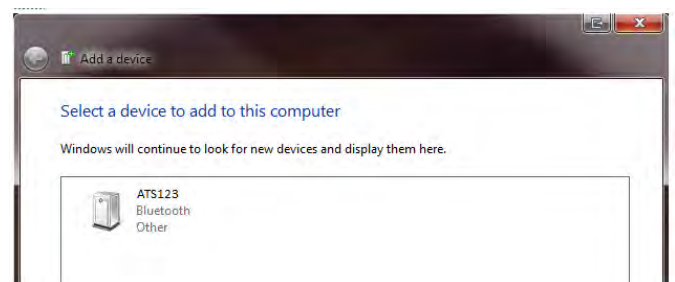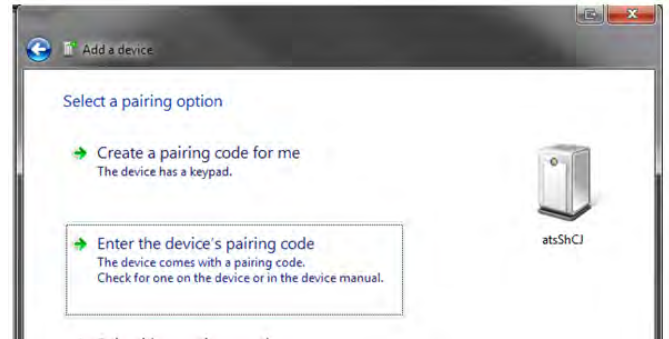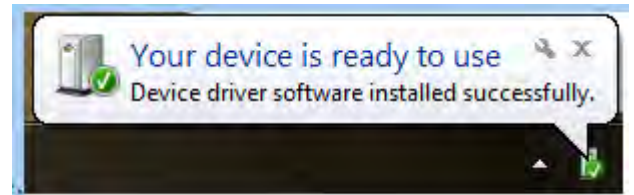
Connect PC to Sign with Bluetooth Wireless - Finish

The drivers will now install and this popup will appear when the sign is ready to use. *Click* close to complete the pairing process.

SmartApps Local/Offline Management with Internet connection

Offline usage is used for modifying equipment settings with a PC connected to the unit with a USB cable or Bluetooth connection, and for creation of reports from data downloaded from the sign using ATS Mobile, the PDA, USB cable or Bluetooth connection. To work offline without a SmartApps account, click the Work Offline button. The browser based interface communicates with the connected device through ATS Assist, a plug-in that allows the browser to talk to the PC and the unit. To see the Work Offline button, ATS Assist must be running before the apps site is opened in the browser. If the Work Offline button is not present, close the apps site, open ATS Assist and reopen the Apps site. There is no user name or password required for offline usage.

To run SmartApps in the field where the PC may not be connected to the internet, a local copy of SmartApps must be installed. For more details see the next lesson - SmartApps Offline Usage.

SmartApps Offline - Field Use With No Internet Connection - READ BEFORE DEPLOYING SIGN

Using SmartApps when not connected to internet

The SmartApps interface may be needed when the PC is not connected to the internet. This is the situation when a sign is in the field and settings need to be changed or data downloaded with the PC connected by USB or Bluetooth, and your PC has no moblie internet connection.

To use the SmartApps interface without the internet, first create a local install of the SmartApps website. ATS Assist may create this local install when it is installed. If not, do it manually as follows: When connected to the internet, go to apps.alltrafficsolutions.com. From any page on the site, click the right mouse button which will bring up the *Install ATS SmartApps onto this computer.* Click this option and a local version of the website will be installed on your PC that will perform all the offline functions. **Test the local install before going out in the field** by connecting the sign to your computer with the cable or bluetooth, disconnecting the internet from the PC (remove cable or turn off wireless), opening ATS Assist and then clicking the ATS icon on the desktop. The SmartApps interface should open and show any units connected to the PC.

If there are any problems with the installation of either program go to the resource page for help troubleshooting PC install issues. Go to https://docs.google.com/a/intuitivecontrols.com/document/pub?id
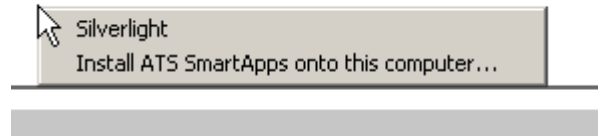
Run ATS Assist

To use SmartApps offline, ATS Assist must be running and the ATS shield logo will be in the PC's application tray. Click the locally installed *ATS SmartApps* icon on the desktop. Click the *Work Offline* button. If ATS assist is not running there will be no *Work Offline* button when ATS SmartApps is started from the desktop. Close the browser tab, start ATS Assist from the programs menu and restart *ATS SmartApps* from the desktop.

Click Work Offline

No user name or password is necessary with the *Work Offline* button.

All Traffic Solutions
SmartApps

LOG ON

Email Address: [_____]
☑ Remember email
Password: [_____]

[Work Offline]   [Log On]

Enter the Equipment Management tab

The system will open in the Equipment Management Tab. Any equipment connected to the PC by Bluetooth or USB cable will show in the Equipment Connected to PC table. Click on the *settings* button and the settings equipment management dialog box will pop up. For information on these settings, see the Equipment Management - Settings lesson.

| ◄ | Dashboard | Equipment Management | Map | Ma |

ALL TRAFFIC SOLUTIONS

Local Mode Active
Welcome,
Ted Graef
ATS Engineering
[log off] [account options]

EQUIPMENT CONNECTED TO PC

	Name ▽	Product Family ▽
Settings	atsMsgSign1	Messaging

Create Messages

On the main Message Management tab the messages and dependent messages on the PC will be available. You can create these messages offline and load them to a sign with the equipment management function. See the messages section for details of creating and loading messages.

ATS Engineering
[log off] [account options]

| Messages on Server | Dependent on Server | Messages on PC | Dependent on PC |

MESSAGES ON PC

|		Name ▽	Screen Size	Screen Density
Edit	Delete	Acc Ahead Left	Standard	Low
Edit	Delete	acc ahead move left	Standard	Low
Edit	Delete	acc ahead move right	Standard	Low
Edit	Delete	Acc Ahead Right	Standard	Low
Edit	Delete	Acc Ahead Stop	Standard	Low
Edit	Delete	acc fender bender kee	Standard	Low

Reports

The only report available when working offline is the Local Analysis report. For information on the local reports, see the SmartApps reporting page. The extended reports with filtering capability require the SmartApps subscription.
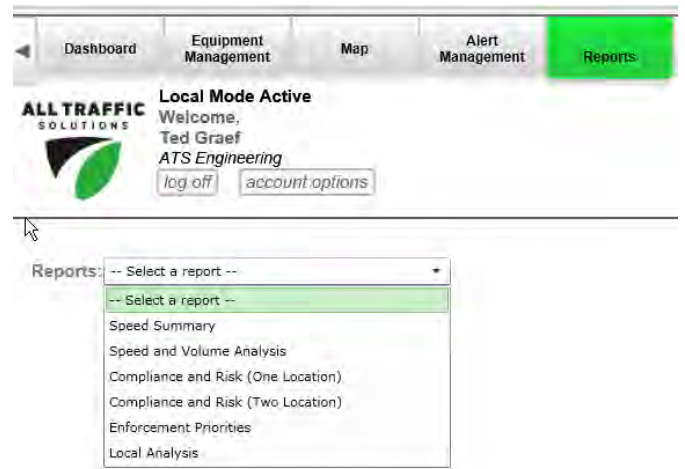
ATS SmartApps + ATS Assist - Functions

Open ATS Assist

ATS Assist allows you to perform several functions without the Web Based Interface. Use ATS Assist to sync traffic data and message files between your PDA and PC, to download traffic data from a sign and to split a data file. Once open ATS Assist will always be running on the PC. It can be minimized, and then maximized by clicking on the ATS icon in the Windows task bar.
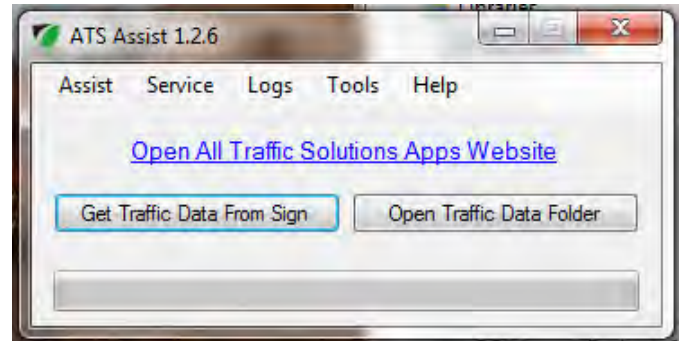
Open the SmartApps Website

With ATS Assist open, open the SmartApps website apps.alltrafficsolutions.com in a browser. If there is no internet connection, use the locally installed SmartApps application discussed in the last lesson. ATS Assist must be running first or the *Work Offline* option will not be available. Click *Work Offline*.

Downloading with the PC and ATS Assist

SmartApps will open on the *Equipment Management* Tab. Select *Settings* for the locally connected unit and go to the *Data* tab. Click the *Download Traffic Data* button. The *Get Traffic Data from Sign* on ATS Assist can also be used. When prompted, give the file a name. Over time many files will be collected, so it will be helpful to create a standard naming convention, such as Road, Location on road, Direction of traffic, Start date. Once uploaded, the data can be analyzed on the Reports tab.
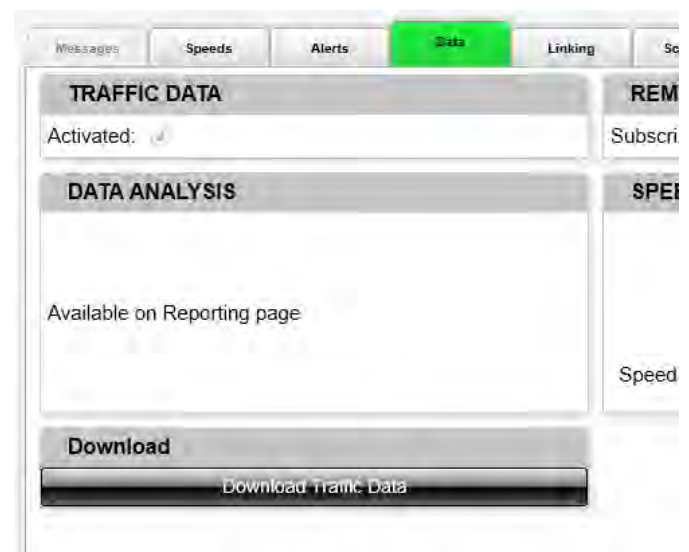
Transfer Data from PDA to PC or Sync Messages

Traffic Data: If the Traffic Data is downloaded to a PDA, it needs to be transferred to a PC connected to the internet to generate reports. Connect the PDA to the PC with a USB cable or with Bluetooth and either Microsoft ActiveSync or Windows Mobile Device Center. Click *Tools*, then *Sync PDA Data*. Check *Traffic Data Files* and click *Start*. Files are transferred to folder: C:/Program Files/All Traffic Solutions/ATS Assist/Traffic Data. Files can also be manually placed into this folder to find them on the analysis website. This is the only folder that SmartApps will look at to see data files for analysis. Once synced, the data can be analyzed on the Reports tab.

Message Files: Messages created on the PDA can be synced to the PC or created on the PC and synced to the PDA.
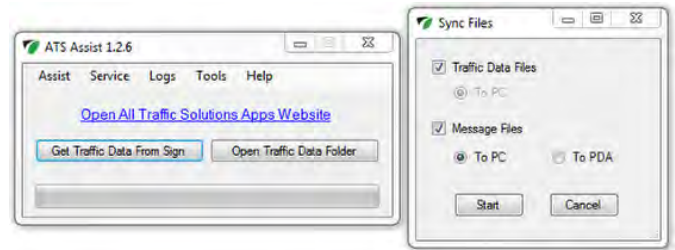
Load Software onto PDA

The ATS Assist software will ask to be updated whenever you are connected to the internet and a new version is available. The ATS Assist may also include updated software for the PDA. To load new software on the PDA, connect the PDA to the PC. In ATS Assist, click Tools, then Install PDA Software. Follow prompts.
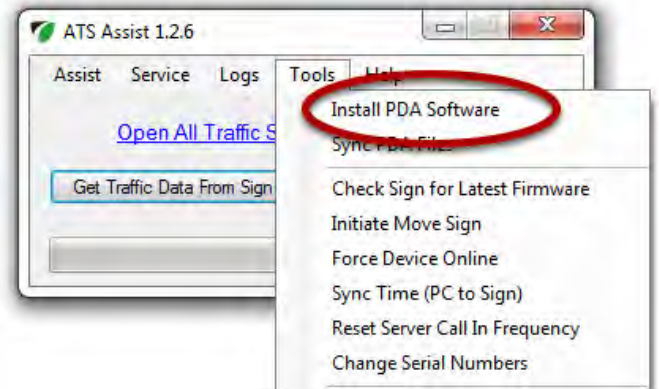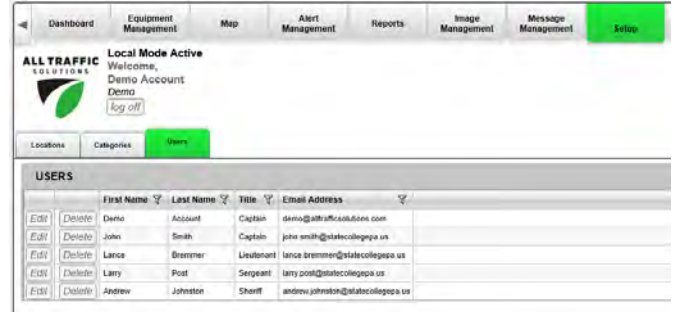
SmartApps: Setup

Setup SmartApp System Users

Click Setup on the top menu bar, and select the Users tab.

All current users are listed and can be edited by clicking the *Edit* button.

Add a new user.

Or add a new user with the *Add User* Button.

Insert user information or edit existing information

Select the user's access level:
- Reporting-Only: Access to data and ability to prepare and print reports, view map, dashboard, images and alerts. Cannot make any changes.
- Standard: Access to all Reporting Only features, and ability to change settings and move equipment, add locations, create and apply messages.
- Administrator: Access to all Standard features, and add users.

Enter the user's name, title and email address. Email address is the user name for the system, and must be unique to each user. Add a password, cofirm and select OK.

An additional user can be set up for any user that wants text messages for alerts. Use the text address for the email address. The user will show up twice in the user table, once with thier email user name, and once with their text address user name. Common text addresses:
- AT&T   10digitphonenumber@txt.att.net
- T-Mobile   10digitphonenumber@tmomail.net
- Verizon   10digitphonenumber@vtext.com
- Sprint

10digitphonenumber@messaging.sprintpcs.com

- Rogers Canada
  10digitphonenumber@pcs.rogers.com

Setup SmartApps Locations, Fixed and Mobile Locations

Fixed and Mobile Locations

Generally fixed locations are locations where data will be collected or message signs are permanently mounted. Mobile locations are locations associated with temporary usage of the message sign, such as "Emergency Vehicle 23." If traffic data is collected at a mobile location, it will usually be moved to a fixed location using the retroactive move function.

Locations and ATS Mobile

When traffic data or images are downloaded with ATS Mobile onto an Android device, the data must be synced to the server for saving and analysis. Collect the data from the unit using ATS Mobile. The device will then ask you to sync the data to a location that is set up in the server. If the desired location is not available, delay the sync until you can set up the new location using the following steps. Then go back to ATS Mobile and select the new location to sync the data.

Add or Edit a Fixed Location.

Click on *Setup* in the main menu bar. The default tab on the sub menu bar is *Locations*. To edit the name of the road click *Edit* next to the road. To edit a location on a Road, click the '+' next to the Road to show the locations associated with this road and then click *Edit*. Locations can also be deleted, but be careful if there is data tied to the location.

The organizational hierarchy of locations is Categories which includes *Road/Groups* which include *Locations*.
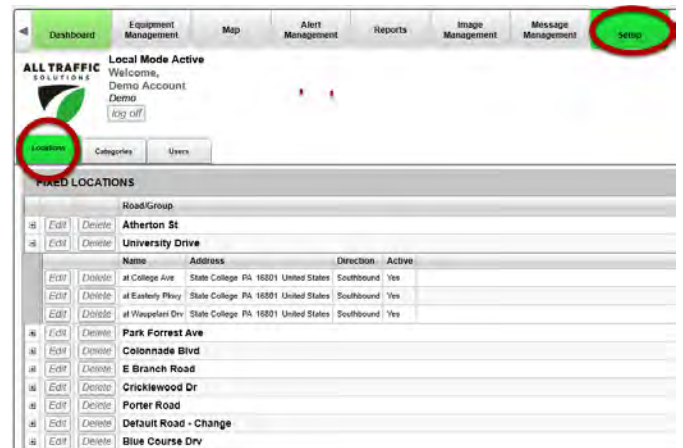
Add or Edit Location Details

Once in the Add/Edit Location dialog box, insert the required information. Location name is the recognizable name of the location, such as Mrs. Jones house, Pizza Hut, etc. Then insert the address. Click *Map It* and the map will center on the inserted address. Then move the icon to the specific location of the equipment. This allows the icon to be placed on a specific side of the street. Add the location to an existing Road/Group or create a new one. Select the direction and enter the speed limit for the location. This speed limit will be used for traffic report calculations.
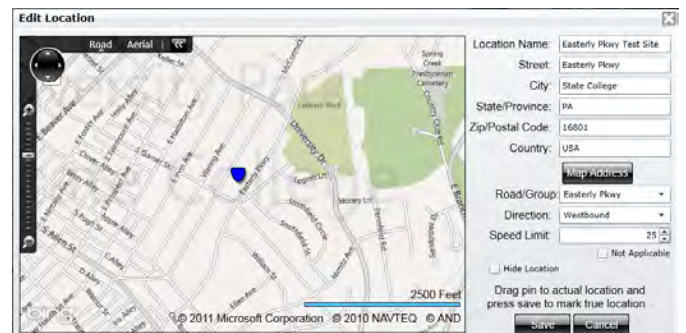
Not Applicable can be checked if the sign has no radar or there is no speed limit at the location.

Check Hide Location if the location is no longer in use. This will eliminate clutter on the map and shorten the location lists in report filters.

When done *Save* the location. This location is now available for placing equipment, and for reporting once data has been collected at the location.

Adding or Editing a Location from the Map

Locations can also be added or edited from the map. Click into the map and check *All Locations* on the layers. To edit a location, click the location icon and select *Edit Location*. To add a new location, do a right click at the desired location and then click the *Add Location* pop up. Refer to the above step once the Add/Edit dialog box comes up.
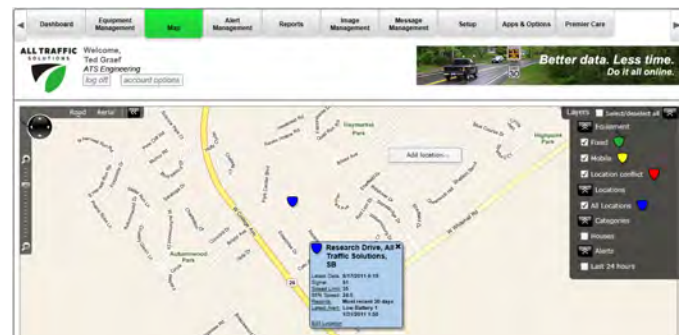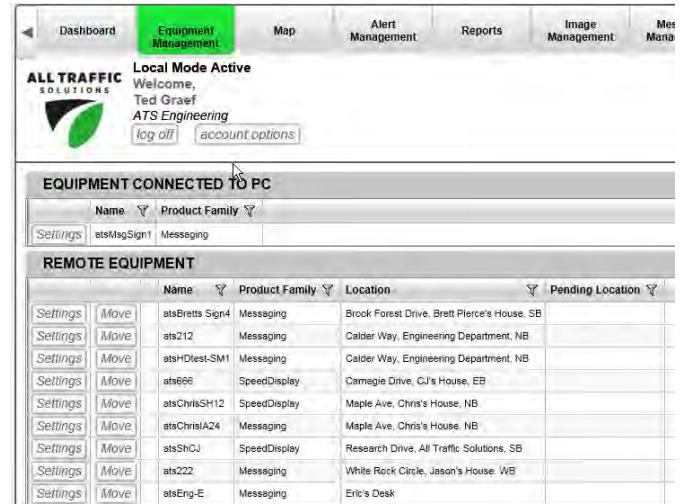
SmartApps: Equipment Management

Equipment Management Overview and Moving Equipment

How to apply view equipment settings, make changes and move equipment in the server.

Local vs Remote Equipment

Local equipment is equipment connected to the PC with a USB cable or wireless bluetooth. To see this table of equipment, the PC must be running ATS Assist. Only equipment directly connected to the PC will show in the table.

Remote equipment is equipment connected with a cellular connection. ATS Assist is not required to run this equipment. All subscribed equipment on the account will show in the table.

Changing Settings

Select Settings for the equipment that needs to be updated. When the settings dialog box comes up for this equipment, it displays the name of the unit, its current location and the last time it logged in. Make all necessary setting changes and click *Apply Changes* to send changes to the sign.

By default, message signs login every 15 minutes and speed displays every 3 hours. Therefore setting changes will take effect the next time a unit calls in. If changes are made and applied.but the time of the last login is earlier than the changes were made then the sign has not been updated.

Locally connected signs will update immediately upon clicking *Apply Changes.*

Moving Equipment in the Server and the Field

Moving Equipment applies only to remotely managed equipment. Remote equipment has two location settings - the actual physical location in the field and the virtual location setting in the server.
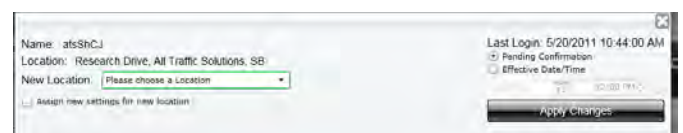
These need to be in agreement for two reasons.
1. If they are not in agreement the equipment in the field will show up on the map as being having a location conflict, which means that the location from the unit's GPS and the location in the server are more than 500' apart.
2. Data taken by the sign will be labeled with the location the sign is at in the server. If the location is incorrect it needs to be corrected so that the data is tied to the correct location.

To Move a sign, select *Move* next to the equipment in the Equipment Management table. When the Move dialog comes up, select the new location for the sign. To change settings for the new location at the time of the move, check the *Assign new settings for new location* box and then fill in the settings for the new location. Use the *Move* dialog to edit an pending move as well.

Pending and Retroactive Moves

There are two ways to move a sign.
Pending Move: In this scenario, queue the sign in equipment management for a pending move by selecting *Pending Confirmation* in the Move dialog box. When the sign is physically moved to the pending location, use the *Move Sign* command at the sign. This causes the sign to call in and "Move" to the new location in the server. On a message sign, you use the top scroll button and follow the instructions on the message sign's display. For speed displays, pressing both the speed limit and display mode buttons at the same time will initiate the sign calling in the move to the server. The speed display shows a crosshair on the front display when a move is initiated.

Effective Date/Time: This *Move* function is used when the sign was moved physically in the past, but not "moved" in the server. Fill in the date and time the sign was actually moved. The data the sign has collected will be divided between the old and new locations at the time you set. This time can only be a time in the past, it cannot be in the future. Future moves are Pending Moves, discussed in the previous section.

Once the new location is selected, the move type is selected and any setting changes are made, click Apply Changes. Pending locations will show up in the Pending Location column on the equipment management table. Retroactive moves will show up on the table as the new location.
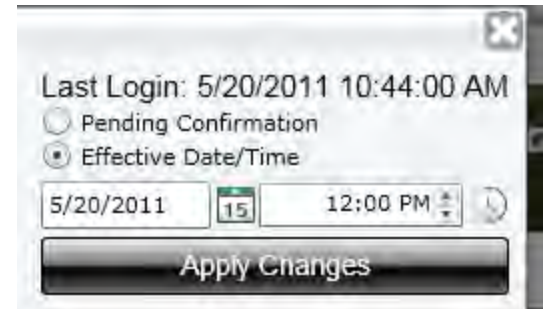
Equipment Management: Sign Mode

Setting the sign mode

The first equipment management step is to select the sign mode. Click Settings for the equipment to be managed. In the Settings popup, select the desired sign operation mode. Only modes applicable to the specific sign will be available so not all the modes above may be available. Units with digits are limited to the Display Off, Speed Limit Sign and Speed Display Mode. Units without radar are limited to the Display Off, Single Message and All Message Mode. Signs with full matrix displays and radar can utilize all modes.

- Display Off: The sign's display will be off (digits and/or message) but the sign will still collect traffic data if it has a radar. Generally known as Stealth Mode.
- Speed Limit Sign: Sets a sign to display a fixed speed limit. For speed displays must be used in combination with a SPEED LIMIT sign wrap.
- Speed Display: Sign will display a vehicle's speed following parameters set on the Speeds tab. For speed displays must be used in combination with a YOUR SPEED sign.
- Single Message: Message sign will display a single message of up to three screens.
- Dependent Messages: SpeedAlert Radar Message Signs with radar or instALERT signs used with a linked speed display will display a set of five dependent messages with each message triggered by a specific vehicle's speed.
- All Messages: Displays all messages in the sign's memory sequentially, creating a message of up to 72 screens. Does not include the "Display Now" message.
- Daily Schedule: Schedule any available modes and imaging over a 24 hour period that repeats daily.
- Weekly Schedule: Schedule any available modes and imaging over a weekly period that repeats weekly.
- To turn the equipment off remotely, first schedule one of the modes for time on, and for any unspecified time windows the sign will be "off" in the standby mode. This is the only time units with radar will not collect data. If the sign is in schedule mode, yet there are no modes selected for any time windows the sign will be off.

Screen Mode Views for SpeedAlert 18

Display Off · Speed Limit Sign · Speed Display · Single Message · Dependent Messages · All Messages

Screen Mode Views for SpeedAlert 24

Mode Views on the SpeedAlert 24 units. The instALERT 24 only has the Single and All Messages modes unless it is linked to a speed display or has an internal radar.

| MODE: SINGLE MSG MODE	MODE: ALL MESSAGES MODE	MODE: DEPENDENT MSG MODE	MODE: SPEED DISP MODE	MODE: NO DISPLAY (STEALTH)	MODE: SPEED LIMIT SIGN
Single Message	All Messages	Dependent Messages	Speed Display	Display Off	Speed Limit Sign

Equipment Management Settings: Messages

How to send a message or dependent message group to a sign and display it on the sign

Select the Equipment Management tab.

Click *Settings* to modify the settings on a unit connected with a USB cable or Bluetooth, or on any unit with remote management. Messages are added in the settings dialog.
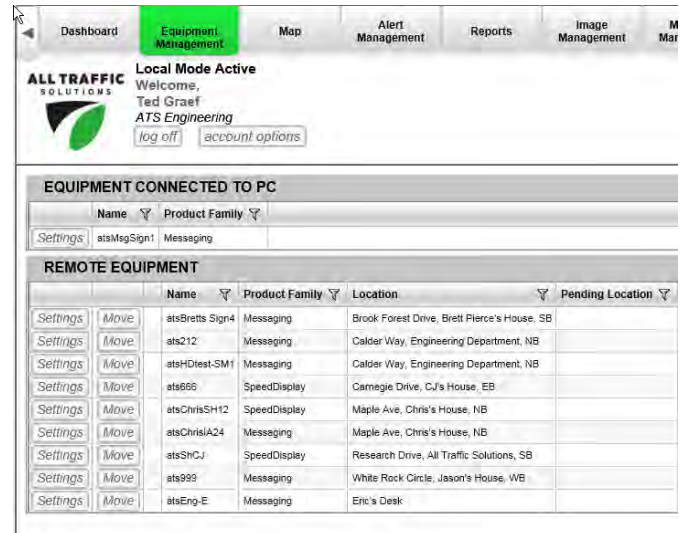
Settings dialog box pops up on the Messages tab

The Messages tab shows the messages on the server (or messages on PC if connected locally) and the messages on equipment. To add a message to the equipment's on-board memory, highlight it in the *Messages on Server* column and click the right arrow which moves it to the *Messages on Equipment* column. Up to 24 messages can be placed on the equipment. If the equipment list is full and another message is needed, remove unneeded messages by highlighting them and clicking the left arrow moving them to the server. Then there will be space to add additional messages.

Preview the message by clicking a message in either column and then clicking Preview under the column. in which it is highlighted.

New messages for the sign are created in the *Message Management* section on the main tabs. To create a new message and place it on the sign, close the *Settings* dialog box with the X, create the new message on the *Message Management* tab, save the message and go back into *Equipment Management, Settings* for the sign that needs the message . The new message will be available in the *Messages on Server* column and can

be moved to the *Messages on Equipment* column.

To display a message on the sign, select the message on the equipment that you want to display by selecting it in the *Active* box. When the sign calls in, the new messages and the active selection will be sent to the sign. The sign calls in every 15 minutes, so it may take up to 15 minutes for the change to take effect.

Display Now when connected Locally

With a sign connected locally with a USB cable, the option to Display Now is available when you preview a message on the computer or on the equipment. Pick any message from either column, *Preview* it and then click *Display Now*.
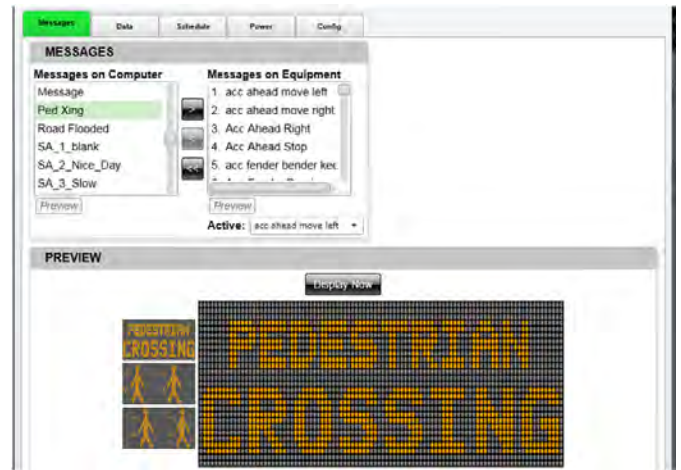
Dependent Message Groups

To select a dependent message group to display on the sign, select a dependent message group from the dropdown in the dependent message groups section. The dependent message groups are created on the main Message Management tab, under the Dependent on Server or Dependent on PC (for local connections.) See the SmartApps Message Management lesson for details on creating dependent message groups.
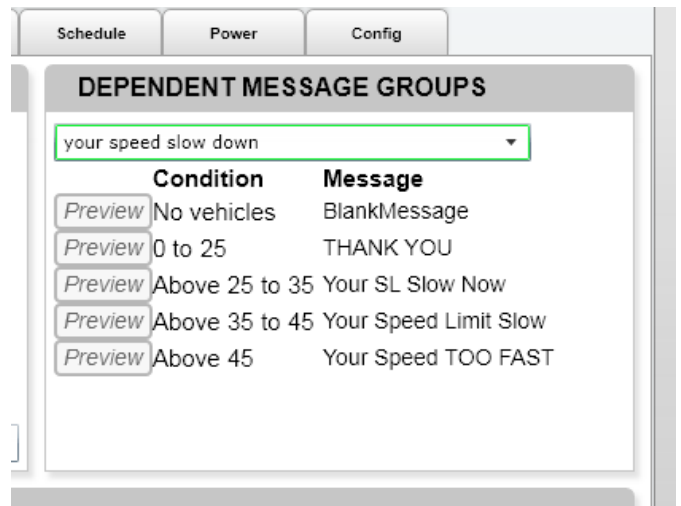
Equipment Management Settings: Speeds

How to set the speed limit and display parameters

Select Equipment Management, Settings for the equipment and then the Speeds tab

1. Change the *Speed Limit* of the road with the up and down arrows.

2. Set the display parameters. *Enable* the display to display vehicle speeds. The *Display Above* setting is used to limit how low a speed the sign will display and is used to save power. If the sign is powered by battery or solar, this might be set to the speed limit plus 1 MPH to not waste power on cars obeying the speed limit. If the sign is on a trailer or running on AC, it could be set as low as 0 MPH, although the sign will not display speeds below 5 MPH to limit false triggers, unless the low speed filter option is selected. Contact ATS for more information. *Max Speed* is the maximum speed to be displayed to prevent anyone from racing the sign. The digits will be blank above this speed. Data with the actual speeds will still be collected even though the sign is blank.

3. Check the *Blink Digit Display* box in the *Digit Display* to have the digits blink when they display. This will save power.

4. Stealth mode: If the display is not enabled, the display will remain blank while the sign records data. In this mode, the sign will collect baseline data without affecting the speeds on the road.

5. The violator strobe is used to catch violators attention by flashing the digits above the set speed. Set the speed above which the digits should flash. This provides a second, more rapid flash rate than the blinking digits.
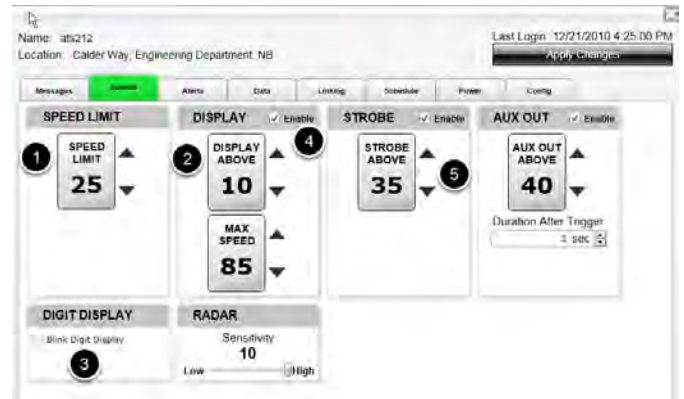
Set Radar Sensitivity

Radar Sensitivity affects the distance at which the sign picks up a vehicle. It is not a specific distance as the actual distance depends upon the vehicle. A tractor trailer will always be picked up at a greater distance than a Miata. Lower this setting to the lowest setting possible to save power. For example, there is no reason to display a vehicle's speed if it is too far away to read the digits. If there is a cross road in the distance, lowering the sensitivity will reduce readings from the cross traffic.
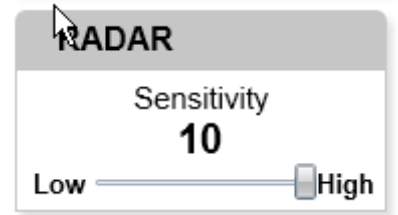
Auxiliary Output Settings

For equipment with the optional auxiliary output relay use the *Aux Out* box to set the trigger speed for the output. Set per the image above, the relay will come on at 40 MPH and will stay on for 2 seconds after the vehicle which triggered it passes. Additional signals will reset the timer, so if there is a train of vehicles, the relay will go off 2 seconds after the last vehicle. The delay duration can be between 1 and 10 seconds. This window will not show if you do not have this option.

Equipment Management Settings: Alerts

How to set alert thresholds and recipients, relationship with images

Equipment Settings, Alerts tab

With the Alert App, the equipment can send an email or text message alert for low battery, tampering, high speed events and low speed congestion. With alerts, you set the thresholds for each type of alert and the personnel that are to receive each alert.

- Set the thresholds for the two low battery alerts at the point where you want to be alerted that a battery change is imminent, and then when it actually needs to be changed.
- Enable the tamper alert to be notified if the sign is being disturbed.
- Set the high speed alert at the speed above which you want to be alerted to a high speed event. Set it high enough that the amount of alerts will not be bothersome.
- Set the congestion alert at a speed below which you want an alert. The system must see this low speed for 10 minutes before the alert will be sent.

To receive email or SMS alerts, set up the appropriate email address in the user setup on the *Setup - Users* tab. If someone needs to get both email and SMS, set them up as two users - one with the SMS address and one with the email address. Then both user names will be available in the Alert notification matrix for selection.

To receive images with the alerts, enable images for each alert condition in the Settings Imaging tab for this piece of equipment. See the Equipment Management: Imaging section.

Equipment Management Settings: Imaging

Settings

The Pictures option can be set up on the "Imaging" tab (1) in the "Equipment Management" pop-up.

Pictures can be taken for High Speed events, Congestion events, Tamper events, and timed events (Awareness) by checking the "Active" box corresponding to the given event. (2)

When managing equipment remotely through the website, the most recent image uploaded is displayed (3) and the percentage of monthly allowed picture usage (4) is displayed given Remote Pictures Management has been purchased.

When managing equipment locally through USB or Bluetooth, buttons will be available to download all images or just take a quick snapshot (5). Images downloaded here can be viewed in the "Image Management" app.
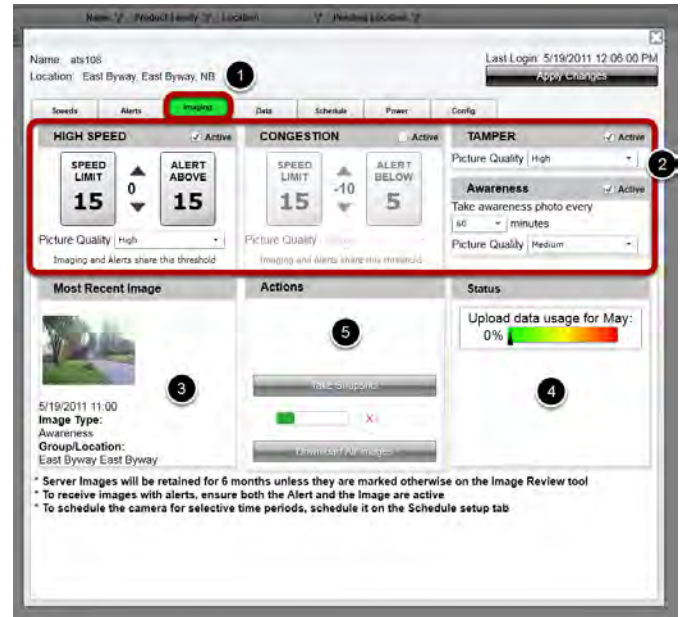

Alerts and Imaging (Remote connections only)

Alerts are only available with the SmartApps remote subscription.

It is important to note that the picture event thresholds for High Speed Events and Congestion Events are the same as the Alerts thresholds. When the thresholds are adjusted on the Alerts or Imaging tabs the value on the other tab will be adjusted accordingly. These are linked so that picture alerts are possible.

To receive an alert of any kind, the alert "Active" checkbox must be checked. To receive a picture alert both the alert and image "Active" checkboxes must be checked for the given event type. Users must be selected for email alerts to be sent.
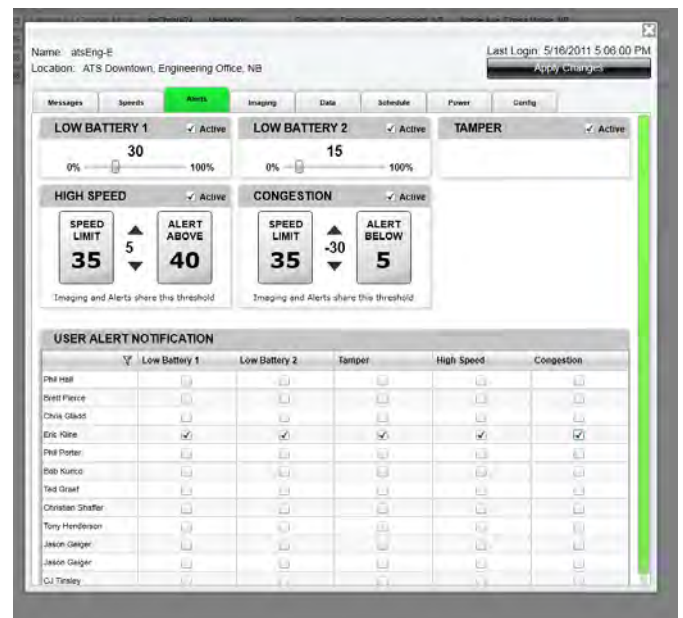
Picture and Alert Logic

Event Type	Alerts not subscribed	Specific alert inactive	Specific alert active
Pictures inactive	Do nothing	Do nothing	Send std alert
Pictures active, no Remote	Take pic	Take pic	Take pic, Send std alert
Remote Pictures, halted	Take pic	Take pic	Take pic, Send std alert
Remote Pictures, enabled	Take pic, Upload pic	Take pic, Upload pic	Take pic, Send pic alert

The chart above outlines the picture and alert logic for a given event under various operating conditions.

When Remote Pictures Management is subscribed images will be uploaded to the server via the cellular network immediately after they are taken. This means the most recent image will always be on the server unless cellular data service at the location of the sign is unavailable or very poor.
If Remote Pictures Management is not purchased or halted but the Picture Hardware option is active, pictures will be taken but must be downloaded via USB or Bluetooth. For more information on the "halted" state of Remote Pictures Management please refer to the *Data Usage* section of this reference.

## Radar and High Speed Events

Timing the instant to capture a high-speed violator is important. The capture mechanism works most of the time, however there is no guarantee that the image taken will show an identifiable vehicle or even if there will be a vehicle in the image field of view. This is due to many circumstances.

Once a high speed event is triggered the camera must turn on and take the image. The entire process takes ~5sec from the time the radar sees the first speed above the high-speed event threshold. During this delay the vehicle is traveling towards the camera. If the vehicle is traveling very fast, it may pass the sign before the image is taken. If the vehicle's speed was read very far in front of the sign, the vehicle will be in the picture but appear far away.

The radar sensitivity setting may be used to adjust the point at which the vehicles are in range of the radar and possibly improve the chances of capturing a good image. However it is important to note that vehicles of different shapes and sizes come into range of the radar at different distances so no setting will be perfect.

Vehicles accelerating towards the sign and triggering a high-speed event just before passing the sign will not be captured due to the camera boot time delay.

License plates will not be readable in images. Images cannot be used with license plate recognition software.
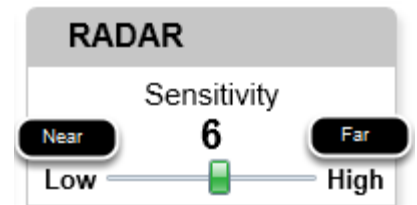
Scheduling

When using the camera it is usually desirable to only capture images during daylight hours. The Scheduling tab allows the camera to be active during specific operation windows and turned off when images will not be worthwhile. If an event occurs during a non-camera operation window that would normally be a picture alert, a standard text-only alert will be sent in its place.

Times not assigned an operation window will place the device in OFF mode and the camera will not be used.
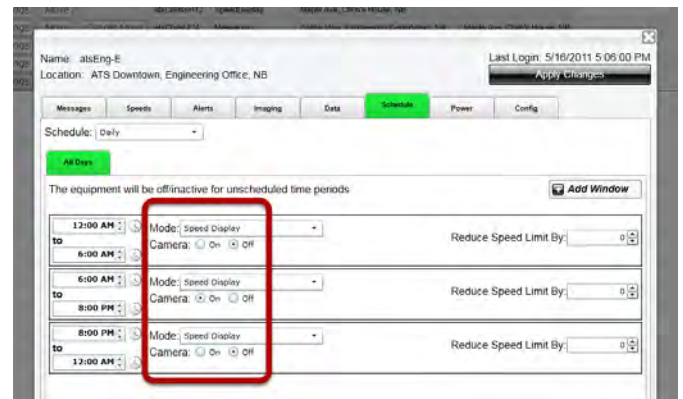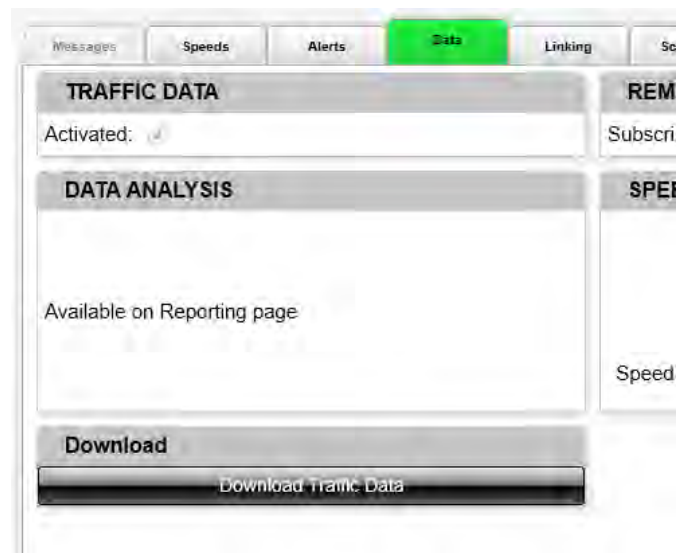
Equipment Management Settings: Data

Set data exceptions

Speeds outside of a minimum and maximum can be ignored. This might be done to eliminate speeds of drivers making a turn at a specific location which lowers the average speed, or a particular environmental signal that gives a false high speed signal. These settings cause the filtered data to not be recorded. This is a filter on the data collection, not on the data reporting.

Local Downloading of Data with the PC and ATS Assist (for customers without the SmartApps Service subscription)

Click Work Offline and SmartApps will open on the Equipment Management Tab. Select Settings for the locally connected unit and go to the Data tab. Click the Download Traffic Data button. The Get Traffic Data from Sign on ATS Assist can also be used. When prompted, give the file a name. Over time many files will be collected, so it will be helpful to create a standard naming convention, such as Road, Location on road, Direction of traffic, Start date. Once uploaded, the data can be analyzed on the Reports tab.

Equipment Management Settings: Schedule

How to schedule equipment to display different messages or speed display options

Select the schedule type from Sign Mode

Any mode other than Daily or Weekly Schedule: There is no schedule and the sign is on all the time. Schedule tab will grey out.
Daily Schedule: The sign will follow the schedule and repeat each 24 hour cycle, and be the same on all days.
Weekly Schedule: Create a schedule for each day of the week, and schedule will repeat each 7 day cycle.
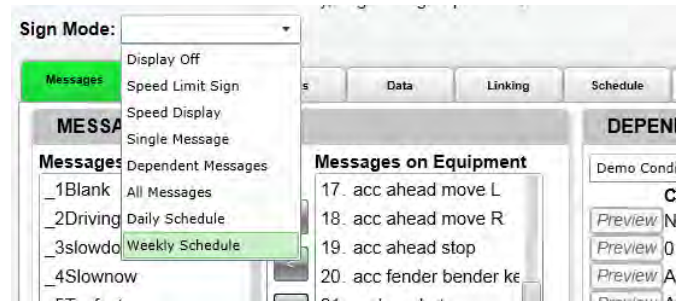
Create schedule for All Days (Daily Schedule) or each day (Weekly Schedule)

Select Daily or Weekly schedule and add a schedule window with the *Add Window* button. For each window, enter the schedule details for the time period. There can be up to six windows per day.
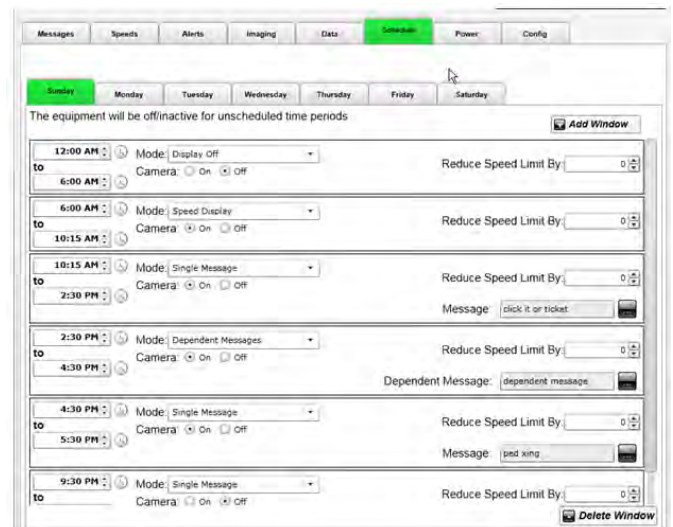

Complete details for each time period

Select the time period for each window. Time windows cannot overlap. The sign will be off for any time that is unaccounted for in a window. Use this to shut the sign down completely, including the data collection.
Schedule time windows from 12:00 AM to 12:00 AM to cover the entire day.

Enter the mode.

- Display off: Digits or messages are off, yet a sign with radar will still collect traffic data (Stealth Mode).
- Speed Display: Standard speed display mode for speed displays and radar message signs. Displays
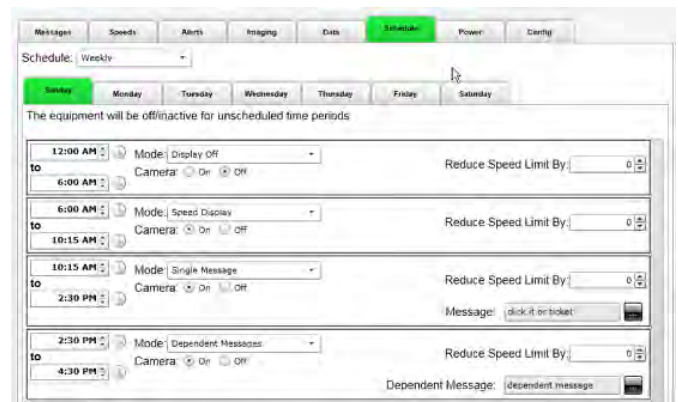
vehicle speeds and collects traffic data.

- Speed Limit Sign: Speed display and message signs can display a speed limit, which can be changed throughout the day with the schedule function.
- Single Message: Displays a single message of up to three screens on a message sign.
- Dependent Message: Displays a dependent message group on the radar message sign or on a message sign that is linked to a speed display. Dependent messages display a message tailored to each vehicle's speed, with three speed ranges and corresponding messages over the speed limit.

Set the camera on or off for each window. See Camera Schedule step below.
Set a reduced speed if applicable. Do this for Dependent Message mode so the ranges for the messages displayed according to speeds change relative to a lower speed limit or for changeable Speed Limit Sign mode.

Select message or dependent message group. If a new message or dependent message group is required, create it on the *Messages* tab and then it will be available on the schedule message drop down list.

Camera Scheduling

For each time window there is an option to have the camera active. Schedule the camera on or off if pictures are desired during the specific time window. This is used to conserve image transfer capacity. Take images only when desired, such as during school arrival and departure times. It is also used to turn the camera off overnight, when it will not capture images in the dark. Note that these time windows are the same except for the camera being off after dark.

Equipment Management Settings: Power

Monitor sign power levels and set brightness levels

The power tab shows the current brightness, power level and power supply.

The power tab helps conserve power for battery applications.

Brightness Level

The brightness level and range can be adjusted on all units. Select a minimum and maximum brightness level and the sign will automatically adjust between these levels depending upon ambient light levels. The minimum might be set higher than 1 due to ambient light levels near the sign at night, and the maximum can be set to the lowest level that provides adequate brightness at a particular location. The lower the maximum is set, the longer the batteries will last between charges. To set the sign to one fixed brightness level, set the maximum equal to the minimum.

Equipment Management Settings: Config

Data from the Config Tab

Settings in the Config Tab

The unit can be given a different name for easy identification in the Equipment Management table. A unit can be put into demo mode, in which it will display a rotating set of speeds to demonstrate the operation. Be careful not to send this to a remote sign in the field.

The information tells ATS all about this sign if we need to upgrade or troubleshoot the unit.

SmartApps General

SmartApps Dashboard

SmartApps Home Tab Dashboard

After logging into SmartApps, the home tab dashboard opens. Widgets can be selected to provide a snapshot of the current remote equipment status. Select windows that will provide the status of your remotely managed equipment.

SmartApps Map

SmartApps Map

The Map tab shows all subscribed equipment currently in the field and its location. It also shows all locations that have been setup in the system, and all locations with traffic data. If there is equipment in the field, the icon will provide a summary of the current status at the location and provide a data summary if applicable. Most SmartApp functions can be accessed from the map. There are links to go directly to settings, reports and other configurations. Equipment with current alerts are highlighted and categories of equipment set up on the *Setup Tab* can be displayed by checking a category.

Map Layers

Map Layers can be turned on or off:

Fixed Equipment: Equipment that is located in a Fixed Position and in agreement with the server. Usually a location with traffic data collection.

Mobile Equipment: Equipment that is stored in a response vehicle that is in field use, and has reported a GPS position to the server.

Location Conflict: Equipment at a location where the equipment's GPS location does not agree with the location in the server.

Locations: Locations set up in the server where equipment will be mounted, and usually where traffic data is collected by units with radar.

Categories: Categories are groups of locations, combined under one name for convenience. Shows all locations from the checked category. Categories are created on the Setup Tab.
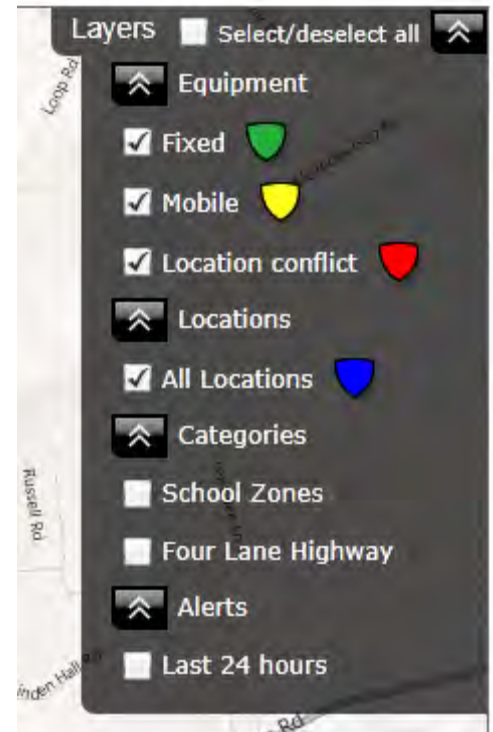
Speed Display Fixed Equipment

Click on a Speed Display to see summary information. Click on the specific item to get more information or change a setting. The unit can be moved in the server, settings can be changed and the most recent data can be accessed directly from this popup. Click the X to close popup.

Message Sign Fixed Equipment

Message signs are in fixed locations if they are mounted permanently or if they have the internal radar and traffic data is being collected. Access settings, status and reports by clicking the relevant link.


Message Sign Mobile Equipment

Message signs are mobile when they are used in many different locations for informing the public. Generally a mobile location will not have traffic data tied to it. Mobile locations will show up on the map once the message sign is deployed and calls in with its GPS location. The icon will stay on the map at full brightness as long as the unit is reporting in and confirming the location. Once it has stopped calling in the icon will dim. The icon will move if the unit calls in from another location. Otherwise it will stay dim until the *Clear Icon* option is clicked.

Location Conflict

Location conflicts are presented as red icons and are generated when a unit reports a GPS location that is more than 500 feet from the server location for the device. Usually this indicates that the sign was moved physically but was not "moved" in the server. It could also mean the sign has been stolen. Correct this situation by changing the location of the sign in the server to agree with the physical location or by tracking down the sign.
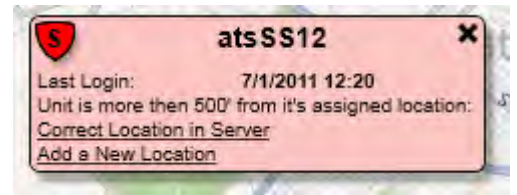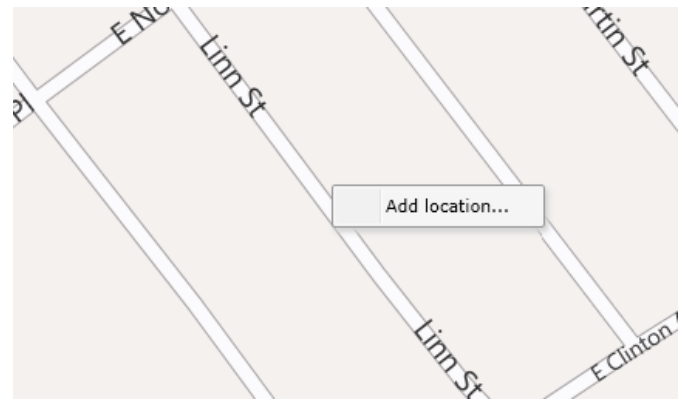
Locations

View all active server locations by checking Locations. View settings related to the location, recent data or edit the physical location. If a location is not longer of interest it can be hidden on the Setup-Locations-Edit popup so it will not clutter the map.
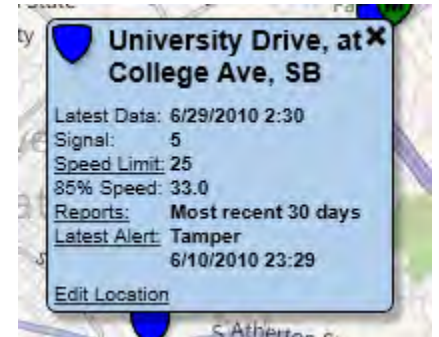
Add a New Location

A right mouse click on the map at the desired location will bring up the *Add Location* option. Clicking this will open the location dialog box where the rest of the settings for the location can be entered.
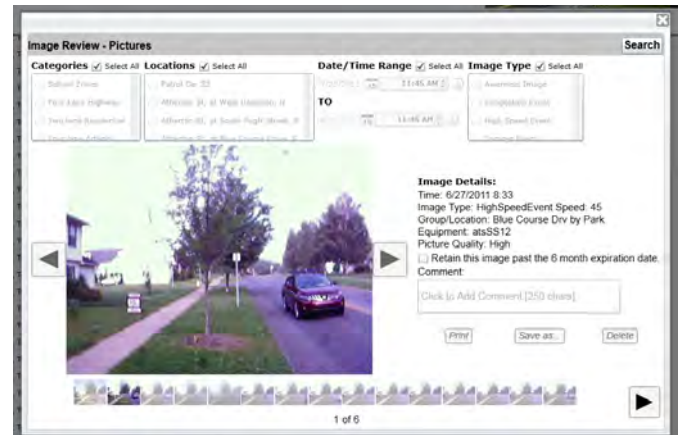
SmartApps Alert Management

Alert Management Tab

Alert Management lists a summary of the alerts in a paged format. It shows the type of alert, location, time and the recipient. If Imaging is subscribed and enabled along with the alert, click the *Image* button associated with a particular alert to navigate the image that was recorded along with the alert. The alert list can be filtered by column header by clicking on the column header. For example, the high speed alerts can be sorted from highest to lowest alert speed.


Alert Images

When the Image button is clicked, the image review popup will show images for the last 100 alerts. The image review filters can be expanded beyond the alert filter using the alert filters at the top of the popup. To get images along with alerts, both SmartApps must be subscribed and enabled.

SmartApps Message Management

Messages Overview

Create messages and dependent messages on this tab. There are two groups of messages: *Local Messages* on the PC and if the SmartApps Equipment Management service is subscribed, *Remote Messages* on the server. Messages on the PC are only available when working on this specific PC. Messages on server are available whenever signed into your account on the internet, no matter the PC. A Remote management subscription is necessary for messages to be saved on the server.
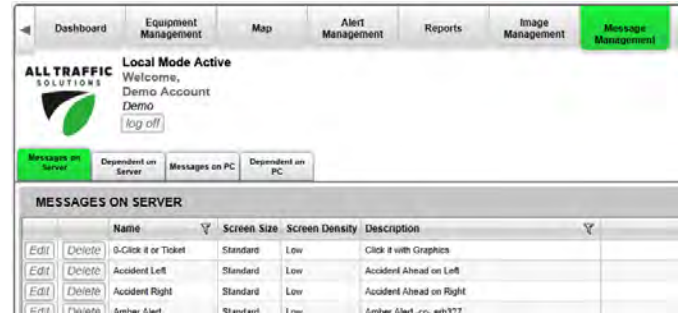
Messages are single, three screen messages. Dependent Messages are groups of five messages with a specific message displayed related to a specific vehicle's speed relative to the speed limit.

Create or Edit a Message

To create or edit a message, either click *Add Message* or *Edit* an existing message. In the edit screen, add the appropriate settings for the message. There are message options that apply to the entire message, and screen options that apply to one of the three available screens within the message. In the *Message Options*, first pick a name and a description for the message and the number of screens. Pick the screen size - *Standard* for an instALERT 24 or *Small* for instALERT 18 or a SpeedAlert 18. Then pick the density of the screen, standard at *Low* or the optional *High* density.
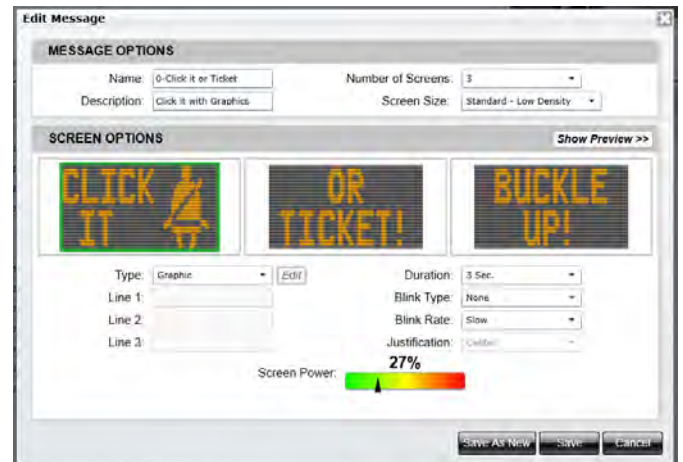
In the *Screen Options*, enter the settings for each screen. Click on the screen to create or edit and it becomes the active screen and gets a green border. Enter the type of screen, whether text of the various size combinations, a YOUR SPEED or SPEED LIMIT screen for a dependent message system, or a graphic. Enter the text in the applicable text boxes. The cursor must be moved out of the text box by clicking on any other function for the text to preview in the screens. Set the duration of the screen, whether it should blink, invert or stay constant and the rate of blinking if applicable. Justify the text left, right or center. A screen power gauge shows whether the message uses more or less power given the settings. Less power means more battery life if this is important for the deployment.

Preview Message

Click Preview to see the message displayed in action.

Dependent Messages

Speed Dependent Messages have the sign display different messages relative to the driver's speed. Create messages for each speed range and save them on the messages tab. Then they are available for selection for the speed range in a dependent message group. Utilize the *Speed Limit* and Your Speed message types as desired when creating messages. You can adjust the speed ranges as desired creating the speed range for each message. To save power, generally select a blank message when no vehicles are detected.

Speed Dependent Messages are also created on the Message Management tab. Just like Messages, Dependent Messages can be stored on the PC. Click on the *Dependent Messages* tab on the main *Messages* tab table. *Edit* a dependent message or click *Add Dependent Message* to add a new dependent message.
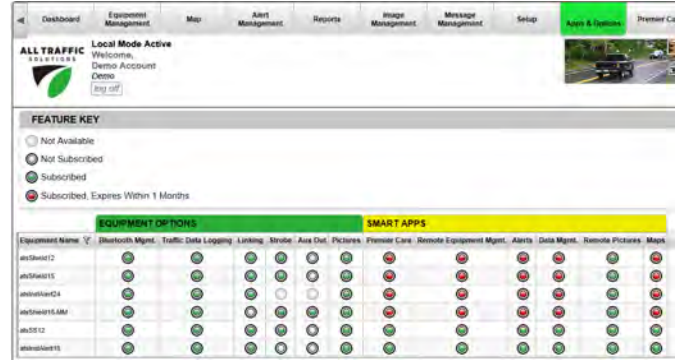
Name the new dependent message and add an optional description if desired. Select the screen size for the equipment that will be displaying the message, Standard for the iA24 of Small for the iA18 or SA18. Fill in the speed limit variables that determine the three speed ranges above the speed limit. Then select a message for each condition. The messages have to already exist in the messages list to be selected for the dependent message group. If an additional message is needed, exit the dependent message tab, create the message and save it and then return to the dependent message screen and it will be available for selection.

You can preview the message for each condition individually using the *Preview* button next to the condition.

SmartApps Apps & Options

Apps and Options Subscription Status

The Apps and Options shows the current subscription status for both hardware equipment options and for subscribed browser based SmartApps. For more information or to subscribe any hardware or SmartApps, contact All Traffic Solutions.

SmartApps PremierCare

Premier Care Subscriptions

The Premier Care Tab shows the current status of the equipment's Premier Care subscriptions. With Premier Care, it is All Traffic Solution's responsibility to ensure that the equipment is always ready for service. It even provides a discount for vandalism related repairs. Contact All Traffic Solutions for more information.

SmartApps: Imaging

Reviewing Images

Reviewing Images in the Image Management App

Remote Image Management App

Images stored in Remote Image Management are received from devices automatically via the cellular network and are organized by location (1). For each active location (locations where equipment is currently assigned) (2) the most recent image will be displayed on the main app screen. Inactive location images are available at the bottom of the tab (3). The monthly data transfer usage meter for the account is shown here as well (4).

To see all images for a given location, click on the location to bring up the image review dialog. To search for images based on multiple locations, trigger types, or a date range click on the "Review all Images" button (5), configure the filters as desired on the top of the image review dialog, and click the search button.
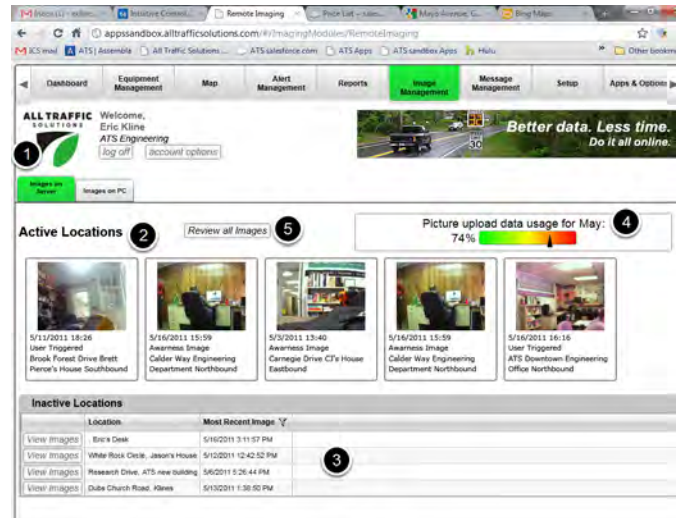
Remote Image Management Image Review

In the Image Review dialog images may be printed, saved to a PC, or deleted (1). When saved on a pc,, the image files will include the image details in the file properties. Comments may be added to an image as desired (2). Images in the Remote Image Management App will be discarded six months after they have been received unless the "Retain this image past the 6 month expiration date" box is checked (3). This box is not checked by default.

Specific images may be found by adjusting the filters at the top of the dialog (4) and then clicking "Search (5)"
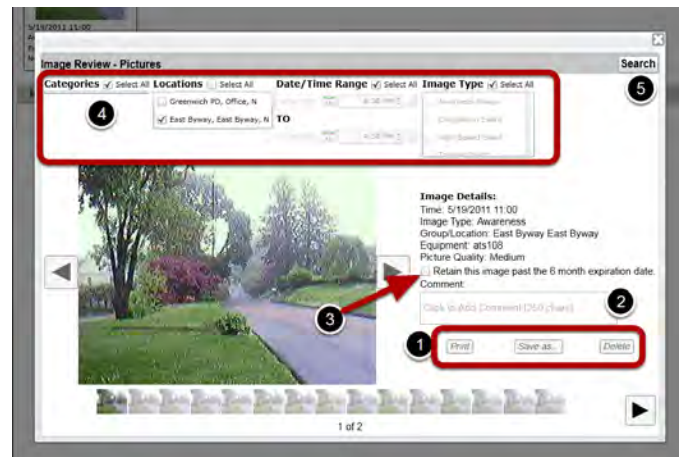
Images on PC (Locally downloaded images)

When images are downloaded via USB or PC with Bluetooth, they are placed in a folder on the PC. Typically this folder is "C:\Program Files\All Traffic Solutions\AtsAssist\Photos\". These images may be viewed through the Image Management App as well by clicking on the "Images on PC" tab.

The 15 most recent images will be displayed as tiles which will bring up the image review dialog when clicked. Alternatively the "Review all Images" may be clicked.
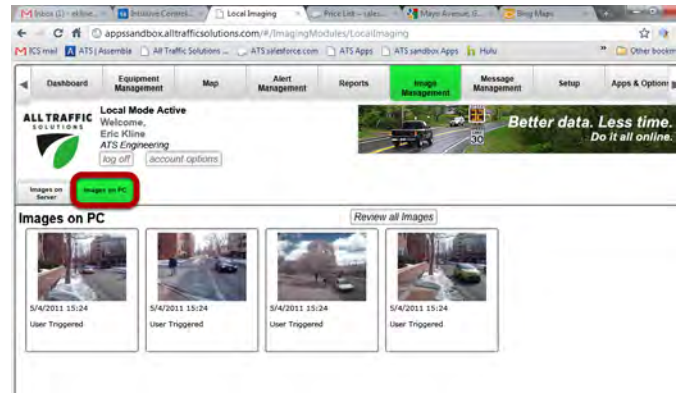
Images on PC Review

Images downloaded via USB and stored on a PC may be reviewed in the Images on PC Review dialog. These images may be filtered by time and / or trigger type.
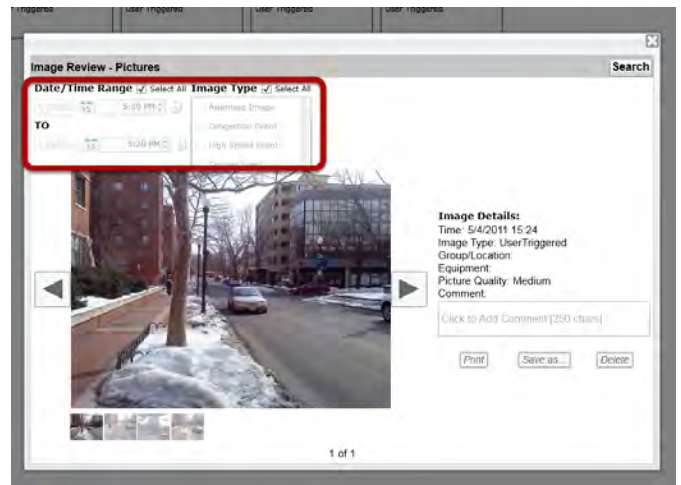
Image Alert Review

Reviewing images from the alerts tab

A history of the most recent alerts is kept in the Alert Management App (1). Any images that have an alerts associated with them can be viewed by clicking on the "Image" button (2) on shown on the given alert line. This will bring up the Image Review Dialogue showing the alert images for the alerts shown in this App.
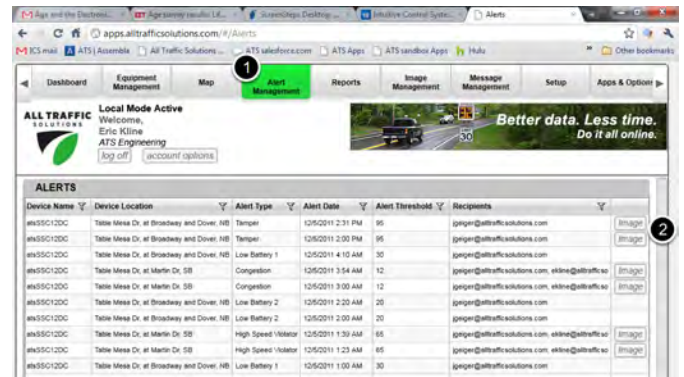
Image Storage

Remote Imaging capacity

The remote image management system uploads images daily so the device will not run out of memory unless it is in a location with no cell signal for an extended period. All devices that are subscribed to Remote Image Management are subject to a cellular data usage cap. This cap is calculated from the images uploaded only (traffic data is not included) and is reset on a monthly basis.

The data allotment is pooled across all devices that are subscribed to Remote Image Management on a given account. Therefore if an account has three devices subscribed the monthly data cap for that account is 3x the single device cap and any one of the devices may use all, some, or none of that total allotment as required.

Halted State: Once the monthly cap has been reached all devices will continue to take images but will no longer upload them to the Remote Image Management App. These images will be stored locally on the device and may be downloaded via USB only and will not reside in the Remote Image Management App. When the device memory gets full, the next new image will overwrite the oldest image.

The data usage tracker will be reset upon the beginning of the next month and new images will automatically begin uploading to the Remote Management App again. Images taken between when the cap was hit and until the account is reset are stored locally will <u>not</u> be uploaded automatically, as this may just take the account right back to the data limit immediately. These need to be downloaded locally.

If a specific device is intended to collect a large amount of images it is recommended to contact ATS and inquire about purchasing a larger data plan for the given device.

Local image storage capacity

The device can store a maximum of approximately 75 high quality images or 100 medium quality images in its memory. Once the storage limit is reached, the oldest images will automatically be overwritten by the newest images. For PC image management via USB this limit is very important to understand so there is minimal image loss on a given deployment.

Conserving Memory

When setting the High-Speed Event image capture threshold be sure that the level is high enough to catch the most extreme violators and not just any moderate violators. This will lower the total number of images taken as well as weed out the violators to the ones that are of most interest.

Awareness images are typically used to monitor road, weather, or parking conditions. Set the time interval as far apart as possible to get the images desired. Medium quality images are usually acceptable for this purpose.

The schedule feature can be used to take images only during desired times of the day. Note that when using the schedule, the entire unit will be in OFF mode during times that are not scheduled. Or just the camera can be turned off for time periods such as overnight when it is dark. See *Scheduling* under the "Setting up the Pictures Option" section for details.

Important Imaging Notes

Image Capture Tips

- It takes ~5 sec to capture a High Speed Event image. The above chart shows the maximum speed vehicle the camera can capture and the distance it must be in front of the sign when the high speed is first detected.
- Rain and snow can obscure parts of the image.
- Images will not be taken once the unit enters "Low Battery" state.
- Alerts and Picture Alerts are subject to a black-out period after a previous alert of the same type.
- High Speed alerts are prevented for 1 minute after a High Speed Event is triggered.
- Congestion alerts are prevented for 15 minutes after a Congestion Event is triggered.
- Tamper alerts are prevented for 1 minute after a Tamper Event is detected.
- Transmission through the device's cellular antenna has been found to cause false readings in the radar of Speed Sentrys and Speed Sentry Shields. Therefore the radar speed is ignored during cellular transmissions. Please note that transmitting a high-quality image via cellular takes ~1.5 minutes and no vehicles will be detected during that time in those products.
- PDA Imaging support is not available at this time.

Max speed to capture	
	Required pickup distance
MPH	feet
5	40
10	81
15	121
20	161
25	202
30	242
35	282
40	323
45	363
50	403
55	444
60	484
65	524
70	565
75	605
80	645
85	686
90	726
95	767
100	807
105	847
110	888
115	928
120	968

SmartApps: Reporting

SmartApps Reporting - Introduction and Differences between Local and Subscription Reporting App

Data Management and Reports

Units that have radar and the Traffic Data Management Option collect traffic speed and volume data, which is then available for reporting. The data is collected either remotely or locally and then analyzed on the ATS SmartApps website or with the locally installed version of SmartApps. There are different reports available depending upon the method used to collect the data.

Local Data Collection and Reports

All local data reports are generated from individual files, with one file consisting of data collected at one location. Reports can be run on each file and then the reports can be compared. Data is downloaded from the sign using ATS Mobile, USB/Bluetooth connection to a PC or a wireless PDA. Files are stored locally on a PC.

Data Collection and Reports with SmartApps Equipment Management and Reporting Subscription

With the subscribed Apps, more report options are available for data analysis. Traffic data is automatically uploaded from the signs on a daily basis and is stored in a database on a secure server. This allows access to the data from any computer with a browser and allows data from multiple days and locations to be compared. The user does not have to spend any time on data collection or file management. Comparisons of multiple locations can be done automatically rather than manually comparing multiple separate printed reports from each location.

Active and Stealth Data Collection

Data can be collected by the sign with the digit display on or off. With the display off and the "YOUR SPEED" sign physically removed the sign collects data in stealth mode and provides a baseline speed and volume profile for the location. After collecting data in stealth mode for a period, the sign digits can be set to perform active traffic calming by turning on the digit display and replacing the "YOUR SPEED" sign. Data from stealth and active modes can be compared to establish effectiveness of the sign at this location and utilized to prioritize enforcement. On a full matrix SpeedAlert sign, a general message that does not reference speed to obtain similar baseline results.

Display Settings vs Data Recording

Display settings and data settings are independent. Setting the display off or limiting the display to speeds above the speed limit and set a maximum speed displayed will not affect the recorded data. All vehicle speeds will be recorded, whether displayed of not.

Data collection location selection

There are several considerations when a location is selected for data collection.

- The location should be on a free flowing section of road with minimal disruptions. This is generally not possible so it is necessary to understand how disruptions will affect the data.
- Mount the sign so it will be able to see vehicles above any parked cars.
- Make sure the sign is pointed as directly as possible at the traffic. Placing the sign on a pole that is at too much of an angle from the lane of traffic will delay picking up vehicles and reduce the effectiveness of the sign and the accuracy of the data. It will also reduce the sign's visibility to the driver.
- Roads with driveways or cross street turns in advance of the signs will show an elevated level of slow speed traffic as drivers will be slowing down to make turns. You may want to disregard low speed readings when you generate reports.
- Do not mount the sign where the drivers are already slowing down, such as close to a stop sign.
- The sign can be used to slow down traffic in advance of another warning sign, such as a school zone or work zone. Be sure to mount the sign far enough in advance to not block or distract the driver from interpreting any of the other warning signage.
- Vehicle volume data is accurate to within 15% on roads with single lane traffic in the measured direction. Volume data collected on roads with multiple lanes of traffic in the same direction will not provide accurate counts but the data will give an accurate speed profile of the road. Two cars traveling next to each other may look like one car to the Doppler radar. The radar is set to pick up the fastest vehicle within its range.

SmartApps Reporting - Data Collection with the Reporting App

If Traffic Data Management has been purchased and the radar equipped unit is on, the unit is collecting data. The Reporting App uploads data automatically from the unit daily as long as there is a cell signal. Data is uploaded automatically each time the sign calls in. If the sign is located where there is no cell signal, the sign will upload all data since the last upload when it is powered and moved within range of a cell signal. The data will not be lost as long as there is a cell signal available at some point.

Setup Locations

Determine locations where the unit will collect data and set them up in the server. Go to apps.alltrafficsolutions.com and click the *Setup* Tab and click *Locations*. Here you can add or edit locations. There are two types of locations Fixed and Mobile.

- **Fixed Location:** A fixed location is any location where a unit will be placed to be remotely managed and used for data collection. Fixed location names are road locations and are not tied to a specific unit.
- **Mobile Location:** A mobile location is generally a storage location for a specific piece of equipment such as a message sign stored in a specific response vehicle. The unit is normally set up at an incident or event specific situations. The unit may only get set at any specific location one time. Data can be collected at mobile locations, but will be tied to the piece of equipment until the data is moved to a fixed location.

Setting up a Fixed Location in the Server

To set up a new fixed location, click *Add Location*. Name the location and fill in the address. Click *Map Address* and the map will find the location according to the map software. Then move the icon to the specific location where the sign is mounted. This is important as it needs to be on the correct side of the street. There may have a location right across the street that will need to be differentiated from this one.

Then assign the location to a Road/Group. This allows location organization. For example, if there are 10 locations set up to take data at different places along Main Street, assign them to the Main Street group so they are easy to manage. Finally set the direction of traffic and speed limit for the location and *Save* the location. *Edit* locations or *Delete* locations by clicking these options next to locations that are already set up.
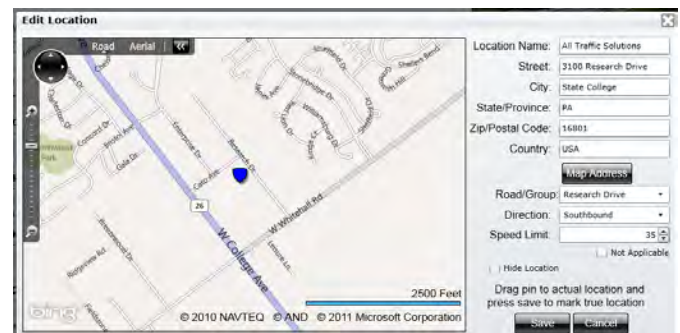
Collecting Data with the SmartApps service

When data is collected using the SmartApps service, the sign must be mounted at the location of interest <u>and</u> the server has to be told where the sign is located using the *Move Sign* functionality. Telling the server where the unit is located allows the system to track the unit and let it put the location label on the collected data. Over time, multiple data sets can be collected at the same location. If you own multiple speed displays, the same speed display does not have to be used to collect data at a specific location. The data is not specific to a unit, but to the location. It is important to locate the sign at the same place each time it is placed at a location for consistency in the data results.

Move Sign

Once a location is set up in the server and a sign is placed at the location, "*Move*" the sign to this location in the server. You are telling the server where the sign is located. There are two ways to "*Move*" a sign.

Pending Move: One is to set the sign up for a pending move. In this scenario, set the sign up for a pending move in equipment management. When the sign is physically moved, use the *Move Sign* command at the sign. This causes the sign to call in to the server and "move" to the new location in the system. On a message board, use the bottom scroll button and follow the instructions on the message sign to hold the top button for 5 seconds. For the speed displays, pressing both the *Speed Limit* and *Display Mode* buttons at the same time for 15 seconds will "Move" the sign. As you hold the buttons the digit segments will create a crosshair inside the outer border and outer segments will "rotate" around the outside border of the unit. When the Move is registered the rotating will stop. A "Move" can also be initiated using the PDA software.

When setting up a pending move, the settings for the unit can be modified to take effect when the Move Sign function is activated. For example, the speed limit can be changed from the speed at the current location, such as 35MPH, to the speed limit at the pending location, such as 25MPH, when the Move Sign function is activated when the sign is moved to the pending location.

Effective Date/Time: This Move function is used when the sign was moved physically in the past, but not "moved" in the server. The sign was moved, but the "Move Sign" function was not utilized. In this case, the effective date/time move tells the system the date and time the sign was actually moved and retroactively moves the sign. The data the sign has collected will be divided between the two locations at the set time. This time can only be a time in the past, it cannot be in the future. Future moves are Pending Moves, discussed in the previous section. Settings cannot be changed using Effective Date/Time retroactive moves.

For more information on moving the sign in the server, see the on-board controls section for the specific unit.

SmartApps Reports - Reporting App Speed and Volume Analysis Report

Once data has been transferred to the server with the Reporting App service it can be analyzed. Data is transferred once per day as long as the unit has a cell signal. If it does not, it will transfer the data from multiple days if necessary once it is brought into range. Any of these reports can be printed by clicking on the save icon and saving the report in PDF format.

Speed and Volume Analysis

This report is three reports in one. It provides a different report for the selection of Volume by Time or Speed Bin, and then a detailed report when a single day is selected.

Speed and Volume Analysis: Volume Analysis by Time for Multiple Days

This report provides vehicle counts by date and time of day. Select to *View Volume by Time,* a specific location and a date range. You determine where data is available for a location by entering a wide date range and then narrowing in on the available data range of interest. Filter for dates, speed range and speed range increment. Once generated, look for days with high volumes in a relevant time frame and then run a single day report for the day of interest.
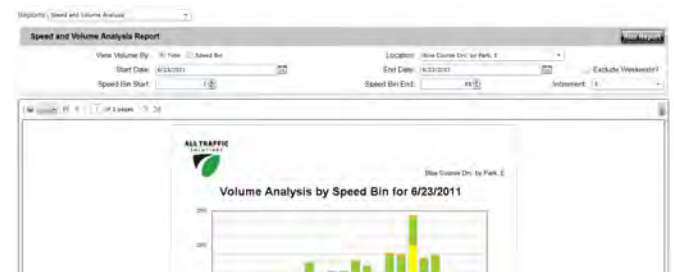
Speed and Volume Analysis: Volume Analysis by Speed Bin for Multiple Days

This report provides vehicle counts by date and speed range. Select to *View Volume by Speed Bin,* a specific location and a date range. Determine where data is available for a location by entering a wide date range and then narrowing in on the available data range of interest. Filter for dates, speed range and speed bin increment. Once generated, look for days with high volumes in a relevant speed bin and then run a single day report for the day of interest.
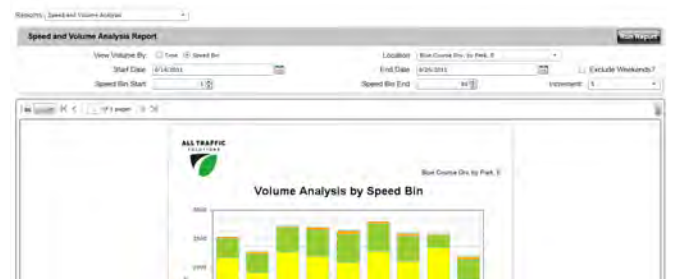
Speed and Volume Analysis: Volume Analysis by Date for a Single Day

Run either of the above reports for a single day only, and the resulting report will provide vehicle counts by speed range and time of day. This report shows the times of worst compliance on a single day by looking for the time window with the highest volume of vehicles in the enforceable speed window. This is the best time to prioritize enforcement.

Speed Summary Report

This report provides summary data for one location, between dates and speed windows selected. This report is similar to the summary report for the local data mode but can give you a speed summary over multiple periods of data collection, not just one file. Select a specific date range, the *last 30 days of data* or *all dates for this location*. The All dates selection provides the first and last dates data was collected at this location. These dates can then be used in the Speed and Volume Report to see when data was collected - the number of studies and their approximate dates.

The report can also be filtered for speeds and for times of the day. The report could be run for only vehicles over the speed limit during afternoon school dismissal hours.

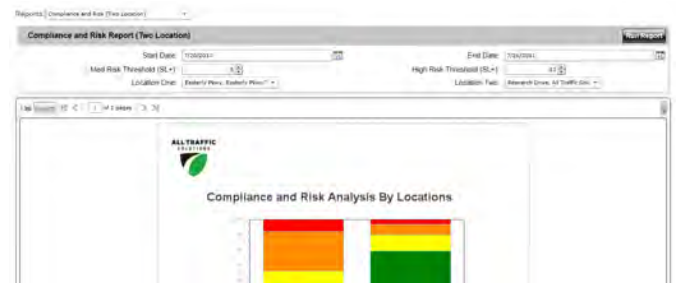# SmartApps Reports - Compliance and Risk Reports

Compliance and Risk Report, One Location

This report shows the compliance to the speed limit for one location. Select the location and define the speed ranges for the medium and high risk designations. The report provides a color snapshot of the situation at this location which may be very helpful to provide to the residents. The report can be run by percent or by volume. Use percent if the daily volume is reasonably consistent. Use volume if daily volume varies greatly, so that outliers on low volume days do not have as much effect on the chart.
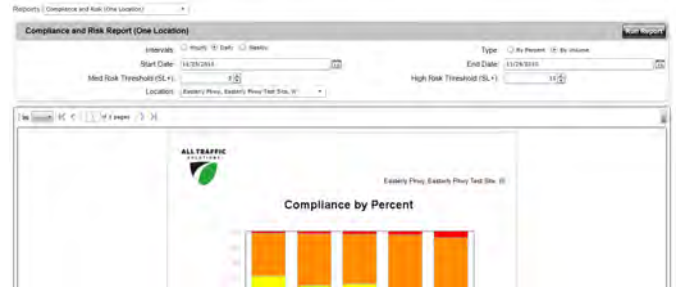
## Compliance and Risk Report, Two Locations

This report does the same thing as the one location report, but it allows comparison of two locations to graphically see which is more compliant. The report is more applicable between two locations with the same speed limit and similar volumes. The report displays in percent to compensate for differences in total volume at the two locations.

Enforcement Priority Report

This report shows the top 10, 20 or 50 time windows with least compliance to the speed limit. Select any or all locations over a chosen time period. The report will lay out the times and locations of the highest number of violators. It shows the magnitude of the violator speed and count compared to the average overall speed and total volume. This highlights the magnitude of the problem at each location and time.
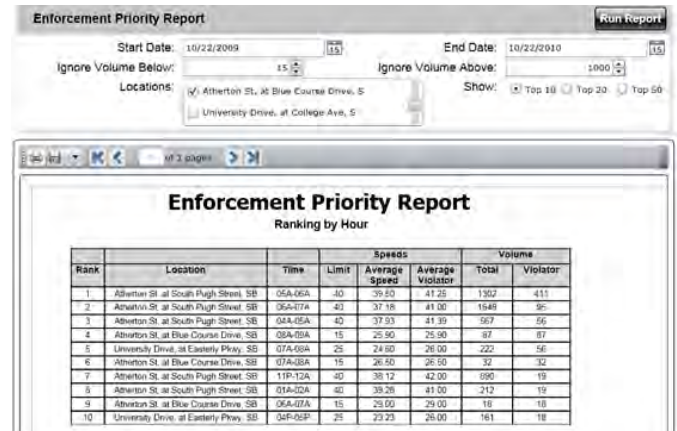
SmartApps Reporting - Local Data Collection with PC or PDA

With local data collection, data collected from the sign is downloaded from the sign manually using either a USB cable connected between the sign and a PC, Bluetooth to the PC, or using a wireless PDA (requires the Bluetooth Management option on the unit.) Once downloaded on the PDA, the data must be transferred to a PC connected to the internet to generate reports from the data. Use ATS Assist to manage the data transfer.

Downloading with the PC

Connect to the sign with a USB cable or with Bluetooth. Once connected, open apps.alltrafficsolutions.com. Go to the *Equipment Management* Tab, select *Settings* for the locally connected unit and go to the *Data* tab. Click the *Download Traffic Data* button. When prompted, give the file a name. As many files are collected it will be helpful to create a standard naming convention, such as Road, Location on road, Direction of traffic, Start date.
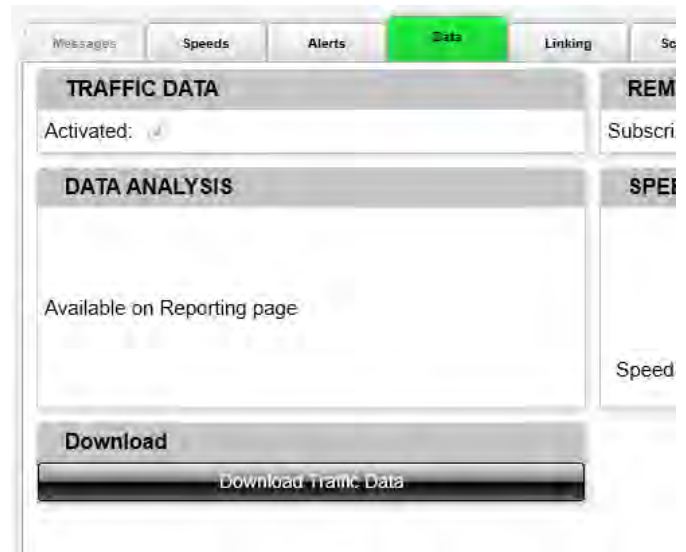

Downloading Data with PDA

When data collection is complete for the location download the data using the Bluetooth connection to the wireless PDA. With the sign on, start Pocket ATS and connect to the sign. Click *Data* and then *Download*. The percentage below *Download* is the percent full of the memory. Click *Download Now*. Name the file. As many files are collected it will be helpful to create a standard naming convention, such as Road, Location on road, Direction of traffic, Start date. Erase the sign memory when you are done. If this is not done, the remaining data will be downloaded with any new data at the next location, as it will still be in the sign's memory.

Transfer Data from PDA to PC

Once the data is on the PDA, it needs to be transferred to a PC connected to the internet to generate reports. Connect the PDA to the PC with a USB cable or with Bluetooth and either Microsoft ActiveSync or Windows Mobile Device Center. Sync the data to the PC with ATS Assist. Check *Traffic Data Files* and click *Start*. Data is transferred to folder: C:/Program Files/All Traffic Solutions/ATS Assist/Traffic Data. Files can also be manually placed into this folder to find them on the analysis website. This is the only folder that SmartApps will look at to see data files for analysis.
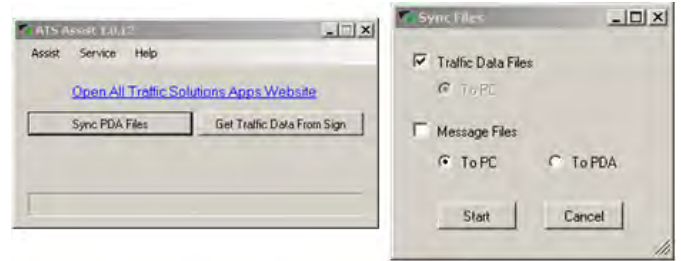
SmartApps Reports - Local Data Collection with PC or PDA

All local data reports are generated from individual files. To compare locations, run reports on multiple files and then compare them manually. To run the reports, connect the PC containing the traffic data files to the internet. Make sure ATS Assist is running , looking for the ATS Shield logo in the PC's Windows Active toolbar. Open a browser and navigate to apps.alltrafficsolutions.com . On the sign in page, click *Work Offline.* Go to the *Reports* tab and select the *Local Analysis* report. There are no other reports available in local mode. See Reports - Report App Subscription Collection for the more extensive SmartApps reporting options. See ATS Assist for instructions to install ATS Assist and the SmartApps interface.

Local Summary Report

Select the data file for reporting in the file dropdown. Filter min and max speed if desired to narrow down the results, such as a minimum speed filter for a road that has many driveways. Or limit the report to just traffic data for vehicles above the speed limit. Once run, there are four reports available on the tabs. The Summary that provides basic information from the data collected at the location. For any of the reports, csv output is available or the report can be printed by clicking the corresponding button.

Local Volume by Time Report

The Volume by Time report provides average vehicle volume by speed and time of day for all dates in the data file. The volumes are averaged over all days in the filter for time of day and speed range. The dates can be filtered down so that the report can show results from fewer days or only one day.

Local Volume by Date Report

The Volume by Date report provides vehicle counts by hour by specific date.

Volume by Speed Report

The Volume by Speed report provides vehicle volume by hour and speed range by day. As the report is scrolled, additional days appear below. This report only has a csv output option, as it can be very long. To print output to a pdf use the Volume by Time report for a single day.

ATS Mobile Functions for All Units

Power

To configure settings that affect power usage, touch the *Power* button on the home screen. The power screen shows options that can help you monitor the battery level on the sign or Android device. It also has options to make changes to sign settings that will affect power consumption.

The *Blink Sign* button allows blinking to be enabled. Enabling blinking for the LED display can greatly improve battery life.

The *Radar Settings* button will allow you to reduce the radar sensitivity to have the speed display pick up vehicles only when they are within visable range of the sign, which will also extend battery life.

Adjusting the brightness range for the sign, either locking it to one brightness level or adjusting the minimum and maximum brightness between which the unit's automatic dimming will operate, can also affect power consumption. Reducing the maximum brightness to 7 can make a significant reduction in power usage.

Config

The *Config* button on the home screen is used to configure settings applicable to the connected sign. The *Tools* button provides the option to identify the sign by displaying the start-up routine on the sign when the button is pressed. The other options on the *Tools* screen are useful for devices that are subscribed to SmartApps.

The *Config* screen also provides access to *Rename* the sign, set the *Clock* on the sign and get diagnostic information from the sign.

Demo Mode can be activated from this screen. If active you will see the ON indicator in the button and the DEMO indicator in the *Config* button on the home screen. The demo mode starts a series of speeds to be displayed on the screen when no cars are in range.

Schedule

To create edit and manage schedules tap the *Schedule* button on the home screen.

For a day schedule, tap the *24 Hour Schedule* button. On the next screen you can read the schedule from the sign, enter the schedule editing screen, or send the selected schedule to the sign. To enter the schedule editting screen tap the *Setup Schedule* button. This editting screen allows you to construct a schedule that will run for a 24 hour period. You can also open an existing schedule and edit it by tapping the *Open from File* button. You can add up to six different time windows. For times when there are no time windows setup the sign will essentially be in stand-by mode where it will not display anything or record data. It will however still call in to the server at its normal frequency for SmartApps users.

For each time window first adjust the desired start and end times using the - and + buttons. Next set the sign mode for that time window by tapping the *Set Mode* button and selecting a mode from the list such as speed display, single message or depenedent message mode. For *Single Message* and *Dependent Message* sign modes, you will need to select the active message during that window. Tap the *Set Message* button to select from the list of available messages.

Once the 24 hour schedule is set *Save* the schedule. To send it to the sign go back one screen and tap the *Send to Sign* button. You will be prompted whether or not to activate the schedule. If so the sign mode will change to *Day Schedule.*

For a weekly schedule go to the 7 Day Schedule. From this screen you can either open an existing weekly schedule or create a new one by selecting a different previously saved 24 hour schedule for each day of the week. (These 24 hour scheduled must be created and saved before creating a 7 day schedule.) After creating a new weekly schedule *Save* it, and if you would like to send it to the sign tap the *Send to Sign* button. You will be prompted whether or not to activate the schedule. If so the sign mode will change to *Week Schedule*.
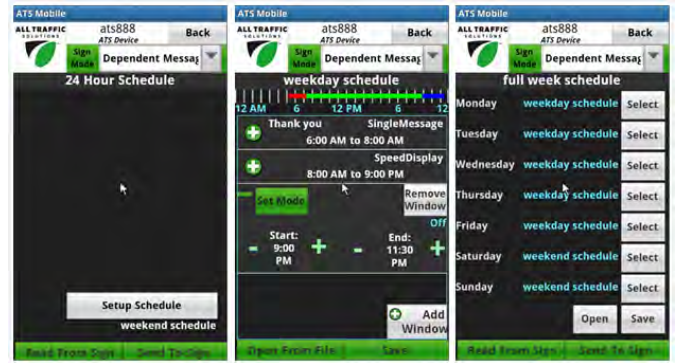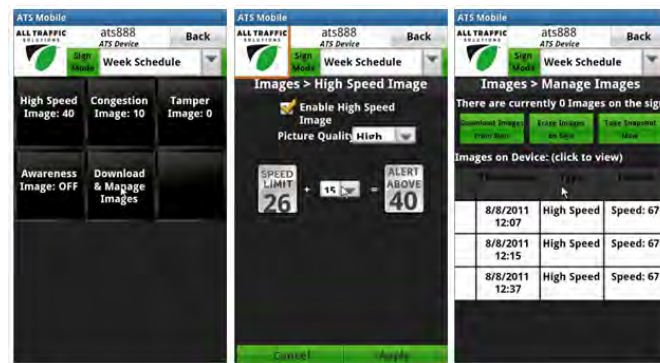
Imaging

For signs with the *Pictures* option enabled the different ways to trigger an image capture can be manged by tapping on the *Imaging* button on the home screen.
For each of the triggers (High Speed, Congestion, Tamper and Awarness) the corresponding button allows you to enable the trigger, select the picture quality, and set the thresholds.
For the signs subscribed to the *Alerts SmartApp* the thresholds for each trigger will be the same for *Alerts* and *Imaging.*
The main *Imaging* screen will indictate which image triggers are turned OFF. For those that are enabled, it will indicate either the threshold speed, number of images taken for tamper, or frequency of awareness picture staken in minutes. For messaging only signs the *High Speed* and *Congestion* triggers will be inactive.

The *Download & Manage Images* button allos you to view how many images are on the sign and whether to downolad or erase them. You can also take a picture manually by tapping the *Take a Snapshot* button and then downloading the image after waiting a couple seconds.
To view each image tap on one of the rows under *Images on Device.* Here you can view the image and its details, choose whether to delete the image, or add comments that will be saved with the image.

Alerts

The *Alerts* button on the home screen will only be active for signs sunscribed to the *Alert Notification SmartApp*.
The functionality is very similar to the *Imaging* function. In the Alerts screen you can manage each alert trigger by tapping on the corresponding button. There you can enable the alert, and set the threshold.
If *Alerts* and *Imaging* are both subscribed on a speed display sign, changing the threshold values of the *High Speed* and *Congestion* alert triggers will automatically change the thresholds for the corresponding image trigger and vice versa, because the thresholds must be the same for each particular alert and image trigger.

The two battery alerts are meant to warn you when the batteries get low and when they get very low. The do not monitor two seperate batteries.