

INTELIGHT™

*MAXVIEW™*

ADVANCED TRAFFIC  
MANAGEMENT SYSTEM

## **MAXVIEW Technical Reference Manual**

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## **Contact Information**

Intelight, Inc.  
3801 E. 34th St., Ste. 105  
Tucson, AZ 85713  
Support: 1-800-MAX-HELP  
Phone: 1-520-795-8808  
Fax: 1-520-795-8811  
Web: [www.intelight-its.com](http://www.intelight-its.com)

To contact Intelight by e-mail:

- Sales: [info@intelight-its.com](mailto:info@intelight-its.com)
- Customer Service: [customersupport@intelight-its.com](mailto:customersupport@intelight-its.com)
- Technical Support: [techsupport@intelight-its.com](mailto:techsupport@intelight-its.com)

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# 1 About this Manual

This manual is intended for traffic signal technical personnel familiar with traffic control application software. This manual describes the complete features, operations and interface capabilities of the Intelight's MAXVIEW ATMS system.

The operational characteristics and terminology herein correspond to North American norms for Traffic Signal Control as generally outlined by National Electrical Manufacture's Association (NEMA) TS-2.

MAXVIEW™ is a general purpose Advanced Traffic Management software program which is highly customizable with many operational configurations which are defined by user data entries. This manual only describes its general features and configuration options. The User should always bench test the intended configuration(s) for desired functionality.

This manual does not attempt to completely cover the operation or functionality of Intelight's MaxTime local controller software intended for both ATC and 2070 hardware. Some sections of this manual may reference MaxTime functionality. For a full description of MaxTime and its operation a user should consult the Intelight MaxTime Technical Reference Manual.

# **2 Minimum System Requirements**

## **2.1 MAXVIEW Server Requirements**

The following outline the minimum hardware and software recommendations for a MAXVIEW server installation.

MAXVIEW server requirements are dependent on the total number of intersections within the system and the desired real-time status polling rate.

All specifications below assume a once per second global status polling rate of all intersections within the system.

### **2.1.1 MAXVIEW Lite Server Requirements**

- Recommend for up to 50 Intersections
- Microsoft® Windows 7 Professional 64-bit
- Microsoft® SQL Server Express
- Microsoft® IIS 7.5 with Microsoft® App Fabric
- .NET 4.6.1+
- Minimum Processor: Intel® Core™ i5 2400 / Pentium® Dual Core G840 or Equivalent
- Memory: 4 GB RAM
- Storage: 5 GB Min, 100+ GB Recommended
- 10/100 Mb/s Network Card

### **2.1.2 MAXVIEW Server Requirements**

- Recommended for more than 50 Intersections
- Microsoft® Windows Server 2008 R2+
- Microsoft SQL 2008 R2+ Server Standard
- Microsoft® IIS 7.5+ with Microsoft® App Fabric
- .NET 4.6.1+
- Minimum Processor: Intel Xeon Server Processor 4+ Core, 8M+ Cache or Equivalent
- Memory: 6 GB RAM
- Storage: 5 GB Min, 100+ GB Recommended
- 100/1000 Mb/s Network Card

## **2.2 MAXVIEW Client Requirements**

As a true thin client, MAXVIEW does not have stringent minimum requirements for client workstation PCs.

The only software that is required on a MAXVIEW client workstation is an Internet web browser and the Microsoft Silverlight 5 browser plugin.

The following minimum requirements are recommended to install and run the MAXVIEW client.

- Microsoft Windows 8/10, Microsoft® Windows 7 SP1, Windows 7, Windows XP, Windows Vista
  - 1.6 GHz or higher processor
  - 512 MB of RAM
- Max OS 10.5.7+
  - Intel Core Duo 1.83 GHz or higher processor

- Memory: 2 GB RAM
- Storage: 10 Mb
- Ethernet (Wireless or Wired)

**Note:** The Microsoft® Silverlight 5 plugin is automatically installed the first time a user loads MAXVIEW client from a workstation machine. A restart of the browser may be required after this initial installation.

## 2.2.1 Supported MAXVIEW Web Browsers

The following list of web browsers are supported by the Microsoft Silverlight plugin and the MAXVIEW client.

OS	IE9+	IE8	IE7	IE6	Firefox 3.6+	Safari 4+
Windows Vista	✓	✓	✓		✓	
Windows 7	✓	✓			✓	
Windows 7 SP1	✓	✓			✓	
Mac OS 10.5.7+						✓

**Note:** Intelight recommends Microsoft Internet Explorer 9+ on all Windows operating systems and Apple Safari on Mac OS X.

# **3 Getting Started**

## **3.1 MAXVIEW Overview**

The MAXVIEW Traffic Signal Management System is a complete traffic signal central system built from the ground up on modern web technologies.

The system design and architecture deliver an ATMS system that is easy to install, maintain and customize while enabling multiple different traffic management scenarios including: main map system wide status, local database management (including real time editing), TOD and manual signal control, customizable alarms, time space diagram, reporting and many more.

Like Intelight's local controller software, MaxTime, MAXVIEW is not resource intensive and does not require proprietary software on user workstations, reducing the overall cost of the system and simplifying installation, configuration, and maintenance.

In addition, MAXVIEW is built upon the latest NTCIP standards enabling integration with a wide range of local signal controllers.

## **3.2 System Architecture Overview**

MAXVIEW ATMS is built on a client/server architecture utilizing Microsoft Web technologies including Microsoft Silverlight and Microsoft .Net 4.0.

The MAXVIEW service is designed to run on Microsoft Windows Server as a web application hosted in Microsoft Internet Information Server 7.5.

The MAXVIEW ATMS client is built on the Microsoft Silverlight 5 application platform. Microsoft Silverlight is a modern and robust web-based user interface platform that Microsoft regularly maintains and updates.

The MAXVIEW service has two main roles: first it hosts and serves the MAXVIEW Silverlight client web application to client work stations and second it manages all communications, scheduling and database upload/download with connected intersections. By utilizing standard Microsoft web components, the MAXVIEW service can be managed and deployed using state of the art technologies, such Microsoft App Fabric and Microsoft Web Deploy, simplifying installation, system upgrades and system maintenance.

The MAXVIEW service is built entirely in Microsoft .Net 4.0, a proven server-side technology developed and maintained by Microsoft. Leveraging .Net enables the MAXVIEW service to seamlessly scale across multiple servers.

In addition, MAXVIEW utilizes Microsoft SQL Server for all configuration and controller database storage, enabling access to system data through SQL queries for advanced reporting scenarios.

The MAXVIEW service can be hosted in an agency's TOC on a new or existing Microsoft Windows Server/Windows 7 machine or remotely on Microsoft's Window Azure Cloud service platform requiring no new hardware or software for an agency to buy or install.

Because MAXVIEW is built upon on modern web technologies, the only software requirement for a user work-station is a modern web-browser such as Internet Explorer 9, Firefox 9, or Safari 5 that supports the free Silverlight plugin (similar to installing Java or Flash plugins).

The MAXVIEW client is cross platform and can be viewed from a computer running Microsoft Windows or Apple OS X.

Once a user's workstation is connected to the network via a direct or a VPN connection, a user can log into the system using their unique MAXVIEW User ID and password. This configuration eliminates the need for separate office and signal system workstations and resource intensive work-station updates whenever the central system is updated.

Furthermore, with the proper login credentials and a VPN connection to the City's system, a user can access the central system from anywhere in the world, on any computer with a web-browser.

### 3.3 Typical System Installation

As discussed above, MAXVIEW is based upon modern client-server architecture. In any given installation the system will include field controllers, a MAXVIEW Server and MAXVIEW clients all of which will be deployed on the same network.

Typically all components of the system will be deployed on an internal LAN and protected from the open Internet by a firewall. Remote clients can then gain access to the system through a VPN connection to the private LAN.

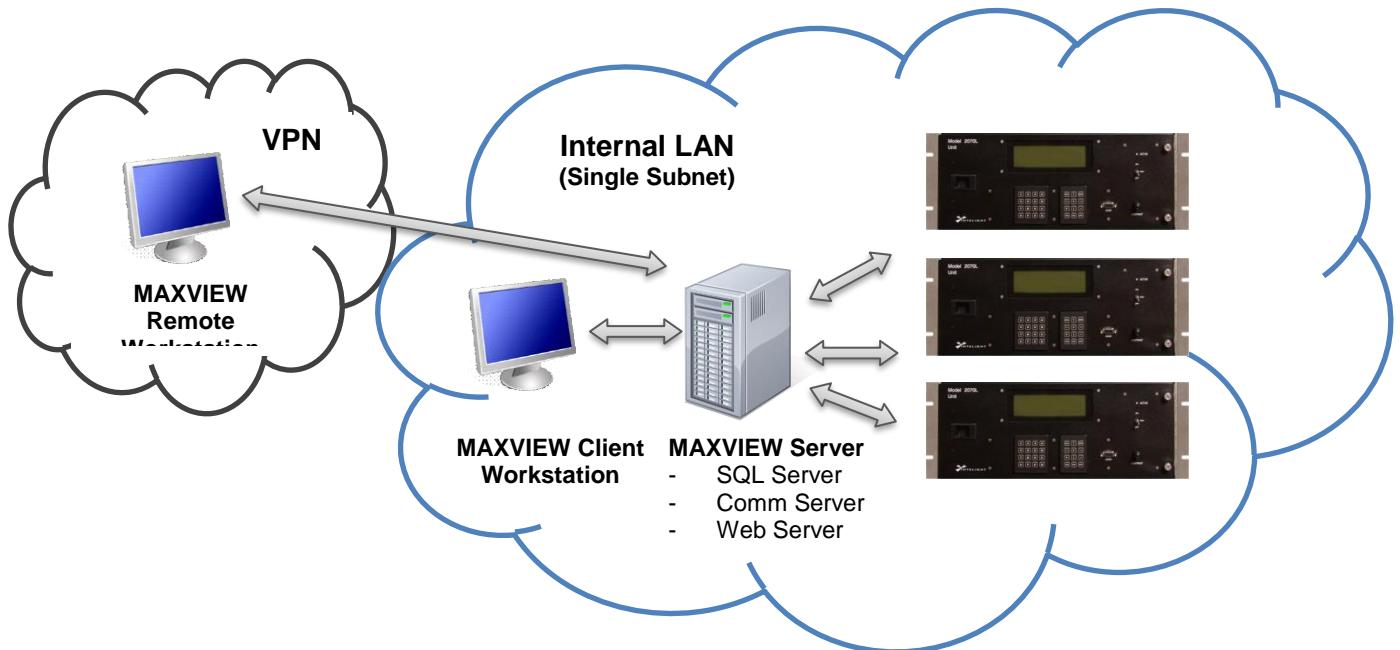
A deployed MAXVIEW system is made up of the following hardware and software components:

1. MAXVIEW Server
  - a. MAXVIEW Server Application hosted in Microsoft IIS 7.5+
  - b. MAXVIEW Database hosted in Microsoft SQL Server 2008 R2+
2. MAXVIEW Client
  - a. MAXVIEW Web Client based on Microsoft Silverlight 5
3. Field Devices
  - a. Traffic controllers deployed in the field

The example below shows all components deployed on a single subnet and single physical server. A system could also be deployed on multiple subnets and across multiple physical servers, where the clients are isolated from the field controllers and only the MAXVIEW server has IP connectivity to the devices in the field.

In any deployment the following IP connectivity is required:

- MAXVIEW Server ↔ Field Devices
  - o Port 80 for HTTP Devices
  - o Port 161 for NTCIP Devices
  - o Port 161 for AB3418/E Devices
- MAXVIEW Client ↔ MAXVIEW Server
  - o Port 80



**Figure 1 MAXVIEW System components in typical installation**

## 3.4 Connect to MAXVIEW from a Workstation

A MAXVIEW client workstation is any computer with a supported Internet browser.

By default the MAXVIEW client is hosted at the following URL, where [MAXVIEWServerName] is the host name or IP of the MAXVIEW server.

- [http://\[MAXVIEWServerName\]/MAXVIEW/](http://[MAXVIEWServerName]/MAXVIEW/)

To load the MAXVIEW Client simply open a supported Internet browser and navigate to the MAXVIEW server URL.

**Note:** While working directly on the MAXVIEW server the client can always be loaded by navigating to <http://localhost/MAXVIEW/>

The first time a client machine is connected to the MAXVIEW server an installation of the Microsoft Silverlight plugin might be required.

If the installation of Silverlight is required, the client machine will prompt a user and automatically install the required plugin. For information on how to install the Microsoft Silverlight 5 plugin see the “Installing MAXVIEW Client Software” section below.

## 3.5 Remote Client Connection

To load the MAXVIEW client a user must be able to resolve and connect to the MAXVIEW server over port 80.

In a recommended network configuration the MAXVIEW server is not Internet facing and therefore VPN access to the local network is required to load the client from an external computer.

Once a user is connected over a VPN, loading the MAXVIEW client is completed in the same way as if a user were directly on the network. No additional ports or configuration is required for access when connected on a VPN.

By default the MAXVIEW client is hosted at the following URL, where [MAXVIEWServerName] is the host name or IP of the MAXVIEW server.

- [http://\[MAXVIEWServerName\]/MAXVIEW/](http://[MAXVIEWServerName]/MAXVIEW/)

To load the MAXVIEW Client simply open a supported Internet browser and navigate to the MAXVIEW server URL.

**Note:** It is not recommended that the MAXVIEW server be Internet facing but instead it should be protected behind a firewall, requiring VPN for access.

# 4 Device Support

## 4.1 Supported Signal Controller Hardware

The following ATC traffic controller hardware manufacturers and models are fully supported by MAXVIEW.

- Intelight
  - MaxTime v1.7.x – HTTP
  - MaxTime v1.6.x – HTTP
  - MaxTime v1.6.x – NTCIP
- Econolite
  - ASC3 v2.47.00 – NTCIP
  - ASC2 v1.X – NTCIP
- McCain
  - BiTran - AB3418E
- Generic NTCIP
  - Any NTCIP 1201/1202 Compliant Controllers – NTCIP

As noted above, MAXVIEW fully supports a generic NTCIP controller type for controllers that implement the NTCIP 1201 and 1202 standard.

The NTCIP 1201 and 1202 standards define access to basic parameters such as phase status, alarm, phase options, phase times, etc. but will not provide access to proprietary NTCIP objects.

## 4.2 Supported Communication Hardware

MAXVIEW currently supports communication with field devices over an IP base network. Any IP based communication hardware can be used for communication with MAXVIEW field devices. Field devices must be assigned a unique static IP address.

The following communication hardware is supported:

- Ethernet
- Fiber
- Wireless
- Ethernet over Copper
- Cellular Connectivity
- Ethernet over Serial (PPP)
- Ethernet over Dialup (PPP)

MAXVIEW supports communicating over serial and dialup modem using PPP to route IP traffic over the serial or dial up connection. In this configuration specific networking devices must be configured on the MAXVIEW server machine as well to provide connectivity.

**Note:** MAXVIEW requires all field devices to have a unique static IP address that is visible from the MAXVIEW server subnet.

## 4.3 Supported Communication Protocols

MAXVIEW supports NTCIP and HTTP communication with field devices and is fully compliant with the NTCIP 1201 and 1202 protocols.

Port 161 is used for all NTCIP SNMP communication and must be open between the MAXVIEW server and the field device if NTCIP communication is used.

In addition to NTCIP, MAXVIEW supports communicating with Intelight controllers running MaxTime version 1.6.8 or higher directly over HTTP for improved communication performance.

All HTTP communication is completed over port 80 by default.

# 5 System Installation

## 5.1 Installing MAXVIEW Server Software

The MAXVIEW Server components are installed using the MAXVIEW installer application. The MAXVIEW server installer will check for all prerequisites, install and configure the MAXVIEW Server application and configure a default database.

No additional configuration is required after running the server installer; however advanced users may wish to configure additional IIS or SQL server settings as appropriate.

### 5.1.1 Server Software Prerequisite

The following software components must be installed on the MAXVIEW server before the MAXVIEW Server Installation can be completed.

#### Required:

- Microsoft .Net 4.0
- Microsoft Internet Information Server 7.5
  - Microsoft recommendation IIS configuration should be installed as below
- Microsoft AppFabric v1.0
- Microsoft SQL Server 2008 R2
  - All SQL Server versions are supported (Express, Enterprise, etc.)

#### Recommended:

- Microsoft SQL Server Management Studio
- Microsoft Silverlight 5 Plugin

If a required prerequisite is missing the MAXVIEW Server Installer will terminate with an error stating which component is missing.

### 5.1.2 Prerequisite Software Installation

Intelight recommends using the Microsoft Web Platform Installer 4.0 to download and install all prerequisite software at once.

The Web Platforms Installer allows a user to select multiple Microsoft software products for installation at one time.

The Microsoft Web Platform installer can be downloaded from the Internet here:

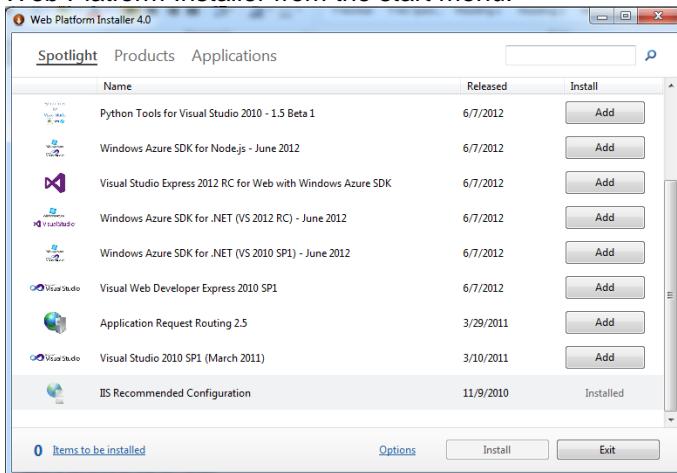
- <http://www.microsoft.com/web/downloads/platform.aspx>

After the Web Platform Installer is installed it can be run from the Start Menu.

### **Web Platform Installer Walkthrough**

**Note:** The Microsoft Web Platform installer requires Administrator rights to run and install the prerequisite components. You may be prompted for Administrator credentials when starting the installer.

1. Launch the Web Platform Installer from the start menu.



**Figure 2 Microsoft Web Platform Installer Application**

2. Using the Search box, find the following components and select **Add** to queue them for installation
  - a. IIS Recommended Configuration
  - b. Windows Server App Fabric
  - c. If needed,
    - i. SQL Server 2008 R2 Express
    - ii. SQL Server 2008 R2 Management Studio Express
      1. Skip this step if you already have a SQL Server instance installed, such as on Microsoft Windows Server Enterprise
  3. Select **Install** to start the software installation

As needed, the Windows Platform Installer can be used to add additional components later.

### **5.1.3 Server Software Installation**

The MAXVIEW Server database and server services are installed or reinstalled using the “MAXVIEW Setup” installer application.

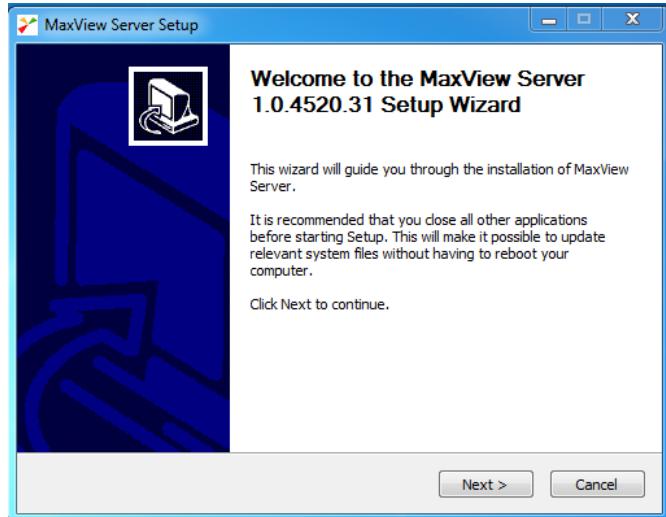
To start the MAXVIEW server installer, copy the MAXVIEW Installer application to the computer where the application should be installed and then double click on the “MAXVIEW Setup.exe” to run the installer application

**Note:** The MAXVIEW installer requires Administrator rights to run and install MAXVIEW. You may be prompted for Administrator credentials when starting the installer.

The MAXVIEW Server Installer will install and configure all the components required to run the MAXVIEW Server.

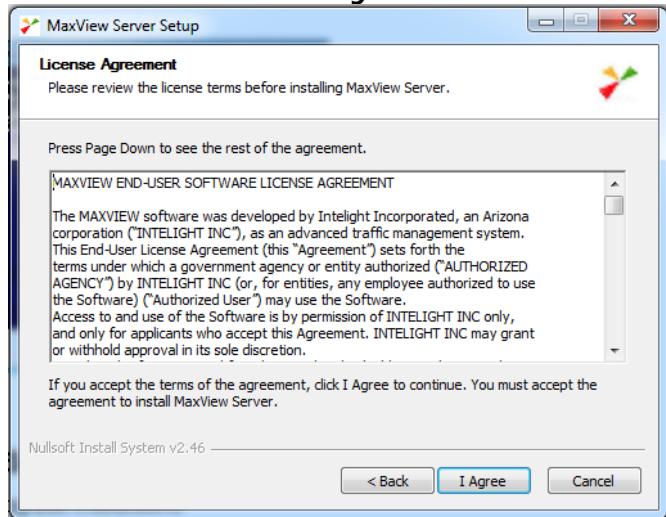
### **MAXVIEW Setup Application Walkthrough**

1. Launch MAXVIEW Server installer and verify the MAXVIEW version you are installing is correct and select **Next** to continue.



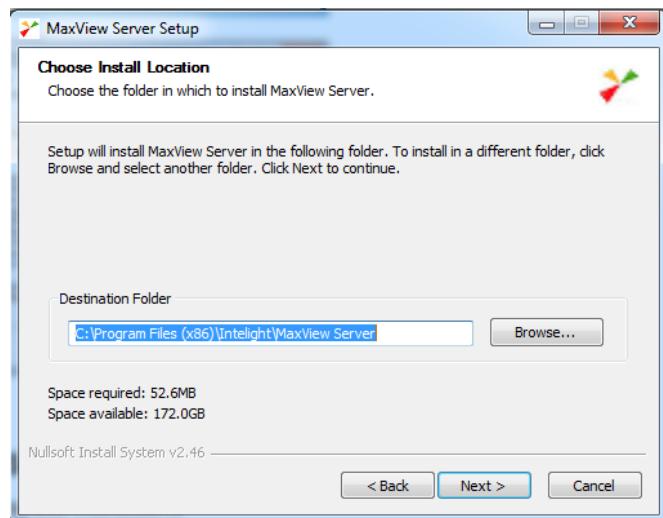
**Figure 3 MAXVIEW Server Installation Welcome Screen**

2. Read the MAXVIEW EULA and select **I Agree** to continue



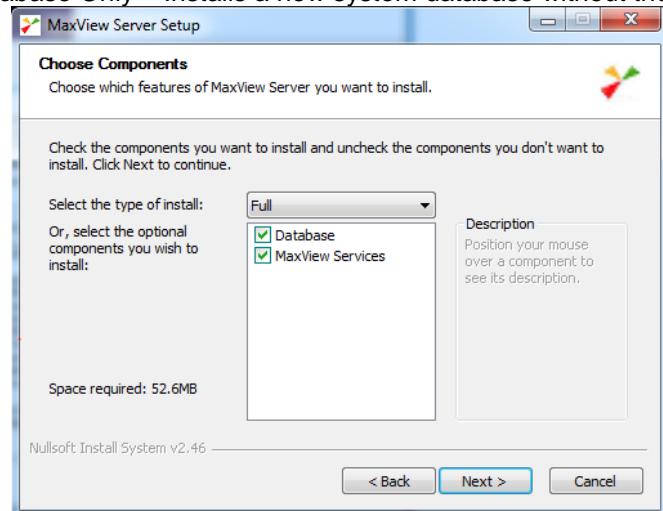
**Figure 4 MAXVIEW Server End User License Agreement**

3. Select the location for the MAXVIEW server binaries. By default the MAXVIEW Server application is installed to "c:\Program Files\Intelight\MAXVIEW Server". Select **Next** to continue.



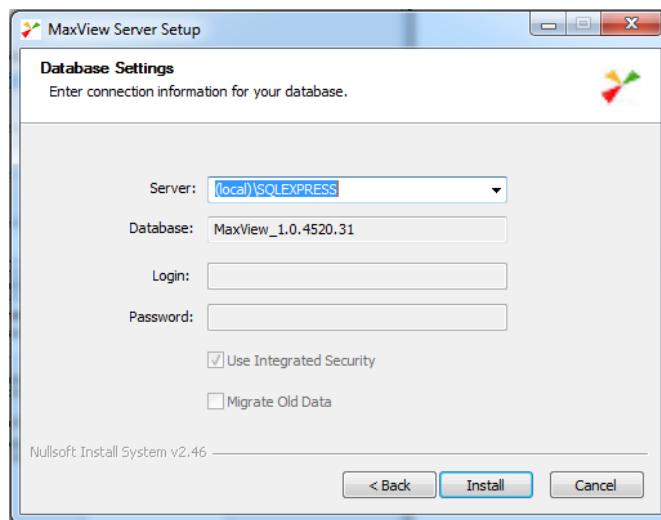
**Figure 5 MAXVIEW Server Installation Location**

4. Select the Installation Type and select **Next** to continue. Most installations will be Full Installations.
  - a. Full Installation - Installs both a new system database and the MAXVIEW services
  - b. Web Only – Installs only the MAXVIEW services without a database.
  - c. Database Only – Installs a new system database without the MAXVIEW services



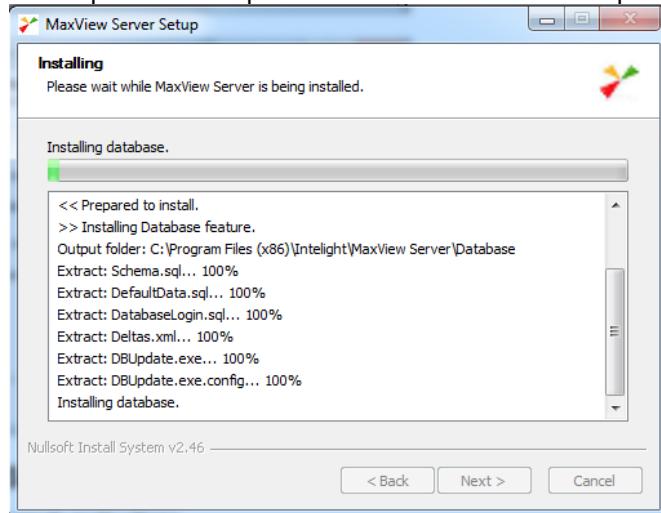
**Figure 6 Select MAXVIEW Installation Type**

5. If installing a database, select the SQL Server instance where the system database should be stored. A remote SQL Server can be entered here if needed.
  - a. In a typical installation there will be only one available SQL Server instance and it will be shown by default



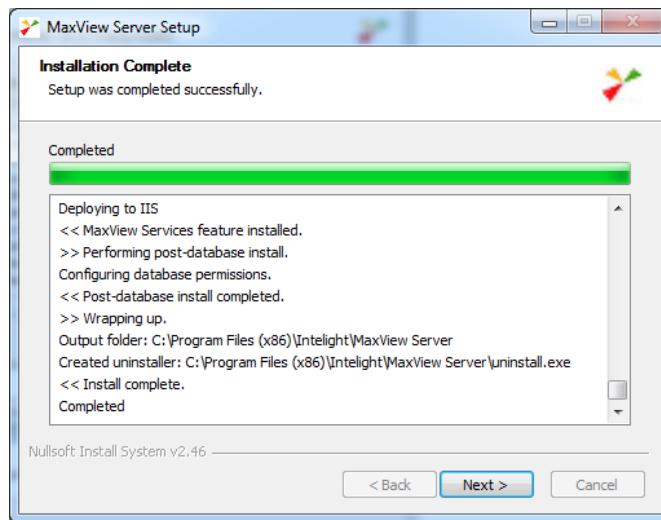
**Figure 7 Select SQL Server for MAXVIEW Installation**

6. Select **Install** to start the installation.
7. The installation will proceed and provide feedback of the overall process.



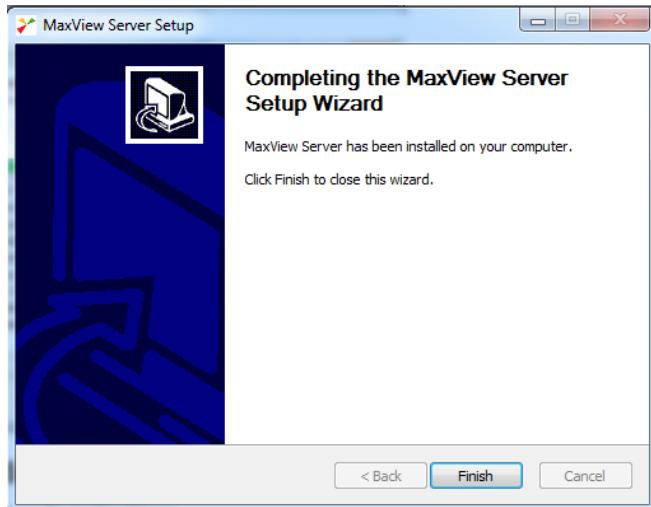
**Figure 8 MAXVIEW Server Installation in Progress**

8. Once the installation is complete a Success message will be shown. Select **Next** to complete the installation.



**Figure 9 MAXVIEW Server Installation Success**

9. Once the installation is complete select **Finish** to close the installer and start using MAXVIEW.



**Figure 10 MAXVIEW Server Installation Completed**

**Note:** After installation a reboot may be required. If the installer requires a reboot a message will be shown after installation. Please reboot the MAXVIEW server before accessing the server.

#### **5.1.4 Server Software Upgrade/Reinstall**

The MAXVIEW server components can be upgraded or re-installed directly over an existing installation as required.

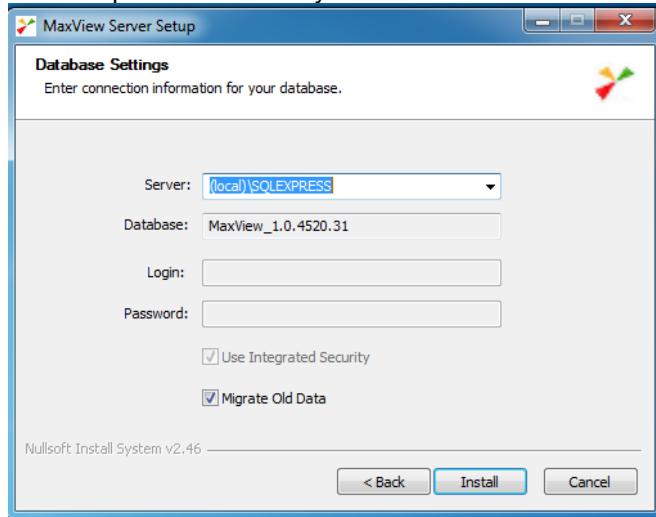
An updated MAXVIEW installer will install the new MAXVIEW server software and will migrate all system data to a new system database.

The MAXVIEW Server installer will never overwrite the existing system database when upgrading or reinstalling MAXVIEW.

To start an upgrade or reinstall, run the MAXVIEW installer again from the server as during the first installation.

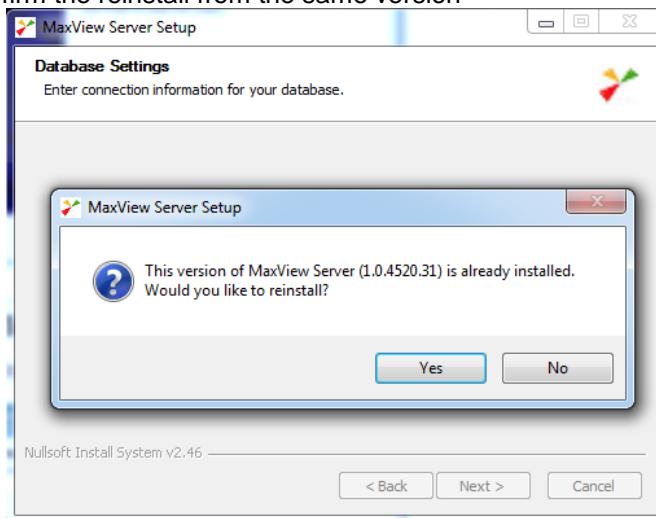
### Reinstall/Upgrade Walkthrough

1. Run the MAXVIEW installer from the computer.
2. Select the installation type and select **Next**
3. On the Database Settings screen, check “Migrate Old Data” to copy any existing data into the new system database.
  - a. A new system database is created on every install
    - i. If “Migrate Old Data” is checked the system data in the existing database is copied to the new system database.
    - ii. If “Migrate Old Data” is not checked the system data in the existing database is not copied to the new system database.



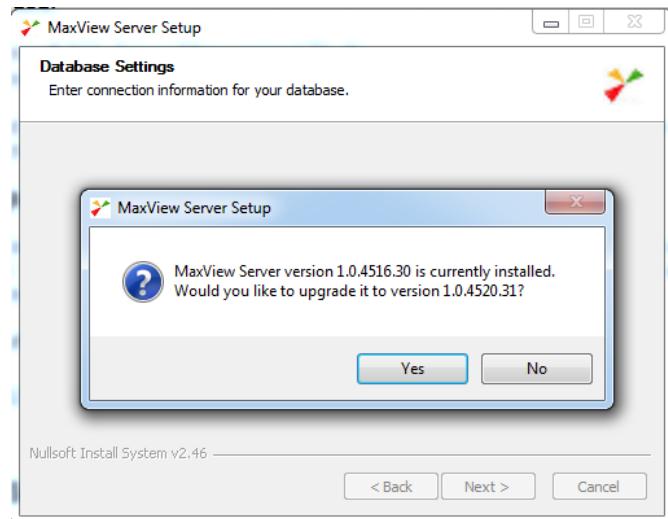
**Figure 11 Migrate Old Data During MAXVIEW Installation**

4. Select **Install** to continue and confirm that you would like to reinstall or upgrade the MAXVIEW Server software.
- b. Confirm the reinstall from the same version



**Figure 12 Reinstall the same MAXVIEW server version**

- c. Confirm the upgrade from an older version to a newer version



**Figure 13 Upgrade from an older version to a newer version**

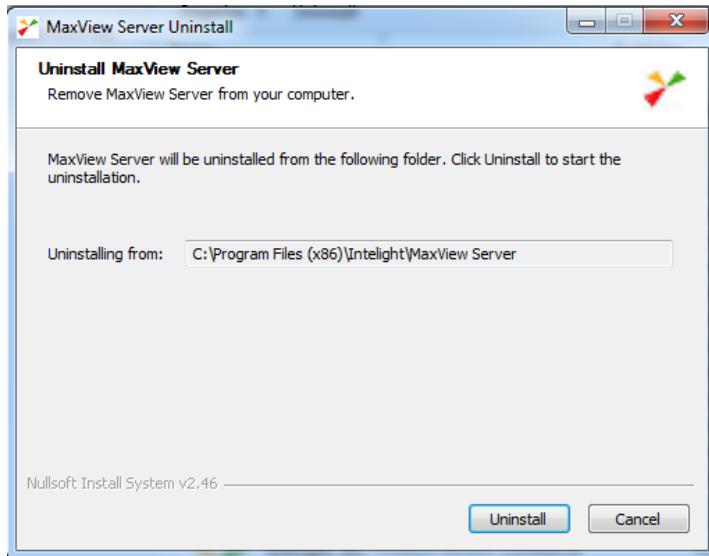
The rest of the server installation will proceed as described above in the Server Software Installation section.

### 5.1.5 Server Software Uninstall

The MAXVIEW Server application can be uninstalled through the Microsoft Windows “Add or Remove Programs” control panel.

To open the “Add or Remove Programs” control panel:

1. Open the Control Panel application from the start menu
2. Select Programs->Programs and Features->Uninstall a Program
3. Select the “MAXVIEW Server” application from the list
4. Select **Uninstall** to start the uninstaller



**Figure 14 MAXVIEW Server Uninstall Application**

Uninstalling the MAXVIEW Server will remove all MAXVIEW files and disable the MAXVIEW application services and website within Microsoft Internet Information Server.

The MAXVIEW Database will not be deleted from SQL Server by the uninstaller. If needed, the database can be deleted through the SQL Management Studio application at a later time.

### 5.1.6 System Database

By default the MAXVIEW Server installer will create and use a system database with a name such as, MAXVIEW\_1.0.4520.31, where 1.0.4520.31 is the version of MAXVIEW that is installed.

As additional versions are installed or upgraded, the old system database will be left provisioned in SQL Server, even though they are no longer used. Old system databases can be deleted through Microsoft SQL Management Studio or left as backups.

The system database name cannot be changed through the installer or the MAXVIEW client. If you wish to create a new system database without running the installer please contact Inteliight for additional support.

## 5.2 Supported MAXVIEW Network Topologies

MAXVIEW is based on a client/server architecture and as such can be deployed in several different network topologies depending on specific IT needs or requirements.

A deployed MAXVIEW system is made up of the following hardware and software components:

1. MAXVIEW Server
  - a. MAXVIEW Server Application hosted in Microsoft IIS 7.5+
  - b. MAXVIEW Database hosted in Microsoft SQL Server 2008 R2+
2. MAXVIEW Client
  - a. MAXVIEW Web Client based on Microsoft Silverlight 5
3. Field Devices
  - a. Traffic controllers deployed in the field

In a typical installation, the MAXVIEW server components above will be deployed on a single physical server that is configured to be on an internal LAN with a single subnet.

**Note:** In any deployment it is recommended that the MAXVIEW Server be configured behind a firewall and not be directly Internet facing.

## 5.3 Installing MAXVIEW Client Software

The MAXVIEW client is built using Microsoft Silverlight 5 and as such there is no additional software to install on a client workstation after the MAXVIEW server is installed, other than the one-time Silverlight plugin install.

Silverlight 5 can be installed on a client workstation as described below.

### 5.3.1 Installing Silverlight 5

When the MAXVIEW client is opened, MAXVIEW will automatically check that the latest version of Microsoft Silverlight is installed. If the Silverlight plugin is not installed, a user will be prompted to install Silverlight before they can use the MAXVIEW client.

Microsoft Silverlight can also be downloaded and installed directly from the Internet at the following URL:

- <http://www.microsoft.com/getsilverlight/Get-Started/Install/Default.aspx>

**Note:** After installing Microsoft Silverlight you may be required to restart your browser before you can load MAXVIEW.

### 5.3.2 Upgrading a MAXVIEW Client Software

Every time the MAXVIEW client is opened on a client workstation, the MAXVIEW software will automatically check for a new version.

If a new version of the MAXVIEW client is available, a notification will be shown asking a user to restart MAXVIEW to load the newest version.

To load the newest version of MAXVIEW, simply close MAXVIEW and reopen it.

When MAXVIEW is opened again, the new version of will be automatically downloaded and used.

**Note:** The current MAXVIEW version number can be seen from the login page above the username and password text boxes.

### 5.3.3 “Installing” MAXVIEW to a Client Workstation

The MAXVIEW client can be run directly from a web browser as discussed above but it can also be installed and run directly from the start menu on a client workstation.

To install the MAXVIEW client onto a client workstation, open the MAXVIEW client webpage as discussed above and select the **Install MAXVIEW** button.

Installing MAXVIEW on a client workstation will add a MAXVIEW shortcut to the start menu so that it can be easily accessed later.

The installed version of the MAXVIEW is the same as the web-based version.

MAXVIEW will still auto-update all client workstations regardless of if they are using the web browser or installed client.

# 6 MAXVIEW Overview

## 6.1 Overview

The MAXVIEW Advanced Traffic Signal Management System is a complete traffic signal central system built from the ground up on modern web technologies.

The system design and architecture provides a solution that is easy to install, maintain and customize while enabling multiple different traffic management scenarios including: main map system wide status, local database management (including real time editing), TOD and manual commands, customizable alarms, traffic responsive, time space diagram, reporting and many more.

Each supported scenario is described in the subsequent sections below.

## 6.2 Product Key

MAXVIEW requires a product key to license the number of user accounts and intersections that are supported for a given installation.

If a valid product key has not been entered a user will be redirected to the product key web page to enter a new product key when signing on.

To enter a new product key manually, open a web browser and navigate to:

- <http://MAXVIEWServerName/MAXVIEW/register.aspx>

### Enter a new Product Key

1. Open the MAXVIEW registration page at the URL above



2. Select **Enter Product Key**
3. Enter the MAXVIEW product key provided by Intelight and select **Validate Product Key**
4. After a valid product key has been entered the webpage will update to show the number of licenses Intersections and User Accounts allowed by the license



### MaxView Server Registration

License Information:  
Valid MaxView Product Key.

Maximum Users:  
10

Maximum Intersections:  
50

[Enter New Product Key](#)

[Clear Product Key](#)

**Figure 16 Valid MAXVIEW Product Key Entered**

## 6.3 Connecting to MAXVIEW

A MAXVIEW client is any computer with a supported Internet browser.

By default the MAXVIEW client is hosted at the following URL, where [MAXVIEWServerName] is the host name or IP of the MAXVIEW server.

- [http://\[MAXVIEWServerName\]/MAXVIEW/](http://[MAXVIEWServerName]/MAXVIEW/)

To load the MAXVIEW Client simply open a supported Internet browser and navigate to the MAXVIEW server URL above.

Upon opening a MAXVIEW client, the following Sign In screen will be shown.



**Figure 17 MAXVIEW Sign In Page**

## 6.4 Signing in and out

A username and password is required for access to MAXVIEW.

By default, the MAXVIEW installer adds a single Administrator account with the following username and password:

- Default Username: Admin
- Default Password: Admin

**Note:** Intelight recommends changing the default password for the default Admin account to prevent unauthorized access.

Additional user accounts can be added as described in the System Configuration section below.

After logging in, users are not signed out of the system automatically. To ensure a malicious user does not gain access through a signed in account, whenever you are done using MAXVIEW it is recommended that you sign out using the **System->Sign out** menu.

To sign out of MAXVIEW select **System->Sign Out** from the main system menu.

Once signed out MAXVIEW you will be returned to the Sign In page. To sign in again simply enter a valid username and password and select **Sign In**.

MAXVIEW does not enforce a limit on the number of concurrent users or the number of times the same user can be signed in MAXVIEW.

Intelight does however recommend that no more than 25 users are connected to a single MAXVIEW server at a time. If additional concurrent users are required, it is possible to deploy an advanced multiple server environment to load balance the system. Please contact Intelight for more information.

# 7 Main User Interface

The MAXVIEW main user interface is made up of several components that provide access to real time status and information about the intersections and the devices configured within the MAXVIEW ATMS system.

These main interface components include:

- Main Menu
- System Devices Tree
- Main System Map with Device Comment
- Selected Intersections
- Favorite Intersections
- Incidents and Traffic Feed
- Server Log
- Alarm Notifications

Each component is discussed below in more detail.

## 7.1 Main Menu

### 7.1.1 Overview

The MAXVIEW main menu provides entry points to all system functionality.

Detailed functional descriptions of each component are provided in the MAXVIEW Operation sections contained within this manual.

Some menu items are only accessible to users with certain permissions—for example only Admin users can access the System->Configuration menu. The specific role required for access to a given menu item is noted below in the Menu Structure table.

### 7.1.2 Menu Structure

Menu Name	Action	User Role Required
-----------	--------	--------------------

<b>System</b>		
- Event Log	View system events such as configuration changes, alarms, user sign in and sign-outs, etc.	All
- Reports	View, edit, and delete reports saved via the “Report” menu of various data views throughout MAXVIEW.	All
- System Settings	Change system wide settings for polling rates, email accounts, etc.	Admin
- System Theme	Configure the system theme and theme colors.	All
- Configuration		Admin

○ Users	Add, edit and delete System Users and configure user group membership.	Admin
○ User Groups	Add, edit and delete System User Groups and group permissions.	Admin
○ Maps	Add, edit and delete System Maps and custom tiles sources.	Admin
○ External Links	Add, edit, and delete external links that can stand alone, or be associated with a device.	Admin
○ Devices	Add, edit, and delete devices and device systems, sections, and groups.	Admin
○ System Detectors	Add, edit and delete system detectors.	Admin
○ System Detector Groups	Add, edit, and delete system detector groups, which are used by traffic responsive plans.	Admin
○ System Detector Links	Add, edit and delete System Detector Links.	Admin
○ Center-to-Center Services	Configure available C2C client and server connections.	Admin
- Edit User Profile	Edit the details of your currently logged in user profile.	
- Sign Out	Sign out and return to the login page.	All

Device Control		
- Manual Control	Opens the Manual Control window to add or remove a manual command with an expiration time to an intersection or group.	All
- Action Set Control	Opens the Action Set Control window to add or a remove a manual action set command with an expiration time.	All
- Time of Day Schedule	Opens the TOD Schedule window where time of day commands that apply to a group or an intersection can be added or removed.	All
- Applied Command Status	View a table of information about all commands that are currently running in the system.	All
- Device Control Status	Opens the Signal Control Status window to view the active commands and command history for an intersection	All
- Configuration		
○ DMS Messages	Configure and preview DMS messages that can be sent as commands to DMS/VMS devices.	Device Control
○ Action Sets	Opens the Action Set configuration window to create, edit or delete	Device Control

	action sets that contain multiple commands to multiple devices.	
o Traffic Responsive Plans	Opens the Traffic Responsive Plan configuration window to create, edit or delete traffic responsive plans.	Device Control

<b>Monitoring</b>		
- <b>System Detectors</b>		
o Event Detail	View a table of information about every system detector event.	
o Historical Data	View customizable charts of system detector data over time.	
o Status	View current real-time status of each system detector's incoming data.	
- <b>Traffic Responsive Plans</b>		
o Historical Data	View customizable tables and charts of traffic responsive event data over time.	
o Status	View current real-time status of each traffic responsive plan, including a breakdown of actual system detector levels versus desired target levels for the plan.	
- Device Detector Historical Data	View customizable charts of detection data polled from each device that supports detection.	
- Device Event Detail	View a table of information about every event (phase, call, etc.) for each device.	
- Device Event Timelines	View customizable charts of any combination of events from any device.	
- Device Event Timeline Reports ( <i>menu</i> )	Contains a list of useful preset reports for the above menu item.	All
- Split Monitor	Opens the real-time Split Monitor window to view the split information for a given intersection.	All
- Device Communication Status	Opens the device communication status window.	All
- Device Status	Opens the real-time operation status window.	All
- <b>Configuration</b>		
o Event Monitoring	View the size of the event database and set the retention period for each event class.	Admin
o Time Drift Management	Configure time drift polling, alarms, and correction.	Admin

<b>Databases</b>		All
------------------	--	-----

- System Databases	Opens the System Database window to view the database change and upload/download history for a given device. Also, manually trigger uploads and downloads.	All
- Upload Schedule	Opens the Database Upload Scheduled Window to add or remove a scheduled upload with database compare for a given device or group.	Admin
- Import/Export Management	Opens the Database Import/Export Utility for Synchro import and export.	All

<b>Alarms</b>		All
- Active Alarms	Opens the System Alarms window to view active and recent (historical) system alarms.	All
- Configure Alarms	Opens the Alarm Configuration window where system alarms can be enabled/disabled and configured.	Admin
- Configure Alarm User Notifications	Opens the Alarms Notification window to add or remove alarm notification for a given user by TOD or for a specific set of alarms and devices.	All

<b>Assets</b>		
- Asset Management	Opens the Asset Management window, where assets can be added, edited, and deleted.	Admin
- Configure Agencies	Configure the list of available agencies, which can be associated with assets in various ways.	Admin

<b>Window</b>		
- Minimize All	Minimize all open windows.	All
- Arrange All	Arrange all open windows in the screen.	All
- Restore All	Restore all open windows.	All
- Close All	Close all open windows aborting any pending changes.	All

<b>Help</b>		
- System Manual	Opens the MAXVIEW Technical Reference Manual.	All
- View Help	Opens the MAXVIEW help file.	All

- About	Opens the About dialog to see the system version.	All
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## 7.2 System Device Tree

### 7.2.1 Overview

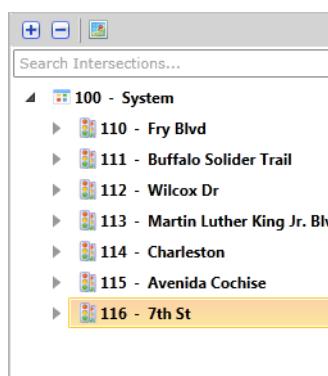
The system device tree shows all the devices that are configured within the system.

Devices are shown in a hierarchical relationship based on their parents. A device's parent is typically a system, section, or group, although a camera may have another device as its parent.

The following sections describe how to expand the system device tree and select a single or multiple devices, as well as other functionality that can be completed using the system device tree.

### 7.2.2 Expand/Collapse the Device Tree

Each parent within the system device tree can be expanded or collapsed to show or hide the devices or sub-groups contained within it.



**Figure 18. System device tree showing collapsed groups within a system**

There are multiple ways to expand or collapse a given parent within the tree:

- Select the or buttons from the system device tree toolbar to expand or collapse the selected parent. Note that all of the sub-groups of that selected parent will also be expanded or collapsed.
- Select the button next to a given a parent to expand that parent only.
- Press the and arrow keys when a parent is selected to collapse or expand it.

### 7.2.3 Select a Device or Group

A single device or group can easily be selected from the system tree.

To select a device or group, single-click on the item you wish to select.

When selecting devices, their corresponding status windows will be shown in the top right hand corner of the main map, and their corresponding icons will be highlighted on the main map with a selection ellipse.

To select a different device or group, simply single-click on the desired item and the selection will be changed.

The keyboard arrow keys can also be used to navigate the system device tree to change what is selected.

**Note:** When a device is selected on the main map, it will also be automatically selected in the system device tree.

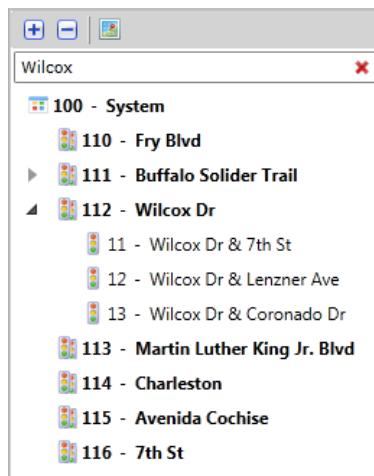
## 7.2.4 Select Multiple Devices and Groups

Using the system device tree, it is also possible to select multiple devices and/or groups at the same time.

To select more than one item, hold the **Ctrl** key while single-clicking on one item after the other. While holding **Ctrl**, the items that were previously selected will remain selected as you click on additional items. Hold the **Shift** key and click an item to select all items between it and the selected item (or whichever item was selected most recently, if multiple items are currently selected).

## 7.2.5 Search and Filter Devices and Groups

The system device tree is searchable by the number or name of any device or group.



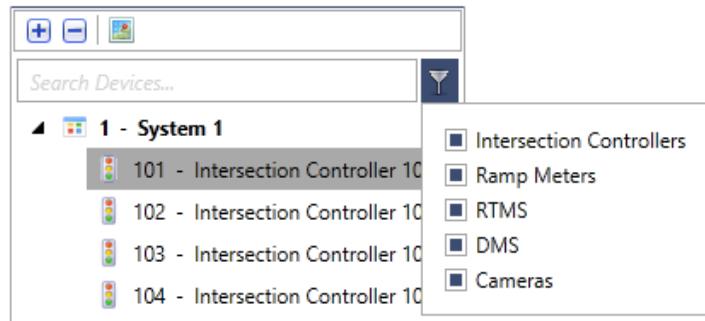
**Figure 19. Search for an item by name or number**

To search for an item, simply start entering text in the “Search Devices...” text box at the top of the system device tree. The system tree will automatically display the matching results as text is entered. To clear the search results and display all items again, click the **\*** button in the “Search Devices...” textbox.

**Note:** The entered search text is case insensitive.

## 7.2.6 Filter Device Visibility by Type

You may filter which types of device are visible in the system device tree:



**Figure 20. Filter device visibility by type**

To filter, click the “funnel”-shaped icon directly to the right of the text box. Click a check box to show or hide all devices of the selected type within the tree. For example, if you clear the check box next to “Intersection Controllers”, then no intersection controllers will be shown in the tree, regardless of any search terms entered. Fill the check box again, and intersection controllers will be shown once more.

### 7.2.7 Locate a Device or a Group on the Map

The system device tree can be used to quickly locate a group or specific device by zooming them into view on the main map. To locate a device or group, first select it in the system device tree by single-clicking on the name.

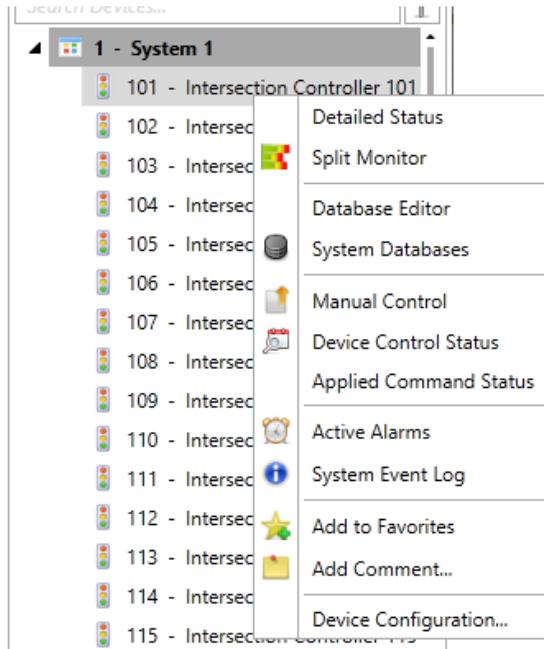
Click the button from the system device tree toolbar, and the selected group or device will be brought into view on the main map.

To locate a different group or device, select the desired item from the system tree and click the button again.

### 7.2.8 Device Context Menu

A device-specific context menu is accessible by right-clicking on a device within the system device tree. The menu will differ somewhat depending on the type of device that was clicked.

To show the context menu, right-click on a device in the system device tree. To hide the context menu, simply left-click outside the menu.



**Figure 21. An example of a device right-click context menu**

The device context menu provides access to specific information and settings for a given device. It opens the same windows that can be accessed through other menus and buttons throughout MAXVIEW. When these windows are opened through a device's context menu, their data will be filtered down to that device only, if applicable.

**Note:** The device context menu is also accessible by right clicking on a device on the main map.

Systems, sections, and groups also have a similar context menu that can be accessed the same way, from the system device tree.

## 7.3 Main System Map

### 7.3.1 Overview

The MAXVIEW main system map provides an easy to navigate a map view of all the devices configured within the system.

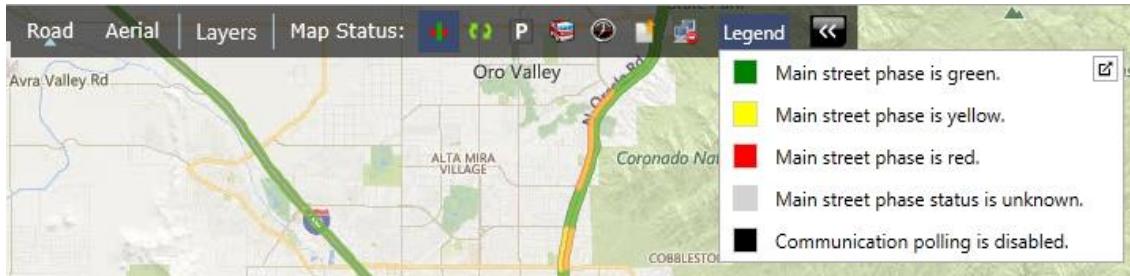
MAXVIEW leverages the Microsoft Bing map service as the default map tile provider to enable seamless, out-of-the-box mapping support. A license to Bing maps is included within the MAXVIEW license.

The system can also support multiple tile based providers to deliver custom map experiences, including OpenMaps, ESRI ArcGIS maps, or a local tile based map server.

**Note:** A full license to the Bing Map service is provided as part of the MAXVIEW system license.

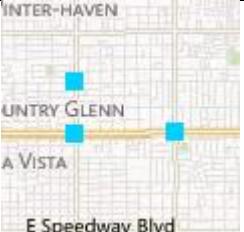
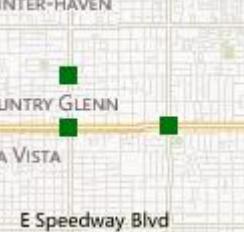
### 7.3.2 Main Map Status Views

MAXVIEW supports several different main map views that can be quickly selected in the top menu of the main map view.



These status views allow a user to quickly obtain a high-level status overview of the entire system. The following views are available:

Status View	Example	Displayed Information
Main Street Green		<ul style="list-style-type: none"> <li>Main street phase is green.</li> <li>Main street phase is yellow.</li> <li>Main street phase is red.</li> <li>Main street phase status is unknown.</li> <li>Communication polling is disabled.</li> </ul> <ul style="list-style-type: none"> <li>Configured main street green phase status (e.g. 2 and 6 or 4 and 8)</li> <li>Unacknowledged heads up alarm notification</li> </ul>
Coordination Status		<ul style="list-style-type: none"> <li>Running in Coordination.</li> <li>Running in Free.</li> <li>Running in Transition.</li> <li>Running in Input/Preempt.</li> <li>Cycle failed or bad plan.</li> <li>Current status is unknown.</li> </ul>

Pattern Status		<ul style="list-style-type: none"> <li><span style="color: green;">■</span> Pattern running in Coordination.</li> <li><span style="color: yellow;">■</span> Pattern running in Free.</li> <li><span style="color: brown;">■</span> Pattern running in Transition.</li> <li><span style="color: orange;">■</span> Controller running in Preempt.</li> <li><span style="color: pink;">■</span> Pattern cycle failed or bad plan.</li> <li><span style="color: red;">■</span> Cabinet flash active.</li> <li><span style="color: purple;">■</span> Pattern running in manual flash.</li> <li><span style="color: gray;">■</span> Communication error.</li> <li><span style="color: black;">■</span> Communication polling is disabled.</li> </ul>
Preempt Status		<ul style="list-style-type: none"> <li><span style="color: cyan;">■</span> No active preempts.</li> <li><span style="color: red;">■</span> Active preempt.</li> </ul>
Local Time Status		<ul style="list-style-type: none"> <li><span style="color: green;">■</span> Time sync within ±5 seconds.</li> <li><span style="color: yellow;">■</span> Time sync within ±10 seconds.</li> <li><span style="color: orange;">■</span> Time sync within ±15 seconds.</li> <li><span style="color: red;">■</span> Time sync within &gt;15 seconds.</li> <li><span style="color: gray;">■</span> Current time sync status is unknown.</li> </ul>
Applied Command Status		<ul style="list-style-type: none"> <li><span style="color: gray;">■</span> No applied commands.</li> <li><span style="color: yellow;">■</span> Single applied manual command.</li> <li><span style="color: brown;">■</span> Single applied action set command.</li> <li><span style="color: darkred;">■</span> Single applied time of day command.</li> <li><span style="color: purple;">■</span> Multiple applied commands.</li> </ul>
Comm Status		<ul style="list-style-type: none"> <li><span style="color: green;">■</span> No communication error.</li> <li><span style="color: darkred;">■</span> Communication error.</li> <li><span style="color: black;">■</span> Communication polling is disabled.</li> </ul>

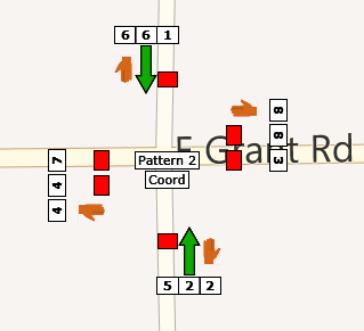
**Note:** Not all main map status views are applicable to all device types. If a device type does not support the currently selected view, then it will show its default status view, which is typically Comm Status.

### 7.3.3 Main Map Status Zoom Levels

MAXVIEW supports displaying real time phase status, alarm status and more on the main system map for all intersections within the system.

For the devices that are displayed on the main map, MAXVIEW handles the rendering of icons automatically without any user configuration.

As a user zooms into the main map, the density of information increases to show more and more data. The following highlights the available main map views as the map is zoomed in and out of a given area.

Zoom Level	Example	Displayed Information
Full zoom		<ul style="list-style-type: none"> <li>Selected Main Map Status View</li> </ul>
Mid-level Zoom		<ul style="list-style-type: none"> <li>Configured main and side street phase status</li> <li>Active alarms</li> </ul>
Close-level Zoom		<ul style="list-style-type: none"> <li>Full intersection detailed status with phase, overlap, ped</li> <li>Active alarm</li> <li>View is fully configurable by a user to add and remove status items</li> </ul>

### 7.3.4 Device Context Menu

The device context menu can be shown by right-clicking on any device on the main map.

The menu structure is identical to the device context menu that is available from the system device tree discussed in [Section 7.2.8](#).

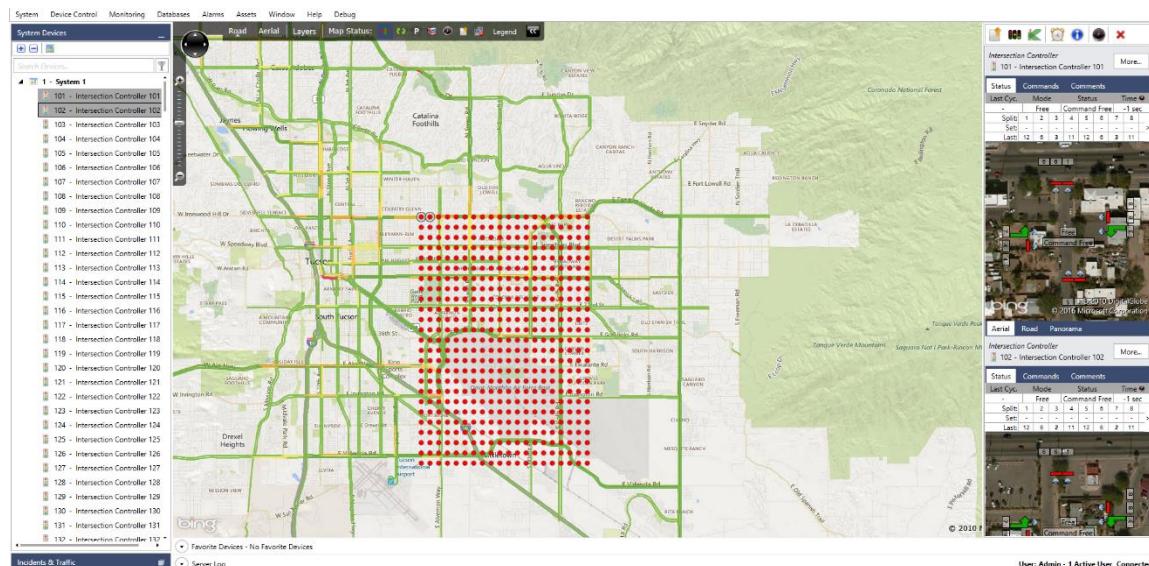
### 7.3.5 Select a Device

To set a device as selected from the main map, single-click on the device status icon on the main map.

When a device is selected, it will be bounded by a selection ellipse on the main map to indicate that that is selected.

### 7.3.6 Select Multiple Devices

MAXVIEW makes it easy to select multiple devices at the same time to either view status or perform actions on the entire group of selected devices.



**Figure 22. Main map showing multiple devices selected at the same time**

To select multiple devices at a time from the main map:

1. Hold the **Ctrl** key and click on the main map.
2. Continue to hold the **Ctrl** key and the mouse button and begin to drag the mouse—as you drag, a dotted bounding box will appear.
3. While holding **Ctrl**, continue to drag the dotted bounding box around the set of devices you wish to select.
4. Release the mouse button and the **Ctrl** key, and the devices within the box will be selected.

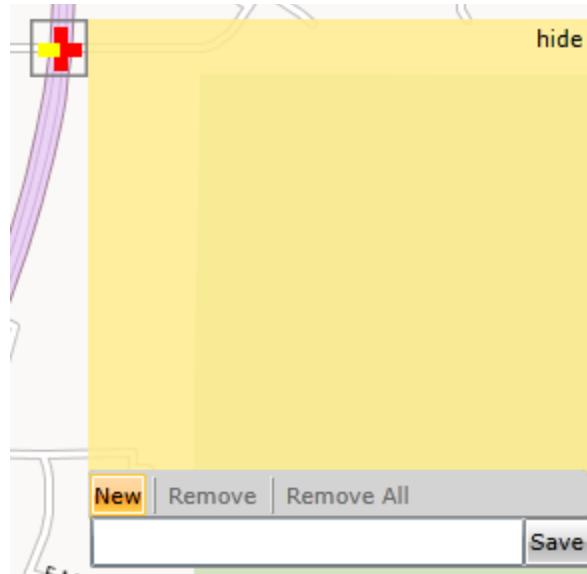
To select a different set of devices, simply repeat the procedure above and lasso a different set of devices.

Multiple devices may also be selected or un-selected one at a time, by holding the **Ctrl** key and repeatedly clicking on each device.

### 7.3.7 Add/Remove Device Comments

Any user can add a comment to a device that is visible on the main map. Comments can be used to track information between shifts or to quickly note an operational issue to follow up on.

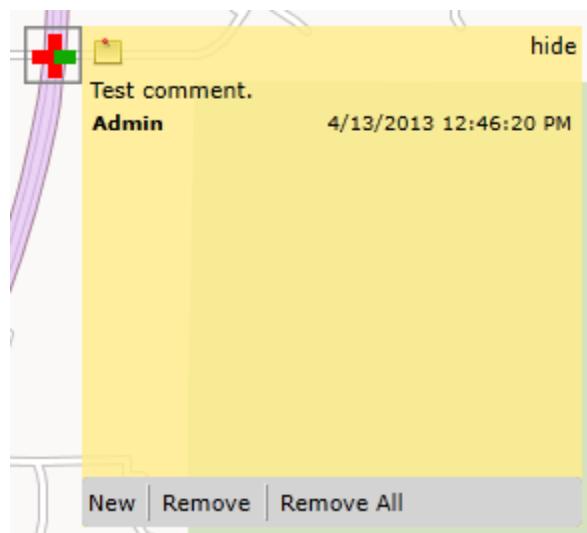
To add a comment, right click on a device on the main map and select “Add Comment”.



**Figure 23. Add Comment to Device on the main map**

To add a new comment, select “New”, type the comment and then select “Save”.

To remove a comment, first select the comment, and then select “Remove”. To remove all the comments at once for a given device, select “Remove All”.



**Figure 24. Device with a comment added by the Admin user.**

Comments are visible immediately across all clients that are currently signed in to the system. Each comment contains a timestamp and the user who made it.

### 7.3.8 Show/Hide Main Map Layers

Main Map Layers can be shown and hidden using the Layers button in the map control bar.



**Figure 25. Main Map Show/Hide Layers**

The layers that are checked will be shown when the map is zoomed within the range set in the zoom range for the given layer.

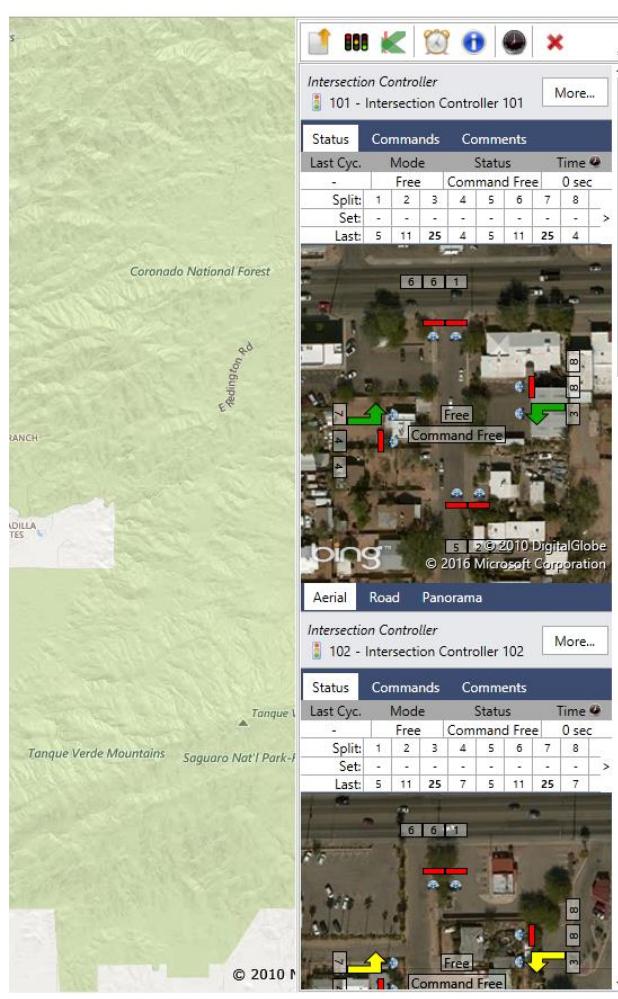
The layers that are unchecked will be hidden.

The layer visibilities settings are saved per user workstation.

## 7.4 Selected Devices

### 7.4.1 Overview

When a device is selected from the system device tree or the main system map, it will be shown in the selected devices view in the main MAXVIEW window:



**Figure 26. MAXVIEW main window showing 2 selected devices**

The selected devices view displays detailed status for the selected devices. It also provides a menu bar to enable various actions to be taken on the selected devices.

The available actions that can be completed on the set of selected devices include:

- Manual Group Control
- Group Plan (*Intersection Controllers only*)
- Time Space Diagram (*Intersection Controllers only*)
- Active Alarms
- System Event Log
- Set or Get Device Time Now (*Intersection Controllers and Ramp Meters only*)
- Unselect All

**Note:** When more than 25 devices are selected at one time, some group actions such as Group Plan, Time Space Diagram, Active Alarms, and System Event Log are not available, and the user will receive a warning when trying to access them.

## 7.4.2 Deselect all Devices

To deselect all devices, select the red  (X) button, from the selected devices toolbar.

## 7.4.3 Set a Manual Group Control Command

MAXVIEW makes it very easy to apply a manual command with a set expiration time to a set of selected devices.

To apply a manual command to the set of selected devices:

- 1) Select the  Manual Group Control button from the selected devices toolbar.
- 2) Select a manual command type, command value and an expiration time.
- 3) Click **Apply Command**.

**Note:** To view, change or remove a set manual command at a later time, open the Manual Control window by clicking the **Device Control** menu and selecting **Manual Control**.

## 7.4.4 View Group Plan

MAXVIEW supports a unique view into the coordination status and split timings for any set of intersections through the Group Plan window.

The Group Plan window is available if the set of intersections are in a predefined group, or if they are simply all selected at the same time.

To view the Group Plan window for a set of selected intersections:

- 1) Select the  Group Plan button from the selected devices toolbar.
- 2) To close the Group Plan window, simply click **Done**.

**Note:** If an intersection is un-selected, it will not be removed from the Group Plan window while the window remains open.

## 7.4.5 View Time Space Diagram

MAXVIEW enables a user to view a time space diagram when two or more intersections are selected, without the need to predefine the corridor or layout.

To view the Time Space Diagram window for a set of selected intersections:

- 1) Select the  Time Space Diagram button from the selected devices toolbar.
  - a. Note that the time space diagram button is only available when two or more intersections are selected.
- 2) To close the Time Space Diagram window, simply click **Done**.

## 7.4.6 View Active Alarms

It is simple to view the active alarms for a set of one or more selected devices. Just click the  Active Alarms button, from the selected devices toolbar.

The Active Alarms window will be shown, with its filter set to only the selected devices.

Additional filters can be added or removed as needed. For more information, see **Section 15: System Alarms**, contained within this manual.

## 7.4.7 View System Log Events

After selecting a device or set of devices, it is simple to view a filtered event log to review the history of system events for a given set of devices.

To view the relevant events for a given set of devices, select the  System Event Log button, from the selected devices toolbar.

The System Event Log window will be shown with the filter set to the selected devices.

Additional filters can be added or removed as needed. For more information, see the *Event Log* section contained within this manual.

## 7.4.8 Set/Get Time Manually

After selecting a device or set of devices that support time synchronization, it is simple to set or get the time.

To set or get the time for a given set of devices, select the  set/get time button from the selected devices toolbar.

To set the controller time select “Set Time Now”.

To get the controller time within MAXVIEW select “Get Time Now”.

If the time synchronization or time set fails, a pop up error message will be displayed.

# 7.5 Favorite Devices

## 7.5.1 Overview

The Favorite Devices pane allows a user to configure a set of “Favorites” that will always be visible within the main MAXVIEW window.

Favorite devices are stored per user to allow each user to save a set of devices that he or she may be most interested in.

The Favorite Devices pane can be expanded and collapsed to hide and show the set of Favorite Devices. By default, after signing in, the Favorite Devices pane is collapsed.

To expand or collapse the Favorite Devices pane, simply click on the “Favorite Devices” text or click on the  expand/collapse button.

**Note:** When more than 25 devices are added as Favorites, some group actions such as Group Plan, Time Space Diagram, Active Alarms, and System Event Log are not available, and the user will receive a warning when trying to access them.

## 7.5.2 Add a Favorite

A user can favorite a new device by opening its context menu and clicking **Add to Favorites**.

When a device is added as a favorite, it will be visible in the Favorite Devices view immediately.

There is no limit on the number of devices a user can favorite.

## 7.5.3 Remove a Favorite

To remove a device from the list of Favorite Devices, simply click the  un-favorite button.

Removing a favorite does not delete the device from the system or remove the device from any other user's favorites.

A removed favorite can be added back again by selecting **Add to Favorites** from the device's right-click context menu.

# 7.6 Server Log

## 7.6.1 Overview

The Server Log pane provides a user readable log of the real time communication between the MAXVIEW client and the MAXVIEW server.

Server Log		
Time	Severity	Message
0:07/10/12 18:41:10	Error	Received error for controller version information for Intersection 27.
0:07/10/12 18:41:10	Error	Received error for controller version information for Intersection 15.
0:07/10/12 18:41:10	Error	Received error for controller version information for Intersection 20.
0:07/10/12 18:41:10	Error	Received error for controller version information for Intersection 6.
0:07/10/12 18:41:03	Information	Connected to MaxView server.
0:07/10/12 18:41:02	Information	Connecting to MaxView server...

**Figure 27** Sever log pane showing recent client/server communication

The Server Log can be used to troubleshoot connection issues or other server communication problems.

**Note:** The Server Log is not meant to be a persistent log of all system events. The System Event Log supports this functionality. See the *System Event Log* section of this manual for more information.

The server log supports a configurable logging level that can be set within the system settings.

The following log levels are available:

Log Level	Detail
-----------	--------

Error	Error level logging only
Warning	Warning and error level logging
Information	Information, warning and error level logging
Verbose	Verbose, Information, warning and error level logging

## 7.6.2 Sort the Server Log

The server log can be sorted by:

- Time
- Severity
- Message

Time	Severity	Message
0:07/10/12 18:41:02	Information	Connecting to MaxView server...
0:07/10/12 18:41:03	Information	Connected to MaxView server.
0:07/10/12 18:41:10	Error	Received error for controller version information for Intersection 6.
0:07/10/12 18:41:10	Error	Received error for controller version information for Intersection 20.
0:07/10/12 18:41:10	Error	Received error for controller version information for Intersection 15.
0:07/10/12 18:41:10	Error	Received error for controller version information for Intersection 27.

**Figure 28 Server log sorted by severity**

To sort or resort the Server Log click on the **Time**, **Severity** or **Message** header.

To change the sort order, click on the currently sorted header again.

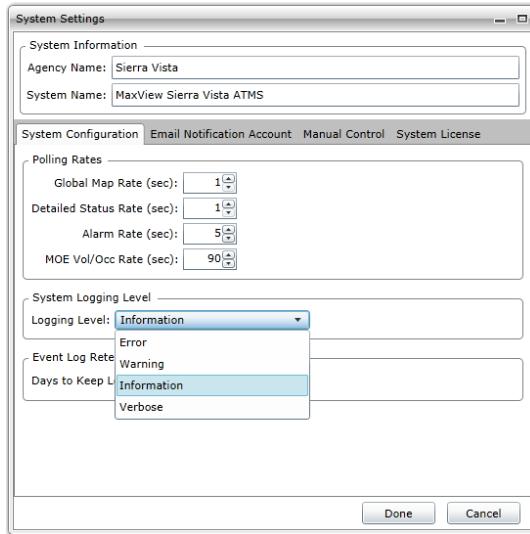
## 7.6.3 Change the Server Log Level

The Server Log logging level defaults to the Information level.

At this log level all error, warning and information events will be written and shown in the Server Log.

The Server Log logging level can be change in the system settings. This change applies to all clients connected to the MAXVIEW server.

To change the Server Log logging level, open the System Settings window from the System->Settings main menu.



**Figure 29 System settings showing the available System Log logging level**

Click on the **Logging Level** drop down box and select the desired logging level.

Select **Done** to save the changes or **Cancel** to abort any changes.

#### 7.6.4 Connection Status

The MAXVIEW client connection status is visible from the main window in the right hand side of the System Log pane.



**Figure 30 MAXVIEW client connection status in Sever Log pane**

The connection status can be in one of the following states:

- **Connected** – The MAXVIEW client is connected to the MAXVIEW server
- **Disconnected** – The MAXVIEW client is disconnected from the MAXVIEW server and is waiting to reconnect
- **Connecting** – The MAXVIEW client is in the process of trying to reconnect to the MAXVIEW server.

More information about the current MAXVIEW server can be seen by hovering over the connected text.

#### 7.6.5 Signed In Users

The set of signed in users is shown in the bottom right hand corner of the main interface.

Hovering the mouse over the “X Signed in Users” text will list the detailed set of users who are connected and when they logged in.

## 7.7 Alarm Notifications

MAXVIEW system alarm notifications are shown in the bottom right hand corner of the main window when enabled.



**Figure 31 System alarm notification window**

The alarm notification window will automatically dismiss in 10 seconds or they can be directly dismissed by the user. For more information see the *System Alarms* section.

### 7.7.1 Dismiss an Alarm Notification

To dismiss an alarm notification, click the **Dismiss** button.

The alarm notification will be dismissed but the alarm will remain active.

### 7.7.2 Dismiss all Alarm Notifications

To dismiss all the alarm notification, click the **Dismiss All** button.

All the pending alarm notifications will be dismissed but all the alarms will remain active.

# 8 System Configuration

## 8.1 Overview

The MAXVIEW system can be configured completely from within the MAXVIEW client using the System Configuration menu.

From System Configuration menu it is easy to add, edit and remove system users, intersections, groups and system maps.

**Note:** A user account with an Admin role is required to access the System Configuration menu.

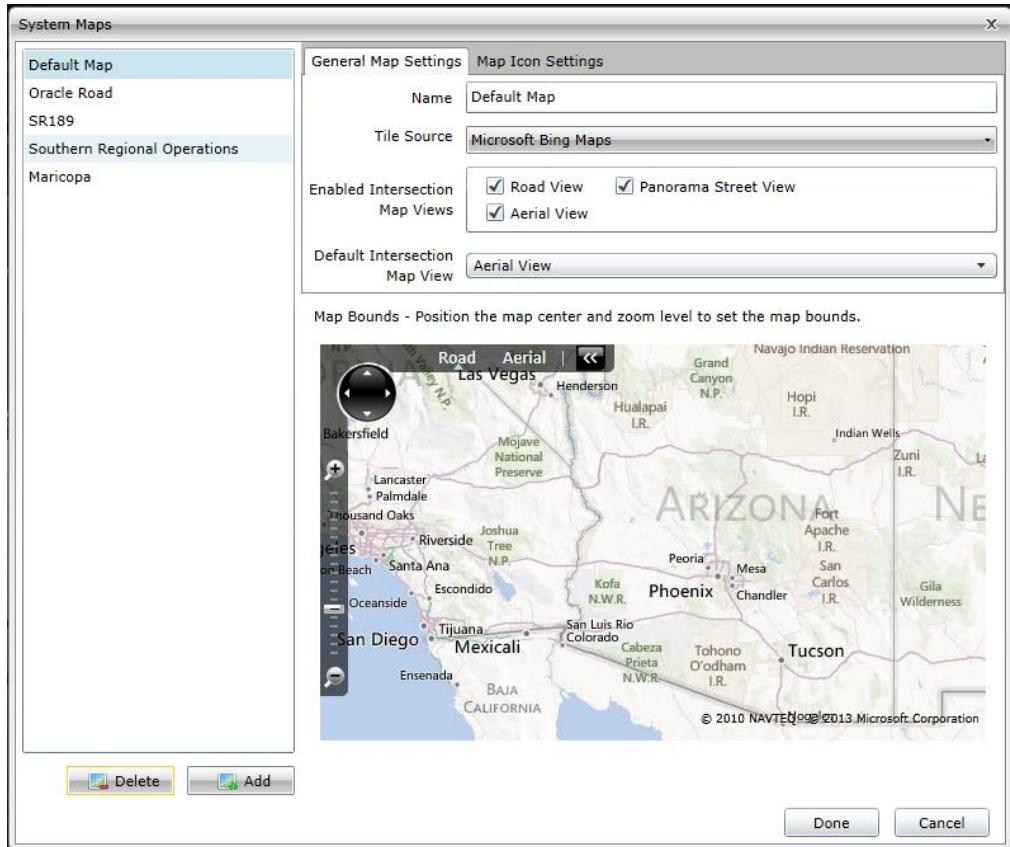
## 8.2 System Maps Configuration

### 8.2.1 System Map Configuration Overview

MAXVIEW supports configuring multiple system maps that can be bounded at different views and locations.

For each system map a user can configure a set of available views (e.g. Road, Aerial, and Panorama) and the set a custom tile source if desired.

Each User is assigned a default map that is used when they sign in. The default map for a given user is set in the User Configuration window. See the *User Configuration* section for more detail.



**Figure 32 System map configuration view**

The System Map configuration window is accessible from the main menu under System->Configuration->System Maps.

**Note:** A single system map must always be configured. It is not possible to delete the last remaining system map.

### 8.2.2 Set Map Location and Bounding Rectangle

A default system map is configured when MAXVIEW is installed. This map is set to Tucson, AZ and named “Default”.

To customize the location of the main system map, simply zoom and drag the map view within the System Map configuration window.



**Figure 33 System map center and bounding rectangle**

After the map is set to the new location the maximum zoom level can be set as well.

The view that is visible in the **System Map** view will set the bounded view that will be used in the main MAXVIEW map view when a user signs in.

### 8.2.3 Add a System Map

Multiple system maps can be added to the system.

To add a new map select **Add** from the System Maps window.

A new map must be configured with a name.

By default a new map will be set to use the Microsoft Bing Map Tile source and the Aerial View as the Intersection Map View.

### 8.2.4 Remove a System Map

A system map can be removed by from the system by selecting **Delete**.

The last system map cannot be removed from the system.

If a user is configured to use a map that is deleted, the first available map will be reassigned to the user automatically.

### 8.2.5 Set Enabled Intersection Map Views

The set of map views that are available within the Intersection Detailed Map View can be configured within the System Maps window.

To set a map views as available select the check box next to the map view name.

If a given map view is set as not available it will be removed from the set of tab views that can be selected in the Intersection Detailed Map View.

**Note:** The Panorama view must also be enabled for each intersection where it is available using the Configuration->Intersection window under Set Location and Direction. See the *Intersection Configuration* section below for more details.

## 8.2.6 Change Default Intersection Map View

The default map view that is loaded when a user selects an intersection can be configured in the System Map configuration window.

By default the Aerial map view is used.

The default view can be changed to any available map view:

- Aerial Map View
- Road Map View
- Panorama Street Map View

The map views that are not set as the default will still be available within the intersection detail map view as additional tabs.

## 8.2.7 Add a System Map Source

MAXVIEW supports adding additional Map Sources to augment that data provided by the Bing Map service.

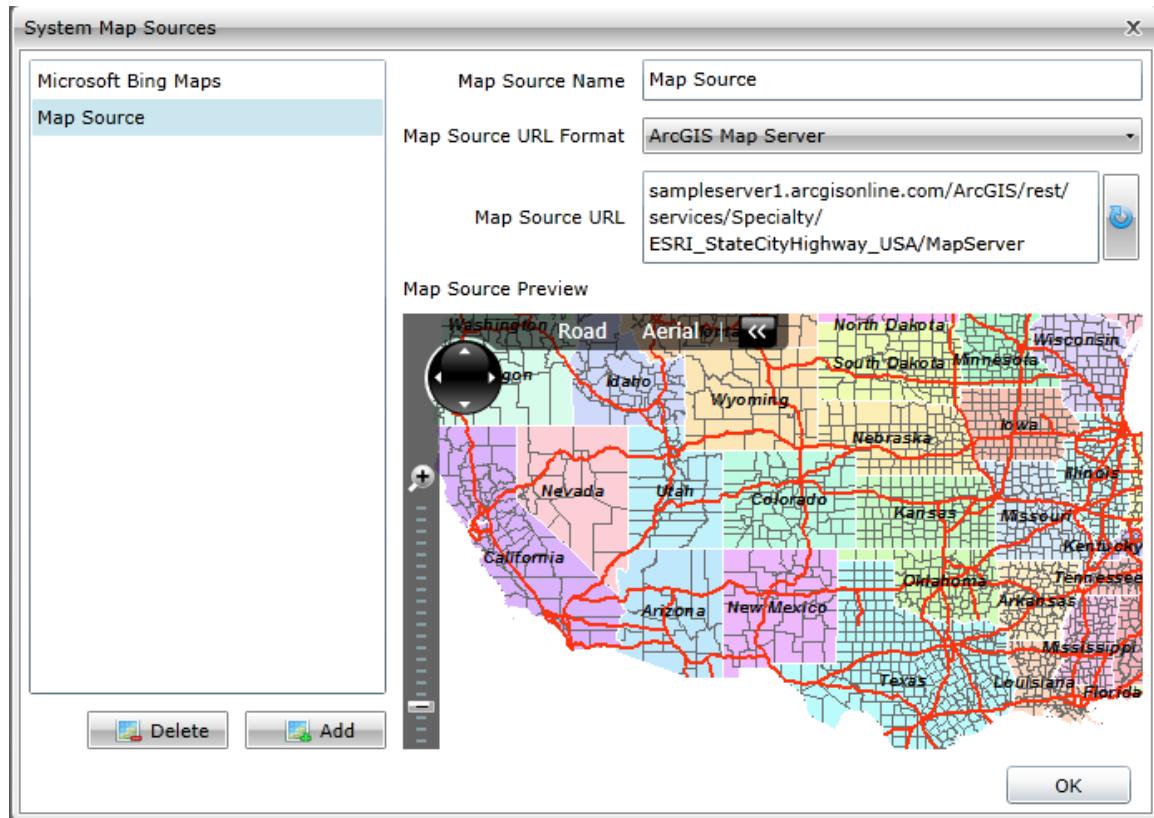


Figure 34 Map Source Configuration Window

To add an Additional Map Source select “Manage” from the System Configuration->System Maps window.

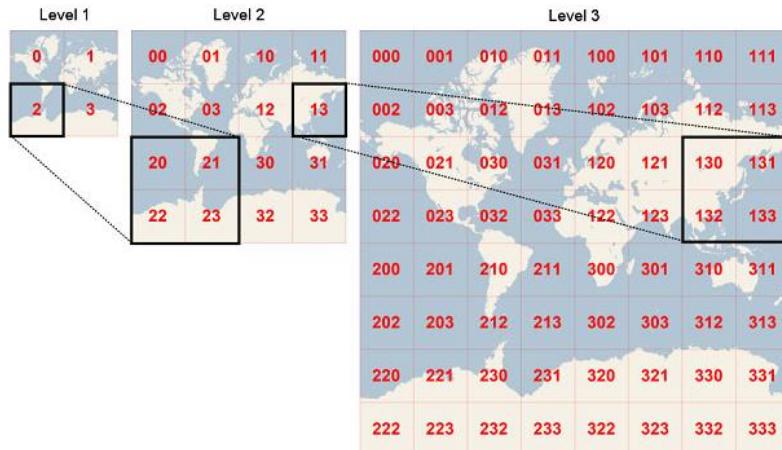
The System Map Source window supports multiple map sources that can be used to power the base main map or additional map layers.

MAXVIEW supports the following Map Source Types:

- Custom – Quad Key String
  - The tile quad key is express in q (0), r (1), t (2), s (3)
  - See below for the tile scheme details
- Custom – Quad Key Numeric – PNG
  - The tile quad key is expressed in 0, 1, 2, 3
  - See below for the tile scheme details
- ArcGIS Tile Server
  - An ArcGIS 9+ server with a cached map tile layer
- ArcGIS Map Server
  - An ArcGIS 9+ server that does not have a cached tile layer

Once configured the map source can be used on multiple system maps or map layers.

The following shows an example of the quad key in a numeric format:



**Figure 35 Tile source quad key format**

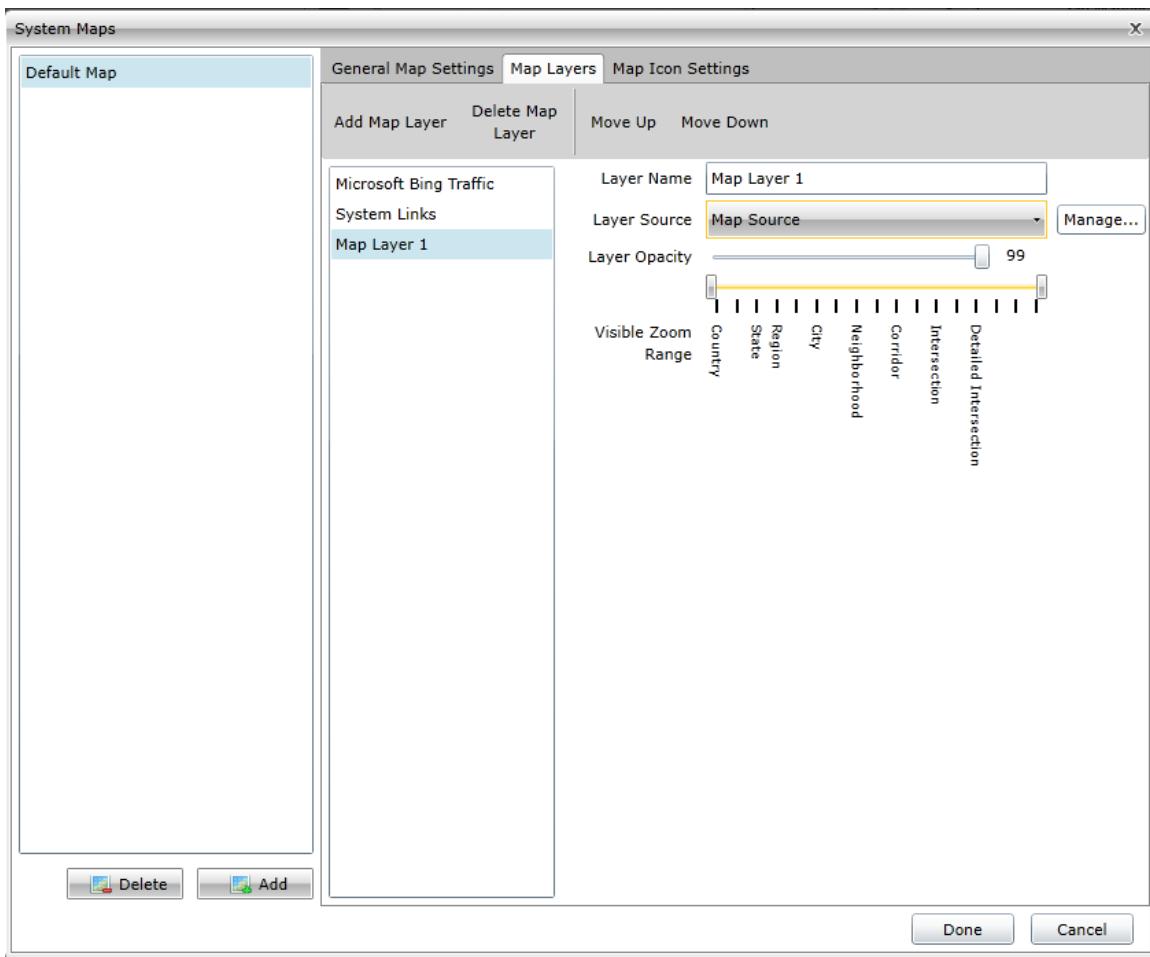
To change the base map to a different Map Source:

- 1) Create a new Map Source by selecting Manage
- 2) Select the Apply Tile Source button to verify the source can be loaded
- 3) Select the new source as the Base Map Source in the Map Configuration drop down

**Note:** If the tile source cannot be found the main map may be left with a white background. To restore the map view either correct the tile source or select the Bing Map Tile provider

## 8.2.8 Configure Map Layers

MAXVIEW supports adding multiple layers to each System Map.



**Figure 36 System Map Layer Configuration**

Layers can be configured to show only at a specific zoom level and with a set opacity.

By default MAXVIEW enables the following two layers which cannot be deleted:

- Microsoft Bing Traffic - Traffic data from the Bing Map server
- System Links – System Link volume and occupancy from System Detectors

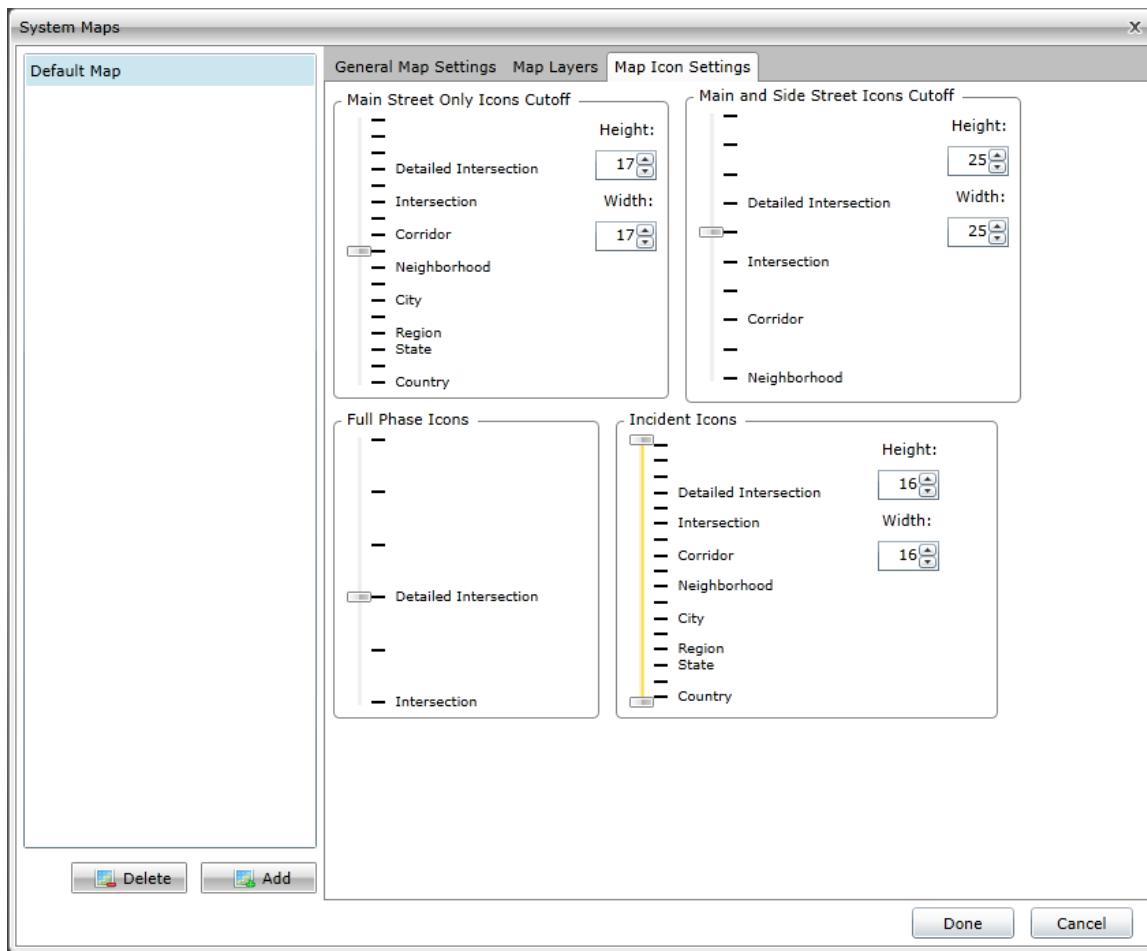
To add an additional map layer select “Add Map Layer” and set the map source.

To remove a map layer select “Delete Map Layer”

Map layer ordering can be changed using the “Move Up” and “Move Down” buttons.

### 8.2.9 Configure Map Icon Sizes

The size and layer visibility for each of the system main map templates can be set for each map in the “Map Icon Settings” tab.



**Figure 37 Main Map Icon Settings in the Map Configuration Window**

To control when each icon template is shown on the main map, set the following zoom levels settings. Note: A higher zoom level corresponds to a more detailed map zoom.

- Main Street Green Icon
- Main and Side Street
- Full Phase Icons
- Incident Icons

The size of each icon on the map can also be set by adjusting the width and height setting.

## 8.3 System Users Configuration

### 8.3.1 System Users Overview

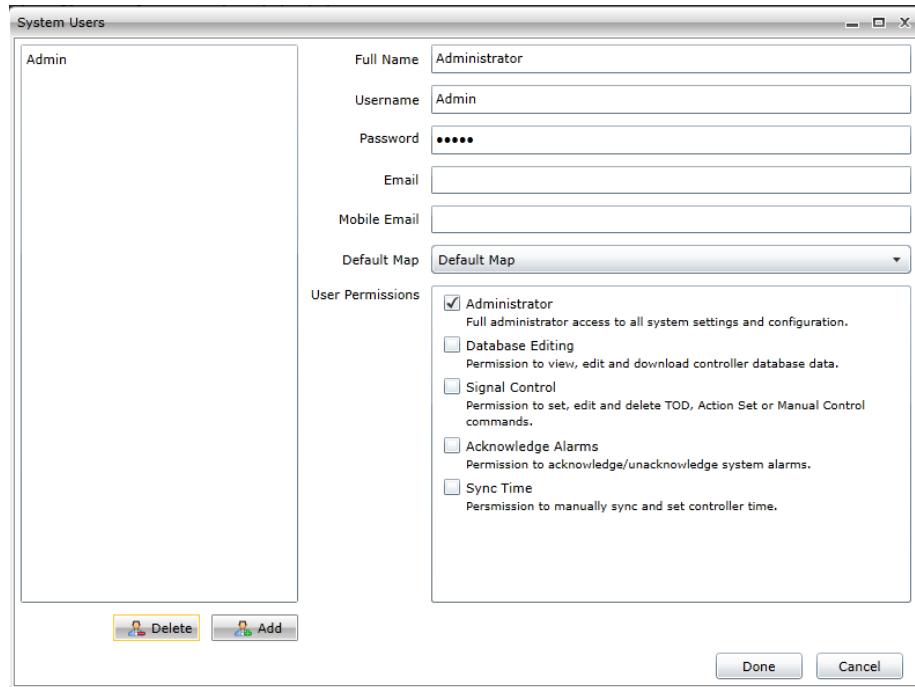
MAXVIEW supports configuring multiple user accounts within the system.

A valid user account is required for access to MAXVIEW.

Each user account is also assigned a role which defines the available permissions and actions the user can perform when signed in to MAXVIEW.

Each user can be logged in to MAXVIEW through multiple clients and user accounts can be shared by multiple people if desired.

The total number of unique users that can be configured within the system is limited by the MAXVIEW product license.



**Figure 38 System User configuration window**

Each user added to the system can be configured with the following properties:

Field	Description	Range	Req.
Full Name	The full name of the user	100 chars	Yes
Username	The username that is used to access the system	30 chars	Yes
Password	The user's password	30 chars	Yes
Email	The user's primary email address.	255 chars	No
Mobile Email	The user's mobile phone email address to enable TXT message based notifications.	255 chars	No
Default Map	The system map that is used when the user signs in	N/A	Yes
System Administrator	Sets the user as a System Admin with full access to all devices and system configuration	True/False	Yes
User Group Membership	The set of user groups the user is a member of.	N/A	No

Each user can be assigned two separate email addresses—each of which will be notified when the user is configured to receive a given alarm.

The Email address field is intended as the user's primary email address.

The Mobile Email address is intended as the user's mobile phone email address to enable TXT message based notifications.

Each user can be configured as a member of a set of User Groups. The User Groups configure what action the user can complete when logged in to the system. See the *Configuring User Group Membership* section below for more info.

### 8.3.2 Add a User

To add a user, first open the System Users window.

Select **Add** to create a new user.

The new user's **Username** must be unique within the system.

Set the user's email address, default map, and roles and select **Done** to save the User to the system.

### 8.3.3 Remove a User

Existing user accounts can be deleted from the system using the System Users window.

To delete a user select the user in the list and then select **Delete**.

A confirmation will be shown to confirm that you want to delete the selected user. Select **OK** to delete the user or **Cancel** to abort the operation.

The Administrator account that is currently signed in and accessing the System User window cannot be deleted.

To accept the change and permanently delete the user from the system select **Done**.

To abort the change and restore the user select **Cancel**.

If the user is currently logged in to the system they will not be logged out but upon signing out the user account that was deleted will not be able to sign back in.

**Note:** Deleting a user cannot be undone once Done is selected.

### 8.3.4 Configure a User Group Membership

A user can be configured to be a member of different User Groups which dictate what functionality they can perform within the system. Each User Group a user is a member of implies a set of permissions on a set intersections or groups of intersections.

A user can be configured to be a member of any configured User Group.

If a user is marked as a System Administrator in the User configuration then that user will have full access to the system and is not required to be a member of any group.

By default the following User Groups are available.

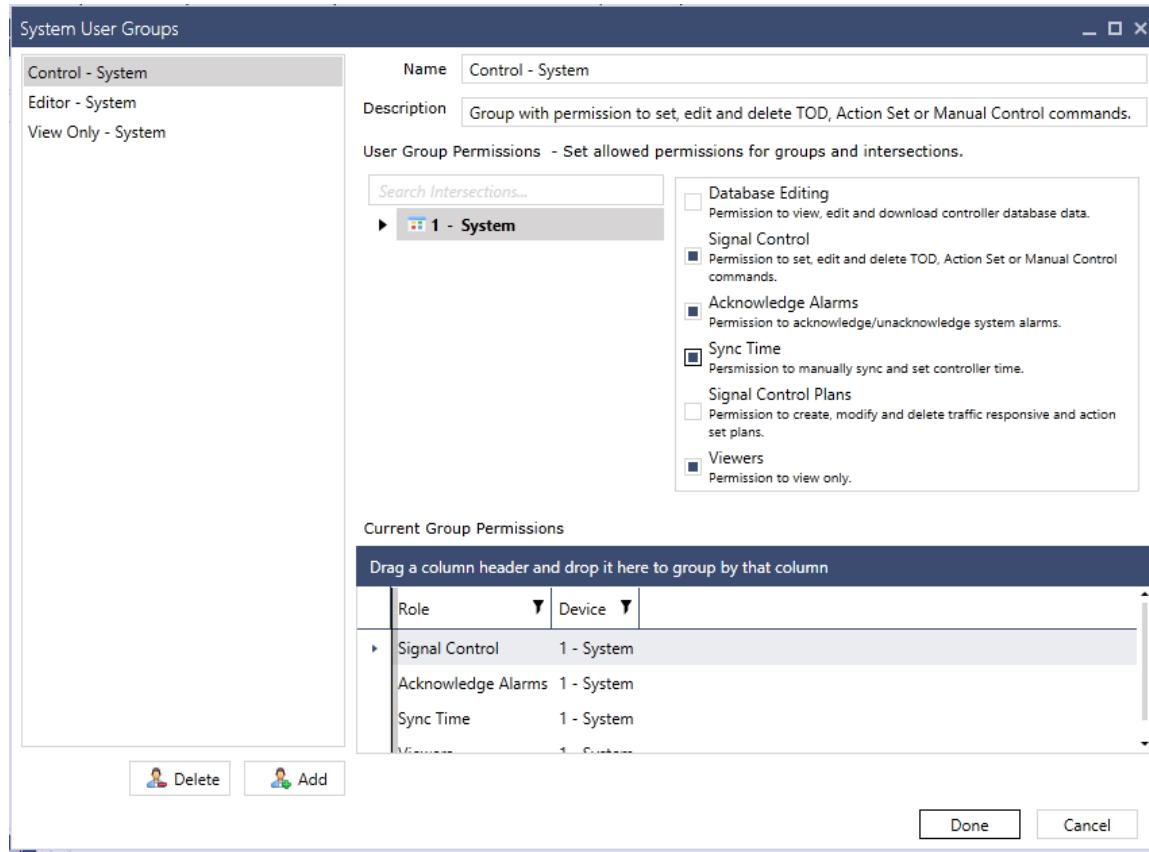
<b>Group</b>	<b>Privileges</b>
Control - System	Permissions to: <ul style="list-style-type: none"> <li>○ Add, delete or edit Time of Day schedule</li> <li>○ Add, delete or edit Manual Control Commands</li> <li>○ Add, delete or edit Action Set commands</li> <li>○ Acknowledge or unacknowledge system alarms</li> <li>○ Get/set controller time.</li> <li>○ View database editor/detailed status</li> </ul>
Editor - System	Permissions to: <ul style="list-style-type: none"> <li>● Upload/download database tables</li> <li>● Add, delete or edit a schedule upload</li> <li>● Add, delete or edit Time of Day schedule</li> <li>● Add, delete or edit Manual Control Commands</li> <li>● Add, delete or edit Action Set commands</li> <li>● Acknowledge or unacknowledge system alarms</li> <li>● Get/set controller time.</li> <li>● Add, edit or delete action set plans</li> <li>● Add, edit or delete traffic responsive plans</li> <li>● View database editor/detailed status</li> </ul>
View Only – System	Permission to: <ul style="list-style-type: none"> <li>● View database editor/detailed status</li> </ul>

To select a role for a given user check the box of the desired role.

As user can be configured as a member of 1 or more groups to allow a set of actions within the system.

## 8.4 User Group Configuration

### 8.4.1 User Group Configuration Overview



Each User Group added to the system can be configured with the following properties:

Field	Description	Range	Req.
Name	The full name of the user	100 chars	Yes
Description	A description of the user group	65535 chars	No
User Group Permissions	The set of permissions assigned to the group	N/A	No

Each User Group can specify a set of permissions on a set of groups and/or intersections.

To set a given set of permissions first select the group or intersection from the tree view and then select the set of permissions that the members of the user group will have.

The lists of the permissions assigned to the group are shown in the grid below the device tree.

When permissions are added to a group they are automatically applied to all sub-groups.

Each user can be added to one or more groups to set their permissions within the system.

## 8.4.2 Add a User Group

To add a user group, first open the System User Groups window.

Select **Add** to create a new user group.

Set the User Group's permissions for a set of groups and/or intersections and **Done** to save the User Group to the system.

## 8.4.3 Remove a User Group

Existing User Groups can be deleted from the system using the System User Groups window.

To delete a User Group select the user group in the list and then select **Delete**.

A confirmation will be shown to confirm that you want to delete the selected user group. Select **OK** to delete the user group or **Cancel** to abort the operation.

Any users that were members of the deleted group will not be members of the group after it is deleted and as such may have no rights within the system. To restore access for these users they must be assigned to one or more user groups in the System Users configuration window.

To accept the change and permanently delete the user group from the system select **Done**.

To abort the change and restore the user group select **Cancel**.

**Note:** Deleting a User Group cannot be undone once Done is selected.

## 8.5 Device Configuration

### 8.5.1 Device Configuration Overview

The Device Configuration window is used to add, edit, and remove devices and groups:

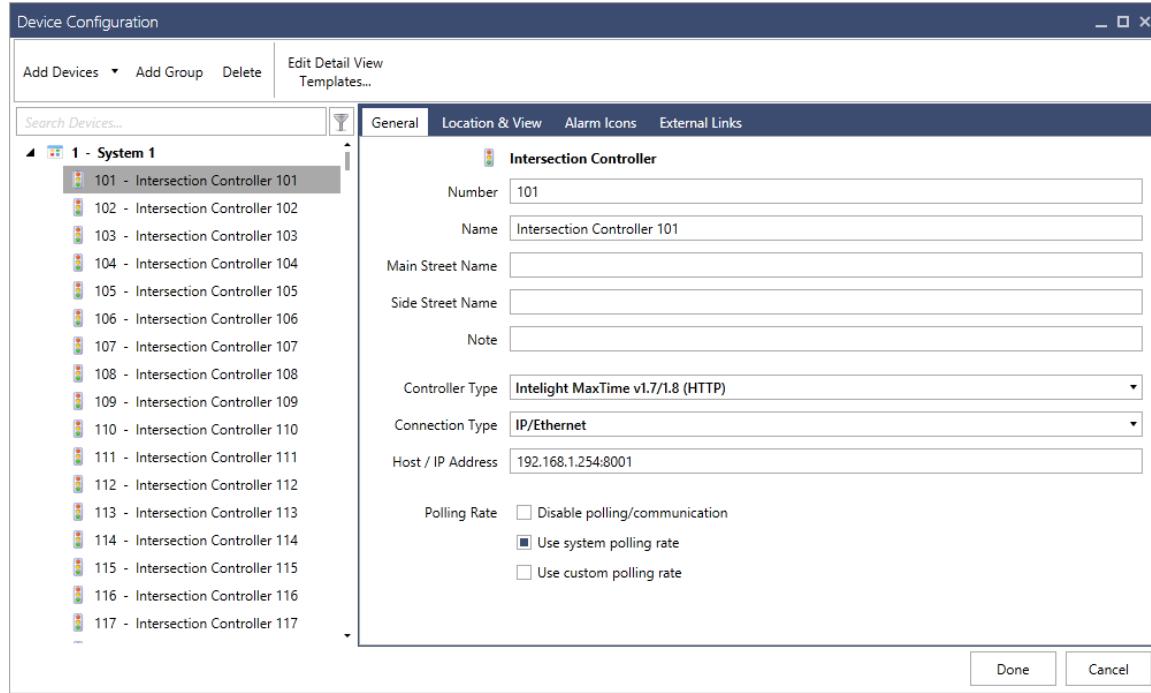
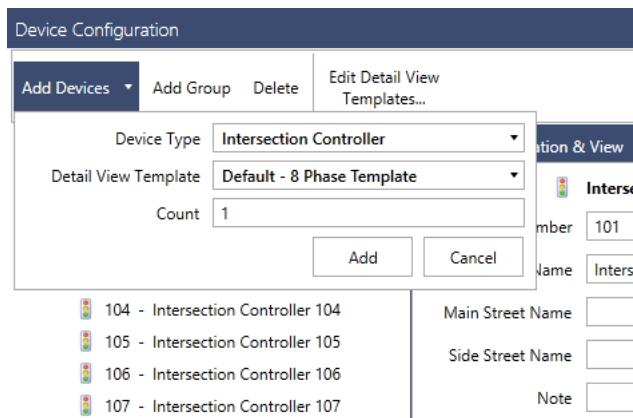


Figure 39. Device Configuration Window

### 8.5.2 Adding Devices

To add new devices to the system, click the **System** menu and select Configuration -> Devices...

Click the **Add Devices** button, at the top of the window. A drop-down dialog appears. Select the type of device you wish to add, the detail view template to use (if applicable), and the count of devices to create:



**Figure 40** The “Add Devices” drop-down dialog

The new devices will be added at the location of the previously selected device, or otherwise at the center of the current map.

**Note:** You may also create a new device by right-clicking a location on the main map and selecting the type of the device you would like from the context menu that appears. The Device Configuration window will open with a new device at the location that was clicked.

The **Host / IP Address** of the new intersection will be empty by default, but it must be entered before the new device can be saved.

You can drag and drop one or more devices at once, within the system device tree on the left-hand side of the window, in order to specify their parent group.

To save the changes to the new devices and add them to the system, click **Done**. Instead, if you wish to abort the changes, click **Cancel**.

The device’s locations and default detail views (if applicable) will also be configured to default values. For information on how to configure device location, see the *Configure Intersection Location and Configure Intersection Detail Map* section below.

### 8.5.3 Adding a Group

To add a new system, section, or group, click the **Add Group** button at the top of the window. A new group is created. You can select the hierarchy level of the new group by selecting “System”, “Section”, or “Group” from the “Type” selection box.

You can drag and drop one or more groups at once, in order to nest groups within other groups.

**Note:** When nesting groups within other groups, you must follow the hierarchy order of the groups. Systems may only nest within other systems. Sections may only nest within systems or sections. Groups may nest within any system, section, or group.

### 8.5.4 Removing Devices and Groups

To remove devices and/or groups from the system, select them in the list and click **Delete**. You can use the **Ctrl** and **Shift** keys to select more than one device in the tree at once.

A prompt will be shown to confirm the delete. Select **OK** to delete the devices and/or groups, or **Cancel** to abort the change. Even if you click OK, you may still click Cancel on the entire Device Configuration window to abort all changes made since the window was opened.

When a device is deleted, all related active alarms will also be removed from the system.

Any event log entries that have been logged for that device will remain, but the device name will appear as **[Device Deleted]**.

### 8.5.5 Configure Controller Type

For all devices except cameras, the **Controller Type** must be set to the correct manufacturer and model to ensure the correct set of data is accessible within the Intersection Database editor.

MAXVIEW currently supports the following controller manufacturers and models of intersection controllers:

- Intelight
  - MaxTime v1.7/1.8 (HTTP)
    - Supports local events logged directly on the controller and sync'd to MAXVIEW.
  - MaxTime v1.6.8+ (HTTP)
  - MaxTime v1.6.7 (NTCIP)
- Econolite
  - ASC/3 v2.45+ (NTCIP)
  - ASC/2 v1.X (NTCIP)
- McCain
  - BiTran (AB3418E)
- Generic
  - Generic ASC Controller (NTCIP)

MAXVIEW can be used to communicate with any controller that supports the NTCIP 1201 and 1202 standard objects using the Generic ASC Controller type.

In this mode global status, alarms, phase times, phase options, etc. can be accessed, but custom proprietary objects will not be accessible.

### 8.5.6 IP Based Connection

When the IP/Ethernet connection type is select, the IP configured for a given intersection should be the hostname or static IP address of the device that is visible from the network that the MAXVIEW central server is connected to.

Each MAXVIEW client does not need direct IP connectivity to the controllers configured within the system as all communication is proxied by the MAXVIEW server.

The intersection **IP / Host** should be entered as follows:

- IP octet: 255.555.255.255, e.g. 192.168.0.1
- Hostname: localhost

The IP or hostname should not contain HTTP or any "/"s.

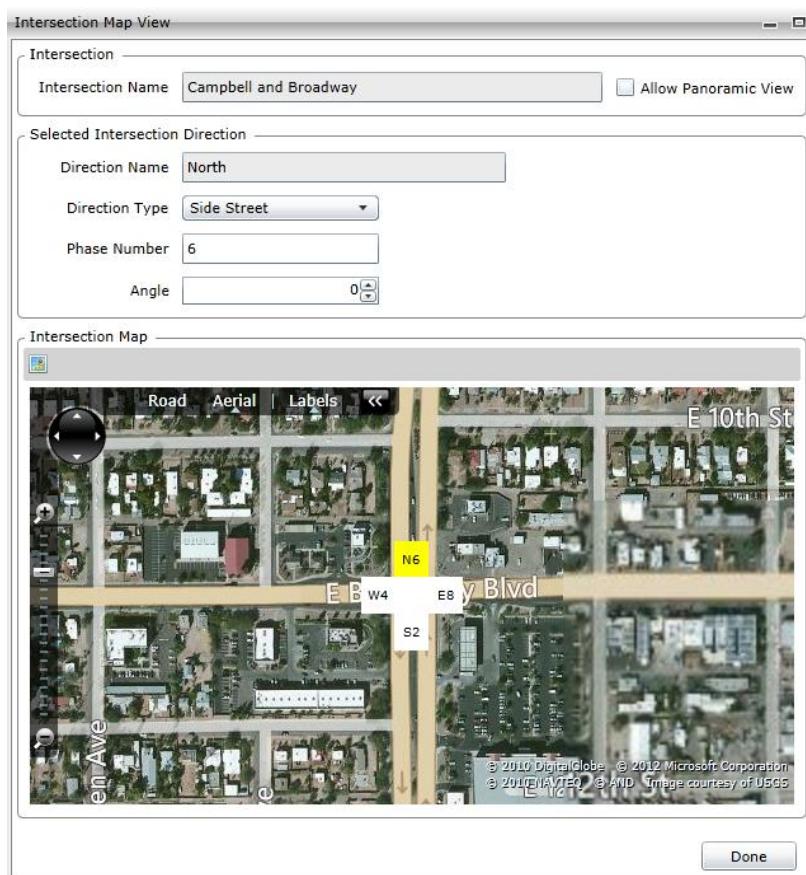
### 8.5.7 Serial Based Connection

For non-HTTP based controllers, a serial connection can be used for connectivity. To enable serial connectivity, select “Serial” as the connection type.

The Comm Port, Speed, Drop Address, Stop Bits, Data Bits, Parity, Flow Control and timeout can then be set.

### 8.5.8 Configure Device Location and Main Street Direction

The device location and (for intersection controllers) main street direction can be configured from the Device Configuration window.



**Figure 41 Intersection Location and Main Street Direction Map View**

To open the Map View window first open the Device Configuration window and then select the desired device in the tree.

Select the **Edit Location & Directions** button from the “Location & View” tab.

The Map View window allows a user to configure the device’s location, and, for intersection controllers, the direction and phases of the main and side streets.

To set the location of the device, either:

- 1) Drag the device to a new location on the map OR

- 2) Right click on the new location and select **Set Center Here**

**Note:** The location map can be zoomed out to make finding the new location and dragging the device easier.

To set the main street phasing and direction of each leg of an intersection controller:

- 1) Zoom in to the location map so that all the legs of the intersection are visible (or reset the map view using the Locate button as described below).
- 2) Select a given leg in the location map intersection view.
  - a. The selected leg will be highlighted in yellow
- 3) Select the direction type of the given leg: **Main Street** or **Side Street**
- 4) Select the **Phase Number** of the given leg

To rotate the overall leg directions set the **Angle** value so that the legs line up with the real intersection direction.

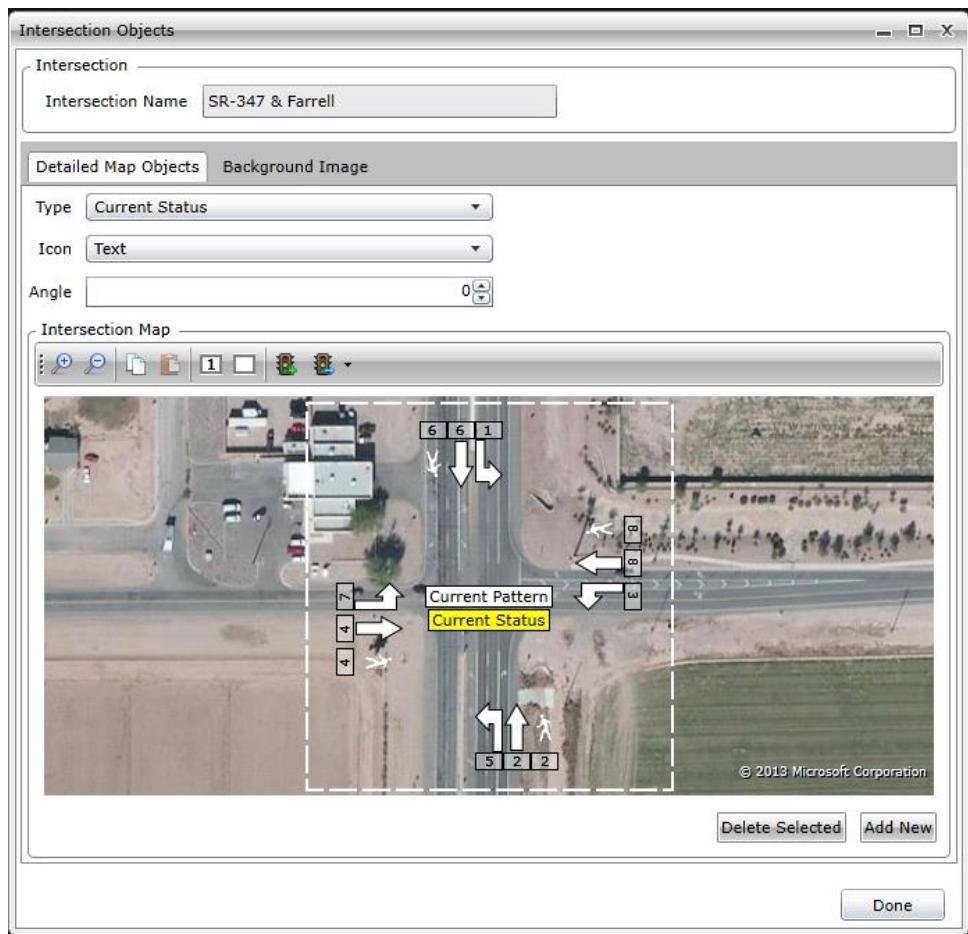
To enable the Panoramic view for the current device, check the **Allow Panoramic** view check box

If the location map has been moved to another view where the device is no longer visible, the view can be reset to the current intersection location by selecting the  locate button in the map toolbar.

Select **Done** to save any changes and return to the Device Configuration window.

### **8.5.9 Configure Detail View** *(Intersection Controllers and Ramp Meters only)*

The detailed map view can be configured uniquely for each intersection controller and ramp meter, using the Device Detail View window.



**Figure 42. Device Detail View window**

This window allows a user to configure the set of status objects that will be shown on the detailed intersection view.

The set of status objects can include phases, overlaps, peds, alarms, pattern and current status.

Once configured the set of status objects will be used throughout the system including on the main map, intersection detailed status, favorite view and more.

A default set of intersection status objects are added when a new intersection is added to the system, as can be seen below.



**Figure 43 Default intersection detail view with phasing**

The position, rotation angle and icon type of each status object is completely configurable by a user.

In addition, status icons that are not required can be removed from the detailed view and status icons that are missing can be added.

The following set of status objects can be added to the intersection detailed view.

Status Object	Icon Types	Description	Assignable Range
Phase	Left Turn Lane, Thru Lane, Right Turn Lane	Displays the Red, Yellow, Green Phase Status	Phases 1-N
Overlap	Left Turn Lane, Thru Lane, Right Turn Lane	Displays the Red, Yellow, Green Overlap Status	Overlaps 1-N
Ped	Pedestrian Icon	Displays the Walk, Flashing Don't Walk, Don't Walk Status	Ped 1-N
Current Pattern	Text	Current running pattern	N/A
Current Status	Text	Current coordination status (e.g. Free, Transition, Coord)	N/A
Alarm Status	Alarm Icon	Displays an icon for the set of active alarms	N/A
Detector	Detector Status Icon	Displays active detector status	Detectors 1-N
Text Label	Text	User entered test	N/A
Preempt	Emergency Preempt Icon, Train Preempt Icon, Light Rail Preempt	Preempt status	Preempts 1-N
5-Section Head	Left Turn	Permissive and protected 5-section head	Permissive Phase 1-N Protected Phase 1-N
Flashing Yellow Arrow	Left Turn, Right Turn	Flashing yellow turn indication	Permissive Phase 1-N Protected Phase 1-N

### **8.5.9.1 Add a New Map Status Object**

To add a new status object to the intersection detail view first open the Intersection Map window.

Select **Add New** to add a new map object. By default, the new map object will be added as a **Thru Lane Phase** status object with Phase 0.

To change the type of status object simply drop down the **Type** combo box and select a new status object type.

When the map object type is changed the icon will default to the first available icon type.

To change the type of icon that is used for a given status object drop down the **Icon** combo box and select the new icon type.

To select a new status object simple click on the status object icon. The selected status object will be highlighted in yellow.

The selected status object can be positioned anywhere on the intersection map view.

To move the status object press and hold the mouse button on the status object icon and drag it to a new location. The arrow keys can also be used to move the selected map object icon.

### **8.5.9.2 Remove a Map Object**

Status objects that are not required within the intersection detailed view can be removed in the Intersections Map window.

To remove an intersection status object first select the object by clicking on the icon.

Once the status object is selected, click **Delete Selected** to remove the status object.

Select **Done** to close the Intersection Objects window and return to the Intersections configuration window.

### **8.5.9.3 Apply a Template**

An Intersection Template can be applied to the detailed intersection layout to reset the set of detailed status icons.

To apply a template, select the  **Apply Template** button and select the template from the list.

When the template is applied the detailed layout will be reset to match the template layout.

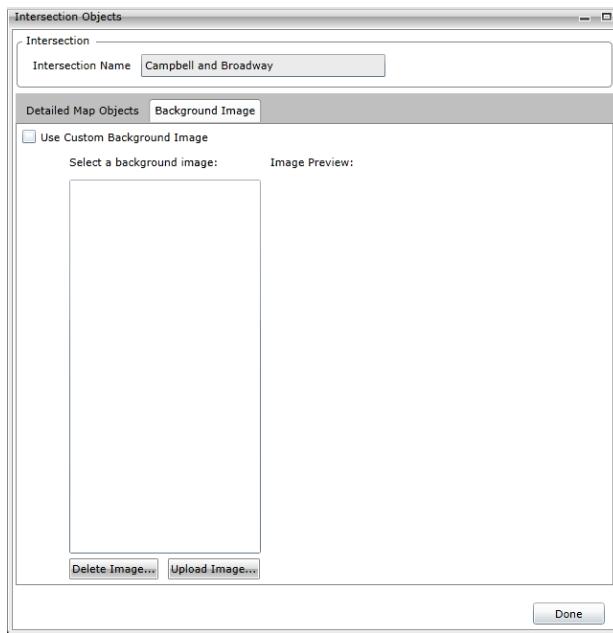
### **8.5.9.4 Save a Template**

The current detailed intersection layout can be saved as a new template.

To save the current layout as a new template select the  **Save Template** button. When prompted enter a name for the template and it will be saved for later use.

### 8.5.9.5 Set a Background Image

A static background image can be used within the intersection detail view.



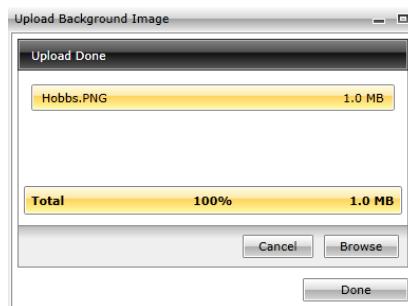
**Figure 44 Set a background image for the intersection detail view**

When a static background image is set it will be used in all the intersection detail views and will override the aerial and road data being served from Bing or the custom tile source.

To set a background image for the detailed view open the Intersections Objects window and select the **Background Image** tab.

To use a background image, check the **Use Custom Background** check box.

To upload a new background, select **Upload**.



**Figure 45 Upload a new Intersection Background image**

Select **Browse** to upload a new image file—the following image formats are supported by MAXVIEW:

- GIF
- JPEG

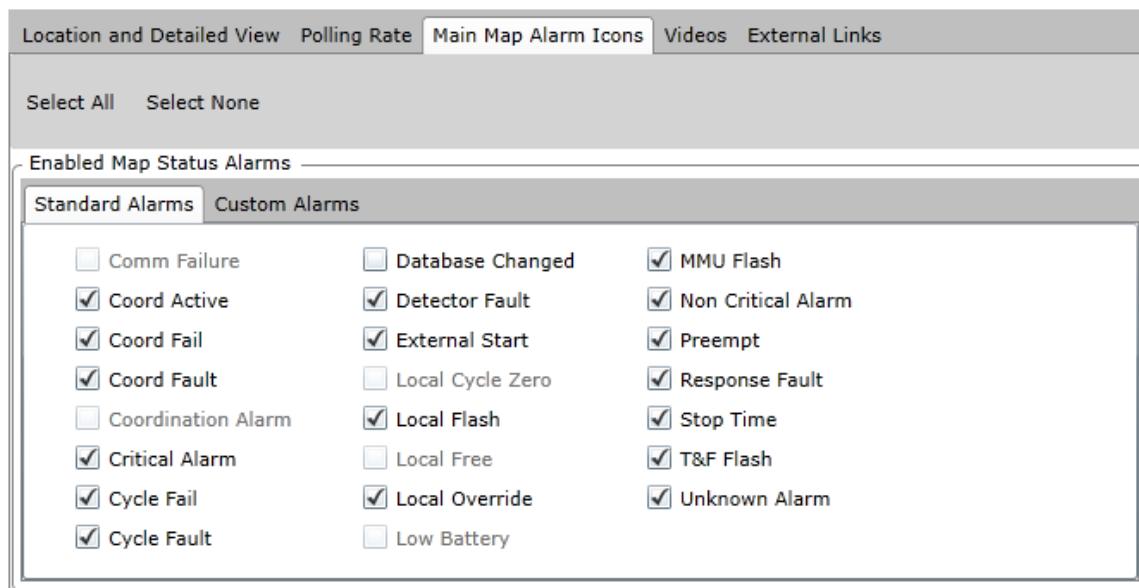
- PNG

After the image file is uploaded select the **Use Custom Background Image** to select a custom background from the list.

Select the desired image from the list and it will automatically be used as the intersection background in all intersection views.

### 8.5.10 Configure Device Main Map Alarm Notifications

You may configure which alarms trigger a flashing alarm icon on the main map for the selected device, from the “Alarm Icons” tab of the Device Configuration window.



**Figure 46. Device Configuration window “Alarm Icons” tab**

The **Alarm Icons** tab allows a user to configure which specific alarms will trigger a heads up alarm on the main map.

By default, all alarms that are enabled within the system will be configured to show as heads up notifications on the main map.

To disable a heads up alarm, uncheck the box next to the desired alarm. When a given alarm is unchecked the alarm will still be received by the system and the alarm will still trigger system notifications but it will not be shown as heads up alarm on the main map for the selected device.

## 8.6 System Detector Configuration

### 8.6.1 System Detector Overview

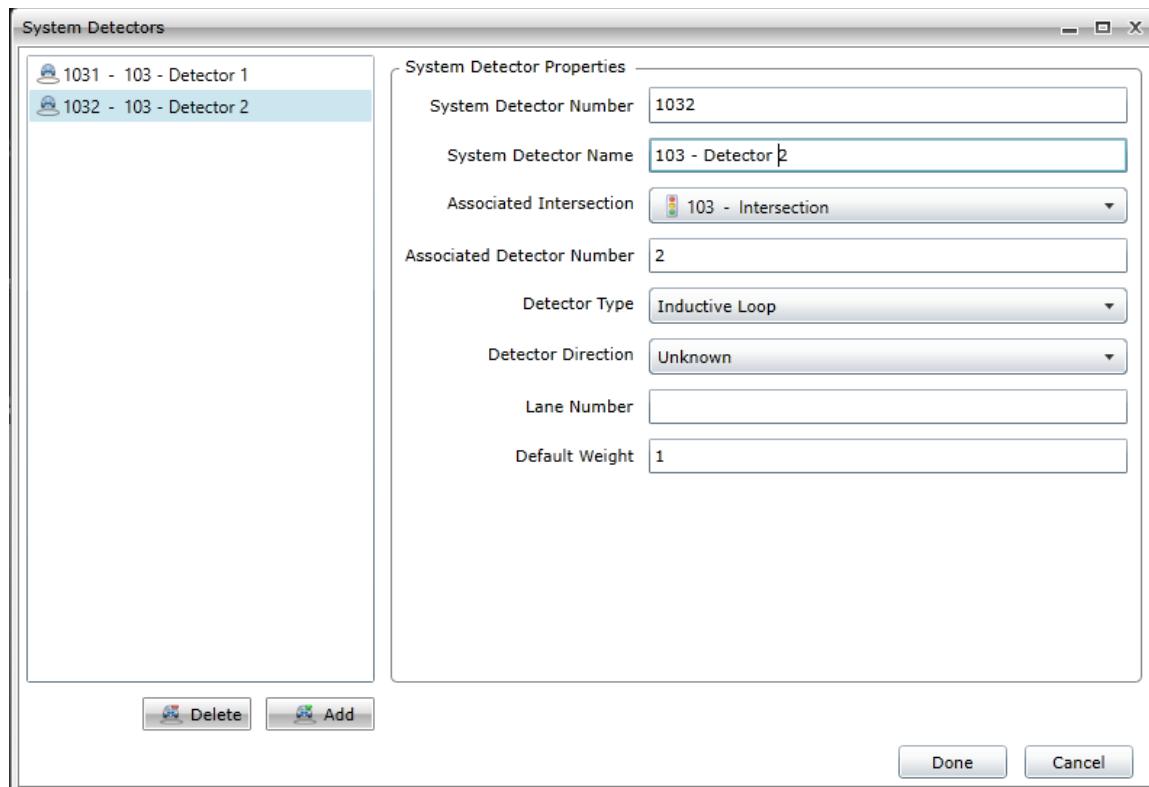
MAXVIEW system detectors are used for Traffic Responsive operation and are monitored by the system at the Volume and Occupancy polling frequency.

Each system detector is a mapped to a given Intersection and Detector, where each System Detector can be tied to a single Intersection and Detector.

At least one System Detector must be configured within the system to create and run a Traffic Responsive plan.

## 8.6.2 Add System Detector

To add a System Detector, select System->Configuration->System Detectors from the main menu.



To add a new System Detector select Add from the System Detector window.

For each System Detector the following settings can be configured:

- System Detector Number – A unique number for this system detector
- System Detector Name – A string name for this system detector
- Associated Intersection – The Intersection this system detector is mapped to
- Associated Detector Number – The detector number to reference on the Associated Intersection
- Detector Type – A record of the physical detector type
- Detector Direction – A record of the direction of this system detector
- Lane Number – A record of the lane number for this detector
- Default Weight – The default weight that should be applied to this detector when used in Traffic Responsive operation.

## 8.6.3 Delete System Detector

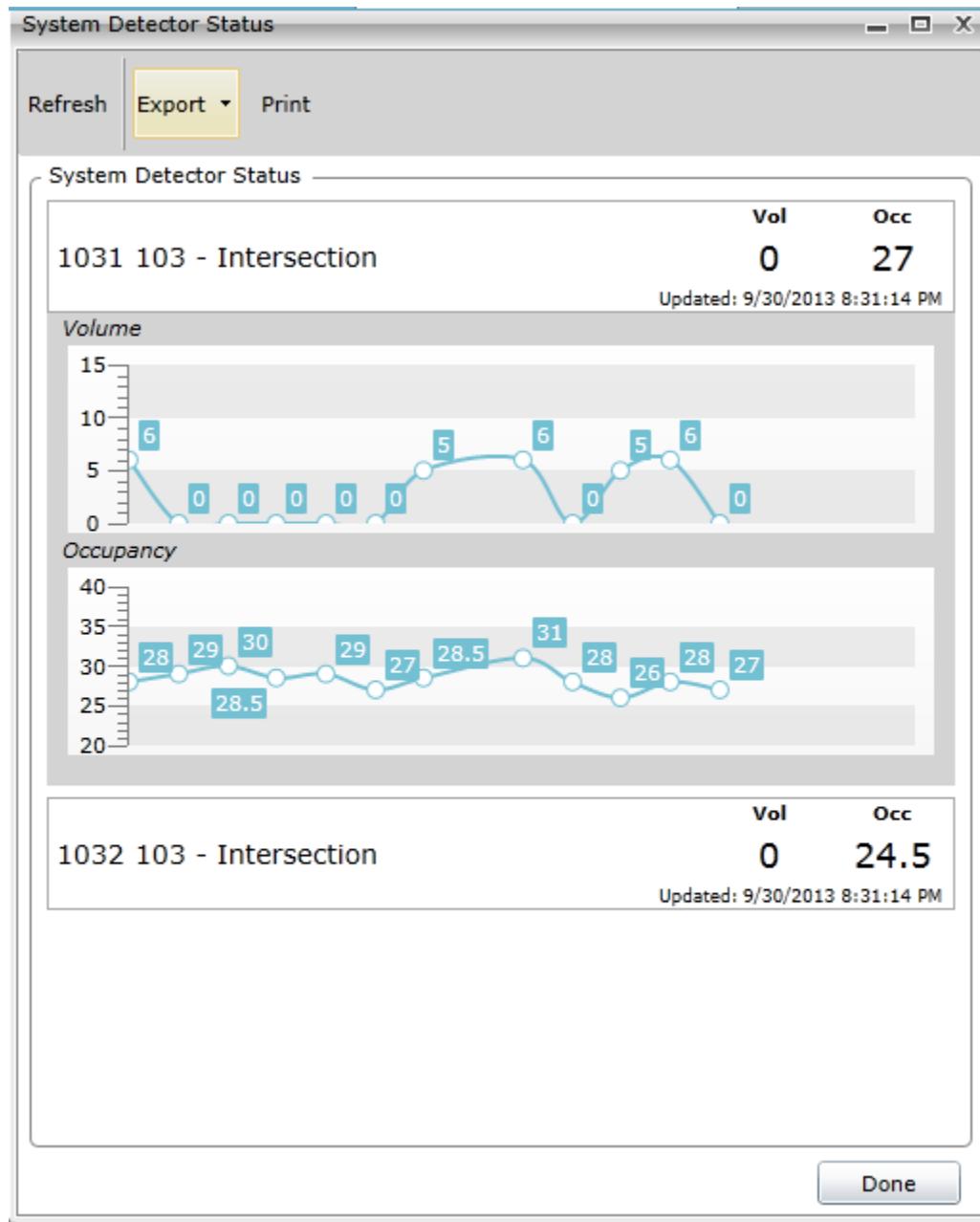
To delete a System Detector, select the System Detector to delete and selected Delete from the System Detector window.

Selecting Done will confirm the deletion of the system detector. Selecting Cancel will abort the operation and restore the system detector.

When a System Detector is deleted it will be removed from any Traffic Responsive plans, even if currently active.

#### 8.6.4 System Detector Status

The real time status of the configured System Detectors can be viewed from the Signal Control->System Detector status window.



The System Detector Status shows the current real time volume and occupancy that is being reported by the detector.

To view a plot of the last 25 reported values, click on a given System Detector. To hide the plotted data click on the detector again.

## 8.6.5 System Detector Polling Rate

The System Detectors configured are all polled at the same system rate.

The rate can be set from 15 secs to 65535 secs.

The default polling rate is 300 secs or 5 mins.

To configure the System Detector polling rate open the System Settings window from the main System menu.

Select the System Configuration tab and set the Detector Vol/Occ Rate to the desired rate.

Any active Traffic Responsive plan will be processed at the Detector Vol/Occ Rate.

## 8.7 System Detector Link Configuration

### 8.7.1 System Detector Link Overview

MAXVIEW supports adding System Detector links that can display the real-time volume and occupancy of a set of system detectors on the map main.

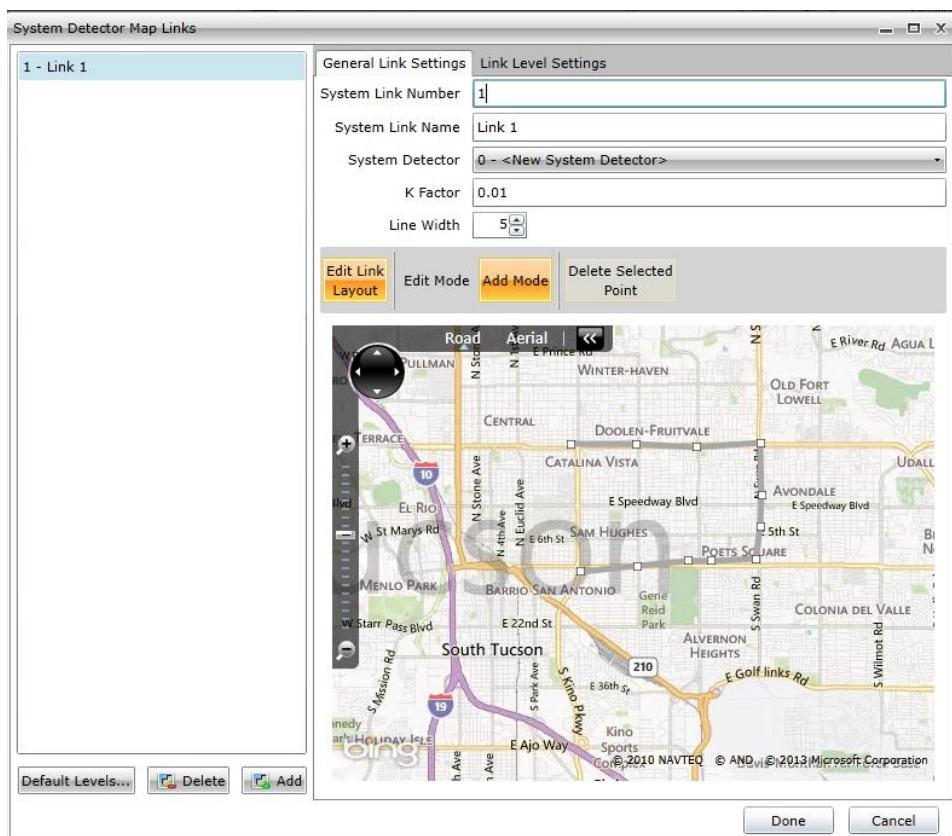


Figure 47 System Detector Link Configuration Window

Each System Detector Link is linked to System Detector as the data source.

At least one System Detector must be configured within the system to create

## 8.7.2 Add System Detector Link

To add a System Detector Link, select System->Configuration->System Detector Links from the main menu.

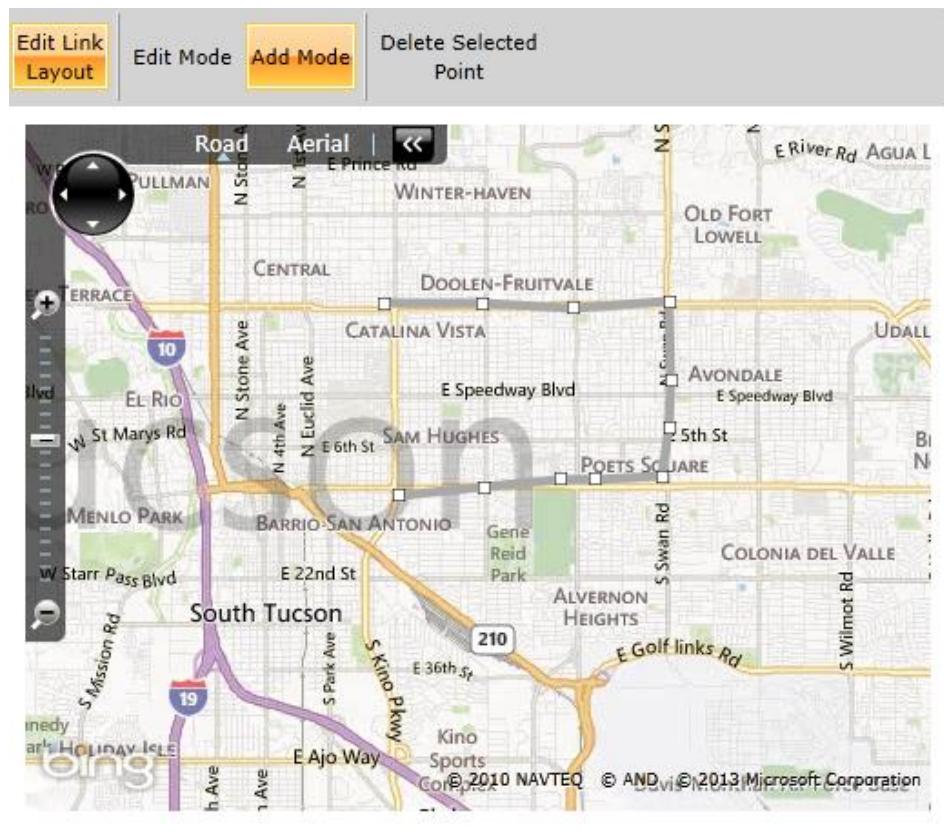
To add a new System Detector select Add from the System Detector window.

For each System Detector the following settings can be configured:

- System Link Number – A unique number for this system detector link
- System Detector Name – A string name for this system detector link
- Associated Intersection – The Intersection this system detector is mapped to
- System Detector – The system detector number to use as the data source
- K Factor – the K factor to use in the v + ko calculation for this link
- Link Layout – The points that make up this link on the map

## 8.7.3 Edit System Detector Link Points

To Edit the System Detector Link map points select “Edit Link Layout”



**Figure 48 Edit System Detector Link Points**

To add additional points select “Add Mode”.

In Add Mode, click on the map to add additional link points. Every click will add a point linked to the last one.

To move or delete existing points select “Edit Mode”.

In Edit Mode, existing points can be selected by clicking on them. Once selected a point can be dragged and repositioned or deleted.

When done editing, select “Edit Link Layout” again to exit the link point edit mode.

### 8.7.4 Edit System Detector Link Levels

Each System Detector Link can indicate a color on the main map to represent the volume, occupancy or v + ko data on the given detector source.

The screenshot shows a software interface titled "Link Level Settings". At the top, there are buttons for "Add Level", "Delete Level", "Move Level Up", "Move Level Down", and "Apply Default Levels". Below these buttons, there is a list of three link levels, each with fields for Vol Level, Occupancy Level, and Indication Color. The first level (Vol Level 10, Occupancy Level 5, Indication Color green) has a red border around its input fields. The second level (Vol Level 25, Occupancy Level 25, Indication Color orange) has a blue border. The third level (Vol Level 30, Occupancy Level 50, Indication Color dark red) has a light blue border. The bottom of the dialog box features a scroll bar.

Level	Vol Level	Occupancy Level	Indication Color
1	10	5	Green
2	25	25	Orange
3	30	50	Dark Red

**Figure 49 Edit System Detector Link Levels**

To add a Link Level to a given System Detector Link select “Add Level”.

To remove a Link Level from a given System Detector Link select “Remove Level”.

When the system detector data is processed the most restrictive/highest numbered level will be selected to represent the current detector status.

### **8.7.5 Delete System Detector Link**

To delete a System Detector Link, select the System Detector Link to delete and selected Delete from the System Detector Link window.

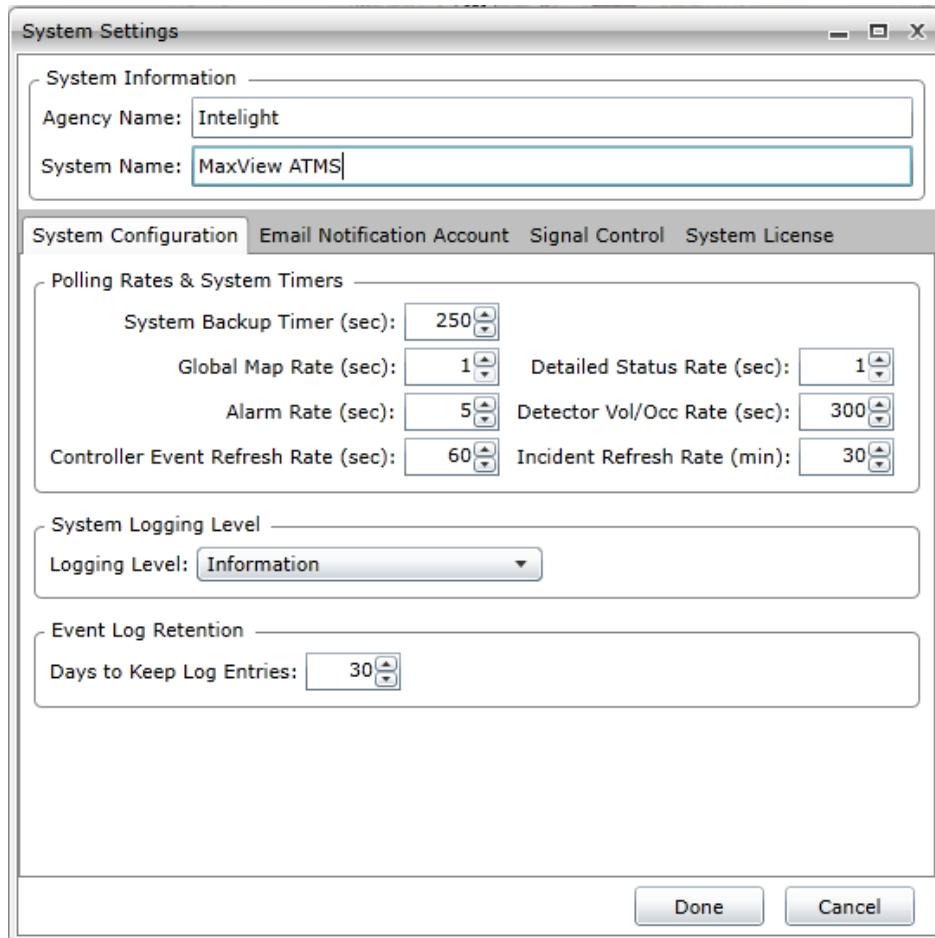
Selecting Done will confirm the deletion of the system detector. Selecting Cancel will abort the operation and restore the system detector.

# 9 System Settings

## 9.1 Overview

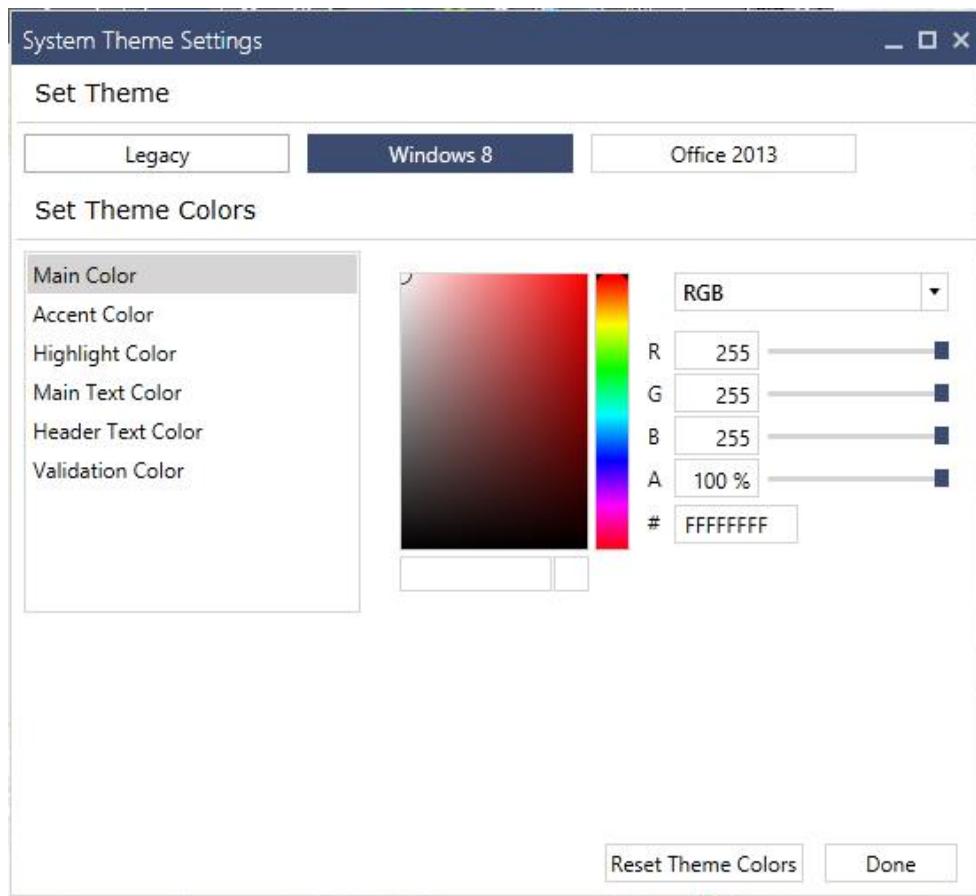
All of the MAXVIEW System Settings can be configured using the System Settings window that is accessible from the main System->Settings menu item.

Administrator access is required to configure the system settings.



**Figure 50 System Settings window**

## 9.2 System Theme Settings



**Figure 51 System Theme settings**

MAXVIEW supports a set of customizable user themes.

The theme can be changed between the Legacy Theme, the Windows 8 Theme, and the Office 2013 theme.

The Windows 8 theme is the default theme.

The theme settings apply to each computer where MAXVIEW is used and will be saved across user logins.

When using the Windows 8 or Office 2013 theme the theme colors can also be set. The theme colors cannot be set on the Legacy theme.

When a theme is changed it is not applied until MAXVIEW is restarted.

## 9.3 System Information Settings

The System Information Settings enable a user to configure the **Agency Name** and the **System Name** of the system.

The agency and system names are used to identify the system—for example they are used in the email notification that is sent when an alarm is triggered within the system.

## 9.4 System Configuration Settings

### 9.4.1 Polling Rates

The global polling rates for the main map status, alarms events, detailed intersection status and the vol/occ data can be configured within the System Configuration window.

By default the following polling rates are configured when the system is installed:

- System Backup Timer: 250 sec
- Global Map Rate: 1 sec
- Detailed Status Rate: 1 sec
- Alarms Rate: 5 sec
- Detector Vol/Occ Rate: 90 sec
- Controller Event Refresh Rate: 60 sec
- Incident Refresh Rate: 30 min

Each polling rate can be individually configured and set as desired.

The following table explains the specific scenarios that each rate controls and a recommended range

Polling Setting	Description	Recommended Range
System Backup Timer	Controls the rate at which commands are sent to each intersection when active	60-300 secs
Global Map Rate	Controls the map status including: phase, overlap, ped, free/coord and pattern status	1-15 secs
Detailed Status Rate	Controls the rate at which the detailed intersection status view (shown when an intersection is double clicked) is updated	1-10 secs
Alarms Rate	Controls how often the system polls each controller for active alarms	5-30 secs
Detector Vol/Occ	Controls how often the vol/occ data will be read for each detector and system detector and stored in the system. Note: Data is only stored if it has changed since the last reading	90-900 secs
Controller Event Refresh Rate	Controls the rate at which controller events are sync'd from MaxTime 1.7 devices. Events are read at the global map rate from all other controller types.	30-90 secs
Incident Refresh Rate	Controls the rate at which the Incident and Traffic feed is refreshed	30-60 mins

### 9.4.2 System Logging Level

The client logging level can be configured in the System Settings window.

By default the logging level is set to **Information**.

A user can set the following logging levels: **Error**, **Warning**, **Information**, **Verbose**.

See the *System Logging* section of this manual for more information.

### 9.4.3 Event Log Retention

The number of days event log records are kept can be configured in the System Settings.

The event log records all activity on the system including the historical volume and occupancy data.

By default the Event Log will purge records older than 30 days.

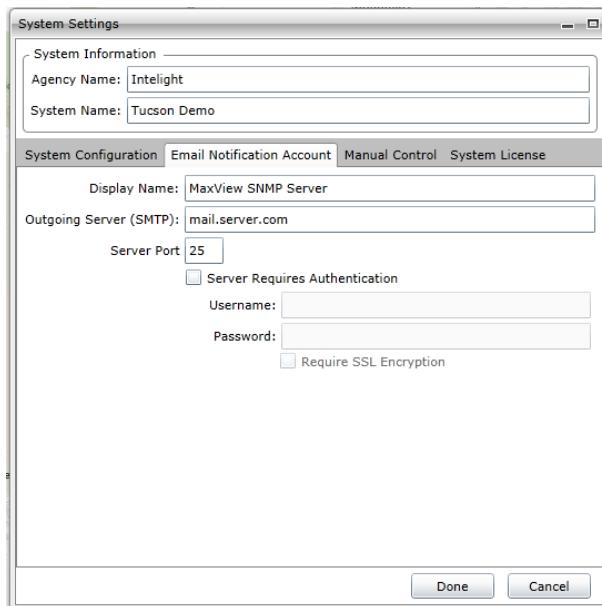
To increase this range set the **Event Log Retention** value to the desired number of days records should be kept.

Any record that is older than the **Event Log Retention** value will be permanently deleted from the system database.

## 9.5 Email Notification Account Settings

MAXVIEW can be configured to send email notifications when certain system events occur, for example when the system receives alarms.

An outgoing SMTP server must be configured in order to support sending email notifications in the **Email Notification Account** tab.



**Figure 52 System Settings showing SMTP server configuration**

To configure the outgoing SMTP server enter server settings for your outgoing SMTP mail server and select **Done**.

If the outgoing SMTP server requires authentication, check the **Server Requires Authentication** checkbox and enter the username and password for the server.

If the server requires SSL, check the **Requires SSL Encryption** check box to connect to the server over SSL.

Note: Most e-mail servers typically use port 25 for non-SSL connections and port 465 for SSL connections, but your mail server settings may be different.

## 9.6 Manual Control Settings

The default expiration time that is used for a new manual command can be configured within the System Settings window.

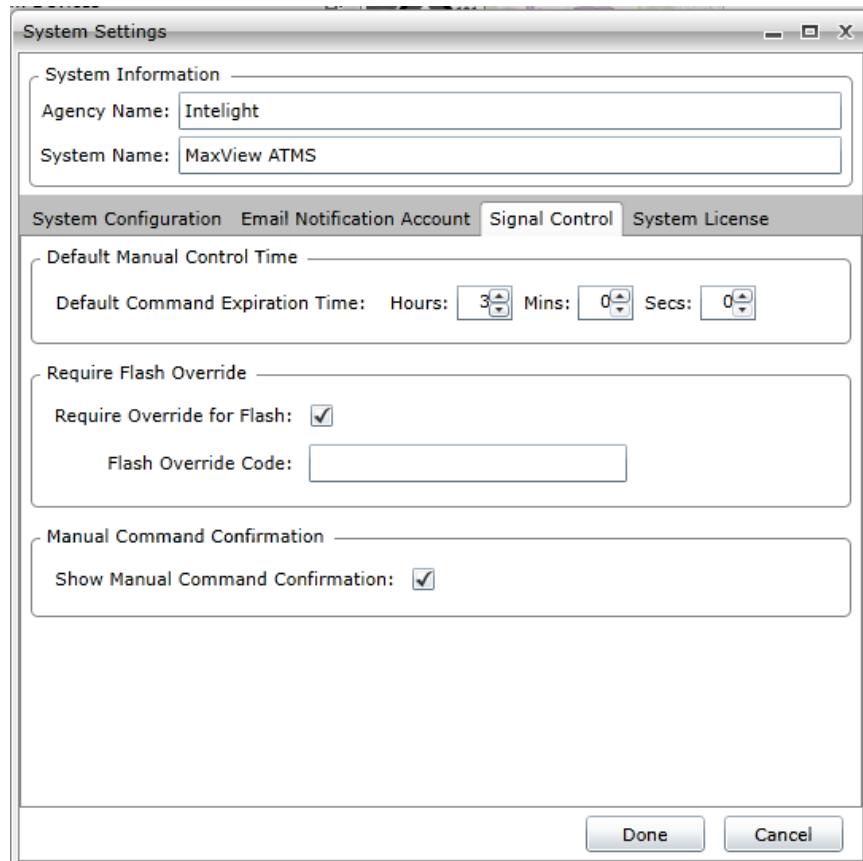


Figure 53 System Settings default manual control expiration time

### 9.6.1 Default Manual Control Timeout

To change the default manual control expiration time set the **Hour**, **Mins** and **Secs** drop down boxes to the desired value and select **Done**.

The default value is 3 hours, 0 mins and 0 secs.

### 9.6.2 Require Flash/Stop Time Override Code

To require an administrator override code whenever a Flash Pattern or Stop Time command is set, check the "Require Override for Flash/Stop Time" checkbox.

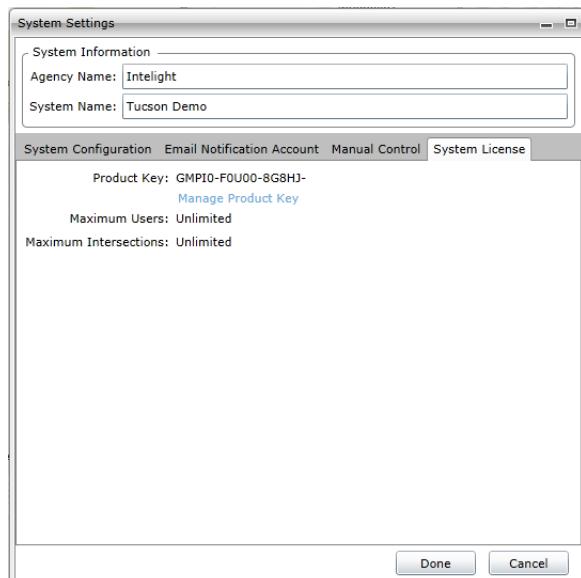
The override code is required when all users set a Pattern command with Flash or sets the Stop Time command.

### 9.6.3 Manual Command Confirmation

To show or hide the confirmation text box that is shown when a manual command is set, check or uncheck the “Show Manual Command Confirmation” checkbox.

## 9.7 System License Information

The current system license key can be viewed and changed from the System Settings window.



**Figure 54 System Settings system license**

To update the system license select **Manage Product Key** which will open a new web browser window.

The system license can also be managed directly from the following website:  
<http://serverurl/maxview/register.aspx>



## MaxView Server Registration

License Information:  
Valid MaxView Product Key.

Maximum Users:  
Unlimited Users.

Maximum Intersections:  
Unlimited Intersections.

**Figure 55 Manage MAXVIEW system License**

To enter a new product key select **Enter New Product Key**.

# 10 Detailed Intersection Status

## 10.1 Detailed Status Overview

The Intersection Detailed Status window shows the detailed phase status of the intersection and also provides access to the full database editor and database management.

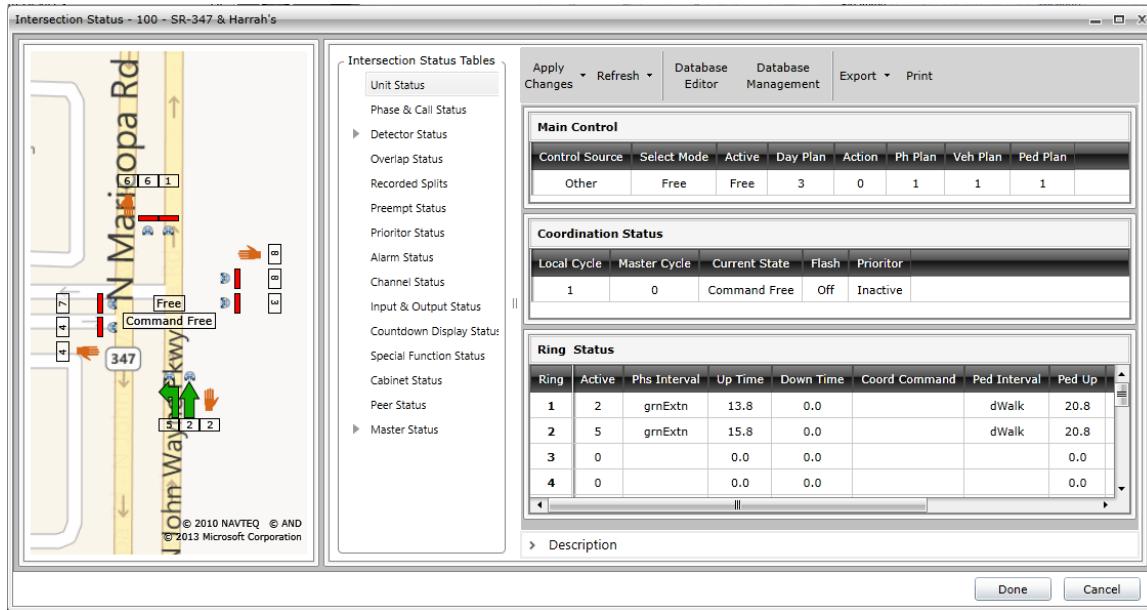


Figure 56 Intersection detailed status

The Intersection Detailed Status window can be launched by double clicking on any intersection from the main map or from the intersection context menu.

## 10.2 Intersection Database Editor

### 10.2.1 Overview

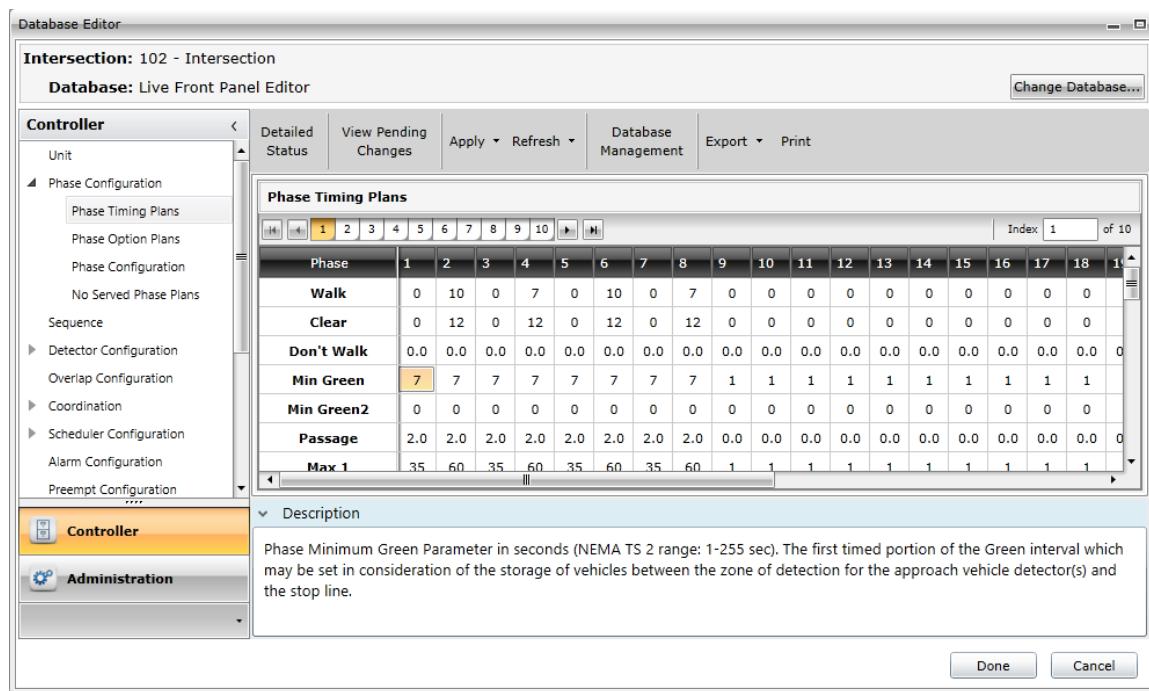
The Intersection Database Editor allows a user to view, edit, upload and download controller database tables.

The Intersection Database Editor allows a user to open two different views into the intersection data:

- **Live Front Panel Editor**
- **Offline Database Editor**

### 10.2.2 Live Front Panel Editor

The MAXVIEW database editor is designed to enable real-time data access from the traffic controllers connected to the system.



**Figure 57 Live Front Panel Editor**

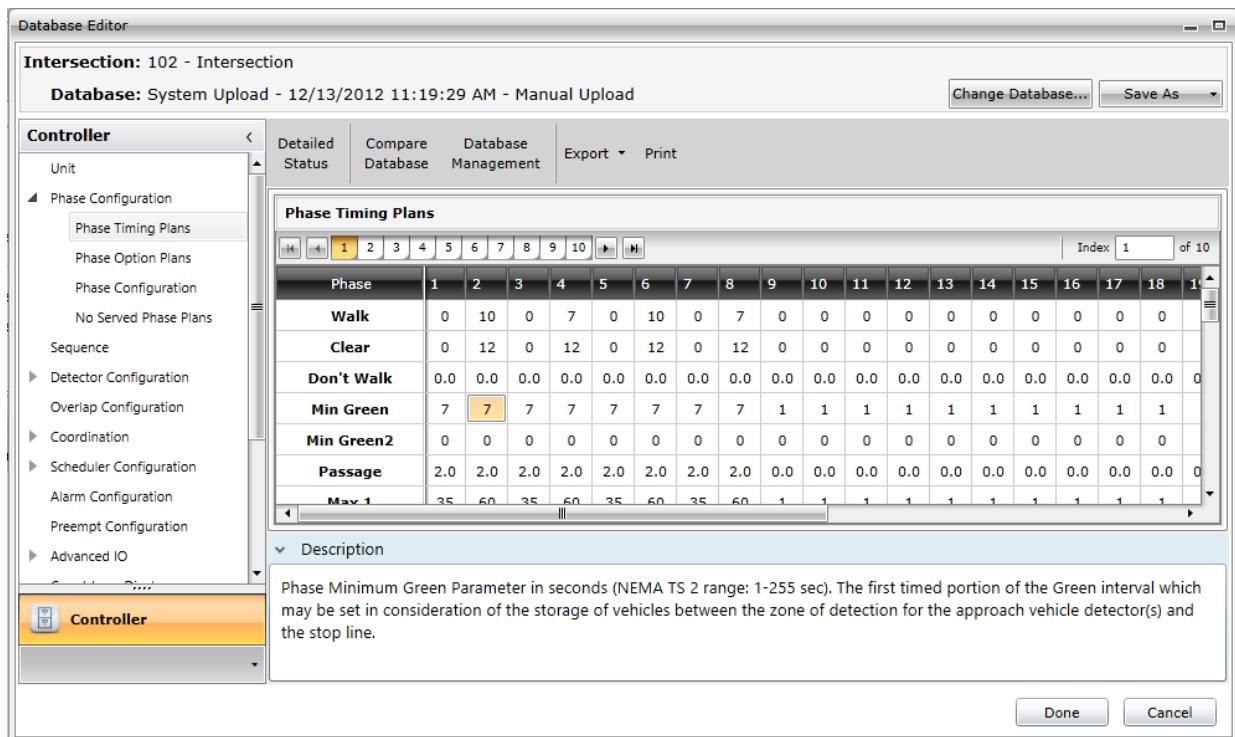
The Live Front Panel editor always loads the most recent data in the controller database when opened.

Using the Live Front Panel editor is just like working in the front panel of the controller; with the added ability of make multiple changes at once and then bulk commit them.

The database editor also supports advanced range checking and viewing changes before committing the download.

### 10.2.3 Offline Database Editor

The MAXVIEW Offline Database Editor enables a user to edit, save and download a full controller database that has been previously uploaded and stored within the system.

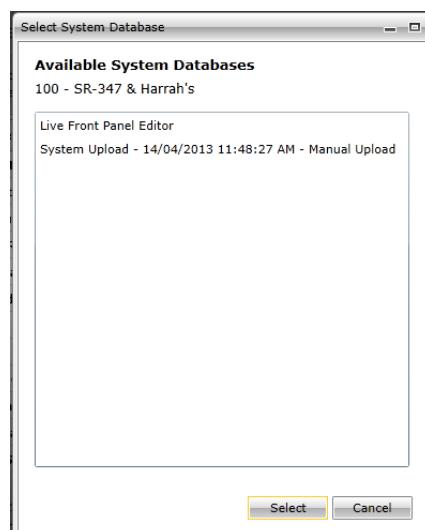


**Figure 58 Offline Database Editor**

After making changes a user can save and download the database or save the updated database to the system without a download for future management.

### 10.2.3.1 Open Live Front Panel and Offline Editor

When using the Live Front Panel or the Offline Editor it is easy to switch between the two different views.



**Figure 59 Change Database Window**

To change the current database select the “Change Database” button. The list of available databases will be shown with the “Live Front Panel Editor” always listed first.

### 10.2.3.2 Compare Databases

The Offline Database Editor also allows a user to compare the current database with another system database.

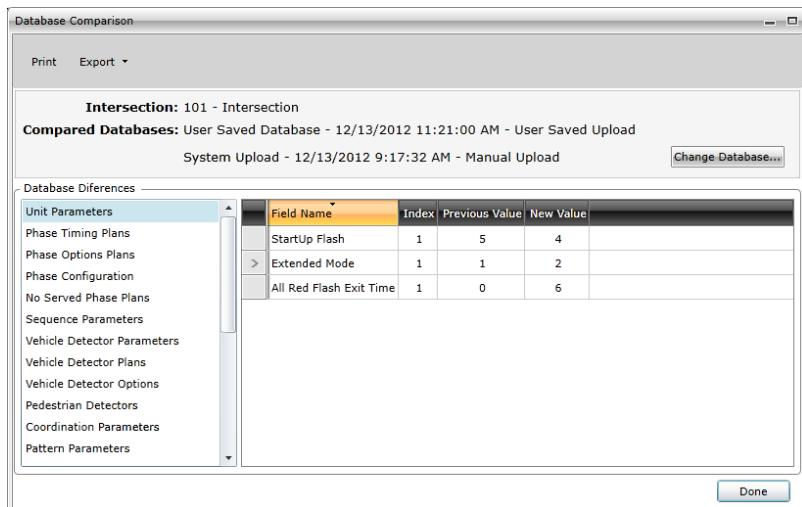


Figure 60 Database Comparison Window

The comparison view displays all the differences between any two saved system databases.

### 10.2.3.3 Save Offline Database As

When editing data using the Offline Database Editor any changes can be saved to the system as a new database to the current intersection or to an intersection of the same type.

The saved offline database can then be downloaded to an intersection at a later time.

To save an offline database select the “Save As” button. The saved database will be saved to the system and will be visible in the System Database window for the current intersection.

## 10.2.4 Enter Database Data

The MAXVIEW database editor makes it simple to view and edit database data for the intersections configured in the system.

The database tables that are available for a given controller are shown in a simple tree view on the left hand side of the database editor.

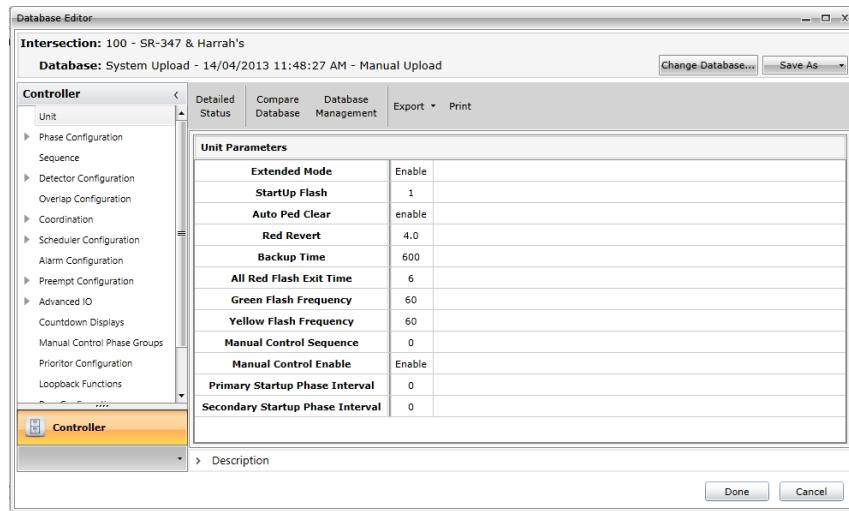
The database editor groups all controller tables into two main categories: **Controller** and **Administration**.

- **Controller** – All configuration tables including phase times, phase options, preempt configuration, etc.
- **Administration** – All administrator settings and unit information such as controller ID, system time, day light savings time, etc.

These categories are used for all controller types but the specific set of tables available for each controller type in each category will vary.

To enter new controller database data first select the desired table from the tree view.

Once a given table is selected the most recent data will be uploaded from the controller database automatically.



**Figure 61 MAXVIEW Database Editor**

To start entering data select a cell.

When done entering data in a given cell, the **Tab** key will move to the next cell on the right and the **Enter** key will move to the cell below.

The **Up**, **Down**, **Left** and **Right** arrow keys can also be used to navigate a given table.

#### 10.2.4.1 Copy/Paste Data

The database editor supports copying and pasting data between the same table, other tables or other applications.

To copy a set of data, select a set of cells and press **Control + C**.

The set of copied data can then be pasted using **Control + V**.

To copy the entire table press **Control + A** to first select all the data and then **Control + C** to copy.

Copied data can be pasted directly to Word, Excel or other programs.

#### 10.2.4.2 Database Editor Range Checking

While entering data the MAXVIEW database editor automatically checks all data ranges to ensure they are valid before the data can be saved and downloaded.

<b>Don't Walk</b>	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.
<b>Min Green</b>	6	6	6	6	6	6	6	6	6	5	5	5
<b>Min Green2</b>	0	0	256	Value must be between 0 and 255 .								0
<b>Passage</b>	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	0.0	0.
<b>Max 1</b>	35	60	35	60	35	60	35	60	1	1	1	1

**Figure 62 Database editor showing range checker**

If a given piece of data is invalid a red warning box will be shown automatically to give information about the valid range of the field.

If the data is not corrected to be within the valid range, it will be abandoned when focus is lost and the cell will revert to the previous value.

#### 10.2.4.3 Contextual Help

The MAXVIEW database editor supports context aware help while editing database data.

To show the contextual help for a given field, select the field and then click the **Description** pane.

To hide the contextual help, click the **Description** pane again.

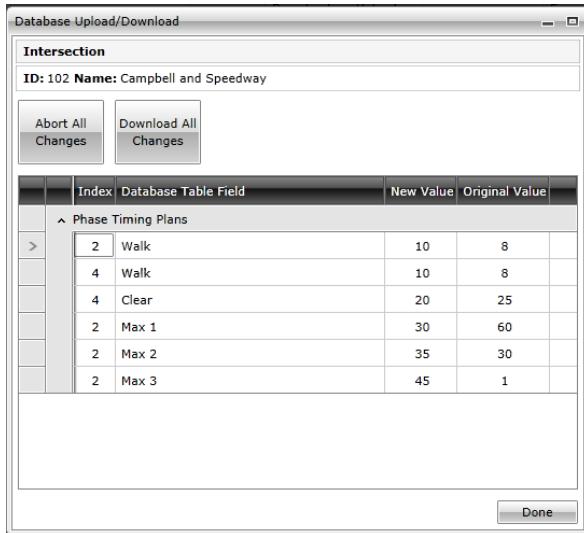
The screenshot shows the MAXVIEW Phase Timing Plans editor. The main grid displays timing parameters for various traffic phases across 16 time steps. The 'Min Green' row is highlighted, and its value '6' is selected. A red box highlights this value, and a tooltip message 'Value must be between 0 and 255 .' appears above the cell. Below the grid, a 'Description' pane is open, providing a detailed explanation of the 'Phase Minimum Green Parameter in seconds (NEMA TS 2 range: 1-255 sec). The first timed portion of the Green interval which may be set in consideration of the storage of vehicles between the zone of detection for the approach vehicle detector(s) and the stop line.'

**Figure 63 Database editor showing contextual help**

#### 10.2.5 View Pending Changes

While editing data it is easy to view the set of pending changes that have been made but that have not yet been downloaded to the controller.

Select the **View Pending Changes** button to open the pending changes window.



**Figure 64 Database editor pending changes**

While viewing a given set of changes, the changes can either be downloaded to the controller or aborted.

To download all the pending changes, select **Download All Changes**.

To abort all the pending changes and reload the data from the controller select **Abort All Changes**.

### 10.2.6 Apply Database Changes

After a given set of changes have been made they must be applied to the controller before they are saved.

MAXVIEW supports applying the changes from current table being edited or downloading the changes from all tables that have been edited.

To apply the changes from just the current table select **Apply Changed->Current Table**.

To apply the changes from all the database tables select **Apply Changes->All Tables**.

MAXVIEW will only apply the pending changes and will not re-download all the data when using the Live Front Panel Editor.

If there are no pending changes selecting download will have no action.

### 10.2.7 Abort Pending Database Changes

While navigating to different tables within the database editor, the data for each table is automatically loaded from the controller, though any previous changes made by a user are preserved.

MAXVIEW supports refreshing database table data from the controller and aborting any changes for both the table that is being viewed and for all tables.

To refresh the controller data from just the current table select **Refresh->Current Table**.

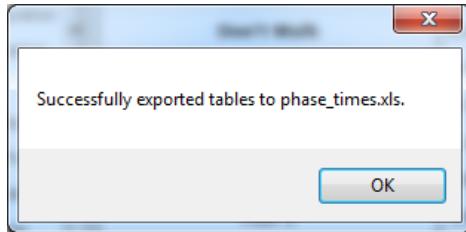
To refresh the controller data from all the database tables select **Refresh->All Tables**.

Selecting to upload the controller data again will abort any pending changes that have not been downloaded.

### 10.2.8 Export a Database Table

The MAXVIEW database editor supports exporting the selected tables to Microsoft Word, Microsoft Excel, or PDF

To export the selected table select the **Export** menu, enter a filename and select Ok.



**Figure 65 Database editor exported**

When the export is complete a notification will show.

### 10.2.9 Print a Database Table

The MAXVIEW database editor supports directly printing a database table.

A screenshot of a Google Chrome print preview window. The title bar says 'Print Preview - Google Chrome'. The main content shows a table titled 'Intersection: 6 - Campbell and Speedway' with a timestamp '7/17/2012 10:56 PM'. The table is titled 'Phase Timing Plans' and has columns labeled 1 through 22. The rows include 'Walk', 'Clear', 'Don't Walk', 'Min Green', 'Min Green2', 'Passage', 'Max 1', 'Max 2', 'Max 3', and 'Conditional Max'. The data consists of numerical values representing timing plans for each phase across the 22 lanes.

**Figure 66 Database Editor Print Preview**

To print the current database table select **Print**.

The system will open a new window with a print preview of the table. To print the table select **Print**. To close the window select **Close**.



# 11 System Database Management

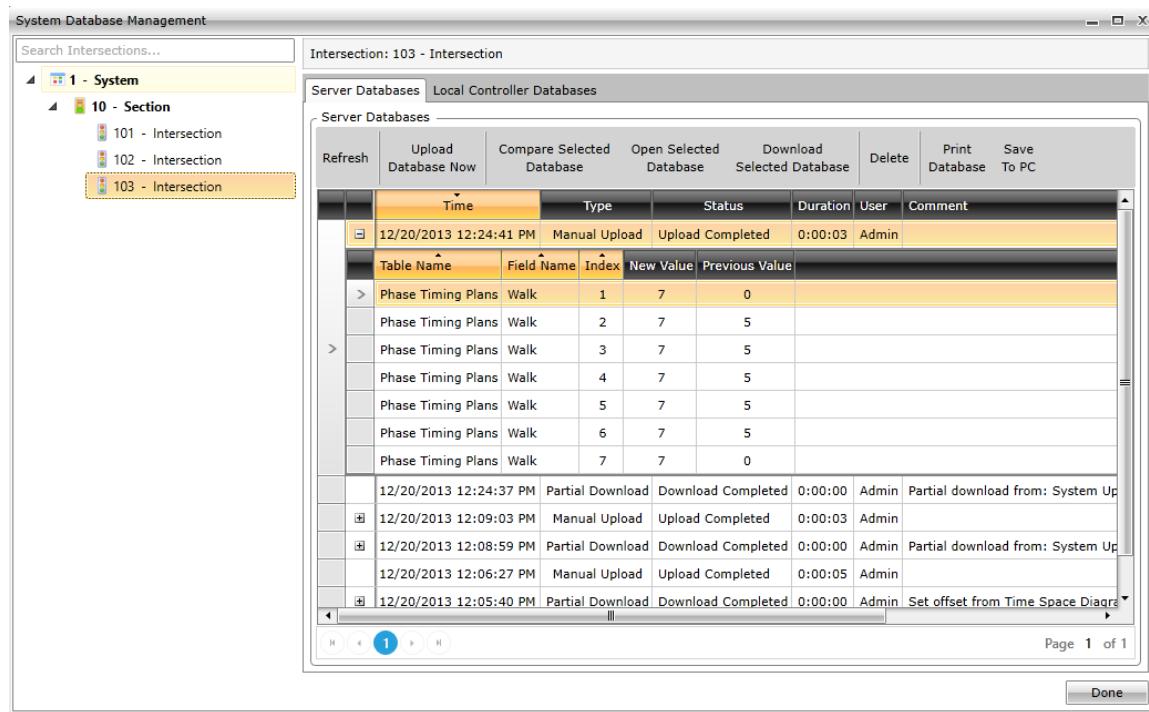
## 11.1 System Database Management Overview

MAXVIEW keeps a detailed history of all uploads and downloads for each controller within the system.

Each change is tracked by time, the user and shows any comment a user might have entered.

All changes are logged with the timestamp, the user, a user comment and the set of changes and can easily be viewed later from the System Database Management view.

To open the System Database Management window select “**Database Management-> System Database Management**” from the main system menu.



**Figure 67 System Database Management view showing the history of database changes**

The Database Management view also allows a user to initiate a full upload or download, compare the selected database with another system database or open a previously saved database to edit.

When connected to a controller running Intelight's MaxTime software, a user can also download the database in Intelight's .bin format to easily transfer the database to another controller or to email it off for support.

## 11.2 Manual Database Full Upload/Download

The Database Management view allows a user to trigger a full database upload or a full database download for a given intersection in the system.

A user can enter a comment to describe the upload or download and upload/download status is provided inline during the database transfer.

An in progress transfer can be canceled or a previously uploaded database can be deleted if needed.

After an upload is complete any changes from the last upload are automatically shown in the database management view, providing the user a quick way to see what has changed.

The screenshot shows a software interface titled "Server Databases" with a sub-tab "Local Controller Databases". Below the tabs is a toolbar with buttons: Refresh, Compare Database, Open Database, Upload Now, Download Now, Delete, and Save to PC. The main area is a table with the following columns: Time, Type, Status, Duration, and Comment. The table lists several database operations:

	Time	Type	Status	Duration	Comment
	Table Name	Field Name	Index	New Value	Previous Value
12/18/2012 12:45:49 PM	Manual Upload	Upload Completed		0:00:02	
Unit Parameters	Yellow Flash Frequency	1	75	60	
Unit Parameters	Green Flash Frequency	1	75	60	
Unit Parameters	Extended Mode	1	2	1	
Split Parameters	Time	6	40	0	
Split Parameters	Time	7	20	0	
Split Parameters	Time	8	40	0	
Split Parameters	Time	3	20	0	
Split Parameters	Time	4	40	0	
Split Parameters	Time	5	20	0	
Split Parameters	Coord Phase	5	True	False	
Split Parameters	Ref Point	2	True	False	
12/13/2012 11:21:00 AM	User Saved Upload	Upload Completed	0:00:00	Copied from system	
12/13/2012 11:08:44 AM	Partial Download	Download Completed	0:00:00		
12/13/2012 10:57:55 AM	Partial Download	Download Completed	0:00:00	Changing splits	

Figure 68 Upload Completed with Changes Shown

## 11.3 Database Comparison

MAXVIEW supports the ability to compare any two system databases that have been uploaded or saved for a given controller.

The database comparison can be opened from the **Offline Database Editor** or directly from the **System Database Management** view.

The Database Comparison window lists all the tables with changes and the specific fields that have changed for each table, with the old and new values both shown.

From the Database Comparison window a user can export or print the changes to easily generate a report of the changes or can select a new database to compare.

The screenshot shows the MAXVIEW Database Comparison window. At the top, there are 'Print' and 'Export' buttons. Below that, the title bar says 'Intersection: 101 - Intersection'. Underneath, it lists 'Compared Databases: System Upload - 12/18/2012 12:45:49 PM - Manual Upload' and 'System Upload - 12/13/2012 9:17:32 AM - Manual Upload'. A 'Change Database...' button is also present. The main area is titled 'Database Differences' and contains a table comparing parameters from two databases. The table has columns: Unit Parameters, Field Name, Index, Previous Value, and New Value. The 'Field Name' column is sorted. The table shows several 'Yellow Change' entries, with one row highlighted in yellow. The left sidebar lists various parameter categories like Unit Parameters, Phase Timing Plans, etc. A 'Done' button is at the bottom right of the table area.

Unit Parameters	Field Name	Index	Previous Value	New Value
Phase Timing Plans	Yellow Change	1	4.0	2.0
Phase Options Plans	Yellow Change	2	4.0	4.4
Phase Configuration	Yellow Change	3	4.0	4.4
No Served Phase Plans	Yellow Change	4	4.0	4.4
Sequence Parameters	Yellow Change	5	4.0	4.4
Vehicle Detector Parameters	Yellow Change	6	4.0	4.4
Vehicle Detector Plans	Yellow Change	7	4.0	4.4
Vehicle Detector Options	Yellow Change	8	4.0	4.4
Pedestrian Detectors				
Coordination Parameters				
Pattern Parameters				
>	Walk	2	8	5
	Walk	4	7	5

**Figure 69 Database Comparison Showing the Differences Between Two Manual Uploads**

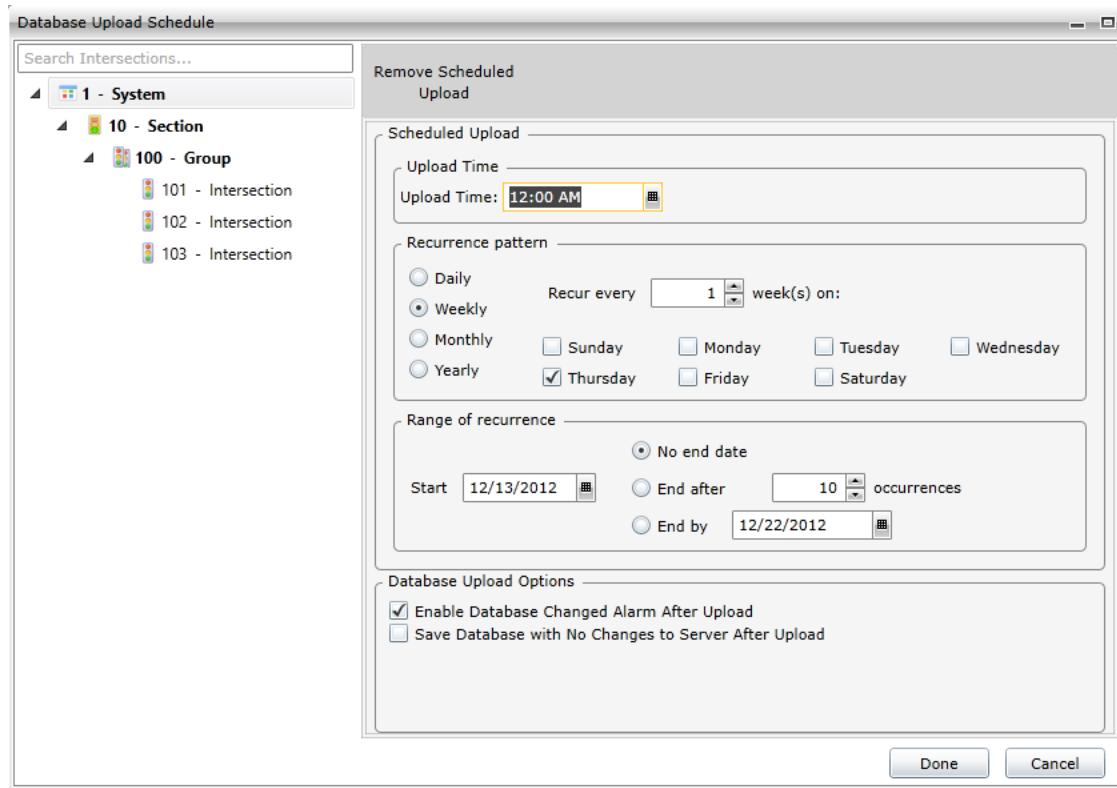
## 11.4 Scheduled Database Upload with Alarms

In addition to supporting a user triggered manual upload for a given controller, MAXVIEW supports scheduling an upload for an intersection group or for a specific intersection.

To open the Database Upload Schedule select “**Database Management-> Database Upload Schedule**” from the main menu.

The Database Upload Scheduler allows a user to specify a one time or recurring scheduled upload for any given group or intersection.

A user can also select whether the Database Changed Alarm should be triggered when the upload is completed or if the database should be kept stored in the system even if there are no changes.



**Figure 70 Database Upload Scheduler Showing Scheduled Upload for the System**

With the Database Upload Scheduler it is easy to ensure the database integrity of all the controllers connected to the system by scheduling weekly uploads to verify the local data.

Check the “**Enable Database Changed Alarm After Upload**” to trigger a database changed alarm when database changes are detected.

Check the “**Save Database with No Changes to Server After Upload**” to save the full database after a scheduled upload even if no changes are detected.

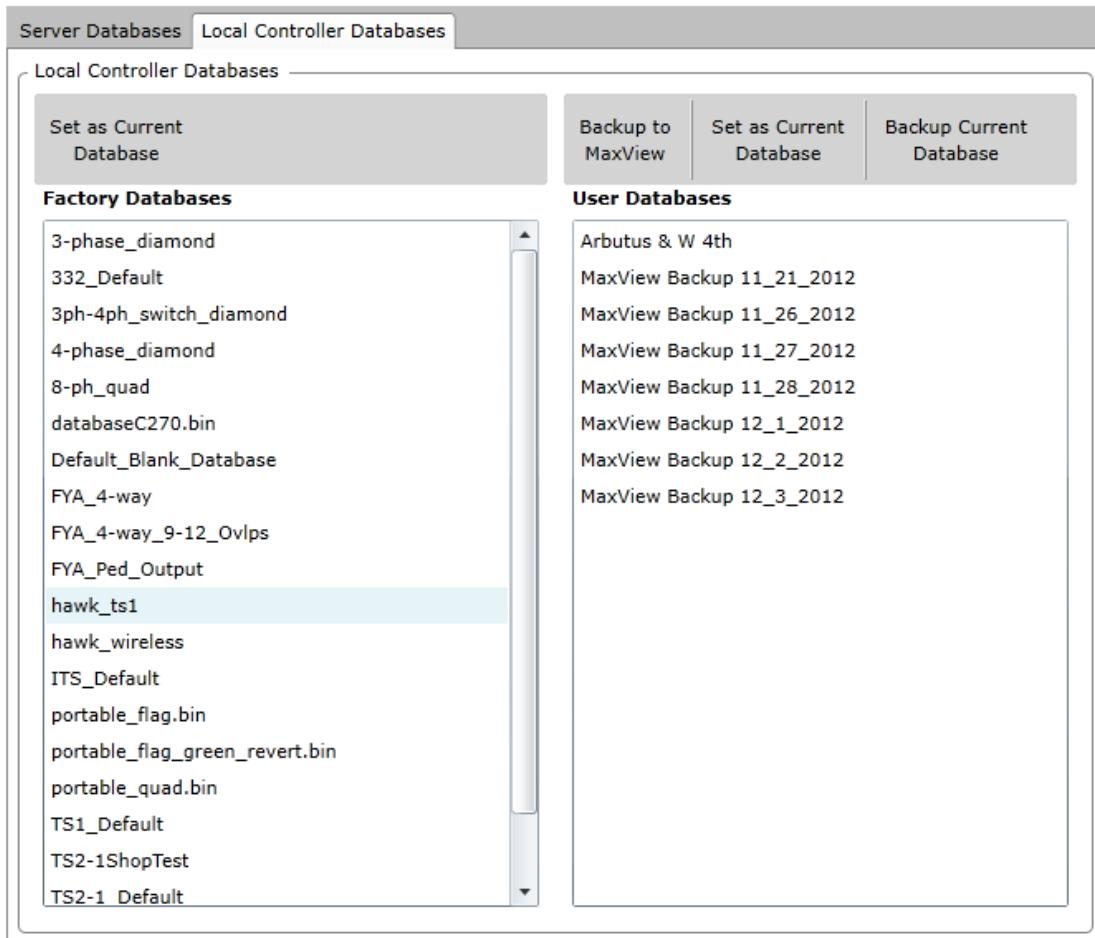
By default a database will no changes will not be saved to the system.

Note: A record of the upload will no changes will always be saved however.

## 11.5 View Local MaxTime Databases

When MAXVIEW is connected to a controller running Intelight's MaxTime local firmware the Database Management view also provides access to view, upload and download the set of databases that are stored on the controller as Factory Defaults or User Saved databases.

A locally saved user or factory database can be set as the active database or the current running database can be saved as a User Database on the controller.



**Figure 71 Database Management Window Showing Local databases**

The Database Backup and Restore window allows a user to access the set of local Factory and User Databases that are stored on the local controller.

As discussed above a user can complete the following tasks when working with the Local Databases:

- **Save to PC** – Saves the select MaxTime bin database to the PC.
- **Set as Current Database** – Set either a Factory Database or a User Database as the current database.

**Note:** A reboot of the controller is required before the new database will be used by the controller.

- **Backup Current Database** – Save the current working database as a new user database that can then later be backed up to MAXVIEW or restored using the Set as Current Database button.

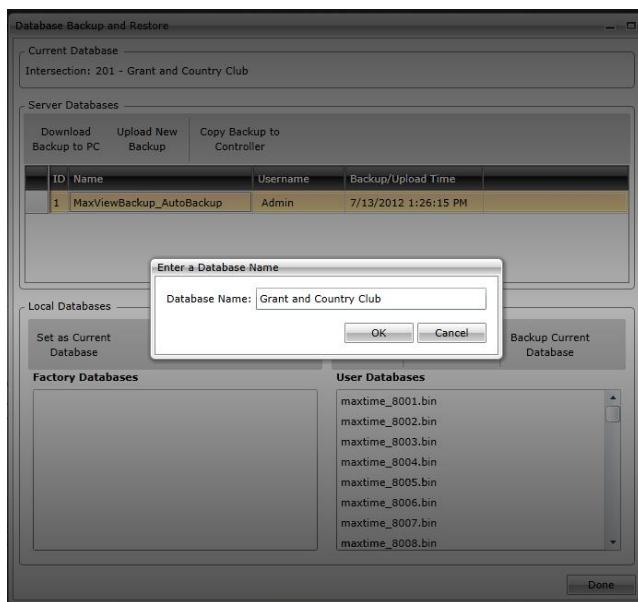
### 11.5.1 Save to PC

To save the selected MaxTime BIN database file to the PC, select the Save to PC button.

A dialog box will be opened to prompt the user for the file name. Select OK to save the BIN database to the selected file.

### 11.5.2 Backup Current Database

To save the current database as a new User Database file on the local controller select the **Backup Current Database** button.



**Figure 72 Database Backup and Restore saving current controller database**

A dialog box will be shown to ask for a name of the database backup.

The name will be pre-populated with the intersection name of the controller. It is recommended to append the date or another unique identifier to the title so that the database backup can be identified later.

Select **OK** to back up the current database and save a copy to the User Databases folder on the local controller.

### 11.5.3 Set as Current Database

When connected to a local controller running MaxTime, MAXVIEW can set any Factory or User Database that is stored on the local as the current running database.

To reset the current database select the desired database form the list and then select **Set as Current Database**.

When the controller is rebooted the set database will be used. Note any pending changes in the local database will be overwritten if they have not been saved.

**Note:** A reboot of the controller is required before the new database will be used by the controller.

# 12 Group Plan

## 12.1 Group Plan Overview

The Group Plan window allows a user to view the coordination status and edit coordination parameters for a given group or corridor all at the same time.

The Group Plan window can be opened for a given group from the Intersections Group main menu or from the group context menu.

The Group Plan window can also be opened for a set of selected or favorite intersections using the  Group Plan button.

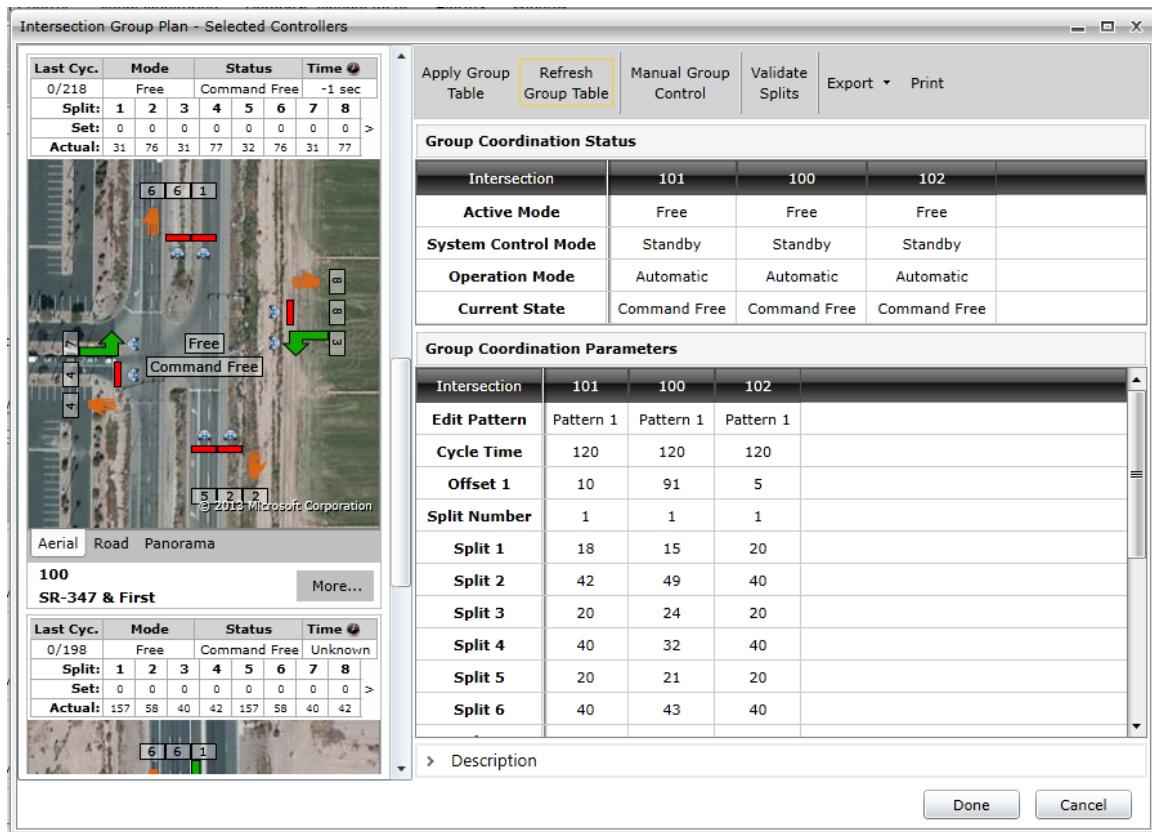


Figure 73 Intersection Group Plan window

## 12.2 Group Plan Coordination Status

The Group Coordination Status panel shows the coordination status of the intersections in the Group Plan window.

Group Coordination Status				
Intersection	301	103	201	
<b>Active Mode</b>	Pattern 2	Pattern 2	Pattern 2	
<b>System Control Mode</b>	Standby	Standby	Standby	
<b>Operation Mode</b>	Automatic	Automatic	Automatic	
<b>Current State</b>	Coord	Coord	Coord	

**Figure 74 Intersection Group Plan window Coordination Status**

The following status is shown for each intersection in the Group Plan window:

- **Active Mode:** The current pattern the controller is running
- **System Control Mode:** The current pattern MAXVIEW is commanding the controller to run. If no command is being sent and received by the controller the value will be “Standby”
- **Operation Mode:** The current operation mode the controller is running. Typically in order to accept commands from a system this is required to be set as Automatic.
- **Current State:** The current state of the controller—e.g. Transition, Coord Free, Bad Plan, Coord, etc.

The status fields are all read only and will refresh in real time automatically.

## 12.3 Group Plan Coordination Parameters

The Group Coordination Parameters panel enables a user to view and edit the cycle length, offsets, split number and split timings of the running pattern or any other pattern configured in the controller.

Group Coordination Parameters			
Intersection	301	103	201
<b>Edit Pattern</b>	Pattern 1	Pattern 1	Pattern 1
<b>Cycle Time</b>	120	120	120
<b>Offset 1</b>	50	80	80
<b>Offset 2</b>	10	0	0
<b>Offset 3</b>	10	0	0
<b>Split Number</b>	1	1	1
<b>Split Time 1</b>	20	20	20
<b>Split Time 2</b>	40	40	40
<b>Split Time 3</b>	20	20	20
<b>Split Time 4</b>	40	40	40

**Figure 75 Intersection Group Plan window Coordination Parameters**

The Group Coordination Parameters panel enables a user to edit data for any pattern or patterns configured in the controller in one location and then download all changes at once.

By default the Group Coordination Parameter panel will load the data of the current running pattern for each intersection, but the data for any pattern can be edited by selecting a new pattern from the **Edit Pattern** drop down.

The cycle time, offsets, split number or split times can be changed by entering new values in the cells.

To change the split number for the selected pattern select a new **Split Number** from the drop down. The split timings of the new split number will be automatically loaded.

Once a set of changes are made they can be downloaded to the given controller by selecting the **Download Group Table** button.

Any changes made to the split timings or cycles for any patterns will be committed to the controller, even if the controller is not currently running the edited pattern.

### 12.3.1 Apply Group Plan Coordination Changes

To download all pending Group Coordination Parameters with changes select the **Apply Group Table** button.

All pending changes will be committed to the patterns and split numbers that have been edited in the Group Plan Coordination panel.

### 12.3.2 Refresh Group Plan Data

To upload the coordination data from the set of controllers and abort any local changes select **Refresh Group Table** button.

Any pending changes will be aborted and the most recent data from the controllers will be loaded.

## 12.4 Manual Group Control

The Group Plan window also enables quick access to manual group control through the **Manual Group Control** button.

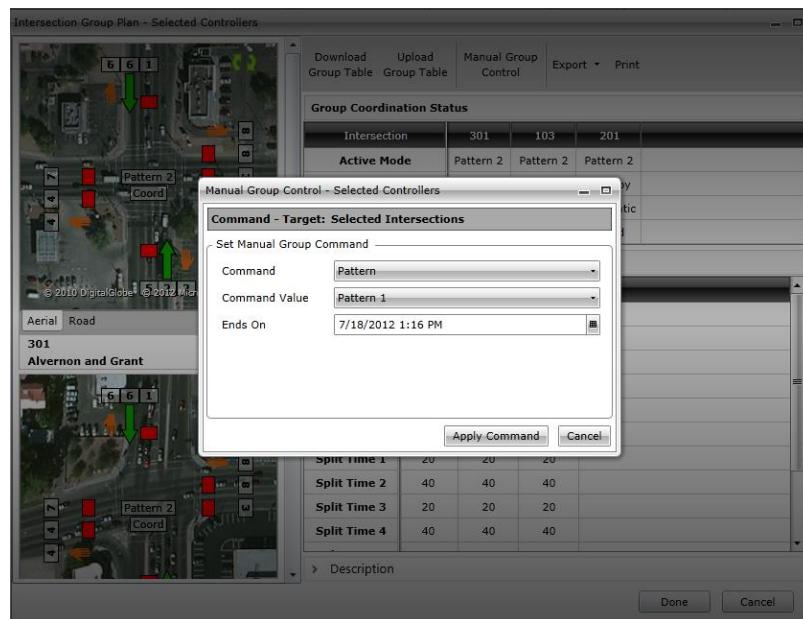


Figure 76 Group Plan manual group control

To send a new manual command with an expiration time to the group or set of selected intersections select the **Manual Group Control** button.

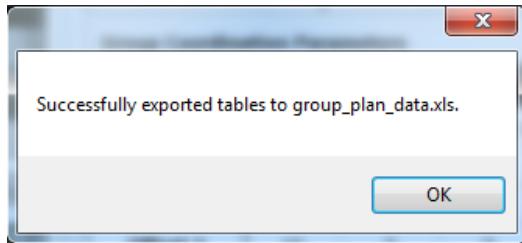
Select the **Command**, **Command Value**, and command **End Time** and then select **Apply Command** to send the command.

The set command can be viewed and edited later from the Manual Control window. To open the Manual Control window select the **Signal Control→Manual Control** main menu item.

## 12.5 Export Group Plan

The Group Plan window supports exporting the coordination status and parameters to Microsoft Word, Microsoft Excel, or PDF

To export the group plan data select the **Export** menu, enter a filename and select **Save**.

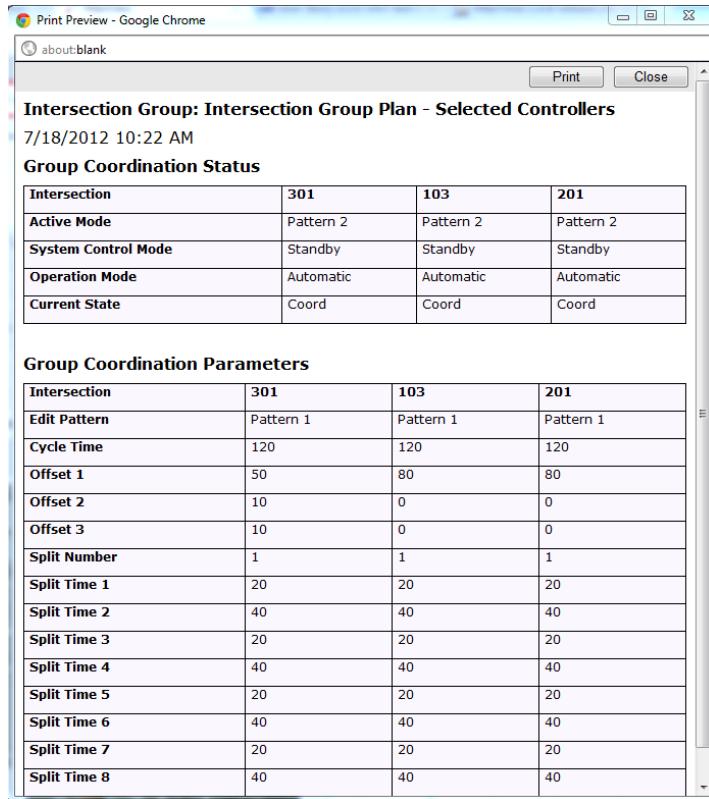


**Figure 77 Group Plan data exported**

When the export is complete a notification will be shown.

## 12.6 Print Group Plan

The Group Plan window supports directly printing a coordination status and parameters data.



Intersection	301	103	201
Active Mode	Pattern 2	Pattern 2	Pattern 2
System Control Mode	Standby	Standby	Standby
Operation Mode	Automatic	Automatic	Automatic
Current State	Coord	Coord	Coord

Group Coordination Parameters	301	103	201
Edit Pattern	Pattern 1	Pattern 1	Pattern 1
Cycle Time	120	120	120
Offset 1	50	80	80
Offset 2	10	0	0
Offset 3	10	0	0
Split Number	1	1	1
Split Time 1	20	20	20
Split Time 2	40	40	40
Split Time 3	20	20	20
Split Time 4	40	40	40
Split Time 5	20	20	20
Split Time 6	40	40	40
Split Time 7	20	20	20
Split Time 8	40	40	40

**Figure 78 Group Plan Print Preview**

To print the current Group Plan data select **Print**.

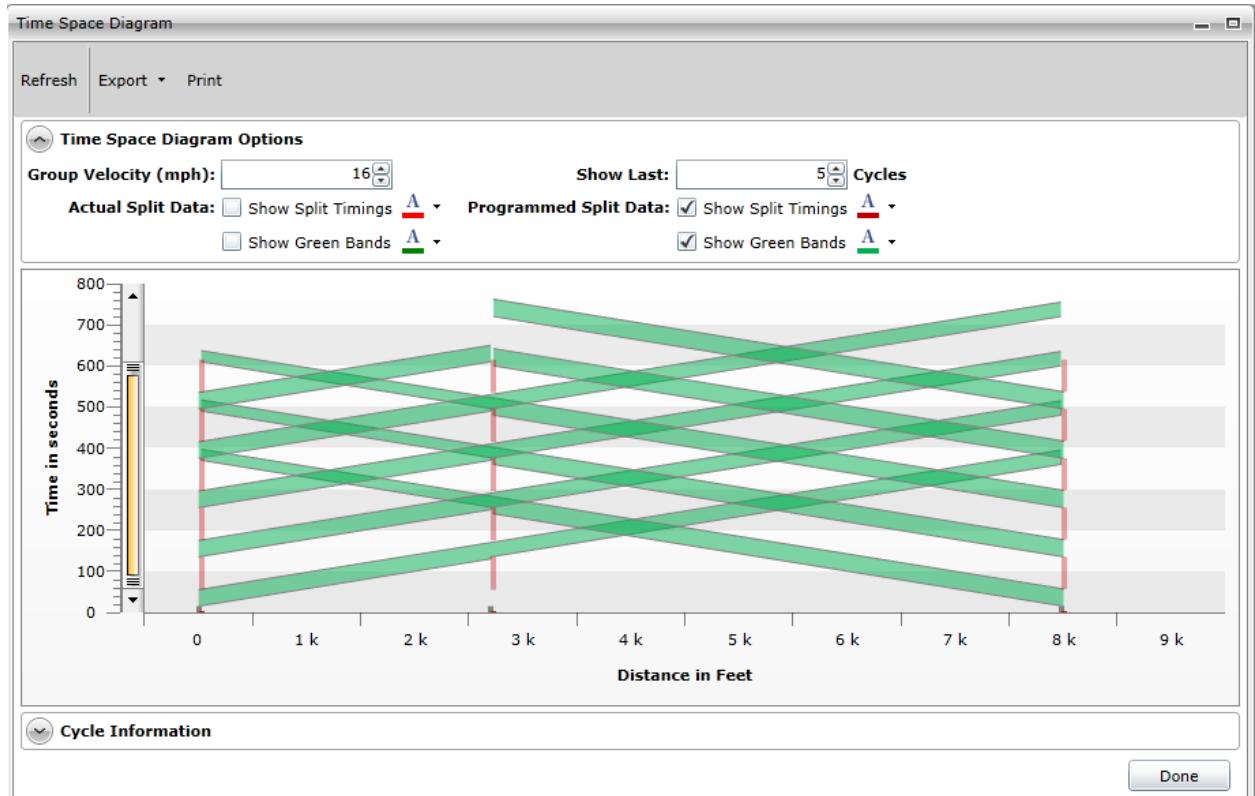
The system will open a new window with a print preview of the group plan data.

To print the table select **Print**. To close the window select **Close**.

# 13 Time Space Diagram

## 13.1.1 Overview

MAXVIEW supports showing a programmed and real-time time-space diagram for a predefined intersection group or section or for a dynamic group of selected or favorite intersections.



**Figure 79 Time-space diagram showing green bands and arterial view**

The MAXVIEW time-space diagram automatically determines the intersection distance using the location of the intersection. It also allows a user to adjust the arterial speed in real time.

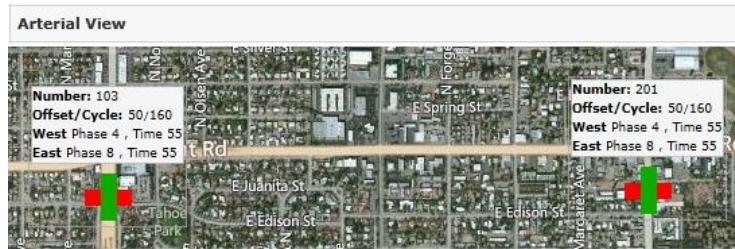
Cycle Information		Intersection Name 103 Intersection	Last X Cycle Information					
Arterial	Turns		Set Pattern	2	2	2	2	2
Set Offset/Cycle	15/120		15/120	15/120	15/120	15/120		
Actual Offset/Cycle	15/120		15/120	15/120	15/120	15/120		
Set North/South Times	40/40		40/40	40/40	40/40	40/40		
Actual North/South Times	79/79		79/79	79/79	79/79	79/79		
Set Pattern	2		2	2	2	2		
Set Offset/Cycle	15/120		15/120	15/120	15/120	15/120		

**Figure 80 Cycle Information in Time Space Diagram**

The time-space diagram also provides information on offset, cycle times and the main street actual and programmed split times of the intersections being viewed.

The time space diagram does not require any pre-configuration of the corridor as all distances are automatically calculated from the main map locations.

If the main street green direction is not configured correctly a notification will be shown when loading the Time Space Diagram window.



**Figure 81** Time space diagram arterial view

The **Arterial View** in the Time Space Diagram window shows the intersection location, cycle time, cycle offset and main street direction with phasing and split times.

The **Arterial View** can be used to confirm that the correct main street direction and phasing is being used to generate the time space diagram.

**Note:** The time space diagram will update in real time as the running pattern or programmed split times change.

### 13.1.2 Set Group Velocity

The Time Space Diagram window allows a user to set the group velocity of the corridor.

By default the velocity is set at 35 mph.

To change the group velocity update the value in the **Group Velocity** text box.

As the velocity is changed the time space diagram will update in real time.

The **Group Velocity** can be set between 1 and 125 mph.

### 13.1.3 Set Number of Cycles

The number of green bands shown in the Time Space Diagram window can be configured using the Number of Cycles text box.

To change the number of cycles displayed update the value in the **Number of Cycles** text box.

As the number of cycles value is changed the time space diagram will update in real time.

The **Number of Cycles** can be set between 1 and 10.

### 13.1.4 Refresh Time Space Diagram

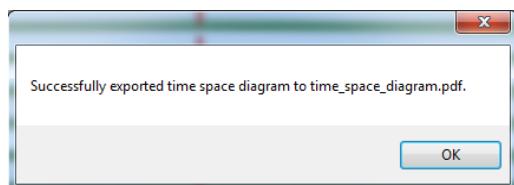
The Time Space Diagram widow continuously refreshes data from the controller to display the most up to date time space diagram.

To force the Time Space Diagram window to refresh select the Refresh button.

### 13.1.5 Export Time Space Diagram

The Time Space Diagram window supports exporting the time space diagram to PDF.

To export the time space diagram select the **Export** menu, enter a filename and select **Save**.

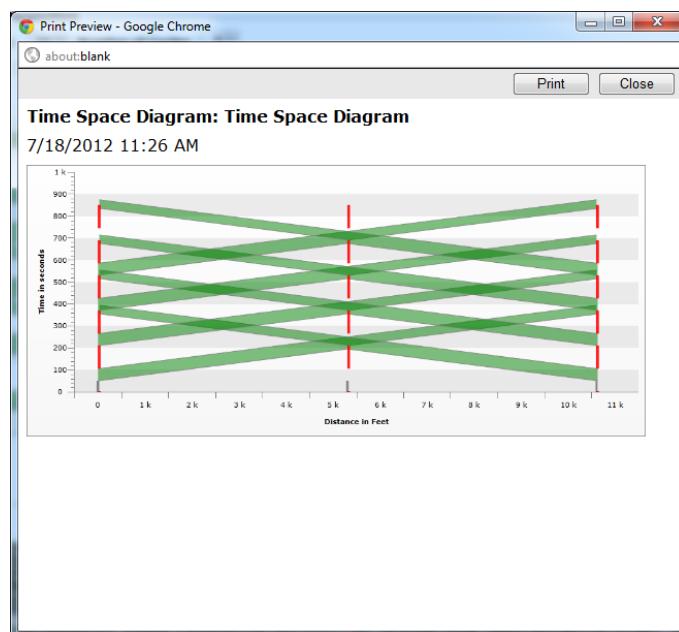


**Figure 82 Time Space Diagram exported**

When the export is complete a notification will be shown.

### 13.1.6 Print Time Space Diagram

The Time Space Diagram window supports directly printing a time space diagram.



**Figure 83 Time Space Diagram Print Preview**

To print the current Time Space Diagram select **Print**.

The system will open a new window with a print preview of the time space diagram. To print the table select **Print**. To close the window select **Close**.

# 14 Device Control

## 14.1 Overview

MAXVIEW supports multiple methods to initiate remote device control from the system, specifically:

- **Manual Commands** – Commands applied to a given group or intersection that expire after a set time
- **Action Set Commands** – A set of commands applied to a set of multiple intersections or groups
- **Time of Day Commands** – Commands applied to a given group or intersection that occur at a given time and may recur for multiple days, weeks, months or years
- **Traffic Responsive Commands** – Commands are applied from a Traffic Responsive Plan Action Threshold list. Traffic Responsive commands can be applied through Manual Command, Action Set Command or Time of Day Command

By default, the following command types are installed in the system—additional command types can be added during integration by modifying the system database:

- **Pattern Command** – Supports setting Pattern 1-128, Free and Flash
- **Special Function** – Supports triggering Special Function 1 - 16
- **Set Time** – Supports setting the system time to a given controller
- **Preempt Command** – Set a preempt as active
- **Stop Time Command** – Set stop time for all rings
- **ASC3 Action Set Command** – Supports setting ASC Action Set as active
- **Central Traffic Responsive Command** – Applies a MAXVIEW traffic responsive plan to the device, which in turn triggers commands based on the plan's action thresholds.
- **Ramp Meter Command** – Controls a ramp meter.
- **DMS Message Command** – Sends a pre-configured DMS message to DMS/VMS sign.

### 14.1.1 Command Priority and Device Groups

MAXVIEW device control commands can be applied to device groups, as well as directly to devices themselves.

When a command is applied to a group, each device within that group will also inherit the applied command, if it is applicable to the device. For example, a Pattern command sent to a group that contains an Intersection Controller and a Ramp Meter will only get sent to the Intersection Controller. This also means that a command can be sent to the entire system by sending it to the root System group.

In order for a single command to be applied to a given device, a logical priority is assigned such that the most restrictive command will always apply—i.e., a command assigned to a device will override a command sent to its parent group, and so on.

This means if a command is applied to a sub-group, the command will override any command applied to a parent group. For example, take the following group hierarchy with a set of applied commands:

- **System 1** – Command: *Pattern 1*
  - **Group 1** – Command: *Pattern 2*
    - **Intersection 101**
    - **Group 2** – Command: *Pattern 3*

- **Intersection 102**

**Intersection 101** will run the *Pattern 2* command, inherited from its parent **Group 1**, which overrides the command applied to **System 1**.

**Intersection 102** will run the *Pattern 3* command, inherited from its parent **Group 2**, which overrides the **Group 1** and **System 1** commands.

Using this approach, commands can be configured for the group as a whole and then overridden on each intersection as needed.

### 14.1.2 Command Source Priority

Because multiple control commands can be applied to the same device from different sources, the following priority is applied to the command sources (from highest to lowest):

1. Manual Commands
2. Action Set Commands
3. Time of Day Commands
4. Traffic Responsive Commands (from any source)

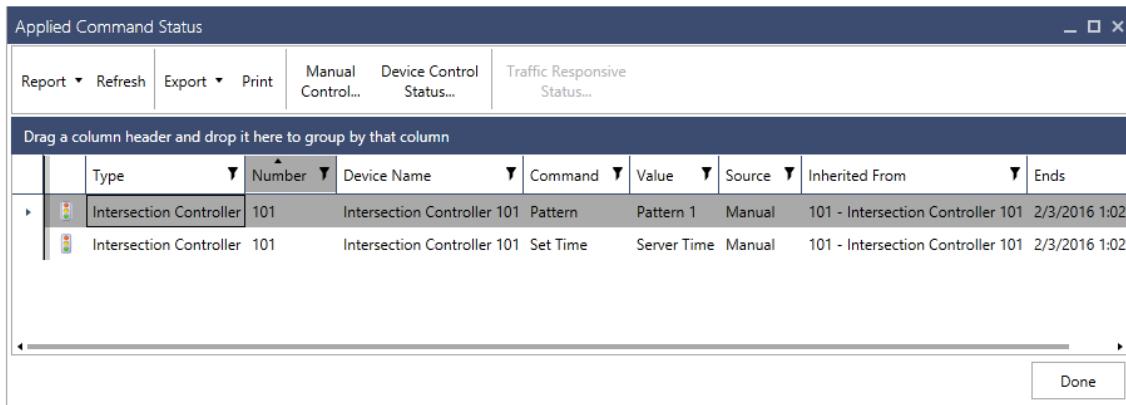
This means that when the same type of command is applied from multiple sources, Manual Commands will override any applied TOD Commands.

Commands of different types can be applied at the same time and will not conflict with each other. For example, a Pattern Command and Time Sync command can be scheduled by TOD to occur at the same time. You may also apply multiple commands of different types to a device via manual control.

## 14.2 Applied Command Status

### 14.2.1 Overview

The Applied Command Status window shows a table of information about all commands that are currently running in MAXVIEW. This is not a view of **ALL** commands that have been set by the user, at any time or priority, but rather only the commands that are running right now on each device.



The screenshot shows the 'Applied Command Status' window with the following details:

- Toolbar:** Report ▾ Refresh Export ▾ Print Manual Control... Device Control Status... Traffic Responsive Status...
- Header:** Drag a column header and drop it here to group by that column
- Table Headers:** Type, Number, Device Name, Command, Value, Source, Inherited From, Ends
- Table Data:**

Type	Number	Device Name	Command	Value	Source	Inherited From	Ends
Intersection Controller	101	Intersection Controller 101	Pattern	Pattern 1	Manual	101 - Intersection Controller 101	2/3/2016 1:02
Intersection Controller	101	Intersection Controller 101	Set Time	Server Time	Manual	101 - Intersection Controller 101	2/3/2016 1:02
- Buttons:** Done

Figure 84. Applied Command Status Window

## 14.3 Device Control Status

### 14.3.1 Overview

The Device Control Status window provides a hierarchical view of all commands set on the selected device, as well as a table of its command event history.

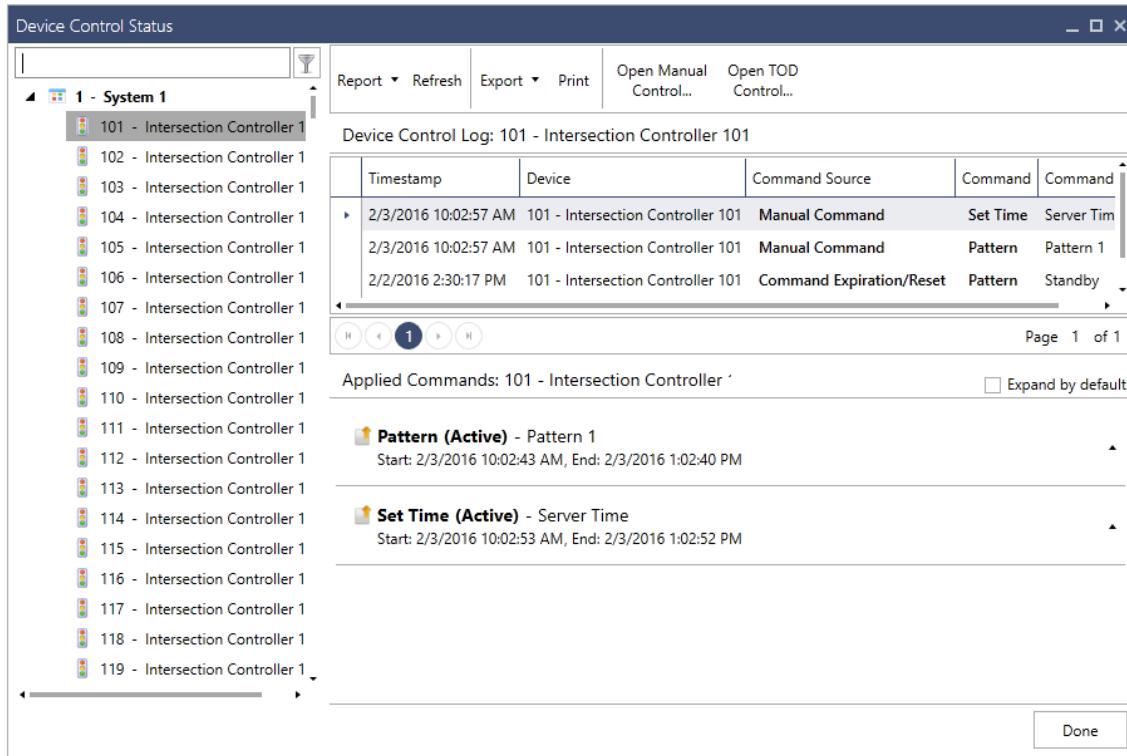


Figure 85 – Device Control Status Window

The Device Control Status window can be opened by clicking the **Device Control** menu and selecting Device Control Status.

### 14.3.2 Device Control Log

The **Device Control Log** panel in the Device Control Status window provides a history of the all commands that have been applied to a given device.

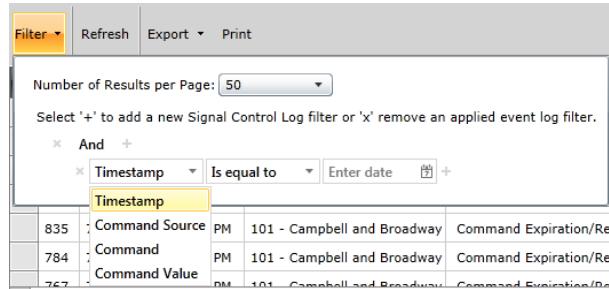
Commands from all sources will be shown in the Device Control Log.

Signal Control Log						
Filter		Refresh	Export	Print		
ID	Timestamp	Intersection	Command Source	Command	Command Value	
996	7/18/2012 11:55:15 AM	101 - Campbell and Broadway	Manual Command	Pattern	Pattern 1	
986	7/18/2012 11:34:35 AM	101 - Campbell and Broadway	Command Expiration/Reset	Pattern	Standby	
862	7/18/2012 8:23:06 AM	101 - Campbell and Broadway	Command Expiration/Reset	Pattern	Standby	
835	7/17/2012 9:37:28 PM	101 - Campbell and Broadway	Command Expiration/Reset	Pattern	Standby	

Figure 86. Device Control Status - device control log

The Device Control Log can be filtered using the **Report** button. A filter can be added for each of the following parameter:

- **Timestamp**: The server time at which the command was sent
- **Command Source**: Manual, TOD
- **Command**: Pattern, Set Time
- **Command Value**: Pattern 1-128, Free, etc.



**Figure 87 – Device Control Status filtering**

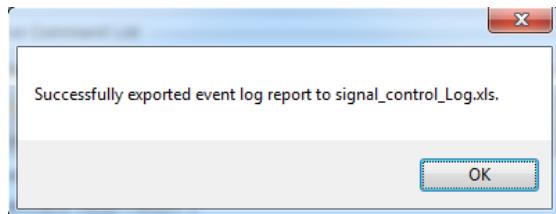
To add a new filter, select the (+) button next to the filter Boolean operation (AND or OR).

To remove a filter, select the (x) button next to the filter Boolean operation (AND or OR).

#### 14.3.2.1 Export Device Control Log

The Device Control Status window supports exporting the signal control log to Microsoft Word, Excel and to PDF.

To export the device control log, select the **Export** menu, enter a filename and select **OK**.



**Figure 88 – Device Control Log exported**

When the export is complete a notification will be shown.

#### 14.3.2.2 Print Device Control Log

The Device Control Status window supports directly printing a Device Control Log.

ID	Timestamp	Intersection	Command Source	Command	Command Value
1002	7/18/2012 12:11:27 PM	101 - Campbell and Broadway	Manual Command	Pattern	Pattern 1
996	7/18/2012 11:55:15 AM	101 - Campbell and Broadway	Manual Command	Pattern	Pattern 1
986	7/18/2012 11:34:35 AM	101 - Campbell and Broadway	Command Expiration/Reset	Pattern	Standby
862	7/18/2012 8:23:06 AM	101 - Campbell and Broadway	Command Expiration/Reset	Pattern	Standby
835	7/17/2012 9:37:28 PM	101 - Campbell and Broadway	Command Expiration/Reset	Pattern	Standby
784	7/17/2012 6:57:28 PM	101 - Campbell and Broadway	Command Expiration/Reset	Pattern	Standby
767	7/17/2012 1:27:51 PM	101 - Campbell and Broadway	Command Expiration/Reset	Pattern	Standby
746	7/16/2012 12:40:59 PM	101 - Campbell and Broadway	Command Expiration/Reset	Pattern	Standby
736	7/16/2012 12:07:51 PM	101 - Campbell and Broadway	Command Expiration/Reset	Pattern	Standby
723	7/16/2012 10:12:42 AM	101 - Campbell and Broadway	Command Expiration/Reset	Pattern	Standby
709	7/16/2012 10:11:40 AM	101 - Campbell and Broadway	Command Expiration/Reset	Pattern	Standby
696	7/16/2012 10:08:38 AM	101 - Campbell and Broadway	Command Expiration/Reset	Pattern	Standby
680	7/16/2012 10:00:37 AM	101 - Campbell and Broadway	Command Expiration/Reset	Pattern	Standby
672	7/16/2012 10:00:03 AM	101 - Campbell and Broadway	Command Expiration/Reset	Pattern	Standby
661	7/16/2012 9:59:20 AM	101 - Campbell and Broadway	Command Expiration/Reset	Pattern	Standby
649	7/16/2012 9:57:47 AM	101 - Campbell and Broadway	Command Expiration/Reset	Pattern	Standby
630	7/16/2012 9:42:20 AM	101 - Campbell and Broadway	Command Expiration/Reset	Pattern	Standby
617	7/16/2012 9:42:07 AM	101 - Campbell and Broadway	Command Expiration/Reset	Pattern	Standby
608	7/16/2012 9:40:40 AM	101 - Campbell and Broadway	Command Expiration/Reset	Pattern	Standby
582	7/16/2012 8:36:56 AM	101 - Campbell and Broadway	Command Expiration/Reset	Pattern	Standby
573	7/16/2012 8:36:31 AM	101 - Campbell and Broadway	Command Expiration/Reset	Pattern	Standby
557	7/15/2012 5:43:57 PM	101 - Campbell and Broadway	Command Expiration/Reset	Pattern	Standby

**Figure 89 – Device Control Log Print Preview**

To print the current Device Control Log, select **Print**.

The system will open a new window with a print preview of the Device Control Log. To print the table select **Print**. To close the window select **Close**.

### 14.3.3 Active Command List

The Signal Control Status window also shows the set of active commands that are applied and overridden for each intersection in the **Active Command List**.

A sorted list of commands in applied priority order for each command type is shown in the Active Command List.

Active Command List	
Command Type: Pattern	
<b>Active Manual Command</b> Command Source: 101 - Campbell and Broadway, Command Priority: 1 Command Name: Pattern Command Value: Pattern 1 Started At: 7/18/2012 11:55:13 AM Ends At: 7/18/2012 2:55:13 PM	
<b>Overridden Time of Day Command</b> Command Source: 101 - Campbell and Broadway, Command Priority: 2 Command Name: Pattern Command Value: Pattern 2 Started At: 7/18/2012 9:00:00 AM Ends At: 7/18/2012 3:00:00 PM	

**Figure 90 Signal Control Status active command list**

The command that is currently active is shown in white.

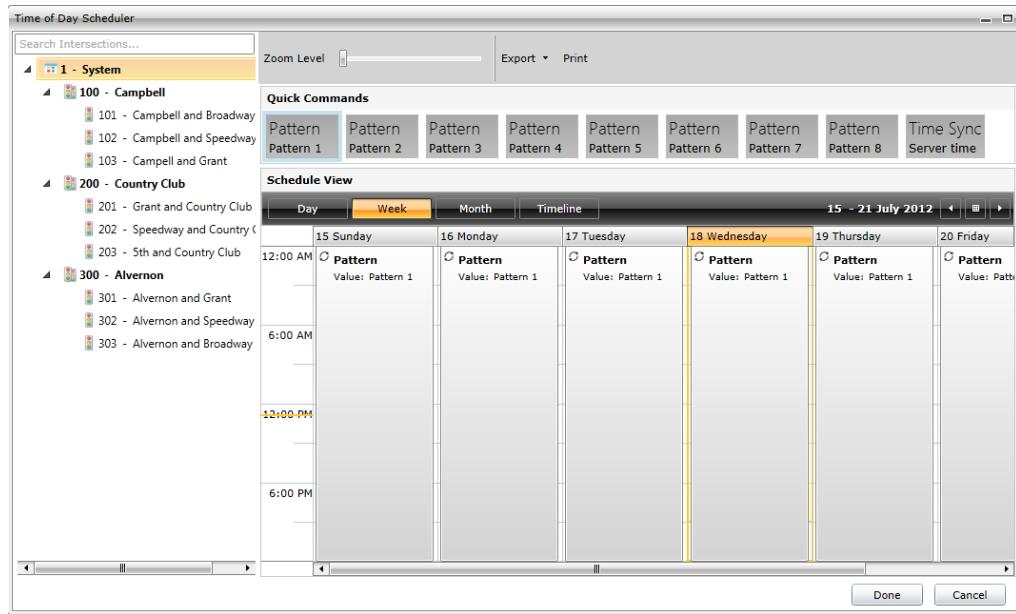
Any overridden command that is not currently active will show in gray.

The Active Command List will update in real time as commands are added or expire from the system.

## 14.4 Time of Day Signal Control

### 14.4.1 Overview

MAXVIEW supports configuring time of day scheduled commands through simple and intuitive calendar based interface.



**Figure 91 Time of Day Scheduler window**

The Time of Day scheduler supports a simple drag and drop based interface for configuring a time of day schedule and is designed to mimic calendar programs a user is already familiar with such as Microsoft Outlook.

A set of Quick Commands are available which can be dragged directly onto the calendar to create a new command or a command can be created by double clicking on a time slot within the calendar.

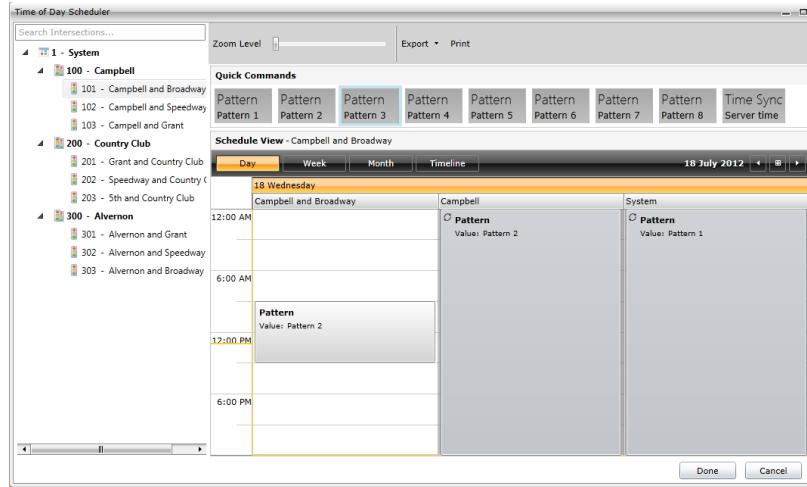
The date and time a given command is applied can be changed by dragging the command within the calendar or by changing the start or end date by dragging the edge of the command.

In addition, TOD commands can be configured with advanced recurrences to satisfy even the most complex TOD schedule.

### 14.4.2 Command Hierarchy and Priority

As discussed above in the *Commands Priority and Intersection Groups* section, time of day commands can be applied to either a group or an intersection.

When a time of day command is applied to a group it will also be inherited by all the groups' children, but can be overridden if desired.



**Figure 92 Time of Day Scheduler showing commands applied to several groups**

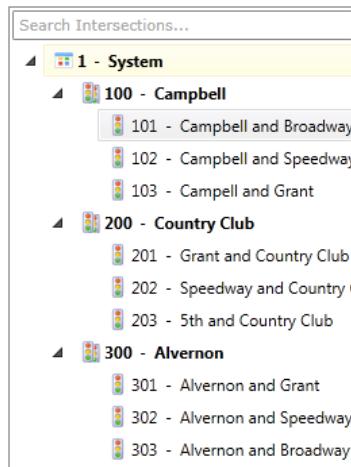
When a sub group is selected the calendars of its parents are also shown as read only so that the inherited commands are also visible.

This can be seen in the figure above where “Intersection 101- Campbell and Broadway” is selected, and the inherited commands from the “100 - Campbell” group and the “1-System” group are also visible as ready only calendars.

Using this approach the set of common commands can be applied to each group and then overridden at each intersection where they do not apply.

#### 14.4.3 Time of Day Device Tree

The device tree in the Time of Day Scheduler window allows the user to select a given group or intersection.



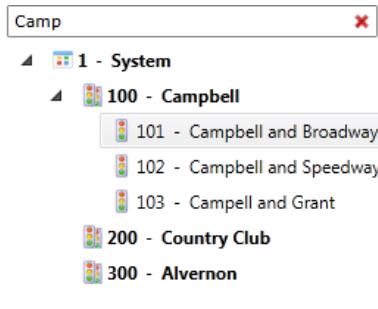
**Figure 93 Time of Day Scheduler device tree**

As the selected intersection or group changes, the time of day schedule for the selected intersection or group will automatically be shown in the time of day calendar.

As noted above the schedule for each parent will also be shown as read only in the calendar so it is clear which commands are inherited from the selected item's parents.

#### 14.4.3.1 Search for an Intersection

The device tree in the Time of Day Scheduler window can be used to search for an intersection by its number or name.



**Figure 94 Search for an intersection by name or intersection number**

To search for an intersection simply start entering text in the “Search Intersections...” text box at the top of the device tree.

The device tree will automatically display the matching results as text is entered.

To clear the search results and display all the intersections again, select **x** in the “Search Intersections...” textbox.

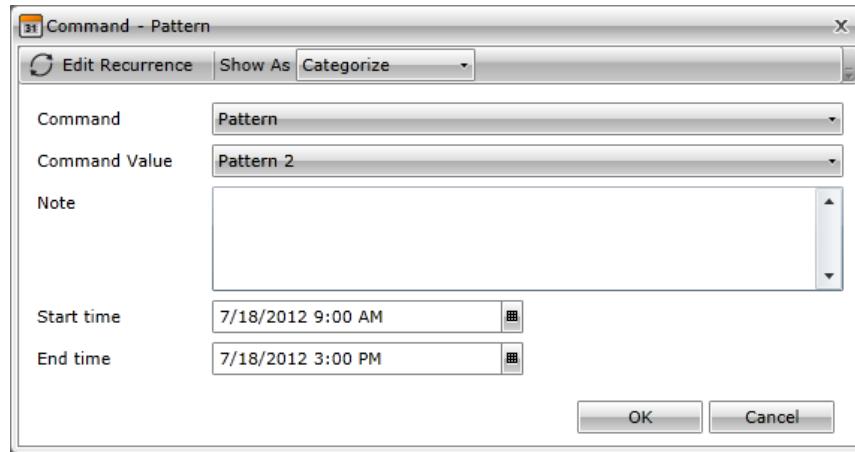
**Note:** The entered search text is case sensitive.

#### 14.4.4 Add a TOD Command

There are several ways to add a new time of day command to the Time of Day Scheduler calendar.

- 1) A new command can be dragged directly from the **Quick Commands** panel and added to the calendar
- 2) A new command can be created by double clicking on a time slot within the calendar
- 3) A copy of an existing command can be made by pressing the **Control** key and then dragging an existing command to a new time slot on the calendar

Once a command is added the command type, command value, start time, end time and description can be edited by double clicking on a given command entry.



**Figure 95 Edit time of day command**

#### 14.4.5 Delete a TOD Command

A time of day command can be deleted directly from the calendar by selecting the button on a given command.

If the command has a set recurrence, a confirmation will be shown asking if the entire series or just the occurrence should be deleted.



**Figure 96 Delete recurring series or occurrence**

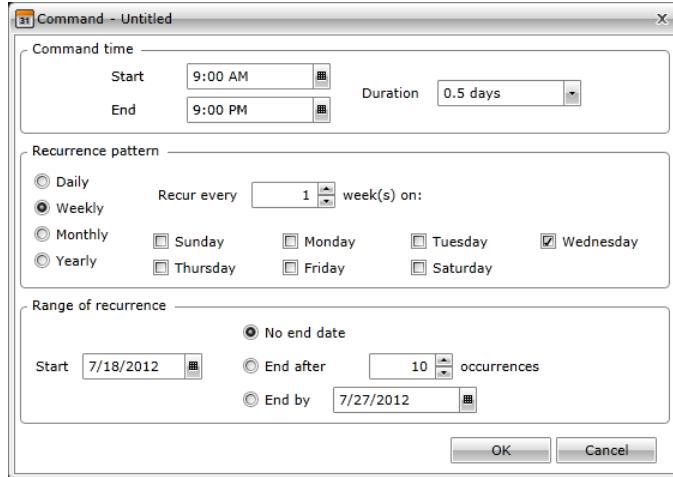
Selecting **Delete this occurrence** will delete just the one occurrence.

Selecting **Delete the series** will delete the entire series and all the recurrences.

#### 14.4.6 Add a Recurring TOD Command

The Time of Day Scheduler supports configuring advanced recurrences for a given command.

To add a recurrence to a given command, double click on the command and select the **Edit Recurrence** button.



**Figure 97 Time of Day command recurrence editor**

The time of day scheduler supports adding the following types of recurrences

Recurrence Type	Recurrence Options
Daily	<ul style="list-style-type: none"> <li>• Every N days</li> <li>• Every weekdays</li> </ul>
Weekly	<ul style="list-style-type: none"> <li>• Every X weeks</li> <li>• Recur on any given day</li> </ul>
Monthly	<ul style="list-style-type: none"> <li>• Every X day of every X month</li> <li>• The Xth day of every X month</li> </ul>
Yearly	<ul style="list-style-type: none"> <li>• Specific day every year</li> <li>• The Xth day of a given month</li> </ul>

The range of a recurrence can also be specified—the available options are:

- No end date
- End after X occurrence
- End by [date]

By adding a recurrence to a given command, an advanced time of day schedule can be created with very few clicks.

#### 14.4.7 Remove a TOD Command Recurrence

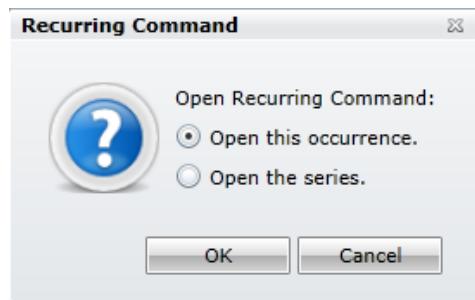
To remove a commands recurrence, first double click on a given command and select **Edit the Series**.

Select the **Edit Recurrence** button to edit the recurrence for the given command.

From the Edit Recurrence window select the **Remove Recurrence** button and then select **OK**.

#### 14.4.8 Create an Exception in a Recurring TOD Command

It is possible to edit or delete a single recurring command occurrence to create a recurrence command exception.

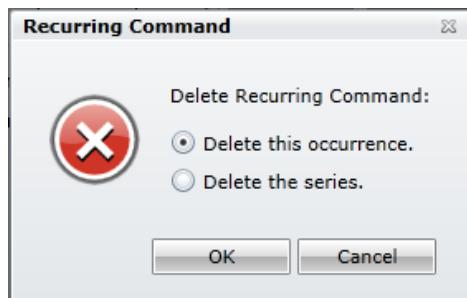


**Figure 98 Edit recurring command occurrence or series**

To edit a single occurrence of a recurring command double click on a command and select **Open this occurrence.**

The command type and command value can now be changed and only this occurrence will be edited.

To delete a single occurrence of a recurring command click the delete button and select **Delete this occurrence.**



**Figure 99 Delete recurring series or occurrence**

Only the selected occurrence will be deleted from the series.

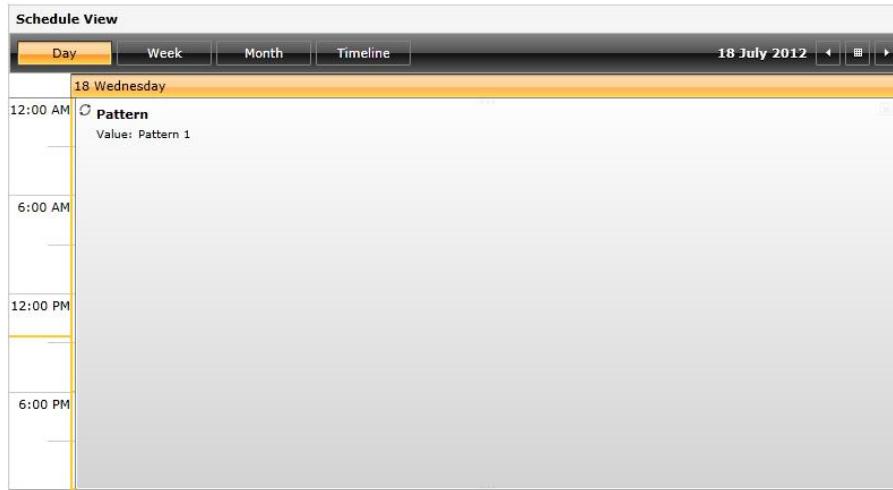
#### **14.4.9     TOD Command Views**

The Time of Day Scheduler supports several views for viewing the commands that are configured for a given intersection.

The set view can be changed by selecting the **Day**, **Week**, **Month** and **Timeline** buttons on the time of day calendar.

##### **14.4.9.1   Day View**

The day view shows the commands that are applied to a single day.



**Figure 100 Time of Day Scheduler day view**

#### 14.4.9.2 Week View

The week view shows the commands that are applied across a week.



**Figure 101 Time of Day Scheduler week view**

#### 14.4.9.3 Month View

The month view shows the set of commands that are applied for a given month.

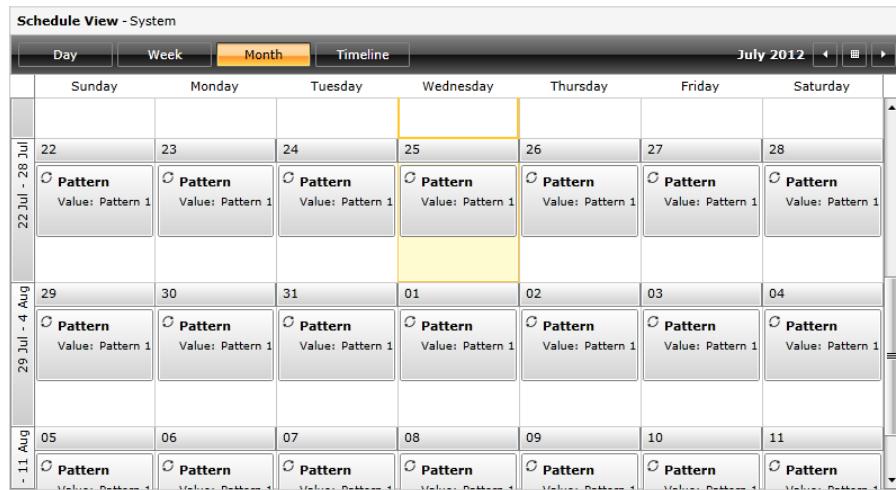


Figure 102 Time of Day Scheduler month view

#### 14.4.9.4 Timeline View

The timeline view inverts the axis of the calendar to show the set of commands applied along the x-axis and the time range across the top y-axis.

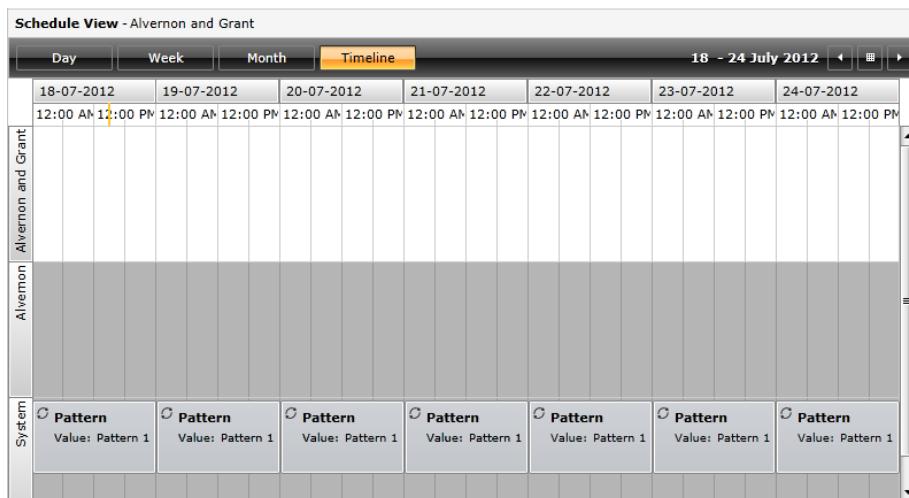


Figure 103 Time of Day Scheduler timeline view

This view is useful to view the ability set of commands across an intersection and its parents for a given time slot.

#### 14.4.9.5 Zoom In and Zoom Out of a View

The time range that is visible in each view can be changed using the **Zoom Level** slider at the top of the Time of Day Scheduler window.



**Figure 104 Time of Day Scheduler view zoom level**

To increase the zoom level, slide the slider value to the right.

To decrease the zoom level, slide the slider value to the left.

By default each zoom is loaded at the fully zoomed out level.

#### 14.4.9.6 Export Time of Day Schedule

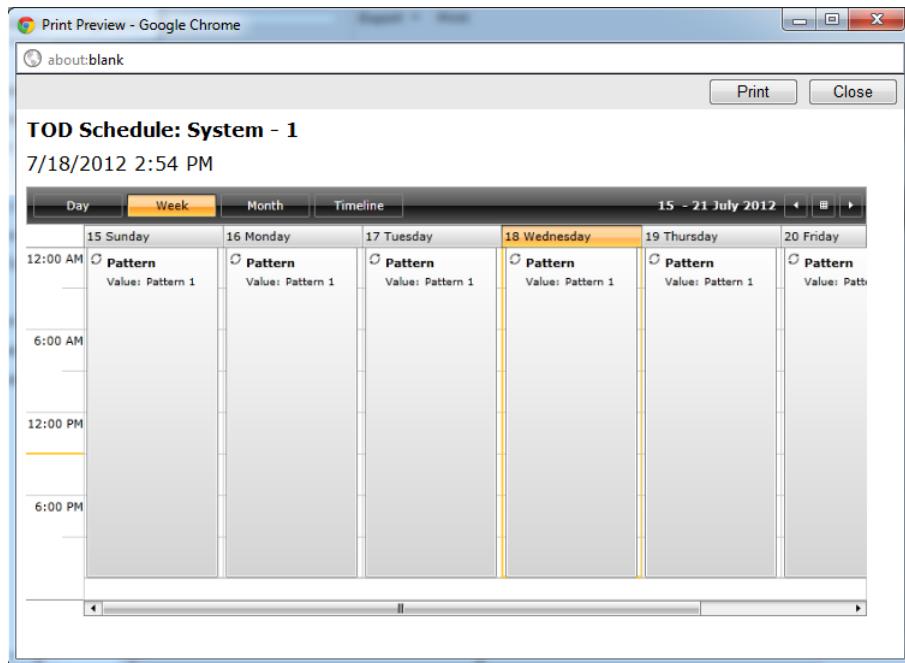
The Time of Day Scheduler window supports exporting the time of day schedule to PDF.

To export the time of day schedule select the **Export** menu, enter a filename and select Save.

When the export is complete a notification will be shown.

#### 14.4.9.7 Print Time of Day Schedule

The Time of Day Scheduler window supports directly printing a time of day schedule.



**Figure 105 Time of Day Print Preview**

To print the current Time of Day Scheduler select **Print**.

The system will open a new window with a print preview of the Time of Day schedule. To print the table select **Print**. To close the window select **Close**.

## 14.5 System Time Synchronization

MAXVIEW supports several mechanisms for maintaining clock synchronization across the set of configured intersection.

The MAXVIEW server can be configured to function as a NTP server for all devices within the network. If the local controller software supports synchronizing its time directly from a NTP source, then this mechanism can be used to always keep the attached device time in sync.

If all or some of the local controllers do not support NTP, MAXVIEW also supports scheduled time synchronization over NTCIP that is configurable through the Time of Day scheduler.

Set Time commands can be configured just like any other system command and set to recur at a set interval (e.g. every day at 3AM).

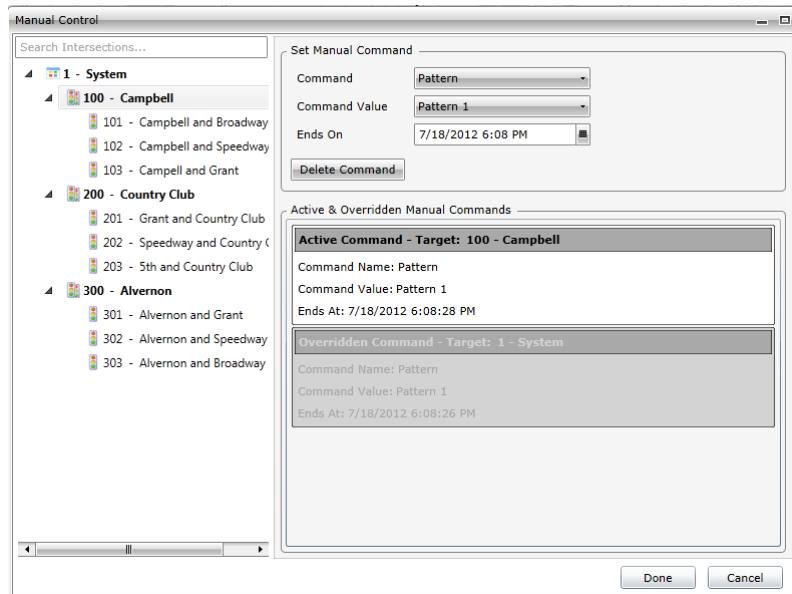
Set Time commands can be applied to the entire System and set to recur every day with no end date to easily set up a time broadcast plan.

## 14.6 Manual Signal Control

### 14.6.1 Overview

MAXVIEW supports applying manual commands to groups or intersections that will expire after a given time through the Manual Control window.

The Manual Control window can be opened from the Signal Control->Manual Control main menu item.



**Figure 106 Manual Control window**

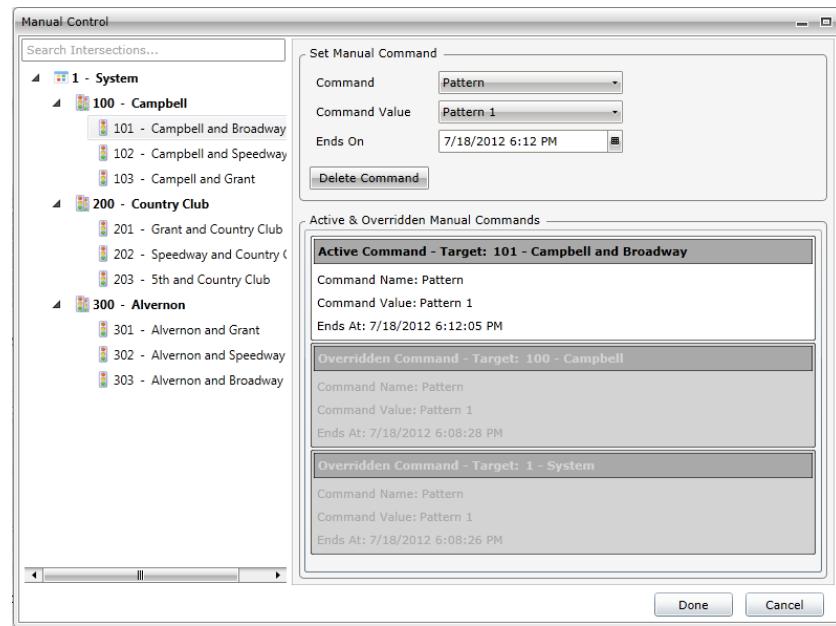
Any command type can be applied as a manual command to a given group or intersection but only a single manual command can be applied to each group or intersection at a time.

The Manual Control window allows a user to view and edit the set of manual commands that are applied to any group or intersection.

## 14.6.2 Command Hierarchy and Priority

As discussed above in the *Commands Priority and Intersection Groups* section, manual commands can be applied to either a group or intersection.

When a manual command is applied to a group it will also be inherited by all the groups' children, but can be overridden if desired.



**Figure 107 Manual Control window showing commands applied to several groups**

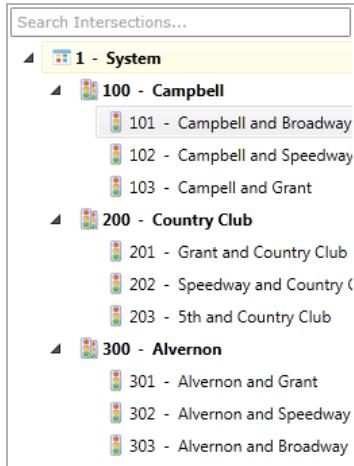
When a subgroup is selected the manual commands applied to its parents are shown as read only overridden commands, so that the inherited commands are also visible.

This can be seen in the figure above where “Intersection 101- Campbell and Broadway” is selected, and the inherited manual commands from the “100 - Campbell” group and “1-System” group are also visible as overridden commands.

Using this approach the set of manual commands can be applied to each group and then overridden at each intersection where they do not apply.

## 14.6.3 Manual Control Device Tree

The device tree in the Manual Control window allows the user to select a given group or intersection to view the set of applied manual commands.



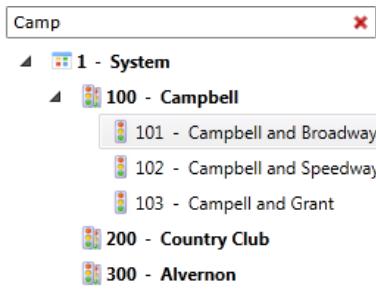
**Figure 108 Manual Control window device tree**

As the device tree selection changes the manual commands for the selected group or intersection will automatically be shown in the Manual Control window.

As noted above the commands for each parent will also be shown as overridden commands in the manual control window so it is clear which commands are inherited from an intersection's parent.

#### 14.6.3.1 Search for an Intersection

The device tree in the Manual Control window can be used to search for an intersection by its number or name.



**Figure 109 Search for an intersection by name or intersection number**

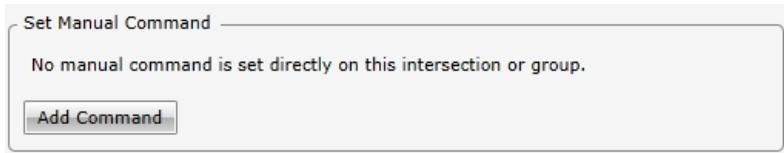
To search for an intersection simply start entering text in the “Search Intersections...” text box at the top of the device tree.

The device tree will automatically display the matching results as text is entered.

To clear the search results and display all the intersections again, select **\*** in the “Search Intersections...” textbox.

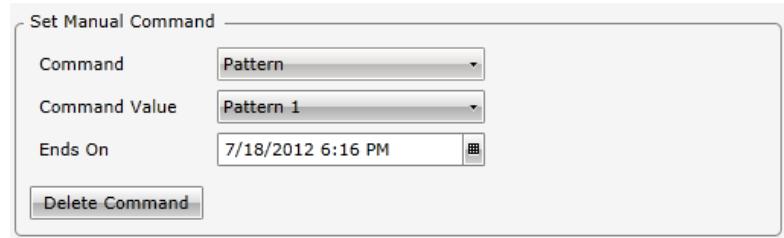
#### 14.6.4 Add a Manual Control Command

To add a new manual control command, open the Manual Control window from the main menu, select the desired intersection and select **Add Command**.



**Figure 110 Manual Control add manual command**

The manual command will be added to the selected intersection or group with the default expiration time.



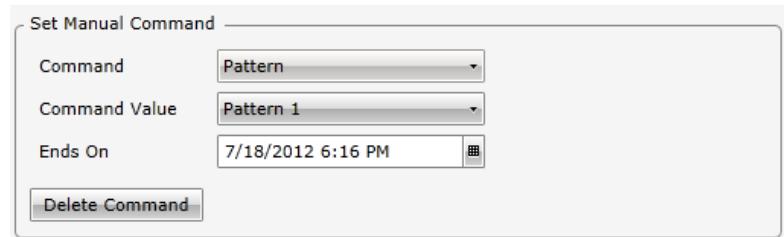
**Figure 111 Manual Control with added command**

To change the **Command Type**, **Command** or **End Date** select the appropriate drop down in the Set Manual Command pane and select a new value.

The command will not be applied until the Manual Control window is closed by pressing **Done**.

#### **14.6.5 Remove a Manual Control Command**

To remove a set manual command, open the Manual Control window from the main menu and select the desired intersection.



**Figure 112 Manual Control with delete command button**

Click the **Delete Command** button to remove the set manual command.

The command will not be removed until the Manual Control window is closed by pressing **Done**.

#### **14.6.6 Update Manual Control Command**

To update a set manual command to a new command value or to change the expiration type open the Manual Control window from the main menu and select the desired intersection.

Set the new command type, command value or expiration time using the drop downs.

Select the **Done** button to save the changes and close the Manual Control window.

## 14.7 Action Set Control

MAXVIEW supports configuring Action Set commands that consist of multiple commands sent to multiple intersections or groups.

Action Sets can be configured to predefine a response for a set of intersections or a corridor that may or may not be in the same group.

### 14.7.1 Add/Remove an Action Set

To add or remove an intersection set open the **Action Set Configuration** window from the “**Signal Control->Action Set Configuration**” from the main menu.

To add a new action set select “**Add**”.

To remove the selected action set select “**Remove**”.

Each action set can contain multiple commands that are set for a specific intersection or group.

To add a new command to the selected Action Set select “**Add Command**”.

To remove the selected command from the selected Action Set select “**Remove Command**”.

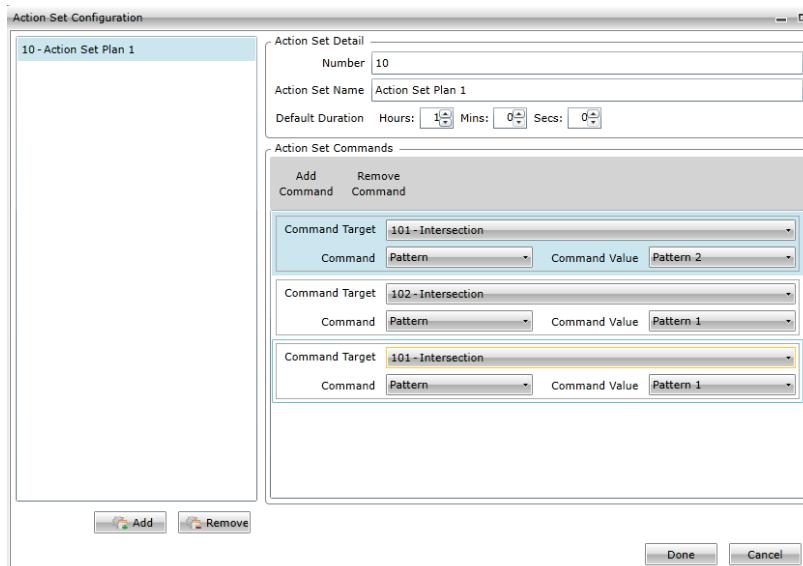


Figure 113 Action Set Configuration Window

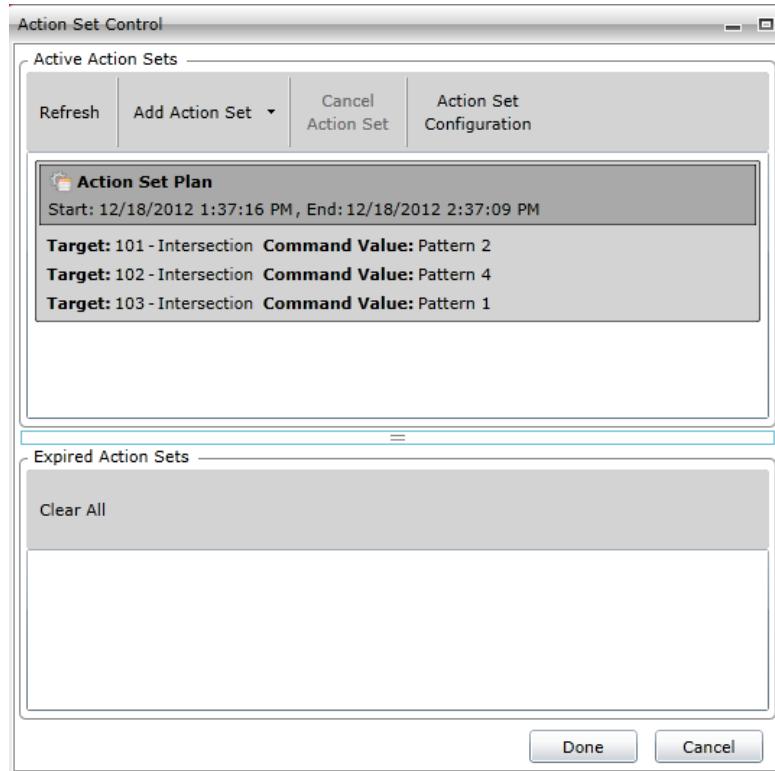
### 14.7.2 Trigger an Action Set

Action Set commands can be set manually in response to an incident and expire after a given time.

To trigger an action set select “**Signal Control->Action Set**” from the main system menu.

The expiration time is set to the configured time by default but can be changed when the action set is applied.

Each active Action Set shows the start time, the expiration time and the set of commands that are contained within the action set.



**Figure 114 Action Set Control Window**

**Figure 115 Action Set Control Showing an Active Action Set with Three Commands**

Once an Action Set is triggered it is displayed as Active in the Action Set Control view and in the Signal Control status view.

An active Action Set can be canceled or edited from the Action Set Control view.

## 14.8 Traffic Responsive Plans

### 14.8.1 Traffic Responsive Overview

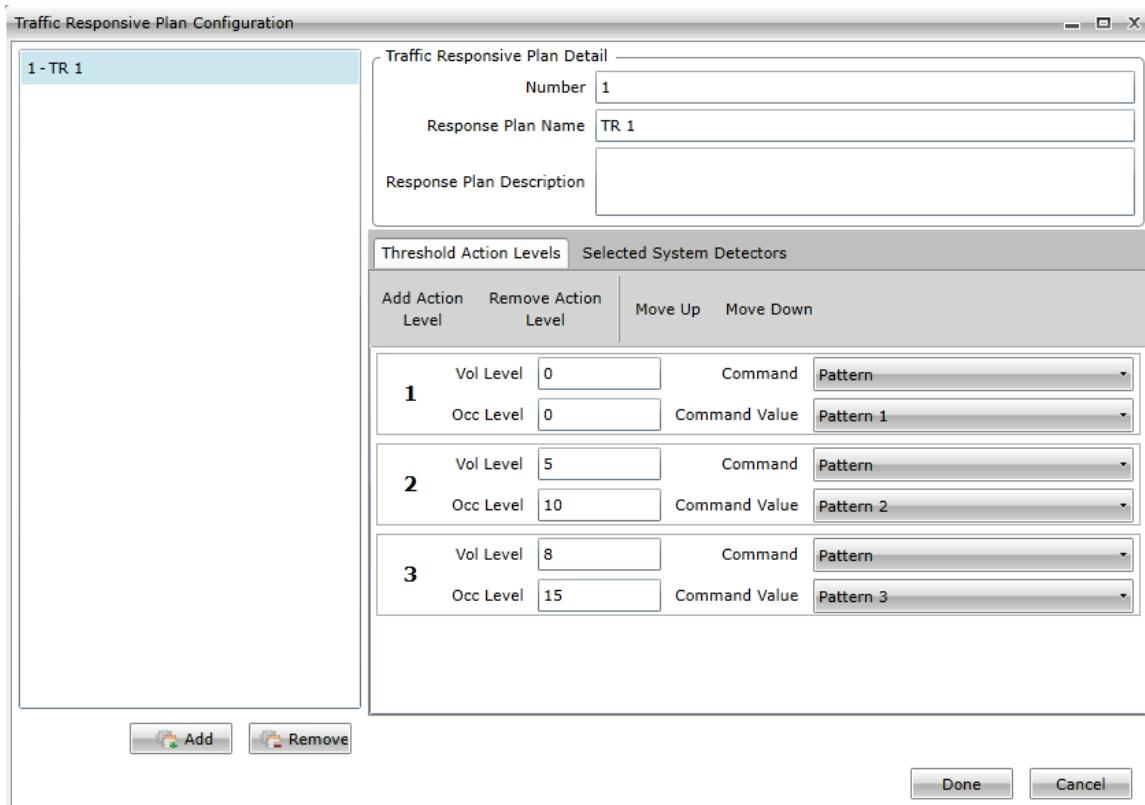
MAXVIEW supports setting a Traffic Responsive command from any source (e.g. Manual Command, TOD Command, Action Set Command).

Each Traffic Responsive command must specify a Traffic Responsive Plan to set as each.

Each Traffic Responsive plan contains a set of Action Threshold Levels and a set of System Detectors that are used to calculate if a given threshold level has been met.

### 14.8.2 Traffic Responsive Action Levels

Each Traffic Responsive plan contains a set of Action Levels that will be set when the configured Volume or Occupancy threshold is met.



Each Traffic Responsive Action Level can be configured to set any command supported within the system. For example a Pattern Command, Preempt Command, etc.

The set threshold will be the highest level which satisfied the Volume or Occupancy constraints set.

The set threshold level is recalculated at the Vol/Occ Detector Polling rate configurable within the System Settings window.

### 14.8.3 Traffic Responsive System Detectors

Each Traffic Responsive plan can be configured with a set of System Detectors that are used to calculate which Action Threshold level should be set.

For each System Detector a Weight Factor can be set.

A weighted average of the Volume and Occupancy of all configured system detectors will be calculated and used to determine the set Action Threshold level.

Traffic Responsive Plan Configuration

1 - TR 1

Traffic Responsive Plan Detail

Number

Response Plan Name

Response Plan Description

Threshold Action Levels   Selected System Detectors

Add System   Remove System  
Detector   Detector

Select the set of system detectors used to calculate the volume and occupancy that is checked against the threshold levels when this plan is active.

System Detector  Intersection Name: Intersection - 103  
Weight Factor  Detector Number: 2

System Detector  Intersection Name: Intersection - 103  
Weight Factor  Detector Number: 1

 Add    Remove

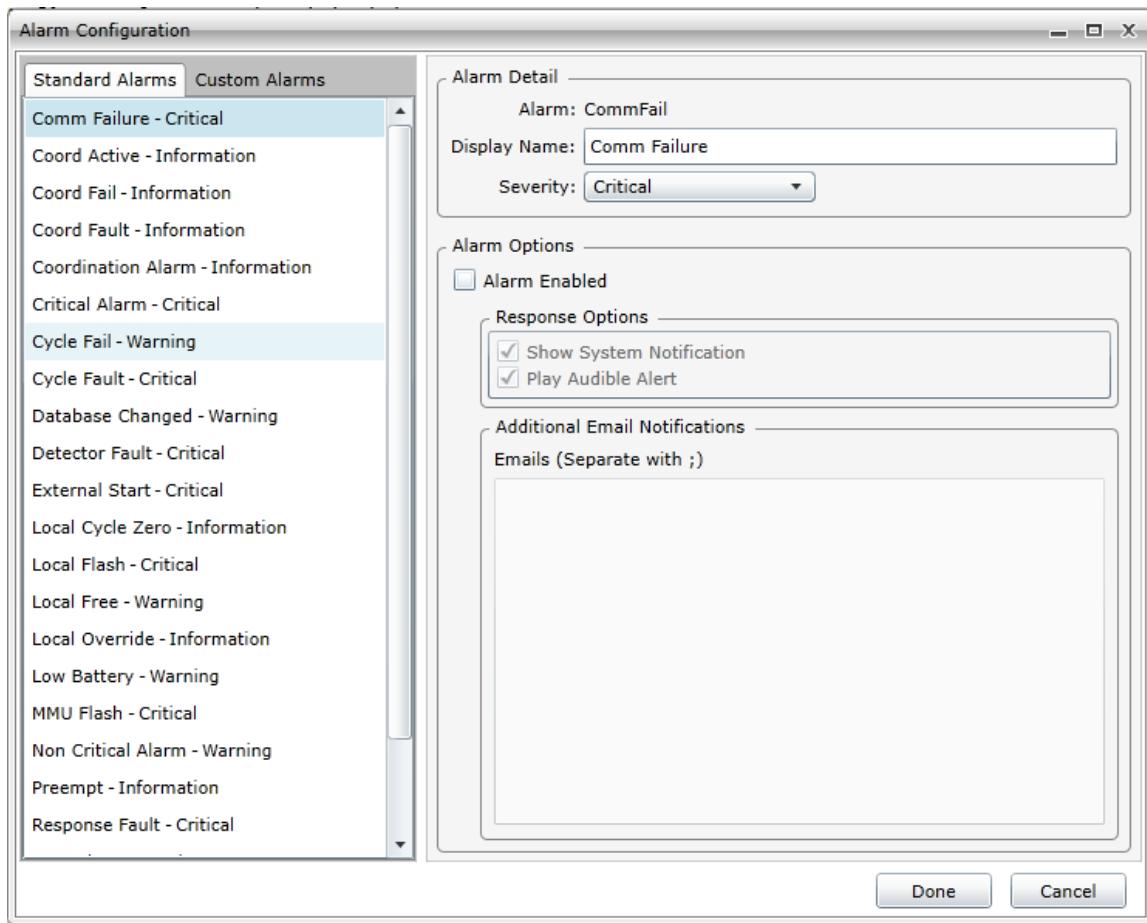
Done   Cancel

# 15 System Alarms

## 15.1 Overview

MAXVIEW supports multiple types of system alarms.

System alarms can be configured to show a system notification, play a sound and also send email notification to users or additional email accounts when they are received and when they clear.



**Figure 116 System Alarm configuration window**

Alarms can also be acknowledged or unacknowledged by a signed in user to signify that the alarm is being worked on.

Each supported alarm in the system is tied to a specific NTCIP alarm. Within MAXVIEW the **Name** and **Severity** of each alarm is then configurable.

Each alarm can also be enabled or disabled.

If an alarm is disabled, the system will not log the alarm when it occurs or clears.

If an alarm is enabled, a specific response can be configured—when enabled an alarm can:

- Show a system toast notification
- Play an audible alert
- Send alert emails to a set of email addresses

**Note:** In order for the system to send alarm notifications emails a valid SMTP server must be configured in the System Settings. See the System Settings section for more information.

## 15.2 Alarm Configuration

### 15.2.1 Overview

The Alarm Configuration window allows a user to configure the set of system alarms that are active in the system and the specific responses the system should take when a new alarm is received.

The Alarm Configuration window can be opened from the Alarms->Alarm Configuration main menu item.

### 15.2.2 Configure Alarm Detail

The **Display Name** of each alarm can be configured in the Alarm Configuration window.



**Figure 117 Alarm Configuration alarm details**

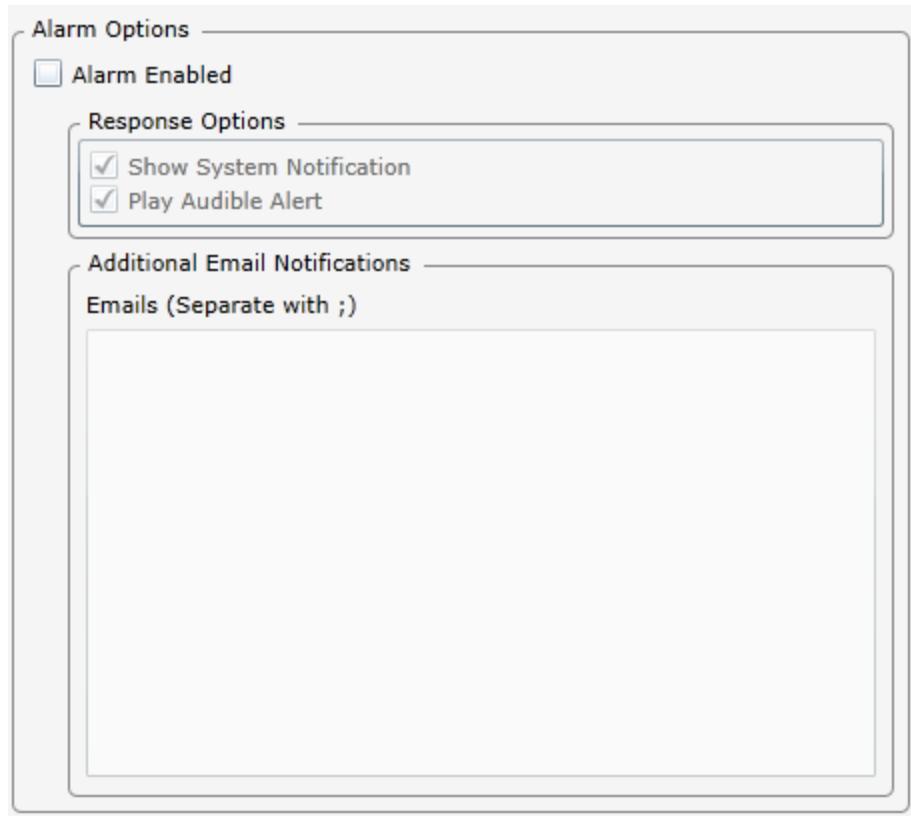
The **Display Name** will be used in all alarm notifications including the system toast and system email notifications.

The **Severity** of each alarm can be configured in the Alarm Configuration window.

The severity of each alarm is used when recording the alarm event in the System Event log. It can be used later to sort and filter the event log.

### 15.2.3 Configure Alarm Options

The alarm options for each alarm in the system can be configured using the Alarm Configuration window.



**Figure 118 Alarm Configuration Alarm Response Options**

Each alarm can be enabled or disabled.

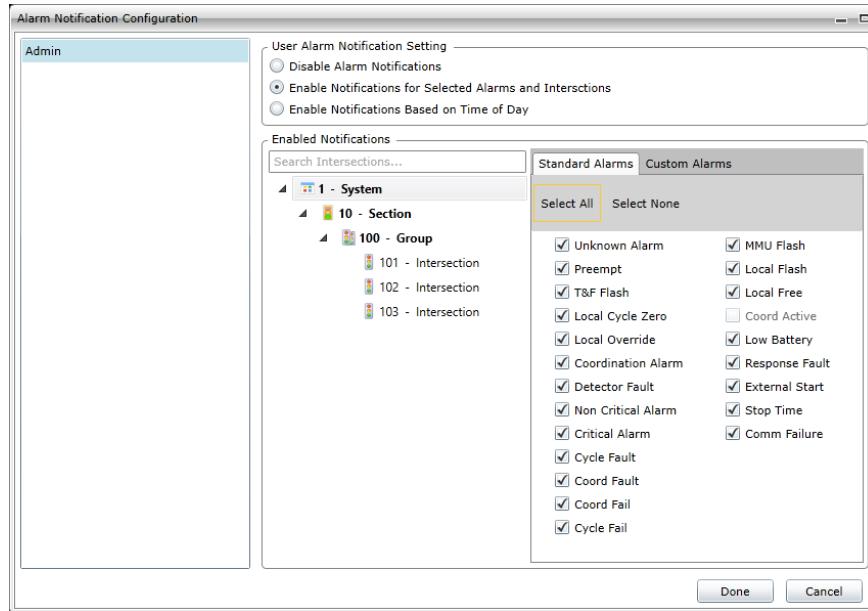
When an alarm is disabled the system will disregard the alarm completely. If the alarm is triggered it will not be logged in the system or trigger any system notifications.

When an alarm is enabled, the response of each alarm can also be configured including the response options and any additional email notifications.

## 15.3 Alarm Notifications

MAXVIEW supports configuring which alarms a user is notified for by intersection or by time of day. Every alarm within the system supports triggering notifications when it is received and when it clears.

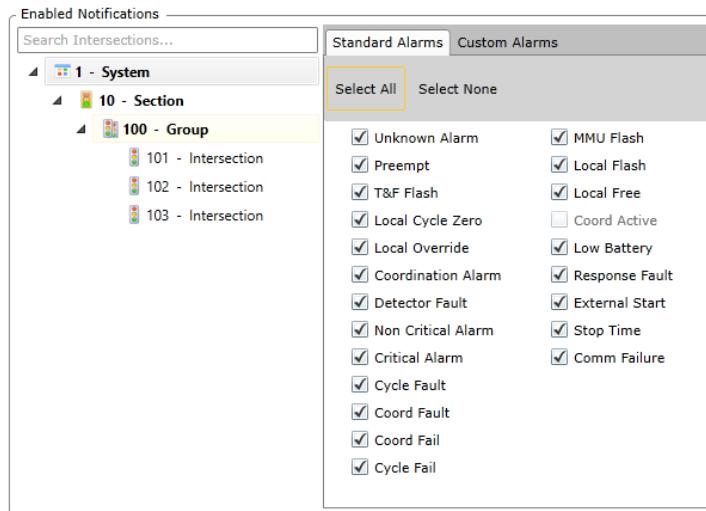
The notification policy for each user can be specified within the Alarm Notification view.



**Figure 119** Alarm Notification Configuration By User

### 15.3.1 Notifications by Alarm and Intersection

The set of intersections and then the set of alarms for each intersection can be configured as triggering notification for a given user. For example, if a user should receive notifications for any alarm in the entire system, the system would be selected and all the alarms would be checked as enabled.



**Figure 120** All Alarms Configured for Notifications

As configured above the user would receive notifications for any alarm received within the system.

### 15.3.2 Notifications by Time of Day

The set of alarm notifications for each user can also be configured using a calendar based time of day scheduler. This allows a user to configure the active alarm recipients based on who is working

at a given time of day. Each scheduled notification allows a user to specific what intersections and what alarms should be received.

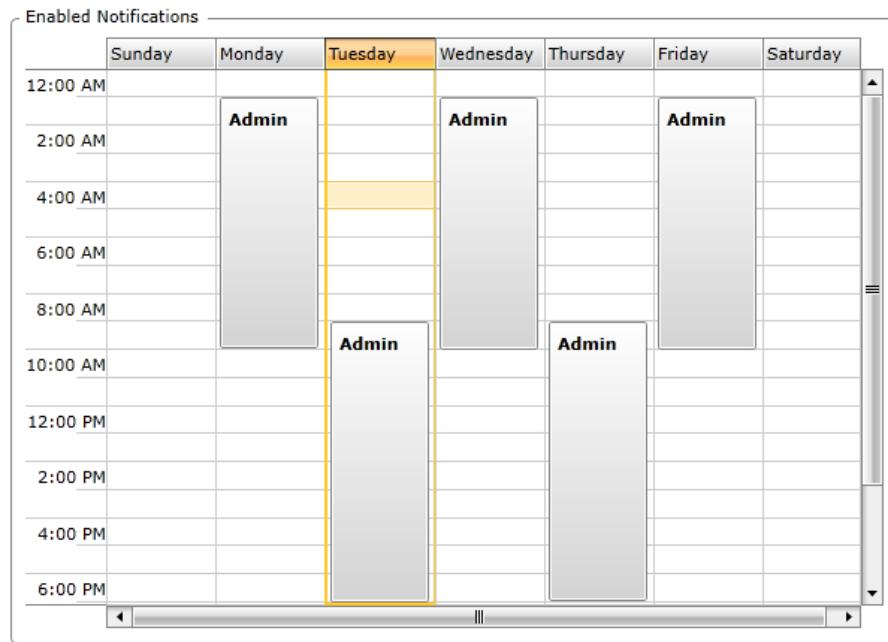


Figure 121 Alarm Notifications Configured by Time of Day

## 15.4 View Active System Alarms

The set of active alarms can be viewed in the Global Alarms window that is accessible from the Alarms->Active Alarms menu item.

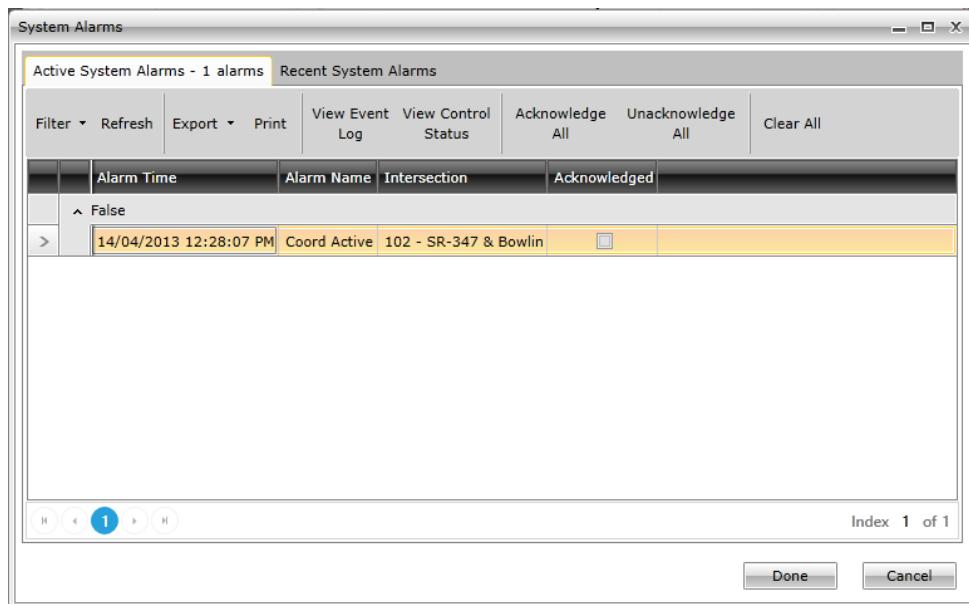


Figure 122 Global Alarms window

The Global Alarms window shows all the active alarms in the system.

It can be filtered by **Alarm Name**, **Intersection**, **Alarm Time** or **Acknowledged** state.

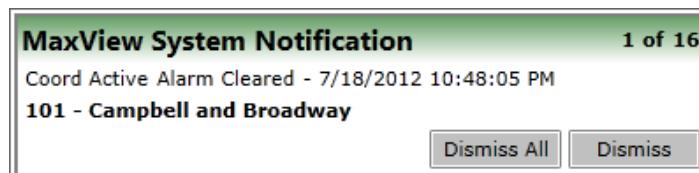
The Global Alarm window is also used to acknowledge/unacknowledged alarms as they are received by the system.

The Global Alarm window also provides quick access to the Event Log and Signal Control Status windows.

When a given alarm is selected pressing the **View Event Log** or **View Control Status** button will launch the respective window filtered to the selected intersection. This allows a user quick access to see what has been happening on a given intersection and why the alarm might have been triggered.

## 15.5 System Alarm Notifications

When an alarm is received or cleared the system can be configured to show a toast notification.



**Figure 123** Alarm toast notification

The alarm toast notification is shown in the bottom right hand side of the main screen.

Only a single toast notification is shown at a time. Subsequent toast notifications will stack up behind the one that is being displayed.

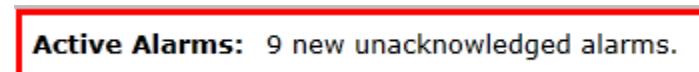
Toast notifications will be automatically dismissed after being shown for 15 seconds.

To dismiss the current notification select **Dismiss**. To dismiss all the pending notifications select **Dismiss All**.

Dismissing a notification does not clear or acknowledge the alarm it only hides the notification.

## 15.6 Acknowledge/Un-acknowledge Alarms

Alarms received in the system must be acknowledged to clear the heads up alarm notification in the main window and on each intersection on the main map.



**Figure 124** Active Alarm notification showing number of unacknowledged alarms

To acknowledge a new alarm click on the **Active Alarms** notification box to open the Global Alarms window.

The Global Alarms window can also be opened from the Alarms->Active Alarms main menu.

	Alarm Name	Intersection	Alarm Time	Acknowledged
^ False				
>	Comm Failure	303 - Alvernon and Broadway	7/19/2012 9:34:28 AM	<input type="checkbox"/>
	Comm Failure	302 - Alvernon and Speedway	7/19/2012 9:34:28 AM	<input type="checkbox"/>
	Comm Failure	102 - Campbell and Speedway	7/19/2012 9:34:28 AM	<input type="checkbox"/>
	Comm Failure	201 - Grant and Country Club	7/19/2012 9:34:28 AM	<input type="checkbox"/>
	Comm Failure	301 - Alvernon and Grant	7/19/2012 9:34:28 AM	<input type="checkbox"/>
	Comm Failure	202 - Speedway and Country Club	7/19/2012 9:34:26 AM	<input type="checkbox"/>
	Comm Failure	101 - Campbell and Broadway	7/19/2012 9:34:26 AM	<input type="checkbox"/>
	Comm Failure	103 - Campbell and Grant	7/19/2012 9:34:26 AM	<input type="checkbox"/>
	Comm Failure	203 - 5th and Country Club	7/19/2012 9:34:26 AM	<input type="checkbox"/>

9 active alarms

(H) < (1) > (H)

Page 1 of 1

[Acknowledge All](#) [Unacknowledge All](#)

**Figure 125 Global Alarms window showing unacknowledged alarms**

To acknowledge/unacknowledge a single alarm check/unchecked the Acknowledged check box for the given alarm.

To acknowledge/unacknowledge all active alarms select the Acknowledge All/Unacknowledge All buttons.

When an alarm is acknowledged or unacknowledged an event log entry will be made including the alarm, user and time.

## 15.7 Main Map Alarm Notifications

### 15.7.1 Intersection Active Alarm Notification

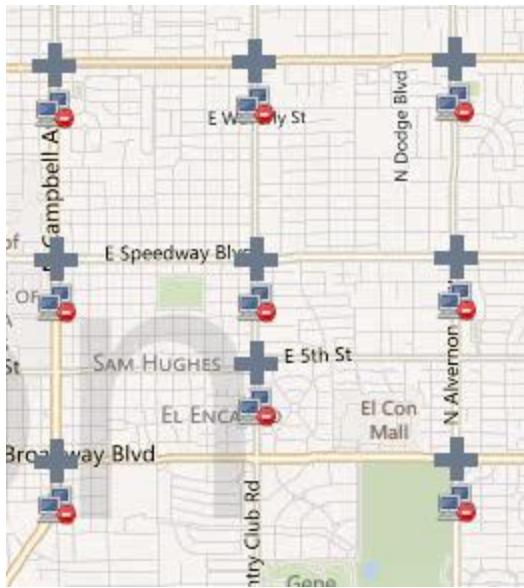
When a new alarm is received the main map icon for the intersection will show a flashing alarm notification icon to indicate there is a new unacknowledged alarm.



**Figure 126 Main map intersections showing active heads up alarm notifications**

The set of alarms that will show main map alarm notification icons on a given intersection can be configured using the Intersections Configuration window, as discussed above in the *Intersection Configuration* section.

The main map alarm flashing notification is cleared when a given alarm is acknowledged, but the active alarm indication will remain.



**Figure 127 Main map icon showing active communication fail alarms**

After an alarm is acknowledged the alarm is still active in the system.

The set of active alarms for a given intersection is shown on mouse over or when the main map is zoomed to show both main and side street status.

The active alarm notification icons will only be cleared when the alarm is cleared or if the alarm is disabled in the system.

### 15.7.2 Configure Intersection Active Alarm Notifications

The set of alarms that trigger heads up main map alarm notifications can be configured for each intersection in the Intersections Configuration window using the **Alarm Status** tab.

Location and Detailed View	Alarm Status	Videos
Select the set of alarms to show on the main map when they are active on this intersection.		
<b>Enabled Map Status Alarms</b> <ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> Unknown Alarm</li> <li><input checked="" type="checkbox"/> Preempt</li> <li><input checked="" type="checkbox"/> T&amp;F Flash</li> <li><input checked="" type="checkbox"/> Local Cycle Zero</li> <li><input checked="" type="checkbox"/> Local Override</li> <li><input checked="" type="checkbox"/> Coordination Alarm</li> <li><input checked="" type="checkbox"/> Detector Fault</li> <li><input checked="" type="checkbox"/> Non Critical Alarm</li> <li><input checked="" type="checkbox"/> Critical Alarm</li> <li><input checked="" type="checkbox"/> Cycle Fault</li> <li><input checked="" type="checkbox"/> Coord Fault</li> <li><input checked="" type="checkbox"/> Coord Fail</li> <li><input checked="" type="checkbox"/> Cycle Fail</li> <li><input checked="" type="checkbox"/> MMU Flash</li> <li><input checked="" type="checkbox"/> Local Flash</li> <li><input checked="" type="checkbox"/> Local Free</li> <li><input checked="" type="checkbox"/> Coord Active</li> <li><input checked="" type="checkbox"/> Low Battery</li> <li><input checked="" type="checkbox"/> Response Fault</li> <li><input checked="" type="checkbox"/> External Start</li> <li><input checked="" type="checkbox"/> Stop Time</li> <li><input checked="" type="checkbox"/> Comm Failure</li> </ul>		

**Figure 128 Intersections Configuration Alarm Status tab**

To disable a given alarm from showing a heads up notification on a given intersection uncheck the alarm name in the **Alarm Status** tab.

When an alarm name is unchecked in the Alarm Status tab, the alarm will still be received and logged by the system but it will not be shown in the main map or in the intersection detailed status for the given intersection.

# 16 Signal Monitoring

## 16.1 Historical Volume/Occupancy

### 16.1.1 Overview

MAXVIEW supports logging historical volume and occupancy data at a configurable interval for each detector on each intersection within the system.

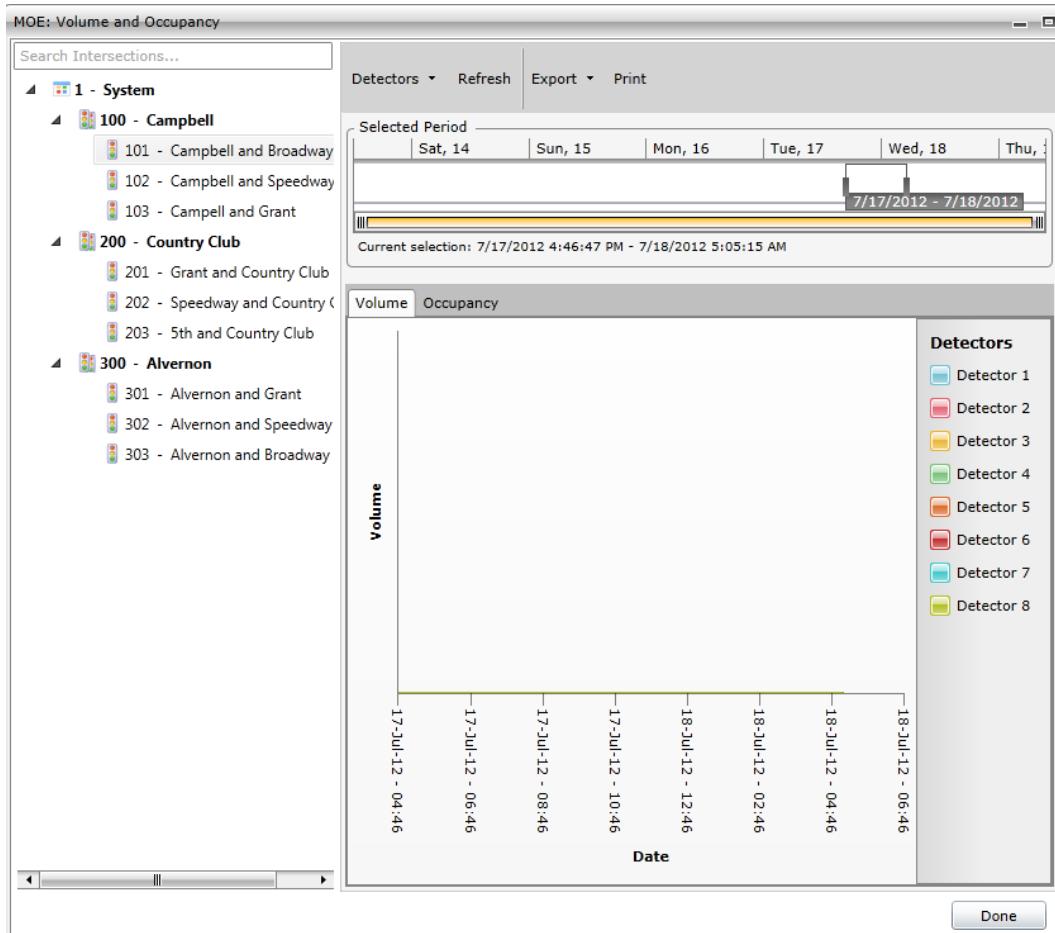


Figure 129 Volume and Occupancy window

The historical data can then be viewed over a given time period for a set of detectors using the Volume/Occupancy window that is accessible from the Signal Monitoring->Historical Vol/Occ menu item.

### 16.1.2 Historical Volume/Occupancy Device Tree

The device tree within the Volume and Occupancy window allows a user to select a given intersection to view.

Data cannot be viewed for a group or subgroup and is only available at the intersection level.

### 16.1.3 Select a Time Range

The time range for which the historical volume and occupancy data is plotted can be easily changed using the **Selected Period** time slider.

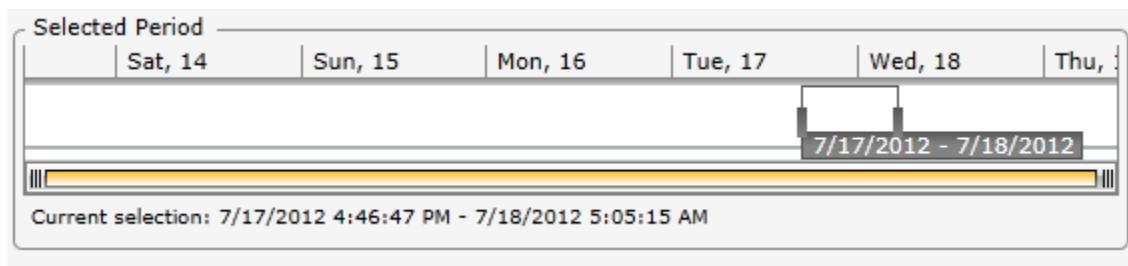


Figure 130 Volume and Occupancy Selected Period time slider

The time slider has two separate dials for changing the selected period.

The yellow zoom dial allows a user to change the zoom level of the time slider—the two figures below show a zoomed in and zoomed out view.

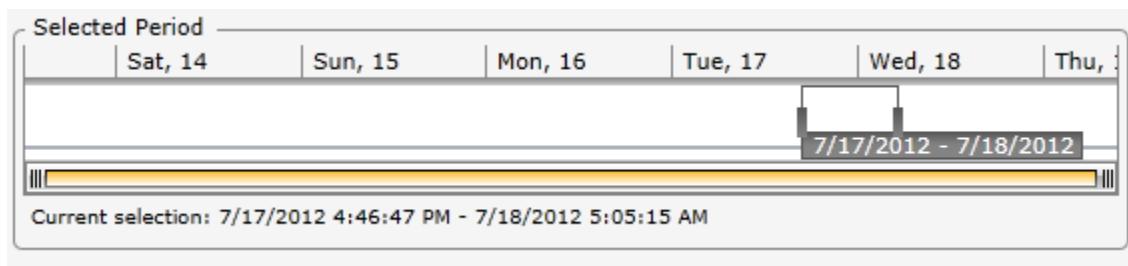


Figure 131 Volume and Occupancy zoomed out time slider

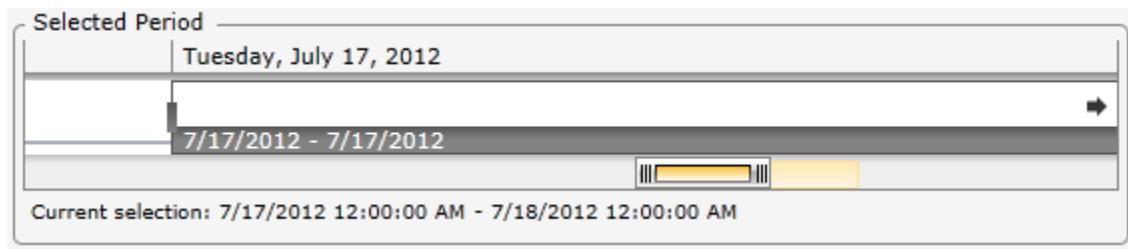


Figure 132 Volume and Occupancy zoomed in time slider

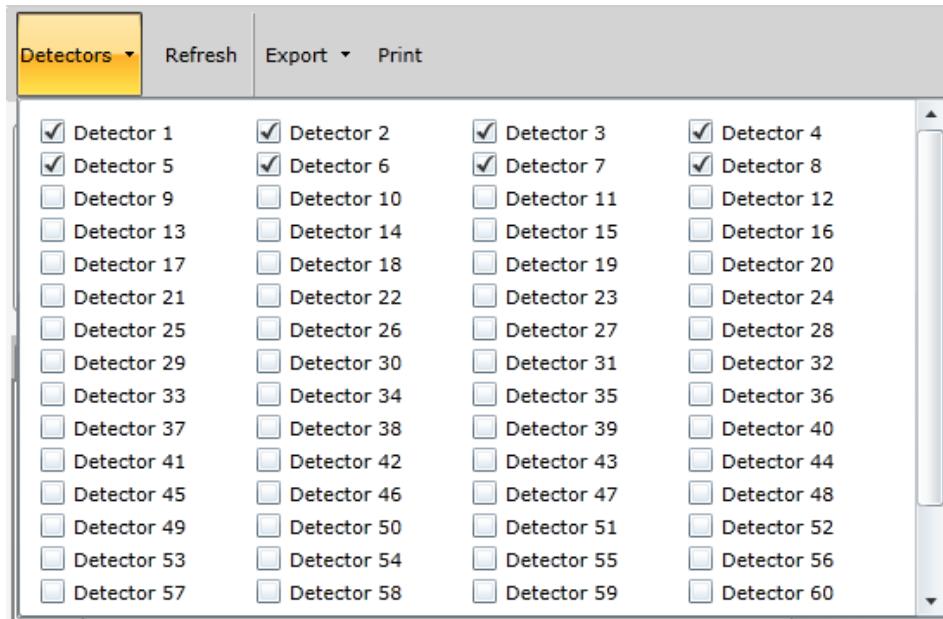
To zoom the time slider out expand the yellow zoom dial to the full width of the time slider. To zoom in, decrease the width of the yellow zoom dial.

The selected date and time being graphed is changed using the gray selected time dial.

To change the date and time click on a new date slot in the time slider or drag and drop the start or end of the gray selected time dial.

### 16.1.4 Filter Detectors

The set of plotted detectors can be changed using the **Detector** drop down menu.



**Figure 133 Volume and Occupancy detector filter**

To change the set of plotted detectors check or uncheck the detector name.

Up to 10 detectors can be plotted at the same time.

### 16.1.5 Refresh Volume/Occupancy Data

The volume and occupancy plotted in the Volume and Occupancy window is not updated in real time.

To refresh the set of data that is being plotted click the **Refresh** button.

#### 16.1.5.1 Export Volume and Occupancy Data

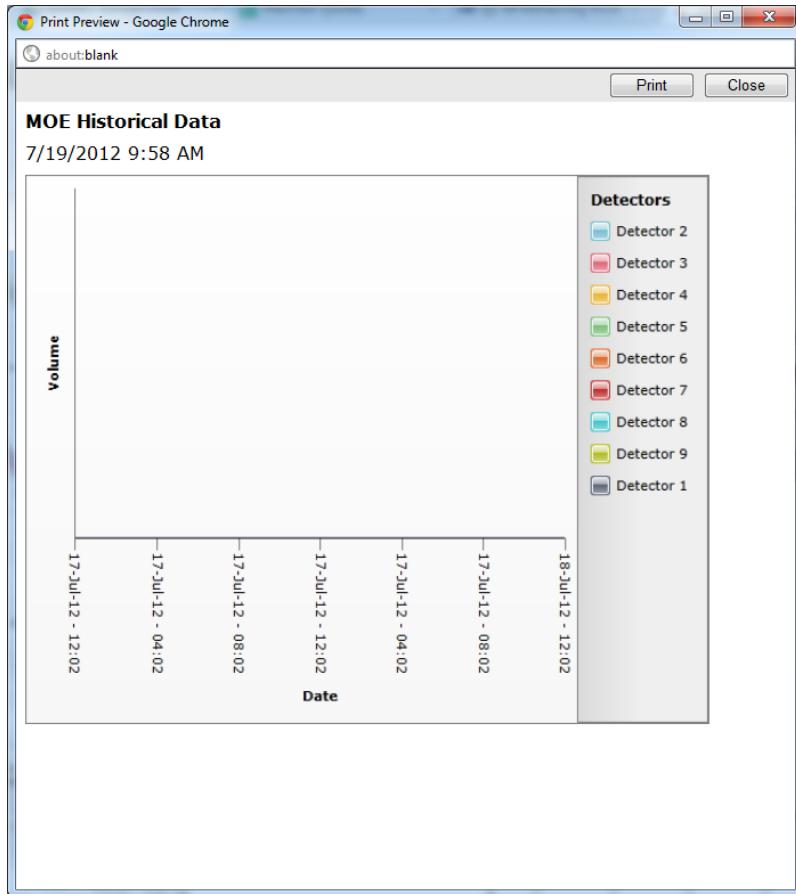
The MOE: Volume and Occupancy window supports exporting a historical volume or occupancy plot to a PDF.

To export the volume and occupancy data select the **Export** menu, enter a filename and select Save.

When the export is complete a notification will be shown.

#### 16.1.5.2 Print Volume and Occupancy

The MOE: Volume and Occupancy window supports directly printing a historical volume or occupancy plot.



**Figure 134 Time of Day Print Preview**

To print the current historical volume or occupancy plot select **Print**.

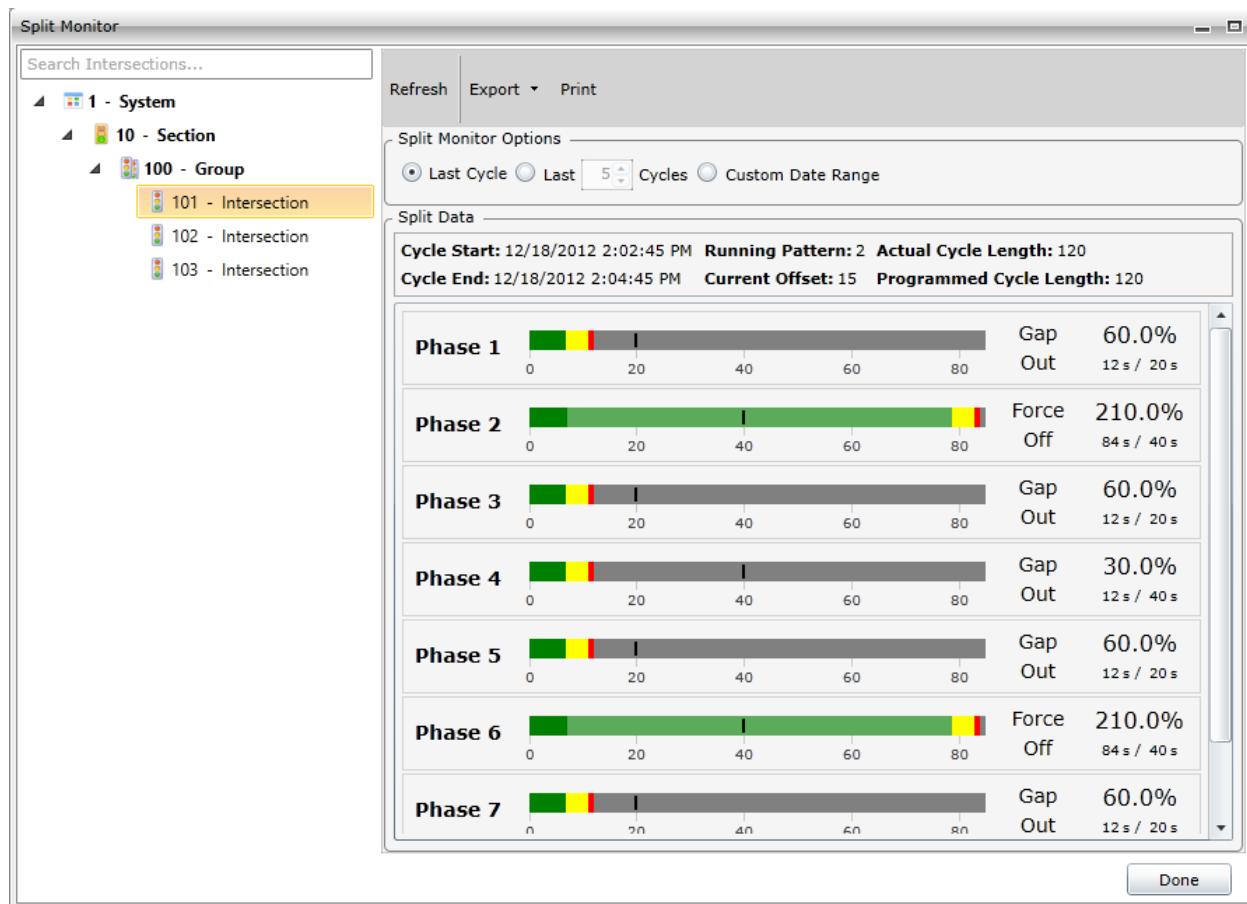
## 16.2 Intersection Split Monitor

MAXVIEW supports an advanced real time Split Monitor view that allows a user to see actual and programmed split data by phase for the last cycle, the last X cycles or for a given time window.

Split data is shown for each split in the selected time range along with the average values.

The split monitor can be viewed for the following split ranges:

- Last Cycle – View split data from the last recorded cycle.
- Last X Cycles – View split data and split averages from the last X recorded cycles.
- Custom Date Range – View split data and split averages from a custom date range.



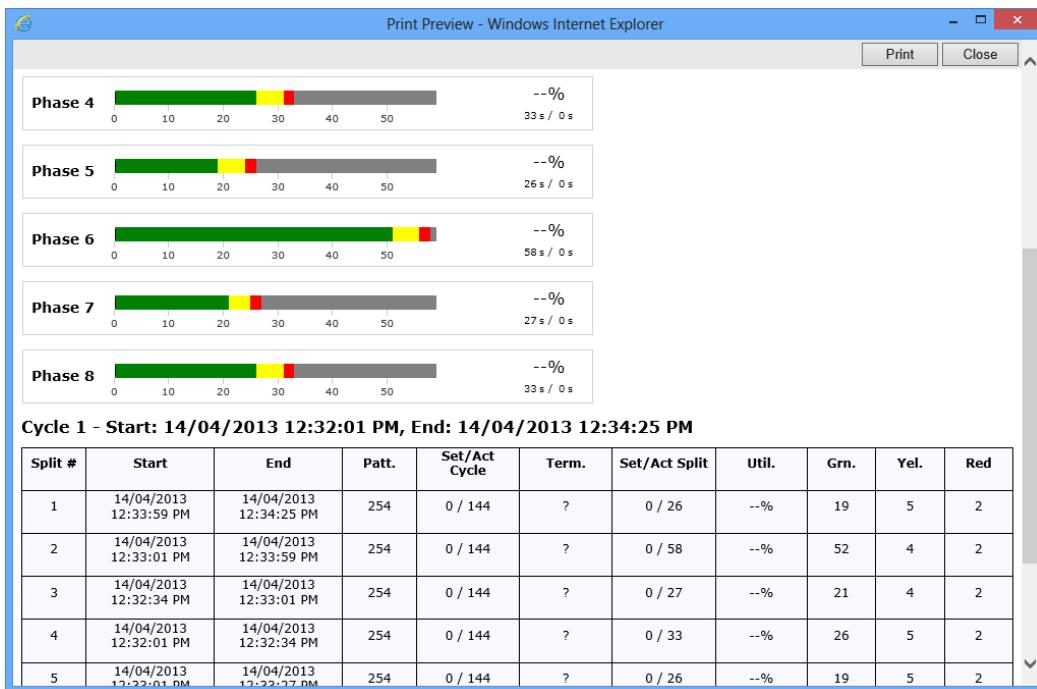
**Figure 135 Split Monitor for the last Cycle**

Each split shown includes the set pattern, the set offset, the set cycle length, the actual cycle length, the set split values and the actual split values.

The split monitor works if the controller is running in coordination or in free.

### 16.2.1 Print Split Monitor Data

To print the split data for the selected view select "Print".



The current split monitor chart and raw split data for the current view will be shown in a print preview window for easy printing.

### 16.2.2 Export Split Monitor Data

To export the split data for the current view select “Export->Word/Excel/PDF”.

The raw split data for each cycle will be exported

## 16.3 Intersection Event Reports

MAXVIEW automatically logs a large set of operational parameters such as pattern changes, status changes, split changes and detector volume and occupancy at a configurable interval.

All data is logged directly to the system database and is accessible from the detailed Intersection Event Viewer where advanced filters can be applied to generate historical reports.

The following is the full set of events that can be configured to be monitored and retained for a specified interval by the system. *Note: The set of recorded event meets the Indiana Department of Transportation NTCIP – Event Data Recorder spec (Item No. 947-XX).*

Event Code	Event Descriptor	Parameter	Description
<b>Active Phase Events:</b>			
0	Phase On	Phase # (1-16)	Set when NEMA Phase On becomes active, either upon start of green or walk interval, whichever occurs first.
1	Phase Begin Green	Phase # (1-16)	Set when either solid or flashing green indication has begun. Do not set repeatedly during flashing operation.

2	Phase Check	Phase # (1-16)	Set when a conflicting call is registered against the active phase. (Marks beginning of MAX timing)
3	Phase Min Complete	Phase # (1-16)	Set when phase min timer expires.
4	Phase Gap Out	Phase # (1-16)	Set when phase gaps out, but may not necessarily occur upon phase termination. Event may be set multiple times within a single green under simultaneous gap out.
5	Phase Max Out	Phase # (1-16)	Set when phase MAX timer expires, but may not necessarily occur upon phase termination due to last car passage or other features.
6	Phase Force Off	Phase # (1-16)	Set when phase force off is applied to the active green phase.
7	Phase Green Termination	Phase # (1-16)	Set when phase green indications are terminated into either yellow clearance or permissive (FYA) movement.
8	Phase Begin Yellow Clearance		Set when phase yellow indication becomes active and clearance timer begins.
9	Phase End Yellow Clearance		Set when phase yellow indication become inactive.
10	Phase Begin Red Clearance	Phase # (1-16)	Set only if phase red clearance is served. Set when red clearance timing begins.
11	Phase End Red Clearance	Phase # (1-16)	Set only if phase red clearance is served. Set when red clearance timing concludes. This may not necessarily coincide with completion of the phase, especially during clearance of trailing overlaps, red revert timing, red rest, or delay for other ring terminations.
12	Phase Inactive	Phase # (1-16)	Set when the phase is no longer active within the ring, including completion of any trailing overlaps or end of barrier delays for adjacent ring termination.
<b>Active Pedestrian Events:</b>			
21	Pedestrian Begin Walk	Phase # (1-16)	Set when walk indication becomes active.
22	Pedestrian Begin Clearance	Phase # (1-16)	Set when flashing don't walk indication becomes active.
23	Pedestrian Begin Solid Don't Walk	Phase # (1-16)	Set when don't walk indication becomes solid (non flashing) from either termination of ped clearance, or head illumination after a ped dark interval.
24	Pedestrian Dark	Phase # (1-16)	Set when the pedestrian outputs are set off.
<b>Barrier / Ring Events:</b>			
31	Barrier Termination	Barrier #(1-8)	Set when all active phases become inactive in the ring and cross barrier phases are next to be served.
32	FYA – Begin Permissive	FYA # (1-4)	Set when flashing yellow arrow becomes active.
33	FYA – End Permissive	FYA # (1-4)	Set when flashing yellow arrow becomes inactive through either clearance of the permissive movement or transition into a protected movement.
<b>Phase Control Events:</b>			
41	Phase Hold Active	Phase # (1-16)	Set when phase hold is applied by the coordinator, preemptor, or external logic. Phase does not necessarily need to be actively timing for this event to occur.

42	Phase Hold Released	Phase # (1-16)	Set when phase hold is released by the coordinator, preemptor, or external logic. Phase does not necessarily need to be actively timing for this event to occur.
43	Phase Registered Call	Phase # (1-16)	Call to service on a phase is registered by vehicular demand. This event will not be set if a recall exists on the phase.
44	Phase Call Dropped	Phase # (1-16)	Call to service on a phase is cleared by either service of the phase or removal of call.
45	Pedestrian Registered Call	Phase # (1-16)	Call to service on a phase is registered by pedestrian demand. This event will not be set if a recall exists on the phase.
46	Phase Omit On	Phase # (1-16)	Set when phase omit is applied by the coordinator, preemptor, or other dynamic sources. Phase does not necessarily need to be actively timing for this event to occur. This event is not set when phase is removed from the active sequence or other configuration-level change has occurred.
47	Phase Omit Off	Phase # (1-16)	Set when phase omit is released by the coordinator, preemptor, or other dynamic sources. Phase does not necessarily need to be actively timing for this event to occur. This event is not set when phase is added from the active sequence or other configuration-level change has occurred.
48	Pedestrian Omit On	Phase # (1-16)	Set when ped omit is applied by the coordinator, preemptor, or other dynamic sources. Phase does not necessarily need to be actively timing for this event to occur. This event is not set when phase is removed from the active sequence or other configuration-level change has occurred.
49	Pedestrian Omit Off	Phase # (1-16)	Set when ped omit is released by the coordinator, preemptor, or other dynamic sources. Phase does not necessarily need to be actively timing for this event to occur. This event is not set when phase is added from the active sequence or other configuration-level change has occurred.
<b>Overlap Events:</b>			
61	Overlap Begin Green	Overlap # (as number A=1 B=2, etc.)	Set when overlap becomes green. Do not set repeatedly when overlap is flashing green. Note that overlap colors are consistent to the GYR intervals resultant from the controller programming and may not be indicative of actual signal head colors.
62	Overlap Begin Trailing Green (Extension)	Overlap # (as number A=1 B=2, etc.)	Set when overlap is green and extension timers begin timing.
63	Overlap Begin Yellow	Overlap # (as number A=1 B=2, etc.)	Set when overlap is in a yellow clearance state. Note that overlaps which drive yellow field indications during a dwell state may be reported as green or inactive. (common to mid-block signals)
64	Overlap Begin Red Clearance	Overlap # (as number A=1 B=2, etc.)	Set when overlap begins timing red clearance intervals.

65	Overlap Off (Inactive with red indication)	Overlap # (as number A=1 B=2, etc.)	Set when overlap has completed all timing, allowing any conflicting phase next to begin service.
66	Overlap Dark	Overlap # (as number A=1 B=2, etc.)	Set when overlap head is set dark (no active outputs). The end of this interval shall be recorded by either an overlap off state or other active overlap state.
67	Pedestrian Overlap Begin Walk	Overlap # (as number A=1 B=2, etc.)	Set when walk indication becomes active.
68	Pedestrian Overlap Begin Clearance	Overlap # (as number A=1 B=2, etc.)	Set when flashing don't walk indication becomes active.
69	Pedestrian Overlap Begin Solid Don't Walk	Overlap # (as number A=1 B=2, etc.)	Set when don't walk indication becomes solid (non flashing) from either termination of ped clearance, or head illumination after a ped dark interval.
70	Pedestrian Overlap Dark	Overlap # (as number A=1 B=2, etc.)	Set when the pedestrian outputs are set off.
<b>Detector Events:</b>			
81	Detector Off	DET Channel # (1-64)	Detector on and off events shall be triggered post any detector delay/extension processing.
82	Detector On	DET Channel # (1-64)	
83	Detector Restored	DET Channel # (1-64)	Detector restored to non-failed state by either manual restoration or re-enabling via continued diagnostics.
84	Detector Fault- Other	DET Channel # (1-64)	Detector failure logged upon local controller diagnostics only (not system diagnostics).
85	Detector Fault- Watchdog Fault	DET Channel # (1-64)	Detector failure logged upon local controller diagnostics only (not system diagnostics).
86	Detector Fault- Open Loop Fault	DET Channel # (1-64)	Detector failure logged upon local controller diagnostics only (not system diagnostics).
87	Detector Fault- Shorted Loop Fault	DET Channel # (1-64)	Detector failure logged upon local controller diagnostics only (not system diagnostics).
88	Detector Fault- Excessive Change Fault	DET Channel # (1-64)	Detector failure logged upon local controller diagnostics only (not system diagnostics).
89	PedDetector Off	DET Channel # (1-16)	Ped detector events shall be triggered post any detector delay/extension processing and may be set multiple times for a single pedestrian call. (with future intent to eventually support ped presence and volume)
90	PedDetector On	DET Channel # (1-16)	
91	Pedestrian Detector Failed	Ped Det # (1-16)	Detector failure logged upon local controller diagnostics only (not system diagnostics).
92	Pedestrian Detector Restored	Ped Det # (1-16)	Detector failure logged upon local controller diagnostics only (not system diagnostics).
<b>Preemption Events:</b>			
101	Preempt Advance Warning Input	Preempt # (1-10)	Set when preemption advance warning input is activated.

102	Preempt (Call) Input On	Preempt # (1-10)	Set when preemption input is activated. (prior to preemption delay timing) May be set multiple times if input is intermittent during preemption service.
103	Preempt Gate Down Input Received	Preempt # (1-10)	Set when gate down input is received by the controller (if available).
104	Preempt (Call) Input Off	Preempt # (1-10)	Set when preemption input is de-activated. May be set multiple times if input is intermittent preemption service.
105	Preempt Entry Started	Preempt # (1-10)	Set when preemption delay expires and controller begins transition timing (force off) to serve preemption.
106	Preemption Begin Track Clearance	Preempt # (1-10)	Set when track clearance phases are green and track clearance timing begins.
107	Preemption Begin Dwell Service	Preempt # (1-10)	Set when preemption dwell or limited service begins or minimum dwell timer is reset due to call drop and reapplication.
108	Preemption Active On	Link	Set when linked preemptor input is applied from active preemptor.
109	Preemption Active Off	Link	Set when linked preemptor input is dropped from active preemptor.
110	Preemption Max Presence Exceeded	Preempt # (1-10)	Set when preemption max presence timer is exceeded and preemption input is released from service.
111	Preemption Begin Exit Interval	Preempt # (1-10)	Set when preemption exit interval phases are green and exit timing begins.
112	TSP Check In	TSP #(1-10)	Set when request for priority is received.
113	TSP Adjustment to Early Green	TSP #(1-10)	Set when controller is adjusting active cycle to accommodate early service to TSP phases.
114	TSP Adjustment to Extend Green	TSP #(1-10)	Set when controller is adjusting active cycle to accommodate extended service to TSP phases.
115	TSP Check Out	TSP #(1-10)	Set when request for priority is retracted.

**Coordination Events:**

131	Coord Pattern Change	Pattern # (0-255)	Coordination pattern that is actively running in the controller. (Highest priority of TOD, System or manual command). This event will not be reapplied if coordination is temporarily suspended for preemption or other external control.
132	Cycle Length Change	Seconds (0-255)	This event shall be populated upon selection of a new coordination pattern change that selects a new cycle length. Cycle lengths in excess of 255 shall record this event with a 255 parameter, requiring controller database lookup for this actual value.
133	Offset Length Change	Seconds (0-255)	This event shall be populated upon selection of a new coordination pattern change that selects a new cycle length. Offsets in excess of 255 shall record this event with a 255 parameter, requiring controller database lookup for this actual value.
134	Split 1 Change	New Split Time in Seconds (0-255)	Split change events shall be populated upon selection of a new coordination pattern as well as during a split change to an active pattern via ACS Lite or other adaptive control system.

135	Split 2 Change	New Split Time in Seconds (0-255)	
136	Split 3 Change	New Split Time in Seconds (0-255)	
137	Split 4 Change	New Split Time in Seconds (0-255)	
138	Split 5 Change	New Split Time in Seconds (0-255)	
139	Split 6 Change	New Split Time in Seconds (0-255)	
140	Split 7 Change	New Split Time in Seconds (0-255)	
141	Split 8 Change	New Split Time in Seconds (0-255)	
142	Split 9 Change	New Split Time in Seconds (0-255)	
143	Split 10 Change	New Split Time in Seconds (0-255)	
144	Split 11 Change	New Split Time in Seconds (0-255)	
145	Split 12 Change	New Split Time in Seconds (0-255)	
146	Split 13 Change	New Split Time in Seconds (0-255)	
147	Split 14 Change	New Split Time in Seconds (0-255)	
148	Split 15 Change	New Split Time in Seconds (0-255)	
149	Split 16 Change	New Split Time in Seconds (0-255)	
150	Coord cycle state change	Parameter (0-6) defined as: 0 = Free 1 = In Step 2 = Transition - Add 3 = Transition - Subtract 4 = Transition - Dwell 5 = Local Zero 6 = Begin Pickup	
151	Coordinated phase yield point	Phase # (1-16)	

### 16.3.1 Local Controller Driven Events

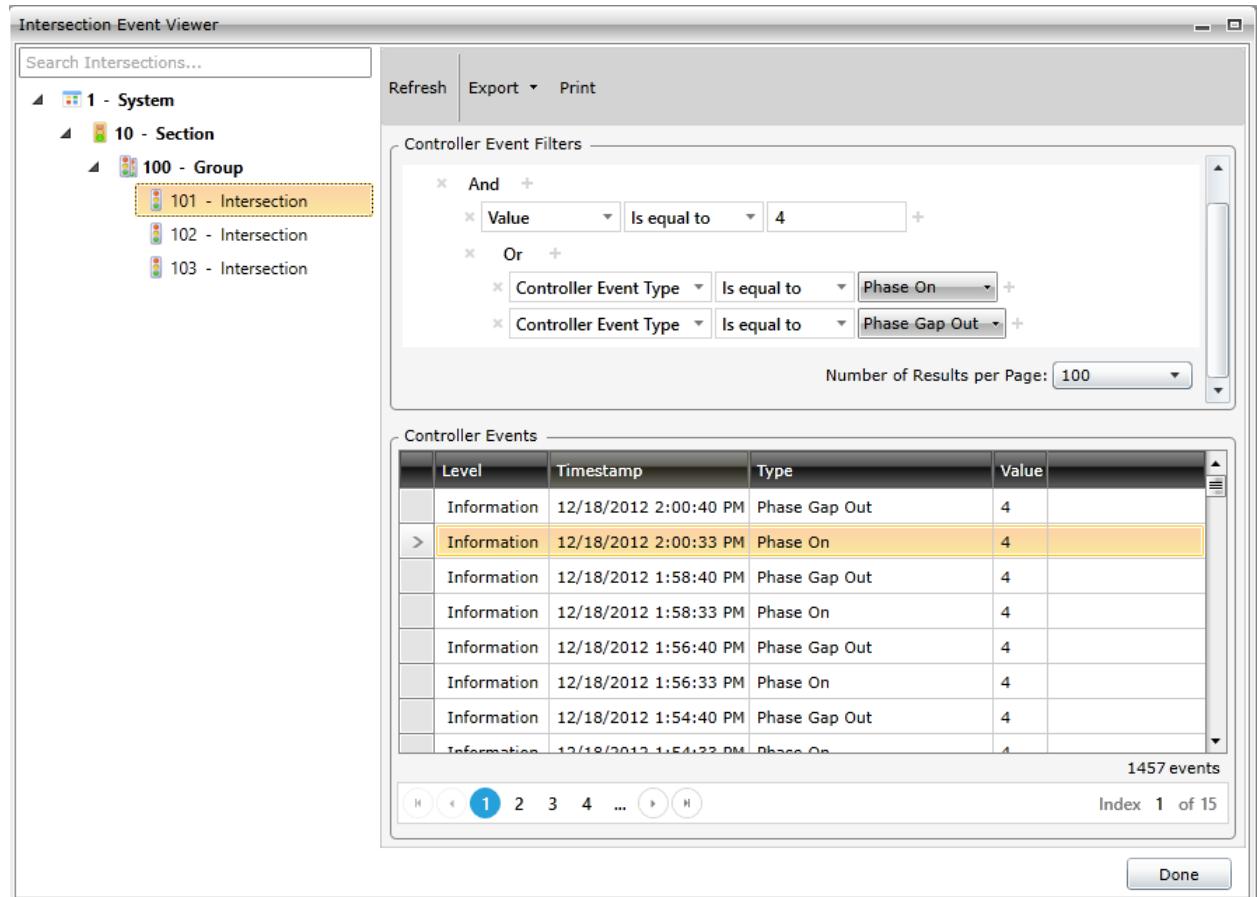
When MAXVIEW is connected to a controller running Intelight's MaxTime software, the resolution of recorded controller events is greatly improved as the controller is responsible for logging all data locally and then passes it on to MAXVIEW.

As part of the local event recorder, MaxTime is capable of logging events at a 1/10<sup>th</sup> of a second resolution and storing them in an on device SQL database. This allows MAXVIEW to query for any new events every couple of minutes and only send up the changes, so that even if the communication channel is not reliable no events are lost.

### 16.3.2 Custom Event Viewer

MAXVIEW provides a robust view into the set of events for a given intersection through the Intersection Event Viewer.

To open the Intersection Event Viewer select “**Signal Monitoring->Event Reports->Custom Event Viewer**” from the main menu



**Figure 136 Intersection View with Several Filters Set**

The Intersection Event Viewer allows a user to view, filter, print and export a set of events for a given controller based on any desired criteria.

The viewer supports setting complex Boolean based logic filters with multiple groupings to allow a user to drill down into the specific set of data.

### 16.3.3 Intersection Event Reports

In addition to the grid view based event viewer described above, MAXVIEW supports a robust timeline based event report view where any given sets of events can be plotted as a scatter, line, step-line or bar graph in time.

The timeline based event viewer allows a user to view any given set of events across months, days, weeks or hours—with the data automatically sampled as needed by the service.

MAXVIEW provides quick access to the following timeline based reports:

- Coordination Report
- Actual/Set Splits Report
- Phase Termination Report
- Manual Control Report
- Preempt Report
- TSP Report
- Detector Failure Report
- Power Failure Report
- Time Drift Report

To view a given event report select “**Signal Control->Event Reports**” from the main system menu.

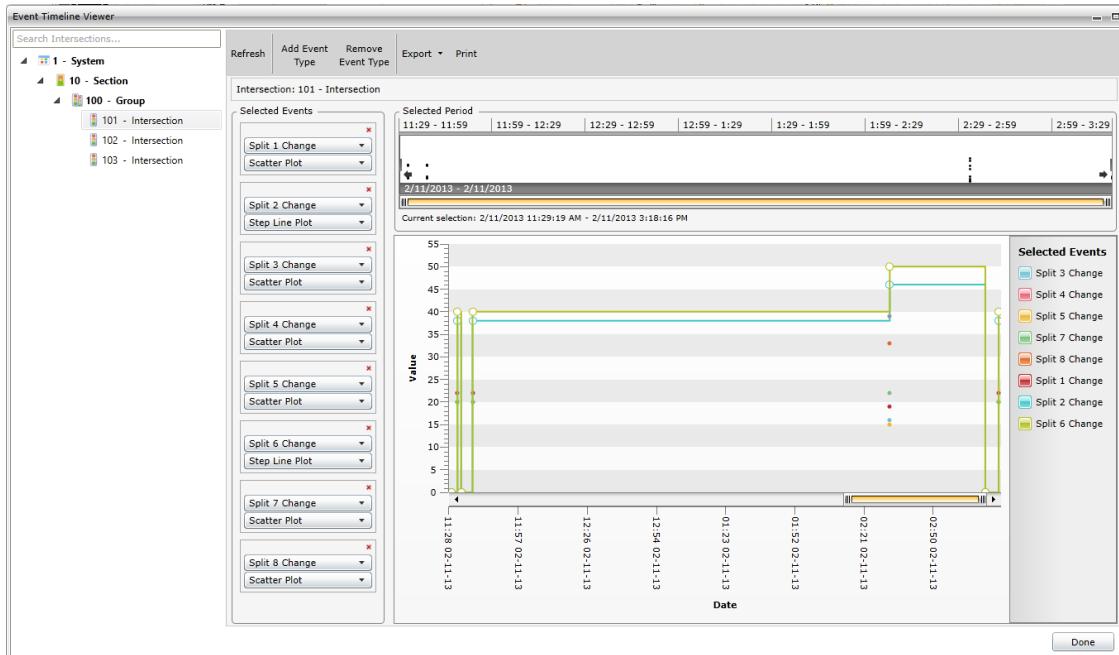
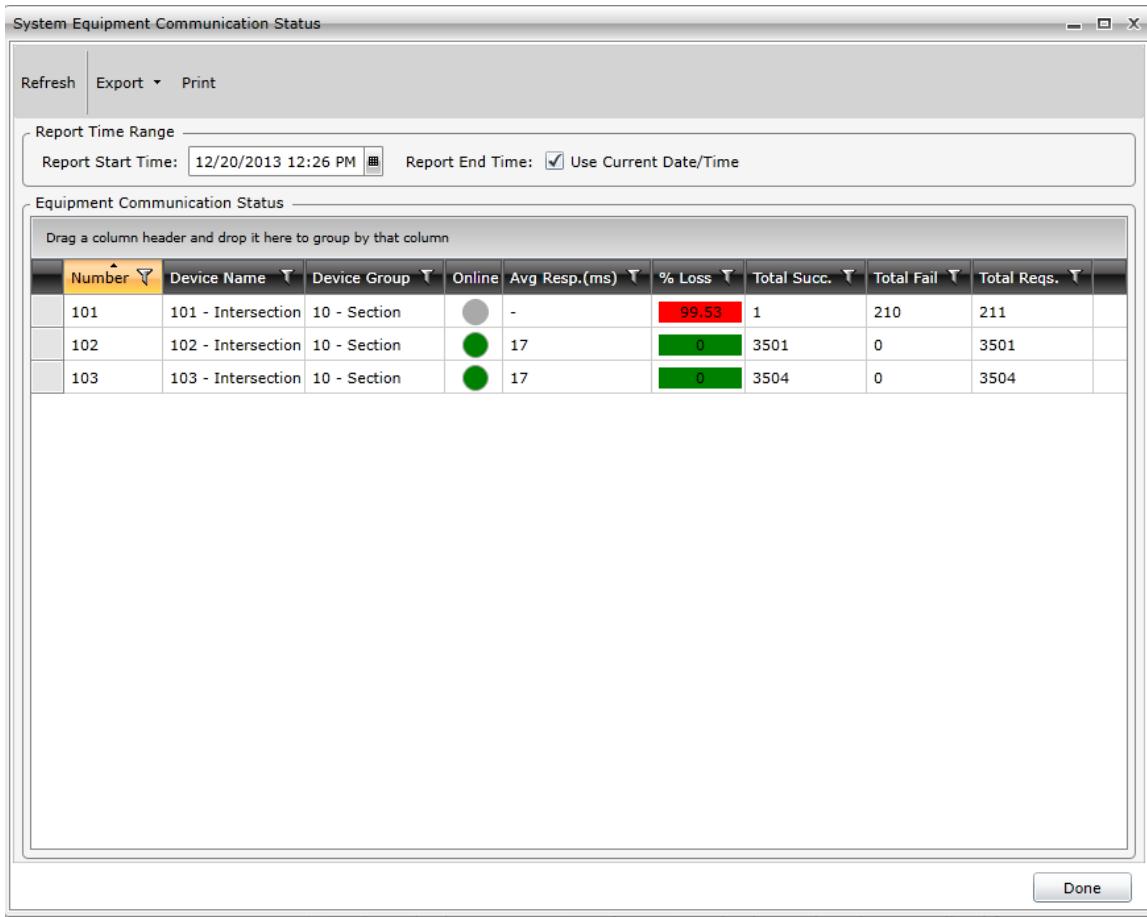


Figure 137 Actual Split Report View

## 16.4 System Device Communication Status

MAXVIEW supports a real-time report view of the communication status of all devices within the system.



**Figure 138 System Device Communication Status Window**

To open the Device Communication Status window select “Signal Monitoring->Device Communication Status” from the main menu.

The Device Communication status represents the communication status over the set period.

By default the end time will always be updated to the current time when Refresh is pressed.

To select a set End Time uncheck the “Use Current Date/Time” checkbox.

## 16.5 System Device Status

MAXVIEW supports a single view into the real-time operational status of all the intersections within the system.

Equipment Status												
Drag a column header and drop it here to group by that column												
Number	Device Name	Device Group	Online	Pattern	Status	Time	Cycle	Act. Cycle	Free Cycle	Offset	Act. O	
101	101 - Intersection	10 - Section	<span style="background-color: #cccccc; border-radius: 50%; width: 16px; height: 16px; display: inline-block;"></span>	Unknown	Unknown	Unknown	-	60	61	-	16	
102	102 - Intersection	10 - Section	<span style="background-color: #008000; border-radius: 50%; width: 16px; height: 16px; display: inline-block;"></span>	Free	Command Free	0 sec	60	57	68	10	1	
> 103	103 - Intersection	10 - Section	<span style="background-color: #008000; border-radius: 50%; width: 16px; height: 16px; display: inline-block;"></span>	Free	Command Free	0 sec	-	57	55	-	48	

**Figure 139 System Device Status Window**

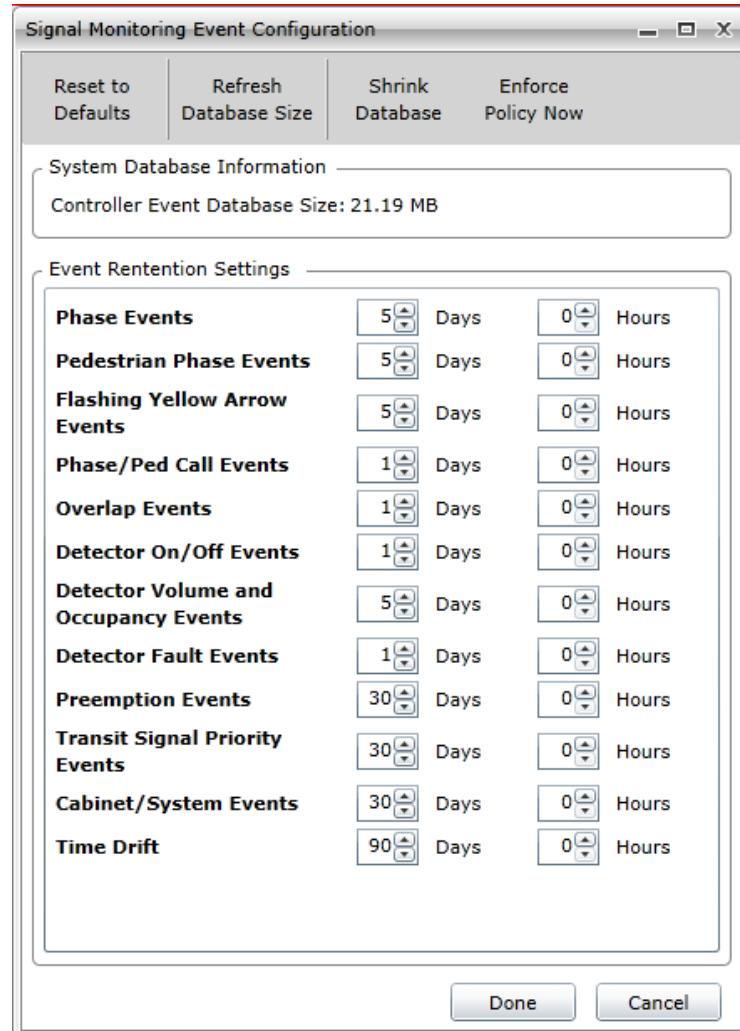
To open the System Device Status window select “Signal Monitoring->Device Status” from the main menu.

The System Device Status displays the following real-time information about all controllers within the system:

- Device Number
- Device Name
- Device Group
- Online Status
- Pattern
- Free/Coord Status
- Last Set Cycle
- Last Actual Cycle
- Last Free Cycle
- Last Set Offset
- Last Actual Offset

## 16.6 Signal Monitoring Settings

The retention times for a given event class can be set in the Signal Monitoring Settings window.



**Figure 140 Signal Monitoring Settings**

The Signal Monitoring setting also shows the size of the current event database and allows a user to enforce the retention policy.

By default the retention policy is enforced daily at 3AM.

# 17 Windows

## 17.1 Overview

MAXVIEW supports multiple windows being opened within the main MAXVIEW window at the same time.

When running in the web browser windows cannot be moved outside of the main MAXVIEW window.

The open windows can be managed using the Window main menu items.

## 17.2 Arrange All Windows

To arrange and tile all the open windows select Window->Arrange All.

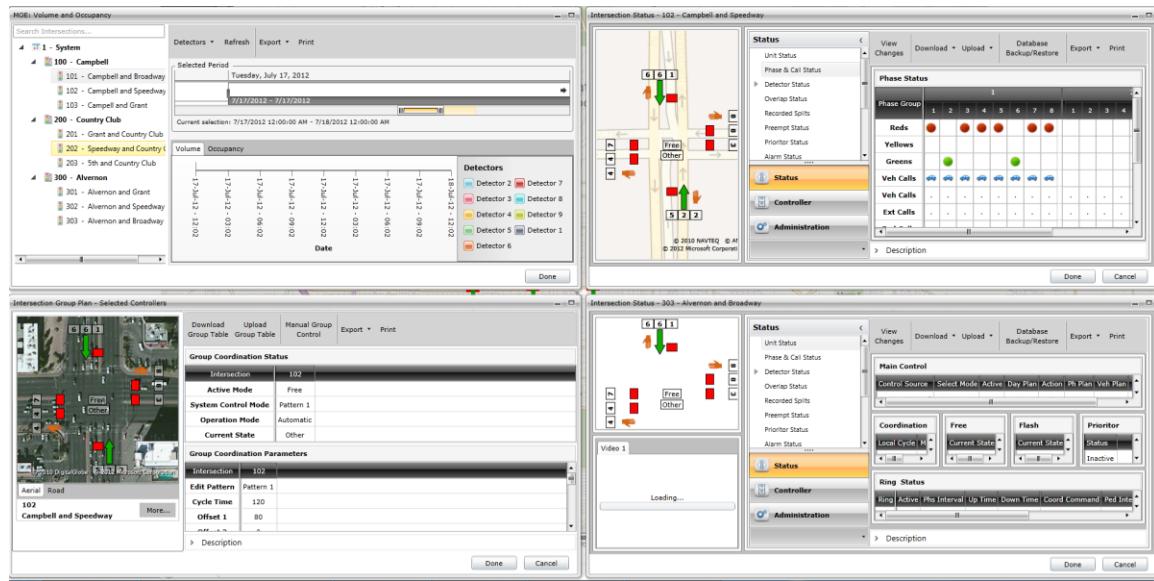


Figure 141 MAXVIEW windows arranged in the main window

## 17.3 Minimize All Windows

To minimize all open windows select Window->Minimize all. Any opened window will be minimized.

## 17.4 Restore All Windows

To restore any windows that have been minimized select Window->Restore all. Any opened window that has been minimized will be restored.

## 17.5 Close All Windows

To close all open windows at once select Window->Close All.

**Note:** Any pending data will be lost when the window is closed.

# 18 System Maintenance

## 18.1.1 System Database Backup

During integration Intelight will configure the MAXVIEW application server to automatically back up the full OS image and all settings (including all MAXVIEW databases) periodically through the Windows Server 2008 R2 Backup Service. (This only applies if Windows Server is used as the server operating system. If Windows 7 is used additional 3<sup>rd</sup> party backup solutions can be deployed).

The backup frequency and persistence time of each backup will be configured at the time of installation based on the cities requirements and can be updated by the city at a future date if required.

In addition, MAXVIEW specific data that is stored within the system database can be configured to be backed up and persisted separately on a more frequent interval if the city desires. The data backup frequency and persistence time of each backup will be configured at the time of installation based on the cities requirements. If necessary, the city or Intelight can restore a previous MAXVIEW configuration from the database backups without restoring the entire server

### **18.1.2 System Start-up and Shutdown**

Upon physical server start up the MAXVIEW application server will startup and begin operation including, polling intersection phase status, alarm status, coordination status, etc. and commence any command operations without any user intervention.

The MAXVIEW server application is managed by Microsoft's App Fabric web technology which monitors the server process's health and automatically restarts the service if an error is encountered.

App Fabric also provides a configured interface for System Administrators to monitor the MAXVIEW service and view lower level event logs as required.

At startup and shutdown the MAXVIEW server also logs events to the system event log.