

SunGuide®:

Version Description Document

SunGuide-VDD-9.0



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John Brisco, SwRI	JSB	05/07/10
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	Tucker Brown, SwRI	TJB	09/19/11
	Tucker Brown, SwRI	TJB	06/22/12
	Tucker Brown, SwRI	TJB	07/28/12
	Tucker Brown, SwRI	TJB	08/30/12
	Tucker Brown, SwRI	TJB	04/09/13
	Tucker Brown, SwRI	TJB	06/23/13
	Tucker Brown, SwRI	TJB	10/11/13
	Tucker Brown, SwRI	TJB	09/12/14
	Tucker Brown, SwRI	TJB	02/23/15
	Tucker Brown, SwRI	TJB	07/30/15
	Tucker Brown, SwRI	TJB	01/04/16
	Tucker Brown, SwRI	TJB	03/08/17
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List of Acronyms

AD.....	American Dynamics
API.....	Application Program Interface
AVL.....	Automated Vehicle Location
C2C.....	Center-To-Center
CAD.....	Computer Aided Dispatch
CCTV.....	Closed Circuit Television
CD.....	Compact Disk
CE.....	Configuration File Editor
COTS.....	Commercial-Off-The-Shelf
CVS.....	Connected Vehicle Subsystem
CNA.....	Contact Notification Application
DLL.....	Dynamics Link Library
DMS.....	Dynamic Message Sign
DNS.....	Domain Name Service
DOM.....	Document Object Model
DOT.....	Department of Transportation
DST.....	Daylight Savings Time
EH.....	Executive Handler
EM.....	Event Management
ESRI.....	Environmental System Research Institute
EV.....	Event Viewer
FDOT.....	Florida Department of Transportation
FHP.....	Florida Highway Patrol
FTP.....	File Transfer Protocol
GAC.....	Global Assembly Cache
GUI.....	Graphical User Interface
HAR.....	Highway Advisory Radio
IDE.....	Integrated Development Environment
IDS.....	Incident Detection Subsystem
IIS.....	Internet Information Services
IM.....	Incident Management
IMS.....	Inventory Maintenance Subsystem
ITN.....	Invitation to Negotiate
ITS.....	Intelligent Transportation Systems
LCS.....	Lane Control Signal
MAS.....	Message Arbitration Subsystem
MCP.....	Manual Control Panel
MLS.....	Managed Lanes Subsystem
NTCIP.....	National Transportation Communications for ITS Protocol
RCA.....	Remote Command Application
RISC.....	Rapid Incident Scene Clearance
RMS.....	Ramp Meter Subsystem
RPG.....	Response Plan Generator
RWIS.....	Road Weather Information Subsystem
SAS.....	Scheduled Actions Subsystem

SB..... Safety Barrier
SPARR..... Smart Phone Application for Road Rangers
SSL..... Secure Sockets Layer
SwRI Southwest Research Institute®
TCS Traffic Control Subsystem
TPS..... Truck Parking Subsystem
TSS..... Transportation Sensor Subsystem
TVT..... Travel Time Subsystem
TxDOT Texas Department of Transportation
URI..... Universal Resource Identifier
VDD..... Version Description Document
VS Video Switching
VSL Variable Speed Limit
VW Video Wall
W3..... World Wide Web Consortium
WPF Windows Presentation Foundation
XAML..... Extensible Application Markup Language
XML..... Extensible Markup Language

Revision History

Revision	Date	Changes
1.0.0-Draft	October 20, 2004	Initial Release.
1.0.0	January 16, 2005	Completed for Release 1.
1.1.0	May 16, 2005	Updated with Release 1.1 functionality.
2.0.0	October 24, 2005	Updated with Release 1.1 patches and Release 2.0 functionality.
2.1.0	April 10, 2006	Updated with Release 2.0 patches, the IM C2C enhancement, and the DMS font enhancement.
2.1.1	April 25, 2006	Modified Data Archive and the CCTV NTCIP driver to provide additional functionality.
2.2.0	October 18, 2006	Updated for Release 2.2 functionality.
2.2.1	November 15, 2006	EM/PM fixes and additions.
2.2.2	March 5, 2007	Updated for Scheduled Actions Subsystem (SAS), GUI Performance Enhancement
3.0.0	September 27, 2007	<p>Added:</p> <ul style="list-style-type: none"> • CCTV American Dynamics Driver • FL511 Web Server • Incident Detection Subsystem (IDS) • IDS VisioPaD Driver • IDS TSS Alarms Driver • AVL/RoadRanger Subsystem • Road Ranger XML Interface Driver • Event Viewer • Operational Data Store • Logic Tree 511 Subsystem • Variable Speed Limit Subsystem • Configuration File Editor <p>Updated:</p> <ul style="list-style-type: none"> • Executive Handler • Status Logger • Admin Editor • GUI/Operator Map • TSS • TVT • DMS • MAS • Event Manager/Response Plan Generator • Reporting Subsystem • C2C Plug-in • Data Archive
3.0.1	November 21, 2007	Updated for Release 3.0 FAT (part 3)

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Revision	Date	Changes
3.0.1a	December 17, 2007	Updated with several Release 3.0.0 updates and installer fixes
3.0.2	January 8, 2008	Updated with several patches and fixes after Release 3.0.1.
3.0.3	January 28, 2008	Updated with several patches and fixes after Release 3.0.2.
3.0.3a	February 14, 2008	Added Footprints references where applicable.
3.0.3b	February 21, 2008	Added additional Footprints references where applicable.
3.1.0	May 8, 2008	Updated for several patches and fixes after Release 3.0.3. Updated for Release 3.1.
3.1.1	May 30, 2008	Updated for Release 3.1.1. Added virtual video wall.
3.1.1a	June 2, 2008	Added a Footprint issue to the “software changes”
3.1.2	July 17, 2008	Updated for Release 3.1.2.
4.0.0-Draft	August 15, 2008	Updated for Release 4.0.0.
4.0.0	September 10, 2008	Updated for FAT enhancements/fixes
4.0.1	September 26, 2008	Updated based on IV&V results
4.0.2	October 3, 2008	Updated with CMB revised Event Lists, SAE codes and change of “Accident to Crash” terminology
4.1.0	October 24, 2008	Updated for Release 4.1.0
4.1.1	November 19, 2008	Updated for Release 4.1.1
4.1.2	January 8, 2009	Updated for Release 4.1.2
4.1.3	March 6, 2009	Updated for Release 4.1.3
4.2.0	May 15, 2009	Updated for Release 4.2.0
4.2.2	June 19, 2009	Updated for Release 4.2.2
4.3.0	February 12, 2010	Updated for Releases 4.3.0 and 4.3.1
4.3.2	March 25, 2010	Updated for Release 4.3.2
4.3.3	May 7, 2010	Updated for Release 4.3.3
5.0.0	May 7, 2010	Updated for Release 5.0.0.
5.0.1	May 25, 2010	Updated for Release 5.0.1.
5.0.2	June 16, 2010	Updated for Release 5.0.2.
5.0.3	June 21, 2010	Updated for Release 5.0.3
5.0.4	November 19, 2010	Updated for Release 5.0.4
5.0.4	February 2, 2011	Updated for post-IV&V changes to Release 5.0.4
5.0.5	February 11, 2011	Updated for addition of SPARR (Release 5.0.5)
5.1.0	July 11, 2011	Updated for Release 5.1.0
5.1.1	June 22, 2012	Updated for Release 5.1.1
6.0.0	April 15, 2013	Updated for Release 6.0.0
6.0.0p2	October 8, 2013	Updated for Release 6.0.0p2
6.1.0	June 6, 2015	Updated for Release 6.1.0
6.1.0	July 30, 2015	Updated for Release 6.1.0p1
6.2.0	January 4, 2016	Updated for Release 6.2
7.0.0	March 8, 2017	Updated for Release 7.0
7.1.0	September 25, 2017	Updated for Release 7.1
7.1.1	February 22, 2018	Updated for Release 7.1.1

Revision	Date	Changes
7.1.2	July 25, 2019	Updated for Release 7.1.2
7.2	November 18, 2019	Updated for Release 7.2
8.0	November 13, 2020	Updated for Release 8.0
8.1	August 24, 2021	Updated for Release 8.1
8.2	July 14, 2022	Updated for Release 8.2
9.0	May 01, 2024	Updated for Release 9.0

1. Scope

1.1 Document Identification

This document serves as the Version Description Document (VDD) for the SunGuide® software.

1.2 Project Overview

The Florida Department of Transportation (FDOT) is conducting a program that is developing SunGuide software. The SunGuide software is a set of Intelligent Transportation System (ITS) software that allows the control of roadway devices as well as information exchange across a variety of transportation agencies. The goal of the SunGuide software is to have a common software base that can be deployed throughout the state of Florida. The SunGuide software development effort is based on ITS software available from the state of Texas; significant customization of the software is being performed as well as the development of new software modules. The following figure provides a graphical view of the software to be developed:

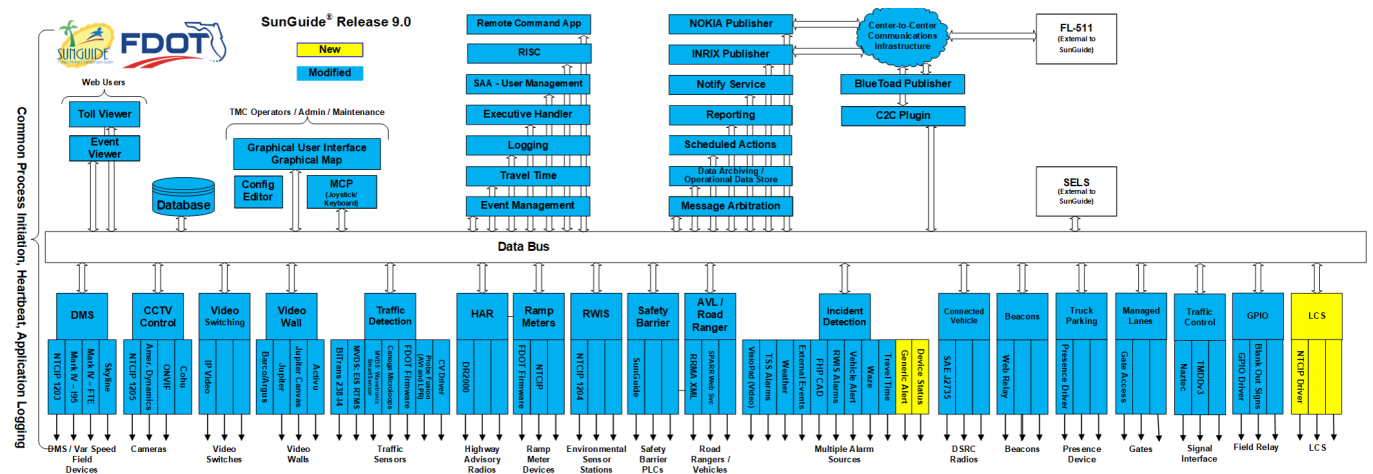


Figure 1-1 High-Level Architectural Concept

1.3 Related Documents

Additional information regarding the SunGuide project can be found in the following documents and electronic publications:

- FDOT Scope of Services: *BEH21, Standard Written Agreement for SunGuide Software Support, Maintenance, and Development, Exhibit A: Scope of Services*. May 16, 2024.
- Notice to Proceed: Letter to Southwest Research Institute® (SwRI®) for BEH21, May 17, 2024
- Letter of Authorization 001: Letter to SwRI for BEH21, May 20, 2024.
- SunGuide Project website: <http://sunguidesoftware.com>.

1.4 Contacts

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For current contact information please refer to this link: <http://sunguidesoftware.com/contact-us>

2. Version Description

2.1 Inventory of Materials

This version of SunGuide includes the following items:

- SunGuide Installation Package Version 9.0 on SunGuide FTP
- SunGuide Documentation Version 9.0 on SunGuide FTP

The documentation is provided under the "Documentation" folder on the Installation Media, and it includes the following document:

- Installation Notes, Version 9.0

2.2 Inventory of Software Contents

The SunGuide system is composed of a number of custom Dynamic Link Libraries (DLLs), Windows services, web applications, and executable applications developed exclusively for the SunGuide system. A custom installation package was also developed to install the custom software. Additionally, a number of Commercial-Off-The-Shelf (COTS) packages were used to develop the custom software and installation packages.

2.2.1 COTS Packages

The custom SunGuide software was developed using the following commercially available software packages:

- Microsoft® Windows 10 Professional Version, Copyright © Microsoft Corporation 1985-2010
- Microsoft® Visual Studio 2022, Copyright © Microsoft Corporation 2022
- Pegasus Imaging CapturePRO Version 3, Copyright © 1997 – 2004 Pegasus Imaging Corporation
- Flexara Corporation InstallShield® Version 2021, Copyright © 2021
- Navteq Map Data, Spring 2024
- Business Objects Crystal Reports Version 13.0, Business Objects SA
- Microsoft SQL Server Native Client 2012
- Editors 2011.1 for WPF, Copyright ©2011 Actipro Software LLC
- DevExpress WPF Controls v23.1.6, Developer Express Inc.
- Video LAN Client Libraries and related Plugins for VLC Release 3.0.18

2.2.2 SunGuide Custom Software

The custom software developed for the SunGuide system includes dynamic link libraries, Windows services, web applications, and executable applications.

2.2.2.1 SunGuide Subsystem and Driver Applications

The subsystem applications developed for the SunGuide system include:

<u>Application</u>	<u>Description</u>
ActivuSunGuideService.exe	The Activu Video Wall Driver service

<u>Application</u>	<u>Description</u>
J2735_2016Win32.dll, J2735_2016MgdWrapper.dll	Libraries to decode messages between the Roadside Equipment (RSE) and the CVS Driver.
AmerDynDriverSvc.exe, AmerDynDriverLib.dll	American Dynamics camera driver service for the CCTV subsystem and supporting assembly.
AvlService.exe, AvlLib.dll	The Automated Vehicle Location (AVL) Subsystem service and supporting assembly.
BarcoDriverSvc.exe, BarcoDriverLib.dll	The Barco Video Wall Driver service and supporting assembly.
BiTran238DriverService.exe	The BiTrans B238 I4 protocol driver service.
BeaconDriverService.exe, BeaconDriverLib.dll	The Beacon BMS driver service.
BlueToadLib.dll, BlueToadService.exe, BlueToadDataLib.dll	The BlueTOAD Publisher service.
BmsService.exe, BmsLib.dll	The Beacon Management Subsystem service.
C2cClientService.exe, C2cClientLib.dll, C2cSharedLib.dll, C2cEmLib.dll	The Subscriber service component of the Center-to-Center (C2C) Subsystem and supporting assemblies.
C2cServerService.exe, C2cServerLib.dll, C2cSharedLib.dll, C2cEmLib.dll	The Publisher service component of the C2C Subsystem and supporting assemblies.
CctvService.exe, CctvLib.dll	The Closed-Circuit Television (CCTV) Subsystem service and supporting assembly.
Cna.exe, CnaLibrary.dll	The Contact Notification Application (CNA) service and support assembly
CvsService.exe, CvsLibrary.dll	The Connected Vehicle Subsystem (CVS) service and support assembly
CvTssDriverSvc.exe, CvTssDriverLib.dll	The Connected Vehicle TSS interface driver service
DarService.exe, DarLib.dll	The Data Archive RITIS (DAR) service and support assembly

<u>Application</u>	<u>Description</u>
DataArchiveService.exe, DataArchiveLib.dll	The Data Archiving Subsystem service and supporting assembly.
DataBusService.exe, DataBusLib.dll	The Data bus Subsystem service and supporting assembly.
DatapathDriver.exe, DatapathDriverLib.dll	The Jupiter Video wall service and support assembly.
DmsStatewideDriver.exe	The Dynamic Message Sign (DMS) Texas Department of Transportation (TxDOT) statewide driver, implements a number of different protocols for DMS.
DmsXmlInterface.exe	The DMS subsystem main process.
EmService.exe, EmLib.dll	The Event Management service is the new SunGuide event creation and management subsystem and supporting assembly.
ExecHandlerEditor.exe	The Executive Handler Process Editor application.
ExecutiveHandlerServerSvc.exe	The Executive Handler management service.
ExecHandlerViewer.exe	The Executive Handler Viewer user interface application.
ExternalEventDriverSvc.exe, ExternalEventDriverLib.dll, IdsDataLib.dll	The External Event Driver for the IDS subsystem receives events from external sources and supporting assemblies.
FhpIncidentService.exe, FhpIncidentLib.dll, IdsDataLib.dll	The FHP Incident Driver service for the IDS subsystem that receives incidents from FHP CAD and supporting assemblies.
FhpInterfaceService.exe, FhpInterfaceLib.dll	The FHP Interface Service which provides FHP CAD data to the FHP Incident Driver. This typically should be installed in one location statewide.
GPIO.exe, GpioLib.dll	The General Purpose Input/Output (GPIO) subsystem and support assembly.
GpioDriverService.exe, GpioDriver.dll	The GPIO Driver for the GPIO subsystem and supporting assembly to communicate with external devices.
HarDR2000Svc.exe, DR2000Lib.dll	The DR2000 Driver for the HAR Subsystem and supporting assembly.
HarService.exe, HarLibrary.dll	The Highway Advisory Radio Subsystem and supporting assembly.

<u>Application</u>	<u>Description</u>
IdsService.exe, IdsDataLib.dll IdsLib.dll	The Incident Detection Subsystem (IDS) service and supporting assemblies.
InrixService.exe, InrixLib.dll, InrixDataLib.dll, C2cSharedLib.dll	The INRIX Publisher service and supporting assemblies.
IpVideoSwitchSvc.exe, IpVideoSwitchLib.dll	The IP Video Switching Driver service and supporting assembly.
J2735DriverLib.dll, J2735DriverSvc.exe	The CVS driver and support assembly
JupiterVwdService.exe, JupiterVwdLibrary.dll	The Jupiter Video wall service and support assembly.
JupiterCanvasDriverService.exe, JupiterCanvasDriverLibrary.dll	The Jupiter Canvas Video wall service and support assembly.
LCS.exe, LcsLib.dll	The Lane Control Signal Subsystem and supporting assembly.
LcsDriverBase.dll LcsNtcipDriverService.exe NtcipDriverLib.dll	The Lane Control NTCIP Driver and support assembly.
MasService.exe, MasLib.dll	The Message Arbitration Subsystem and supporting assembly.
McpManagerSvc.exe, McpManagerLib.dll, McpControlLib.dll	The Manual Control Panel Subsystem and supporting assemblies.
Mls.exe, ManagedLanesLib.dll	The Managed Lanes Subsystem service and supporting assembly.
NaztecDriver.exe, NaztecDriverLib.dll	Naztec Driver supports traffic signal communication with the Trafficware software.
NokiaService.exe, C2cSharedLib.dll, NokiaLib.dll	The Nokia C2C data provider service.
NotifyManagerService.exe, NotifyManagerLib.dll	The Notify Manager service.

<u>Application</u>	<u>Description</u>
NtcipDriver.exe, NtcipDriverLib.dll	The NTCIP 1205 camera driver.
NtcipDriverService.exe, NtcipDriver.dll, MlsDriverBase.dll	The Managed Lanes Gate control driver.
OnvifDriverService.exe, OnvifDriverLib.dll	The ONVIF camera driver.
OperatorMap.exe	The executable driving the WPF and XAML behind the Operator Map.
ProbeFusionDriverSvc.exe, ProbeFusionDriverLib.dll	The Probe Fusion Driver for the TSS Subsystem and supporting assembly.
RampMeterService.exe	The Ramp Metering Subsystem service.
RcaService.exe, RcaLib.dll	The Remote Command Application (RCA) and supporting assembly.
Risc.exe RiscLib.dll	The Rapid Incident Scene Clearance (RISC) service and supporting assembly.
Rms170DriverSvc.exe, Rms170DriverLib.dll	The BiTran170 RMS Driver service and supporting assembly.
RmsNtcipDriver.exe, RmsNtcipDriverLib.dll	The RMS NTCIP Driver service and supporting assembly.
RRXMLDriverService.exe, RRXMLLib.dll	The Road Ranger Driver service synchronizes information with mobile data collection and display devices.
ReportGenerator.exe, RsService.exe, RsLib.dll	The Performance Measures Reporting subsystem service and supporting assembly.
RwisAlarmDriverService.exe, RwisAlarmDriverLib.dll	The RWIS alarm monitoring IDS driver service.
RtmsDriverSvc.exe, RtmsDriverLib.dll	The Remote Traffic Monitor Sensor Driver service and supporting assembly.
RwisDriverSvc.exe, RwisDriverLib.dll	The Roadside Weather Information Driver service and supporting assembly.
Rwis.exe, RwisLib.dll	The Roadside Weather Information subsystem service and supporting assembly.

<u>Application</u>	<u>Description</u>
SAA.exe, SaaApp.exe	The System Administration Application (SAA) service.
SasService.exe, SasLib.dll	The Scheduled Actions Subsystem service and supporting assembly.
SbAlarmDriverSvc.exe, SbAlarmDriverLib.dll, IdsDataLib.dll	The Safety Barrier Alert Driver service and supporting assembly.
SbDriverSvc.exe, SbDriverLib.dll	The Safety Barrier Driver service and supporting assembly.
SbService.exe, SafetyBarrierLib.dll	The Safety Barrier Subsystem service and supporting assembly.
SPARRDriverService.exe, SPARRLib.dll, SPARRWebServiceLib.dll, GZipEncoder.dll	The AVL Smart Phone Application for Road Rangers (SPARR) Driver service allows smart phone to interface with the AVL subsystem.
Tcs.exe, TcsLib.dll	The Traffic Control Subsystem service and supporting assembly.
TpsDriver.exe, TpsDriverLib.dll	The Truck Parking Driver service and supporting assembly.
TpsService.exe, TpsLib.dll	The Truck Parking Subsystem service and supporting assembly.
TssAlarmDriverSvc.exe, TssAlarmDriverLib.dll, IdsDataLib.dll	The TSS Alarm Driver for the IDS subsystem receives traffic sensor alarms from TSS and supporting assemblies.
TssService.exe, TssLib.dll	The Transportation Sensor System Subsystem service and supporting assembly.
TvtAlertDriver.exe, TvtAlertDriverLib.dll	The Travel Time Alert driver service for the IDS Subsystem produces alert for changes in travel times.
TvtService.exe, TvtLib.dll	The Travel Time Subsystem service and supporting assembly.
VehicleAlertDriverService.exe, VehicleAlertDriverLib.dll, IdsDataLib.dll	The Vehicle Alert driver service for the IDS Subsystem communicates with wrong way driving and over-height detection devices.

<u>Application</u>	<u>Description</u>
VisioPadDriverSvc.exe, VisioPadDriverLib.dll, IdsDataLib.dll	The VisioPaD driver service for the IDS subsystem communicates with the third-party CitiLog VisioPaD video incident detection software and supporting assemblies.
VsService.exe, VsLib.dll	The Video Switching Subsystem service and supporting assembly.
VwsService.exe, VwsLibrary.dll	The Video Wall Subsystem service and supporting assembly.
WazeEventService.exe, WazeEventLib.dll, IdsDataLib.dll	The Waze Event driver service for the IDS subsystem communicates with the third-party Waze feed provided by FDOT Central Office.
WeatherAlertDriverSvc.exe, WeatherAlertLib.dll, IdsDataLib.dll	The Weather Alert Driver for the IDS subsystem receives weather alerts from external sources and supporting assemblies.
WsDOTDriverSvc.exe, WsDOT170TssDriverLib.dll	The Washington DOT driver for the Transportation Sensor System Subsystem service and supporting assembly.
WwdApi.exe, WwdApiLib.dll, IdsDataLib.dll	The Wrong Way Driver API and supporting assembly.

2.2.2.2 SunGuide Managed Assembly Dynamic Link Libraries

The .NET managed assemblies developed for the SunGuide system and shared by more than one component include:

<u>Managed Assembly</u>	<u>Description</u>
ActiveIts.DataLibrary.dll	Contains data objects which are shared between ActiveITS ATMS products.
ActiveIts.ItsGenericLibrary.dll	This assembly contains the classes that define the generic subsystem components used by most of the ActiveITS applications.
DataLibrary.dll	Contains data objects which are used by SunGuide applications.
EmLib.dll	The Event Management business logic assembly; used by EM and AVL.
ExecClientLib.dll	This assembly contains a class used by managed code clients to interact with the Executive Handler server.

<u>Managed Assembly</u>	<u>Description</u>
FDOT.StatusLogClientLib.dll	This assembly contains a class that implements a Status Logger client object using only managed code.
IdsDataLib.dll	IDS common data assembly; used by IDS and its drivers.
ItsGenericLibrary.dll	This assembly contains the classes that define the generic subsystem components used by most of the SunGuide applications.
MvvmLib.dll	Contains base object definitions used by data objects and user interface controls.
OMInterface.dll	This assembly is loaded into Internet Explorer by the Operator Map and serves as the map's data source and link with the Data Bus; also used by the Event Viewer.
SharpMap.dll	This assembly is based on the public domain SharpMap V2 GIS library used under the LGPL. Used by INRIX Publisher, SG C2C Publisher, and SG C2C Subscriber.

2.2.2.3 Status Logger

The components of the Status Logging facility for the SunGuide system include:

<u>Application</u>	<u>Description</u>
StatusLogLib.dll, StatusLogServer.dll	The Status Logger dynamic link libraries containing Status Log server access support and Status Log file access support.
StatusLogService.exe	The Status Logging server application, implemented as a Windows Service. It accepts Status Log messages from multiple clients for storage to a disk file.
StatusLogViewer.exe	The Status Log files viewing application.
StatusLogSettings.exe	Application for managing status log setting.

2.2.2.4 Executive Handler

The components of the Executive Handler facility for the SunGuide system include:

<u>Application</u>	<u>Description</u>
ExecutiveHandlerServer.dll	The Executive Handler dynamic link library containing Executive Handler server access support.
ExecutiveHandlerEditor.exe	This application edits the list of processes managed by the Executive Handler server.
ExecutiveHandlerServerSvc.exe	The Executive Handler server application.

ExecutiveHandlerViewer.exe	The Executive Handler viewer application.
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2.2.2.5 Config File Editor

The components of the Configuration File Editor for the SunGuide system include:

<u>Application</u>	<u>Description</u>
ConfigEditor.exe	The Configuration File Editor application.

2.2.2.6 Notify Manager

The components of the Notify Manager facility for the SunGuide system include:

<u>Application</u>	<u>Description</u>
NotifyManagerLib.dll	The Notify Manager dynamic link library containing Notify Manager server support.
NotifyManagerService.exe	The Notify Manager server application.

2.2.2.7 Event Viewer

The components of the Event Viewer web application for the SunGuide system include:

<u>Application</u>	<u>Description</u>
EventViewer.dll	The Event Viewer web application assembly.
OMInterface.dll	This assembly is loaded into Internet Explorer by the Event Viewer and serves as the app's data source and link with the Data Bus.

2.2.2.8 Jar Files

The following Jar files make up the subsystems as indicated.

<u>JarFile</u>	<u>Subsystem</u>	<u>Description</u>
activation.jar	common	Java class for activation of a subsystem.
bcprov-ext-jdk18on-176.jar	common	Java encryption library.
comm.jar	common	Java low level communications and modem package.
commons-codec-1.13.jar	common	Java encoding library.
commons-lang3-3.1.jar	common	Java encoding library.
jaxen-core.jar	common	Java API for XML messaging.
jaxen-full.jar	common	Java API for XML messaging.
jaxen-jdom.jar	common	Java API for XML messaging.
jconn2.jar		JConnect JDBC driver.
jdom.jar	common	Java class for performing XML DOM parsing.

<u>JarFile</u>	<u>Subsystem</u>	<u>Description</u>
jmgmt.jar	common	Java monitoring and extensions.
joesnmp-0.2.6.jar	common	Java SNMP interface for IM notification.
js.jar	common	Java Javascript library.
jtds-1.3.1.jar	common	Java SQL Server driver.
lz4.jar	common	Java LZ4 compression library.
mail.jar	common	Java mail class for IM notifications.
resolver.jar	common	Java Apache Resolver class.
saxpath.jar	common	Java XML SAX parser.
sqljdbc.jar	common	Java SQL Server library.
statuslogger.jar	common	Java class that implements Status Logger client.
velocity-dep-1.3.1.jar	common	Java based web engine.
Util.jar	common	Java class for collected utilities.
xercesImpl.jar	common	Java Xerces parser.
DbComm.jar	DMS	Java classes that communicate with the data bus communications package.
DmsMain.jar	DMS	Java classes that implements DMS main process.
Jmgmt.jar	DMS	Java class for general process management.
Libraries.jar	DMS	Java class for interface to various data files.
Net.jar	DMS	Java class the abstracts the low level TCP/IP socket communications package.
StatewideDriver.jar	DMS	Java class that implements the multiple protocols of the TxDOT Statewide TxDOT Driver.
Transactions.jar	DMS	Java class that implements transactions for communications between processes.
XmlInterface.jar	DMS	Java DMS XML interface.
xercesImpl.jar	common	Java XML library.
xml-apis.jar	common	Java communications API for RS-232C and IEEE 1284 (unused) communications.
xmlParserAPIs.jar	DMS	Java Xerces parser APIs.
rms.jar	RMS	Java classes that implement the Ramp Metering subsystem.
BiTran238DD.jar	TSS	Java BiTrans B238 I4 driver.

2.2.2.9 XML Schema Files

The messaging between the SunGuide components uses the Extensible Markup Language (XML). The form and content of these messages is defined by XML schemas. The schemas are also installed on a target system to allow message validation, when enabled.

2.2.2.10 Android Application Packages

The Smartphone Application for Road Rangers is a SunGuide application for use on Android smartphones. Its components include:

<u>Application</u>	<u>Description</u>
SPARR.apk	The SPARR application for installation on Android devices.

2.2.3 SunGuide Installation Package

An installation package was developed to install the custom software components (executable applications, DLLs and support files) of the SunGuide system. The installation package was developed with the InstallShield 2021 compiler, builder and the Integrated Development Environment (IDE). The IDE uses the concept of a project, and a project defines the files necessary to build an installation package.

The SunGuide Installation Package provides for installation of the required software components for the SunGuide system.

2.3 Software Changes

The following patches (enhancements) are included in this release:

- Release 1.0, Patch 4:
 - Any IM messages that exactly fit the width of a DMS sign will now display appropriately, without adding undesired newlines and without over-abbreviating.
 - DMS parsing has been corrected for messages with extended lengths using 2 bytes. SNMP over UDP support for the DMS driver has been added.
 - The TSS subsystem now sends map detector requests after the pertinent add detector responses have been processed by the subsystem.
 - The Barco driver now allows for more than 20 sources.
 - The RTMS driver has been corrected for issues regarding large detector loads.
 - The IP Video Switch driver has a new config file processing group, “finishGroup”. Commands in this group will be performed even if “command Group” command fails. This was implemented so that the Vbrick edit mode can be cleared if some other command fails.
 - Fixed issue with the MCP manager next/previous keyboard command where the camera video was being switched, but camera control was not.
 - The Data Bus now returns connection information in a retrieve data types response, and delete messages are now properly broadcasted to subscribed Data Bus clients.
 - Blank abbreviations work once the “ABBR” field of the “ABBREVIATIONS” table is updated to accept nulls. A database script has been provided in this patch.
- Release 2.0, Patch 1:
 - Provide the capability to implement “reverse pan” logic for cameras that have an old (not approved) version of NTCIP 1205.
- Release 2.0, Patch 2:
 - CCTV: Adds ability to use speed multipliers on camera pan/tilt speeds.
 - Travel Time: Fixes issue with calculation of travel time. Updated Admin editor for issue where links were not always displayed.
- Release 2.1 —Enhancements:

- Incident Management (IM) C2C feature that allows a SunGuide deployment to access other center's DMS and HAR assets in incident management response plans.
- DMS/IM feature that uses stored font information to determine whether a message should be displayed upon a DMS.
- Release 2.1.1 — updates:
 - Data Archive:
 - Modified formatting of CSV files
 - Added option to update archive as data is received.
 - CCTV NTCIP Driver:
 - Added option to enable sending commands without waiting for responses.
- Release 2.1.2 — updates:
 - MCP Manager:
 - Modified to use connection retry parameters read from the config file.
 - Removed usage of class instance of StringBuilder with local instance.
 - Incident Management:
 - Lane block status is now initialized to “all lanes”.
 - Fixed class casting exception in DMS response plans with local signs are processed.
 - Fixed “onRouteRamp/offRouteRamp” mismatch problem.
 - Added check for null node when generating a device listing.
 - DMS: Modified driver to fix character truncation problem in Polling.
 - CCTV: Changed database open cursor limit from 300 to 500 to prevent failures when adding cameras.
 - CCTV NTCIP Driver: Made changes to improve responsiveness of PTZ commands.
 - TSS: Modified data collection to only cap smoothed data.
 - TVT:
 - Modified to use link speed limit in calculations when 0 is received for speed.
 - Fixed a problem where changes made to Frequency from Admin Editor causes TVT to generates even if stopped.
 - MAS: Updated to handle exceptions noted in Footprints Issue #53.
 - VWS/VS: Updated system to stop video tours when a connection request is made.
 - IP Video Switch Driver: Added support for Cornet video codec devices.
 - C2C Publisher: Re-ordered generation of C2C CCTV XML data to match “c2cCctv” template.
 - Admin Editor: Added support for Cornet video codec devices.
 - Operator Map:
 - Fixed problem where suggested response plan dialog is not displayed if incident matches multiple predefined response plans.
 - Fixed a problem with incomplete loading of the DMS Sequence edit dialog.
 - Fixed problem with Video Tours being shown incorrectly on the GUI.
 - ITS Generic Library: Added code to handle otherwise unhandled exceptions and log an event to the Windows Event Handler.
- Release 2.2.0
 - Event Management / Performance Measures (EM/PM) Module added consisting of:

- EM/PM GUI ASP.NET web application
 - EM/PM Subsystem Windows service
 - Road Ranger Subsystem Windows service
 - VisioPaD Subsystem Windows service
- Status Logger: Fixed a problem with the Status Log Viewer that prevented saving multiple log files as text.
- MAS: Restructured the use of shared resource locks and fixed several bug.
- Operator Map GUI: Added handling for intermittent “Permission Denied” errors.
- Admin Editor: Added Device Driver Editor page and corrected link for TSS Alarm Thresholds.
- Incident Management:
 - Added two new permissions to IM, Assign/reassign event ownership and Manage events without obtaining ownership.
 - Updated schemas and IM XML handling for new permissions.
 - Changed logic for users to allow event modification without obtaining ownership.
- Release 2.2.1
 - EM/PM GUI fixes:
 - Added user admin form.
 - Fixed database reader and report generation casting issues.
 - Added buttons for “Generate Chronology Report” and “Printable List”.
 - The “smartNavigation” feature was changed to the “maintainScrollPositionOnPostBack” feature of .NET 2.0.
 - Fixed a problem that produced the wrong data when applying time range to each day.
 - Road Ranger/SIRV page changed to fill in status time.
 - Added CCTV Preset information to Chronology report.
 - Fixed a problem with the link to the VisioPaD alert handling window.
 - Fixed some typos in the Crystal Reports PM reports.
 - Fixed a problem that caused location proximity of cameras in the “Block CCTV” list to be reversed.
 - EM/PM Subsystem fixes:
 - Added <autolaunch> tag to config file to disable EM/PM GUI automatic launch.
 - Database command objects have added closeConnection calls to manage active Oracle connections.
 - Made changes to DMS association logic.
 - Event location selection problems were corrected.
 - Fixed error conditions in audit function.
 - Changed to send the proximity value “At” to IM to facilitate the generation of ramp messages in response plans.
 - Location comparison checking was fixed to prevent redundant chronology records.
 - The login was changed to include a check against SunGuide for direct login.
 - VisioPaD Subsystem fixes:

- Fixed database reconnection problems upon database disconnect or failure events.
- Release 2.2.2
 - Fixes:
 - Update the reconnect procedure in the EMPM subsystem
 - Fixed problem with the detector editor screen properly recognizing the address field.
 - Fixed a problem where the roadway editor would return errors on a successful operation. (Issues #105 and #106)
 - Fixed issue existed where a message library could be copied into a sub-library. This caused the DMS subsystem to stop responding to requests. Changes have been made to both the subsystem and the GUI to prevent operators from doing this. (Issue #103)
 - Updated the name of “Miami” to “Miami-Dade” in the navigation selection box of the control panel, and added a new entry named “Monroe” which centers the view on the Florida keys. This update improves consistency between IM and the Device Linking Editor when roadway names are modified. (Issues #103, #112 & #99 — long term solution for #88)
 - Fixed issue of angle calculation in the link map algorithm used by IM. Improves consistency between IM and the Device Linking Editor when roadway names are modified. (Issues #98 & #99 — long term solution for #88)
 - TSS/BiTrans Driver/RTMS Driver/Data Archive: Added timestamp field to detector polls, and changed Data Archive to log this timestamp rather than the time the poll was received from TSS. Furthermore, code was added to protect against multiple polls possibly occurring within a single poll cycle period. (Issues #82 & #95)
 - RTMS Driver: Fixed a problem which could prevent a user from modifying a detector (Issue #135)
 - Added Scheduled Actions Subsystem (SAS)
 - Created SAS service and added SAS installation option to installer
 - Updated Admin Editor to facilitate adding, modifying and deleting SAS sequences
 - Updated Admin Editor to facilitate adding, modifying and deleting SAS schedules
 - Add screens to Operator GUI to support SAS functionality
 - Implement performance improvements for the GUI:
 - Moved XML parsing code from JavaScript to C# running in an ActiveX control (Issue #62)
 - Allow user to change password
 - Log out/re-login without reloading map
 - Indication of bad username/password, retry login without reloading
 - Select subsystems to log into before logging in
 - Change subsystems logged into while running (dynamically add/remove subsystem connections)
 - Handle disconnection from Data Bus without reloading

- Operator map logs to Status Logger
 - Connection Manager link no longer needed for Operator Map (still used for editors); map connects directly to Data Bus
 - District views in Navigation Panel now customizable by District
 - JavaScript errors no longer popup to the user. They are caught and details sent to status logger. User will receive a notification in System Messages that an error occurred.
- Incident Management: Added ability to choose between a predefined response plan and a generated response plan (Issue #49)
- Video Switching: Added compatibility of iMPath (4200) encoders and Vbrick decoders (Issue #115)
- Release 3.0.0
 - Added CCTV driver for American Dynamics Speed Dome cameras.
 - Added Logic Tree 511 subsystem.
 - Added Incident Detection subsystem:
 - IDS subsystem application.
 - VisioPaD Driver application.
 - TSS Alarm Driver application.
 - Added AVL/RR subsystem:
 - AVL subsystem application.
 - Road Ranger XML Interface Driver application.
 - Added Variable Speed Limit subsystem.
 - Added Event Viewer web application.
 - Added configuration file editor.
 - Added Operational Data Store and reporting.
 - Added FL511 web site and server.
 - Revised GUI/Operator Map.
 - Revised Event Management subsystem.
 - Revised Response Plan Generation subsystem.
 - Revised Performance Reporting subsystem.
 - Revised Data Archive subsystem to support Operational Data Store.
 - Revised Administrative Editor web application.
 - Revised C2C Plug-in.
 - Revised DMS subsystem.
 - Revised MAS subsystem.
 - Revised TSS subsystem.
 - Revised TVT subsystem.
 - Revised Status Logging system.
 - Revised Executive Handler system.
- Release 3.0.1
 - Added documentation for installation Crystal Reports. (No Foot Print Issue)
- Release 3.0.1a
 - TSS alarm thresholds will now save correctly (FP Issue # 348)
 - ODS suspect data processing optimized (No Foot Print Issue)
 - VisioPaD driver now sending proper acknowledgement packets to VisioPaD Supervisor (Was noted during FAT 3)

- Barco driver now has new option to replace spaces in source names with a configurable value (Noticed during D7 install)
- Stability fixes to Admin Editor Reference Point Editor (No Foot Print Issue)
- Added CCTV driver for American Dynamics Speed Dome cameras. (New Feature added)
- Installer now allows empty fields for Executive Handler group membership, which causes writing of the values to the registry to be skipped. (No Foot Print Issue)
- Web site is now created on target server when just the web server is installed. (No Foot Print Issue)
- The location of the folder for the web server's web service was corrected. (No Foot Print Issue)
- The web server web site files were added to the installer's file set. (No Foot Print Issue)
- Release 3.0.2
 - Admin Editor:
 - Fixed transposition of minutes and seconds on SAS Summary dialog.(No FP Issue)
 - Fixed Event location GPS coordinates don't change with Admin Editor modification. (Issue #419)
 - Increased length of Sort Order field on all EM dialogs. (No FP Issue)
 - Added validation of email field on EM Agency Contact dialog. (No FP Issue)
 - Added validation of Mile Marker field, corrected Reference Point List sort order, and changed Exit Suffix field validation to be alphanumeric on Location dialog. (FP Issue #380)
 - AVL/RR subsystem:
 - Alerts are stopped on "Patrolling" only. (E-mail received regarding SG Release 3 TERL issues list #14)
 - Distance and destination issues were addressed. (E-mail received regarding SG Release 3 TERL issues list #15)
 - Modified regular expression used by MCP manager to allow underscore or space as delimiter in camera name. (No Foot Print Issue)
 - Event Management:
 - Audit GUI now has complete functionality for: (These were fixed when IBI completed GUI Functionality)
 - Event Status Audit
 - Responder List Audit
 - Dispatch Vehicle Audit
 - Lane Blockage Audit
 - Location/Congestion Audit
 - Notifying Agency/Contact Audit
 - Involved Vehicle Audit
 - Event Details:
 - Location/Congestion reference point sorting and filtering update (No Foot Print Issue)
 - Permissions updated throughout all GUIs (No Foot Print Issue)

- Generate Chronology button no longer available if Reporting subsystem not available (No Foot Print Issue)
- Generate Response Plan button no longer available if RPG subsystem not available (No Foot Print Issue)
- Activation Message has a more meaningful message (No Foot Print Issue)
- Termination Message has a more meaningful message (No Foot Print Issue)
- AVL Status List added to the Dispatch section, with checkbox used to enable or disable it (No Foot Print Issue)
- Events can no longer be closed if there is an active congestion queue (No Foot Print Issue)
- HOT and HOV lane classification in the event list is corrected (No Foot Print Issue)
- Reporting:
 - Single set of buttons for Excel, PDF, and Word. (No Foot Print Issue)
 - Updated reports for devices, traffic flows, and month incident management (No Foot Print Issue)
- Fixed Depart Vehicle bug in Tablet application. (Should not be included in this document)
- Windows Installer Crystal Reports 11.5 run-time installer execution added to install procedures. (No Foot Print Issue)
- Release 3.0.3
 - Admin Editor:
 - Text boxes were made wider in order to view all of the text. (Issue #364)
 - EM Roadway editor now allows removal of unused counties and directions (Issue #420).
 - RM Fuzzy Lanes editor modified the widths of the link/lane ID boxes to I long length fuzzy lane ID's (Issue #2 from RM Integration testing 12/16/2007).
 - RM Fuzzy Parameters editor updated to resolve issue when modifying a Metering Rate centroid/base value that produced errors. Added Local Occ and Local Speed to the centroid/base option list. Added Metering Rate High/Low values as read only text boxes. Included note that these values are only editable through the operator map (Issues #1, #3, and #4 from RM Integration testing 12/16/2007).
 - AVL/RR subsystem: Fixed bug which caused an error when attempting to save information about vehicle status (Issue #383).
 - VSL: Fixed database code for modifying VSL groups (Issue #375).
 - Data Archive: Improved performance of TSS archiving by altering to use periodic bulk inserts rather than extremely frequent individual inserts (Issue #389).
 - GUI: Fixed sorting Reference Point on GUI (Issue #421)
 - MAS: Fixed issue where messages could not be added to the queue when a message of the same priority was added and removed (Issue #375).
 - DMS: updated with a fix to sequence libraries (Issue #356).

- DMS: Fixed numbers' pad on the keyboard to work when wanting to edit the mileage (Issue #429)
- CCTV American Dynamics driver: Updated to properly fill in response string for building an XML message in an error response (Issue #390).
- RPG: E-mail location description updated to include reference point name (Issue #379).
- Event Management:
 - No Lane Blocked changed to No Lanes Blocked (Issue #400)
 - Keypad enabled for RPG Radius Change (Issue #399)
 - Involved Vehicle Summary now includes vehicle model (Issue #401)
 - Contact Summary fix — includes agency and phone number (Issue #407)
 - Congestion Description fix — congestion description includes the correct offset types (at, before, beyond, rampTo, rampFrom) (Issue #413)
 - AVL RR status list (in EM) now contains all entries (Issue #415)
 - Event icon placement changed to always be on top (Issue #414).
 - Chronology now includes Road Ranger Procedural Errors (Issue #397)
 - Weather Conditions Database View fixed (Issue #408)
 - Relationship to exit bug — all locations now appear in the list (Issue #374)
 - RPG Email footer updated (Issue #395)
 - RPG Email Subject — Cleared not default (Issue #394)
 - Event XML error (rampto, rampfrom) fixed (Issue #388)
 - Clone Event Timestamps fix — timestamps synchronized for both the original and cloned events (Issue #406)
 - All agencies show up in expanded Responder List (Issue #392)
 - Email message, recipient group names, and individual recipients show up chronology (Issue #396)
 - Fixed Pop-up “An undefined JavaScript Function was called: EventUpdated” (Issue #403)
 - User with full permissions to the EM subsystem can access EM Audit (Issue #405)
- Release 3.1.0
 - Fixes, updates, and enhancements:
 - Admin Editor:
 - VSL— Made thresholds editable for first zone setting (no FP issue)
 - DMS sign latitude/longitude will now appear in standard notation rather than scientific notation (Issue #285)
 - Special characters (such as &) in object names are now handled correctly in delete operations (Issue #558)
 - Minor update to 511 Link Summary Report editor to correct overlapping layout (no FP issue)
 - Restructured Ramp Meter dialog interface and modified saving of HI/LO values (Issue #573)
 - Resolved an error occurring when attempting to edit a CCTV camera through Admin Editor (Issues #614 and #619)
 - AVL:

- Fixed errors preventing vehicle status from setting correctly (Issue #383)
- Modified AVLRR to monitor EM event updates for updating which vehicles are assigned to an event (Issue #527)
- C2C Publisher:
 - Updated to correctly report incident types, road conditions, weather conditions (Issue #561)
- CCTV:
 - Fix to properly release camera connections when not in use (Issue #233)
 - Resolved an error occurring when attempting to edit a CCTV camera through Admin Editor (Issues #614 and #619)
- CCTV NTCIP Driver:
 - Fix to correct spinning cameras issue by sending multiple stop commands (Issue #274)
 - Fix to properly release camera connections when not in use (Issue #233)
- Data Archive:
 - TVT tables not purging (Issue #436)
- Database:
 - DMS message and sequence library deletions (Issue #356)
 - Fix to properly allow priority column to be updated for messages in predefined response plans (Issue #577)
- Data Bus:
 - Data Bus no longer sends responses for received messages (no FP issue)
- DMS:
 - Fixed problems with DMS Pixel Status (Issue #373)
- EM:
 - Fixed sorting Reference Points backwards (Issue #446)
 - Fixed duplicating reference points in list (Issue #451)
 - Fixed Event History not updating (Issue #465)
 - Fixed Email not displayed correctly in Event History / Chronology Report (Issue #466)
 - Fixed Event History timestamps different than chronology report (Issue #467)
 - Fixed Exit Ramp Lane Blocked text (Issue #468)
 - Fixed Response Plan Items not being sorted (Issue #477)
 - Fixed lane blockage description for “3 right lanes” vs “3 Lanes” (Issue #484)
 - Fixed Email Group failure (Issue #505)
 - Fixed Response Plan logic problems (Issue #509)
 - Fixed Response Plans not terminating (Issue #510)
 - Response Plan item adding/removal process improved to ensure duplicate items are not added (Issues #523 and #538)

- Fix made to Audit GUIs to allow users to blank the timestamp (Issue #529)
- Improvements made to the data parsing and updating algorithms to improve performance (Issues #536 and #553)
- Added “Ignore” to drop down list for “Using DMS” (Issue #508)
- CCTV/Preset are now copied in cloned events (Issue #516)
- Closed events can now be viewed from vehicle match list (Issue #568)
- Corrected issue causing incorrect locations to appear for an event (Issue #576)
- Updated EM GUI for Express Lanes from “Ht” to “EL” (no FP issue)
- Event Viewer:
 - Resolved an error retrieving agency information on event details page (Issue #587)
- IDS:
 - Fixed database exception attempting to resolve an already resolved alarm (Issue #521)
- IP Video Switch Driver:
 - Resolved errors preventing snapshots working correctly from external files (Issue #424)
 - Added removal of “stale” snapshots (Issue #476)
 - Fix for Vbrick6000 series MPEG 4 decoders (Issue #179)
 - Fix to prevent the driver from waiting on broken camera connections (Issue #316)
- ITS Generic Library:
 - Fixed problem preventing multidrop addresses on the same IP/port from working simultaneously (Issue #440)
- OperatorMap/OMInterface:
 - Fixed reference point ordering (Issue #428)
 - Fixed incorrect VSL duplicate sign recommendation display (Issue #443)
 - Fixed bug in adding text to response plan emails (Issue #444)
 - Fixed error retrieving active events in incident alarm dialog (Issue #481)
 - Fixed JavaScript error on RPG subsystem stop/restart (Issues #473 and #522)
 - Modifications made to response plan dialogs as directed by FDOT CO (Issue #482)
 - Fixed large icons appear after subsystem disconnect/reconnect events (Issue #255)
 - Gracefully handle invalid stored window positions for multi-monitor setups (Issue #544)
 - Moved link report popups to alert box (Issue #425)

- Enabled processing of decimal values in RMC control dialog for metering rate and metering rate range (no FP issue)
- RM:
 - Updates issues from the Ramp Metering Issues List (no FP issue)
- RMS 170 Driver:
 - Resolved driver connectivity issue on a software reset (no FP issue)
- RPG:
 - Corrected the RPG email congestion format (Issue #393)
 - Fixes to correct several issues dealing with email location descriptions, message display, and added support for gore lane (Issues #453, #459, #463, and #472)
 - Fix to correct RPG email format so that “Exit” text does not appear if there is no exit number (Issue #515)
 - Fix to correct RPG email format for event type to use long name (Issue #499)
 - Fixed problem with entry ramp blockages (Issue #613)
 - Updated RPG to ensure “Express Lanes” will be plural even if only one express lanes is blocked (no FP issue)
- RS:
 - Fixed Chronology Report missing Notifying Agency/Contact and Nearest CCTV/Preset (Issue #496)
 - Corrected header of Weekly_Report (Issue #502)
 - Resolved selection issues in Performance Measures report selection (Issue #460)
 - Correction made to Event_Stat_DMS report to retrieve correct event ID (Issue #501)
 - Corrected filters for weekly, monthly, and annual reports (Issues #530 and #586)
 - Fixed issue causing involved vehicles to be missing from chronology report (Issue #543)
 - Corrected location filters in various reports (Issue #548)
- RTMS Driver:
 - Improved detailed logging of poll responses by adding device ID (no FP issue)
- SAS:
 - Fixed invalid timer periods (Issue #225)
- TSS:
 - Will now publish free flow travel times for TSS links when speeds of 0 are measured (Issue #503)
- TVT:
 - Corrected problem periodically causing device templates to not update without a restart of TVT (Issue #295)
- VSS:
 - Fixed a problem that prevented status retrieval of existing switched connections (Issue #326)

- VSL:
 - Fixed loss of communication with MAS (Issue #375)
 - Fixed rejected recommendation (Issue #439)
 - Fix to make VSL recommendations accurate (Issues #438 and #589)
- Web Server:
 - Updated to exclude travel time links beginning with “XX” from displaying on the website (Issue #435)
 - Fix for cameras appearing without sorting/grouping by roadway and direction (Issue #557)
 - Updated to correctly display incident types, road conditions, weather conditions (Issue #561)
 - Changed to not show closed events on the website (Issue #563)
- Installer:
 - Added SG version string to dialogs and removed version string from individual components in the features dialog (Issue #456)
 - Changed service credential dialog to disguise password entry (Issue #457)
- Added I-95 Express Lanes:
 - Pricing subsystem
 - Toll Viewer web application
 - Added a configurable parameter in web.config for displaying/hiding effective end time column from ‘Overrides’ table (no FP issue)
 - Admin Editor: Express Lanes support
 - Operator Map: Express Lanes tab
 - Update Express Lanes Override dialog to display initial selection as “Please Select One” when an event is required for an override (no FP issue)
 - Updated Express Lanes Override dialog to sort event lists with most recent events first (no FP issue)
 - Modified Toll Gantry Icon on Express Lanes Tab to be distinct from the Toll Rate Sign icon (no FP issue)
- Release 3.1.1
 - Toll Viewer:
 - Updated “DMS Communication” table to display manual DMS messages posted on DMS (no FP issue)
 - RPG:
 - Renamed “HOT Lane” to “Express Lanes” in generated DMS messages. “Express Lanes” will be plural even if only one express lane is blocked (no FP issue)
 - EM:
 - Updated EM GUI icon for Express Lanes from “Ht” to “EL”
 - Replaced all instances of “HOT” with “Express Lanes” in EM (no FP issue)
 - Update to prevent modifying an event’s involved vehicles from forcing a refresh of other open event dialogs (Issue #595)

- Changes to improved EM subsystem login speed (Issue #618)
- Added code to allow changed event status from Closed without reopening the browser (Issue #639)
- Updates to allow RR to “Arrive” (Issue #642)
- Operator Map:
 - Express Lanes:
 - Updated Express Lanes Override Dialog to read “Please Select One” when event is required. If no event is required, default is “None” (no FP issue)
 - Updated Express Lanes Override Dialog to sort event list with most recent events first (no FP issue)
 - Added current server clock time to the green bar at the top of the tabbed GUI (no FP issue)
 - Added display of scheduled rates for the current day – both past rates and scheduled future rates (no FP issue)
 - Added pop-up dialog for operator to acknowledge whether a rate change occurred successfully and was placed on DMSs (no FP issue)
 - Modified Toll Gantry sign icon on tabbed GUI to be distinct from Toll Rate sign icon (no FP issue)
 - Video Switching:
 - Shared displays are no longer displayed as an ordered list of destinations, but are instead displayed as a Virtual Video Wall (no FP issue)
- Admin Editor (Express Lanes):
 - Updated “Segment/Rate Schedules” entry screen to allow for starting a segment rate schedule during anytime of the day rather than only midnight (no FP issue)
 - Added “Lane ID” to Express Segment entry screen to require entry of unique lane ID as specified by FTE (no FP issue)
- Pricing Subsystem:
 - Updated to allow for starting segment schedule at any time of day rather than only midnight (no FP issue)
 - Updated store and use segment “Lane ID” when communicating rate to FTE Middleware (no FP issue)
 - Added additional alert for confirmation from user that DMSs changed per new rate (no FP issue)
 - Updated to report historical rates charged and future rates to be charged for current day (no FP issue)
- Video Switching:
 - Updated to allow a user with appropriate privileges to define, store and edit the graphical layout of shared displays (no FP issue)
- 511:
 - Updated to improve FTP uploads to LogicTree (Issue #474)
- AVL/RR:
 - Updates to allow GUI to view AVL changes (Issue #645)

- Updates to allow RR to “Arrive” (Issue #642)
 - Updates to prevent incorrect “on-scene” status (Issue #630)
 - Reporting:
 - Fixed Travel Time report (Issue #640)
 - Web Server:
 - Changes to eliminate scripting errors (Issue #590)
 - Changes to fix problems with symbols on web banner (Issue #638)
 - C2C Plug-in:
 - Updates to Subscriber for improved handling of C2C status updates (no FP issue)
 - CCTV/NTCIP Driver:
 - Changes to allow changing of operational status (Issue #649)
 - Data Bus:
 - Changes to work around unexpected disconnection problem (Issue #490)
- Release 3.1.2
 - Operator Map:
 - Removed “Load Old Map” button from Link/Shield Editor (Issue #720)
 - Fixed Road Ranger arrival date in event details and chronology (Issue #719)
 - Fixed problem in Traffic Volume by Detector Per Lane Per Direction report (Issue #676)
 - Fixed EM Event modification problem (Issue #675)
 - Fixed problem with updating AVL/RR form (Issue #643)
 - Reporting:
 - Fixed problem with direction filter (Issue #694)
 - Fixed Traffic Flow Monthly report (Issue #689)
 - Fixed D5 iFlorida report (Issue #688)
 - Fixed Miscellaneous Notifier Contact report (Issues #686, #670)
 - Fixed problem in Traffic Volume By Detector Per Lane Per Direction report (Issue #676)
 - Fixed issues with iFlorida detector reports (Issue #674)
 - Fixed a problem with miscellaneous contacts report (Issue #670)
 - Fixed problems with weekly performance report (Issue #668)
 - Fixed DMS/VSL info population in Travel Time Per DMS report (Issues #637, #681)
 - Addressed issues with annual, quarterly, monthly, and weekly performance measures reporting (Issues #635, #634, #633, #632)
 - Fixed problem with Event Stat DMS report (Issue #601)
 - Miscellaneous iFlorida reports fixed (Issue #554)
 - 511
 - Fixed a problem caused by a previous change to MAS (Issue #682)
 - Fixed 511 Link Summary pop-ups when Link Reporting is disabled (Issue #663)
 -
 - RPG
 - Fixed problem with suggested DMS message when pattern mixes travel and ramp lanes (Issue #695)

- Fixed blockage description problem for travel and off-ramp mix (Issue #656)
- C2C Plug-in:
 - Fixed an unhandled exception problem during Extractor reconnect (No FP issue)
- Video Wall:
 - Fixed problem with Virtual Video Wall changing default behavior (Issue #716)
 - Fixed problem with retrieving updated tour info from Video Switching (Issue #661)
- TSS/TVT:
 - Fixed problem where remapping of TSS Links caused loss of alarm threshold data (Issue #541)
- IDS
 - Fixed error message issued when no VisioPaD agency could be found during VisioPaD alert generation (Issue #692)
- IMS
 - Fixed problem with data retrieval (Issue #706)
- EM
 - Fixed problem adding event contacts (Issue #703)
- Data Bus
 - Fixed subsystem reconnection problem on Data Bus restart (Issues #732, #700)
- DMS
 - Fixed pixel error test timeout in NTCIP driver (Issue #699)
 - Fixed disappearance of message library on renames (Issue #610)
 - Fixed data retrieval problem reconfiguring sign from DMS to VSL (Issue #360)
- Data Archive
 - Implemented performance improvement to reduce size of virtual memory usage (Issue #370)
- Admin Editor
 - Fixed Location Sort Order length entry (Issue #731)
- Release 4.0.0-Draft
 - Added support for Data Fusion
 - Added External Events driver to IDS
 - Added Weather Alerts driver to IDS
 - Added Floodgate editor and status dialogs
 - Removed Logic Tree 511 subsystem and FL511 Web Server
 - Fixes and Updates
 - Reporting:
 - Fixed time error in report (Issue #779).
 - Fixed DMS in VSL list (Issue #775).
 - Fixed subsystem lockup (Issue #762).
 - Admin Editor:
 - Fixed unapproved work problem (Issue #745).

- Fixed problem configuring locations (Issue #738).
 - Operator Map:
 - Fixed sorting of DMS items in response plan (Issue #477)
- Release 4.0.0
 - Modified the Response Plan dialog to alter how publishing 511 information is handled
 - Fixed the processing of SAE codes in the Event details screen
 - Added Metro Area to EM Location data.
 - Fixes and Updates
 - Reporting:
 - Fixed report opening problem (Issue #783).
 - Fixed formatting of lane blockage in event details report (Issue #776).
 - Fixed VSL/DMS messages in reports (Issue #772).
 - Fixed Event Chronology report (Issue #756).
 - Admin Editor:
 - Fixed configuring locations under lane configuration (Issue #742).
 - GUI:
 - Fixed distorted alert sound problem (Issue #524).
 - ITS Generic Library:
 - Fixed periodic message loss problem (Issues #768, #763, #732, #555, #521).
 - TSS:
 - Fixed WsDOT Driver speed limit cap problem (Issue #793).
- Release 4.0.1
 - Placed tenth mile event distance proximity changes into release stream.
 - Placed missing Floodgate dialog elements into release stream.
 - Changed text of weather alert dialog.
 - Updated SAE code text generation to include congestion tail information.
 - Placed reporting subsystem changes made to address FP Issues #762 and #783 into release stream.
- Release 4.0.2
 - Updated SAE code handling to include changes from the FDOT Modified SAE Code Sequencing, Version 14.
 - Replaced the event type “Accident” with “Crash” and removed/ceased “Amber Alert” event type.
 - Fixes
 - Fixed problem in C2C plug-in that prevented reading of SAE code list from config file (no FP issue).
 - Fixed ODS TSS rollup failure (Issue #826).
 - Fixed misfiring Data Archive timer (Issue #822)
 - Fixed video switching failure (Issue #798).
 - Fixed display of westbound speeds in Line Graph report (Issue #796).
 - Fixed right lanes SAE codes incorrectly indicating center lanes (Issue #846)
- Release 4.1.0
 - Updated TSS subsystem to support new requirements

- Added support for probe detection readers
- Added new Probe Fusion Driver
- Updated TVT subsystem to support new requirements
- Updated Data Archive subsystem
 - Added support to archive new probe reader data
- Updated Operator Map and Administrative Editor
 - Supports new configuration for probe devices, alternate and matching routes, new TSS and TVT subsystem configuration, etc.
- Fixes and Updates
 - Admin Editor
 - Updated Map Detector dialog for probe detector configuration (Issue #874)
 - Fixed storage of character font in DB (Issue #838)
 - Implemented improvements to database code to close unused DB connections (Issues #704 and #648)
 - EM
 - Fixed ability to audit closed event (Issue #837)
 - Fixed off ramp lanes influencing shoulders (Issue #815)
 - Added Event Type updates to event chronology (Issue #777)
 - Fixed center lane blockage description (Issue #749)
 - Added original/current concept to e-mail titles (Issue #735)
 - Fixed EM/MAS error handling a missing message queue item (Issue #659)
 - Fixed Event DMS assignment list problem (Issue #537)
 - DMS/MAS
 - Fixed blank line formatting problem in MAS (Issue #849)
 - Fixed DMS/MAS failure on DMS failover (Issue #750)
 - IDS/VisioPaD
 - Fixed subsystem crashing problem (Issue #854)
 - Fixed VisioPaD processing of RoadRanger on-scene data (Issue #759)
 - Reporting
 - Fixed reporting issues – continuation of 554 (Issue #836)
 - Fixed report errors; note that reports not fully addressed have been placed into separate issues (Issue #825)
 - Fixed listing of newly added filters (Issue #817)
 - Fixed Notifier Contact report (Issue #807)
 - Fixed date range filtering (Issue #803)
 - Fixed DMS filtering (Issue #755)
 - Fixed TSS detector reports (Issue #741)
 - Fixed iFlorida reports in D6 (Issue #688)
 - Fixed from/to location filtering for event list (Issue #678)
 - Updated all Long Names from the RS GUI by removing all dashes and underscores and renaming as agreed upon during the 4.1 FAT (no FP issue).

- TVT
 - Fixed negative travel time display (Issue #852)
- VSL
 - Added VSL Message Beacon enhancement (Issue #845)
 - Fixed VSL not respecting operational status of detectors (Issue #816)
 - Fixed VSL crash (Issue #802)
 - Fixed blanking of VSL sign (Issue #773)
 - Fixed VSL sign failure in VSL/DMS/GUI (Issue #607)
- C2C
 - Fixed a problem that caused contradictory conditions to be published in events (Issue #855)
 - Fixed a problem that prevented sending event commands to FLATIS (no FP issue).
- TSS
 - Fixed an error in TSS which prevented newly mapped links in a detector from being placed on the map without restarting TSS (no FP issue).
- SAS
 - Fixed a camera motion problem caused by an incorrectly handled exception (Issue #876)
- Database
 - Added code to dynamically reconnect to database, resulting in fixes for a number of reported problems (Issues #930, #781, #758, #751, #715, #705, #636, #631, #570, #566, #523, #513)
- Release 4.1.1
 - Admin Editor
 - Fixed cloning of rate table in Express Lanes editor (Issue #924)
 - Fixed error shown when trying to same duplicate word in Approved Word list (Issue #892)
 - Fixed DMS configuration issues with full matrix toll rate signs (Issue #886)
 - EM
 - Fixed problem with events not being removed from event list when closed or voided (Issues #909, #821, #820)
 - Added phone number to responder contact records in event history (Issue #863)
 - Fixed incorrect weather conditions information supplied to Chronology report (Issue #848)
 - GUI
 - Fixed performance issue when sending message to multiple signs (Issue #922)
 - Fixed problem selecting all signs to send a message (Issue #921)
 - MAS
 - Fixed problem handling 2-phase silver alerts with unapproved words (Issue #873)
 - Reporting

- Fixed sorting of signs in DMS Messages report (Issue #938)
- AVL/RR
 - Fixed RR Driver problems (Issue #800)
- Safety Barrier
 - Updated SB driver to use a single socket for connection with all PLCs (Issue #915)
- Release 4.1.2
 - Admin Editor
 - Updated Admin to make location alternate routes optional (Issue #976)
 - Fixed population of community name in previously saved dial-up signs (Issue #964)
 - Fixed null reference error when saving a dial-up sign (Issue #963)
 - Added cloning of Express Lane rate tables (Issue #924)
 - AVL/RR
 -
 - C2C Plug-in
 - Fixed missing cross street data in Location data (Issue #1000)
 - Fixed missing alternate route data in Event command data (Issue #993)
 - Fixed problem handling remote device control requests (Issue #987)
 - CCTV
 - Fixed problem with changing camera status without driver being connected (Issue #1010)
 - Fixed missing PTZ on some AD cameras (Issue #965)
 - Data Archive
 - Fixed Data Archive network failure recovery (Issue #971)
 - DMS
 - Fixed detailed status reporting to include lamp error in Mark IV driver (Issue #833)
 - Express Lanes
 - Fixed Toll Viewer display of Traffic Events (Issue #974)
 - GUI
 - Fixed updating of AVL/RR status list (Issue #1009)
 - Fixed updating of status for remote cameras (Issue #1008)
 - Improved performance of TVT pane in tabbed GUI (Issue #1007)
 - Fixed remote DMS control problem (Issue #1006)
 - Fixed VSL “Not connected” configuration error (Issue #1005)
 - Need for .NET 2.0 SDK to allow Operator map login (Issues #981 and #954)
 - Removed “Radius” from RPG GUI (Issue #972)
 - Update to keep TVT table header at top of screen (Issue #940)
 - RPG
 - Fixed multiple adds of titles to e-mails (Issue #916)
 - Fixed display of response plans for ramp patterns without travel lanes (Issue #895)
 - Removed unwanted punctuation from vehicle alert e-mail templates (Issue #864)

- Fixed failure to generate response plans using Amber Alert template when involved vehicles are missing data (Issue #841)
- Added vehicle state option to Amber Alert template (Issue #654)
- TSS
 - Fixed Probe Fusion driver functional problem (Issues #983 and #975)
- Release 4.1.3
 - AVL/RR
 - Expand the event data interaction between SunGuide and Road Ranger devices to allow for adding/updating of live events
 - New RR-related reports
 - The following Footprint issues:
 - Traffic Flow Monthly Report in D6 (Issue #689)
 - User Account Permission Changes / Re-Authentication (Issue #704)
 - Password change — DMS fails to authenticate (Issue #717)
 - TSS Raw Data Duplicates (Issue #728)
 - DMS randomly blanking (Issue #774)
 - DMS and TSS Report Problems (Issue #809)
 - DMS Mark IV Controller reports “NODE OFFLINE” but SunGuide reports ActiveRo (Issue #818)
 - RPG Failed to generate DMS in response plan (Issue #882)
 - Config Editor Crash (Issue #887)
 - DMS VSL Message Travel Time Report Per DMS Comments (Issue #897)
 - LineGraphOfTotalVolumePerDetectorPerDirection comments (Issue #898)
 - TabularSpeedsByDetectorStationPerLanePerDirection Comments (Issue #900)
 - Incident_Management_Monthly Comments (Issue #901)
 - Weekly_Report Comments (Issue #902)
 - Monthly_Report Comments (Issue #903)
 - Central_Computer_System Comments (Issue #908)
 - Controller rejecting DMS message while queue state indicates complete (Issue #917)
 - If you put an Address of 65535 for a DMS device the device and IP address gets modified to 0 and localhost (Issue #927)
 - DMS Message report showed travel times in second and incorrect (Issue #935)
 - RS took long time to generate reports (Issue #937)
 - Java script error when attempting to set the Ramp Metering Time of Day tables (Issue #939)
 - XML validation error between RRRXML Driver and RRMA application for user_type field (Issue #970)
 - VSL signs Display “@nbsp;” instead of speed limit (Issue #985)
 - Change C2C schema Location sort order from short to integer (Issue #994)
 - Traffic Detection Reports not working (Issue #1001)

- DMS Errors — MAS/DMS show Failed but message is on sign (Issue #1004)
- Modifying Probe Fusion device mapping causes tag matching failure (Issue #1013)
- VSL need to be removed from signs tab on the 511 website. (Issue #1015)
- RMS metering mode not restored on subsystem restart. (Issue #1020)
- RM 170 Controller is locking. (Issue #1021)
- Admin Editor gives error when editing (Issue #1022)
- Getting a lot of false alarms from 511 alerts (Issue #1024)
- Toll Viewer calendar (Issue #1031)
- Problem editing link lengths via the AE Map Detector screen (Issue #1032)
- 2 Page DMS Message Display in Response Plans (Issue #1035)
- AVL Driver error upon creating unconfirmed event with location (Issue #1037)
- Missing Line Header in TVT configuration causes TVT messages to error when formatting strings (Issue #1039)
- TVT viewer fails to display content unless .NET 2.0 SDK is installed. (Issue #1040)
- Remove Event from FLATIS when an event is closed (Issue #1041)
- Simplify deleting Floodgate Audio Messages and Banners (Issue #1042)
- Toll Viewer and PS out of sync (Issue #1046)
- All cameras spinning out of control (Issue #1047)
- RM 170 Controller is locking when comm is lost and power cycled. (Issue #1050)
- RM Subsystem fails to change metering mode based on Central TOD table (Issue #1058)
- RM central TOD table displays ‘Local’ entries incorrectly as ‘Fuzzy’ (Issue #1059)
- RM 170 Controller should return to the correct metering mode after power cycle or software reset. (Issue #1061)
- Add Floodgate command history storage to SG (Issue #1071)
- EM Thinks the Earth is Smaller Than It Is (Issue #1073)
- RM 170 controller meters incorrectly when a ‘short stop’ occurs. (Issue #1076)
- RM 170 Controller detects a ‘long stop’ prematurely. (Issue #1079)
- Publish to FL-ATIS does not persist between DMS subsystem restarts (Issue #1093)
- C2C use of Long Name instead of Short Name for EM Reference Points (Issue #1098)
- Add TVT length to C2C data (Issue #1106)
- Add a “can publish” flag to DMS, CCTV, TVT data (Issue #1107)
- Release 4.2.0
 - IDS
 - Added new driver and updated IDS for retrieval and processing of FHP CAD incident data

- Updated IDS and VisioPaD driver to allow operators to disable/enable incident detection by Citilog cameras
- Travel Time
 - Added uncapped data to archived data and updated Travel Time Performance Measure Report
- FootPrints issues addressed:
 - Fixed problem with incorrect display of available and selected counties on Admin Editor Roadway page (Issue #1232)
 - Fixed problem causing a reset of map preferences when upgrading from 4.1.2 to 4.1.3 Patch 3 (Issue #1231)
 - Fixed problem using the Vehicle Tag Match link in EM (Issue #1224)
 - Enhancement for reporting vehicle GPS location as a new report column (Issue #1215)
 - Enhancement for adding FHP Filter alert box option (Issue #1209)
 - Enhancement for VSL Plan Groups drop down list to GUI (Issue #1208)
 - Enhancement for including cross street in FHP CAD incident filtering (Issue #1205)
 - Enhancement to include additional FHP CAD incident actions to event chronology (Issue #1204)
 - Enhancement to alert operator when non-dismissed incident is closed by FHP CAD (Issue #1202)
 - Enhancement to include additional alerts for FHP events in archive (Issue #1201)
 - Enhancement for adding responder arrival in FHP CAD events (Issue #1200)
 - Enhancement for FHP CAD event updates (Issue #1199)
 - Fixed problem with AVLRR retrieving events from data bus on startup (Issue #1192)
 - Fixed problem adding loop or radar detector types with Admin Editor (Issue #1190)
 - Updated vehicle location reports (Issue #1185)
 - Fixed problem with VisioPaD alarms involving acknowledgement of a system-wide disabled camera response (Issue #1184)
 - Fixed database query for retrieving unresolved external events on startup Enhancement that retrieves unresolved external alerts on IDS startup (Issue #1183)
 - Fixed problem with probe fusion detector mapping (Issue #1180)
 - Fixed error archiving TSS data received from C2C sources (Issue #1176)
 - Fixed e-mail description in response plan generated e-mails (Issue #1170)
 - Fixed problem with Admin Editor EM Vehicle Model dropdown (Issue #1168)
 - Fixed problem caused when changing the AVL/RR IP port (Issue #1167)
 - Fixed editing of Detector maps by Admin Editor (Issue #1165)
 - Fixed propagation of report filter edits and deletions (Issue #1161)
 - Corrected missing VSL data in reports (Issue #1152)

- Fixed mismatch of colors between Operator Map and 511 website (Issue #1150)
- Fixed problem that caused trouble opening newly created Road Ranger vehicles in Admin Editor (Issue #1149)
- Fixed handling of modified EM location data by AVL (Issue #1141)
- Fixed failure in CCTV NTCIP driver when saving CCTV changes (Issue #1139)
- Added updated Floodgate Data file to release documents (Issue #1136)
- Fixed Admin Editor failure to edit reference points and filter locations (Issue #1129)
- Fixed the loss of detector map configuration on TSS restart (Issue #1127)
- Fixed problem with modifying an AVI/LPR detector causing multiple polls to occur simultaneously (Issue #1121)
- Added ability for operators to turn off travel time messages to a DMS (Issue #1120)
- Fixed exception in Travel Times caused by enabling or disabling of message generation on a device (Issue #1119)
- Enhancement that handles invalid characters during database import using data pump (Issue #1105)
- Fixed problem modifying local TOD table for some Ramp Meter sites (Issue #1102)
- Fixed problem with updating TSS thresholds on the GUI as changed are made (Issue #1092)
- Fixed EM auditing problem (Issue #1089)
- Suppressed duplicate e-mail generation in EM (Issue #1086)
- Fixed excluding of ramp event filtering in report (Issue #1082)
- Fixed problem logging into DMS subsystem (Issue #1049)
- Fixed C2C installer and documentation to only use space-delimited server URI lists (Issue #1045)
- Enhancement to add “Commissioned” flag to DMS and CCTV devices (Issue #1044)
- Fixed problem saving EM location after changing direction with congestion (Issue #1034)
- Release 4.2.2
 - Express Lanes
 - Persist toll requests through PS subsystem restarts
 - Quality control system for tolls
 - Toll Viewer usability updates
 - Logging of previous day’s activity
 - EM
 - Added send of user notification message when event commands to FLATIS fail.
 - FootPrints issues addressed:
 - Fixed EM icon legends in GUI (Issues #1279 and #1278)
 - Fix for Floodgate editor crashing IE in GUI(Issues #1277 and #1238)

- Fixed incident alert getting stuck in EM in IDS VisioPaD driver (Issue #1275)
- Fixed problem editing “Florida’s Turnpike” equipment in Admin Editor (Issue #1274)
- Enhancement that added a “Hide Full Track” button in AVL Replay dialog (Issue #1265)
- Enhancement that clarified controls for enabling tracks for individual vehicles (Issue #1264)
- Fixed publishing of remote roadway links when used by local Travel Time links in C2C Plug-in (Issue #1251)
- Fixed problem with events in D6 locking EM (Issue #1245)
- Fixed loss of update handling problem in RR driver after adding new vehicle operator (Issue #1239)
- Enhancement added Center ID attribute to Travel Time link roadway link list in C2C Plug-in (Issue #1237)
- Fixed a problem in EM with use of ampersand in reference points (Issue #1235)
- Fixed saving of message priority from GUI (Issue #1233)
- Fixed missing Exit number in RPG Suggested Email locations (Issue #1230)
- Fixed problem in MAS that generated no DMS queue error on MAS restart (Issue #1229)
- Fixed problem saving weather conditions in EM (Issue #1227)
- Fixed problem with VSL signs not receiving suggested plans from (Issue #1218)
- Removed exponential scale from chart in Weekly PM report (Issue #1198)
- Fixed event status filter of “Any” not capturing events in RM (Issue #1148)
- Fixed problem in EM with Contact appearing multiple times (Issue #1137)
- Fixed problem in EM with approved alerts showing in event list (Issue #1064)
- Fixed problem with approved VSL plans not being updated in SunGuide (Issue #947)
- Release 4.3.0
 - Express Lanes Enhancements
 - Updated Pricing modes to include Time of Day, Zero Rate, Closed, Manual, and Dynamic.
 - Pricing tabbed GUI displays a full rate history table and last message sent to each DMS.
 - Added Offline Synchronization.
 - Added ability to specify transit times during mode change.
 - Added starting state checks and recommendations.
 - TSS
 - Implemented an alarm recovery threshold to limit the number of alarms generated when speed or occupancy fluctuates around the alarm threshold (Issue #1096)

- Implemented the slow polling of failed traffic detectors so comms can resume automatically (Issue #102)
- FootPrints issues addressed:
 - Fixed Ramp Meter 170 driver polling of failed devices (Issue #1412)
 - Fixed database exception when archiving express lanes DMS data (Issue #1406)
 - Fixed Pricing not updating tolls intermittently (Issue #1402), This issue will remain open until the fix has been operating successfully in D6 for some time.
 - Changed Admin Editor to prevent editing of a camera's poll process (Issue #1399)
 - Fixed merge message functionality in MAS for Mark IV signs (Issue #1396)
 - Fixed incorrect "Field in Error" indication in Admin Editor (Issue #1360)
 - Provided instructions to removed unused DMS group info from database that was causing exceptions (Issue #1356)
 - Fixed a problem auditing EM event type change (Issues #1385 and #1355)
 - Fixed a problem in the handling of apostrophes in the Event List (Issue #1352)
 - Fixed a problem adding new Ramp Meter controllers in Admin Editor (Issue #1336)
 - Fixed report template issues (Issue #1327)
 - Fixed problem with toggling Abandoned/Disabled vehicles icons on map (Issue #1316)
 - Added separate event severity for FL-ATIS (Issue #1280)
 - Fixed problem with updates to Ramp Meter Controller Status Overview dialog (Issue #1142)
- Release 4.3.1
 - Post-FAT FootPrints issues addressed:
 - Implemented alerts for zero rates in Pricing (Issue #1431)
 - Updated Express Lanes GUI headings (Issue #1430)
 - Implemented alerts for Pricing offline file handling errors (Issue #1429)
 - Fixed Toll Viewer Lanes Affected message (Issue #1428)
 - Implemented single TSS alert per link (Issue #1426)
 - Replaced checkbox with radio buttons for selecting Speed and/or Occupancy (Issue #1423)
 - Updated audit record timestamps (Issue #1422)
- Release 4.3.2
 - Enhancements:
 - Added support for multiple simultaneous DMS sequences (Issue #1123)
 - TERL IV&V issues addressed:
 - Update build scripts to ensure latest IP video devices file is included on the install media
 - Updated Video Source and Destination Admin Editor screens to allow up to 8 "cards"
 - Fixed problem with single TSS alarm per link when more than one link is assigned to a detector

- FootPrints issues addressed:
 - Fixed icons for Events marked as Crashed (Issue #1444)
 - Fixed problem sending HAR messages (Issue #1440)
 - Improved performance of EM Maintenance query (Issue #1286)
- Release 4.3.3
 - TERL IV&V issues addressed:
 - Changed the logic used to dismiss unacknowledged TSS Speed AND Occupancy alarms
 - District 6 IV&V issues addressed:
 - Changed reissued update rate to use the same rules as when originally requested (Issue #2)
 - Fix error message to use the text “ID” instead of “i/d” (Issue #3)
 - Remove the text “you should” from “suggested” message (Issue #4)
 - Change the word “Lane” to “Mode”(Issue #5)
 - Changed alert logic so that a vehicle moved from a travel lane to a shoulder will generate an alert (Issue #6)
 - Changed rate mode recommendation from “manual” to “TOD” when system is in manual prior to shut down and all signs match the current TOD rate at restart (Issue #9)
 - Changed logic to prevent a rate adjustment after restart if rate adjustment was ended before restart (Issue #10)
 - Changed alert logic resolution to recognize “Ended due to restart” (Issue #11)
 - FootPrints issues addressed:
 - Fixed problem causing HAR subsystem to exit when connecting to HAR driver (Issue #1460)
 - Added “direction” data that was missing from Event Detail report (Issue #1443)
 - Made improvements to Data Archive so it could keep up with archiving traffic data (Issue #1442)
 - Sorted the lanes displayed in the TSS Link Speed window (Issue #1438)
 - Fixed parsing of RWIS XML in Publisher (Issue #1387)
- Release 5.0.0
 - SunGuide Operator Map revisions:
 - Replaced SVG Viewer and SVG map fragments with Windows Presentation Foundation (WPF) and map tiles
 - Removed dependencies on PHP
 - Moved shield data into database
 - Integrated device linking into Operation Map
 - Fixed problem that caused some TSS Links to disappear from the map (Issue #1465)
 - Response Plan Generation revisions:
 - Completed migration of response plan generation from Java RPG app to .NET EM app
 - Moved device linking data into database

- Fixed problem that prevented contacts marked as “Sensitive” from receiving e-mail alerts (Issue #1482)
- Data Bus revisions:
 - Incorporated TxDOT data bus changes. No functional changes but improvements for speed and efficiency.
- Status Logger revisions:
 - Changed file dialog handling in Status Log Viewer for Windows Vista and Seven compatibility (Issue #1437)
- C2C revisions
 - Provided Floodgate configuration file with fixed counties/regions (Issue #1302)
- Release 5.0.1
 - District 6 IV&V issues addressed:
 - Pricing
 - Changed Rate History Table to show entries by the effective time (Issue 7)
 - Changed Toll Viewer to not eliminate entries with the end time before the start time (Issue 8)
 - Changed Pricing Startup State dialog to always require operator approval before Pricing can be initialized (Issue 12)
 - Changed Offline Synchronization to stop processing rates if a recoverable error is found, and continue tying the rate until successful (Issue 13)
 - Changed Toll Viewer to allow pasting a date and starting a search without clicking outside of the Date/Time field (Issue 14)
 - Changed Dynamic Mode alerts to replace an alert for the same segment (Issue 15)
 - Changed Pricing to automatically acknowledge a Rate Change alert when the Suppress Rate Change Alerts flag is set (Issue 16)
 - Changed Pricing to only log the Effective Time if it was provided by the Middleware (Issue 17)
 - Removed roadway filter from the Toll Viewer’s event list (Issue 18)
 - Added more meaningful error descriptions to Admin Editor (Issue 21)
 - Added Event ID field to the DA_PS_TOLL_RATES table (Issue 22)
 - Changed the displayed rate table to suppress the rate charged field until rate goes into effect (Issue 26)
 - Changed Pricing to not persist comments for a mode change or rate adjustment at periodic updates (IV&V pg. 21 under “Issues During Re-Testing”)
 - Post-FAT enhancements addressed
 - Operator Map
 - Non-TSS links edited in the Link Editor will update when changed without having to restart the map.
 - RPG

- All references to “511” will be replaced with FL-ATIS, excluding the RPG icon.
- Pricing
 - In Pricing, Non-TOD alert messages will be changed from “Lane is operating...” to “Express Lanes segment (segment name) is operating...”
 - In Pricing, lane blockage removal alert messages will be changed from “Lane associated with...” to “Express Lanes segment (segment name) associated with ...”
- GUI revisions:
 - Updated VDD and IN regarding map tile location (FP Issue 1503)
- Admin Editor revisions:
 - Fixed handling of abbreviations and approved words with apostrophe (FP Issue 1496)
- EM revisions:
 - Fixed problem with adding new event (FP Issue 1494)
 - Added a chronology record when contacts are added to events (FP 1493 and 1487)
- Reporting and VSL revisions:
 - Fixed VSL reports that were not showing date and time posted (FP Issue 1414)
- TSS and IDS revisions:
 - Fixed a problem that caused TSS alarm generation to not recover when TSS was restarted (FP Issue 1134)
- C2C Plug-in revisions:
 - Fixed a problem that caused new devices or messages to be sent to subscribers as “update” instead of “add” (FP Issues 1497 and 1357)
- Release 5.0.2
 - TERL IV&V issues addressed:
 - Fixed saving of current window positions (Issue #1)
 - Fixed TSS link status tooltip text (Issue #2)
 - Fixed problem with multiple windows for “Add New Event” (Issue #3)
 - Fixed problem with camera sequences (Issue #4)
 - Fixed saving of event severity icon selections (Issue #6)
 - Fixed Ramp Meter dialog error during TOD entry (Issue #7)
 - Fixed subsystem logout problem when using Logout from context menu (Issue #9)
 - TSS no longer has to be restarted to get new links from Link Editor (Issue #11)
 - Fixed RPG HAR dialog resetting priority to zero (Issue #12)
 - MAS no longer has to be running for RPG to function properly (Issue #14)
 - Fixed usage of HAR icon on map when message is present (Issue #15)
 - Fixed TSS alarm cause updates in alert list (Issue #16)
 - Removed Gilchrist county from Panhandle region (Issue #17)
 - Added direction info to Event Detail report (Issue #18)
 - GUI revisions:

- Added missing HAR GUI file items to installer (FP 1521)
- Fixed JavaScript out-of-memory error (FP 1515)
- Fixed resetting of AVL/RR GUI drop down boxes content after update receipt (FP 1347)
- Fixed GUI slowness (FP 1343)
- Fixed GUI excessive memory usage (FP 1256)
- Fixed Device Sequencing Editor timeout when attempting to retrieve data from C2C Subscriber (FP 1236)
- Fixed resizing problem in AVL/RR Details window (FP 1219)
- Fixed EM GUI code to eliminate constant errors being logged (FP 1085)
- Fixed problem that cause response plans to be missing from EM list (FP 1083)
- Fixed data bus connection from GUI problem (FP 1029)
- Added new options for displaying event icons on the map (FP 598)
- HAR revisions:
 - Fixed set of beacon status in HAR driver (FP 1520)
- C2C Plugin revisions:
 - Fixed reporting of county info for TSS links (FP 1516)
 - Fixed reporting of county info for EM events (FP 1461)
- EM revisions:
 - Fixed county sort order (FP 1484)
 - Fixed last update time on e-mail alerts (FP 1333)
- DMS revisions:
 - Fixed use of apostrophes in abbreviations (FP 1478)
 - Fixed sequencing/authentication problem (FP 1388)
- Data Archive revisions:
 - Fixed disconnection from TSS after C2C Subscriber restart (FP 1452)
 - Fixed incorrect timestamps in TSS status records (FP 1225)
- Pricing revisions:
 - Fixed problem with Toll Viewer Discrepancy report (FP 1446)
 - Fixed problem with Toll Rate Discrepancy report (FP 1408)
- Video Switching revisions:
 - Fixed usage of non-default SNMP ports (FP 1436)
- AVL/RR revisions:
 - Fixed duplicate status entries in RR Admin report (FP 1196)
 - Revised AVL/RR to use Navteq map data in place of Dynamap data (FP 1157)
- Reporting revisions:
 - Fixed Quarterly Incident Detail report (FP 905)
 - Fixed RR Admin report (FP 904)
- Release 5.0.3
 - TERL IV&V issues addressed:
 - Fixed TSS alarm cause updates in alert list (Issue #16)
 - Data Archive revisions:
 - Addressed TSS archiving latency issue (FP 1499)
- Release 5.0.4

- INRIX Publisher Enhancement:
 - Retrieve speed data from INRIX web service, initially for I-10 and part of I-75.
 - Make the speed data available to SunGuide and FL-ATIS using the C2C Status Infrastructure on a configurable county-by-county basis.
- General System revisions:
 - Changed sort order in EM tables to fix issue with EM Locations published to C2C (FP 1570)
 - Fixed database update script (FP 1618)
 - Implemented performance improvements (FP 1628)
 - Fixed installer to include missing text-to-speech library (FL 1733)
 - Updated dependencies in installer that prevented county data for devices going to C2C if AVL not installed on same host as C2C Plug-in (FP 1751)
- Admin Editor revisions:
 - Enhancement to append short name to reference point list in EM Reference Point editor (FP 1508)
- C2C Plug-in revisions:
 - Fixed problem in Subscriber caused loss of Floodgate data (FP 1552)
- Data Archive revisions:
 - Fixed DMS Message query that was taking too long (FP 1606)
 - Issue addressed with FP 1499 in 5.0.3 (FP 1643)
 - Fixed a problem that TSS CSV files from being created (FP 1668)
- EM/RPG Subsystem revisions:
 - Removed dependency on Data Archive for DM message event chronology records (FP 1223)
 - Fixed problem building a modify DMS message (FP 1246)
 - Enhancement to forced abbreviations logic in RPG (FP 1413)
 - Made a change to include Road Ranger timestamps in the event chronology (FP 1486)
 - Updated EM to subscribe for DMS messages (FP 1511)
 - Fixed issue of devices not using the correct device template (FP 1512)
 - Fixed problem finding particular DMS signs on the Turnpike Spur (FP 1524)
 - Fixed problem selecting a Road Ranger as a contact (FP 1549)
 - Fixed a problem that prevented dialog from opening if DMS/HAR/MAS were not started (FP 1544)
 - Fixed problem with no dispatch/arrival after selecting RR as contact (FP 1550)
 - Fixed a problem with the way virtual device linking nodes were passed to the GUI (FP 1551)
 - Ported abbreviation code from RPG (FP 1555)
 - Fixed a problem with direction name lookup in predefined response plans (FP 1565)
 - Fixed problem calculating distances to signs (FP 1569)
 - Implemented speed improvement in event creation and response plan generation (FP 1577)

- Fixed problem with incorrectly sorted locations in ported RPG Java code (FP 1582)
- Changed response plans to use long names instead of short names (FP 1605)
- Fixed ramp text in response plan messages (FP 1607)
- Fixed problem with vehicle alert vehicle model selection (FP 1611)
- Added a check that Subscriber is connected before sending event publish/unpublish messages to it (FP 1627)
- Fixed problem with lane blockage for shoulder blockage (FP 1645)
- Fixed a problem with response plan device templates not being correctly applied (FP 1652)
- Fixed a problem that prevented e-mail generation when event vehicle had N/A for the make (FP 1656)
- Made a change to allow selection of a vehicle without a color (FP 1658)
- Fixed a problem with vehicle info in response plan e-mails (FP 1662)
- Fixed problem that prevented DMS chronology entries from showing in EM chronology (FP 1667)
- Changed a DB query to exclude the to-be-deleted row (FP 1671)
- Fixed a problem that prevented event attributes from being included in response plan e-mails (FP 1672)
- Made a change to allow selection of a vehicle without a model (FP 1682)
- Fixed problem auditing responder timestamps (FP 1710)
- Changed RPG to use “Crash” instead of “Incident” for event type (FP 1738)
- Fixed device templates for response plans using incorrect templates (FP 1766)
- Fixed Audit permission within the GUI (FP 1767)
- GUI revisions:
 - C2C links will be now be shown on the Operator Map
 - Addressed slow performance issues with AVL dialogs (FP 1343)
 - Fixed AVL/RR UI problem; added performance improvements (FP 1541)
 - Fixed problem saving window positions when dialog is minimized (FP 1545)
 - Fixed problem where Disabled Subsystems preference is ignored (FP 1547)
 - Fixed problem with Floodgate icons in Floodgate summary dialog (FP 1554)
 - Fixed problem with automatic population of congestion tail offset (FP 1556)
 - Added new parameter to prevent change of focus to System Messages when new messages arrive (FP 1557)
 - Fixed problem that caused VSL alerts to be shown in pop-up (FP 1558)
 - Fixed problem with Event Details dialog loading if vehicle make or model is N/A (FP 1559)
 - Revised some JavaScript calls that caused exception generating event from FHP alert (FP 1560)
 - Fixed problem causing tabbed UI scroll headers to throw errors (FP 1561)
 - Fixed problem with missing VisioPaD snapshots in alerts (FP 1562)
 - Made changes to prevent spontaneously closing of Operator Map (FP 1564)

- Added code to allow blanking of multiple signs from DMS Status dialog (FP 1571)
- Addressed Operator Map crashes in D5 (FP1583)
- Fixed possible threading problem for UI updates (FP 1588)
- Fixed dialog close exceptions (FP 1624)
- Fixed problem that prevented response plan dialog from terminating (FP 1625)
- Fixed problem with the DMS short status window being unable to blank a DMS (FP 1666)
- Fixed problem of being unable to select a roadway of direction for a new TSS link in the TSS Link Editor (FP 1684)
- Fixed Link Editor to work with an empty node list (FP 1712)
- Fixed problem that caused an exception when selected event responder has no contacts (FP 1746)
- Fixed issue of Toll Rate signs sending messages to MAS instead of directly to DMS (FP 1749)
- Fixed Core Responders not showing (FP 1752)
- Fixed issue where responder agency would not be checked when assigned a response time (FP 1754)
- Fixed Issue of RR response time are clickable in Responder table (FP 1780)
- Fixed Issue of selecting the first contact for a responder was not working (FP 1792)
- Fixed issue of CCTVs not sorting in the nearest CCTV section (FP 1794)
- Fixed issue of weather radio buttons unselecting after save (FP 1797)
- IDS revisions:
 - Fixed problem with display of FHP and VisioPaD alerts (FP 1580)
 - Fixed problem handling FHP removal notifications (FP 1594)
- Pricing Subsystem revisions:
 - Updated so that event association for rate adjustments is always optional (FP 1637)
- Reporting Subsystem revisions:
 - Event_Stat_Level report will now consider closures of the shoulders and previous blockages when calculated reopen lane times (FP 1364)
 - Fixed problem that prevented selection of roadway direction and from/to options (FP 1581)
 - Added additional exception handling for failed report generation attempts (FP 1660)
 - Removed filter that event chronology is based on, which removed dependency on DA (FP 1690)
- Safety Barrier
 - Added alert in Alert Box for SB alerts (FP 1510)
- Status Logger revisions:
 - Fixed a problem that caused SL Viewer to fail when reading a corrupt log file (FP 1630)
- Release 5.0.5
 - AVL SPARR Enhancement:

- Developed new AVL driver to interface with smart phones.
- Developed Road Ranger application for the Android smart phone platform.
- Updated AVL subsystem to use new driver.
- Release 5.1.0
 - Connected Vehicle
 - Configuration, Data Acquisition, Archiving, C2C, and GUI work to support RSE devices
 - Event Management
 - Do not publish flag for EM locations
 - Chronology Blockage time was corrected (FP 1138)
 - Generate Mileage from DMS for RPG messages (FP 1260)
 - Last update Time for an email from RPG was corrected (FP 1333)
 - Auditing an event status issue (FP 1378)
 - Fixed Chronology to show “No Lanes Blocked” at proper time when changing the event location (FP 1389)
 - EM Location changed to make description optional (FP 1683)
 - EM Lanes Reopen time now reports the correct time even when blockage is changed during auditing (FP 1743)
 - Chronology does not show “blanked” if message was removed by user (FP 1753)
 - Event Type audit now modify the event type date (FP 1817)
 - Auditing the RRs corrected (FP 1840)
 - Default templates for HAR and DMS are now editable (FP 1909)
 - Invalid error message when an event is removed from the event list has been removed from the status log (FP 1922)
 - Center to Center
 - Publish “Unconfirmed” Events (Soft Messaging)
 - Updated to be Windows Server 2008 compliant
 - DMS
 - Multithreaded process for process status and sending commands
 - DMS now sends updates to connected clients after a systemUpdateMsg (FP 1821)
 - DMS now works in clustered environments with multiple Ips assigned to the machine (FP 1969)
 - TSS
 - Email Alerts for Failed detectors
 - Email Alerts for Invalid Data from a detector
 - GUI
 - Closed events are no longer shown on the Operator map (1601)
 - DMS conflicts will now only show in a single dialog (FP 1522)
 - A popup will warn operators if they attempt to close an event that will not be included in performance measures (FP 1514)
 - Missing DMS sign from drop down (FP 1529)
 - Fixed problem of EM List failing to Update (FP 1563)
 - TSS Link Editor Dialog issues have been corrected (FP 1722, FP 1962)
 - Map now handles N/A as valid make or model (FP 1784)

- Comment Box defaults to the 1st item in the sort order configured (FP 1811)
- Multiple map views can be created in the same session (FP 1824)
- Authorize function corrected to help with dialog sizing (FP 1852)
- Fixed issue where TSS contact where attempted to be created with invalid data (FP 1913)
- VW
 - Multiple Layouts for Virtual Video Wall (FP 730)
- RS
 - Updated to be Widows Server 2008 compliant
 - RR Admin Details Report Billable time calculation fix (FP 906)
 - RR Administration Report Billable calculation fix (FP 1075)
 - Weekly PM Report Problems (FP 1491)
 - Threading issue when generating reports (FP 1602)
 - New IDS Alert Summary Report (FP 1619)
 - Reports from Multiple users will not cause issues (FP 1803)
 - VSL Header correction (FP 2004)
- AVL
 - Remove extraneous XML from vehicle marked as AVL Only (FP 1195)
 - Threading issue caused a database problem (FP 1454)
 - Status update problems (FP 1506)
 - Corrected Locking issue in the SPARR Driver (FP 1843)
 - Fixed issue where the SPARR app would close unexpectedly (FP 1864)
 - Additional Thread safety was added to data lists within AVL (FP 1903)
- MAS
 - Message Priorities corrected to be priorities right at all times (FP 1376, FP 1950)
 - Now Sends any event Id in a merged message, even if the event Id is on the lower priority message (FP 1770)
 - Fixed issue where MAS would not always honor the priority of messages (FP 1804)
 - Optionally can bypass DMS conflict checking (FP 1854)
- Admin
 - Updated error handling (FP 1427)
 - Live update on Toll Lane Status Signs (FP 1750)
 - Text correction in PS (FP 1818)
 - More informative Error Messages (FP 1829)
 - Sort Order increased to allow more than 9 digits (FP 1887)
- HAR
 - Ensure Unique name when sending message (FP 1527)
- DA
 - Adding index to keep pace with data inserts (FP 1532)
 - TSS Rollup data time correction (FP 1849)
- VS
 - Tours switching rapidly (FP 1578)
 - Threading issue when performing connection request corrected (FP 727)
- IDS

- IDS no longer closes when there are multiple alerts with the same id on startup (FP 1705)
 - Remarks column in database was lengthened to 256 (FP 1731)
- CCTV
 - Fixed problem where Bosch camera would lock up and driver would report 100% usage (FP 1737)
- PS
 - Now ignores fractional seconds in the discrepancy report as SunPass does not provide that accuracy (FP 1756)
 - Toll Viewer speed improved to prevent timeout errors (FP 1791)
- GUI Pref
 - Now sends updates about user changes such as map views created (FP 1825)
- C2C
 - Fixed Publisher and now reads RWIS temperatures correctly (FP 1837)
 - Fixed issue where Publisher reported -1 for all Traffic Speed Data (FP 1856)
 - Fixed issue where recycling the Publisher would result in data no longer being sent to the Provider (FP 1926)
- RWIS
 - Removed unwanted warning message (FP 1859)
- Release 5.1.1
 - Enhancements
 - Activu Video Wall Driver Support
 - Support Driver for Activu Video Wall control
 - Admin
 - Renamed UDP and TCP protocols for TransCore devices (FP 2084)
 - C2C
 - Subscriber now logs the text description of the location information in the database (FP 1687)
 - DAR
 - Data Archive RITIS support to write updates to a RITIS FTP site
 - Data Archive
 - DA now writes classification reads to the CSV files (FP 2137)
 - DMS/MAS
 - MAS was made aware of DMS status. DMS will now attempt to stay in sync with the MAS queue. (FP 1310)
 - MAS now uses the database to persist MAS queues through a restart
 - Event Management
 - Configurable option to use long name in email for roadway description and ref point (FP 1530)
 - Multiple contacts with the same name are now allowed. Must be different agencies (FP 1748)
 - New mapping of event types to human readable response plan event types (FP 1744)
 - Jupiter Video Wall Driver
 - Support Driver for Jupiter Video Wall control
 - Probe Fusion Driver

- Additional configuration and driver changes to support an advanced filtering and averaging algorithm
 - RS
 - Excel reports now generate in a data only format (FP 1055)
 - Safety Barrier Alert Driver
 - New driver for Safety Barrier alerts. SB Alerts will now go through IDS. Alerts and operator responses will be logged in the database
 - SPARR Driver
 - Driver now supports a close event command
- Admin
 - TSS detector and protocol matches are enforced (FP 1813)
 - No longer trims name of ramp meter on edit/delete(FP 2071)
 - Fails and alerts user when attempting to edit a TVT link when one of the TSS links has been deleted (FP 2076)
 - No longer allows trailing or leading whitespace on DMS signs (FP 2145)
- AVL
 - Fixed RR stop alert issues (FP 1998)
 - SPARR Driver checks to see if driver is already logged in (FP 2001)
 - Fixed issue of database logging when driver is running but is not connected to the proxy (FP 2211)
- C2C
 - Additional information stored on floodgates (FP 1687)
 - Fixed issue with status website icons (FP 2120)
 - Fixed C2C disconnect/reconnect issues (FP 2121)
 - Fixed issue on reconnection of C2C components (FP 2209)
 - Fixed issue sending event start time for Unconfirmed events (FP 2242)
- DA
 - Restructured DMS query to allow for faster execution (FP 2086, 2283)
 - Fixed issue logging remote TSS Data (FP 2989)
- DMS
 - Packet length on a UDP port server message was increased for larger messages (FP 1927)
 - Fixed log in issue with DMS (FP 2108, 2127)
 - Time sync is now configurable (FP 2193)
- EM
 - Chronology entries when using multiple events now show DMS posting messages correctly (FP 1223)
 - Chronology now automatically refreshes after receiving successful response from FLATIS (FP 1382)
 - Multi-word abbreviations allowed (FP 1827)
 - Always add chronology records when Activating/Terminating response plans for each item (even if unchanged) (FP 1902)
 - Added ability to set quantities for activities of RRs (FP 1997)
 - Exit Number is now available for use in templates (FP 2045)
 - Added ability to delete activities from an event (FP 2052)

- No longer use “—Between—“ when replacing templated messages (FP 2082)
- Chronology shows when a response plan is published (FP 2113, 2154)
- Emails are now generated and sent to multiple recipients instead of individual emails (FP 2207)
- Fixed RPG distance calculations (FP 2219)
- IDS
 - FHP Alerts are created as Unconfirmed if no trooper arrival is present (FP 1740)
- INRIX
 - Now allows multiple SetIds (FP 2027, 2096)
 - Uses the Full Name if the Roadway name is missing (FP 2155)
- Installer
 - Folder picker issues resolved (FP 1939)
- MAS
 - Better handling of timeouts when using merged travel time messages (FP 1941, 2215)
- Operator Map
 - Audited contacts with no name can now be saved (FP 1816)
 - Editing and drawing a TSS link has been corrected (FP 2039)
 - Ramp Meter list no longer loses focus when refreshing (FP 2064)
 - Spelling conflict dialog closes when all conflicts are resolved (FP 2085)
 - Fixed find on map for RSE (FP 2106)
 - Fixed issue with custom-defined fonts on DMS signs (FP 2133)
- PS
 - Segment Rate Schedules with the same start time are now allowed (FP 2035)
- RMS
 - Fixed issue sending updates on modification of ramp meters (FP 2112)
- Release 6.0.0
 - Enhancements
 - Dual Support of SQL Server databases
 - Renaming now support on devices
 - NTCIPv2 Color/Graphics support for DMS signs
 - Scheduled Action Subsystem revision to handle
 - Camera Actions
 - DMS Sequences
 - Travel Times Display
 - Video on Desktop including a software video decoder for viewing video directly from the Operator Map
 - Ownership of DMS messages when using predefined response plans/generated response plans (FP 1498)
 - Bulk Updates for AVLRR (FP 1591)
 - “Nearest CCTV” doesn’t populate with geographically closest cameras (FP 1455)
 - AVL Alerts need to be logged (FP 1999)

- Populate contact phone numbers if contact is already defined in EM (FP 1634)
- Allow Construction/Planned Construction events to have “zones” like Congestion (FP 1579)
- Add vehicle alert (amber, silver, LEO) templates
- TransCore Encompass driver support of the TCP and status message
- Store priority in DMS message library (FP 2301)
- TSS validation of speeds using the reported volume value
- Travel time message templates can be displayed with no units
- EIS G4 detector support
- Lane averages will be volume weighted in the rolling average
- Link averages will be volume weighted as a rolling average as well as a poll cycle average of the lanes.
- Added a configurable minimum volume for a lane to produce a TSS alert based on speed or occupancy
- Added a configurable option for running report against a database that is not the primary SunGuide Database.
- Admin
 - Fixed issue with vehicle Operator configurations in AVL (FP 2172)
- AVL
 - Fixed stop alerts triggering an the incorrect times (FP 2161)
 - Fixed issue logging RR activities sent by the Operator Map when running the RRXML driver with no incoming connection on that driver (FP 2347)
- DMS
 - Fixed clock syncing issue causing DMS to stay in a pending state (FP 2163)
 - Fixed issue causing DMS to sporadically stop sending status updates (FP 2352)
- EM
 - Fixed issue creating lane blockage records through auditing (FP 1492)
 - Fixed issue of logging a DMS response in an event response plan when activating a unrelated sequence on a sign used by the response plan (FP 2195)
 - Fixed issue activating a response plan on a DMS that used the “Default DMS” template (FP 2225)
 - Fixed issue audit a section of the event next to a part that had also be previously audited. (FP 2294)
- GUI
 - Fixed issue in Operator Map that allowed user to input an incorrect value that would cause Ramp Metering firmware to stop functioning correctly (FP 1636)
 - Events created from a TSS alert will default to a “Congestion” event type (FP 2243)
 - Fixed issue setting English and Spanish Floodgates using the set multiple option (FP 2273)
 - GUI now populates the Mile Marker field if the mile marker is defined (FP 2307)

- Fixed issue not requiring an activity to be set before departing a Road Ranger. (FP 2355)
 - GUI now allows sorting by Columns on the Travel Times tab (FP 2423)
- INRIX
 - Introduced a publish flag to the INRIX links so a district can choose to not publish particular links on the FLATIS site. (FP 2336)
- Jupiter Driver
 - Fixed issue where Jupiter driver would not start using the Executive Handler (FP 2337)
 - Fixed issue on Jupiter Driver startup when using the IP as the hostname (FP 2367)
- MAS
 - Fixed issue where MAS would not honor the operator approval override flag in the config file (FP 2361)
 - Fixed issue where beacons would not be set for the VSLs (2368)
- MCP
 - Fixed issue where video was unable to be switched via the MCP (FP 2129)
- RM
 - Fixed issue setting the controller to the active state (FP 2354)
- RS
 - Fixed issue overwriting existing reports if a report with the same name is attempted to be uploaded (FP 2310)
- RTMS Driver
 - Fixed CRC check and the ability to set the detector to Wavetronix HD through Admin Editor (FP 2366)
 - Fixed issue generating XML for the Canoga detectors (FP 2380)
- TSS
 - Fixed a logging issue that would log classification data was not present even though the data was not mandatory (FP 2362)
- Release 6.0.0, Patch 1
 - Enhancements
 - Updated logging of CCTV, DMS, MAS, TSS, and TVT to report device names instead of internal IDs where possible (FP 2535)
 - AVL/RR
 - Synchronized use of IDs for vehicles across subsystem, driver, and EM (FP 2555)
 - C2C
 - Synchronized IDs of roadways in location and roadway definitions (FP 2543)
 - Fixed publishing of FLATIS events (FP 2548)
 - Data Archive
 - Reduced startup overhead of reading configuration (FP 2549)
 - DAR
 - Fixed issues causing warning and error messages and process restarts (FP 2553)
 - DMS

- Disabled sending of deprecated sequence messages (FP 2529)
- Allowed SID and service name of database to differ (FP 2537)
- Fixed behavior on disconnecting from other subsystems (FP 2544)
- EM
 - Fixed issue preventing response plan actions from executing when email actions failed to execute (FP 2523, 2787)
 - Fixed process of creating events from SPARR app (FP 2526)
 - Fixed auditing of duplicate RR activities (FP 2530)
 - Fixed blocked lane wording (FP 2532)
 - Fixed behavior when requesting response plan with explicit zero radius (FP 2536)
 - Fixed failure to save event using custom comment types (FP 2538)
 - Fixed sending of multiple emails to recipients in responses (FP 2539)
 - Fixed wording of shoulder blockages (FP 2546)
 - Fixed chronology report issues and nearest camera error (FP 2550)
 - Fixed event severity updates (FP 2552)
- IDS
 - Fixed an error causing exceptions when resolving IDS alerts (FP 2519)
 - Fixed synchronization of UI and subsystem alert resolution (FP 2547)
- Operator Map
 - Fixed crash bug relating to DMS spelling conflicts (FP 2564)
- SAS
 - Fixed timing issue caused by scheduled items being configured with different time zones (FP 2540)
 - Allowed multiple DMS scheduled items to overlap (FP 2542)
 - Fixed duplication of messages in MAS on SAS restart (FP 2565)
- TVT
 - Fixed handling of MAS connection/status changes (FP 2545)
- Release 6.0.0, Patch 2
 - Admin
 - Renaming devices now supported (FP 116)
 - Added VDD documentation (FP 2492)
 - Updated Platform requirements in VDD (FP 2573)
 - AVL/RR
 - Improved behavior of stop alerts (FP 1998)
 - Fixed issue with departure time of vehicles (FP 2241)
 - Fixed memory issue within AVL (FP 2261)
 - Fixed issue of multiple arrivals of a RR from a tablet (FP 2414)
 - Fixed startup issue with SPARR driver (FP 2571)
 - Restored previous interface of RRXML driver (FP 2575)
 - C2C
 - C2C Collector connection issue resolved (FP 1958, 2095)
 - CCTV
 - CCTV no longer uses range Zoom Limit (FP 2500)
 - Improved disconnect/reconnect logging (FP 2583 (part 1))

- Fixed IpVideoSwitchDriver to allow alternate switch configurations (FP 2609)
- DA
 - Fixed Data Archive of DMS message so they no longer archive the “current_tvt” and cause a backlog (FP 1888)
 - Fixed issue with connection issues to Executive Handler (FP 1973)
 - Restructured DMS insertion query to allow for faster execution (FP 2283)
- DAR
 - Fixed issue with connectivity to the DAR FTP (FP 2417)
 - Enhanced to resend TSS configuration to RITIS nightly (FP 2637)
- DMS
 - Fixed issue editing DMS with an IP conflict (FP 2464)
 - Fixed issue sending messages to SES America signs (FP 2638)
- EH
 - Fixed issue where EH crashes upon multiple disconnect/reconnect attempts (FP 1786)
- EM
 - Fixed issues with agency contact records (FP 1748)
 - Fixed an issue with which message template to use for a particular lane configuration (FP 2299)
 - Fixed issue retrieve message templates for DMS in RPG (FP 2345)
 - Added configuration item for using County long name in emails (FP 2466)
 - Chronology now reports “Unconfirmed” when publishing unconfirmed events to FLATIS (FP 2495)
 - Fixed issue with auditing duplicate responder timestamps (FP 2586)
 - Fixed issue with case insensitivity when comparing license plates (FP 2613)
 - Fixed issue with events not storing arrival time of responder if the notified time was not set (FP 2618)
- HAR
 - Fixed issue setting beacons and configuring HARs (FP 2609)
- MAS
 - Fixed high utilization issue (FP 2505)
 - Improved interaction with TVT (FP 2541)
- IDS
 - Improved handling of FHP updates (FP 2480)
- Nokia
 - Corrected mapping of link data (FP 2581)
- Operator Map
 - Prevented saving of map views with identical names (FP 1825)
 - Fixed issue with displaying “MM” in mile marker section of event details dialog (FP 2194)
 - Fixed issues recording and saving floodgate messages (FP 2254)
 - Fixed issue editing multiple DMS signs at the same time (FP 2369)
 - Improved editing of multiple DMSs (compared with 5.1 and previous) (FP 2381)
 - Improvements to the Edit Link Placement Dialog (FP 2391, 2461)

- Limited use of auto-focus by desktop video wall (FP 2583 (part 2))
 - Fixed issue with display of Blue TOAD links (FP 2590)
 - Response now can be generated with a “0” radius selected (FP 2605)
- RMS
 - Fixed issue moving RMSs between installations (FP 1635)
 - Fixed error setting RMC rate/range values (FP 2576)
- RS
 - Fixed Road Ranger Admin Detail report (FP 1523)
 - Fixed Performance Measure reports (FP 2531)
- RWIS
 - Fixed missing dependency of driver (FP 2589)
- SAS
 - Allows Termination of a SAS item (FP 286)
 - Fixed timing issue within SAS schedules for DST (FP 2627)
- TSS
 - Fixed handling of zero speed report (FP 1526)
- TVT
 - Fixed integration of C2C links (FP 2566)
 - Improved handling of MAS blanking (FP 2588)
- VS
 - Fixed missing dependency of driver (FP 2580)
- VW
 - Removed unnecessary error report on successful action (FP 2591)
 - Fixed issues with updated Activu driver (FP 2592)
 - Jupiter Driver now supports HD sources (FP 2191)
- Release 6.0.0, Patch 3
 - AVL
 - Fixed issue where AVL vehicle stuck in arrive state (FP 2411)
 - SPARR Driver may now set status to Unresolved (FP 2652)
 - Fixed issue with RR Status (FP 2685)
 - Fixed issue creating geofence midpoints (FP 2713)
 - C2C
 - Fixed issue where county information is missing (FP 2623)
 - Fixed issue with link name containing name instead of ID (FP 2663)
 - Fixed issue with command received by the command receiver (FP 2758)
 - Fixed C2C component reconnect issue (FP 2797)
 - Fixed issue posting floodgate messages (FP 2803)
 - DA
 - Improved purge method (FP 2724)
 - DMS
 - Re-implement DMS Groups for SAS (FP 2563)
 - Added ability for third parties to submit color DMS messages (FP 2676)
 - EM
 - Fixed Response Plan Discrepancy Email vs. DMS Wording (FP 2579)
 - Fixed Chronology not showing Primary/Secondary Entries (FP 2598)
 - Fixed issue with auditing EM Responders (FP 2653)

- Fixed EM lag behavior and slow startup (FP 2668)
- Fixed Lane Blockage Description (FP 2683)
- Fixed issue with FHP event not getting correct nearest camera (FP 2688)
- Fixed issue with cloned event not copying involved vehicle data (FP 2688)
- Fixed issue with Primary event ID set to NA (FP 2691)
- Fixed issue with Chronology entries showing device ID (FP 2692)
- Fixed issue with email body for full closure events (FP 2712)
- Fixed minor issues with EM after hotfix 6 and 9 (FP 2717)
- Fixed issue with releasing ownership of an event (FP 2726)
- Fixed issue with email body containing multi text from DMS (FP 2731)
- Fixed issue with Email body for center lane blockage (FP 2759)
- Fixed issue with EM locking up (FP 2785)
- GUI
 - Fixed issue with some dialogs displaying too small (FP 1852)
 - Better filtering of TSS road link information (FP 2181)
 - Added a shortcut to the Short status (FP 2649)
 - Fixed several small exceptions (FP 2658)
 - Fixed issue editing pre-defined response plans (FP 2671, 2708)
 - Fixed issue with FHP Incident ID not populating in Event (FP 2686)
 - Fixed issue with AVL RR not being sorted in a list (FP 2694)
 - Fixed issue with the default email group not being selected (FP 2695)
 - Fixed issue searching the message library in a response plan (FP 2699)
 - Fixed issue with the response plan dialog not showing the priority of the currently active message on the DMS (FP 2749)
 - Fixed issue with message pop for response plan (FP 2770)
 - Fixed issue editing layouts (FP 2809)
- IDS
 - Fixed issue with too many alerts (FP 2646)patch 2
 - Fixed issue with FHP Alerts not resolving correctly (FP 2660)
- MCP
 - Fixed connectivity issue (FP 2624)
 - Fixed issue with the joystick (FP 2698)
- SAS
 - Fixed issue to prevent end date from occurring prior to start date (FP 2719)
- SB
 - Fixed issue with SB selection window snapping back to first entry in the list of safety barriers (FP 2718)
- RM
 - Fixed Ramp meter shut down issue (FP 1574)
- RS
 - Fixed issue with ID being used instead of name (FP 2648)
 - Fixed view in for Event Reports (FP 2684)
 - Fixed report issue Incident Duration Full Detail report (FP 2696)
 - Fixed issue with the VW_DEVICE View (FP 2710)
 - Fixed issue with VW_RS_EVENT_PERFMEASD view (FP 2753)
 - Fixed issue with VW_RS_DMS_MESSAGE view (FP 2754)

- Fixed issue with view for Road Rangers (FP 2769)
- Fixed issue with filtering by RR, vehicle, or detector (FP 2788)
- TSS
 - Fixed issue with Wavetronix protocol displaying incorrect speed (FP 2422)
 - Fixed issue with TSS threshold dropping out after midnight (FP 2665)
 - Fixed issue adding TSS links to roadway geometry (FP 2804)
- VS
 - Fixed issue disassociating Video Source from Camera (FP 2634)
- Release 6.1.0
 - Enhancements
 - Modified the permission architecture of the system to unify with the TxDOT permission model
 - Unified Executive Handler with TxDOT
 - Added a configuration file editor for config file validation
 - Added a beacon management subsystem to control beacon activation/deactivation
 - Added NTCIP version 2 and version 3 compliance for RWIS devices
 - Created an RWIS simulator for all versions of NTCIP supported by SunGuide
 - Added the ability for the software to alert users on RWIS readings exceeding defined thresholds
 - Added the Nokia Publisher to the SunGuide installation
 - Added a CCTV Driver to support the ONVIF protocol
 - Improved the installer and installation process
 - Re-arranged the Report Templates in the installation media (FP 2522)
 - Reimplemented DMS Groups (FP 2563)
 - Added a bulk insert tool for devices (FP 2438)
 - Added response plan termination capability to the Event Details dialog (FP 2511)
 - Added a Response plan status for events which will require termination of a response plan prior to the close of an event (FP 1769, 2525, 2862, 583)
 - Added the ability to schedule response plan from SAS
 - Integrated the login and subsystem dialogs into the Operator Map
 - Added ability to configure and use remote center CCTV video streams within Video on Desktop
 - Added support for the Click!512 device to detect Wrong Way Driving incidents
 - Added alerting based on Wrong Way Driving event detections (FP 2922)
 - Added a “Turn Lane” lane type to the available lane configurations (FP 722)
 - Admin Editor
 - Updated logging when trying to delete a camera or source when in use by a tour (FP 2705)
 - Fixed issue allowing duplicate renames in RM Controllers (FP 2927)
 - Fixed issue of configuring HAR control number (FP 2941)
 - Fixed issue of Admin losing authentication (FP 2942)
 - Fixed confirmation dialog to show the display name of the device (FP 2962)

- Fixed issue allowing user to map multiple lanes to the same detection zone (FP 2965)
- Fixed issue allowing duplicate Lane Map configurations (FP 2967)
- Fixed issue of adding duplicate poll process (FP 2968)
- Fixed issue with RM Controllers and mileposts (FP 2970)
- Fixed issue with duplicate TSS Detector display names (FP 2971)
- Fixed button enabled issue for TSS Mapping (FP 2973)
- Fixed issue with missing zone configuration for a link (FP 2974)
- Reworded error message in in TVT Configurations (FP 2976)
- Duplicate contact names are now case-insensitive (FP 3022)
- AVL
 - Reworked AVL logic for better performance (FP 2411)
 - Fixed issue with AVL storage of event IDs (FP 2685)
 - Updated the SPARR Android app to be used on Android 4.4 and above (FP 2842)
 - Fixed issue with an memory exception in AVL after deployment of newest version of the SPARR app (FP 2842)
 -
 - Fixed issue with handling of deleting vehicle statuses (FP 2985)
 - Added additional SPARR configuration documentation to VDD (FP 3127)
- BlueTOAD
 - Fixed an issue with password changes affecting authentication with the BlueTOAD subsystem (FP 2763)
 - Added BlueTOAD Subsystem to the SunGuide Installation (FP 2799)
- C2C
 - Added timestamps to the C2C link data (FP 2735)
 - Fixed C2C/CCTV connection issue (FP 2735)
 - Added full event type name in the C2C XML feed (FP 2776)
 - Fixed an issue with adding C2C devices from data bus (FP 2905)
 - Fixed issue adding remote DMS to response plan (FP 3036)
- CCTV
 - Added a parameter to multiple the zoom for each manufacturer (FP 2185)
 - Add ability to add a camera for Video on Desktop purposes but has no camera controls (FP 2730)
 - Increased cctv_video_stream_info.stream_url from 100 to 1000 characters (FP 2902)
 - Addressed possible issue with CCTV camera status (FP 3030)
- DA
 - Fixed issue with ODS tables having multiple parent records (FP 1589)
 - Fixed issue with ODS tables picking up a name change of a DMS (FP 2702)
- Database
 - Modified a view to show the CCTV device id (FP 2773)
- DMS
 - Added the ability to use contractions in the approved word list (FP 2397)
 - Fixed issue editing DMS message Library messages (FP 2822)
 - Fixed permission issue in DMS (FP 2841)

- Fixed issue with maximum message length to be logged in the Database (FP 2852)
- Allow external user to tell DMS not to modify the multi (FP 2676, 2854)
- Fixed issue with Brightness Level and Brightness Mode values (FP 2917)
- Fixed issue with REF_ID being consumed by a failed Approved Word addition (FP 2988)
- Fixed issue with sign deletion failure causing queue status issues (FP 3012)
- Fixed issue with device renaming causing stale data to be sent to the Operator map (FP 3013)
- Fixed issue with the logic to retrieve graphics dealing with signs that do not have graphics (FP 3041)
- Documentation
 - Added RS configuration to the VDD (FP 2810)
- EM
 - Fixed issue with unresponsive SMTP server not allowing a response plan to fully activate (FP 2335)
 - Adjusted wording for block vs closed DMS signs (FP 2579)
 - Fixed issue with responder departure times (FP 2764)
 - Fixed issue with logging Severity 2 events in the database (FP 2848)
 - Fixed issue auditing chronology (FP 3005)
 - Fixed device naming issue in chronology (FP 3014)
 - Added first response plan time to the database (FP 3018)
 - Fixed an issue departing multiple road rangers (FP 3023)
 - Fixed issue with terminating a large number of DMS signs from a response plan (FP 3054)
 - Fixed error condition when editing lane blockage (FP 3072)
 - Fixed issues with EM not removing messages on DMSs as part of a termination (FP 3140)
- GUI
 - TSS Link Editor Improvements (FP 2391)
 - Added option stretch Video on Desktop windows by default (FP 2458)
 - Added Digital Zoom Functionality (FP 2508)
 - Added timestamp to all C2C link data (FP 2595)
 - Fixed issue randomly causing a deadlock on logins (FP 2626)
 - Filtered list of events in the re-publish event dialog (FP 2314, 2633)
 - Added a list of available cameras within Video On Desktop (FP 2716)
 - Fixed display of VisioPaD images on IE9 and above (FP 2855)
 - Added configurable buffer to Video on Desktop (FP 2887)
 - Fixed issue with modifying message libraries and messages at the same time (FP 2910)
 - Fixed Manage Manufactures dialog (FP 2930)
 - Fixed issue with showing error message for editing blockage dialogs (FP 2933)
 - Fixed issue with DMS showing a small size (FP 2938)
 - Fixed issue with the number of lanes not matching the number of lanes in the GUI when using the link editor (FP 2945)

- Fixed issue with DMS add attempt showing current message (FP 2946)
- Fixed issue with modifying active schedules and schedule items (FP 2950)
- Fixed selection issue of permissions in SSA (FP 2955)
- Fixed issue with saving devices when editing a SAS item (FP 2961)
- Fixed issue with how MAS Queues for DMSs without queues are shown in the DMS Status Dialog (FP2980)
- Fixed issue with editing a schedule item with a range of recurrence selected (FP 2998)
- Fixed issue with AVL Responders in the EM dialog (FP 3007)
- Fixed selection issue in Video Wall Control dialog (FP 3043)
- Fixed issue when dealing with the blank status in the Short Status dialog for Express Lane signs (FP 3049)
- Fixed issue editing DMS message libraries (FP 3062)
- Added missing FHP actions (FP 3073)
- Fixed issue with VW list jumping to top of list (FP 3076)
- Fixed issue with DMS losing correct size in the GUI (FP 3085)
- Fixed issue with Blank Queue button Short Status Dialog for Toll Rate signs (FP 3118)
- Fixed issue with being able to select Toll Rate signs in a response plan (FP 3129)
- Fixed issue sorting dates in the DMS Status Dialog (FP 3138)
- IDS
 - Fixed issue with ordering of subsystem in config file or missing drivers from config file (FP 2647)
 - Added ability to filter out alerts based on what changed in the alert (FP 2675)
 - Fixed issue with IDS restart affecting the TSS Alarm Driver (FP 3020)
 - Fixed logging level issue with Weather Driver (FP 3021)
 - Fixed issue to better handle FHP incidents with no direction (FP 3037)
 - Fixed issue saving WWD device configurations (FP 3051)
 - Fixed issue removing alert box for WWD alerts (FP 3093)
- Installer
 - Moved operation files from the installation folders to configurable locations (FP 2204, 2205)
 - Added Navteq data to the installation media (FP 2672)
 - Added workstation/server time sync requirement to the VDD (FP 2738)
 - Updated the ERWIN Database model (FP 2742)
- MCP
 - Fixed issues with reconnecting to devices on timeout of connection (FP 3050)
- NOKIA
 - Upgraded feed to support version 3.1.2 (FP 3119)
- RM
 - Fixed issue deleting controller (FP 2966)
- RS

- Enhanced reporting to include a report queue, scheduled reports, and email reports (FP 2100, 2729)
- Fixed error text for overwriting and existing file (FP 2953)
- SAS
 - Fixed issue with recurrence patterns with no end date (FP 2901)
 - Fixed issue with SAS terminating message that were manually removed (FP 3108)
- TSS
 - Added a time sync ability for Wavetronix and Wavetronix HD detectors (FP 2456)
 - Added the AWAM Protocol (FP 2801)
 - Added the Sirit Flex 520x protocol (FP 2802)
 - Fixed issue with maintain current detector status in the database (FP 2876)
 - Fixed issue with XML for added links and lanes (FP 2943, 2979)
- TVT
 - Fixed issue in configuration of C2C link used in travel times (FP 2909)
 - Clarified error in the case of deleting a message template that is in use (FP 2969)
 - Fixed naming issue for TVT System Messages (FP 3079)
- VW
 - Added IPStream to the Jupiter video wall (FP 2379)
 - Fixed reconnect logic for Activu Driver (FP 2816)
 - Fixed issue with retrieving 'mpeg-4' video sources (FP 3150)
- Release 6.1.0 Patch 1
 - Enhancements
 - Updated a view to account for WWD device uptime information (FP 3100)
 - Updated VLC libraries to version 2.1.5 (FP 3216)
 - Added the ability to search on the VOD cameras (FP 3217)
 - Added documentation for various installation conditions to IN (FP 3226)
 - Admin
 - Warning added when changing DMS sign types (FP 3011)
 - Fixed display issue with lat/long values for detectors (FP 3163)
 - C2C Publisher
 - Fixed issue with camera blocking (FP 3162)
 - CCTV
 - Fixed issue when changing information for a camera (FP 3170)
 - Fixed issue with Device uptime (FP 3185)
 - EM
 - Updated the email editor to WPF (FP 2811)
 - Events that are associated to another now stay in cache until all associated events are closed (FP 3001)
 - Fixed issue with 511 messages not being removed for events with associated events (FP 3122)
 - Fixed issue that was inserting blank chronology entries (FP 3181)
 - Fixed issue in blockage calculation (FP 3188)
 - Fixed issue with DMS chronologies entries (FP 3197)

- IDS
 - Fixed issue disabling Citilog detection (FP 3184)
 - Removed extraneous column from the database (FP 3252)
- Nokia
 - Fixed display issue of roadway name on FLATIS (FP 3204)
- Operator Map
 - Fixed display issue with current AVL status (FP 3141)
 - Fixed issue with TSS links showing transparent (FP 3160)
 - Fixed issue displaying VisioPaD alerts in a WPF window (FP 3168)
 - Fixed RWIS dialog column display issue (FP 3215)
- Ramp meter
 - Fixed issue with volumes on tamp meters (FP3165)
- SAA
 - Fixed issue with roadway shields not appearing on the map (FP 3222)
- Status Logger
 - Updated log message to include display name (FP 3015)
- Toolset
 - Fixed crash when Excel is not installed (FP 3246)
- Travel Times
 - Fixed issue with travel time calculation in 0 volume conditions (FP 3189)
- Release 6.2
 - Enhancements
 - Modified EM to add a sort order to all roadway displays (FP 448)
 - Modified DMS to optionally force a blank for the status in SG upon a device failure (FP 955)
 - Modified the Operator Map to have a “Find on Map” for all IDS alerts (FP 1715)
 - Modified EM to hold as much information as possible when changing event locations (FP 1734)
 - Events owned by the user will highlight in the event list (FP 1910)
 - Modified EM to support discontinuous lane blockage (FP 1912)
 - Added support to IDS for alerts from C2C TSS links (FP 2073)
 - Added a “Year” field for involved vehicles and response plan templates (FP 2223)
 - TSS configuration was moved from the Admin Editor to the Operator Map (FP 2418)
 - Modified EM to allow comments via audit (FP 2570)
 - Added toggle settings for C2C devices (FP 2587)
 - Modified EM to accept response plan templates per event type (FP 2620/2621)
 - Modified SAS to allow a user to see all scheduled items within a schedule (FP 2629)
 - Modified EM to optionally set the DMS capitalization globally (FP 2650)
 - Altered Involved Vehicle Tag matching to exclude alpha-numeric characters (FP 2656)

- Modified the way the operator handles the Road Ranger when the Road Ranger is the notifier of an incident (FP 2661/3040)
- Modified the TSS Alerts to auto-dismiss redundant alerts (FP 2845)
- Stale TSS links now grey out on the Operator Map (FP 2989)
- The Subsystem Pane with now auto-hide after all subsystems are connected (FP 3153/3219)
- Added Support for the Single and Quad model of Web Relay (FP 3395/3257)
- Enhanced the Activu Driver to persist a connection for better sync with the Activu controller (FP 3375)
- Synced statewide database indices (FP 3378)
- Added different AutoFocus and AutoIris commands through NTCIP (FP 3415)
- Added support for BlueMac devices (FP 3345)
- Modified Probe Algorithm to account for Arterial Roadways
- Added support for WAZE alerts through IDS
- Added additional support including automatic response plans for Wrong Way Driving
- Admin Editor
 - Fixed issue selecting graphics and TVT templates (FP 3426)
 - Fixed issue for event type when switching through default DMS Message Templates (FP 3571)
- Config Editor
 - Fixed issue with selection of objects (FP 3248)
- C2C
 - Fixed issue with roadway id in the link Data (FP 2663/3430)
 - Fixed issue with C2C Roadways not showing display name to the user (FP 3445)
 - Fixed issue with roadways having duplicate short names not appearing in the feed (FP 3451)
 - 3rd party TSS links now have an optional display name (FP 3526)
- Database
 - Fixed issue with upgrade scripts (FP 3587)
- Data Archive
 - Fixed issue with archived TSS lengths (FP 3231)
 - Fixed issue archiving detector data (FP 3418)
 - Fixed issue storing RWIS data (FP 3543)
- DMS
 - DMS library message will now store priority (FP 2301)
 - Fixed issue with status poling (FP 3183, 3399)
- EM
 - Added SAE code descriptions for 5 new lane types (FP 2332)
 - Added log message if user tries to delete a message template while in use (FP 2969)
 - Fixed issue with extra space in response plan template (FP 3313)

- Fixed issue with initial confirmed date when event is created via the SPARR Driver (FP 3321)
- Fixed issue with unpublishing an issue from FLATIS (FP 3366)
- Fixed issue with long usernames and response plan items (FP 3370)
- Fixed a locking issue (FP 3371)
- Fixed issue with slowness in returning a response plan (FP 3379)
- Fixed issue with the response plan email item not wrapping the body text (FP 3385)
- Fixed issue with cloned events' response plan (FP 3411)
- Fixed issue with nearest camera button not working (FP 3419)
- Fixed issue with the pre-defined response plans not updating correctly upon configuration (FP 3443)
- Fixed issue with operators not able to dispatch RRs with no radio assigned (FP 3452)
- Fixed issue in classification of HOV, Gore, and HOT lanes for blockage (FP 3461)
- Fixed issue creating DMS Library messages (FP 3531)
- Fixed issue with Roadway sorting (FP 3593)
- Event Viewer
 - Fixed issue with multiple logins from the same machine (FP 3305)
- IDS
 - Fixed issue with IDS restarting if an active VisioPaD camera had currently disabled detection (FP 3523)
 - Fixed issue with TSS alerts not clearing (FP 3589)
- MCP
 - Fixed issue with Joystick not being able to move camera (FP 3416)
 - Fixed issue with cycling through presets (FP 3454)
- Operator Map
 - Fixed issue when renaming a vehicle status (FP 2984)
 - Fixed issue in sort order for Auditing Lane Congestion (FP 3423)
 - Fixed issue editing Pre-defined Response Plans (FP 3443)
 - Added error notification if a detector is attempted to be deleted while its links are in use (FP 3475)
 - Fixed issue with EL Permissions to signs (FP 3479)
 - Fixed issue with the Message library in the DMS Send Message dialog (FP 3481)
 - Fixed issue adding DMS Groups to Response plans (FP 3505)
 - Changed default RWIS column for visibility to be the number instead of the description (FP 3514)
 - Fixed issue with dates in the reporting dialog (FP 3533)
 - Fixed issue with Find on Map from the Event List dialog (FP 3577)
 - Fixed issue with Floodgate recording (FP 3581)
- Ramp Meter
 - Fixed issue editing configuration of a Ramp Meter (FP 3471)
 - Fixed issue with log message having ID but no device name (FP 3472)
 - Fixed issue with state changes (FP 3482)

- Fixed error handling when RM fails to create (FP 3483)
- RS
 - Fixed issue with CCTV Report display of camera name (FP 3440)
- RWIS
 - Fixed issue with adding with the same name (FP 3311)
 - Fixed issue with RWIS Op Status (FP 3448)
- SAS
 - Fixed issue running a report through SAS (FP 3355)
 - Fixed issue editing SAS Schedules (FP 3554)
- Status Logger
 - Fixed issue with SL Details dialog buttons (FP 3588)
- TSS
 - Fixed issue with Out of Range Exception for Probe Fusion Driver (FP 3342)
 - Fixed issue with Tag Expirations being shorter than poll cycles (FP 3376)
 - Fixed issue remapping lanes after BlueMac hotfix (FP 3496)
 - Fixed issue with added detectors that never receive updates (FP 3519)
- VS
 - Fixed issue VS not connecting to the IP Switch Driver properly (FP 3422)
- VW
 - Fixed issue with Jupiter Canvas driver with UTF-8 vs ASCII (FP 3396)
- Release 7.0
 - Enhancements
 - Converted the following subsystems to WPF dialog in the Operator Map
 - AVLRR
 - CCTV
 - EM
 - SAA
 - System
 - TSS
 - VW
 - Converting the following administration dialog from Admin Editor to the Operator Map
 - AVL
 - CCTV
 - VS
 - DMS
 - EM
 - TVT
 - Added the Traffic Controls Subsystem (TCS)
 - Added the Managed Lanes Subsystem (MLS)
 - Added the Truck Parking Subsystem (TPS)
 - Poll CCTV Cameras (FP 3187)
 - Archival of Ramp Metering data (FP 1081)
 - Allow Ramp Meter to be scheduled “Off” (FP 1407)
 - Allow some presets to be locked by admins (FP 2303)
 - Allow PTZ Control for tours in VOD (FP 2569)

- Removal of non-TSS links (FP 3251)
- Configurable sounds for alert messages (FP 3004)
- System Message categorization and filtering (FP 3564)
- Auto-merge operator and travel time messages (FP 3565)
- Disable response plan items for suggestion (FP 3180)
- Allow device specific default messages when travel times can't be calculated (FP 3566)
- Alternate travel time destinations if travel time cannot be calculated (FP 3567)
- Unconfirmed Lane Blockages (FP 3195)
- C2C Publisher
 - Fixed issued with cameras being removed from C2C (FP 3770)
- DMS
 - Fixed an issue with DMS hanging on startup (FP 3783)
 - Fixed issue with startup for graphic signs not having status (FP 3856)
- EM
 - Fixed issue with Executive Notifications emails and chronology entries (FP 3536/3832)
- Operator Map
 - Fixed issues with Link Editing dialog (FP 3687)
 - Fixed issue with Operator Map freezing (FP 3743/3804)
 - Fixed issue with Operator Map crashing (FP 3662)
 - Fixed memory Utilization issue (FP 3719)
 - Fixed issue with Turn Lanes not considered as blockage in Event List (FP 3866)
 - Fixed issue with DMS Sign use change to a Toll Sign (FP 3665)
- RS
 - Fixed issue with reports not taking Turn Lanes into account when the “Any Lane” filter is used (FP 3712)
- RWIS
 - Fixed issue with SNMP library for device communication (FP 3865)
- SPARR Android application
 - Fixed issues with notifications and recovery from standby (FP 3221)
- TSS
 - Fixed parsing issue in the Wavetronix HD protocol (FP 3790)
- Release 7.1
 - Enhancements
 - Converted the following subsystems to WPF dialog in the Operator Map
 - C2C
 - RMS
 - Converting the following administration dialog from Admin Editor to the Operator Map
 - DA
 - HAR
 - IDS
 - RMS

- RWIS
 - SB
 - Centers, Device Drivers, Manufacturers
 - RMS NTCIP Driver (FP 3239)
 - TAPCO protocol for WWD (FP 3956)
 - Device Permissions (FP 1701)
- AVL
 - Fixed memory issue in AVL (FP 4050)
- CCTV
 - Fixed issue with Static cameras going to error states (FP 4065)
- DA
 - Fixed issues purging data when less than 1000 records to purge (FP 4071)
- IDS
 - Resolved issues handling update Waze alerts (FP 4033)
- Operator Map
 - Improved map memory usage (FP 3662)
 - Fixed issue adding event when AVL was disabled (FP 3897)
 - Fixed issue with IDS alert associations with the user does not own the event (FP 3928)
 - Fixed issue in new dialog creation with selecting event locations (FP 3933)
 - Fixed issue with sort order for the counties parameter for reports (FP 3936)
 - Fixed issue with having both and FHP and Waze event number (FP 4003)
 - Fixed issue with the “Next Message” column for DMS (FP 4040)
 - Changed the pre-defined plans to load in alphabetically order (FP 4076)
- RS
 - Fixed issue audit closure time in view (FP 3910)
- RWIS
 - Added support for Visibility devices not supporting all NTCIP fields (FP 3930)
- TSS
 - Added Support for the GovComm radar device (FP 3559)
 - Fixed issue in Probe Fusion driver causing crash (FP 4099)
- Release 7.1.1
 - Enhancements
 - C2C Lane by Lane Detector Data (SG-3808)
 - C2C Icon Configuration (SG-2736)
 - New Event Types (SG-3873)
 - Roadway Type Flags (SG-3849)
 - Match Bluetooth Reads Between Makes/Models (SG-3984)
 - Add NTCIP Wiper Functionality (SG-4227)
 - Added support for Bride Preemption (SG-4208)
 - Added TSS support for FLIR (SG-4278)
 - Add CivicSmart as an available Truck parking protocol (SG-4280)
 - Foreground and background colors allowed for TPS (SG-4409)
 - Added support for ONVIF Iris movement (SG-4498)
 - AVL

- Fixed issue adding vehicle agency (SG-4311)
- Fixed issue with AVL not reporting positions (SG-4391)
- BlueTOAD
 - Now handles status of “N/A” (SG-4203)
- C2C
 - Fixed issue of name used for remote DMS and HAR in the event chronology (SG-4495)
- CCTV
 - Fixed issue deleting a camera that was Out of Service on startup of Cohu driver (SG-4488)
- Data Archive
 - Fixed issue archive 3rd parties in ODS tables (SG-3844)
 - Fixed issue of memory leak (SG-4331)
 - Added information when DA doesn’t start due to missing parameters (SG-4374)
- Data Bus
 - Fixed issue with memory leak (SG-4332)
- DMS
 - DMS Pixel Test issue resolved (SG-3607)
 - DMS Error code 23 more well defined (SG-3631)
 - Fixed issue with DMS dialog resizing (SG-3837)
 - Fixed issue where DMS socket hangs (SG-4173)
 - Fixed issue with saving Force Blank of Failure (SG-4330)
- EM
 - Changed Shoulder/Ramp/Shoulder blockage description (SG-3951)
 - Fixed audit timestamp issue (SG-4037)
 - Fixed issue with deleted vehicle still in reports (SG-4063)
 - Added automated Bridge Preemption events (SG-4154)
 - Expanded comments to a max of 1000 characters (SG-4160)
 - Fixed issue with RR Assisted Criteria for reporting (SG-4162)
 - Fixed issue inserting into audit chronology (SG-4274)
 - Fixed issue with saving locations with the publish flag (SG-4346)
 - Fixed issue with modifying location in audit (SG-4359)
 - Fixed issues with auto-merge causing large event chronologies (SG-4364)
- General
 - Fixed Schemas for auto-merge (SG-4394)
 - Fixed issue with a small memory leak in the Id Wrapper (SG-4440)
- IDS
 - Added Safety barrier as a protocol in WWD (SG-3843)
 - Fixed alarm getting stuck in Operator Map (SG-3997)
- MAS
 - Fixed issue with auto-merged TVT messages not updating (SG-4296)
 - Fixed issue with auto merge merging to many messages (SG-4431)
- MLS
 - Fixed inverted permission check (SG-4254)
- Operator Map

- Fixed issue with editing a large number of signs (SG-3359)
- Issues with Response Plan resolved (SG-3618)
- Issues with DMS Graphic config resolved (SG-3659)
- Fixed Add New Event sorting and tabbing (SG-3708)
- Fixed issue with minimized dialogs not focusing (SG-3793)
- Fixed issue deleting/modifying vehicles while dispatched (SG-4027)
- Fixed issue streaming TKH cameras (SG-4112)
- Fixed issue with event locations created from alerts (SG-4163)
- Fixed issue activating Floodgates (SG-4168)
- Fixed issue editing responder time after set (SG-4169)
- Fixed issue cloning events (SG-4171)
- Fixed lock on camera control dialog (SG-4176)
- Fixed issue copying chronology (SG-4177)
- Fixed issue with Responder timestamps and contacts (SG-4178)
- Re-added feature from the 6.2 style event list (SG-4179)
- Improved Filtering on Event Location in Event List (SG-4180)
- Fixed sorting and reporting fields in Reports (SG-4184)
- Fixed issue in response plan showing DMS status as unknown (SG-4190)
- Fixed issue showing last updated time in Responders dialog (SG-4196)
- Fixed issue with Congestion Tail reference point (SG-4197)
- Clarified warding when adding a General Purpose DMS (SG-4204)
- Fixed issue with the Operator Map crashing (SG-4217)
- Fixed an Operator Map memory leak (SG-4218)
- Widened the pre-defined plan dialog (SG-4235)
- Fixed issue in Floodgate Management search (SG-4245)
- Removed check for video stream uniqueness (SG-4290)
- Fixed issue displaying location point (SG-4291)
- Added ability to add/delete RR activities after departure (SG-4292)
- Fixed Camera control PTX when first opened (SG-4293)
- Fixed issue with TVT configuration dialog showing changes (SG-4294)
- Fixed issue with Predefined Plans checking the wrong permission (SG-4295)
- Fixed issue where auto merge did not update TVT messages (SG-4296)
- Fixed issue showing sample TVT Template out of order (SG-4297)
- Fixed DMS Graphic dialog opening and usability (SG-4298)
- Fixed issue with DMS Group Editor (SG-4316)
- Added Location Description column to TSS detector grid (SG-4318)
- Fixed Grid issues in Server 2016 and Windows 10 (SG-4319)
- Fixed issue of Operator Map crashing when adding agency contact (SG-4323)
- Fixed issue finding TSS alerts on map (SG-4336)
- Fixed Operator Map crashing issue (SG-4349)
- Fixed issue with ATIS Escalation (SG-4377)
- Fixed issue adding DMS messages after restart (SG-4395)
- Added additional validation to DMS config dialog (SG-4411)

- Fixed issue selecting “Any Counties” won’t allow user to select a roadway (SG-4424)
- Fixed issue with TSS lane name character description (SG-4425)
- Fixed issue with map crashing due to spelling conflict (SG-4430)
- Fixed issue with the location configuration freezing (SG-4442)
- Fixed issue that made event comments hard to scroll (SG-4444)
- Fixed issue with the view of the Road Ranger Activities (SG-4446)
- FHP On-scene time auto filled when event is created from FGP alert (SG-4469)
- Fixed issue with DMS Description in configuration (SG-4474)
- RS
 - RR Assist report issue resolved (SG-3420)
 - RR Duplicate Activity report issue resolved (SG-3435)
 - VisioPaD Summary report issue resolved (SG-3468)
 - Updated Incident Detection Alert Types report (SG-3868)
 - Added support for larger Excel reports (SG-4198)
 - Fixed reports that didn’t handle alphanumeric ids for links (SG-4214, SG-4255, SG-4414, SG-4363)
- RWIS
 - Fixed issue where RWIS station did not return to Active state after successful comm (SG-4285)
- SAA
 - Fixed issue with database failure recovery (SG-4447)
- SAS
 - Fixed issue with SAS saved action lists (SG-3825)
 - Fixed issue with saving SAS DMS items (SG-4159)
- SPARR
 - Fixed issue allowing creations and dispatch of vehicle is invalid status (SG-3647)
- TCS
 - Fixed issue activating timing plan (SG-4151)
 - Filtered to controllers only used in plans (SG-4286)
- Toolset
 - Fixed issue starting the toolset (SG-4219)
- TPS
 - Fixed issue with controller op status (SG-4370)
- TSS
 - Added IPSens device integration (SG-4035)
 - Added SNAPS device integration (SG-4167)
 - Fixed issue saving multiple TSS Link additions (SG-4192)
 - Fixed issue modifying detectors (SG-4347, SG-4360)
- TVT
 - Fixed issue with stranded graphic in template (SG-3831)
- VS
 - Fixed issue with retrieveData when no devices were configured (SG-4307)
- Release 7.1.2

- Enhancements
 - Display Coordinates (SG-2507)
 - DMS Status in Chronology (SG-3747)
 - Cloned Events (SG-3751)
 - Travel Time Destinations in DMS Message Report (SG-3855)
 - Multiple Video Stream in VOD (SG-3881)
 - Update Connected Vehicle protocol (SG-4181)
 - Truck Parking upgrade (SG-4304, SG-4305)
 - BlinkLink WWD integration (SG-4585)
 - AVL Status in C2C (SG-4586)
- AVL
 - Fixed issue with SPARR application locations (SG-4463)
 - Added count of updates received from each vehicle (SG-4528)
 - Fixed issue with locations without route or driver (SG-4535)
 - Fixed issue with geofence alerts not being saved to database (SG-4543)
 - Fixed issue with error message in RRXML driver (SG-4548)
 - Fixed a sync issue with services (SG-4550)
- DMS
 - Fixed issue with DMS stuck in Error state (SG-4563)
- EM
 - Fixed issue with Responder Agency Timestamps (SG-3356)
 - Fixed auditing timestamps in event chronology (SG-4260)
 - Fixed issue with Vehicle Matching (SG-4367)
 - Fixed issue with auditing event responder times (SG-4514)
- General
 - Fixed issue with memory usage in certain process (SG-4587)
- MAS
 - Fixed issue with message merging (SG-4508)
- MLS
 - Fixed issue with Versilia Gates staying in error state (SG-4381)
- Operator Map
 - Fixed issue with display status of DMS in response plan (SG-4400)
 - Fixed issue causing a failure to send FLATIS messages (SG-4513, SG-4529)
 - Fixed issue with RWIS Status dialog (SG-4521)
 - Fixed issue with DMS Message Library dialog freezing (SG-4531)
 - Added expand/collapse button to event details (SG-4591)
 - Added Search box by default on CCTV Camera Control Dialog (SG-4505)
 - Populated MM in event location, if defined (SG-4540)
 - Fixed issue using both English and Spanish floodgates (SG-4541)
- RMS
 - Fixed issue sending speed data (SG-4515)
 - Fixed issue with controller communication failures (SG-4525)
- RS
 - Added Road Ranger Alert report (SG-3024)
 - Added RWIS Visibility (SG-3491)

- Added Time to response plan" to Incident Full Detail Report (SG-4083)
- Added Secondary Crash filter to Event Management Reports (SG-4260)
- Fixed issue with modified detectors in Detector Volume Tabular Report (SG-4490)
- Added a Traffic Flow Report (SG-4503)
- RWIS
 - Fixed issue changing RWIS Op Status (SG-4506)
- TPS
 - Added a can Publish flag for Facilities (SG-4538)
- TSS
 - Fixed issue with FLIR data collection (SG-4569)
- Release 7.2
 - Enhancements
 - Monitor and Regulate DMS Fonts (SG-3568)
 - Links on Map (Multiple stacked links) (SG-2736)
 - Audit Chronology (SG-1422)
 - Case Sensitivity in Object Names (SG-2963)
 - Planned Events (SG-3860)
 - Roadway Naming (Primary/Secondary) (SG-3848)
 - ICMS Integration (SG-4329)
 - Event List Row Highlighting (SG-4301)
 - Permanent Status Filter (SG-4302)
 - Color/Non-Color Messages in SAS (SG-3986)
 - Generic Purpose Input/Output Subsystem (Bridge Reporting) (SG-4577)
 - Executive Notifications (SG-4015)
 - EM Intersections (SG-4187)
 - WWD Crash Descriptor (SG-4650)
 - AVL
 - Sparr Driver does not create new session token when data is reset (SG-4686)
 - Road ranger name not populating in Responders window when logging in via SPARR app (SG-4549)
 - BlueTOAD
 - Continuous BlueTOAD Errors (SG-4618)
 - BlueTOAD failed. N/A reported for status (SG-4730)
 - C2C
 - Floodgate Message Library Deleted (SG-4629)
 - C2C subscriber timestamp not adjusting for time zone (SG-4603)
 - SR-429 NB from MtPlymouth to SR-46 Reporting No Data (SG-4547)
 - CCTV
 - A few CCTV schema discrepancies (SG-4673)
 - ONVIF Iris commands (SG-4778)
 - Error polling ONVIF camera (SG-4855)
 - Data Archive
 - Data Archive Not Archiving TSS Between 12am and 1am (SG-4782)
 - Database
 - Database Upgrade Issue - ODS_TPS_AREA_DMS (SG-4783)

- DMS
 - DMS Posting Errors in MAS when creating response plans - but not when directly sending to DMS (SG-4757)
 -
- EM
 - Events not saving or generating response plans (SG-4735)
 - "Performance Measures" message when attempting to change event status to closed (SG-4687)
 - Responder notification time (SG-4728)
 - Getting a Blank screen while trying to see event base on Tag Matches (SG-4674)
 - Add device Location Description information to Response Plan Dialog (SG-2632)
 - SB Alerts not triggering in EM (SG-4765)
 - Can't depart or arrive RR after Hotfix 8 for 7.1.0 (SG-4829)
 - Various issues with EM and Hotfix 8 (SG-4832)
- IDS
 - WWD FLIR Protocol (SG-4606)
 - Multi-selecting IDS alerts for dismissal (SG-4545)
- Operator Map
 - Unable to open DMS graphics dialog (SG-4733)
 - Some dialogs default to 0 height for new users (SG-4604)
 - Unable to Open Event Details Window (SG-4698)
 - Add "Displayed On Map" field (or similar) to TSS Link Editor dialog (SG-4561)
 - "Primary Event" under Event Details in Event Details windows showing events in random order (SG-4718)
 -
- RS
 - Operator Performance Measures Reports (SG-3555)
 - New report search parameter, user id (SG-1335)
 - Unable to generate reports in Microsoft Word (SG-4631)
 - Report for MVDS with classification (SG-3753)
 - Traffic Detection Reports failing (SG-4799)
- SAA
 - Large SAA resource usage (SG-4417)
- TSS
 - TSS Link and Detector Status Windows Will No Open in Operator Map (SG-4695)
 - Add WWD directional bin to TSS status (SG-4607)
 - Fractional Occupancy (SG-4596)
- TVT
 - TVT Message Templates cannot explicitly set second phase color if same as first phase (SG-4652)
 - TVT Configuration "Select on Map" option does not update TSS links on map from initial set (SG-4648)

- TVT configuration dialog actively sorts during name entry (SG-4647)
- Release 8.0
 - Enhancements
 - Event Details Crash Types Drop Down Menu (SG-1584)
 - Setting up TSS Alarms in 5.0.3 (SG-1698)
 - Predefined Plans do not Populate Dynamic Vehicle Information (SG-3029)
 - NOAA Weather data feed driver (SG-3228)
 - Enable spellcheck for text fields (SG-3900)
 - Permission issue with some Subsystem (SG-3974)
 - Allow audit of secondary event status (SG-4082)
 - Deprecate old SAS Schedule Items (SG-4366)
 - Notify Manager Email (SG-4656)
 - Remove County Boundaries from Reporting (SG-4677)
 - Ability to Edit Operator Comments through Audit (SG-4679)
 - SAS Controlled Permissions (SG-4705)
 - Add County to device configuration (SG-4706)
 - Update Camera Blocking functionality to not require VS subsystem (SG-4727)
 - Report diagnostics information from TPS devices (SG-4771)
 - A "snooze" or "reset" Button for the Road Ranger Stopped Vehicle Alert (SG-4789)
 - Ignore Out of Service Cameras when Finding Closest Camera to an Event (SG-4776)
 - Incorrect "Last Updated" in Email Response Plan items (SG-1957)
 - Location Based Email Group Selection (SG-4681)
 - Cloning Events and Injury Data Transferred (SG-4635)
 - Email Template for Response Plans (SG-4682)
 - Event Details Addition: FHP Case Number (SG-1586)
 - DMS Device Sequencing Loop handling (SG-4949)
 - Non-Standard DMS Messages for Color DMS Do Not Display Well on Operator Map (SG-3444)
 - RPG DMS Suggested Priorities Based on Event Type (SG-5077)
 - Add more information to EM window title bar (SG-1713)
 - Allow audit on injuries (SG-4966)
 - Highlight events that have not been updated within certain time. (SG-3749)
 - Allow DMS graphics to be defined in EM template (SG-4761)
 - Alert Operator when an event is created through the SPARR app (SG-3949)
 - Alert users when C2C missing for TVT generation (SG-3123)
 - Auto-Merge and Manual Merge with Travel Time are Inconsistent (SG-4948)
 - For NTCIP Cameras, set into manual mode before sending manual command (SG-4870)
 - Remote Command Application (SG-5272)
 - Add RISC designation for events & auto-cycle/select contractor to be dispatched (SG-3465)

- Change to/from Daylight Saving Time Results in Incorrect Intervals and Sorting (SG-2640)

Release 8.0 Hotfix 1 Issues and Enhancements

- SG-3010 - Error Messages with Object References in SunGuide 6
- SG-4921 - Activu Interface Reporting Error, but Appears to be Working
- SG-5132 - Event Details Congestion Control will not Update Congestion Tail County
- SG-5159 - Executive Notifications Showing -1 Minutes for Duration
- SG-5212 - Non-Color DMS - Have color options in SunGuide
- SG-5230 - DMS graphic list not available in response plan
- SG-5249 - ONVIF and Axis Camera
- SG-5256 - GPIO DMS Message Actions Staying Dirty
- SG-5264 - Location information not populating on clone event
- SG-5325 - Cannot Set Unconfirmed Blockage On Some Events
- SG-5332 - Waze Alerts Missing EM Location
- SG-5334 - Congestion Head Offset is not automatically selected
- SG-5335 - Cloning Event Issues
- SG-5336 - SunGuide Failure - Shutdown
- SG-5337 - Adaptive NTCIPv1(no PMPP) Signs Not Supporting CRC Within Font
- SG-5338 - Issues Reported with SunGuide 7.2
- SG-5341 - Unable to modify the event location/congestion
- SG-5350 - Reporting & Dispatch Feature Functionality
- SG-5356 - Right Shoulder Blockage on Exit Ramp generates DMS for "Left Shoulder Blocked"
- SG-5357 - DMS Failure for Silver Alerts
- SG-5358 - Editing Response Plan with both Monochrome and Color Signs
- SG-5365 - Performance issue with TMDD Driver.
- SG-5368 - Silver Alert Input Screen - Typing and Timing Issue
- SG-5383 - Cloned Event with CLEAR_CONGESTION auto populated in comments
- SG-5389 - I can't set two TPS in service
- SG-5390 - MCP Joystick is not working
- SG-5392 - Long running query on EM audit data
- SG-5400 - SAS icon toggle has no effect on Operator Map
- SG-5407 - Event Chronology Report does not Include all Involved Vehicles
- SG-5414 - Hotfix 3 Issues- CAD Alerts
- SG-5421 - Blockage time in chronology copied from previous entry
- SG-5424 - Responder Operator password disappears when operator is modified
- SG-5439 - Issues With OTM
- SG-5440 - SunGuide does not allow Line Matrix DMS that report graphics capability
- SG-5442 - Nothing appears in the Incident Timeline Data section
- SG-5449 - Clearing highlighted fields in Executive Notification Template not functioning properly
- SG-5453 - EM Abbreviation Dialog has changed to require abbreviated word to be shorter
- SG-5467 - Issue with Event List with Lane Blockage

- SG-5471 - "True incident clearance" time calculating issue
- SG-5472 - EM- Congestion Tail Missing
- SG-5481 - "No CCTV" checkbox in Event Details reverts to an assigned camera
- SG-5482 - Issues with DMS Group configuration
- SG-5486 - Dialog is not using the time when change in the blockage
- SG-5500 - Congestion is not showing up correctly in event
- SG-5503 - Traffic Detection Reports not returning data
- SG-5504 - IDS Summary Report - FHP Alert
- SG-5512 - Unable to select "Allow Unconfirmed Lane Blockage" when auditing event lane blockage
- SG-5515 - Device Linking upstream display errors
- SG-5521 - Operator Map UI Issues from an RDP Session when Logged into TCS/TSS
- SG-5524 - Event status cannot be set
- SG-5537 - lane blockage duration reporting as 0 incorrectly in SunGuide Reports
- SG-5549 - DMS Graphic Config Dialog Not Opening
- SG-5555 - Spanish Floodgate Spellcheck
- SG-5556 – Work zone status change in Chronology

Release 8.0 Hotfix 2 Issues and Enhancements

- SG-5162 - Can Not Save TVT Message Template
- SG-5258 - DA archive does not appear to be tracking DMS status/DMS Report not working properly
- SG-5307 - System Uptime data not being stored
- SG-5381 - TMDD Driver Support - Subscriptions
- SG-5391 - TSS status is freezing while doing a search
- SG-5462 - Could not modify event location/congestion to database.
- SG-5494 - Add new event window - "Name" column not showing for one user
- SG-5558 - Move RSU communications from SNMPv1 to SNMPv3
- SG-5560 - User unable to change persistent configuration dialog columns
- SG-5562 - Response plan attempts to send signal timing plan even after timing plan has been removed
- SG-5566 - AVL History Table
- SG-5569 - Event chronology indicates incorrect timing plan activation when terminating response plan
- SG-5570 - SAS Schedule item running an hour off from scheduled time
- SG-5581 - SG7.2 HF 4 Congestion Events (with a tail) are flagged not to be published to FL-511.
- SG-5588 - EM Message Template
- SG-5609 - Operators Unable to Save Lane Opening/Event Closure
- SG-5618 - RR Arrivals/Departures Shown Incorrectly as Mobile Upload

Release 8.0 Hotfix 3 Issues and Enhancements

- SG-3336 - Automatically select associated event in alert handling dialog
- SG-3488 - DMS priority in Response Plan changes all DMS sign messages

- SG-3745 - Allow the organization to be selected within the "Add New Event" dialog box
- SG-3800 - Reporting of more accurate locations
- SG-4122 - Migrate Waze Reader to SunGuide codebase
- SG-4815 - Response plans should use Congestion Tail if available
- SG-5156 - Timestamp logic pop-up warnings
- SG-5170 - Ability to filter roadway in Waze Alert
- SG-5245 - ICMS Changes for Response Plans
- SG-5313 - K&K Wrong Way Driving application support
- SG-5376 - Add Nearest Camera Information to C2C eventData
- SG-5426 - TVT or MAS causing DMS to go into Error state
- SG-5620 - When you click on create event, nothing happen.
- SG-5641 - Location Offset Tag Replaced With Incorrect Value
- SG-5647 - Several DMS Descriptions and Lat/Long Have Been Swapped
- SG-5651 - Cross Street on Approach Is Modified When Modifying the Congestion Tail Reference Point
- SG-5659 - Response Plan applies to DMS outside the defined parameters
- SG-5666 - Receiving FHP Alerts, But Driver Failing to Process
- SG-5683 - RRRXML Driver Fails to Convert GeoDecisionsDateTime to DateTimeOffset
- SG-5686 - Users are unable to show/hide icons on the Operator Map
- SG-5687 - Location Description showing blank in TSS and VOD dialogs
- SG-5688 - Unable to void events
- SG-5693 - DMS Messages Not Centered Vertically
- SG-5694 - Executive Notification generated for should only blockage
- SG-5695 - Cannot open predefined plan config dialog
- SG-5697 - SAS is not starting Ramp Metering
- SG-5698 - Search panel in grids should appear on left side
- SG-5699 - Congestion events not publishing to FL-ATIS
- SG-5700 - Cloned event location is not correct
- SG-5702 - VOD Layouts Dialog Behind VOD Window
- SG-5703 - RMC Status Doesn't Match Actual Status
- SG-5710 - Unable to unblock lanes
- SG-5712 - Abbreviation behavior change

Release 8.0 Hotfix 4 Issues and Enhancements

- SG-2570 - Allow comments to be added to closed events without reopening
- SG-3499 - Reporting "Ramp Closed" for Different Lane Mappings
- SG-3962 - Add Open CCTV from Event List & Event Details Feature
- SG-4936 - Add Roadway Filter to Monthly Performance Measures Report.
- SG-4965 - Add support for mileage tracking in SPARR interface
- SG-5251 - Wrong Way Device - Incorrect images displayed in SunGuide with Alert
- SG-5359 - Wrong Way Driver Alert
- SG-5613 - C2C Provider sending Warning
- SG-5650 - Executive Notification Emails sending in white text
- SG-5565 - Add support for GovComm WWVDS

- SG-5639 - Incorrect Lane Blockage time
- SG-5705 - TCS Subsystem Memory Problems (Leak?)
- SG-5728 - Report not correctly displaying data
- SG-5729 - TMC Notified vs. Arrival
- SG-5744 - Unable to Create Event from FHP Alert
- SG-5746 - DMS Font Issues and Approval Word Prompt
- SG-5747 - C2C Infrastructure Not Passing Any Data - Error Reported in Status Website
- SG-5755 - Trying to organize videos on VOD results in the OperatorMap crashing.
- SG-5769 - Controller Change from SG via TMDD

Release 8.0 Hotfix 5 Issues and Enhancements

- SG-2570 - Allow comments to be added to closed events without reopening
- SG-3499 - Reporting "Ramp Closed" for Different Lane Mappings
- SG-3962 - Add Open CCTV from Event List & Event Details Feature
- SG-4936 - Add Roadway Filter to Monthly Performance Measures Report.
- SG-4965 - Add support for mileage tracking in SPARR interface
- SG-5251 - Wrong Way Device - Incorrect images displayed in SunGuide with Alert
- SG-5359 - Wrong Way Driver Alert
- SG-5613 - C2C Provider sending Warning
- SG-5650 - Executive Notification Emails sending in white text
- SG-5565 - Add support for GovComm WWVDS
- SG-5639 - Incorrect Lane Blockage time
- SG-5705 - TCS Subsystem Memory Problems (Leak?)
- SG-5728 - Report not correctly displaying data
- SG-5729 - TMC Notified vs. Arrival
- SG-5744 - Unable to Create Event from FHP Alert
- SG-5746 - DMS Font Issues and Approval Word Prompt
- SG-5747 - C2C Infrastructure Not Passing Any Data - Error Reported in Status Website
- SG-5755 - Trying to organize videos on VOD results in the OperatorMap crashing.
- SG-5769 - Controller Change from SG via TMDD

Release 8.1 Issues and Enhancements

- SG-2364 - Log username of user that changes device status
- SG-2510 - Indicate removed items in Current Response Plan list prior to plan activation
- SG-3143 - Status Logger Filters
- SG-4781 - Request update of integrated VLC libraries
- SG-5327 - Integrate Traffic Vision video analytic alerts into SunGuide
- SG-5303 - MH Corbin WWD Integration
- SG-5236 - We would like a TPAS enhancement that would alarm when a space has been occupied For an extended time.
- SG-5278 - Blank Out Signs Integration
- SG-3335 - Alert the operator when a travel time is double (or some other ratio) the free flow travel time
- SG-5065 - Add support for authentication via Active Directory

- SG-3338 - Allow floodgates to be scheduled through SAS
- SG-3925 - Add assigned Beat to Road Ranger information in Event Reports
- SG-4985 - Ability to configure response plan search radius by event type
- SG-4209 - Use polyline instead of a single point for road closures
- SG-564 - Remove List Options without Deleting
- SG-2493 - Icon enhancement for Arterial DMS
- SG-5410 – Question about new Executive Notification

Release 8.1 Hotfix 1 Issues and Enhancements

- SG-4713 - Response Plan dialog appearing to show wrong merged messages
- SG-5007 - Floodgate message library not loading completely
- SG-5470 - Carmanah - Wrong Way Driver
- SG-5606 - Mas isn't starting
- SG-5725 - Auditing Event Times Does not Work
- SG-5760 - Associated events in the TAM interface do not open the event.
- SG-5775 - Various report issues in D5
- SG-5791 - WWD TAM using the default event type template
- SG-5820 - Unable to modify event location
- SG-5823 - Unable to delete RMC
- SG-5841 - Shoulder Blocking/Lane Blocking - Clear and Reopen Times
- SG-5874 - Response Plan defaulting to 255 priority
- SG-5881 - DMS Response Plans
- SG-5893 - Auditing Timestamp of Event Type Doesn't Work
- SG-5894 - Camera Blocking
- SG-5897 - SAS messages not posting
- SG-5900 - EM list not updating lane closure/opening
- SG-5920 - AVL/RR Icon colors not updating
- SG-5936 - TIM Message Format
- SG-5940 - Executive Notification don't always generate
- SG-5953 - DMS Font Auto-Management sending incompatible font numbers
- SG-5956 - Auditing Wrong Way Driver Events
- SG-5962 - Issues with device uptime reports
- SG-5973 - Config Editor complains about CPU process thresholds above 100
- SG-5978 - Travel times failing to post
- SG-5980 - Detector Data Detail Report is not accurate
- SG-5987 - Creating an Event from a TSS Alarm Assigns no Owner
- SG-5990 - TIM presentation region is missing
- SG-5996 - RCA Configuration and Device Permission
- SG-5999 - EM becomes unresponsive and requires restart
- SG-6002 - TMDD/NTCIP 1202's Pattern Cycle Time (and offset) data type needs to be upsized
- SG-6008 - "Find on Map" is gray out for RMS devices
- SG-6010 - Executive Handler keep crashing on some servers
- SG-6011 - Unable to create event with new added vehicles as notifying contact

- SG-6016 - RISC Configuration does not save End Point
- SG-6023 - -04:00 shows in time of incident line of Executive Notification
- SG-6032 - Cannot Audit an event to "False Alarm"
- SG-6043 - Truck Parking sensor reporting future time for status in SunGuide
- SG-6046 - When adding contact into agency, the changes does not save.
- SG-6063 - Information Copied into Cloned Event
- SG-6086 - Data Archive - Memory Usage
- SG-6093 - EM Freeze on 8.1
- SG-6104 - Roadway/Direction missing from DMS Tooltips
- SG-6113 - OperatorMap Not Responding
- SG-6114 - MH Corbin devices not polling

Release 8.1 Hotfix 2 Issues and Enhancements

- SG-5363 - EM Reports Show Incorrect Filter Value in Header
- SG-5464 - Blue Band Integration - TPS
- SG-5487 - Develop Standard WWD Alert Input Interface
- SG-5585 - CV Connected Vehicle App SunGuide Support Request (I-4 Frame)
- SG-5708 - Scheduled Reports Dates
- SG-5774 - Integrate TAPCO/Blink link Over height Sensors into SunGuide
- SG-5851 - Events stuck in event list
- SG-5880 - DMS Preview Pane - Not displaying image to scale
- SG-5994 - Update J2735Driver from "polygon(oldRegion)" to circle or lane.
- SG-6019 - Changing DMS default font does not update the selected font in the configuration dialog
- SG-6060 - SunGuide Playing Alert Sounds When Configured Not To
- SG-6101 - FHP Alert Filtering and Updates
- SG-6105 - Replace SAE codes in SunGuide C2C events
- SG-6129 - IDS Weather Alerts not Populating
- SG-6136 - Bridge Preemption not Showing in FL-ATIS
- SG-6140 - Update Apache Log4j to Newest Version
- SG-6141 - C2C Subscriber Fails to Update a Few Minutes After Restart
- SG-6146 - EM Location/ Congestion Tail
- SG-6147 - Predefined Plans Not Saving DMS Template Tags
- SG-6157 - Change of reference point causes EM to fail authentication
- SG-6159 - MAS not merging TVT correctly when more than one custom message is present.
- SG-6167 - Operator Map Hung Up While Auditing Responder Timestamps
- SG-6173 - Response plan having minutes of lag when posting message to DMS
- SG-6177 - Operator Map locks up if Vehicle Alert dialog opens but user is not able to access the vehicle alert image directory
- SG-6178 - Setting up active directory login access
- SG-6180 - Lane Blockage showing Congestion Cleared Status
- SG-6194 - Missing Events In Event List
- SG-6195 - IDS Not Receiving FHP Alerts

- SG-6200 - Not receiving C2C camera devices
- SG-6221 - Adding new configuration file value for an external host
- SG-6222 - Event Viewer login failing
- SG-6225 - Operator Map Slowness with DMS dialog

Release 8.1 Hotfix 3 Issues and Enhancements

- SG-4760 - Not Auto-Merging Scheduled Messages
- SG-4968 - Wrong Way Detection Pop-Up Alerts
- SG-5215 - SAS Missing Merge with Travel Time Option
- SG-5282 - Change "Terminate Schedule" in SAS to also remove DMS from device queue.
- SG-5561 - Give permitted users the ability to assign an active event to a user
- SG-5782 - RISC Module Enhancements
- SG-5811 - Search Historical Reports by FHP CAD & Case#
- SG-5865 - Improve EM DMS suggestions if message does not fit
- SG-6039 - Temporary "Allowed Word" option for authorized users
- SG-6072 - Vehicle Alert dialog does not pop up when minimized
- SG-6073 - Make SunGuide usernames case insensitive
- SG-6206 - SG 8.1 Deployment on Test system TSS repeatedly fails
- SG-6261 - Can't manage CCTV presets while device permissions are enabled

Release 8.2 Issues and Enhancements

- SG-3926 - Assign CCTV to DMS and provide shortcut in DMS dialog
- SG-4891 - Rewrite the CCTV NTCIP driver in C#
- SG-5143 - Make Chronology report be able to be generated entirely or only in sections of interest.
- SG-5456 - "TMC Notified" for all notified times regardless of whether notified box is checked
- SG-5557 - Ability to Set WWD Sites to Maintenance Mode via SG
- SG-5706 - Add timestamp in SunGuide incident when Executive Notification Emails are sent
- SG-5806 - Adding multiple activities to a responder at one time instead of only one at a time.
- SG-5810 - Copy a SAS Plan
- SG-5875 - Issue 564 Phase 2 Ceased Use Implementation
- SG-6015 - TPAS prompt for verifying available spaces for CO reporting
- SG-6120 - Allow saving configuration of items without errors despite errors in other items of the same type.
- SG-6142 - Add a "Submit Crash Report" option for Operator Map Failures
- SG-6371 - SetOpStatusResp RefID does not match request
- SG-6353 - Wrong Way Alert Image Slideshow Not Panning Through Images
- SG-6334 - Editing the TEXT for RPG isn't matching what you typing
- SG-6294 - GovComm alerts not showing
- SG-6226 - Change Password isn't working

- SG-6027 - Datapath Video Wall integration

Release 8.2 Hotfix 1 Issues and Enhancements

- SG-6391 - Excessive Operator Map Warnings in SL from TCS Subsystem
- SG-5677 - EM_EVENT_PERFMEASD table not flagging WRS_FULLLCLOSURE column correctly
- SG-5745 - Road Ranger Assists Report Charts by Time not Working Correctly
- SG-6227 - Camera Usage Report formatting changed in 8.1hf1
- SG-6242 - RCA Subsystem causing EM list to be empty
- SG-6317 - Avigilon updates for image timing
- SG-6343 - SAS Messages not displaying on DMS
- SG-6354 - Wrong Way Detection - Unresolved Alerts
- SG-6382 - Add Scroll Functionality in "Tab" Version of Event Details Window
- SG-6392 - Unable to create new DMS Message Library or rename Message
- SG-6429 - Abbr Requirement Not Enforced for Abbreviations
- SG-6431 - RISC Activation Email - Pulling in wrong information
- SG-6442 - ISS WWD protocol not receiving alarms
- SG-6453 - QAR reports 100% pass when at least one DMS has failed
- SG-6538 - Desktop Video Dialog does not auto-populate with the selected camera
- SG-6789 - CLONE - SAS Messages not displaying on DMS
- SG-5724 - Reports not Available in SG 8.0
- SG-5888 - Dash in Word begin Replaced Causing Unapproved Word
- SG-6197 - K&K Wrong Way Driving
- SG-6230 - Not able to name DMS Message Library
- SG-6321 - Reports View
- SG-6347 - Addition of FDLE Alert Type to Replace AMBER, LEO, and SILVER Alerts
- SG-6376 - Can't edit a Scheduled items in SAS
- SG-6390 - WWD Report immediately uses 100% CPU when ran
- SG-6408 - Disabling AVL subsystem prevents opening of add new event dialog
- SG-6426 - Cannot Rename Managed Road
- SG-6434 - Device changes are not updated
- SG-6438 - Road Ranger "Distance to Destination" is Wrong
- SG-6467 - Not Getting WWD Email Messages
- SG-6151 - Accurate Location
- SG-6192 - SAS Not Previewing Color DMS Options After Save
- SG-6323 - Rubber Banding Operator Map Doesn't Zoom/Pan Properly
- SG-6325 - Purple Alert as new Event Type
- SG-6339 - Index on EM_EVENT_CHRONO.CREATED_DATE
- SG-6370 - Incorrect schema information
- SG-6459 - Null Chronology Description when Changing Congestion Tail
- SG-6484 - approvePlannedEvent missing its type

Release 8.2 Hotfix 2 Issues and Enhancements

- SG-5508 - Make "Off ramp Backup" and "Congestion" available as options when planning events
- SG-5707 - Option to not open a report on completion (only email)
- SG-5981- Add "# of Items" column to SAS Schedule Table
- SG-6050 - FTE External Integrated Website - WWDS Alerts
- SG-6087 - Collect additional data related to RR-involving incidents
- SG-6235 - Video on Desktop using significantly more resources after installing 8.1
- SG-6389 - Add New Column in the Event List for "Congestion"
- SG-6528 - Cannot Add DMS to Response Plan
- SG-6530 - DMS RPG Message did not fit on the sign
- SG-6565 - Release 8.2 Hotfix 2 Integration Testing
- SG-6567 - Cameras keep spinning when using Camera Control to PTZ
- SG-6571 - RMC Communication Issues
- SG-6578 - Beacon communication issue
- SG-6580 - RWIS stations failed since upgrade to 8.2 HF1
- SG-6598 - SPARR app not allowing user to add an activity when in light mode
- SG-5807 - Add weather to the event list for pre-planned events
- SG-6479 - WWD Dismiss as False Alarm Closes Event
- SG-6485 - Error while trying to load a Predefined Response Plan
- SG-6487 - No TPS historical data being captured in database
- SG-6505 - AVLRR retrieveDataReq.xsd Missing Attributes
- SG-6508 - EM EventDetails.xsd Missing Attributes
- SG-6511 - Default State can be deleted
- SG-6520 - Event Details Dialog Freezes When Saving Accurate Location Without a Location
- SG-6522 - AVL Report Only Returns Records with Status = "ARRIVED"
- SG-6541 - Monthly Performance Measures Report Fails
- SG-6550 - Beacon Problems
- SG-6551 - C2C retrieveDataReq.xsd Missing Attributes
- SG-6552 - DAR retrieveDataReq.xsd Missing Attributes
- SG-6553 - GPIO retrieveDataReq.xsd Missing Attributes
- SG-6560 - Error message from map causing large log
- SG-6575 - Floodgate Message Library Blank in New Floodgate Window
- SG-6586 - Road Ranger Status page not displaying Event ID
- SG-6587 - Graphics Saved in Library Messages Don't Show When Activating Sign
- SG-6588 - Unable to Audit Vehicle Dispatch Time
- SG-3769 - Allow sharing of created VOD tours and layouts
- SG-3942 - Select Camera in VOD camera list when new window is created with video feed
- SG-6191 - Snapshot feature in Desktop Video Wall
- SG-6577 - Find on Map function grayed out in RWIS Station Status dialog

Release 8.2 Hotfix 3 Issues and Enhancements

- SG-6133 - Duplicate events showing up in Incident Detail report
- SG-6515 - EM Abbreviation allows duplicate
- SG-6593 - SPARR continued issues
- SG-6606 - Wiper and washer label control not properly showing up
- SG-6692 - EM won't start - invalid event
- SG-6708 - WWD Resolve Alarm Popup Hidden Behind Associated Cameras
- SG-6711 - Ceased Use Link
- SG-6719 - Can't change stream quality with right-click after 8.2HF2 upgrade
- SG-6739 - EM showing "No Location" on old, secondary events
- SG-6747 - Permission error creating event from IDS alert
- SG-6777 - Old events reappeared after restarting EM subsystem
- SG-6850 - EM won't start
- SG-4649 - Keep DMS device icons on map when using TVT configuration
- SG-4725 - Requesting an additional field in the "EventChrono RPT View"
- SG-4791 - Incident Clock should Start when the Operator Clicks on "new event"
- SG-4876 - TSS Alarms - Agency Contact Config
- SG-5349 - FL-511 not publishing correct lane blockage if an event has both the turn lane and travel lane blocked
- SG-6036 - EM selects predefined group of event attributes based on event type
- SG-6513 - FDOT Standard TPS Protocol
- SG-6605 - WWD Alert Active after Event Closed
- SG-6611 - EM retrieveDataReq.xsd missing default values
- SG-6649 - Cannot Change Lane Configuration in Event Details
- SG-6673 - Event Status Auditing Failed
- SG-6705 - Not able to add CCTV to a desktop tour once tour is originally saved
- SG-6706 - Analog CCTV from VICON doesn't work after 8.2
- SG-6709 - DAR - FTP Passive Mode
- SG-6716 - Random Error while cloning event
- SG-4794 - Hide the password in "TSS Detector Configuration" Dialog box

Release 9.0 Issues and Enhancements

- SG-6652 - DMS Cycling from Error to Active
- SG-6751 - Event Audit Error Message
- SG-6814 - Event Audit Error
- SG-6887 - Event Audits for Event Location not updating properly in the map
- SG-4385 - Apply On a per day basis filter to device report
- SG-6201 - Add EM audit events to DAR XML feed
- SG-6355 - Security improvements
- SG-6492 - Allow simultaneous remote/local devices from IDS vehicle alert device drivers
- SG-6510 - "Removed" FHP CAD Alerts Not Coming In
- SG-6523 - Add Vehicle Alert Device status to C2C
- SG-6646 - IDS Fails Upon Startup

- SG-6700 - FHP Interface Server not successfully running
- SG-6701 - "Left/Right Lane Blocked" Duplicated in 511 ATIS RPG Suggestion
- SG-6718 - Problem editing DMS in Response Plan
- SG-6729 - Operator Map Error TargetInvocationException
- SG-6753 - Email information missing from Report GUI Display
- SG-6782 - NTCIP 1209v2 protocol implements deprecated data collection table
- SG-6789 - CLONE - SAS Messages not displaying on DMS
- SG-6801 - Roadway/Direction not showing on Event List
- SG-6818 - FHP/ Waze IDS Alert Issues (Various)
- SG-6830 - Contact Notification Areas Configuration
- SG-6846 - IDS ownership of event in Chronos report and in OM event window
- SG-6849 - Upgrade to .NET 4.8
- SG-6860 - Flex Lanes - Incorporate Corridor Status Window into SunGuide's Operator Map
- SG-6862 - Flex Lanes - Allow Configuration of Heads Outside of Shoulders
- SG-6921 - Error occurred acquiring the server time
- SG-6923 - Tours not saving correctly
- SG-3232 - Associating FHP and TSS Alerts to Already Created Events
- SG-4562 - Nearest camera for SPARR created events
- SG-4758 - RWIS Alerts need the alert type and value added
- SG-4784 - Keyword search for Reports
- SG-4941 - Emails for Device Issues
- SG-5364 - Request to enhance for Vehicle dispatch documentation
- SG-5532 - Report per-day basis filter when crossing day boundaries
- SG-5668 - WWD Detection on Mainlines using MVDS
- SG-5682 - Wrong Way Driver response plan's location
- SG-5876 - Issue 564 Phase 3
- SG-6121 - TSS – Wavetronix driver update for Wrong Way Driver | Directional Flag
- SG-6131 - Involved Vehicle Make and Model Automatically Approved
- SG-6135 - SunGuide EM Ribbon Update
- SG-6193 - Enhance the Contact section in SunGuide
- SG-6281 - WWD Image Failure Hangs Operator Map
- SG-6286 - Unable to delete TPS facility
- SG-6312 - Add Device and Link Geographic Filtering into C2C Subscriber
- SG-6367 - LCS module for SunGuide
- SG-6397 - RISC Module Chronology Report
- SG-6463 - Status Log Level Monitor
- SG-6483 - Reset GPIO Override
- SG-6488 - GPIO Devices and Device Groups Published with Can Publish Unchecked
- SG-6549 - DataArchive Subsystem doesn't see changes made to MVDS
- SG-6556 - Generic Alert Interface
- SG-6597 - Audit Event: Event Location and Congestion not updating
- SG-6601 - Can't Delete Road Ranger Activities
- SG-6630 - Out of Service Status Message

- SG-6674 - Alphabetize Video Layout List
- SG-6720 - Unexpected behavior when adding floodgates
- SG-6774 - Cannot add or remove vehicle makes or models
- SG-6816 - Response Plan can be Opened, Modified and Activated for Closed Event
- SG-6835 - Various Grid views have sort/filter bugs
- SG-6836 - Event Details Dispatch Vehicle Status List no longer shows Event IDs for arrived Responders
- SG-6853 - Traffic Detection Rollup Data Tabular is off by 4 hours
- SG-6879 - Deleting Contacts Corrupts CNA Database
- SG-6889 - Changing the "total spaces" of a TPS facility breaks facility
- SG-6895 - Cannot Audit EM Timestamp
- SG-6904 - Multiple-select for alerts works, multiple-resolve varies
- SG-6910 - Saving changes to a Vehicle Make causes it's Vehicle Models to vanish
- SG-1053 - Add filter in reports for "Comment Type" and Comment keyword search
- SG-2964 - Multiple Logical Devices Mapped to Same Physical Device
- SG-3047 - Multi-select cameras into new video wall window from map
- SG-6417 - Configure RPG Distance for DMS Messages when Travel Lanes are Cleared
- SG-6595 - Sounds for Wrong Way Alerts
- SG-6749 - Icon in Video in Desktop Video Wall Dialog
- SG-6858 - The media player has been disposed

2.4 SunGuide Application Installation

The following sections provide an overview of how to install the SunGuide software. The installation of the software should be performed by someone who has attended the SunGuide “System Administration/Deployment Training Course” as many of the installation procedures are not obvious to a user who is not familiar with the software design and implementation.

The SunGuide software is installed using custom setup programs that are included on the SunGuide distribution CD and the manual operations described in the following sections.

2.5 Installation Overview

The following steps needs to be performed to install the SunGuide application software:

- Backing up existing SunGuide servers (see Section 2.6)
- Prepare the SunGuide servers (see Section 2.7)
- Install the database (see Section 2.9)
- Install the application software (see Section 2.12)
- Install and Configure the Center-to-Center software (see Section 2.13)
- Configure the system (see Section 2.14)

2.6 Backing Up Existing SunGuide Servers

If the installation to be performed is on servers currently configured to execute SunGuide, the following files should be backed up prior to installation so that they can be reused once the new installation is performed:

- config.xml – primary configuration file that contains the settings for all of the SunGuide subsystems and drivers
- FL-ATIS_FloodGate_Data.xml – contains the floodgate message “slot” configuration data used by the Floodgate GUI
- IpVideoDevices.xml – provides model specific settings for video devices
- SnapshotDevices.xml – defines video capture devices and corresponding IP video decoder devices
- OMInterface.dll.config.xml – Operator Map client configuration settings
- ProcessList.xml – Executive Handler Server’s list of installed services
- Note: This is only necessary if the system is not operating in a clustered environment. The Installer will auto-generate a ProcessList.xml for all installed SunGuide application processes.
- Web.config – If uninstalling and re-installing any C2C web services, each web service contains a web.config file for C2C configuration.

2.7 Platform Requirements for the SunGuide System

Application Server:

- Operating System: Windows Server 2016 or higher
- .NET 4.8 minimum required.
- IIS Web Server

Database Server:

- Operating System: Windows Server 2016 or higher
- Database Product: SQL Server 2016 or higher

Workstation:

- Operating System: Windows 10 or higher
- NET: 4.8 minimum required.

Please note that ALL servers and workstations needed to be **time-synced** to a common source.

2.8 Preparing SunGuide Servers

The following is a list of steps that need to be performed to install the SunGuide software:

1. Ensure that the current user on the server has administrative privileges.
2. Create a share point (which will be called the “SunGuide share point” for the remainder of this document) on a system folder that is accessible to all SunGuide application and database servers (e.g., [\\Archimedes\fdot](#)). Be sure to give the SunGuide services account full access to this share.
3. Copy “config.xml” file to the SunGuide share point. This file will be called the <config file loc> for the remainder of this document (e.g., [\\Archimedes\fdot\config.xml](#)). Incorporate any changes from the config file updates included on the distribution CD. See the section titled Configuration Editor in the Software User’s Manual on how to edit the configuration file.

4. Verify available ports for Status Logger (8000) and Executive Handler (8001, 8002) by running “Netstat -a” from a DOS command line from the SunGuide application servers.
5. If the AVL/RR subsystem or the C2C plug-in will be installed on the target system, the Navteq map data must be located local to the server or on a file share accessible by the applications.
6. Ensure that IIS and ASP.NET4.6.2 are installed and enabled on each server that will host a webserver application (e.g. OperatorMap, Webserver). Ensure that the ASP.NET 4.6 and Active Server Pages web extensions are enabled in IIS.
7. Install SunGuide Software using SunGuideInstall.exe (see Section2.12).
8. In the location that the OperatorMap web application is installed, edit the “OMInterface.dll.config.xml” file appropriately. These edits include server locations, floodgate message configuration file name and location, and map tile’s location. The map tile’s location must match the actual location of the map tile files. The default location is a folder named “Tiles” under the “OperatorMap” folder. To change the default location, edit the “value” attribute associated with the “key” attribute named “tilesets”. The “value” attribute must contain pairs of strings that define the label of the tile set and the file system path of the tileset. The file path can be relative to the “OperatorMap” folder or it can be an absolute path. Note that neither the label nor the file path may contain any whitespace characters.

2.9 SunGuide Database Installation

The SunGuide database installation occurs in three steps: SQL Server installation, creation of the SunGuide database container and preparing it for data and loading starter data.

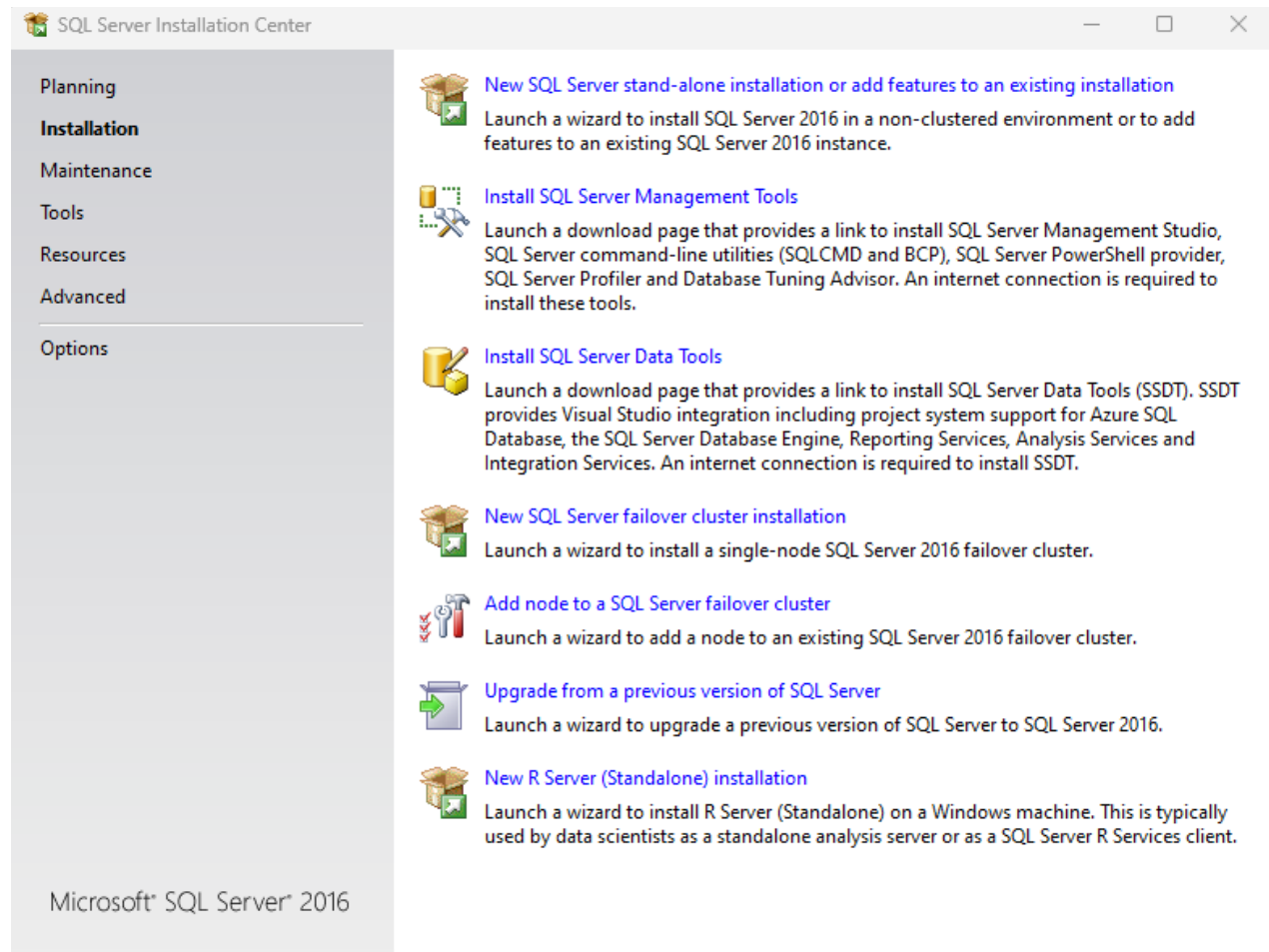
2.9.1 SQL Server 2016 Installation

This section does not replace the detailed instructions published by Microsoft for the installation of SQL Server 2016. These instructions only describe the highlights and are intended for persons experienced with installing SQL Server products. It is helpful if all previous SQL Server installations are removed. Remove empty SQL Server directories from previous installations.

2.9.1.1 Install SQL Server Software

The SQL Server software should be installed on every server that will host the SunGuide database. It is recommended that at a minimum, SQL Server 2016 should be installed.

For a standard installation select “New SQL Server stand-alone installation” seen in the picture below.

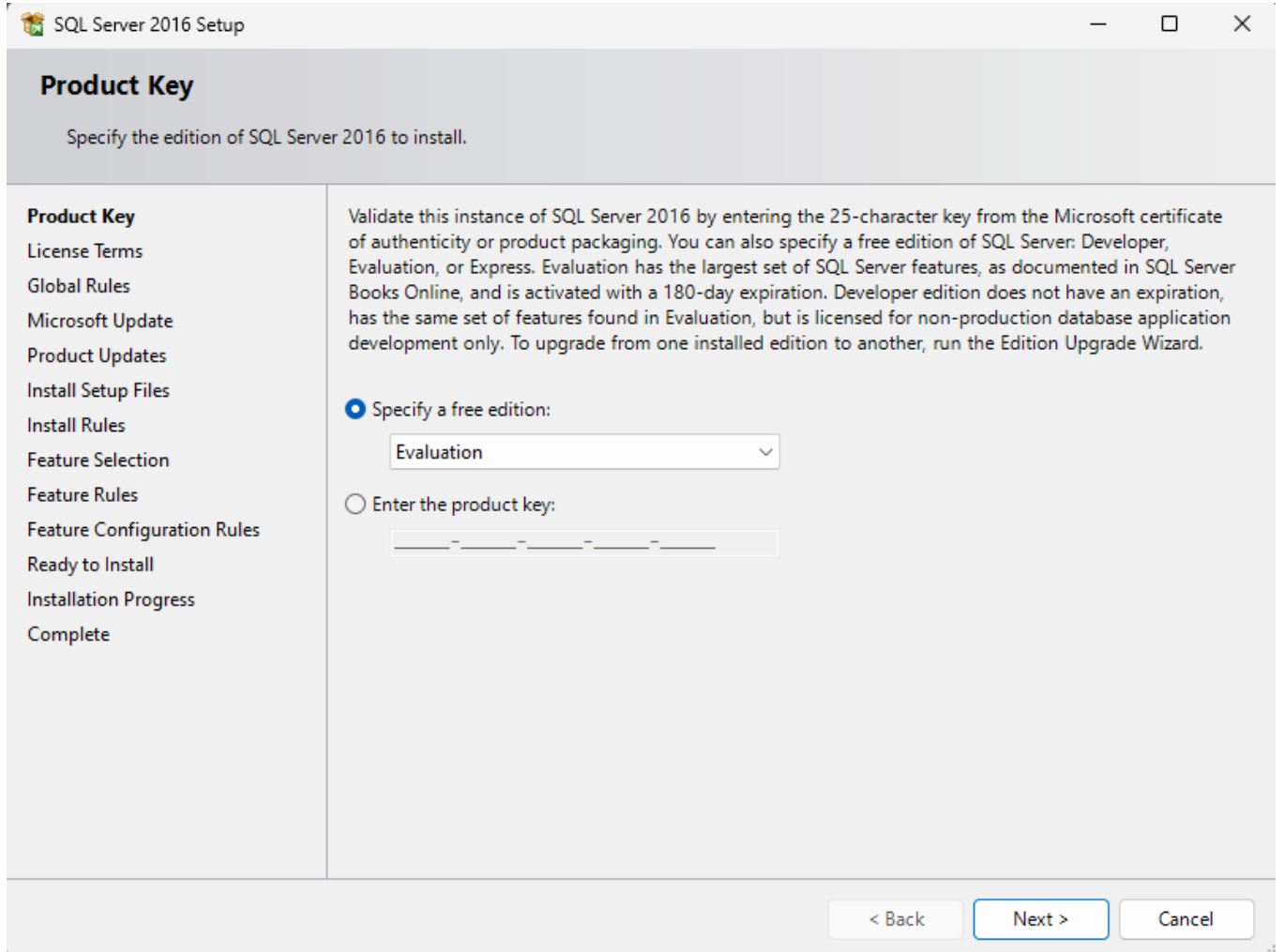


The screenshot shows the SQL Server Installation Center window. The title bar reads "SQL Server Installation Center". On the left is a navigation pane with the following menu items: Planning, **Installation**, Maintenance, Tools, Resources, Advanced, and Options. The main content area lists several installation options, each with an icon and a description:

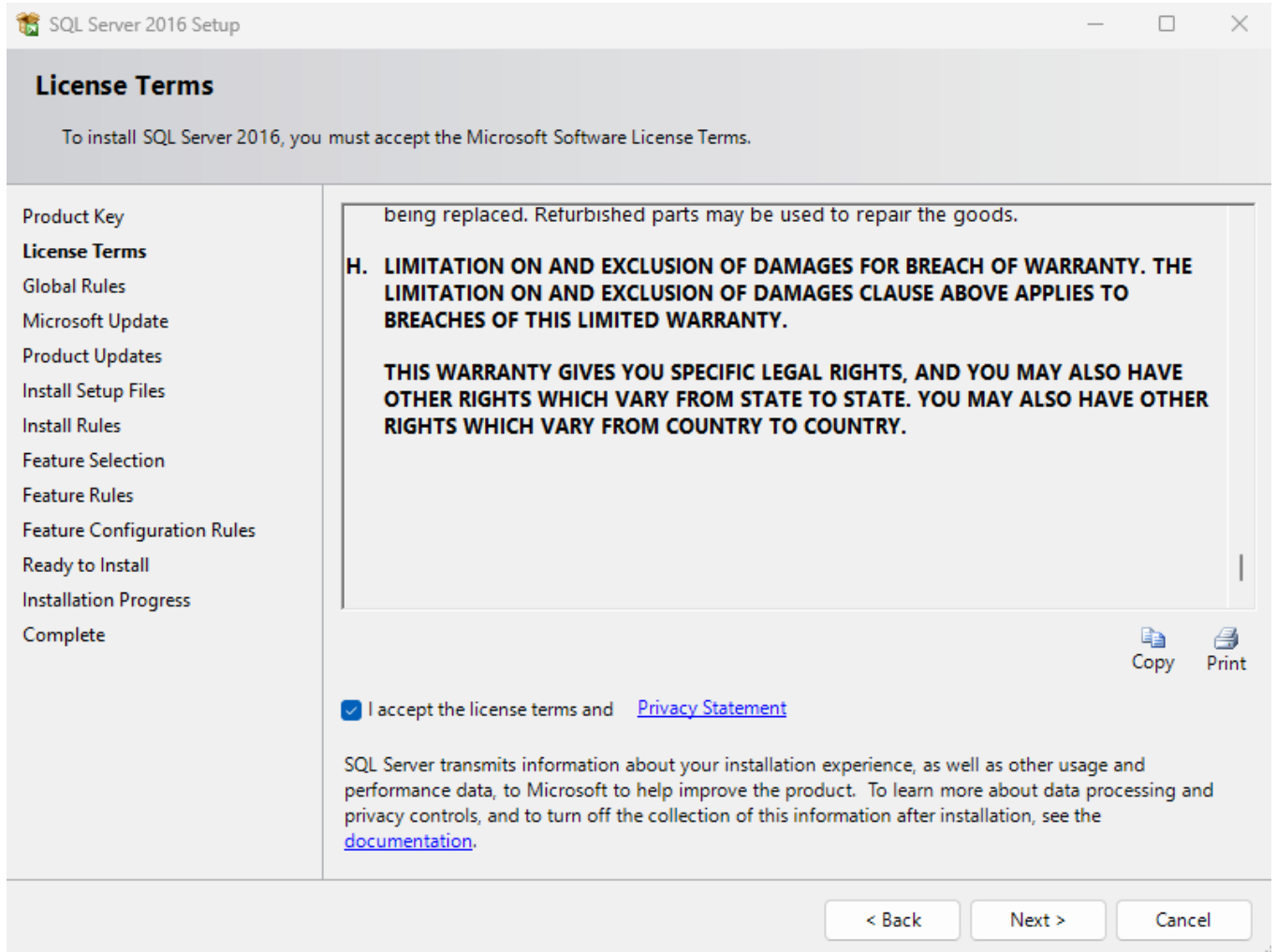
- New SQL Server stand-alone installation or add features to an existing installation**
Launch a wizard to install SQL Server 2016 in a non-clustered environment or to add features to an existing SQL Server 2016 instance.
- Install SQL Server Management Tools**
Launch a download page that provides a link to install SQL Server Management Studio, SQL Server command-line utilities (SQLCMD and BCP), SQL Server PowerShell provider, SQL Server Profiler and Database Tuning Advisor. An internet connection is required to install these tools.
- Install SQL Server Data Tools**
Launch a download page that provides a link to install SQL Server Data Tools (SSDT). SSDT provides Visual Studio integration including project system support for Azure SQL Database, the SQL Server Database Engine, Reporting Services, Analysis Services and Integration Services. An internet connection is required to install SSDT.
- New SQL Server failover cluster installation**
Launch a wizard to install a single-node SQL Server 2016 failover cluster.
- Add node to a SQL Server failover cluster**
Launch a wizard to add a node to an existing SQL Server 2016 failover cluster.
- Upgrade from a previous version of SQL Server**
Launch a wizard to upgrade a previous version of SQL Server to SQL Server 2016.
- New R Server (Standalone) installation**
Launch a wizard to install R Server (Standalone) on a Windows machine. This is typically used by data scientists as a standalone analysis server or as a SQL Server R Services client.

Microsoft® SQL Server® 2016

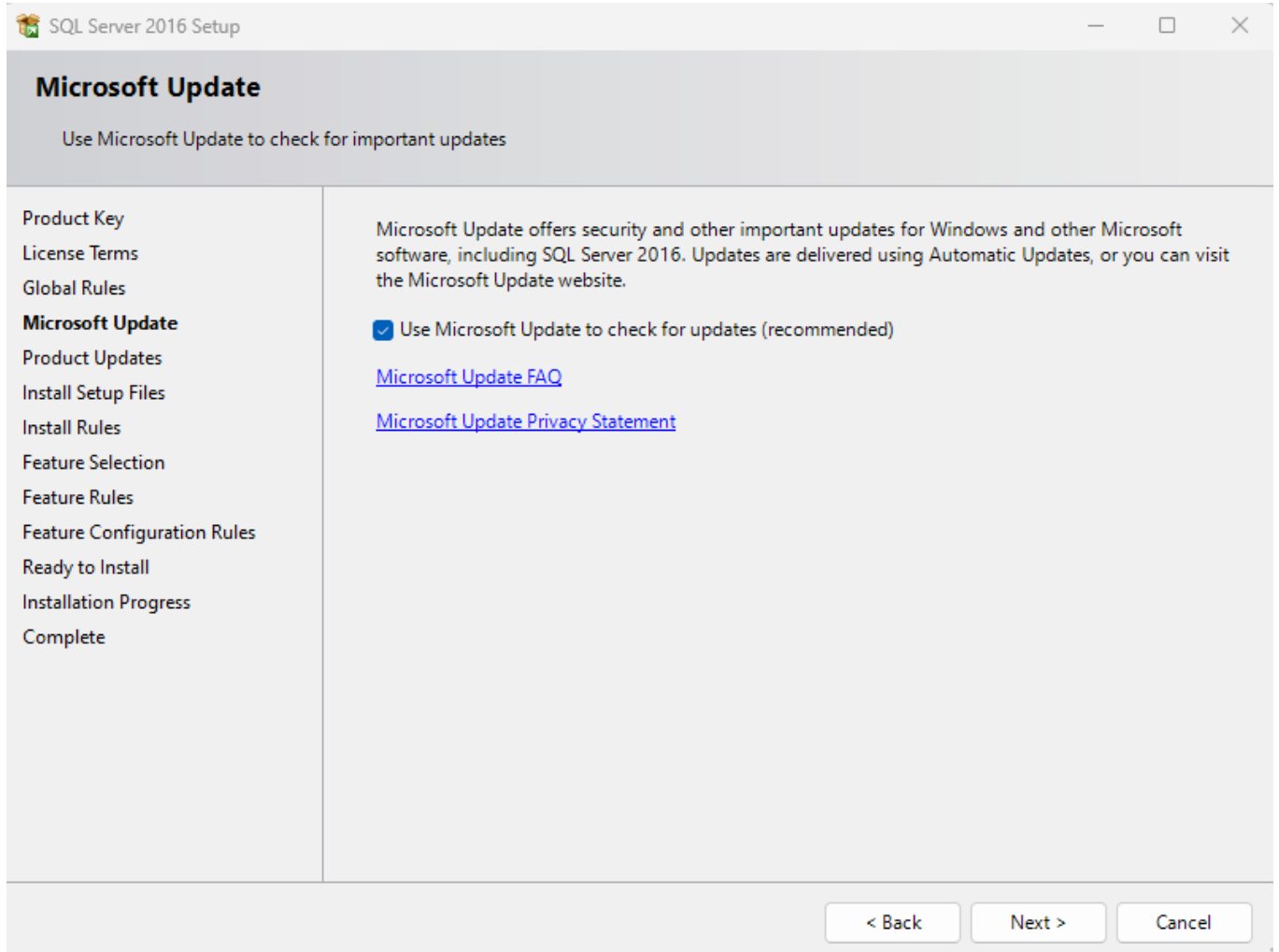
Enter the product key. Press next. Agree to license terms and select Next.



After accepting the licensing terms click Next.



Select Microsoft update to check for important updates and click Next.



In the Install Rules, the setup rules identify potential problems that might occur while running setup. If everything passes, select Next.

SQL Server 2016 Setup

Install Rules

Setup rules identify potential problems that might occur while running Setup. Failures must be corrected before Setup can continue.

Product Key
License Terms
Global Rules
Microsoft Update
Product Updates
Install Setup Files
Install Rules
Feature Selection
Feature Rules
Feature Configuration Rules
Ready to Install
Installation Progress
Complete

Operation completed. Passed: 4. Failed 0. Warning 1. Skipped 0.

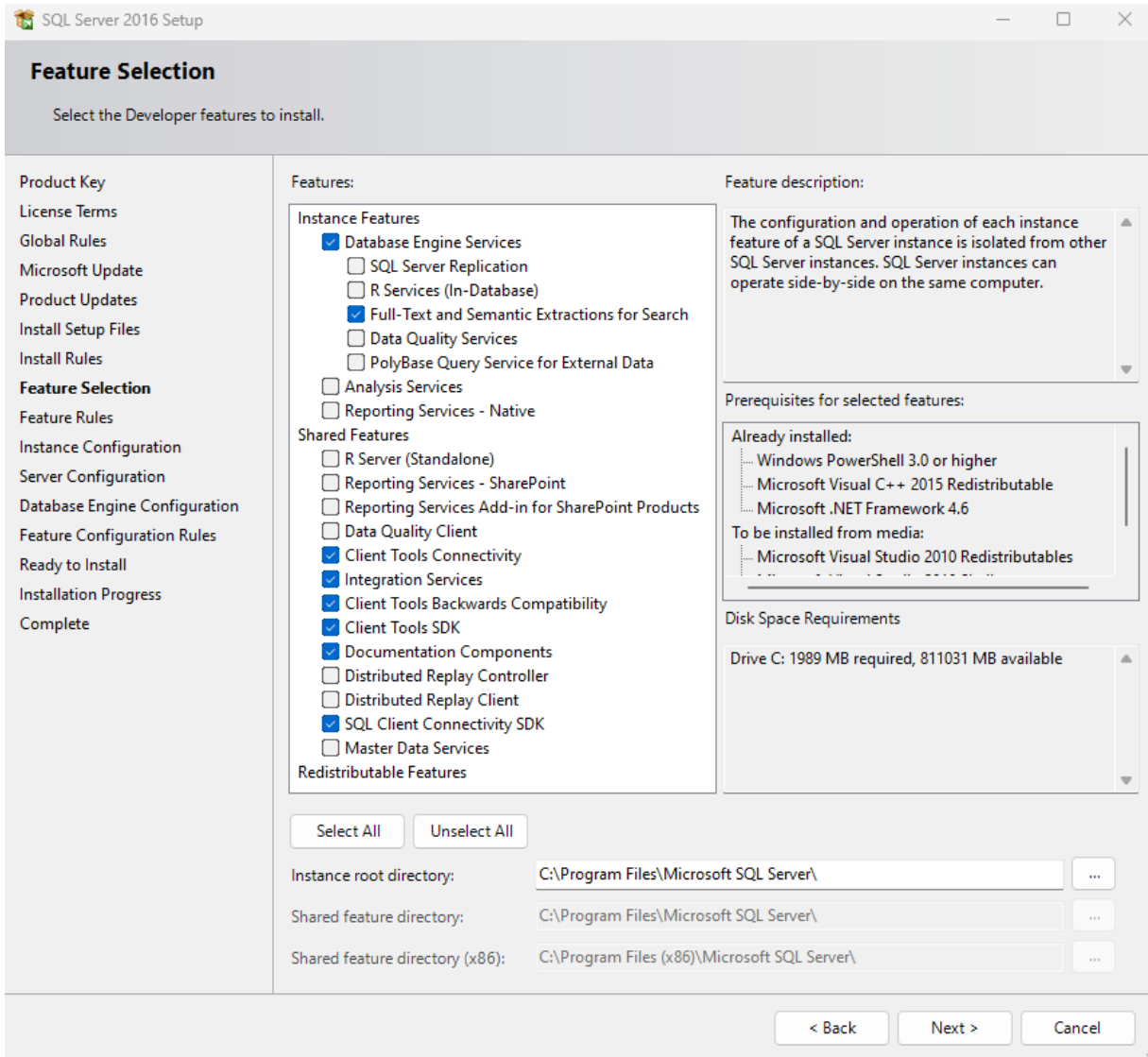
Hide details << Re-run

[View detailed report](#)

	Rule	Status
✓	Fusion Active Template Library (ATL)	Passed
✓	Consistency validation for SQL Server registry keys	Passed
✓	Computer domain controller	Passed
✓	Microsoft .NET Application Security	Passed
⚠	Windows Firewall	Warning

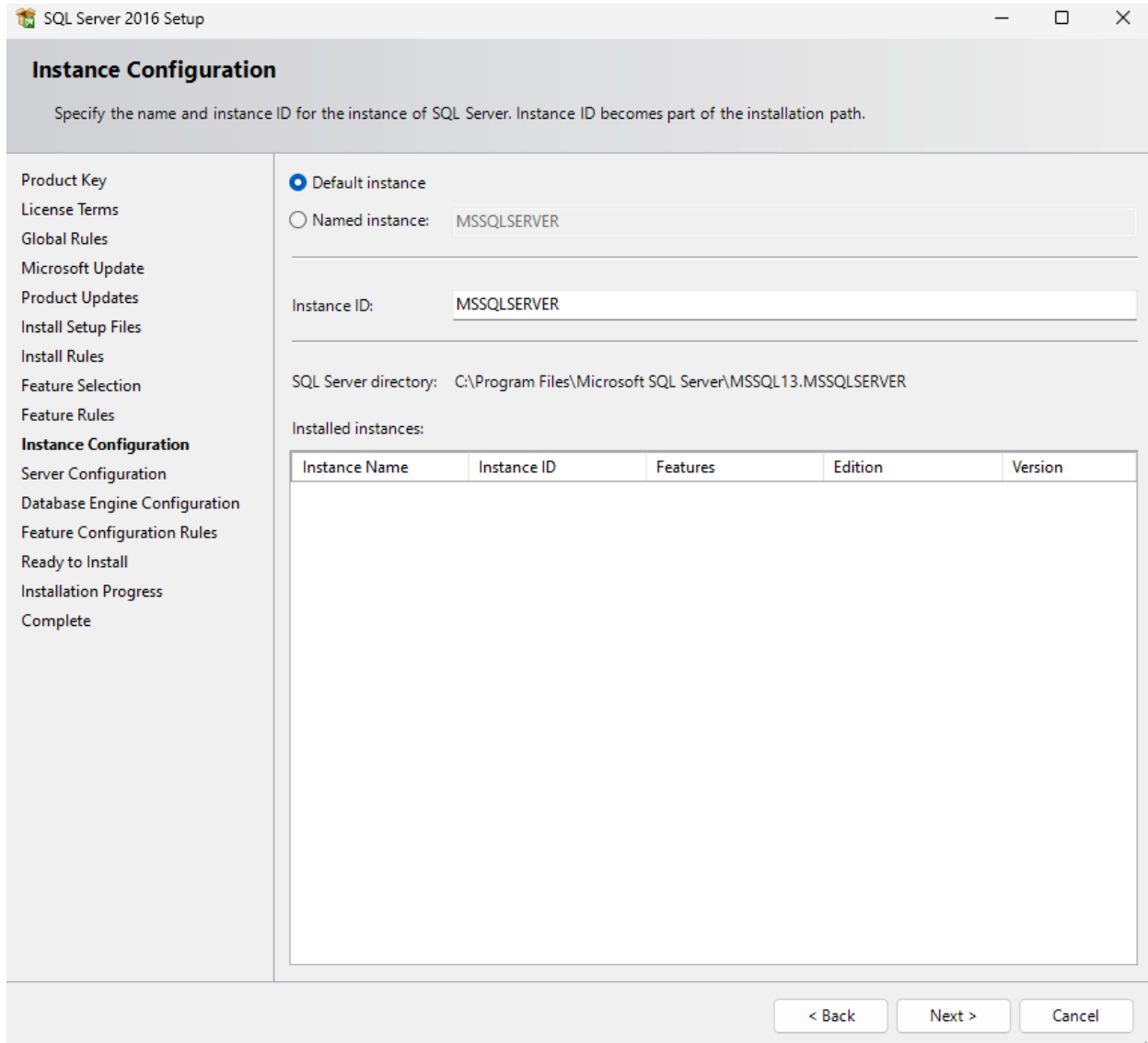
< Back Next > Cancel

Select the following options seen in the picture below for installation. The shared feature directories may be changed but the stock directories are acceptable.



Select Next.

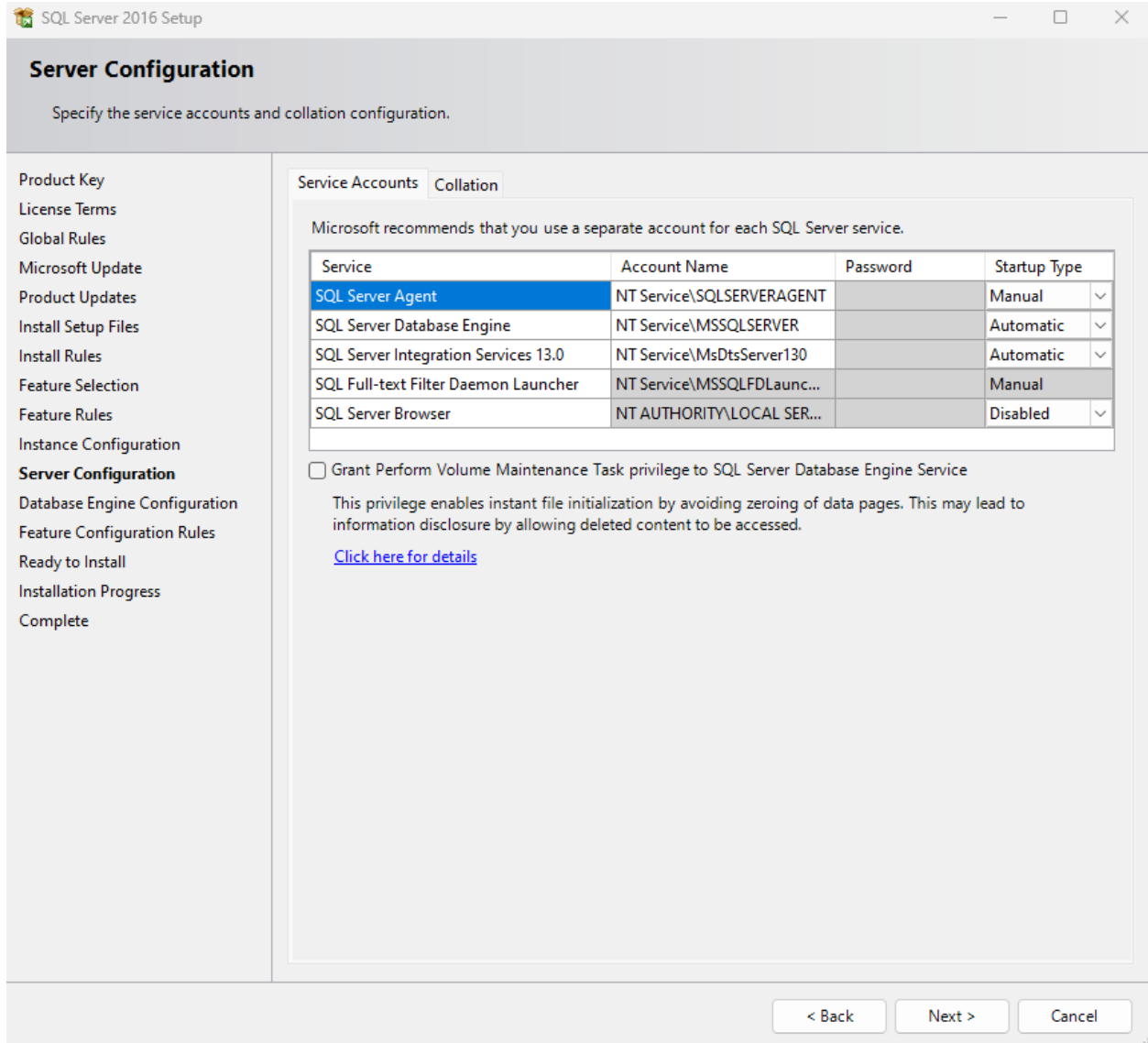
On the dialog below, set the instance name and set the root directory for the instance. The default is acceptable.



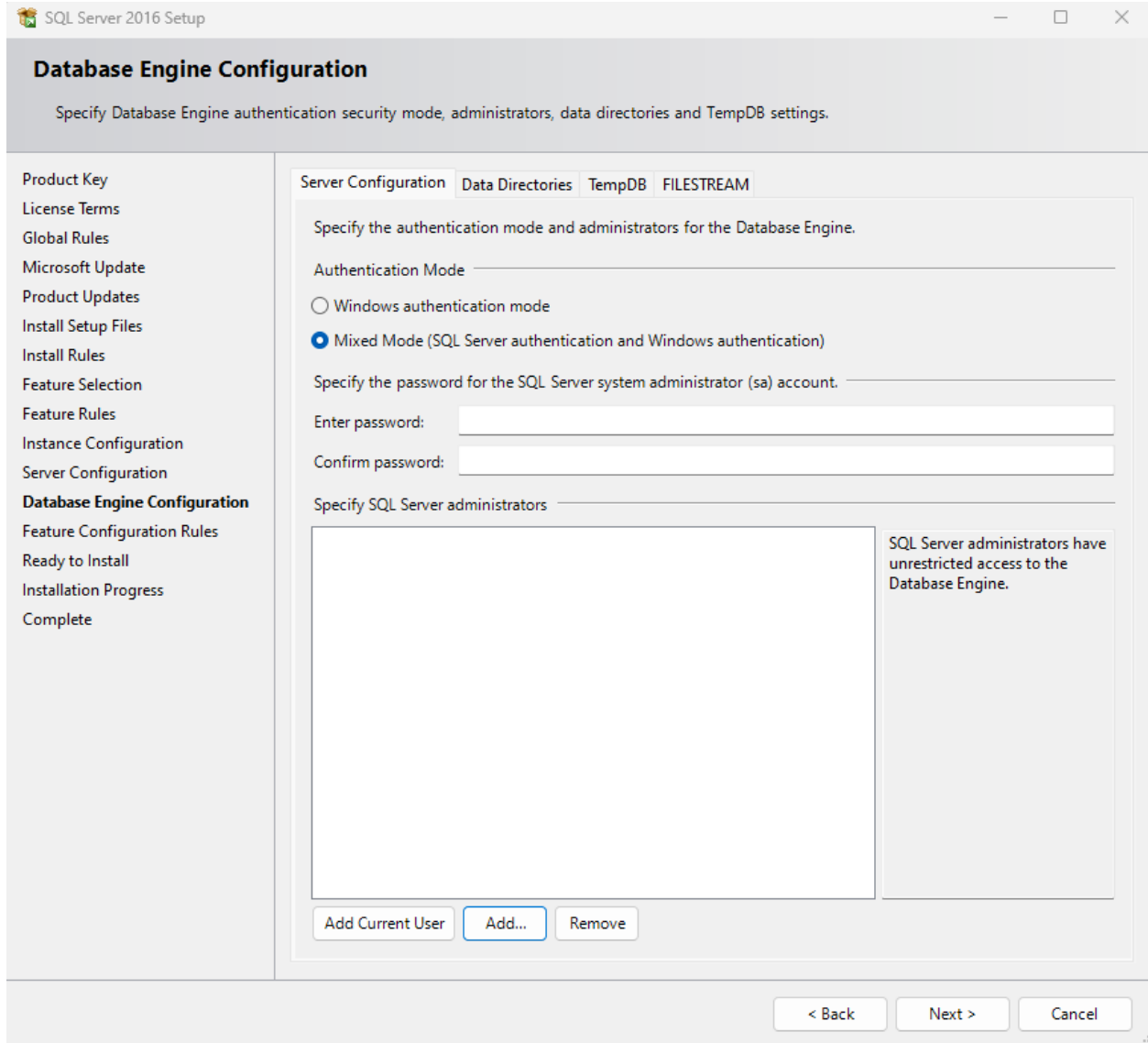
Select Next.

Confirm there is enough disk space and select Next.

On the following dialog, confirm the service accounts and passwords changing them if desired. Defaults are acceptable.



On the following dialog, set the Authentication mode to Mixed Mode. Set a password, and add possible administrators or groups for administration of the SQL Server Instance.



Select Next.

When Error Reporting has completed, select Next.

When Installation Configuration Rules have completed, select Next.

Review the summary and select Install.

Once the installation has completed, review installed features to make sure they installed, and select Close.

2.9.1.2 SunGuide Database Creation

The SunGuide database must be created first, and then it must be prepared for data loading.

2.9.1.3 Create a blank database

Once a SQL Server instance is installed, locate the “createSqlServerDb.bat” script located on the installation media in the Upgrade Scripts folder. Copy the file to the local file system along with the “create_sunguide_sqlserver.ddl” file. The DDL file contains the information needed to create a blank database.

Run the “createSqlServerDb.bat” file. You will be prompted for the following information.

- Database Server Name — Name of the server on which the database is being installed
- Username – This should be a user that is authorized to modify the SQL Server Instance and configured in the previous SQL Server setup. If using the SQL Server Authentication, the username is configurable.
- Password – The Windows Authentication Password or SQL Server Authentication Password. Please make sure to remember this password.
- Name of the database – Name to give the created database
- Location for storing the database files – The location on the local file system where the database should store its data.

Once the file has completed, a blank database should be created.

2.10 Status Logger Database Setup

During development of SunGuide 6.2, changes to Status Logger were incorporated into SunGuide that allow Status Log Service to write to a database container for logging performance improvements.

Status Logger Notes:

- The existing SunGuide database container may be utilized for convenience, or an alternate database may be used. It is recommended that an alternate database be used, due to backups and exports that are routinely performed on the primary database.
- Status Logger creates its own tables so, beyond the instructions below, there is no additional database configuration needed.

Recommended instructions for installing and configuring a new database instance for Oracle or SQL Server are provided below.

1. Create SQL Server database
 - a. If you need to install a new instance of the SQL Server database software, please reference section 3.5.2 in the VDD. Whether in a new SQL Server instance, or adding a new database container to your existing instance, please run the following steps.
2. Create a new database for Status Logger
 - a. Open SQL Server Management Studio.
 - b. Log into the database instance you just created as a system administrator.
 - c. Right click on the Database item in the tree and select the context menu action for “New Database”.

- i. Database name needs to be chosen (SLDB, ...)
- ii. Choose appropriate storage mechanisms and locations for the default data files
- iii. If this is a standalone instance not being used with Always On, it is recommended to set the Recovery Model to “Simple”

2.11 Crystal Reports Run-time Installation

The Crystal Reports run-time support needed by the SunGuide Reporting subsystem is installed automatically by the SunGuide Installer if needed.

2.12 Application Installation

The setup program is started by running **setup.exe** from either the *Setup/x86* or the *Setup/x64* directory on the distribution CD, as appropriate for the architecture of the machine. If the .NET4.8 Framework is not present when running the SunGuide installer, it will automatically be installed. When SunGuideInstallVxxxx.exe is run, the first dialog displayed is the one shown in Figure 2-1. This dialog is displayed while the Windows Installer is being configured in preparation for the SunGuide software installation process.

Beginning with SunGuide Release 4.2.0, the setup program includes a special application designed to interface with the Florida Highway Patrol (FHP) Computer Aided Dispatch (CAD) system. This application is intended to be installed once in a central location and provide FHP incident data to all SunGuide deployments. It is included in the SunGuide installer because it makes use of some of the SunGuide core components. The application checkbox, located at *Detection Systems/Incident Detection Subsystem/FHP Interface Server* in the feature tree, is unchecked by default. Configuration instructions for the FHP Interface Server are located in Section 4.9.

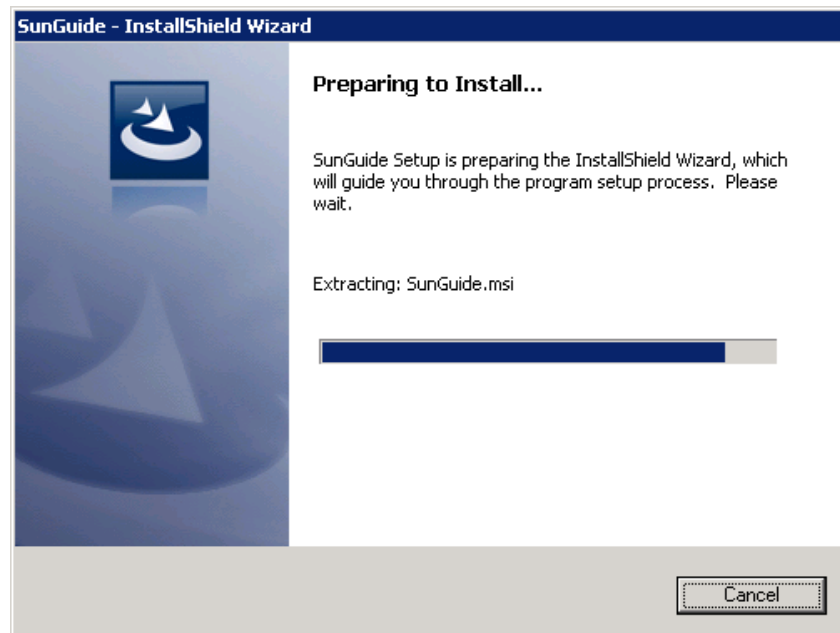


Figure 2-1 Windows Installer Dialog

2.12.1 Initial Installation

On the first installation of the SunGuide software on the target workstation, the first dialog displayed after the **Preparing to Install...** dialog is the **Welcome** dialog shown in Figure 2-2. The only action required from this dialog is to either select **Next** to continue installation or **Cancel** to exit the installation.

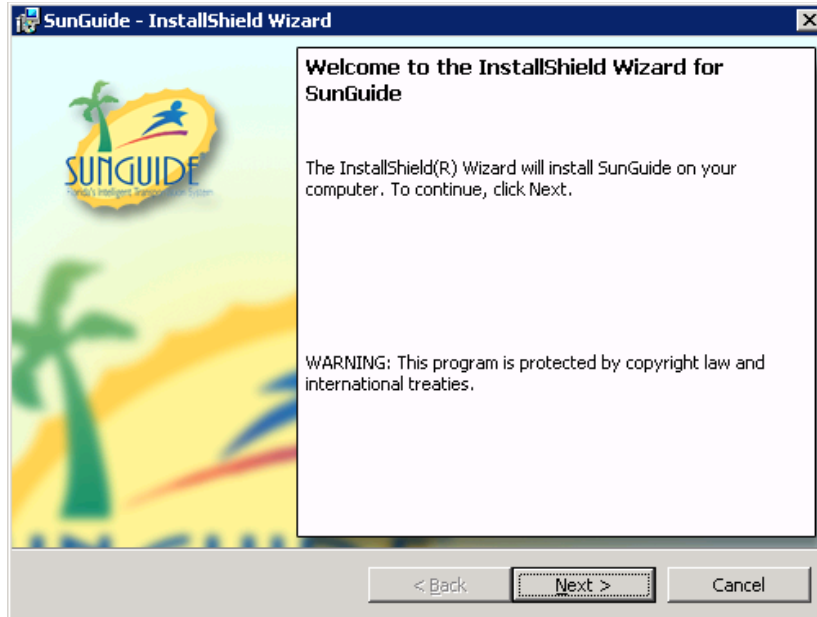


Figure 2-2 SunGuide Setup Welcome Dialog

The next dialog displayed is the **Destination Location** dialog shown in Figure 2-3. This dialog is used to specify the destination folder for the components to be installed. It is recommended to keep the default selection, but the **Change...** button can be used to select an alternate location for the installed files. Select a destination folder and press the **Next** button; or press the **Back** button to return to the previous dialog; or press the **Cancel** button to exit the installation.

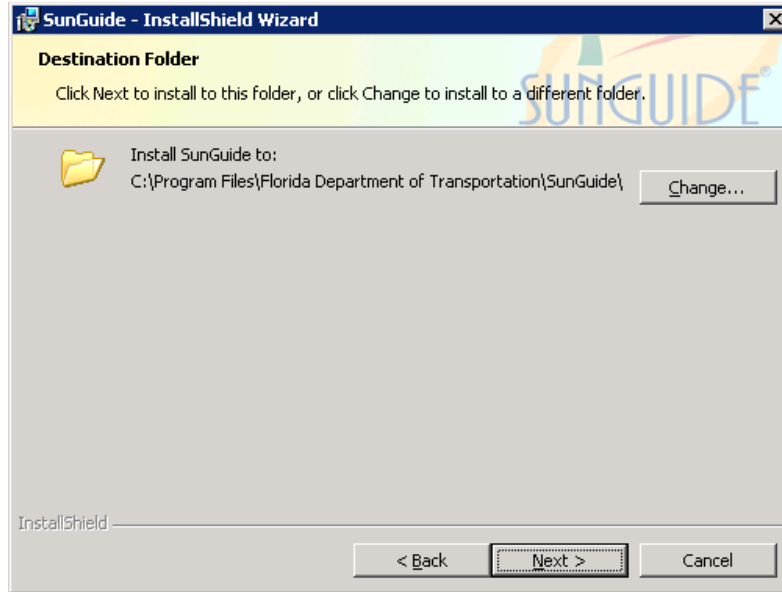


Figure 2-3 SunGuide Setup Destination Location Dialog

The next dialog displayed is the **Select Config File** dialog shown below. This dialog is used to select the SunGuide configuration file (config.xml) that should be used for the 100 installation. Enter the location of the config file and press the **Next** button to continue or press the **Back** button to return to the previous dialog or press the **Cancel** button to exit the installation. If the configuration file is not valid for the version of SunGuide being installed, a dialog will allow the Configuration File Editor to be launched so the file may be corrected. Without a valid configuration file, the installation process cannot continue.



Figure 2-4 SunGuide Setup Select Config File Dialog

The next dialog displayed is the **Select Features** dialog shown below. This dialog is used to select the software components to be installed. Select the components to be installed and press the **Next** button to continue or press the **Back** button to return to the previous dialog or press the **Cancel** button to exit the installation. The location of individual components may be modified using the **Change...** button, but typically should be left in the default location.

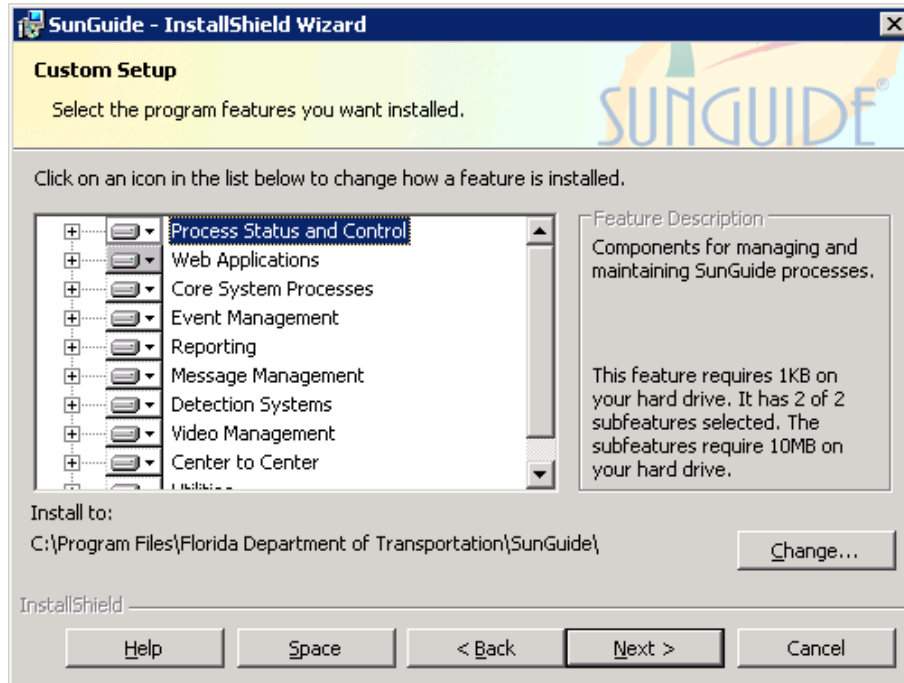


Figure 2-5 SunGuide Setup Select Features Dialog

Note that the Map Tiles option will require significant installation time, and may not be needed on all servers, depending on the configuration of the system. If the Map Tiles component is selected, this warning will be displayed.

If IIS is not installed on the machine, certain web applications will not be available for installation. A warning will be displayed in this case.

The next dialog displayed is the **Service Logo Information** dialog (Figure 2-6). One of the default system accounts (Local Service, Network Service, or Local System) can be selected, or a named account can be selected. The privileges and network credentials associated with the system accounts are displayed in the dialog. For a named account, enter the account name (with domain, if appropriate) and password in the *User Name* and *Password* fields. Press the **Next** button to keep these selections and proceed with the installation; or, press the **Back** button to return to the previous dialogs to modify the selections; or, press the **Cancel** button to exit the installation.

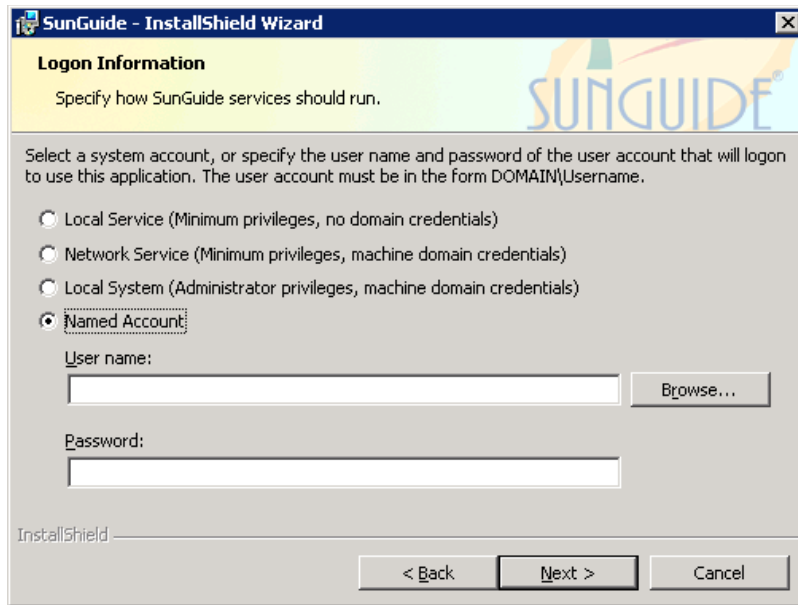


Figure 2-6 SunGuide Service Logon Information Dialog

The final dialog displayed before the setup program actually begins installation is the **Ready to Install the Program** dialog shown in Figure 2-7. Press the **Install** button to proceed with the installation; or, press the **Back** button to return to the previous dialogs to modify the selections; or, press the **Cancel** button to exit the installation.

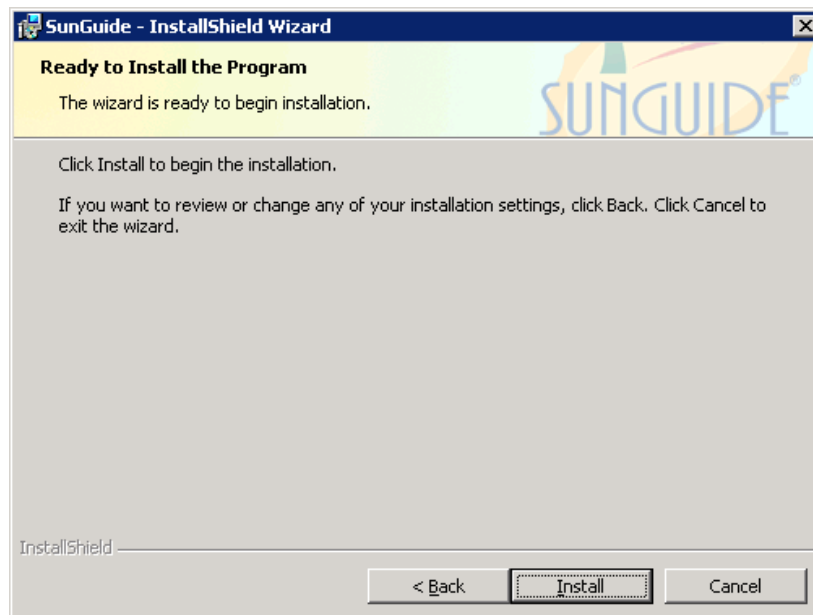


Figure 2-7 SunGuide Setup Ready To Install Dialog

While the setup program is installing files, the **Setup Status** dialog shown in Figure 2-8 is displayed. This dialog shows the progress of the installation. Additional supplementary dialogs may also be displayed as required third party components are installed and configured.

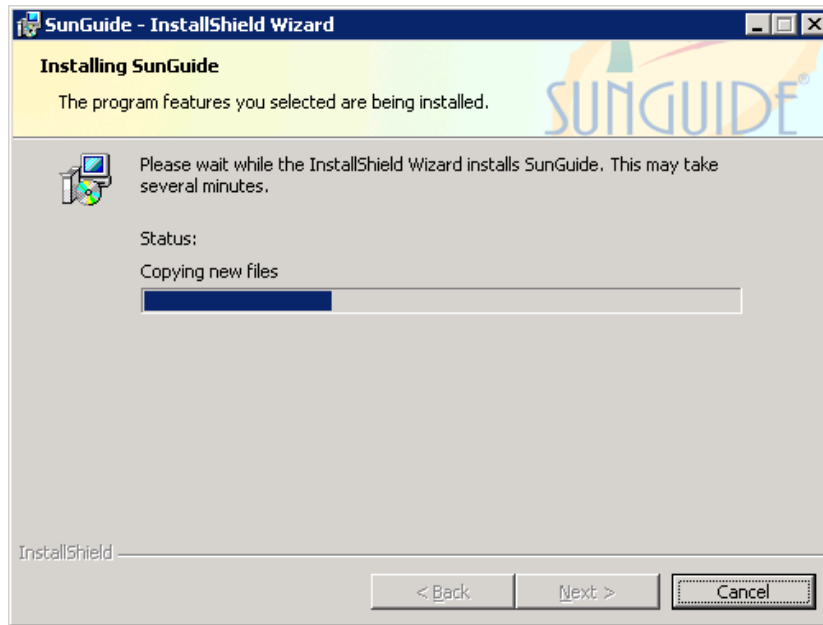


Figure 2-8 SunGuide Setup Status Dialog

When the files have been installed, the **InstallShield Wizard Complete** dialog shown in Figure 2-9 is displayed. Press the **Finish** button to complete installation and exit setup.

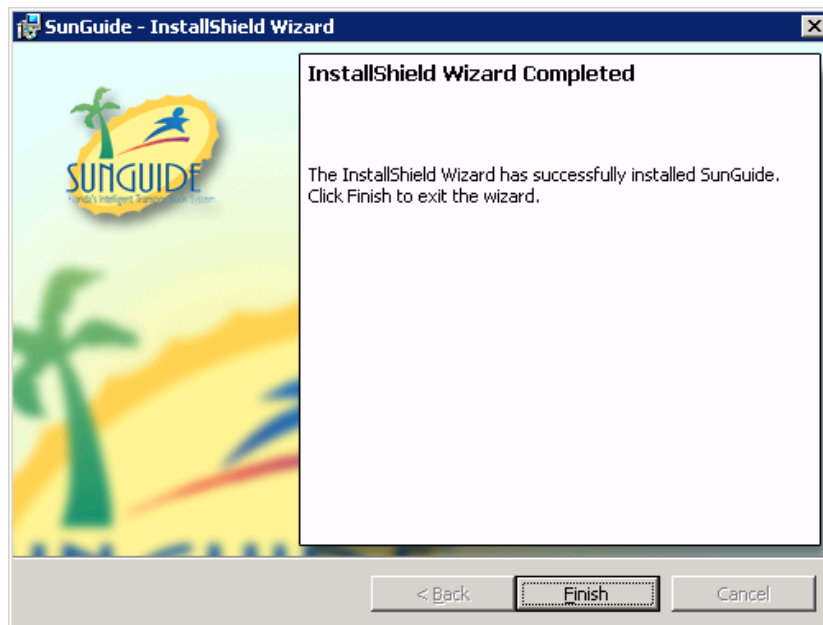


Figure 2-9 SunGuide Setup InstallShield Wizard Complete Dialog

2.12.2 Maintenance Installation

The SunGuide setup program can also be used to modify an existing installation. This allows for repairing installed components, installing or removing components, or completely removing the installed SunGuide components.

If the setup program detects that one or more SunGuide components are currently installed, the first dialog displayed is the **SunGuide Maintenance** dialog shown in Figure 2-10. This dialog is used to select the desired setup maintenance operation. *Remove* removes the currently installed SunGuide components. *Repair* reinstalls the currently installed SunGuide components. *Modify* allows for individually adding or removing SunGuide components.

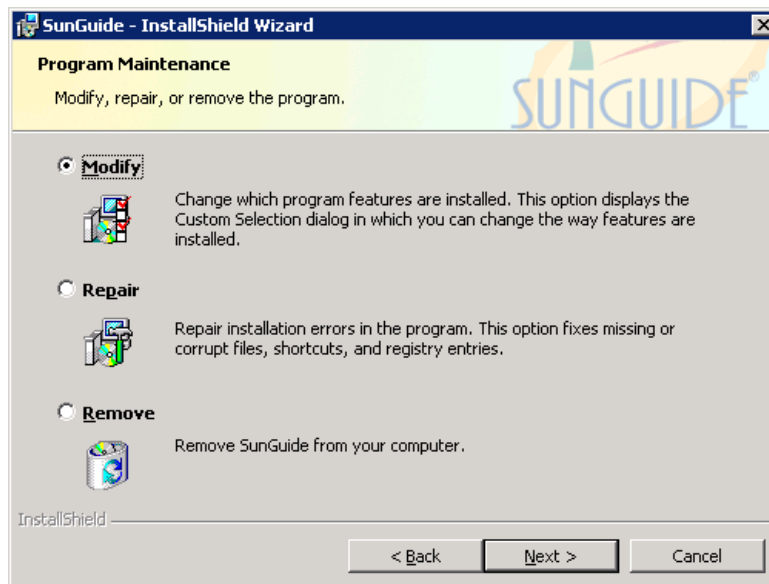


Figure 2-10 SunGuide Setup Maintenance Dialog

If the *Remove* option is selected from the **SunGuide Maintenance** dialog, the next dialog displayed is the **Confirm Uninstall** dialog shown in Figure 2-11. To proceed with removing the installed SunGuide components, press **Remove**. To cancel removing the components and return to the previous dialog, press **Back**.

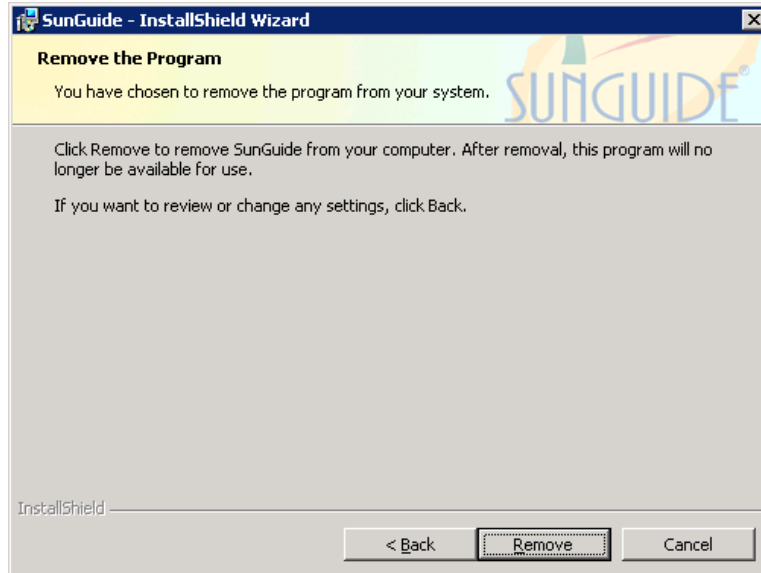


Figure 2-11 SunGuide Setup Confirm Uninstall Dialog

If the removal of the components is confirmed, the setup program displays a **Setup Status** dialog similar to that shown in Figure 2-8, followed by a **Maintenance Complete** dialog similar to that shown in Figure 2-9.

If the *Repair* option is selected from the **SunGuide Maintenance** dialog, the setup program begins reinstalling the currently installed components. While the components are being reinstalled, the setup program displays a **Setup Status** dialog similar to that shown in Figure 2-8, followed by a **Maintenance Complete** dialog similar to that shown in Figure 2-9.

If the *Modify* option is selected from the **SunGuide Maintenance** dialog, the setup program allows the current installation to be modified by adding or removing components. The setup program displays the **Select Features** dialog shown in Figure 2-5 and proceeds from that point in the same fashion as an initial install. For a maintenance operation, the check boxes next to the components in this dialog indicate the components that are currently installed, and those that are not checked are not currently installed. During maintenance, to keep an installed component leave it checked. To remove an installed component, uncheck it. To add a component that is not currently installed, check it. To keep a component uninstalled, leave it unchecked.

2.13 Center-to-Center Installation and Setup

Windows Internet Information Services (IIS) is used to host the Center-to-Center (C2C) Infrastructure applications. It is assumed that IIS is installed and enabled on the server selected for C2C Infrastructure installation.

2.13.1 Internet Information Services Preparation

- The C2C Infrastructure web services are ASP.NET 4.8 applications. ASP.NET 4.8 must be installed and enabled in IIS for the applications to operate.
- A new application pool should be created for use by the C2C web services. Any application pool used the C2C web services must have its recycling disabled and be started.
- The Status Website uses the Microsoft ASP.NET 4.8 AJAX Extensions 1.0 for visualization. These extensions must be installed on the hosting computer if the Status

Website feature is installed. A copy of the AJAX Extensions installer is included with the C2C Infrastructure installer in the Installation Package.

Note: If IIS 7.0 on Windows Server 2016 will be used to host the C2C web services, the IIS 6 Management Compatibility role must be installed to allow operation of the C2C Infrastructure installer.

2.13.2 Infrastructure Installation

The C2C setup program is started by running **Setup-C2CI-Vxxx.exe**(where **xxx** is the current version of the software being installed) from the *Misc* directory on the distribution CD. When setup program is run, the first dialog displayed is the Welcome Dialog shown in Figure2-12. The only action required from this dialog is to either select **Next** to continue installation or **Cancel** to exit the installation.



Figure 2-12 Welcome Dialog

The next dialog displayed is the Select Features Dialog shown in Figure 2-13. This dialog is used to specify the software components to be installed. Select the components to be installed and press the Next button to continue or press the Back button to return to the previous dialog or press the Cancel button to exit the installation.

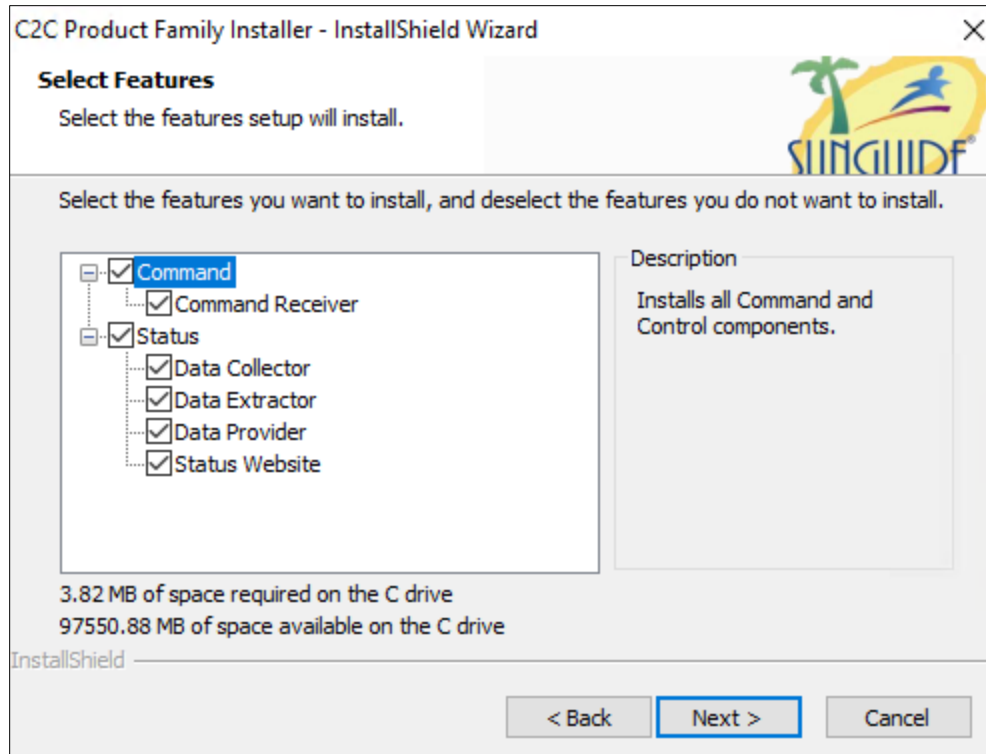


Figure 2-13 Select Features Dialog

The next dialog displayed is the Web Service Path Selection Dialog shown in Figure 2-14. This dialog is used to specify the folder and web path for the web service components. The web service components include the Command Receiver, the Data Collector, the Data Extractor, and the Data Provider. For the web site name, if an existing website [e.g. Default Web Site] is selected, then Internet Information Services (IIS) will automatically be configured when the service is installed. Also, the sub folder will be created in the root directory for the selected site, and the program files will be installed to this location. If Non-Web Path is chosen, then the user must configure IIS after installation and enter the entire installation file path in the Sub Folder text box. Select the web site name and the destination sub-folder and press the Next button; or press the Back button to return to the previous dialog; or press the Cancel button to exit the installation.

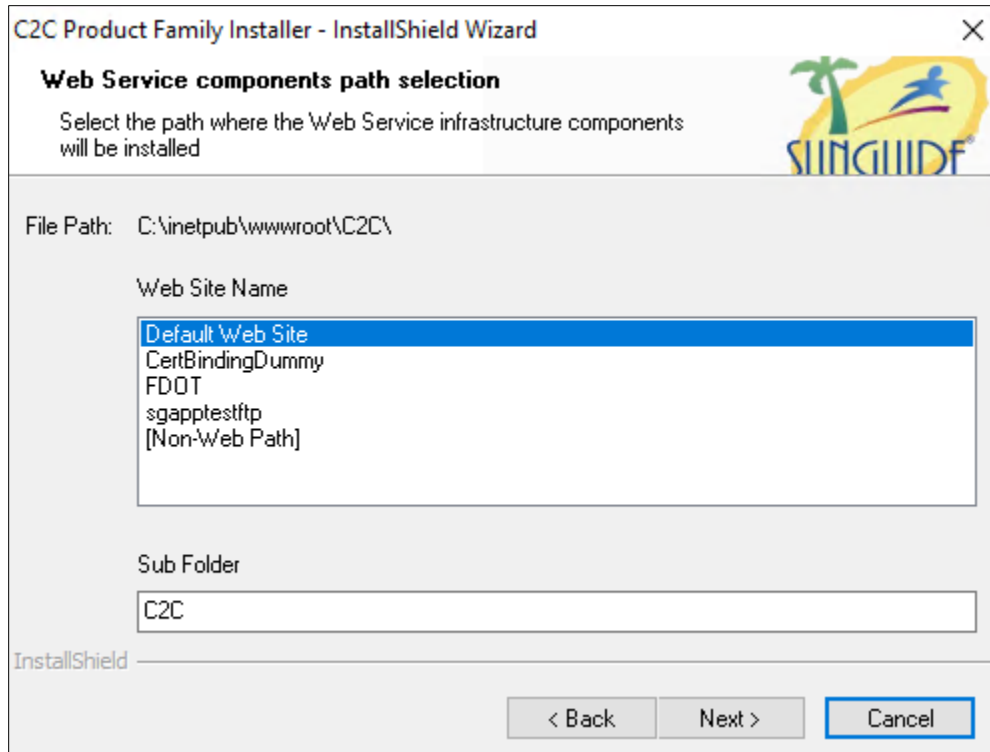


Figure 2-14 Web Service Path Selection Dialog

The next dialog displayed is the Status Logger Host and Port Dialog shown in Figure 2-15. This dialog is used to specify Internet Protocol (IP) address and port number for communicating to the Status Logger. Each of the software components communicates to the Status Logger to log status messages during execution. The Status Logger is delivered as a separate product with its own setup program. Refer to the Status Logger Software User’s Manual for installation and usage of the Status Logger. Enter the IP address and port number for the Status Logger service and press the Next button; or press the Back button to return to the previous dialog; or press the Cancel button to exit the installation.

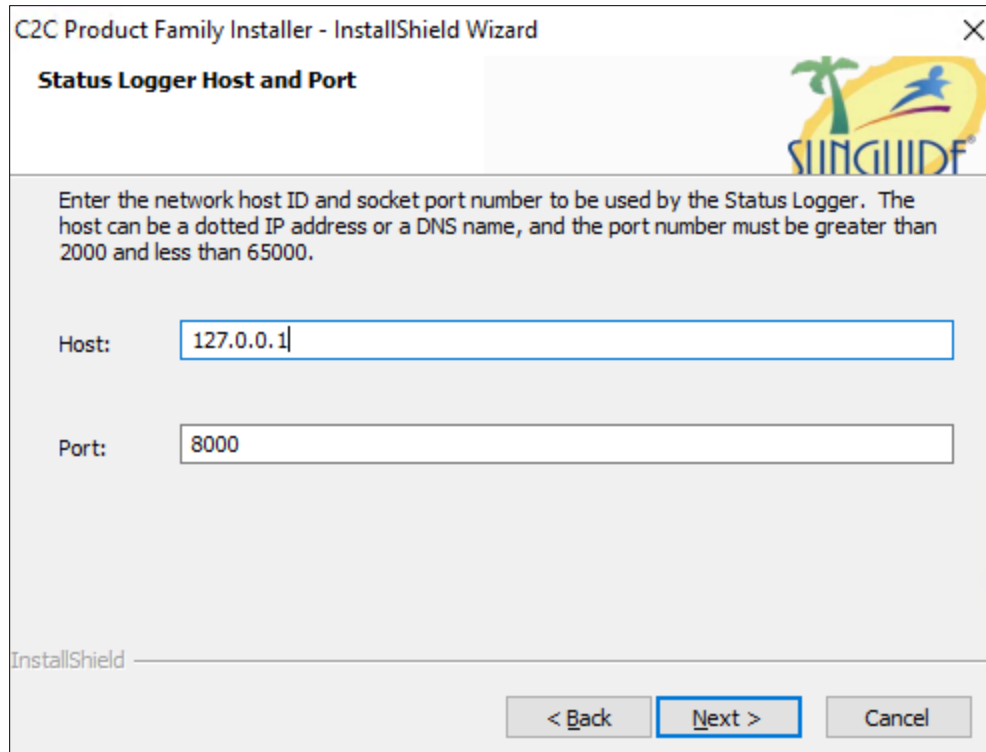


Figure 2-15 Status Logger Host and Port Dialog

The next dialog displayed is the Data Provider Configuration Dialog shown in Figure 2-16. This dialog is used to specify the name for the provider which will be the process name displayed in Status Logger for messages logged by the provider. Enter a name for the Data Provider and press the **Next** button; or press the **Back** button to return to the previous dialog; or press the **Cancel** button to exit the installation.

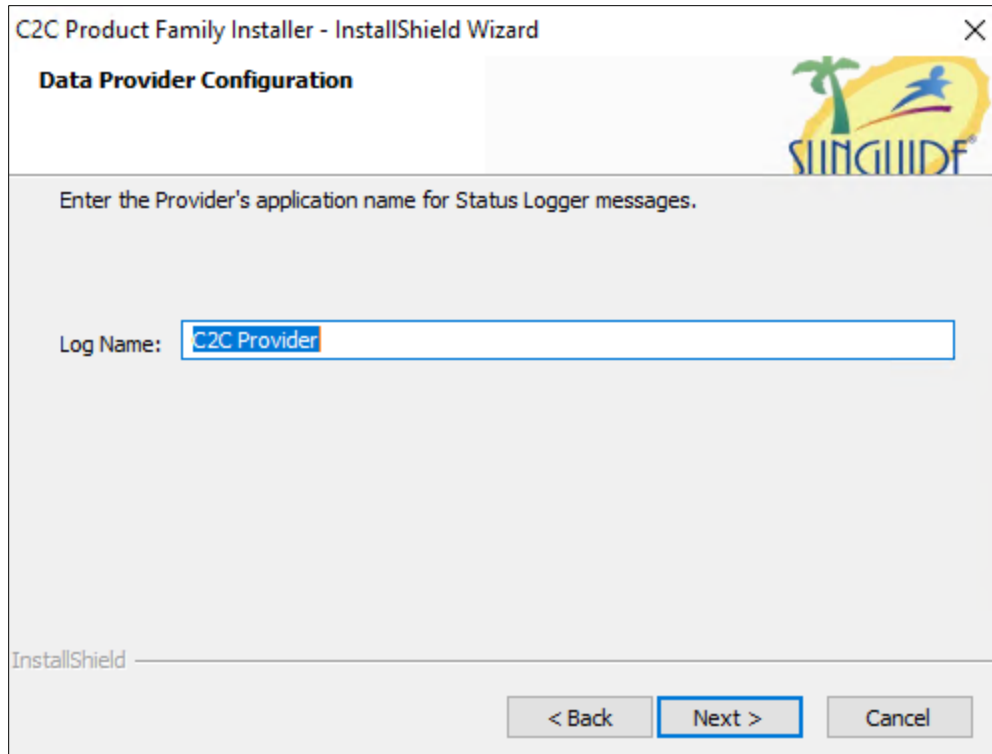


Figure 2-16 Data Provider Configuration Dialog

The next dialog displayed is the Data Provider Data Type Selection dialog shown in Figure 2-17. This dialog is used to select a list of data types that the Provider will subscribe for. Check any data types which the Provider should request from the TMC. Leave undesired data types unchecked. Then press the **Next** button to continue; or press the **Back** button to return to the previous dialog; or press the **Cancel** button to exit the installation.

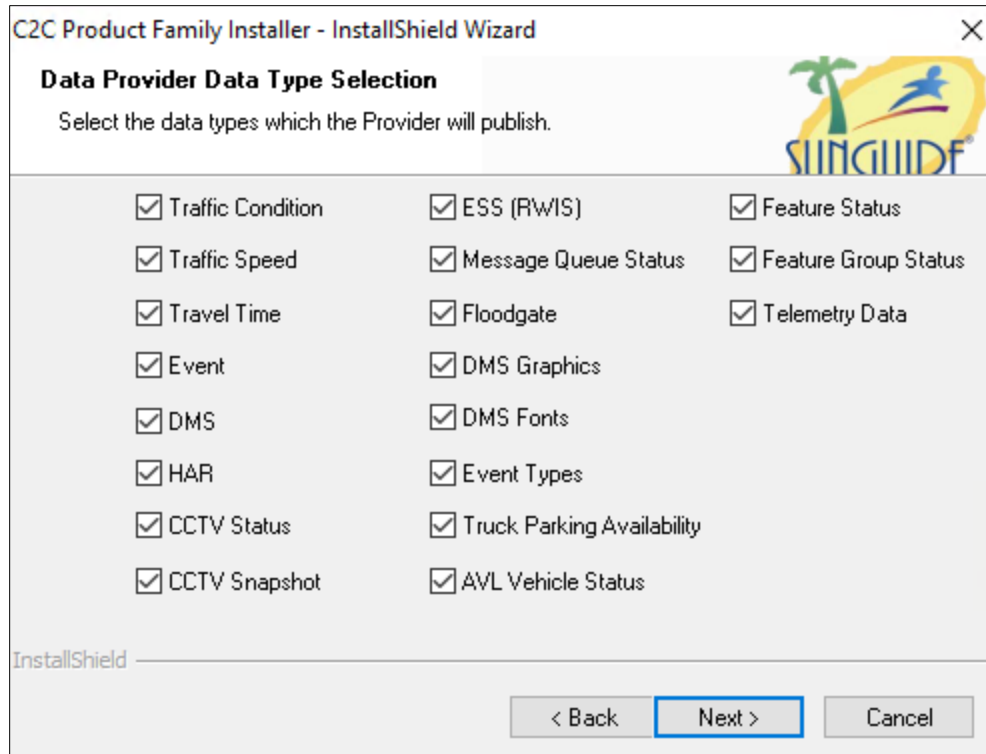


Figure 2-17 Data Provider Data Type Selection Dialog

The next dialog displayed is the Data Collector Configuration Dialog shown in Figure 2-18. This dialog is used to identify the Collector and the Providers that it will receive data from. Enter the Collector's application name for Status Logger messages, the Uniform Resource Identifier (URI) for the Collector's update web service and a space delimited list of URIs for the Data Providers that the Collector will log into and receive data from. Then press the Next button to continue; or press the Back button to return to the previous dialog; or press the Cancel button to exit the installation.

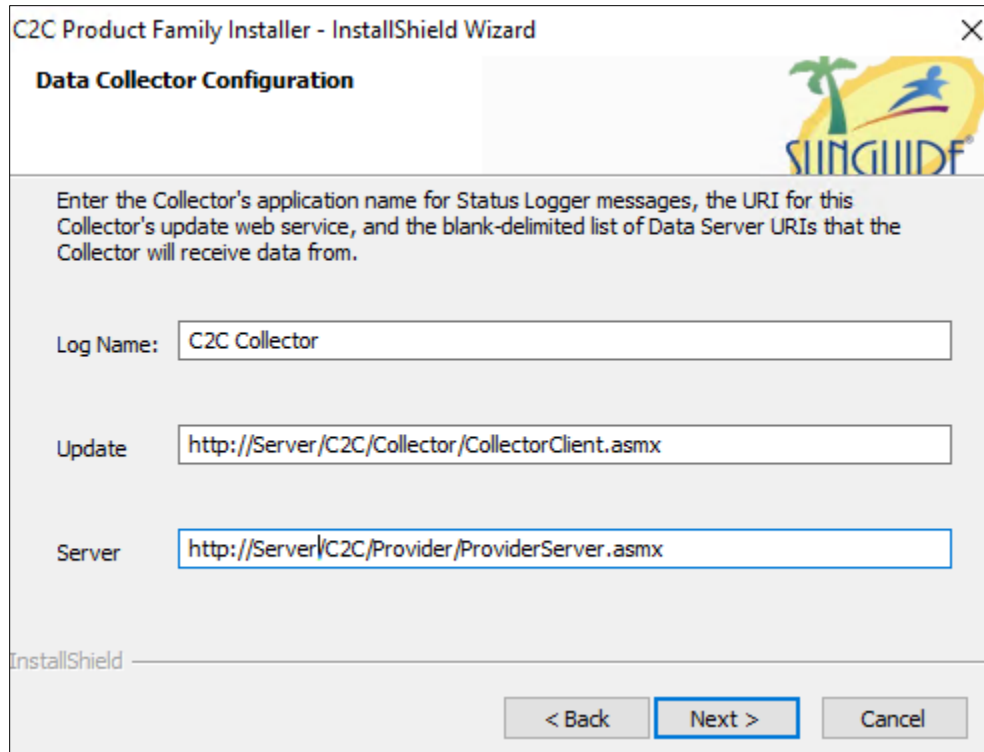


Figure 2-18 Data Collector Configuration Dialog

The next dialog displayed is the Data Collector Data Type Selection dialog shown in Figure 2-19. This dialog is used to select a list of data types that the Collector will subscribe for. Check any data types which the Collector should request from the TMC. Leave undesired data types unchecked. Then press the Next button to continue; or press the Back button to return to the previous dialog; or press the Cancel button to exit the installation.

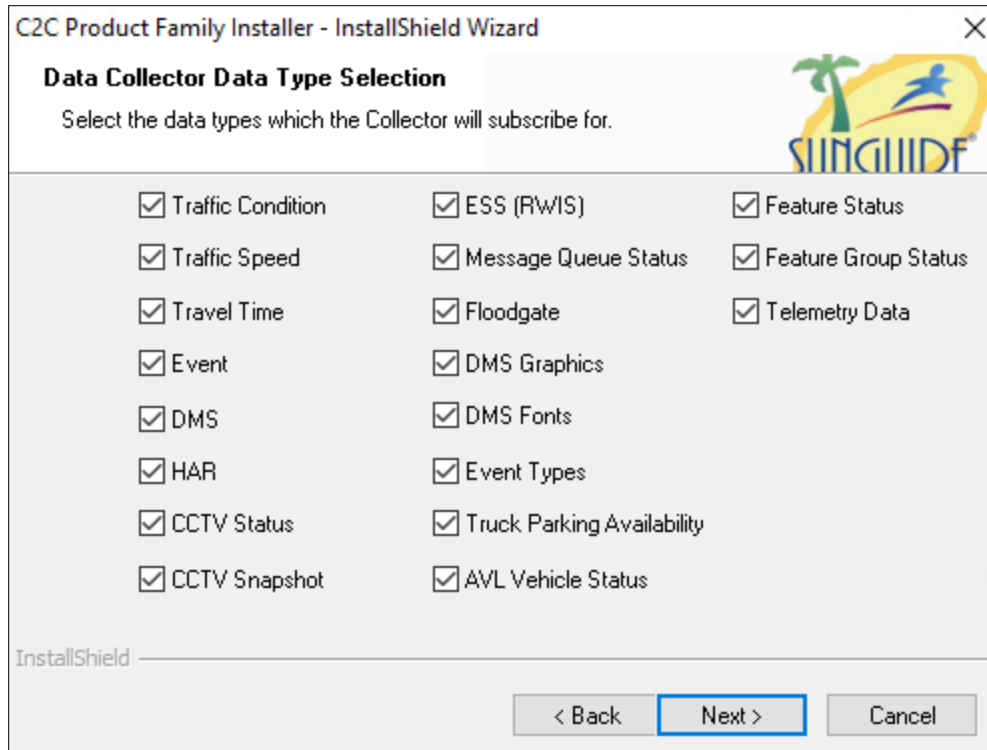


Figure 2-19 Data Collector Data Type Selection Dialog

The next dialog displayed is the Data Extractor Configuration Dialog shown in Figure 2-20. This dialog is used to identify the Extractor and the Collector or Provider server from which it will receive data. Specify the Extractor’s application name for Status Logger messages, the URI for the Extractor’s update web service and the URI for the Data Collector or Data Provider from which the Extractor will receive data. Then press the Next button to continue; or press the Back button to return to the previous dialog; or, press the Cancel button to exit the installation.

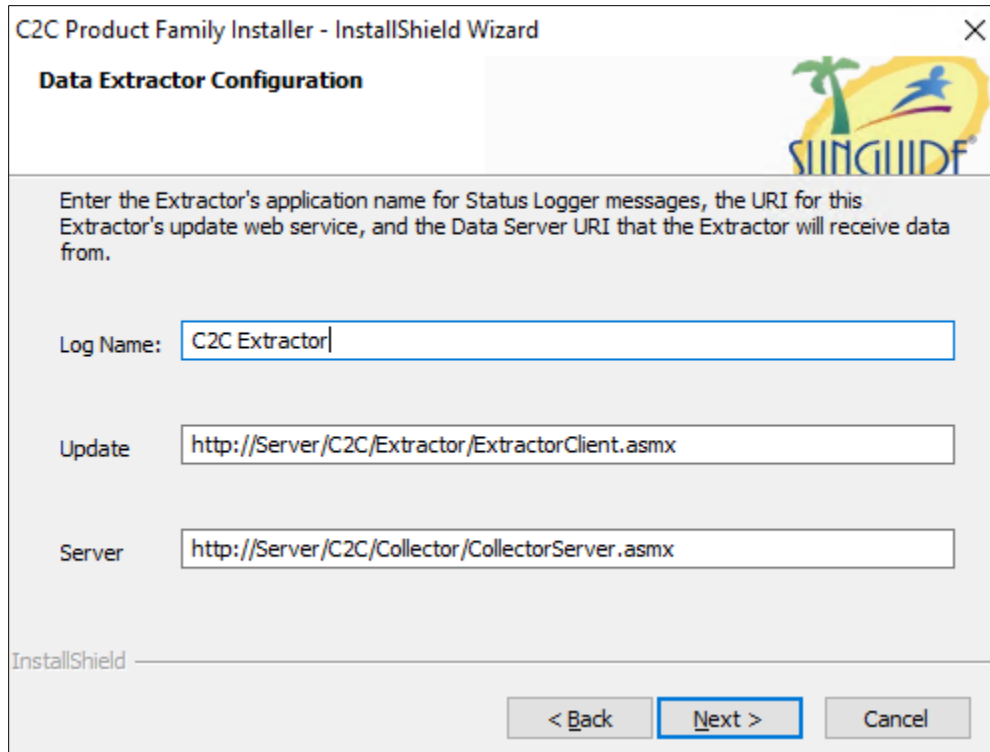


Figure 2-20 Data Extractor Configuration Dialog

The next dialog displayed is the Command Receiver Configuration Dialog shown in Figure 2-21. This dialog is used to specify the location of the TMC XML Server to which the Command Receiver will connect when issuing a command request to the TMC. Enter the network host ID and socket port number to be used by the Command Receiver. Also enter the log name used to identify the Command Receiver in Status Logger. Then press the **Next** button; or press the **Back** button to return to the previous dialog; or press the **Cancel** button to exit the installation.

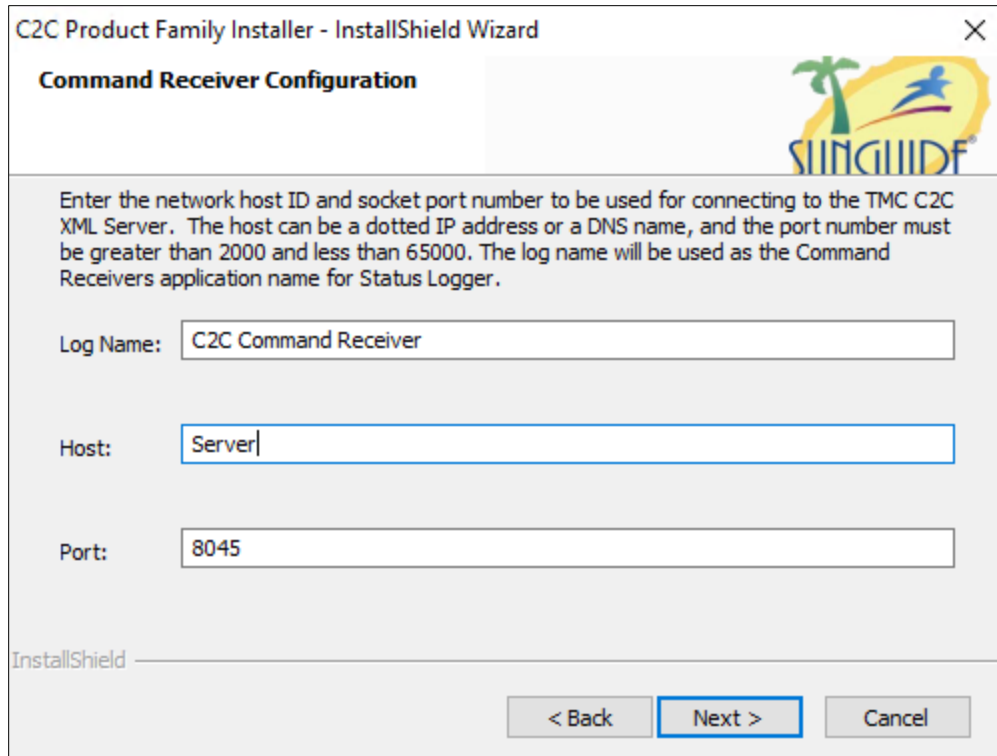


Figure 2-21 Command Receiver Configuration Dialog

The next dialog displayed is the Start Copying Files Dialog shown in Figure 2-22. This dialog is used to show a summary of the features which will be installed, and the paths they will be installed to. If the selections are correct, press the **Next** button to begin copying the files; or, press the **Back** button to return to the previous dialog; or press the **Cancel** button to exit the installation.

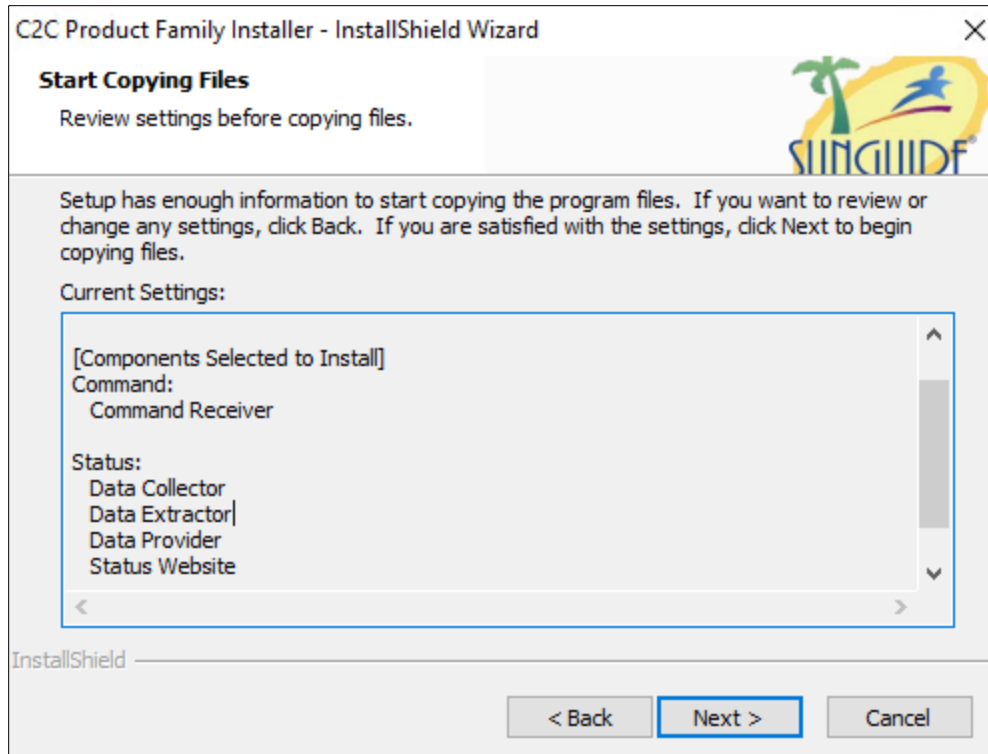


Figure 2-22 Start Copying Files Dialog

The next dialog displayed is the Setup Status Dialog shown in Figure 2-23. This dialog is used to track the progress of the installation process. No user input is necessary, but the **Cancel** button may be pressed at any time to stop the installation process and exit the installation.

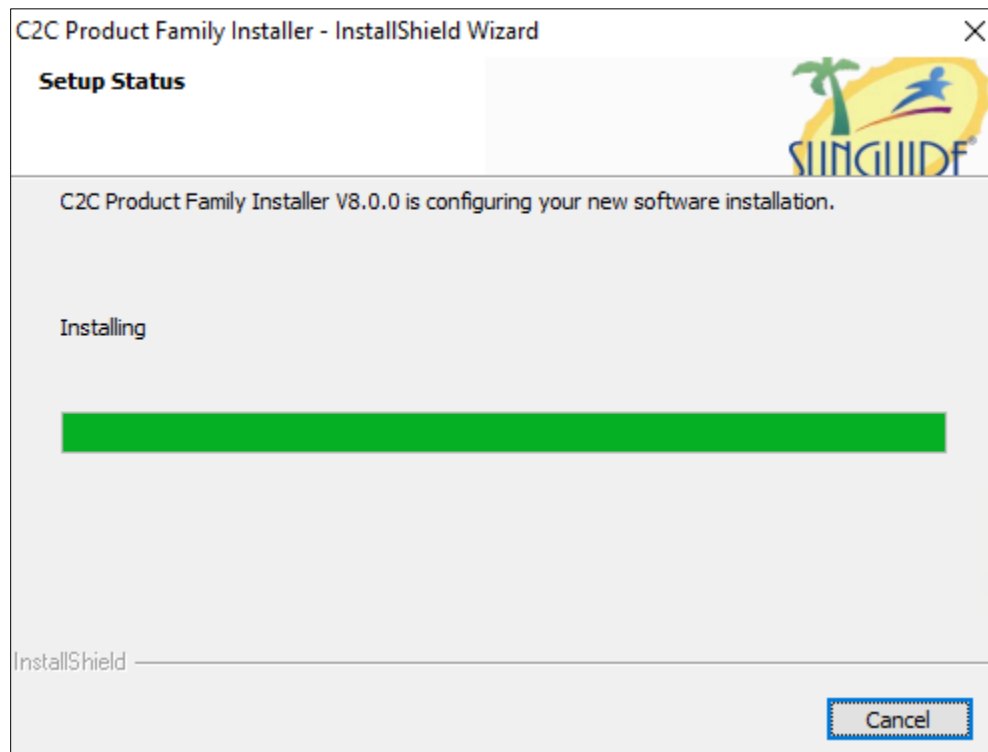


Figure 2-23 Setup Status Dialog

The next dialog displayed is the InstallShield Wizard Complete Dialog shown in Figure 2-24. This dialog is used to determine if the machine should be rebooted after installation is complete. Select one of the two restart options and press the **Finish** button; or press the **Back** button to return to the previous dialog; or press the **Cancel** button to exit the installation.

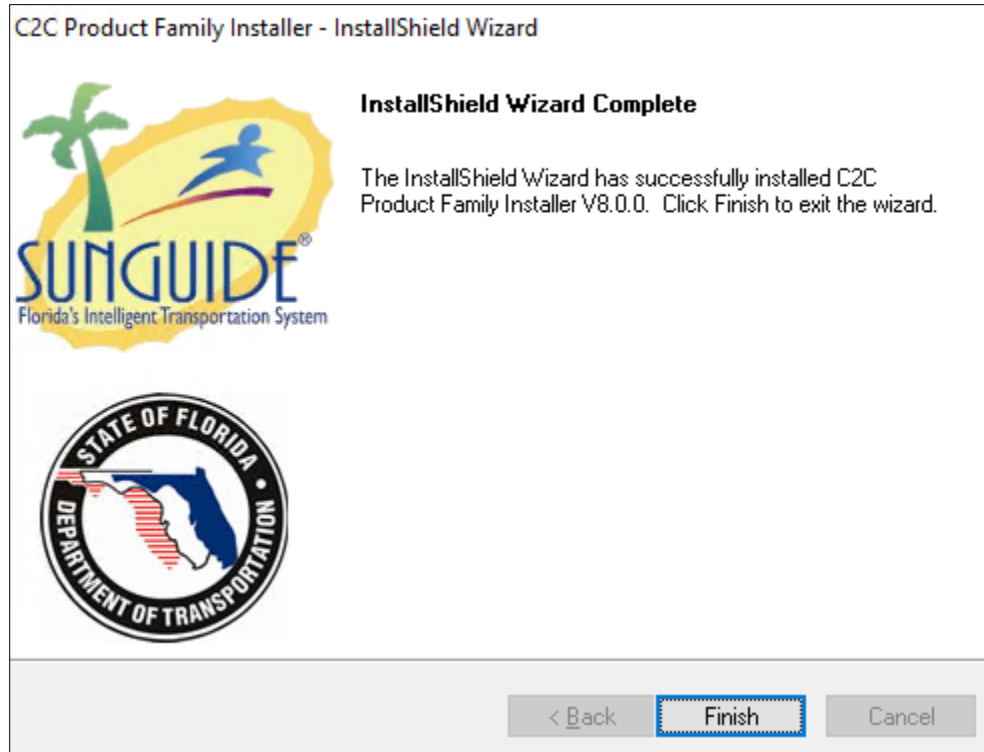


Figure 2-24 InstallShield Wizard Complete Dialog

2.13.3 Initiating a Session

The C2C Infrastructure is implemented using web services. They can be controlled manually through the IIS.

2.13.4 Stopping and Suspending Work

The web services can be stopped using IIS. Note that web services continue to operate at some level until IIS is restarted or a dll or web.config file is updated. Pressing the Pause button in Internet Services Manager simply causes new HTTP sessions to be disallowed. All existing sessions will continue. Pressing the Stop button disallows all future incoming HTTP requests, even on the existing sessions, but still permits outgoing proxy calls to be made to other web services.

2.13.5 Configuration of the C2C Web Services

The C2C Web services include:

- Command Receiver
- Data Provider
- Data Collector

- Data Extractor

Each of these services uses a “web.config” file to configure the service. The “web.config” file is an ASCII XML data file which defines the configuration of the web service. For each “web.config” file, most of the content of the file is general information for web services. This document will only discuss those sections in the file that are specific to the C2C service.

The Data Provider and Data Collector Data Type Selection dialogs contain a set of checkboxes for selecting data types. The selected types are placed into the value attribute of the subscription data type add element in the corresponding “web.config” files described below. The following table identifies the data types supported by SunGuide. The “web.config” files can be edited after the install to set the data types selected.

networkData	Parent data type of the nodeData, linkData, and tvtLinkData network data types
localeData	Parent data type of the locationData and roadwayData location data types
eventData	Event data type supports planned and unplanned events
trafficCondData	Traffic speed, volume and occupancy status data from the SunGuide TSS data
tvtStatusData	Travel time data from the SunGuide TVT data
dmsData	Dynamic message sign status data
cctvStatusData	Closed circuit TV status data
cctvSnapshotData	CCTV video snapshot data
harData	Highway advisory radio status data
essData	Environmental status sensor status data, based on SunGuide RWIS data
floodgateData	Floodgate data from the FL-ATIS system
remoteMsgData	Queued DMS and HAR messages from the SunGuide MAS subsystem
fontData	Configured DMS Fonts
graphicData	Configured DMS Graphics
avlVehicleStatusData	AVL vehicle position and status values
gpioFeatureStatusData	GPIO device status data
gpioFeatureGroupStatusData	GPIO device group status data
truckParkingFacilityData	Truck Parking Facility status
vehicleAlertDeviceStatusData	Vehicle device status data

For the Command Receiver, the C2C configuration information is shown in Table 2.1 below.

Table 2.1 Command Receiver web.config Settings

```
<appSettings>  
  <!-- Flag indicates if XML validation is required -->
```

```
<add key="validateXml" value="False"/>
<!-- Host IP/name of the TMC C2C XML Server -->
<add key="xmlServerHost" value="127.0.0.1"/>
<!-- IP Port of the TMC C2C XML Server -->
<add key="xmlServerPort" value="8045"/>
<!-- Status Logger variables -->
<add key="processName" value="C2C Command Receiver"/>
<add key="statusLoggerHost" value="127.0.0.1"/>
<add key="statusLoggerPort" value="8000"/>
<add key="StatusLoggerLevel" value="slDebug"/>
<!-- Executive Handler variables -->
<add key="executiveHandlerPort" value="8001"/>
<add key="executiveHandlerHeartbeat" value="30"/>
<!-- Encryption variables -->
<add key="encryptionEnabled" value="false"/>
<add key="expectedServerName" value=""/>
<!-- Compression variables -->
<add key="compressionMode" value="None"/>
<add key="compressionThreshold" value="2000000"/>
<!-- Latitude of the location hosting variables -->
<add key="StatusLatitude" value="28500000"/>
<add key="StatusLongitude" value="81400000"/>
</appSettings>
```

The parameters for configuring the Command Receiver are:

xmlServerHost	Host IP/name of the TMC's C2C XML Server.
xmlServerPort	IP Port of the TMC's C2C XML Server.
statusLoggerHost	The name of the computer hosting the Status Logger service.
statusLoggerPort	The port for communicating to the Status Logger service.
statusLoggerLevel	Set the logging level to be used by the web service. Choices include <i>slError</i> , <i>slWarn</i> , <i>slInfo</i> , <i>slDebug</i> , and <i>slDetail</i> .
executiveHandlerPort	The socket listener port for the Executive Handler service.
executiveHandlerHeartbeat	The time in seconds between executive handler heartbeat status updates.
processName	A name which uniquely identifies this Command Receiver to the Status Logger service.

For the Data Provider, the C2C configuration information is shown in Table 2.2 below.

Table 2.2 Data Provider web.config Settings

```
<appSettings>
  <!--the XML data types for the Subscribe web method -->
  <add key="subscriptionDataTypes" value="networkData localeData eventData
trafficCondData tvtStatusData dmsData cctvStatusData cctvSnapshotData harData essData
floodgateData remoteMsgData fontData graphicData avlVehicleStatusData
gpioFeatureStatusData gpioFeatureGroupStatusData truckParkingFacilityData
vehicleAlertDeviceStatusData"/>
  <!-- the interval at which keepAlive messages are to be delivered -->
  <add key="keepAliveIntervalSeconds" value="30"/>
  <!-- Time in milliseconds for the web method calls to the clients to complete -->
  <add key="clientWebMethodTimeout" value="15000"/>
  <add key="serverWebMethodTimeout" value="15000"/>
  <!-- Status Logger variables -->
  <add key="processName" value="C2C Provider"/>
  <add key="statusLoggerHost" value="localhost"/>
  <add key="statusLoggerPort" value="8000"/>
  <add key="StatusLoggerLevel" value="slDebug"/>
  <!-- Executive Handler variables -->
  <add key="executiveHandlerPort" value="8001"/>
  <add key="executiveHandlerHeartbeat" value="30"/>
  <!-- Encryption variables -->
  <add key="encryptionEnabled" value="false"/>
  <add key="expectedServerName" value=""/>
  <!-- Compression variables -->
  <add key="compressionMode" value="None"/>
  <add key="compressionThreshold" value="2000000"/>
  <!-- Latitude of the location hosting variables -->
  <add key="StatusLatitude" value="28500000"/>
  <add key="StatusLongitude" value="81400000"/>
</appSettings>
```

The parameters for configuring the Data Provider are:

subscriptionDataTypes	A space-delimited list of the data types that the Provider will accept and maintain. The data type names correspond to the element names found in the schema defining the C2C data.
keepAliveIntervalSeconds	The time interval, specified in seconds, at which a keep-alive message will be sent to the Provider's client update sessions. This value must be less than the session timeout specified by the Provider clients' web services. The minimum session timeout allowed by IIS is 1 minute, so a 30-second keep-alive should prevent the session from timing out.
clientWebMethodTimeout	The allowed time in milliseconds for the web method calls to the clients to complete.
serverWebMethodTimeout	The allowed time in milliseconds for the web method calls to the servers to complete
processName	A name which uniquely identifies this Data Provider to the Status Logger service.
statusLoggerHost	The name of the computer hosting the Status Logger service.
statusLoggerPort	The port for communicating to the Status Logger service.

statusLoggerLevel	Set the logging level to be used by the web service. Choices include <i>slError</i> , <i>slWarn</i> , <i>slInfo</i> , <i>slDebug</i> , and <i>slDetail</i> .
executiveHandlerPort	The socket listener port for the Executive Handler service.
executiveHandlerHeartbeat	The time in seconds between Executive Handler heartbeat status updates.
encryptionEnabled	A value that indicates whether to enable encryption.
expectedServerName	The expected host to use when validating a certificate received from a server.
compressionMode	The compression mode to use when communicating with Executive Handler. Valid values are "Always", "Intelligent", and "None".
compressionThreshold	The compression threshold to use when using the "Intelligent" compression mode.
StatusLatitude	The latitude of the location hosting this piece of the infrastructure. This is passed in connectivity status information.
StatusLongitude	The longitude of the location hosting this piece of the infrastructure.

For the Data Collector, the C2C configuration information is shown in Table 2.3 below.

Table 2.3 Data Collector web.config Settings

```
<appSettings>

<!--the XML data types for the Subscribe web method -->
  <add key="networkData localeData eventData trafficCondData tvStatusData dmsData
cctvStatusData cctvSnapshotData harData essData floodgateData remoteMsgData fontData graphicData
avlVehicleStatusData gpioFeatureStatusData gpioFeatureGroupStatusData truckParkingFacilityData
vehicleAlertDeviceStatusData"/>
  <!--the interval at which keepAlive messages are to be delivered -->
  <add key="keepAliveIntervalSeconds" value="30"/>
  <!--the allowed time in milliseconds for the web method calls to the
clients to complete -->
  <add key="clientWebMethodTimeout" value="15000"/>
  <!--the allowed time in milliseconds for the web method calls to the servers to complete -->
  <add key="serverWebMethodTimeout" value="15000"/>
  <!--the interval at which the Collector should attempt a login to the servers -->
  <add key="serverConnectIntervalSeconds" value="10"/>
  <!--the blank-delimited list of data servers that will be providing data to the Collector -->
  <add key="serverList"
value="http://server/C2C/Provider/ProviderServer.asmx"/>
  <!--the URI of the Collector's client side Web Service. Sent to the data providers when
logging in to them -->
  <add key="updatesURI"
value="http://server/C2C/Collector/CollectorClient.asmx"/>
  <!-- Status Logger variables -->
  <add key="processName" value="C2C Provider"/>
  <add key="statusLoggerHost" value="localhost"/>
  <add key="statusLoggerPort" value="8000"/>
  <add key="StatusLoggerLevel" value="slDebug"/>
```

```
<!-- Executive Handler variables -->
  <add key="executiveHandlerPort" value="8001"/>
  <add key="executiveHandlerHeartbeat" value="30"/>
<!-- Encryption variables -->
  <add key="encryptionEnabled" value="false"/>
  <add key="expectedServerName" value=""/>
<!-- Compression variables -->
  <add key="compressionMode" value="None"/>
  <add key="compressionThreshold" value="2000000"/>
<!-- Latitude of the location hosting variables -->
  <add key="StatusLatitude" value="28500000"/>
  <add key="StatusLongitude" value="81400000"/>
</appSettings>
```

The parameters for configuring the Data Collector are:

subscriptionDataTypes	A space-delimited list of the data types that the Collector will accept and maintain. The data type names correspond to the element names found in the schema defining the C2C data.
keepAliveIntervalSeconds	The time interval, specified in seconds, at which a keep-alive message will be sent to the Collector's server login sessions and client update sessions. This value must be less than the session timeout specified by the remote web services. The minimum session timeout allowed by IIS is 1 minute, so a 30-second keep-alive should prevent the session from timing out.
clientWebMethodTimeout	The time interval, specified in milliseconds, allowed for a response to a web method call to a client update session. This value should only be set long enough to provide stable operation under normal data loads. A greater depth of chained infrastructure services will require a longer timeout interval.
serverWebMethodTimeout	The time interval, specified in milliseconds, allowed for a response to a web method call to a server login session. This value should only be set long enough to provide stable operation under normal data loads.
serverConnectIntervalSeconds	The interval at which the Collector should attempt a login to the servers.
serverList	The space-delimited list of data servers (URIs) that will be providing data to the Collector.
updatesURI	The URI of the Collector's client side Web Service. Sent to the data providers when logging in to them.
processName	A name which uniquely identifies this Data Collector to the Status Logger service.

statusLoggerHost	The name of the computer hosting the Status Logger service.
statusLoggerPort	The port for communicating to the Status Logger service.
statusLoggerLevel	Set the logging level to be used by the web service. Choices include <i>slError</i> , <i>slWarn</i> , <i>slInfo</i> , <i>slDebug</i> , and <i>slDetail</i> .
executiveHandlerPort	The socket listener port for the Executive Handler service
executiveHandlerHeartbeat	The time in seconds between executive handler heartbeat status updates.
encryptionEnabled	A value that indicates whether to enable encryption when communicating with Executive Handler and Status Logger.
expectedServerName	The expected host to use when validating a certificate received from a server.
compressionMode	The compression mode to use when communicating with Executive Handler.
compressionThreshold	The compression threshold to use when using the "Intelligent" compression mode.
StatusLatitude	The latitude of the location hosting this web service. This is passed in connectivity status information.
StatusLongitude	The longitude of the location hosting this piece of the infrastructure.

For the Data Extractor, the C2C configuration information is shown in Table 2.4 below.

Table 2.4 Data Extractor web.config Settings

```
<appSettings>
  <!--the XML data types for the Subscribe web method -->
  <add key="networkData localeData eventData trafficCondData tvtStatusData
dmsData cctvStatusData cctvSnapshotData harData essData floodgateData remoteMsgData
fontData graphicData avlVehicleStatusData gpioFeatureStatusData
gpioFeatureGroupStatusData truckParkingFacilityData vehicleAlertDeviceStatusData"/>
  <!--the interval at which keepAlive messages are to be delivered -->
  <add key="keepAliveIntervalSeconds" value="30"/>
  <!--the allowed time in milliseconds for the web method calls to the servers to
complete -->
  <add key="serverWebMethodTimeout" value="15000"/>
  <!--the interval at which the Collector should attempt a login to the servers -->
  <add key="serverConnectIntervalSeconds" value="10"/>
  <!--the blank-delimited list of data servers that will be providing data to the
Collector -->
  <add key="serverList"
value="http://server/C2C/Collector/CollectorServer.asmx"/>
  <!--the URI of the Collector's client side Web Service. Sent to the data
providers when logging in to them -->
  <add key="updatesURI"
value="http://server/C2C/Extractor/ExtractorClient.asmx
  <!-- Status Logger variables -->
  <add key="processName" value="C2C Provider"/>
  <add key="statusLoggerHost" value="localhost"/>
  <add key="statusLoggerPort" value="8000"/>
  <add key="StatusLoggerLevel" value="slDebug"/>
  <!-- Executive Handler variables -->
```



```
<add key="executiveHandlerPort" value="8001"/>
<add key="executiveHandlerHeartbeat" value="30"/>
<!-- Encryption variables -->
<add key="encryptionEnabled" value="false"/>
<add key="expectedServerName" value=""/>
<!-- Compression variables -->
<add key="compressionMode" value="None"/>
<add key="compressionThreshold" value="2000000"/>
<!-- Latitude of the location hosting variables -->
<add key="StatusLatitude" value="28500000"/>
<add key="StatusLongitude" value="81400000"/>
</appSettings>
```

The parameters for configuring the Data Extractor are:

subscriptionDataTypes

A delimited list of the data types that the Extractor will use when logging into the web service named in the “serverList” parameter. The Extractor will log into the server web service and subscribe for data for use by the **RequestNets** web method to retrieve current data. The data type names correspond to the element names found in the schema defining the C2C data. Note that the keyword “all” can be used instead of the data type list to receive all data types. This has the advantage of eliminating filtering of data by type.

keepAliveIntervalSeconds

The time interval, specified in seconds, at which a keep-alive message will be sent to the Extractor’s server. This value must be less than the session timeout specified by the Extractor server’s web service. The minimum session timeout allowed by IIS is 1 minute, so a 30-second keep-alive should prevent the session from timing out.

serverWebMethodTimeout

The allowed time in milliseconds for the web method calls to the servers to complete

updatesURI

The URI of the Extractor’s client-side Web Service.

serverList

The URI of the web service that will be serving XML data to the Extractor.

processName

A name which uniquely identifies this Data Extractor to the Status Logger service.

statusLoggerHost

The name of the computer hosting the Status Logger service.

statusLoggerPort	The port for communicating to the Status Logger service.
statusLoggerLevel	Set the logging level to be used by the web service. Choices include <i>slError</i> , <i>slWarn</i> , <i>slInfo</i> , <i>slDebug</i> , and <i>slDetail</i>
executiveHandlerPort	The socket listener port for the Executive Handler service
executiveHandlerHeartbeat	The time in seconds between Executive Handler heartbeat status updates
encryptionEnabled	A value that indicates whether to enable encryption.
expectedServerName	The expected host to use when validating a certificate received from a server.
compressionMode	The compression mode to use when communicating with Executive Handler. Valid values are "Always", "Intelligent", and "None".
compressionThreshold	The compression threshold to use when using the "Intelligent" compression mode.
StatusLatitude	The latitude of the location hosting this piece of the infrastructure. This is passed in connectivity status information.
StatusLongitude	The longitude of the location hosting this piece of the infrastructure. This is passed in connectivity status information.

A default IIS installation will limit the size of messages between the C2C web services to 4 MB. A district with a large number of devices and events can generate C2C messages in excess of this limit. The allowable message size can be increased with the addition of an override element in the “web.config” file of each C2C web service that would need to handle messages greater than 4 MB. An example of the override element is shown in the XML fragment in Table 2.5.

Table 2.5 Override Message Size web.config Settings

```
<system.web>
<!--Change the default maximum request length with this element. The value is
in KB.-->
<httpRuntimemaxLength="50000" />
</system.web>
```

2.14 Configuration

The SunGuide software has several configurable parameters that are used to establish communication between SunGuide processes as well as to alter the behavior of the SunGuide applications. The following sections describe the configuration parameters available – these values should not be changed unless the impact of the change is well understood.

2.14.1 IP Port Usage

The table below shows IP port usage by the various subsystems and drivers of the SunGuide software.

Table 2.6 Port Assignments

SunGuide Component	IP Port Used
AVL/RR Subsystem	41300
Beacon Management Subsystem	45678
BlueTOAD Publisher Subsystem	23402
BMS Web Relay Driver	45679
C2C Publisher Plug-in	34852
C2C Subscriber Plug-in client connections	40051
C2C Subscriber Plug-in Extractor connection	20001
CCTV American Dynamics Driver	12167
CCTV Cohu Driver	12166
CCTV NTCIP 1275 Driver	12164
CCTV ONVIF Driver	12165
CCTV Subsystem	40015
Contact Notification Application (CNA)	40002
Connected Vehicle Subsystem (CVS)	40014
Connected Vehicle Driver	40142
Data Archive	5890
Data Archive RITIS	38946
Databus	8009
DMS	40001
DMS driver port	10350
Event Management Subsystem (EM)	41400
Executive Handler Server client connections	8001
Executive Handler Server for EH viewer connections	8002
GPIO	40052
GPIO Device Driver	40053
HAR DR2000 Driver	40107
Highway Advisory Radio Subsystem (HAR)	40017
Incident Detection Subsystem (IDS)	40008
IDS TSS Alarm Driver	44444
IDS VisioPaD Driver	40089
IDS Weather Alert Driver	43159
IDS External Event Driver	38569
IDS FHP Incident Driver	38521
IDS FHP Incident Provider	42124
IDS Device Status Alarm Driver	38522
IDS RWIS Driver	44445
IDS Safety Barrier Driver	38590
IDS Generic Alert Protocol Driver	44449

SunGuide Component	IP Port Used
IDS Travel Time Alert Driver	44448
IDS Waze Driver	44447
IDS Vehicle Alert Driver	44446
INRIX Publisher	38943
Managed Lanes Subsystem	38960
MCP Manager	40007
Message Arbitration Subsystem (MAS)	38900
MLS NTCIP Driver	38961
Naztec Driver	38951
Nokia Publisher	38945
Notify Manager	8004
Ramp Meter Subsystem (RMS)	40003
Remote Command Application (RCA)	43008
Rapid Incident Scene Clearance (RISC)	41401
Reporting Subsystem (RS)	40013
RMS BiTran-170 Driver	9001
RMS NTCIP Driver	9002
Road Ranger XML Driver	41301
Road Weather Information System Subsystem (RWIS)	40077
RWIS Driver	40078
Safety Barrier Driver (SB)	40088
Safety Barrier Subsystem	40011
Scheduled Actions Subsystem	40712
SPARR Driver	41302
SQL Server	1433
Status Logger	8000
System Administration Application (SAA)	29100
Traffic Control Subsystem	38950
Transportation Sensor Subsystem (TSS)	40004
Travel Time Subsystem (TVT)	40012
Truck Parking Subsystem (TPS)	40016
Truck Parking Driver	45680
TSS Bitrans Driver	12888
TSS Probe Fusion Driver	48888
TSS RTMS Driver	40005
TSS WsDOT Driver	8091
TSS CvTss Driver	40020
TSS PTMS Driver	40006
Video Switch Subsystem (VS)	40022
Video Wall Subsystem (VW)	40027
VisioPaD Subsystem	40097
VS IP Video Switch Driver	40010
VW Activu Wall Driver	29207
VW Barco Wall Driver	40037

SunGuide Component	IP Port Used
VW Datapath Wall Driver	40040
VW Jupiter Wall Driver	40038
VW Jupiter Wall Canvas Driver	40039

2.14.2 Executive Handler Configuration

- Run Executive Handler Editor, and add processes using the settings in Table 2.7 below (note that which process will be configured will vary based on the information contained in the deployment specific *Implementation Plan*):

Table 2.7 SunGuide Application Configuration

What	Type	Windows Service	Display Name	Arguments	Subsystem
Notify Manager	Service	NotifyManagerService	SG Notify Manager	[CONFIG_FILE] notifyMgr	GUI
Event Management	Service	EmService	SG Event Manager	[CONFIG_FILE] em	EM
Rapid Incident Scene Clearance	Service	RiscService	SG RISC Subsystem	[CONFIG_FILE] risc	RISC
AVL/RR Subsystem	Service	AvlService	SG AVL Subsystem	[CONFIG_FILE] avlrr	AVL/RR
AVL/RR XML Driver	Service	RRXMLDriverService	SG AVL Road Ranger Driver	RRXMLDriver [CONFIG_FILE] avlrr	AVL/RR
AVL/RR SPARR Driver	Service	SPARRDriverService	SG AVL SPARR Driver	SPARRDriver [CONFIG_FILE] avlrr	AVL/RR
DMS Subsystem	Service	DmsXmlInterface	SG DMS XML Interface	<i>None</i>	DMS
DMS Subsystem	Service	DmsStatewideDriver	SG DMS Statewide Driver	<i>None</i>	DMS
HAR Subsystem	Service	HarService	SG HAR Subsystem	[CONFIG_FILE] har	HAR
HAR Driver	Service	HarDR2000Svc	SG HAR DR2000 Driver	DR2000 [CONFIG_FILE] har	HAR
Travel Times Subsystem	Service	TvtService	SG TVT Subsystem	[CONFIG_FILE] tvt	TVT
Message Arbitration Subsystem	Service	MasService	SG Message Arbitration Subsystem	[CONFIG_FILE] mas	MAS
Variable Speed Limit Subsystem	Service	VslService	SG VSL Subsystem	[CONFIG_FILE] vsl	VSL

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What	Type	Windows Service	Display Name	Arguments	Subsystem
Pricing Subsystem	Service	PsService	SG Pricing Subsystem	[CONFIG_FILE] ps	EL
Reporting Subsystem	Service	RsService	SG Reporting Subsystem	[CONFIG_FILE] rs	EM
Inventory & Maintenance Subsystem	Service	ImsService	SG Inventory Maint Subsystem	[CONFIG_FILE] ims	IMS
Data Archive Subsystem	Service	DataArchiveService	SG Data Archive Subsystem	[CONFIG_FILE] DataArchive	Archive
Data Archive RITIS Subsystem	Service	DarService	SG Data Archive RITIS Subsystem	[CONFIG_FILE] dar	Archive
IDS Subsystem	Service	IdsService	SG IDS Subsystem	[CONFIG_FILE] ids	IDS
IDS VisioPad Driver	Service	VisioPadDriver	SG IDS VisioPad Driver	VisioPadDriver [CONFIG_FILE] ids	IDS
IDS TSS Driver	Service	TssAlarmService	SG IDS TSS Alarm Driver	TssAlarmDriver [CONFIG_FILE] ids	IDS
IDS TVT Driver	Service	TvtAlarmService	SG IDS TVT Alarm Driver	TvtAlarmDriver [CONFIG_FILE] ids	IDS
IDS Safety Barrier Driver	Service	SbAlarmService	SG IDS SB Alarm Driver	SbAlarmDriver [CONFIG_FILE] ids	IDS
IDS Weather Driver	Service	WeatherAlertService	SG IDS Weather Alert Driver	WeatherAlertDriver [CONFIG_FILE] ids	IDS
IDS External Event Driver	Service	ExternalEventService	SG IDS External Event	ExternalEventDriver [CONFIG_FILE] ids	IDS
IDS FHP Driver	Service	FhpIncidentService	SG IDS FHP Incident Driver	hpIncidentDriver [CONFIG_FILE] ids	IDS
IDS WAZE Driver	Service	WazeEventService	SG IDS Waze Event Driver	WazeEventDriver [CONFIG_FILE] ids	IDS
IDS RWIS Driver	Service	RwisAlarmService	SG IDS RWIS Alarm Driver	RwisAlarmDriver [CONFIG_FILE] ids	IDS
IDS Vehicle Alert Driver	Service	VehicleAlertService	SG IDS Vehicle Alert Driver	VehicleAlertDetectionDriver [CONFIG_FILE] ids	IDS
IDS Device Status Alarm Driver	Service	DeviceStatusAlarmService	SG IDS Device Status Alarm Driver	DeviceStatusAlarmDriver [CONFIG_FILE] ids	IDS
Generic Alert Protocol Driver	Service	GenericAlertService	SG IDS Generic Alert Protocol Driver	GenericAlertProtocolDriver [CONFIG_FILE] ids	IDS

What	Type	Windows Service	Display Name	Arguments	Subsystem
FHP Interface Server	Service	FhpInterfaceService	SG IDS FHP Interface Server	[CONFIG_FILE] fhp	IDS
WWD API Service	Service	WwdApiService	SG WWD API Service	[CONFIG_FILE] WwdApiService	IDS
Ramp Meter Subsystem	Service	RmsService	SG Ramp Meter Subsystem	<i>None</i>	RMS
Ramp Meter 170 Driver	Service	Rms170DriverSvc	SG RMS 170 Driver	Bitran-170 [CONFIG_FILE] rms	RMS
Ramp Meter NTCIP Driver	Service	RmsNTCIPDriverSvc	SG RMS NTCIP Driver	RmsNtcipDriver [CONFIG_FILE] rms	RMS
RWIS Subsystem	Service	RwisService	SG RWIS Subsystem	[CONFIG_FILE] rwis	RWIS
RWIS Driver	Service	RwisDriverSvc	SG RWIS Driver Service	RwisDriver [CONFIG_FILE] rwis	RWIS
TSS Subsystem	Service	TssService	SG TSS Subsystem	[CONFIG_FILE] tss	TSS
TSS RTMS Driver	Service	RtmsDriverSvc	SG RTMS Driver Service	RtmsDriver [CONFIG_FILE] tss	TSS
PTMS Driver Service	Service	PtmsDriverSvc	SG PTMS Driver Service	PtmsDriver [CONFIG_FILE] tss	TSS
TSS BiTran Driver	Service	BiTran238Driver	SG TSS BiTran238 Driver	<i>None</i>	TSS
TSS 170 Driver	Service	WsDOTDriverSvc	SG WsDOT 170 Driver Service	[CONFIG_FILE] WsDotTss	TSS
TSS Probe Fusion Driver	Service	ProbeFusionDriverSvc	SG TSS Probe Fusion Driver Service	ProbeFusionDriver [CONFIG_FILE] tss	TSS
TSS Connected Vehicle Driver	Service	CvTssDriverSvc	SG TSS Connected Vehicle Driver Service	CvTssDriver [CONFIG_FILE] tss	TSS
PTMS Driver Service	Service	PtmsDriverSvc	SG PTMS Driver Service	PtmsDriver [CONFIG_FILE] tss	TSS
Safety Barrier Subsystem	Service	SbService	SG Safety Barrier Subsystem	[CONFIG_FILE] sb	SB
Safety Barrier Driver	Service	SbDriverSvc	SG Safety Barrier Driver	SBDriver [CONFIG_FILE] sb	SB
Connected Vehicle Subsystem	Service	CvsService	SG Connected Vehicle Subsystem	[CONFIG_FILE] cvs	CVS

What	Type	Windows Service	Display Name	Arguments	Subsystem
CVS J2735 Driver	Service	J2735DriverSvc	SG J2735 Connected Vehicle Driver	J2735Driver [CONFIG_FILE] cvs	CVS
CCTV Subsystem	Service	CctvService	SG CCTV Subsystem	[CONFIG_FILE] cctv	CCTV
CCTV NTCIP Driver	Service	NtcipCctvDriver	SG CCTV NTCIP Driver	NTCIP_1 [CONFIG_FILE] cctv	CCTV
CCTV AD Driver	Service	AD_SD_Driver	SG CCTV AD Driver	AD_SD_Driver [CONFIG_FILE] cctv	CCTV
CCTV ONVIF Driver	Service	OnvifCctvDriver	SG CCTV ONVIF Driver	ONVIF_Driver [CONFIG_FILE] cctv	CCTV
CCTV Cohu Driver	Service	CohuDriverService	SG CCTV Cohu Driver	CohuDriver [CONFIG_FILE] cctv	CCTV
Video Switching Subsystem	Service	VsService	SG Video Switching Subsystem	[CONFIG_FILE] vs	VS
VS IP Switch Driver	Service	IpVideoSwitchSvc	SG IP Video Switch Driver	IpVideoSwitch [CONFIG_FILE] vs	VS
Video Wall Subsystem	Service	VwsService	SG Video Wall Subsystem	[CONFIG_FILE] VideoWallSystem	VW
VW Barco Driver	Service	BarcoDriverSvc	SG VWS Barco Driver	BarcoWall [CONFIG_FILE] VideoWallSystem	VW
VW Jupiter Driver	Service	JupiterDriverSvc	SG VWS Jupiter Driver	JupiterVideoWall [CONFIG_FILE] VideoWallSystem	VW
VW Jupiter Canvas Driver	Service	JupiterCanvasDriverSvc	SG VWS Jupiter Canvas Driver	JupiterCanvas [CONFIG_FILE] VideoWallSystem	VW
VW Activu Driver	Service	ActivuWallSvc	SG Activu Driver Service	ActivuWall [CONFIG_FILE] VideoWallSystem	VW
VW Datapath Driver	Service	DatapathDriverSvc	SG VWS Datapath Driver	DatapathDriver [CONFIG_FILE] VideoWallSystem	VW
MCP Manager	Service	McpManagerSvc	SG MCP Manager	[CONFIG_FILE] McpManager	GUI
Scheduled Actions Subsystem	Service	SasService	SG Scheduled Actions Subsystem	[CONFIG_FILE] sas	SAS
Center to Center Publisher	Service	C2cServerService	SG C2C Publisher	[CONFIG_FILE] C2cPublisher	C2C

What	Type	Windows Service	Display Name	Arguments	Subsystem
Center to Center Subscriber	Service	C2cClientService	SG C2C Subscriber	[CONFIG_FILE] C2cSubscriber	C2C
INRIX C2C Publisher	Service	InrixService	SG INRIX Publisher	[CONFIG_FILE] inrix	C2C
Nokia C2C Publisher	Service	NokiaService	SG NOKIA Publisher	[CONFIG_FILE] nokia	C2C
BlueTOAD Publisher Subsystem	Service	BlueToadService	SG BlueTOAD Publisher	[CONFIG_FILE] bluetoad	BlueTOAD
Beacon Management Subsystem	Service	BmsService	SG Beacon Management Subsystem	[CONFIG_FILE] bms	BMS
BMS Web Relay Driver	Service	BmsWebRelayDriver	SG WebRelay Driver	BeaconDriver [CONFIG_FILE] bms	BMS
Truck Parking Subsystem	Service	TpsService	SG TPS Subsystem – Truck Parking Subsystem	[CONFIG_FILE] tps	TPS
Truck Parking Driver	Service	TpsDriverService	SG TPS Subsystem – Truck Parking Driver	TpsDriver [CONFIG_FILE] tps	TPS
Traffic Control Subsystem	Service	TcsService	SG TCS Subsystem – Traffic Signal Control	[CONFIG_FILE] tcs	TCS
Traffic Control Naztec Driver	Service	NaztecDriverSvc	SG TCS Naztec Driver	NaztecDriver [CONFIG_FILE] tcs	TCS
TCS TMDD Driver	Service	TmddDriverSvc	SG TCS TMDD Driver	TmddDriver [CONFIG_FILE] tcs	TCS
Managed Lanes Subsystem	Service	MlsService	SG MLS Subsystem – Managed Lanes	[CONFIG_FILE] mls	MLS
Managed Lanes NTCIP Driver	Service	MlsNtcipDriver	SG MLS NTCIP Driver	MlsNtcipDriver [CONFIG_FILE] mls	MLS
General Input Output Subsystem	Service	GpioService	SG GPIO Subsystem	[CONFIG_FILE] gpio	GPIO
GPIO Device Driver	Service	GpioDriverService	SG GPIO Device Driver	GpioDeviceDriver [CONFIG_FILE] gpio	GPIO
Contact Notification Application	Service	CnaService	SG CNA - Contact Notification Application	[CONFIG_FILE] cna	CNA

What	Type	Windows Service	Display Name	Arguments	Subsystem
Remote Command Application	Service	RcaService	SG RCA - Remote Command Application	[CONFIG_FILE] rca	RCA
Lane Control Subsystem		LcsService	SG LCS- Lane Control Subsystem	[CONFIG_FILE] lcs	LCS
LCS NTCIP Driver		LcsNtcipService	SG LCS NTCIP Driver	LcsNtcipDriver [CONFIG_FILE] lcs	LCS
Data Bus	Service	DataBusService	SG Data Bus Subsystem	[CONFIG_FILE] databus	Data Bus
System Administration Application	Service	SaaService	SG SAA - System Administration Application	[CONFIG_FILE] saa	SAA

2.14.3 Configurable Parameters

SunGuide supports a Config File Editor complete with a schema for all available parameters to the system. Each parameter has a description and a default value, where available. Please use the Config Editor for all configuration file questions.

2.15 System Updates

Districts are encouraged to keep servers and workstations used to host SunGuide up to date with operating system patches and security hotfixes, and .NET updates and service packs. However, operating system service packs should be tested against SunGuide and approved before deployment to production systems. Note that .NET major version updates may be installed since they reside “side-by-side” with the major .NET version currently used by SunGuide.

3. Source Code Installation (For Development Purposes)

Installation of the SunGuide Software includes both installation of the COTS tools and SunGuide custom source code on the host platform for software development and installation of the SunGuide executable programs and DLLs on the target system for operation.

3.1 Installation on Development Platform

In order to modify either the SunGuide custom software or the custom installation packages, it is necessary to install the COTS development tools and the source code for the SunGuide system.

3.1.1 COTS Development Tools Installation

Microsoft® Windows 10 or higher version is installed on the development workstation using the operating system setup utility. When installation is complete, all service packs must be applied.

Microsoft® Visual Studio 2022 is installed on the development workstation using the compiler setup utility. The C++ and C# components must be installed at a minimum.

The Microsoft® Platform SDK, Windows Server 2019 Release, is installed on the development workstation using the SDK download utility available on the Microsoft web site. Only the Core SDK component of the Windows SDK is installed.

Pegasus Imaging Capture PRO Version 3 is installed on the development workstation using the setup utility provided with the toolkit. The toolkit's licensing application must be run to enter a valid license key before the toolkit's library components can be distributed. This component is optional.

Flexara InstallShield® Version 2021 is installed on the development workstation.

DevExpress WPF Controls v19 is installed on the development workstation.

3.1.2 SunGuide Custom Software

The source files for the SunGuide custom software must be installed on the development system in order to be modified or rebuilt.

3.1.2.1 Source Code Installation

The SunGuide source code is installed on the development system by copying it from the distribution media to the development system using Windows Explorer. Because the various projects that make up the SunGuide system software have interdependencies, all of the source code should be copied to the development workstation. Also, because the relative paths to the source code and support files are stored in the Visual Studio workspace and project files used to build the software components, the source files must be copied to the development system with the directory structure intact.

3.1.2.2 Build Instructions

The various software components (DLLs and executables) that make up the SunGuide system are described in Section 2.2.2. Each of these components was built using the IDE that accompanies Microsoft® Visual Studio .NET. A Microsoft® Visual Studio .NET solution file (*.sln*) is provided

on the distribution CD for building each of components that comprise the SunGuide system. Prior to building software components, you must:

- Install the COTS development tools as described in Section 3.1.1.
- Install the SunGuide source code as described in Section 3.1.2.1.

3.1.2.2.1 Building the Components

The solution files for each of the components described in Section 2.2.2 are listed in the following table.

Solution File	Component(s)
Activu SunGuide Service.sln (C# Project)	Activu SunGuide Service.exe
AmericanDynamicsDriver.sln (C# Project)	AmerDynDriverLib.dll AmerDynDriverSvc.exe
Avl.sln (C# Project)	AvlLib.dll AvlService.exe
BarcoDriver.sln (C# Project)	BarcoDriverLib.dll BarcoDriverSvc.exe
BeaconDriver.sln (C# Project)	BeaconDriverLib.dll BeaconDriverService.exe
Bms.sln (C# Project)	BmsLib.dll BmsService.exe
BlueToad.sln	BlueToadLib.dll BlueToadDataLib.dll BlueToadService.exe
C2cClient.sln (C# Project)	C2cClientLib.dll C2cClientService.exe C2cEmLib.dll C2cSharedLib.dll
C2cServer.sln (C# Project)	C2cEmLib.dll C2cServerLib.dll C2cServerService.exe C2cSharedLib.dll
Cctv.sln (C# Project)	CctvLib.dll CctvService.exe
ConfigEditor.sln (C# Project)	ConfigEditor.exe
Cna.sln (C# Project)	CnaLibrary.dll Cna.exe
Cvs.sln (C# Project)	CvsLibrary.dll CvsService.exe

Solution File	Component(s)
CvTssDriver.sln (C# project)	CvTssDriverLib.dll CcTssDriverSvc.exe
DataArchive.sln (C# Project)	DataArchiveLib.dll DataArchiveService.exe
Dar.sln (C# Project)	Dar.exe DarLib.dll
DataBus.sln (C# Project)	DataBusLib.dll DataBusService.exe
DatapathDriver.sln (C# Project)	DatapathDriverLib.dll DataPathService.exe
Em.sln (C# Project)	EmLib.dll EmService.exe
EventViewer.sln (C# Project)	EventViewer.dll OMInterface.dll Preprocessor.exe
ExecClientLib.sln (C# Project)	ExecClientLib.dll
ExecutiveHandler.sln (C# Projects)	ExecHandlerEditor.exe ExecutiveHandlerServerSvc.exe ExecHandlerViewer.exe
ExternalEventDriver.sln	IdsDataLib.dll ExternalEventDriverLib.dll ExternalEventDriverSvc.exe
FhpIncidentDriver.sln	FhpIncidentLib.dll FhpIncidentService.exe IdsDatalib.dll
Gpio.sln	Gpio.exe GpioLib.dll GpioDriverService.exe GpioDriver.dll
DR2000.sln (C# Project)	DR2000Lib.dll HarDR2000Svc.exe
HarService.sln (C# Project)	HarLibrary.dll HarService.exe
Ids.sln (C# Project)	IdsDataLib.dll IdsLib.dll IdsService.exe
Inrix.sln (C# Project)	C2cSharedLib.dll InrixLib.dll InrixDataLib.dll InrixService.exe

Solution File	Component(s)
IpVideoSwitchDriver.sln (C# Project)	IpVideoSwitchLib.dll IpVideoSwitchSvc.exe
ItsGenericLibrary.sln (C# Project)	ItsGenericLibrary.dll
J2735Driver.sln (C# Project)	J2735_2016MgdWrapper.dll J2735_2016Win32.dll J2735DriverLib.dll J2735DriverSvc.exe
JupiterVwd.sln (C# Project)	JupiterVwdService.exe JupiterVwdLibrary.dll
JupiterCanvas.sln (C# Project)	JupiterCanvasDriverService.exe JupiterCanvasDriverLibrary.dll
SunGuide.Lcs.sln	Lcs.exe LcsLib.dll
Mas.sln (C# Project)	MasLib.dll MasService.exe
McpManager.sln (C# Project)	McpControlLib.dll McpManagerLib.dll McpManagerSvc.exe
Mls.sln (C# Project)	MlsService.exe MlsLib.dll
NaztecDriver.sln (C# Project)	NaztecDriver.exe NaztecDriverLib.dll
Nokia.sln (C# Project)	C2cSharedLib.dll NokiaLib.dll NokiaService.exe
NotifyManager.sln (C# Projects)	NotifyManagerService.exe NotifyManagerLib.dll
NtcipDriver.sln (CCTV) (C# Project)	NtcipDriver.exe NtcipDriverLib.dll
NtcipDriver.sln (LCS) (C# Project)	LcsDriverBase.dll LcsNtcipDriverService.exe NTCIPDriverLib.dll
NtcipDriver.sln (MLS) (C# Project)	NtcipDriverService.exe NtcipDriver.dll MlsDriverBase.dll
OMInterface.sln (C# Project)	OMInterface.dll
OperatorMap.sln (C# Project)	OperatorMap.exe

Solution File	Component(s)
ProbeFusionDriverSvc.sln (C# Project)	ProbeFusionDriverLib.dll ProbeFusionDriverSvc.exe
RCA.sln (C# Project)	RcaLib.dll RcaInterfaceLib.dll RcaService.exe
Risc.sln (C# Project)	RiscLib.dll Risc.exe
Rms170DriverSvc.sln (C# Project)	Rms170DriverLib.dll Rms170DriverSvc.exe
RmsNtcipDriverSvc.sln (C# Project)	RmsNtcipDriverLib.dll RmsNtcipDriver.exe
RRXMLDriver.sln (C# Project)	RRXMLDriverService.exe RRXMLLib.dll
RsService.sln (C# Project)	RsLib.dll RsService.exe ReportGenerator.exe
RtmsDriverSvc.sln (C# Project)	RtmsDriverLib.dll RtmsDriverSvc.exe
RwisAlarmDriver.sln (C# Project)	RwisAlarmDriverLib.dll RwisAlarmDriverService.exe
RwisDriverSvc.sln (C# Project)	RwisDriverLib.dll RwisDriverSvc.exe
RwisService.sln (C# Project)	RwisLib.dll Rwis.exe
Saa.sln (C# Project)	Saa.exe SaaApp.exe
Sas.sln (C# Project)	SasLib.dll SasService.exe
SbAlarmDriver.sln	SbAlarmDriverLib.dll SbAlarmDriverSvc.exe IdsDataLib.dll
SbDriverSvc.sln (C# Project)	SbDriverLib.dll SbDriverSvc.exe
SbService.sln (C# Project)	SafetyBarrierLib.dll SbService.exe
SPARRDriver.sln (C# Project)	GZipEncoder.dll SPARRDriverService.exe SPARRLib.dll SPARRWebServiceLib.dll

Solution File	Component(s)
StatusLogger.sln (C# Projects)	StatusLogLib.dll StatusLogService.exe StatusLogViewer.exe StatusLogSettings.exe
StatusLogClientLib.sln (C# Project)	FDOT.StatusLogClientLib.dll
Tcs.sln (C# Project)	TcsLib.dll Tcs.exe
Tps.sln (C# Project)	TpsLib.dll TpsService.exe
TpsDriver.sln (C# Project)	TpsDriverLib.dll TpsDriver.exe
Tps.sln (C# Project)	TpsLib.dll TpsService.exe
TssAlarmDriver.sln (C# Project)	IdsDataLib.dll TssAlarmDriverLib.dll TssAlarmDriverSvc.exe
TvtAlarmDriver.sln	TvtAlertDriver.exe, TvtAlertDriverLib.dll
Tss.sln (C# Project)	TssLib.dll TssService.exe
TvtService.sln (C# Project)	TvtLib.dll TvtService.exe
VehicleAlertDetectonDriver.sln	VehicleAlertDriverService.exe AvigilonDataLib.dll AvigilonWebService.dll BlinkLinkWebService.dll CarmanahDataLib.dll CarmanahWebService.dll GovCommDataLib.dll IssDataLib.dll IssWebService.dll MHCorbinDataLib.dll TrafficVisionDataLib.dll TrafficWebService.dll VehicleAlertDriverLib.dll
VisioPadDriver.sln (C# Project)	VisioPadDriverLib.dll VisioPadDriverSvc.exe IdsDataLib.dll
Vs.sln (C# Project)	VsLib.dll VsService.exe

Solution File	Component(s)
VwsService.sln (C# Project)	VwsLibrary.dll VwsService.exe
WazeEventDriver.sln	IdsDataLib.dll WazeEventLib.dll WazeEventService.exe
WeatherAlertDriver.sln	IdsDataLib.dll WeatherAlertLib.dll WeatherAlertDriverSvc.exe
WsDOTDriverSvc.sln (C# Project)	WsDOT170TssDriverLib.dll WsDOTDriverSvc.exe
WwAPI.sln	WwdApi.exe WwdApiLib.dll DataLib.dll

To build the components the following steps are performed.

1. Using Windows Explorer, locate the solution file for the component, located in the sub-folder for the component within the **Process** folder on the development workstation and double click on that file to start Microsoft® Visual Studio .NET using that solution file.
2. From the Build menu, select Configuration Manager and set the configuration to either Debug or Release for the solution. The output of the compiler (newly built library or executable) will be stored in either the **Debug** or **Release** subdirectory of the component depending on the configuration selected.
3. In the Solution Explorer window of the Microsoft® Visual Studio .NET IDE, select the solution (the top entry in the pane). Right click on the solution and select Build Solution to build the component(s) or Rebuild Solution to force a complete rebuild of the component(s).

3.1.3 SunGuide Custom Installation Package

A custom installation package was developed to install the SunGuide executables, DLLs and support files on target workstations. If it is necessary to modify or update the installation packages, the source files for the installation packages must be installed on the development system.

3.1.3.1 Source Code Installation

The SunGuide installer source code is installed on the development system by copying it from the distribution CD to the development system using Windows Explorer. Because the relative paths to the install source code and support files are managed by the InstallShield utility, the source files must be copied to the development system with the directory structure intact.

To install the source code on a development workstation, create a destination directory on the development system named **Installers\SunGuide**, and copy the contents of the **Installer** directory from the **Source** directory on the distribution CD to the **Installers\SunGuide** directory on the development system. This directory contains the InstallShield project for the SunGuide system

installation package. It also contains the SunGuide executables, DLLs, and support files that are packaged and installed by the InstallShield installation package.

3.1.3.2 Build Instructions

Prior to building the installation package for the SunGuide system you must:

- Install the COTS development tools as described in Section 3.1.1.
- Install the SunGuide system installer source code as described in Section 3.1.3.1.

To build the installation package, the following steps are performed.

1. Using Windows Explorer, locate the InstallShield project file for the SunGuide system, **SunGuide.ism**, located in the directory **Installers\SG Installer** on the development workstation and double click on that file to start InstallShield Dev Studio using that project file.
2. All SunGuide software packages must be built in the same relative source tree path using the Release build flags.
3. From the Releases category on the InstallShield IDE, select SINGLE_EXE_IMAGE under either x64 or x86, right click and select Build to rebuild the chosen installation package. The installation package will be built to **ISbin\<platform>\SINGLE_EXE_IMAGE\DiskImages\DISK1\Setup.exe**. Note that the additional files and folders with the installer are also required for a successful installation.

3.2 Installation on Target System

3.2.1 Custom Software Installation

Installation of the SunGuide system executable applications and DLLs on the target system is done using the SunGuide custom installation package. The procedure for doing this is described in the SunGuide Software User's Manual.

3.2.2 Target System Setup

Some aspects of the target system setup cannot be performed by the installation package. These activities are described in the following section.

3.2.2.1 Time Synchronization

Since the SunGuide system components reside on several servers and workstations, all logging status information to a central repository, it is important that the clocks on all machines are synchronized. In a Windows domain environment, all workstations and servers that are members of the domain will automatically be synchronized with the designated domain time controller. This domain time controller can then be synchronized with an external time source such as **time.microsoft.com** or **time.nist.gov**.

4. Notes

4.1 BiTrans Controller Communications Limitations

BiTrans B238-I4 driver: the BiTrans controller firmware only recognizes the following serial port settings (which implies that terminal servers must use this configuration when then are connected to this device):

- baud rate: 1200
- data bits: 8
- parity: even
- stop bits: 1

4.2 Barco/Argus Video Wall Driver

The current version of the Apollo software from Barco does not support the retrieval of the "current connections" through the Apollo Application Program Interface (API) when the SunGuide driver is started. Barco is working on a "fix" for this and once the Barco API is updated the SunGuide driver should work without modification.

4.3 Logging Levels and Debugging Mode

The information logging level and debugging mode SunGuide applications can be changed by editing the common configuration file and restarting the applications. The logging level of applications can also be changed dynamically using a feature of the Executive Handle Viewer. It is important to note that applications running in debugging mode and with debug or detail logging mode will take longer to respond than normal because of the extra information being displayed and logged. This can be especially noticeable when using the Admin Editor since requests for data from a subsystem will take longer to fulfill and may result in a timeout error.

4.4 Operator Map

The Operator Map requires that the Microsoft .NET Framework 4.8 at a minimum be installed on each client workstation to allow the WPF XAML to run.

4.5 American Dynamics Ultra 8 Camera

The American Dynamics Speed Dome Ultra VII camera that was used during development was running (the most recent version available) firmware version 2.03, dated January 24, 2006. According to AD, this is the most current version of the firmware.

The driver was tested against an American Dynamics Speed Dome Ultra 8 camera that was running firmware version 1.09, FPGA version 2006/10/31 15:18. Firmware updates for the American Dynamics Speed Dome Ultra cameras are available from at:

http://www.americandynamics.net/support/downloads_speeddome.aspx

The American Dynamics CCTVs do not support all of the capability provided by a NTCIP CCTV. The features supported by the driver include:

- Pan
- Tilt
- Zoom

- Focus
- Iris
- Nudge pan
- Nudge tile
- Store preset
- Move to preset

Note that the "nudge" command is "backwards" on the Ultra 8, the vendor has verified that the version SwRI tests against has an error in the firmware. In order to ensure that the cameras are functioning properly with the SunGuide system, they should be reset to factory default settings prior to installation. This is done using the SpeedDome Configuration utility (available from American Dynamics). For the Speed Dome Ultra VII, this is described in the "American Dynamics SpeedDome Ultra VII Day/Night Camera Dome Configuration Utility Operator's Manual". For the Speed Dome Ultra 8, this is described in the "American Dynamics SpeedDome Ultra 8 Camera Dome Configuration Utility Version 1.01 Operator's Guide". Both of these documents are available from at:

http://www.americandynamics.net/support/documents_index.aspx?docType=7

Also, unless the cameras are installed in a multi-drop configuration, the address switches should be set to switch 1 = 1, switch 2 = 0, switch 3 = 0.

4.6 Externally Generated Snapshot Files

The IP Video Switch driver can be configured to read externally generated image files instead of generating images internally with the video capture hardware and driver. The image files must be placed in the folder named in the "snapshotDirectory" element of the IP Video Driver section of the configuration file. The files must be named using the following format:

"<Center ID>_<Device ID>.<File Type>", where

- "Device ID" specifies both a camera and a video source,
- "Center ID" is the value from the "centerId" element from the common section of the configuration file, and
- "File Type" matches the "fileType" element from the IP Video Driver section of the configuration file.

This functionality is enabled by setting the "useExternalFiles" element in the IP Video Driver section of the configuration file to "true" and the "externalFileType" element to the image file type to be read. Note that capturing snapshots with the video capture card and driver will be disabled while this setting is in use.

4.7 New Behavior of Video Switching

Shared displays are no longer displayed as an ordered list of destinations, but are instead displayed as a Virtual Video Wall. New installations and upgrades from versions prior to 3.1.1 will require configuration of the Virtual Video Wall to view and switch shared video destinations with Video Switching. This can be accomplished by logging into the Operator Map as a user with permission to configure video destinations, selecting VS | Virtual Wall Layouts from the context menu, and adding all shared video destinations to the wall as they are physically arranged.

4.8 FHP Interface Server Configuration

The FHP Interface Server application is intended to be installed once in a central location and provide FHP incident data to all SunGuide deployments via the IDS FHP Incident Driver. The default installation will set the application, which runs as a Windows service, to start automatically on a system restart, and it will use a local "config.xml" file copied by the installer into the folder where the EXE file is located. The default location of the EXE is "c:\Program Files\Florida Department of Transportation\SunGuide\SubSystems\IDS\FhpinterfaceServer".

The configuration file contains values that will need to be edited before the application can be used. The edits include defining the location and usage credentials of the FHP FTP server and the list of users (i.e. SunGuide deployments) that will be subscribing for FHP incidents. The FHP Interface server settings are enclosed in the an element named "fhp", that is located in the "dataProviders" element.

4.9 SPARR Installation and Configuration

4.9.1 SSL Configuration

The use of SSL for communication between the SPARR mobile app and the AVL SPARR driver can be enabled and disabled using a flag in the SunGuide configuration file. If SSL is to be used, support for it must be installed on the server hosting the SPARR driver. The files necessary to install the SSL support are in the "InstallSSL" folder of the distribution media.

Copy the "InstallSSL" folder to a local hard drive, and start the "InstallSsl.exe" application from the local folder by double-clicking on the application in the folder view. The following figures show the dialogs presented by the application.

Usage Notes:

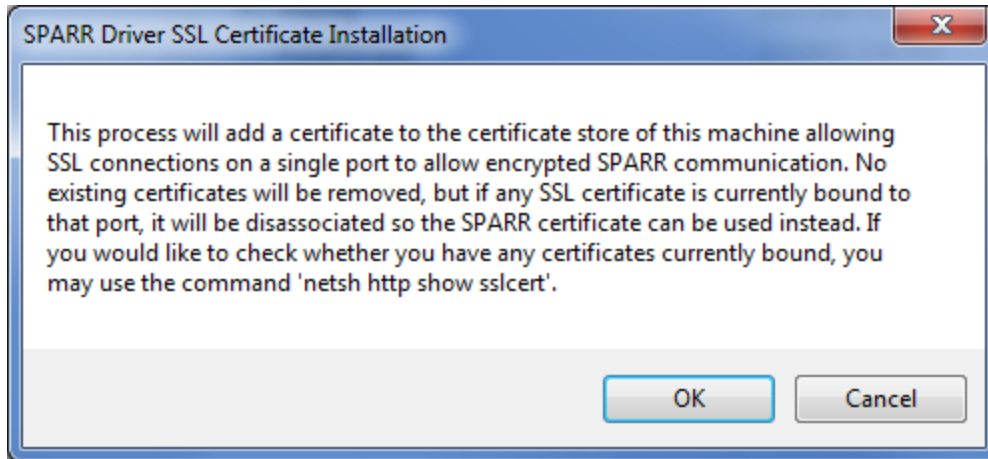
- The "httpcfg" command, used for older systems, is in the "InstallSSL" folder.
- The "port" value requested by the application and mentioned in the steps below will be the same value as in SPARR Driver "webServicePort" parameter in the config file.

PLEASE NOTE: PHONES RUNNING ANDROID 5.0+ USING SSL MUST BE CONFIGURED TO RUN WITH WINDOWS SERVER 2008 AND HIGHER (TLS version support).

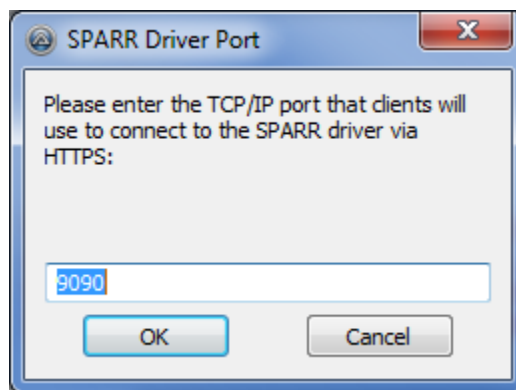
4.9.1.1 All Versions of Windows

For all Windows versions, initial dialogs similar to the following will be presented.

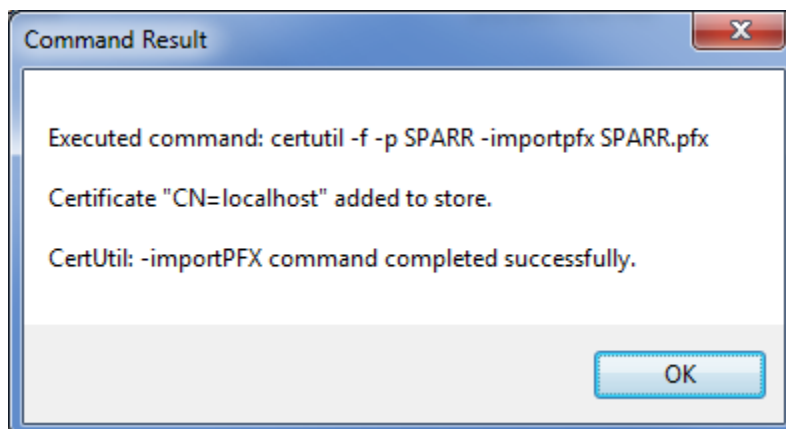
This dialog simply explains what will be done to the system. Press the OK button to continue.



This dialog is prompting for the port number to be used for secure communications between the mobile device and the SunGuide SPARR driver. The port entered in the dialog and the port in the SPARR Driver "webServicePort" parameter in the SunGuide config file should be the same. Enter a value and press the OK button to continue.



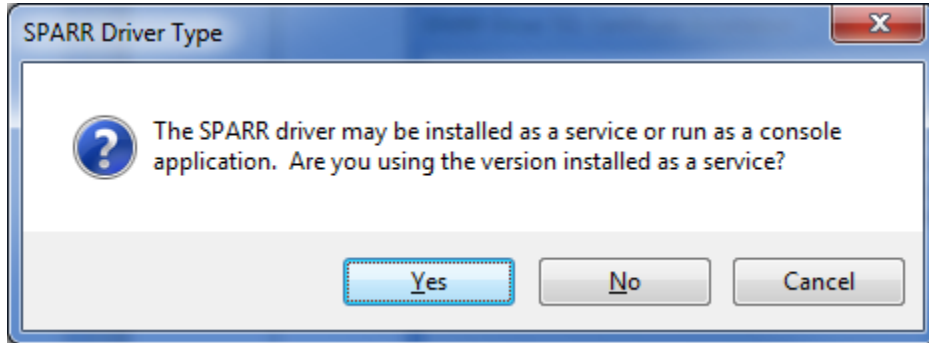
This dialog shows the import certificate command that was run and the result. Press the OK button to continue.



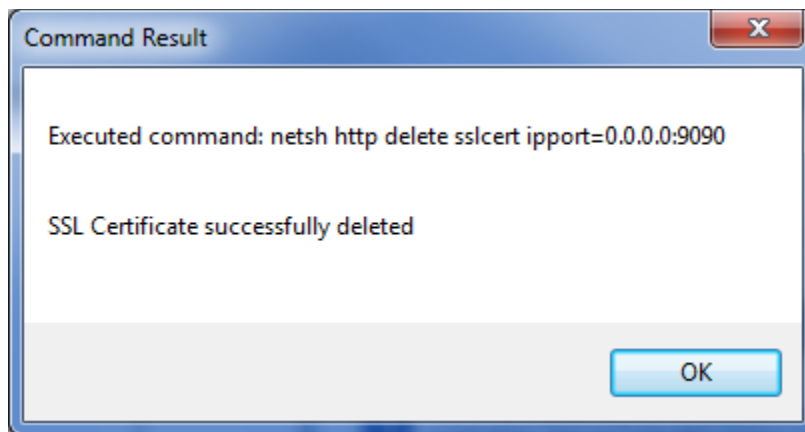
4.9.1.2 Newer Versions of Windows

For newer systems (Vista, Windows 7, Server 2008) the following dialogs will be presented.

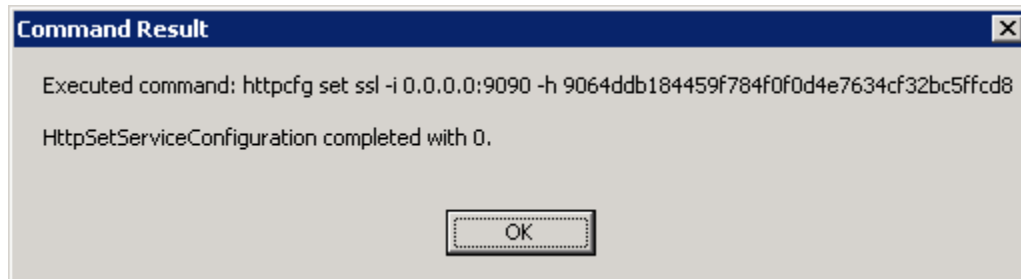
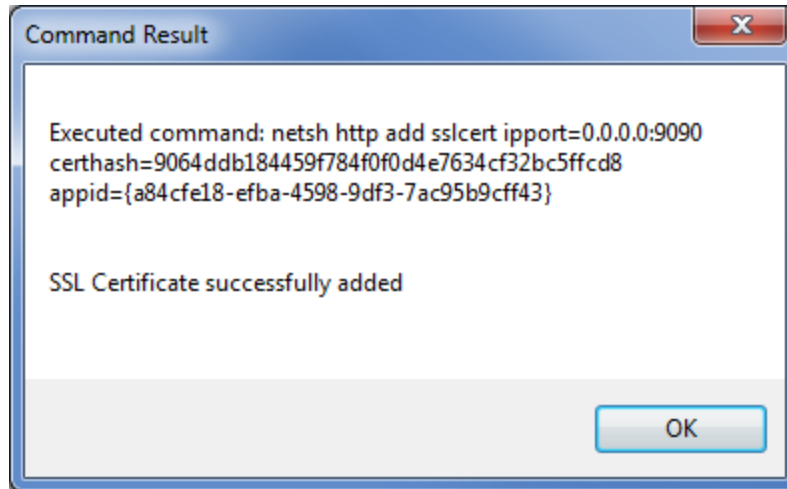
This dialog is asking how the SPARR driver will be used: as a Windows service, or as a console application. Press Yes to indicate the Windows service is being installed, as this is what is provided by the installer. The console app option is only used for testing purposes.



This dialog shows the delete certificate command that was run and the result. Press the OK button to continue. Note that the command result will indicate a failure if no certificate for the entered port was present on the machine; this is normal behavior.



This dialog shows the add certificate command that was run and the result. Press the OK button to complete the SPARR SSL certificate installation on newer systems.



4.9.1.3 Manual Certificate Installation

If running the application did not successfully install the SSL support the following steps using manual-entered commands can be used instead.

For systems running Windows XP or Server 2003, use these steps:

1. Copy the "InstallSSL" folder and its contents to a folder on a local hard drive.
2. Start a Windows Command Prompt and change the working directory to the local-copied folder.
3. Run the following command, where <port> is the web service port.

```
httpcfg delete ssl -i 0.0.0.0:<port>
```

4. Run the following command, where <port> is the web service port. Do not include a line break. (The hex code is a certificate thumbprint.)

```
httpcfg set ssl -i 0.0.0.0:<port>-h  
9064ddb184459f784f0f0d4e7634cf32bc5ffcd8
```

For systems running Windows Vista, Windows 7, or Server 2008, use these steps:

1. Copy the "InstallSSL" folder and its contents to a folder on a local hard drive.
2. Start a Windows Command Prompt and change the working directory to the local-copied folder.
3. Run the following command, where <port> is the web service port.


```
netsh http delete sslcert ipport=0.0.0.0:<port>
```

4. Run the following command, where <port> is the web service port. Do not include line breaks. (The first hex code is a certificate thumbprint. The second is the application ID for the SPARR driver Windows service.)

```
netsh http add sslcert ipport=0.0.0.0:<port>  
certhash=9064ddb184459f784f0f0d4e7634cf32bc5ffcd8  
appid={a84cfe18-efba-4598-9df3-7ac95b9cff43}
```

4.10 Video Wall Drivers

As of version 5.1.1, both Activu and Jupiter video walls will be supported in SunGuide. The following is the currently supported version of each:

Make: Activu

Model: Visualization & Collaboration Software for Command and Control

Version: 5.0

Make: Jupiter

Hardware Model: Fusion Catalyst

Control Software Name: Control Point Server

Version: 2.1.0.117

4.11 Operator Map Troubleshooting

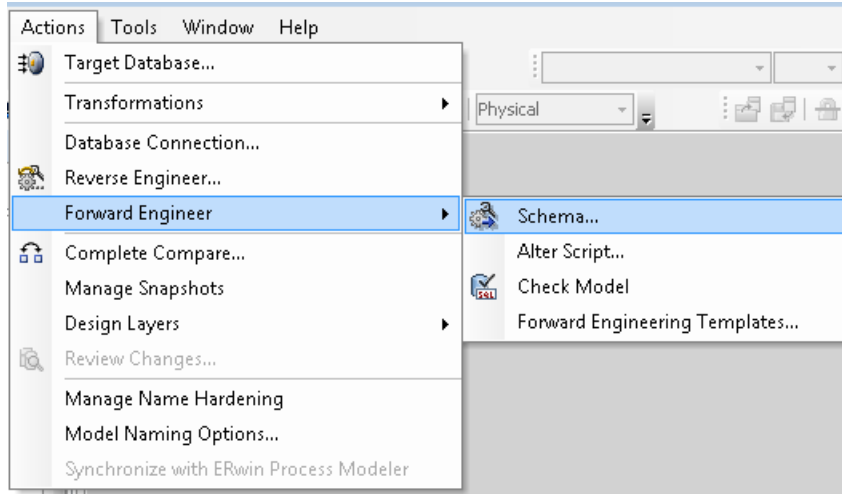
- Try uninstalling Operator Map from the list of Add or Remove Programs in the Control Panel and then reinstall from the web site.

4.12 Generation of Database Creation Scripts from ERWIN

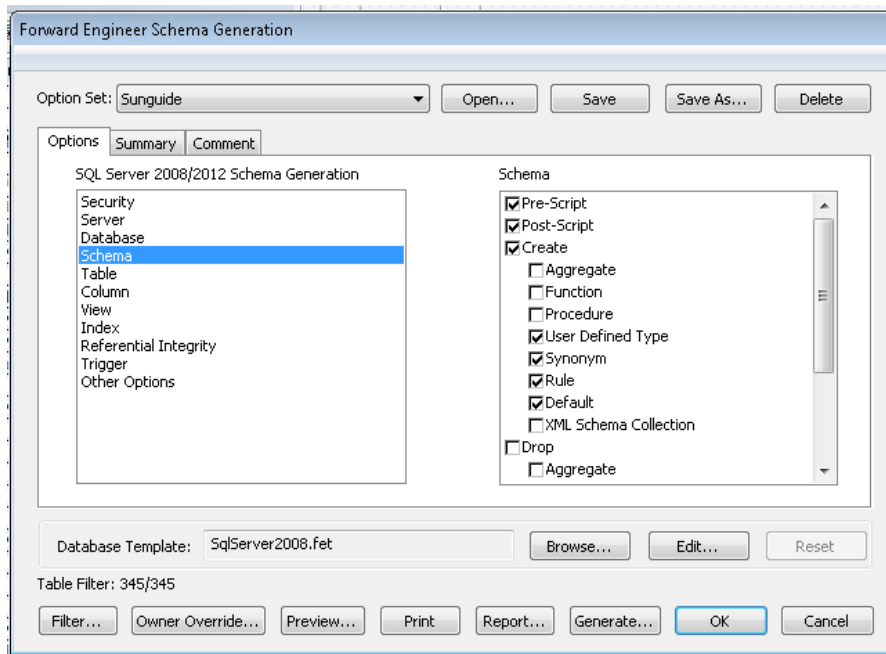
4.12.1 Generating SQL Server Database Scripts

This section will cover how to generate the SQL Server scripts to create a complete SunGuide database with the minimal data set needed to allow the SunGuide software to run without error. Please note that there is currently an issue in the Database Template that ERWIN uses to generate the script in ERWIN 9. This document assumes that the user will be generating the SQL Server scripts in ERWIN 8.

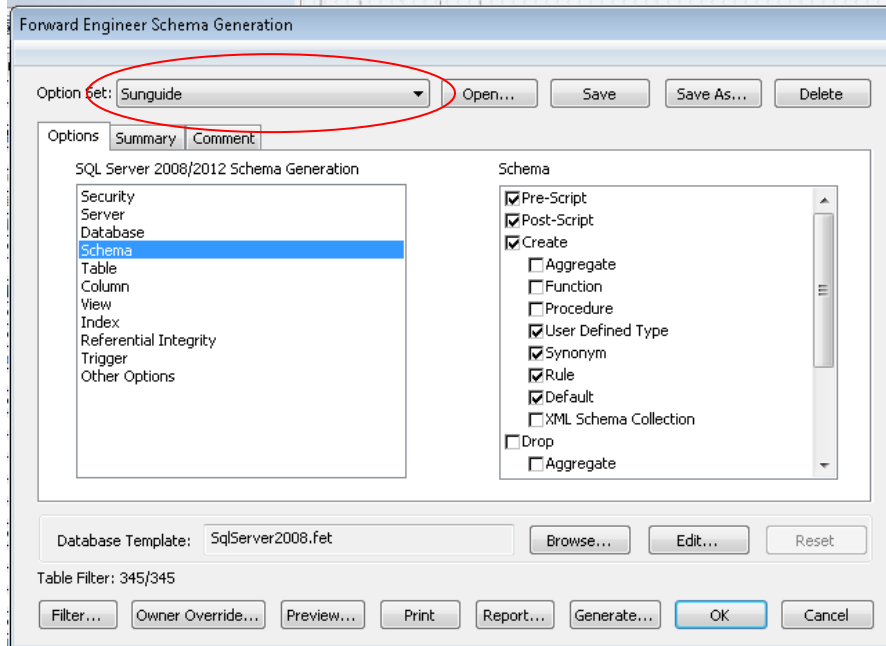
With ERWIN open and the “SunGuide_Model-SQL Server-PHYSICAL” model loaded, navigate to the “Actions” menu item and hover over the “Forward Engineer” item. After a short period a small menu will appear to the side, left-click the “Schema...” option.



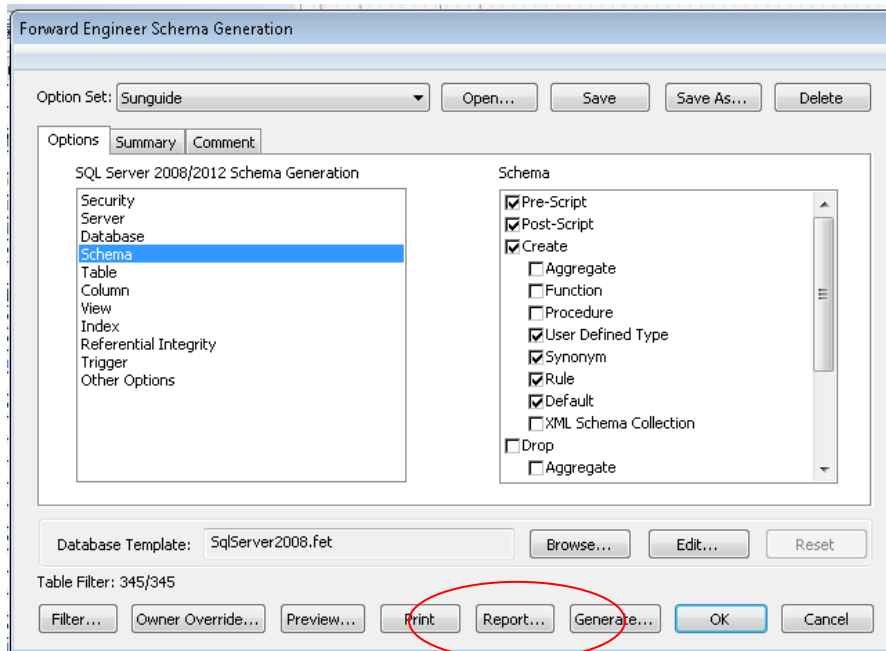
Once selected, the dialog below will appear.



In the window, select “SunGuide” in the “Option Set” drop down box.



Next, click on the “Report...” button located at the bottom of the “Schema Generation” dialog.



Once pressed, another “Save File” dialog will appear, give a name to the file to generate and navigate to the location where ERWIN should save the file to and click the “Save” button. A small dialog will appear showing that ERWIN is currently generating the script and will disappear once the script has been generated. Once that dialog disappears, ERWIN may be closed without any issue.

4.13 Import Intersections

The SunGuide Toolset allows for a user with permission to import intersection data into the SunGuide system by reading in Navteq shapefiles and allowing the user to filter, add, modify, and delete intersections that are imported.

4.13.1 Generating Pre-Requisite Files

To correctly import intersections, the SunGuide Toolset requires a set of files to exist to display the data to the User. The Toolset requires 3 parameters to automatically generate the files as shown in Figure 4-1.

Fields available when the “Generate Pre-Requisite Files” radio button is selected include:

- **ShapeFile Folder:** This parameter is the location of the Navteq Shapefiles.
- **Index ShapeFile Exe:** This parameter is the location of the “ExportNavteqCsvFiles.exe”. The SunGuide Toolset will automatically default to the location of the bundled executable, but the user may choose to select a different executable of the same name.
- **Export Intersections Exe:** This parameter is the location of the “NavteqIntersections.exe”. The SunGuide Toolset will automatically default to the location of the bundled executable, but the user may choose to select a different executable of the same name.
- **Run:** Button that is enabled on all parameters listed above have been provided. This will begin the generation of the pre-requisite files needed before attempting to import any intersections.

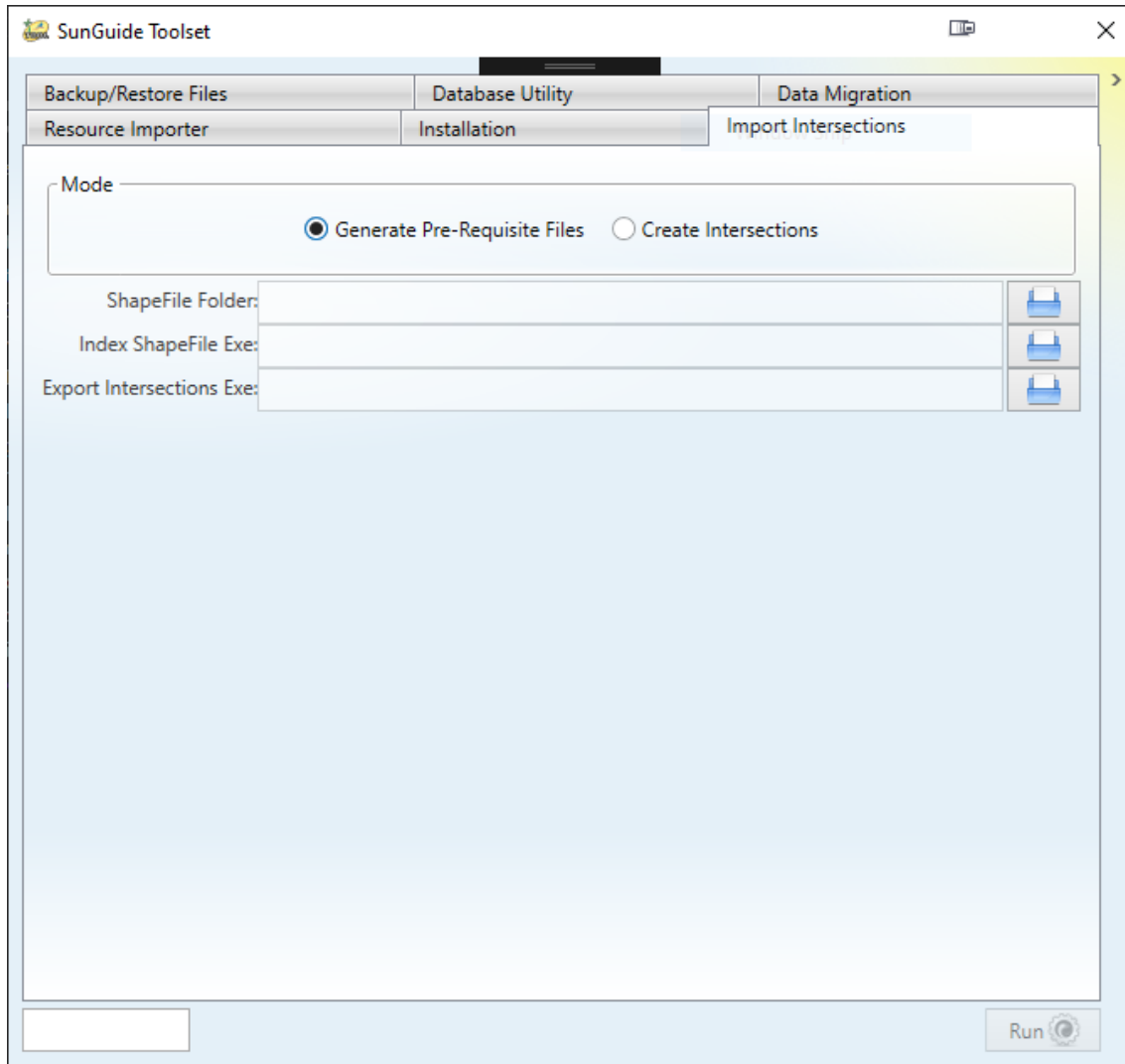
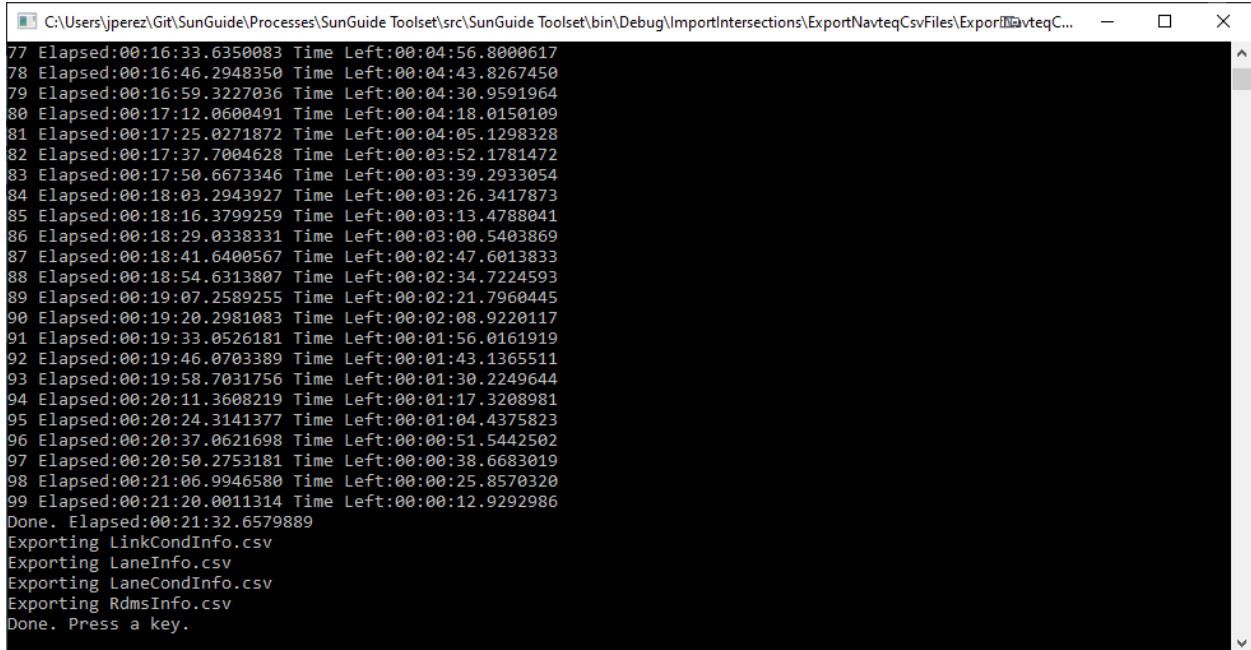


Figure 4-1 Generate Pre-Requisite Files

Once the “Run” button has been pressed, a command line window will open and begin executing the “ExportNavteqCsvFiles.exe” executable. Figure 4-2 shows a sample of the output from this executable running.

Note: This executable may take some time to complete. However, the executable it isn’t expected to be re-ran more than once per quarter to line up when new Navteq shapefiles are provided.



```
C:\Users\jperez\Git\SunGuide\Processes\SunGuide Toolset\src\SunGuide Toolset\bin\Debug\ImportIntersections\ExportNavteqCsvFiles\ExportNavteqC...
77 Elapsed:00:16:33.6350083 Time Left:00:04:56.8000617
78 Elapsed:00:16:46.2948350 Time Left:00:04:43.8267450
79 Elapsed:00:16:59.3227036 Time Left:00:04:30.9591964
80 Elapsed:00:17:12.0600491 Time Left:00:04:18.0150109
81 Elapsed:00:17:25.0271872 Time Left:00:04:05.1298328
82 Elapsed:00:17:37.7004628 Time Left:00:03:52.1781472
83 Elapsed:00:17:50.6673346 Time Left:00:03:39.2933054
84 Elapsed:00:18:03.2943927 Time Left:00:03:26.3417873
85 Elapsed:00:18:16.3799259 Time Left:00:03:13.4788041
86 Elapsed:00:18:29.0338331 Time Left:00:03:00.5403869
87 Elapsed:00:18:41.6400567 Time Left:00:02:47.6013833
88 Elapsed:00:18:54.6313807 Time Left:00:02:34.7224593
89 Elapsed:00:19:07.2589255 Time Left:00:02:21.7960445
90 Elapsed:00:19:20.2981083 Time Left:00:02:08.9220117
91 Elapsed:00:19:33.0526181 Time Left:00:01:56.0161919
92 Elapsed:00:19:46.0703389 Time Left:00:01:43.1365511
93 Elapsed:00:19:58.7031756 Time Left:00:01:30.2249644
94 Elapsed:00:20:11.3608219 Time Left:00:01:17.3208981
95 Elapsed:00:20:24.3141377 Time Left:00:01:04.4375823
96 Elapsed:00:20:37.0621698 Time Left:00:00:51.5442502
97 Elapsed:00:20:50.2753181 Time Left:00:00:38.6683019
98 Elapsed:00:21:06.9946580 Time Left:00:00:25.8570320
99 Elapsed:00:21:20.0011314 Time Left:00:00:12.9292986
Done. Elapsed:00:21:32.6579889
Exporting LinkCondInfo.csv
Exporting LaneInfo.csv
Exporting LaneCondInfo.csv
Exporting RdmsInfo.csv
Done. Press a key.
```

Figure 4-2 Export Navteq Csv Files Sample Output

Once, the “ExportNavteqCsvFiles.exe” executable has completed, it will prompt for the User to “Press any key”. After a key is press, the SunGuide Toolset will begin running the “NavteqIntersections.exe” executable. Figure 4-3 shows a sample of the output from this executable running.

Note: This executable may take some time to complete as well. It should also not be left unattended as there may be some user prompts displayed.



```
C:\Users\jperez\Git\SunGuide\Processes\SunGuide Toolset\src\SunGuide Toolset\bin\Debug\ImportIntersections\NavteqIntersections\NavteqIntersecti...
Using output files: e8b6aa30-05ae-4137-aab7-69439d1a7707.csv and e8b6aa30-05ae-4137-aab7-69439d1a7707.kml
Loading CSV data.
Analyzing data
```

Figure 4-3 Navteq Intersections Sample Output

While this executable is running, a prompt such as the one in Figure 4-4 may be displayed. This prompt can be safely ignored but it should be noted that it is due to an intersection having incompatible lane types in the Navteq data.

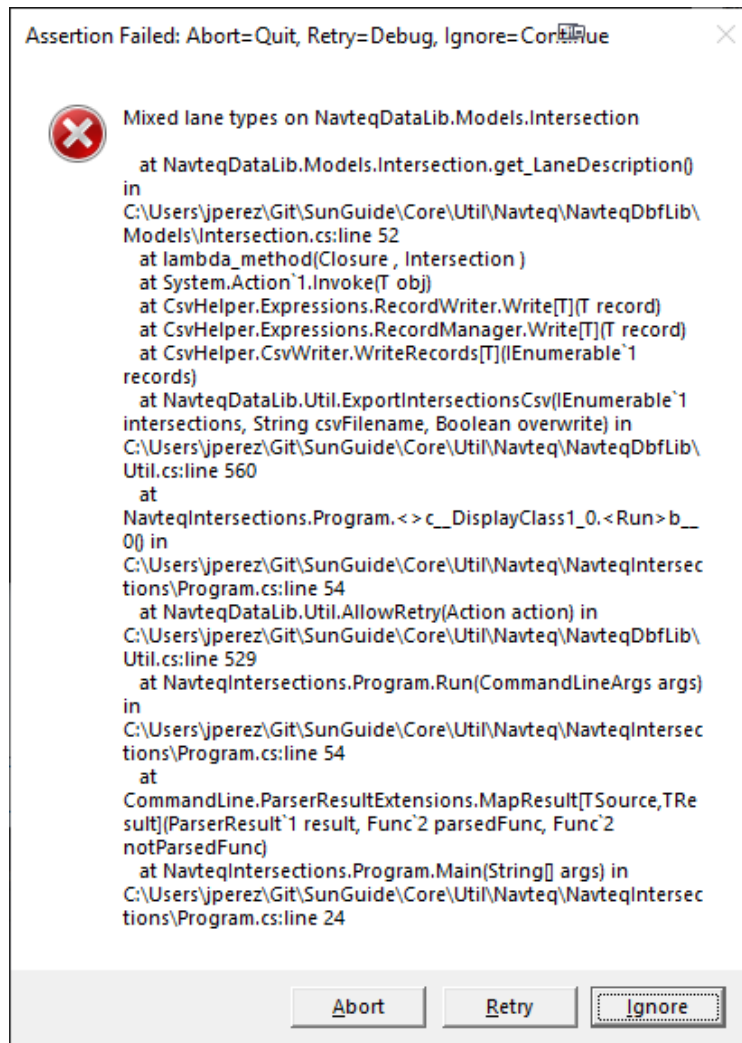


Figure 4-4 Incompatible Lane Types Prompt

Once both executables have completed, the “Run” button will be enabled again.

4.13.2 Create Intersection

Selecting this radio button will allow a user with permission to create and import intersections into the SunGuide system using the files generated in the “Generated Pre-Requisite Files” section. Figure 4-5 shows the window and the various options which will be needed be entered.

Fields available in this mode include:

- **SunGuide Config File:** Specifies the location of the SunGuide Config File.
- **User Name:** The user name to authenticate to the SunGuide system.
- **Password:** The password of the user to authenticate to the SunGuide system.
- **Connect:** Button enabled once the SunGuide Config File, User Name, and Password have been provided. Pressing this button will allow the SunGuide Toolset to authenticate to the SunGuide

system to retrieve EM Counties, Roadways, Lane Types, Reference Points, and Lane Mapping data. Furthermore, the arrows to the right of the button will begin to spin. Once completed, the arrows will stop spinning.

- **Intersection CSV File:** The CSV file generated by the “Generate Pre-Requisite Files” section.
- **County:** The County all intersections will be part of. This is populated after a connection has been established to the SunGuide system.
- **Roadway:** The Roadway of the Intersection. This combo box is populated once the Intersection CSV File has been loaded.
- **Direction:** The Direction to give to the Intersection(s) by default. This may be changed before the actual importing process.
- **Starting Intersection:** The Starting Cross Street to import from. This combo box is populated once the “Intersection CSV File” has been loaded.
- **Ending Intersection:** The Ending Cross Street to import to. This combo box is populated once the “Intersection CSV File” has been loaded.
- **Run:** Button is enabled once all the parameters have been specified.

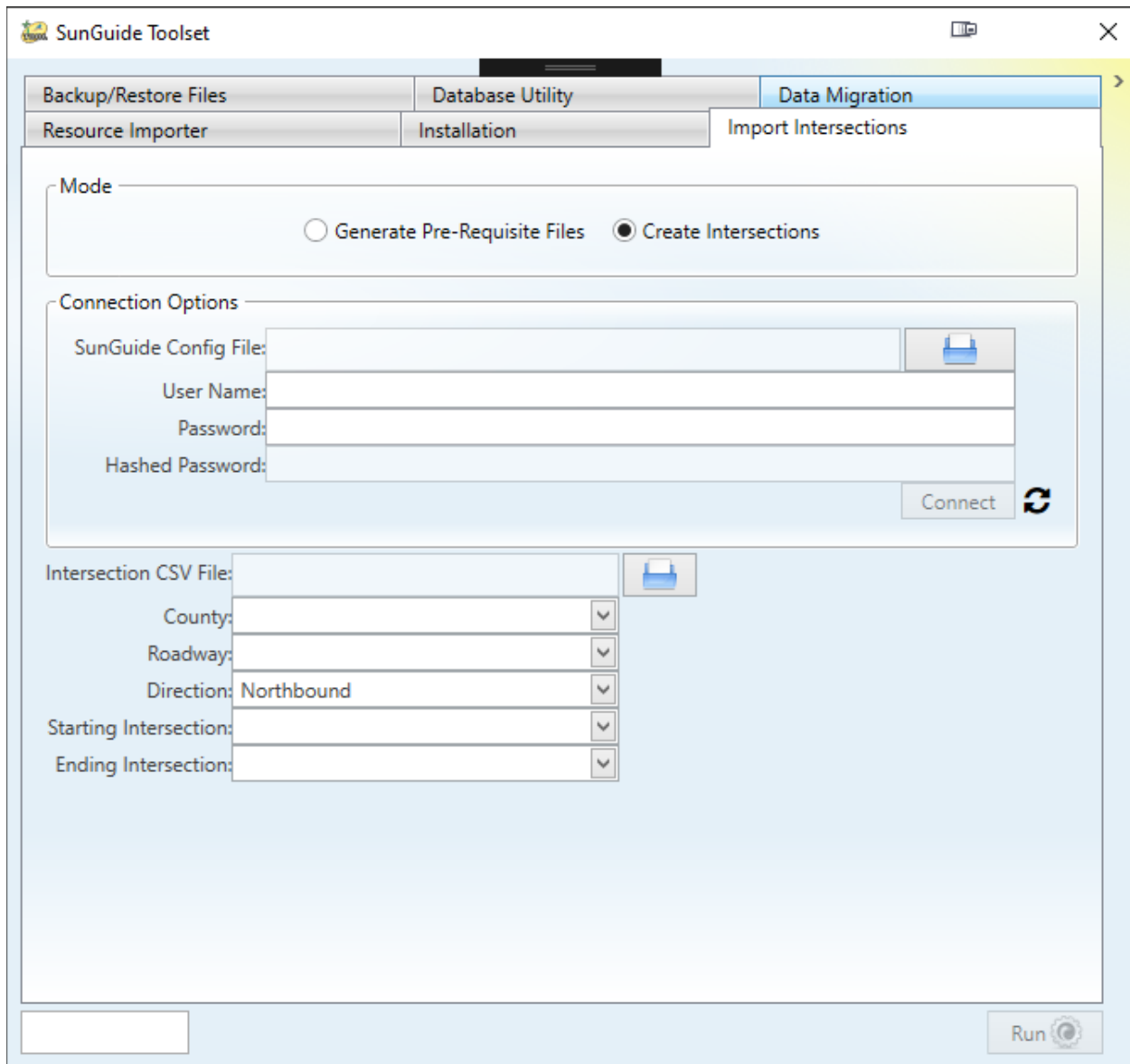


Figure 4-5 Create Intersections

Once the “Run” button has been pressed, the “Edit Intersections” dialog will appear. This dialog, as shown in Figure 4-6, is where a user may make alterations to the Intersection(s) prior to them being imported into the SunGuide system.

Fields and Options available include:

- **Delete:** Removes an Intersection from the Import Process.
- **Save:** Saves all edits and begins the Import Process into SunGuide.
- **County:** The county of where the Location will be associated with. This field is Editable.
- **Point:** The Latitude and Longitude of where the Intersection is at. This field is Not Editable.
- **Short Name:** The Short Name to give to this Location. This field is Editable.
- **Long Name:** The Long Name to give to this Location. This field is Editable.
- **Description:** The Description to give to this Location. This field is Editable.
- **Roadway:** The Roadway of the Cross Street. This field is Not Editable.

- **Direction:** The Direction of Travel on the Cross Street. This field is Editable.
- **Lanes:** Lanes of the Approach. The number, order, and type of Lanes are Editable.

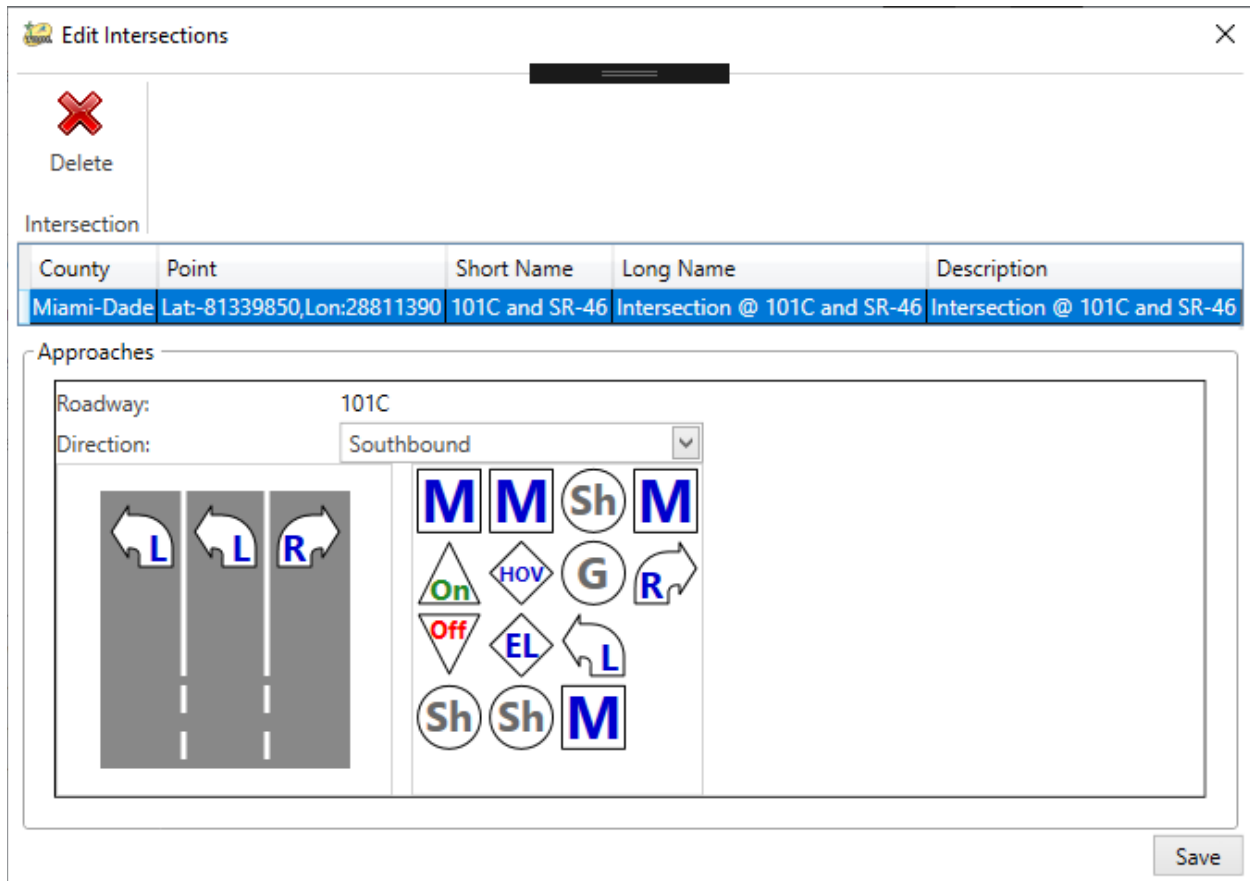


Figure 4-6 Edit Intersections

After the User presses the “Save” button, the SunGuide Toolset will begin the Import Process and create any necessary parent records which may not already exist in the system, such as: Roadways, Lane Map, Reference Point, and Location. All modifications/steps are noted in the logger for the Toolset as shown in Figure 4-7. Once all the import process has completed, the “Run” button will re-enable.

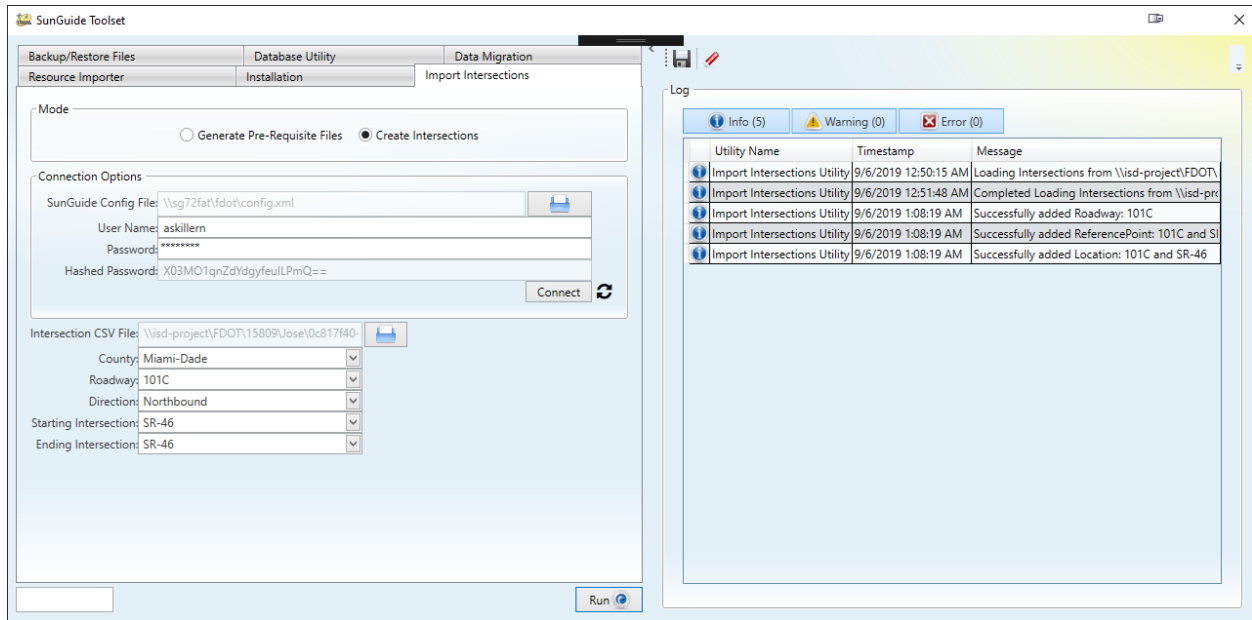


Figure 4-7 Import Intersections Logging