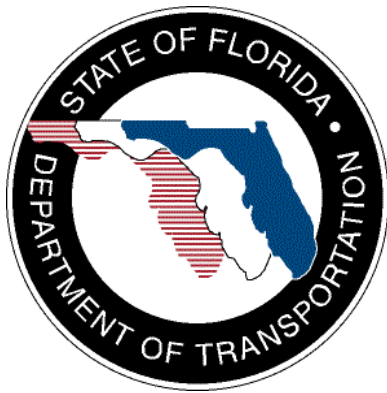


SunGuide®:

Version Description Document

SunGuide-VDD-6.0.0



Prepared for:

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John Brisco, SwRI	JSB	02/08/10
John Brisco, SwRI	JSB	03/25/10
John Brisco, SwRI	JSB	05/06/10
John Brisco, SwRI	JSB	05/07/10
John Brisco, SwRI	JSB	05/25/10
John Brisco, SwRI	JSB	06/16/10
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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
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
MAS.....	Message Arbitration Subsystem
MCP	Manual Control Panel
NTCIP	National Transportation Communications for ITS Protocol
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®
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)

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

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) SunGuide Support, Maintenance and Development Contract, contract number BDQ69, addresses the necessity of supporting, maintaining and performing enhancement development efforts to the SunGuide software. The SunGuide software was developed by the FDOT in a contract from October 2003 through June 2010. 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 and is deployed throughout the state of Florida. The SunGuide software is based on ITS software available from the state of Texas; with significant customization and development of new software modules to meet the needs of the FDOT. The following figure provides a graphical view of the SunGuide software:

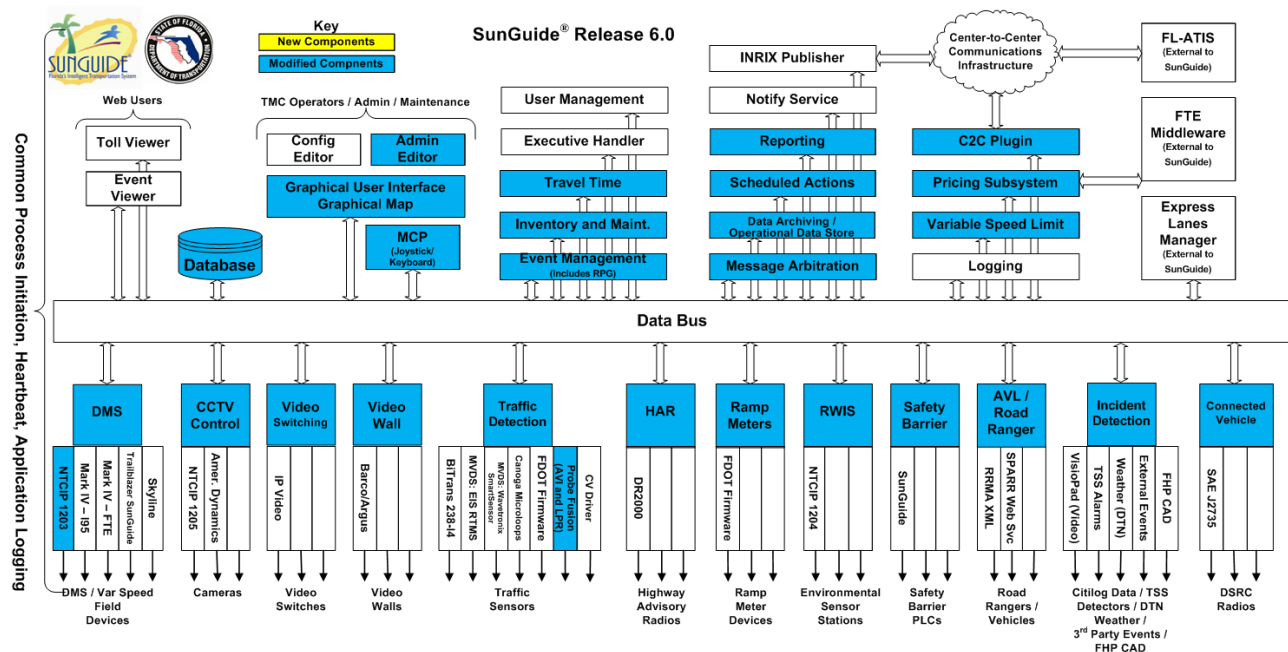


Figure 1-1 - High-Level Architectural Concept

The SunGuide development effort began in October 2003, six major releases have been developed and this document is addressing an incremental update of the fifth release of the software. After the development, the software will be deployed to a number of Districts and Expressway Authorities throughout Florida and support activities will be performed.

1.3 Related Documents

The following documents were used to develop this document:

- FDOT Scope of Services: *BDQ69, Standard Written Agreement for SunGuide Software Support, Maintenance, and Development, Exhibit A: Scope of Services*. July 1, 2010.
- Notice to Proceed: Letter to SwRI for BDQ69, July 1, 2010
- Letter of Authorization 001: Letter to SwRI for BDQ69, July 1, 2010.
- Letter of Authorization 002: Letter to SwRI for BDQ69, August 3, 2010.
- Letter of Authorization 003: Letter to SwRI for BDQ69, August 19, 2010.
- Letter of Authorization 004: Letter to SwRI for BDQ69, October 20, 2010.
- Letter of Authorization 005: Letter to SwRI for BDQ69, November 9, 2010.
- Letter of Authorization 006: Letter to SwRI for BDQ69, June 28, 2011.
- Letter of Authorization 007: Letter to SwRI for BDQ69, December 22, 2011.
- SunGuide Project website: <http://sunguidesoftware.com>

1.4 Contacts

The following are contact persons for the SunGuide software project:

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- Robert Heller, SwRI Project Manager, rheller@swri.org, 210-522-3824
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2. Version Description

2.1 Inventory of Materials

This version of SunGuide includes the following items:

- SunGuide Installation Package Version 6.0.0 on DVD-ROM
- SunGuide Source Code Version 6.0.0 on CD-ROM
- SunGuide Documentation Version 6.0.0 on DVD-ROM

The Documentation item is provided in a folder named "Documentation" on the Installation DVD, and it includes the following documents:

- Installation Notes, Version 6.0.0

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 XP Professional Version 2002 with Service Pack 3, Copyright © Microsoft Corporation 1985-2002
- Microsoft® Windows 7 Professional Version , Copyright © Microsoft Corporation 1985-2010
- Microsoft® Visual Studio 2010, Copyright © Microsoft Corporation 2010
- Microsoft® Platform SDK, Windows Server 2003 SP1 Release, Copyright © Microsoft Corporation 2005
- Microsoft® Platform SDK, Windows Server 2008 Release, Copyright © Microsoft Corporation
- NetToolWorks SNMP for .NET Version 1.4.2, Copyright © 2002 - 2004 NetToolWorks, Incorporated
- Pegasus Imaging CapturePRO Version 3, Copyright © 1997 – 2004 Pegasus Imaging Corporation
- Macrovision Corporation InpreparingstallShield® Version 2011, Copyright © 2011
- SharpMap V2 (Open Source mapping library)
- Navteq Map Data, May 2009
- Business Objects Crystal Reports Version 13.0, Business Objects SA
- Microsoft SQL Server Native Client 11.0
- Editors 2011.1 for WPF, Copyright ©2011 Actipro Software LLC

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>
Activu SunGuide Service.exe	The Activu Video Wall Driver service
ASN_200911_WIN32.dll	Libraries to decode messages between the Roadside Equipment (RSE) and the CVS Driver.
ASN_200911_WIN32_MGDL IB.dll	
ASN_VIIPOC_WIN32.dll	
ASN_VIIPOC_WIN32_MGD LIB.dll	
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.
BiTran238Driver.exe	The BiTrans B238 I4 protocol driver 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.
CvsLibrary.exe, CvsLibrary.dll	The Connected Vehicle Subsystem (CVS) service and support assembly
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 Databus Subsystem service and supporting assembly.
DMSPolling.exe	Polls signs on a frequency specified by the parameters given.
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.
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.
GuiMgrService.exe, GuiMgrLib.dll	Graphical User Interface (GUI) preference manager process and supporting assembly.
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.
IdsService.exe, IdsDataLib.dll IdsLib.dll	The Incident Detection Subsystem (IDS) service and supporting assemblies.
ImsService.exe, ImsLib.dll	The Inventory Maintenance Subsystem service and supporting assembly.
InrixService.exe, InrixLib.dll, InrixDataLib.dll, C2cSharedLib	The INRIX Publisher service and supporting assemblies.
J2735DriverLib.dll, J2735DriverSvc.dll	The CVS driver and support assembly

<u>Application</u>	<u>Description</u>
JupiterVwdService.exe, JupiterVwdLibrary.dll,	The Jupiter Video wall service and support assembly.
IpVideoSwitchSvc.exe, IpVideoSwitchLib.dll	The IP Video Switching Driver service and supporting 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.
NtcipCctvDriver.exe	The NTCIP 1205 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.
PsService.exe, PsLib.dll, TollInterfaceLib.dll	The I-95 Express Lanes Pricing Subsystem and supporting assemblies.
RampMeterService.exe	The Ramp Metering Subsystem service.
Rms170DriverSvc.exe, Rms170DriverLib.dll	The BiTran170 RMS Driver service and supporting assembly.
RRXMLDriverService.exe, RRXMLLib.dll	The Road Ranger Driver service synchronizes information with mobile data collection and display devices.
RsService.exe, RsLib.dll	The Performance Measures Reporting subsystem service and supporting assembly.
RtmsDriverSvc.exe, RtmsDriverLib.dll	The Remote Traffic Monitor Sensor Driver service and supporting assembly.
RwisService.exe, RwisLib.dll	The Roadside Weather Information subsystem service and supporting assembly.
RwisDriverSvc.exe, RwisDriverLib.dll	The Roadside Weather Information Driver service and supporting assembly.
SasService.exe, SasLib.dll	The Scheduled Actions Subsystem service and supporting assembly.

Application

Description

**SbDriverSvc.exe,
SbDriverLib.dll**

The Safety Barrier Driver service and supporting assembly.

**SbAlarmDriverSvc.exe
SafetyBarrierLib.exe**

The Safety Barrier Alert Driver service and supporting assembly.

**SbService.exe,
SafetyBarrierLib.dll**

The Safety Barrier Subsystem service and supporting assembly.

**GZipEncoder.dll
SPARRDriverService.exe,
SPARRLib.dll,
SPARRWebServiceLib.dll**

The AVL Smart Phone Application for Road Rangers (SPARR) Driver service allows smart phone to interface with the AVL subsystem.

**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.

**TvtService.exe,
TvtLib.dll**

The Travel Time Subsystem service and supporting assembly.

**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.

**VslService.exe,
VslLib.dll**

The Variable Speed Limit (VSL) subsystem service and supporting assembly.

**VsService.exe,
VsLib.dll**

The Video Switching Subsystem service and supporting assembly.

**VwsService.exe,
VwsLibrary.dll**

The Video Wall Subsystem service and supporting assembly.

**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.

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>
EmLib.dll	The Event Management business logic assembly; used by EM and AVL.
FDOT.ExecClientLib.dll	This assembly contains a class used by managed code clients to interact with the Executive Handler server; installed to the Global Assembly Cache (GAC).
FDOT.ItsGenericLibrary.dll	This assembly contains the classes that define the generic subsystem components used by most of the SunGuide applications; installed to the GAC.
FDOT.StatusLogClientLib.dll	This assembly contains a class that implements a Status Logger client object using only managed code; installed to the GAC.
IdsDataLib.dll	IDS common data assembly; used by IDS and its drivers.
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 Logging

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

<u>Application</u>	<u>Description</u>
StatusLogger.cpl	The Status Logger configuration control panel applet.
FDOT.StatusLoggerDll.dll	The Status Logger dynamic link library 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.

2.2.2.4 Executive Handler

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

<u>Application</u>	<u>Description</u>
FDOT.ExecHandlerDll.dll	The Executive Handler dynamic link library containing Executive Handler server access support.
ExecHandlerEditor.exe	This application edits the list of processes managed by the Executive Handler server.
ExecHandlerSvc.exe	The Executive Handler server application.
ExecHandlerViewer.exe	The Executive Handler viewer application.

2.2.2.5 Notify Manager

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

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

2.2.2.6 Configuration File Editor

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

<u>Application</u>	<u>Description</u>
AbstractComponentFactoryFramework.dll	The Config Editor dynamic link library containing classes that encapsulate ESRI MapObjects components.
AbstractComponentFramework.dll	The Config Editor dynamic link library containing classes that generate NTCIP MULTI messages.
ConfigEditor.exe	The Configuration File Editor application.
Editors.dll	The Config Editor dynamic link library containing classes that
UIToolset.dll	The Config Editor dynamic link library containing classes that
Validator.dll	The Config Editor dynamic link library containing classes that

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>
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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.
Preprocessor.exe	Processes configuration information.

2.2.2.8 Toll Viewer

The components of the Toll Viewer application for the I-95 Express Lanes system include:

<u>Application</u>	<u>Description</u>
TollViewer.dll, SortControl.dll	The Toll Viewer web application assemblies; provides GUI functionality.
TollViewerSvc.dll	The Toll Viewer web service assemblies; handles database access for web application.
TollViewerLib.dll	Database access assembly shared by Toll Viewer web app and web service.

2.2.2.9 Jar Files

The following Jar files make up the subsystems as indicated.

<u>Jar File</u>	<u>Subsystem</u>	<u>Description</u>
activation.jar	common	Java class for activation of a subsystem.
Comm.jar	common	Java low level communications and modem package.
Jaxen-full.jar	common	Java API for XML messaging.
Jdom.jar	common	Java class for performing XML DOM parsing.
Joesnmp-0.2.6.jar	common	Java SNMP interface for IM notification.
Log4j.jar	common	Java class for interface to Status Logger Event logging.
Mail.jar	common	Java mail class for IM notifications.
Ojdbc14.jar	common	Oracle JDBC interface class.
Resolver.jar	common	Java Apache Resolver class.
Saxpath.jar	common	Java XML SAX parser.
Statuslogger.jar	common	Java class that implements Status Logger client.
Util.jar	common	Java class for collected utilities.
Velocity-dep-1.3.1.jar	common	Java Apache Velocity engine for producing mail message output for IM.
xercesImpl.jar	common	Java Xerces parser.
Xml-apis.jar	common	Java communications API for RS-232C and IEEE 1284 (unused) communications.

<u>Jar File</u>	<u>Subsystem</u>	<u>Description</u>
NtcipCctvDD.jar	CCTV	Java NTCIP 1205 (CCTV) camera driver.
Converter.jar	DMS	Java class that converts XML documents to java transactions.
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.
UserInterface.jar	DMS	Java user interface developed for TxDOT not used in SunGuide.
XmlInterface.jar	DMS	Java DMS XML interface.
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.

2.2.2.10 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.

2.2.2.11 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.

2.2.2.12 Database Models and Creation Scripts

<u>File</u>	<u>Description</u>
SunGuide_Model-LOGICAL.erwin	Logical database model for SunGuide including tables and the relationships between them.

SunGuide_Model-ORACLE-PHYSICAL.erwin	Oracle physical database model for SunGuide containing database specific information such as tablespaces, base dataset, and indexes.
SunGuide_Model-SQL Server-PHYSICAL.erwin	SQL Server physical database model for SunGuide containing database specific information such as tablespaces, base dataset, and indexes.
Oracle_Sunguide.fet	File used to format views used during the database script creation process.
oracle_sg_scripts.ddl	Script used to create a blank SunGuide database in Oracle including the base dataset required to operate SunGuide.
create_sunguide_sqlserver.ddl	Script used to create a blank SunGuide database in SQL Server including the base dataset required to operate SunGuide.
createSqlServerDb.bat	Batch file used to call the "create_sunguide_sqlserver.ddl" during the blank database creation process.

For additional discussion on generating scripts, please see the Notes section of the document.

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 2011 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 "smartNavaigation" 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/relogin 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 SortOrder field on all EM dialogs. (No FP Issue)
 - Added validation of 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 rcvd regarding SG Release 3 TERL issues list #14)
 - Distance and destination issues were addressed. (E-mail rcvd 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 accommodate 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)
- Databus:
 - 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 dropdownlist 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 freeflow 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)
 - Databus:
 - 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)
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- 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)
- Databus
 - Fixed subsystem reconnection problem on Databus restart (Issues #732, #700)
- DMS
 - Fixed pixel error test timeout in NTCIP driver (Issue #699)
 - Fixed disappearance of message library on rename (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 Road Range 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

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- 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)
- Javascript error when attempting to set the Ramp Metering Time of Day tables (Issue #939)
- XML validation error between RRXMLDriver 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 webiste. (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 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 databus 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 shutdown 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)
 - Databus revisions:
 - Incorporated TxDOT databus 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 Startp 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 databus 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 TurnpikeSpur (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 and 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 (FP 1583)
 - 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 take into account closures of the shoulders and previous blockages when calculates 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)
- Autosize 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 Lauouts for Vitual 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 improv'd 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 trafficSpeedData (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)
 - Juptier 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 webste 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 activites 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)
- 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 Oracle and 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)

3. 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.

3.1 Installation Overview

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

- Backing up existing SunGuide servers (see Section 3.2)
- Prepare the SunGuide servers (see Section 3.3)
- Install the database (see Section 3.5)
- Install Crystal Reports run-time software (see Section 0)
- Install the application software (see Section 3.7)
- Install and Configure the Center-to-Center software (see Section 3.8)
- Configure the system (see Section 0)

3.2 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
- ipvideodevices.xml* – provides model specific settings for video encoding and decoding devices
- SnapshotDevices.xml* - defines video capture devices and corresponding IP video decoder devices
- OMInterface.dll.config – operator map client configuration settings
- Center-to-Center Infrastructure web.config files – configuration for C2C Infrastructure
- FL-ATIS_FloodGate_Data.xml – contains the floodgate message "slot" configuration data used by the Floodgate GUI

*These files will reside on ALL servers configured to run the IpVideoSwith Driver

3.3 Minimum Platform Requirements for Application Servers

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

1. Microsoft's Server OS is recommended. SunGuide has been tested against both Microsoft Server 2003 SP1 and higher, as well as Microsoft Server 2008.

3.4 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. Install the Oracle database client and update the "tnsnames.ora" file. (Please refer to section 3.4.1.2)
3. Verify connectivity to the database from each SunGuide application server. On each server, give NETWORK_SERVICE, or whichever account is used by IIS, full permissions to the Oracle folder, propagated recursively using the Advanced button in the Sharing and Security dialog.
4. 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.
5. Copy the XML schema files to the SunGuide share point.
6. 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.
7. 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.
8. Ensure that the Windows .NET 4.0 Framework is installed. The presence of the .NET 2.0 version can be checked by examining the contents of the "Windows\Microsoft.NET\Framework" directory on the system drive for a subfolder with a name that begins with "v4.0.30319". If the newer version of the framework does need to be installed, an installation utility named "dotNetFx40_Full_setup.exe" for .NET 4.0 is freely available from Microsoft; it is also included with the installation media in the "Setup" folder.
 - a. **DO NOT INSTALL .NET 4.5. The presence of .NET 4.5 can be verified through the Add/Remove Programs dialog. This cannot be verified via the "Windows\Microsoft.NET\Framework" directory. If this is installed, the Operator Map will appear to be functional but will have small defects that are not present with .NET 4.0.**
9. Ensure that the Windows Visual C (VC) for Visual Studio 2010 runtime is installed. The presence of the VC10.0 runtime can be checked by examining the contents of the "Windows\WinSxS" directory on the target system for subdirectories containing "VC90" and "9.0.30729.4974" in the name. If the VC10.0 runtime does need to be installed, an installation utility named "vcredist_x86.exe" for Version 10.0 is freely available from Microsoft; it is also included with the installation media in the "DotNet2" folder.
10. If the AVL/RR subsystem or the C2C plug-in will be installed on the target system, the Navteq map data must be located on a file share accessible by the applications.
11. If the Reporting subsystem application will be installed on the target system or ODS reporting will be performed from the target system, Crystal Reports Version 11.5 will need to be installed on the target system (the software should be installed with the "default" values provided by the installer). The Reporting subsystem uses pre-configured

Crystal Reports template files. The SunGuide installer can install a set of template files to a selectable location, but the latest version of the templates should be requested from the FDOT CO and installed manually instead of or replacing the files from the installer. Ensure that the <rs> section in the config.xml file points to the report templates and exported reports folders appropriately, that they exist, and have appropriate permissions and folder shares set. Both folders and shares should have administrative and sunguide service account full access, and the report templates should be shared to these and admin editor users, and everyone should have read access to the exported reports folder and folder share.

- a. If intending to run a SQL Server database, please install the Microsoft SQL Server Native Client 11.0.
12. Ensure that IIS and ASP.NET 4.0 are installed and enabled on each server that will host a webserver application (e.g. OperatorMap, Webserver).
13. Install SunGuide Software using SunGuideInstall.exe (see Section 0).
14. On the SunGuide application server that will be running the Status Logger the Status log directory, host and port settings must be set:
 - a. Directory: c:\Status Log
 - b. Host/Port: 127.0.0.1:8000
15. On the SunGuide application server running Executive Handler, set the primary port to 8001.
16. In the location that the OperatorMap web application is installed, edit the "OMInterface.dll.config" file appropriately. These edits include server locations, floodgate message configuration file name and location, and map tiles location. The map tiles 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 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.
17. From the IIS manager, ensure that the SunGuideAdmin application is running ASP.NET 4.0.
18. Ensure that the ASP.NET 4.0 and Active Server Pages web extensions are enabled in IIS.

3.5 SunGuide Database Installation

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

3.5.1 Oracle Installation

This section does not replace the detailed instructions published by Oracle for the installation of Oracle 11g server and client. These instructions only describe the highlights and are really for persons experienced with installing Oracle products. Stop all Oracle services running (if any); these services should be set so that they do not start automatically. It is helpful if all previous

Oracle installations are removed using the appropriate Oracle installer. Remove empty Oracle directories from previous installations.

3.5.1.1 Install Oracle Server Software

The Oracle server software should be installed on every server that will host the SunGuide database. It is recommended to use Oracle 11.2; however Oracle 11.1.0.7 will also be sufficient to run SunGuide.

If server does not have a static IP address, install the Microsoft Loopback Adaptor:

- Install hardware
- Choose from list
 - Network adaptors
 - Microsoft
 - Loopback Adaptor
- Configure Microsoft Loopback adaptor
 - Static IP address 192.168.x.x (1 < x < 255)
 - Network mask 255.255.255.0

Installation of Oracle server software:

- Install as a user with local administrator rights.
- Choose directories (recommend using the default, on local drive)

3.5.1.2 Install Oracle Client

The latest version of the Oracle 11.2 client software must be installed on all servers within the SunGuide system. (Note that the Oracle 11.2 client is backwards compatible with Oracle version 11.1.0.7 and later.) The client can be found on the SunGuide Release 5.1 distribution media. Ensure the .NET 2.0 and .NET 4.0 Frameworks are installed before installing the Oracle client.

- Install as a user with local administrator rights.
- Choose directories (recommend using the default)

Oracle network configuration assistant

- Do not configure another listener
- Configure local names
 - Database name
 - Host name or IP address or localhost or loopback address
 - Test it using "SYSTEM/floridad0t" credentials

When complete, ensure the OracleDataAccess.dll has successfully been placed in the GAC.

3.5.1.3 SunGuide Database Creation

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

3.5.1.4 Create the database container

The SunGuide database container must be created and prepared for the import of data from a starter database.

Oracle database configuration assistant:

- Create a new database
- Choose appropriate storage mechanisms and locations
- Database name needs to be chosen (D1SG, D2SG, ...MDXSG,...) limited to 8 characters not case sensitive
- Select "floridad0t" for password to "SYSTEM" and "SYS" users
- Suggested resource assignments for the database:
 - (11G) Set the memory resource slider to approximately 50%
 - Set Processes parameter to at least 300
 - Set Open_Cursors parameter to at least 1000
 - Set Sga_max_size parameter to 264241152
 - Set Shared_pool_size parameter to 167772160

Oracle network configuration assistant:

- Configure a TCP listener on port 1521 (default)
- Configure local names
 - Database name
 - Host name or IP address or "localhost" or loopback address
 - Test it using the "SYSTEM" user ID and its password

3.5.1.5 Create the SunGuide tablespaces

SunGuide requires named tablespaces for both of the SunGuide schemas: FDOT_OWN and FDOT_ODS. The following tablespaces should be created:

FDOT_OWN

- SUNGUIDE
- SUNGUIDE_IDX

FDOT_ODS

- ODS
- ODSIDX
- ODSTRD
- ODSTRDIDX
- ODSTLPD
- ODSTLPDIDX
- ODSTTI
- ODSTTIIDX
- ODSTAGS
- ODSTAGSIDX

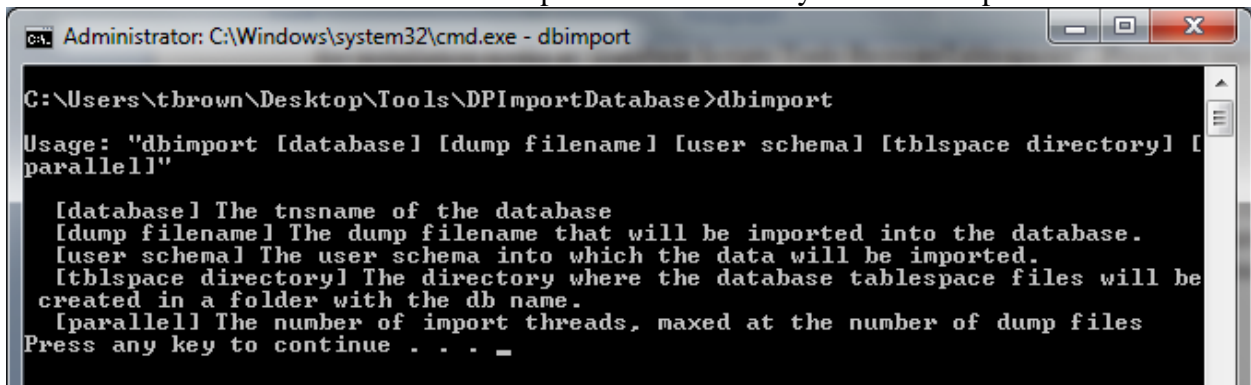
A callable batch file and SQL scripts for creating the tablespaces appropriately may be found on the installation media at "Database Scripts\Tools\RecreateTablespaces". Please be sure to check the log file for errors after use.

3.5.1.6 SunGuide Data Importing/Exporting

Once the SunGuide container is created, it must be loaded with the appropriate data. This data is usually loaded using one of the Oracle import tools. The database tools are located on the installation media in the folder "DB Tools". The following sections describes each scripts purpose and how it is to be used.

3.5.1.7 DataPump Import

Within the DPImportDatabase folder there a batch file called "dbimport.bat". Running the bat file from the command line will show the parameters necessary to run the export.



```
Administrator: C:\Windows\system32\cmd.exe - dbimport
C:\Users\tbrown\Desktop\Tools\DPImportDatabase>dbimport
Usage: "dbimport [database] [dump filename] [user schema] [tblspace directory] [parallel]"
[database] The tnsname of the database
[dump filename] The dump filename that will be imported into the database.
[user schema] The user schema into which the data will be imported.
[tblspace directory] The directory where the database tablespace files will be
created in a folder with the db name.
[parallel] The number of import threads, maxed at the number of dump files
Press any key to continue . . . _
```

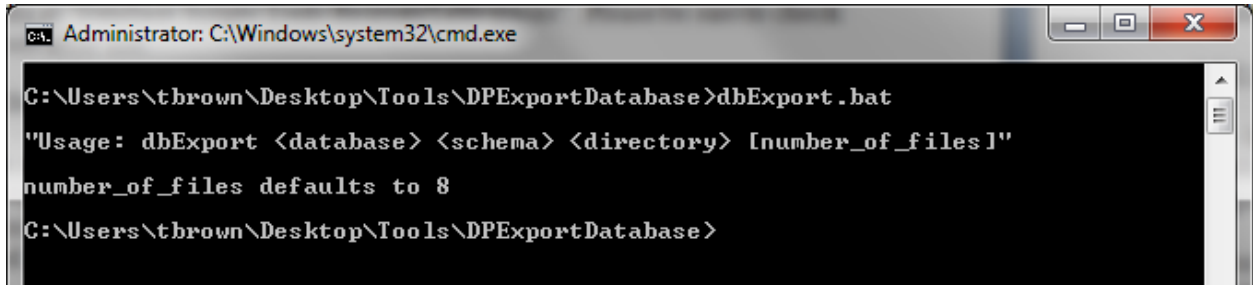
Parameters:

- database: the tnsname of the database
- dump filename: The dump filename that will be imported into the database
- use schema: The user schema into which the data will be imported (FDOT_OWN, FDOT_CVS, or FDOT_ODS)
- tblspace directory : The directory where the database tablespace files will be created in a folder with the database name
- parallel: number of import threads, maxed at the number of dump files

Once the correct parameters are entered, the script will import the dump files into the Oracle database. If prompted with a "SQL>" prompt, type "exit" and the script will continue with the next steps. Also note that the import script calls the Recreate Synonyms, Rebuild Indexes, and Recreate Tablespaces scripts defined below.

3.5.1.7.1 DataPump Export

Within the DPExportDatabase folder there a batch file called "dbExport.bat". Running the bat file from the command line will show the parameters necessary to run the export.



```
Administrator: C:\Windows\system32\cmd.exe
C:\Users\tbrown\Desktop\Tools\DPEExportDatabase>dbExport.bat
"Usage: dbExport <database> <schema> <directory> [number_of_files]"
number_of_files defaults to 8
C:\Users\tbrown\Desktop\Tools\DPEExportDatabase>
```

Parameters:

- database: the tnsname of the database
- schema: Schema to export (FDOT_OWN, FDOT_CVS, or FDOT_ODS)
- directory : folder location on the file system where the export should be written.If spaces are present in the file path, the entire file path must be quoted.
- Number_of_files (optional): number of files to break the export into

Once the correct parameters are entered, the script will export the Oracle database into dump files. If prompted with a “SQL>” prompt, type “exit” and the script will continue with the next steps.

3.5.1.8 SunGuide Blank Database

Once the SunGuide container is created, instead of importing a populated database, the database may be populated using the minimum data set required to run SunGuide. To populate the blank database, locate the oracle_sg_scripts.ddl file from the installation media in the Models\Creation Scripts\Oracle folder.

Open a sqlplus prompt, connect to the database as the SYSTEM user, and run the DDL file from above. The script will prompt for locations where the tablespaces should be created. Ensure the locations provided exist on the database server.

Once the scripts has completed, check the output log to ensure no errors have occurred.

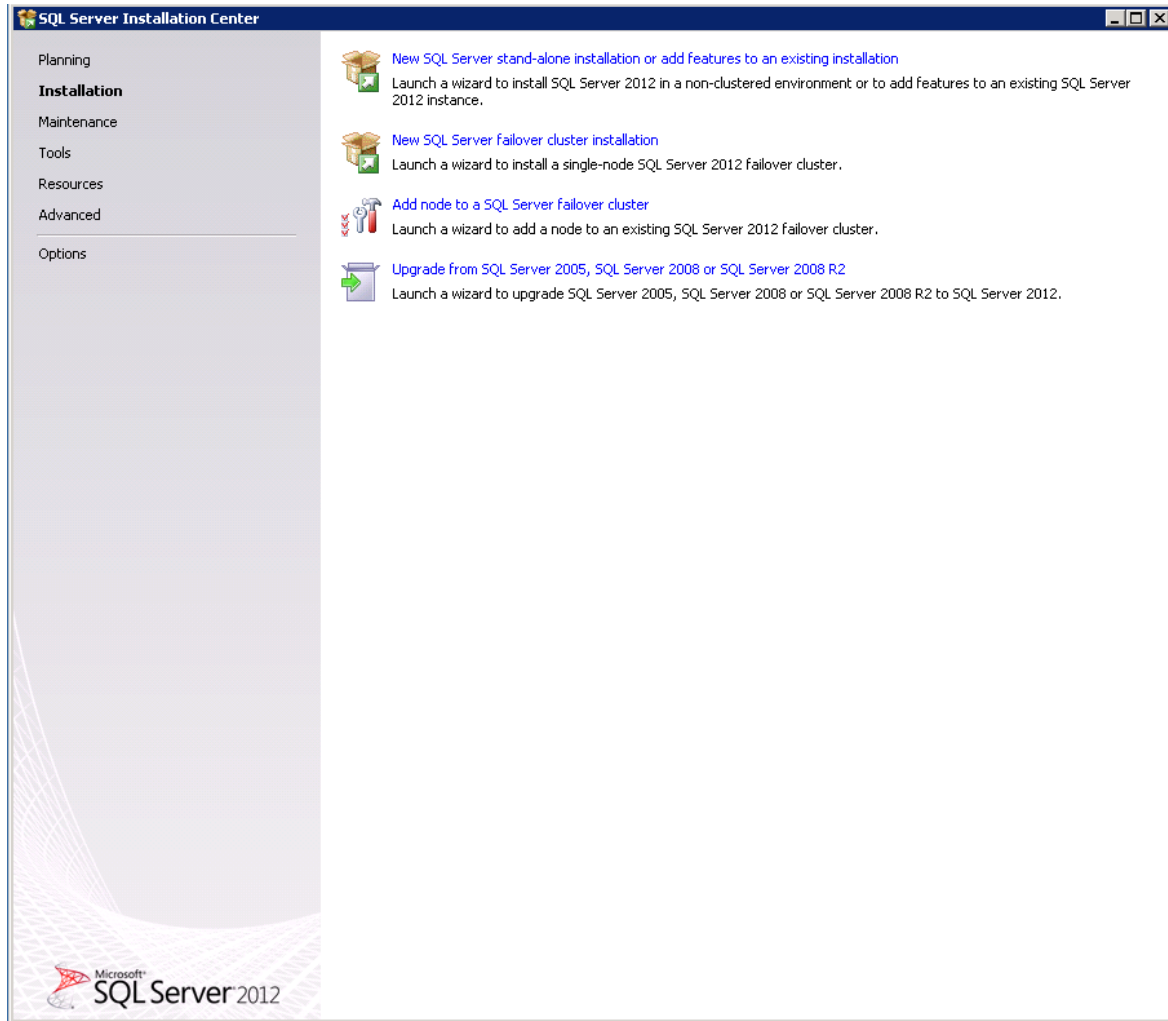
3.5.2 SQL Server 2012 Installation

This section does not replace the detailed instructions published by Microsoft for the installation of SQL Server 2012. These instructions only describe the highlights and are really 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.

3.5.2.1 Install SQL Server Software

The SQL Server software should be installed on every server that will host the SunGuide database. It is recommended that SQL Server 2012 be installed however SQL Server 2008 is supported.

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

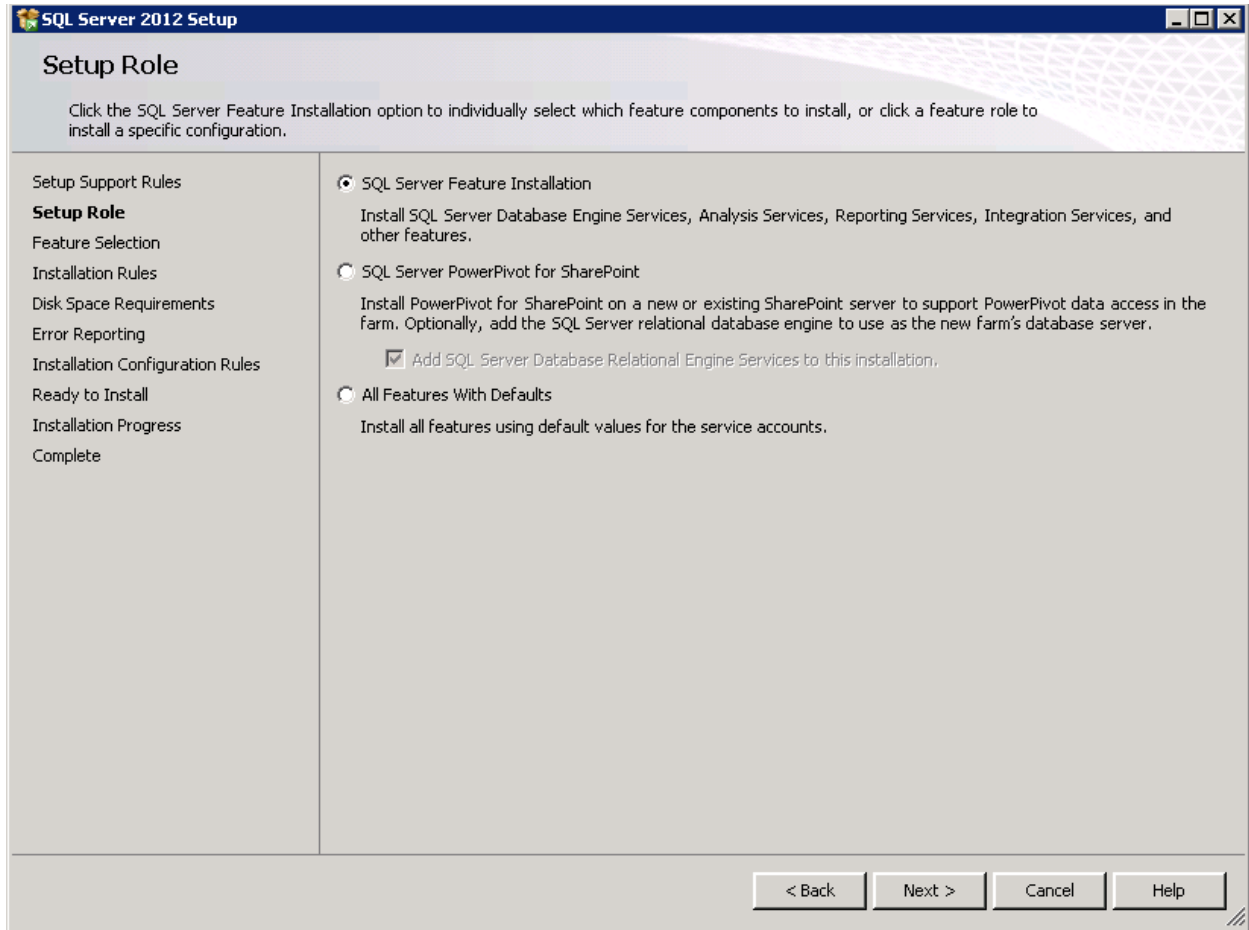


Select OK.

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

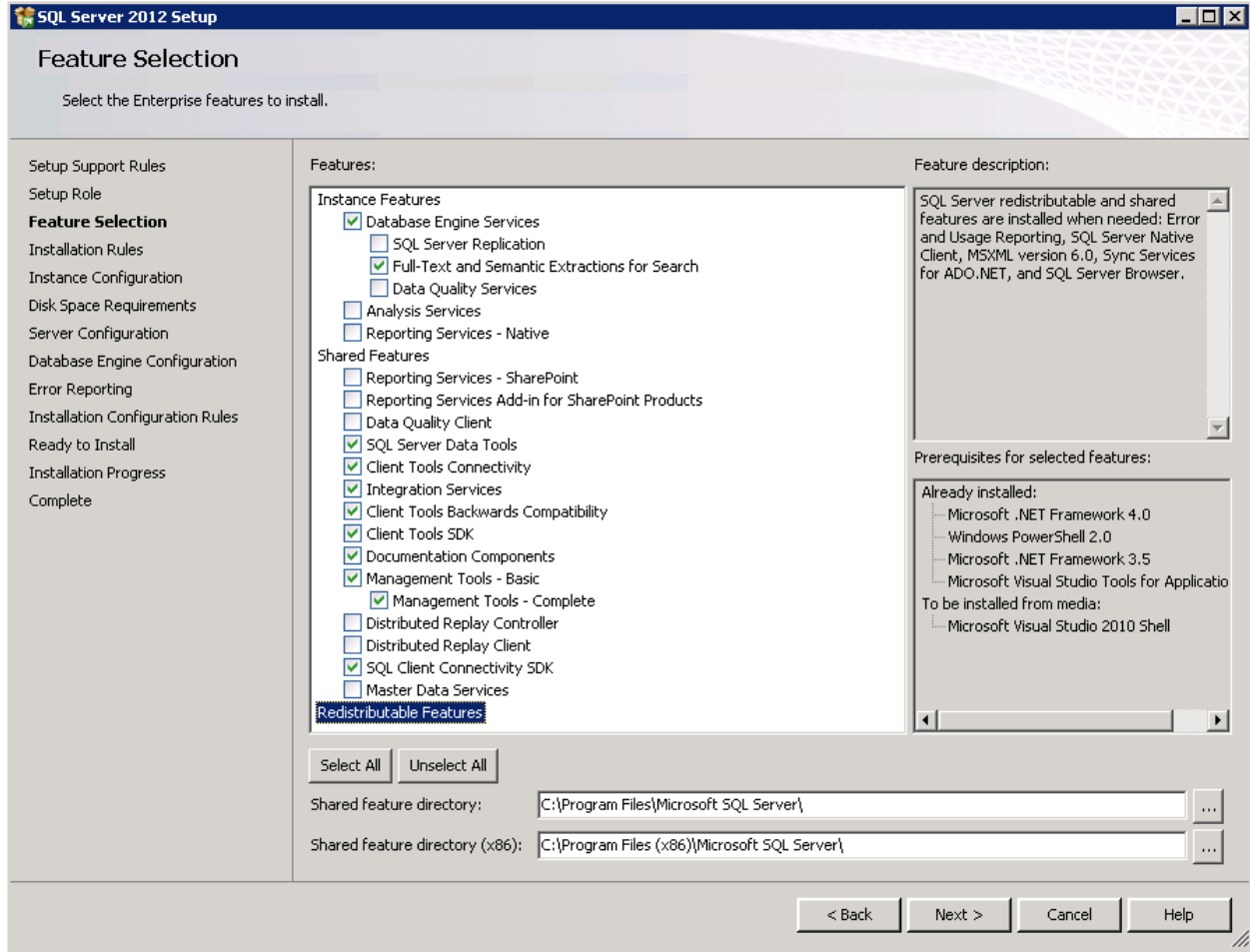
After checking for updates and creating the setup files, select Install.

Select the SQL Server Feature Installation as seen below.



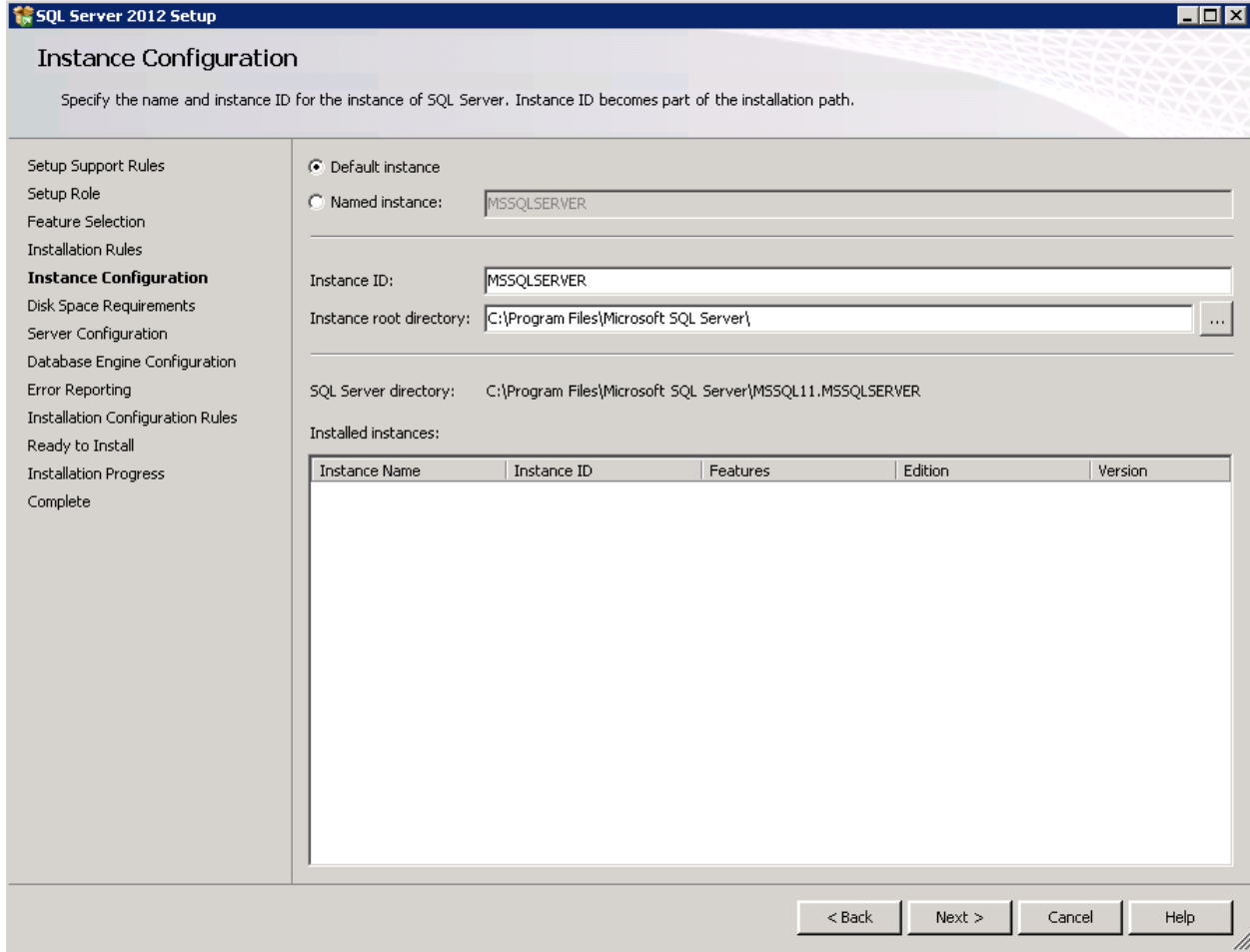
Select Next.

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 and after checking installation rules, select Next.

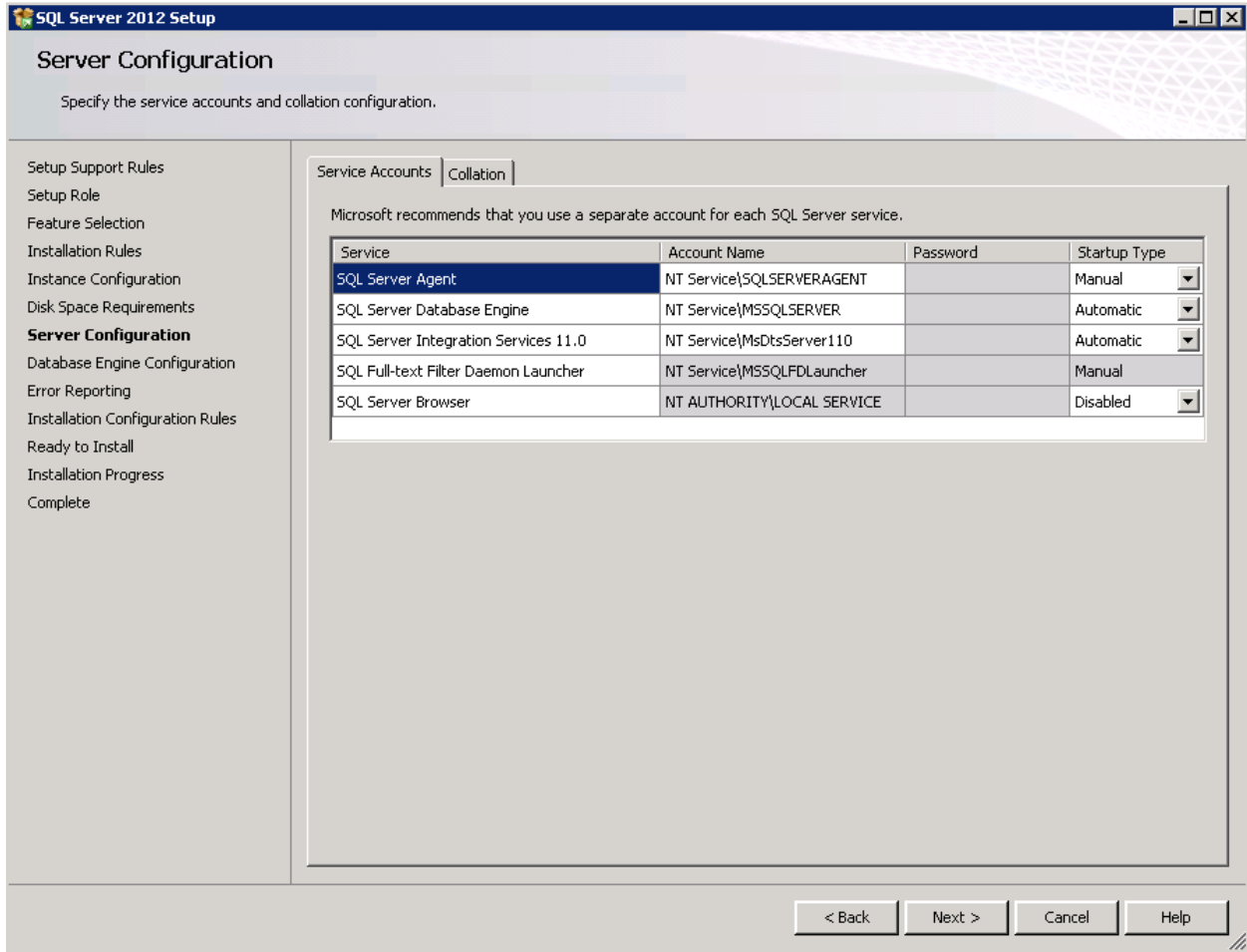
On the dialog below, set the instance name and set the root directory for the instance. The default is acceptable.



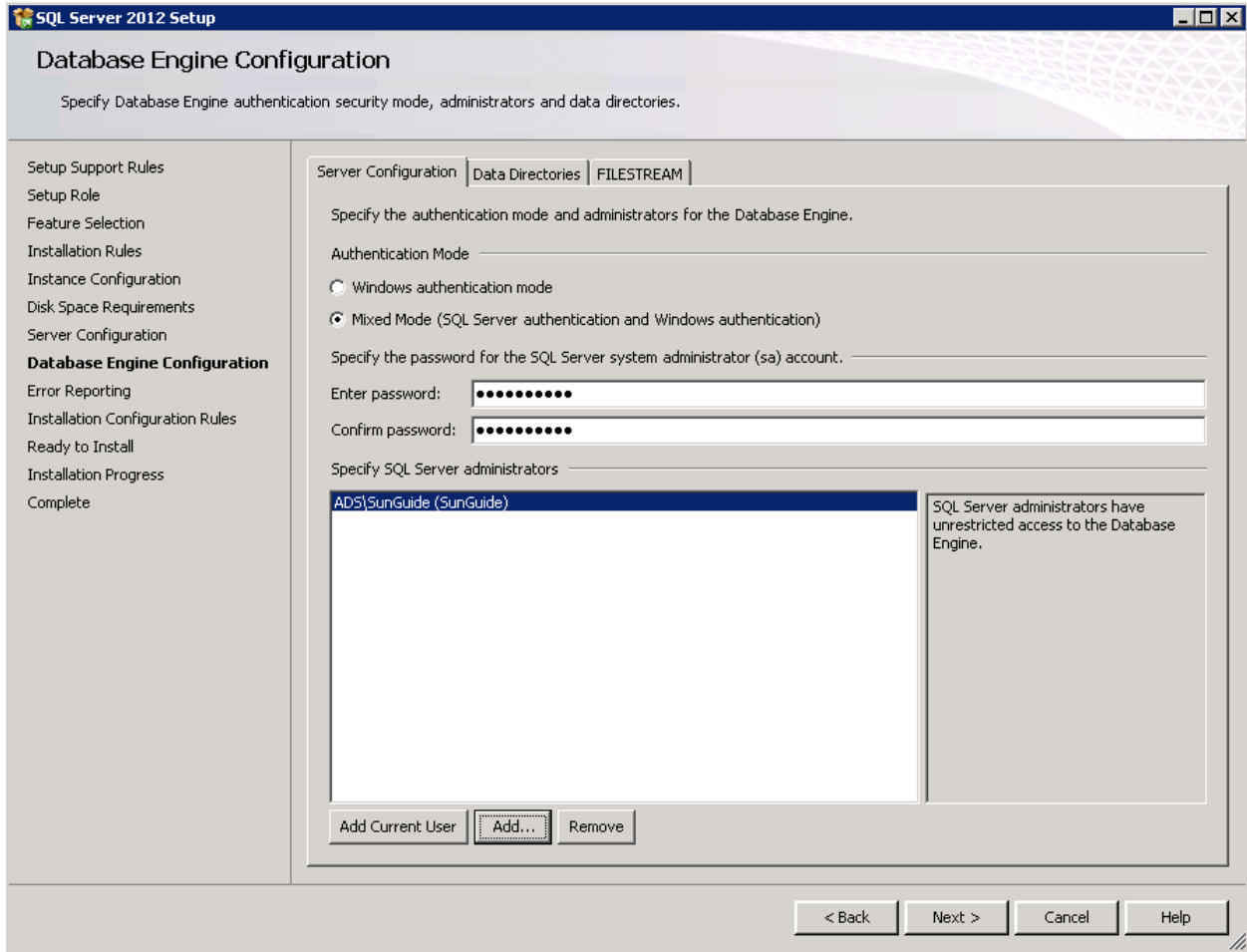
Select Next.

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.

3.5.2.2 SunGuide Database Creation

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

3.5.2.3 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. If you are done with the sqlplus session, type “exit” and press enter.

3.5.2.4 SunGuide Data Loading

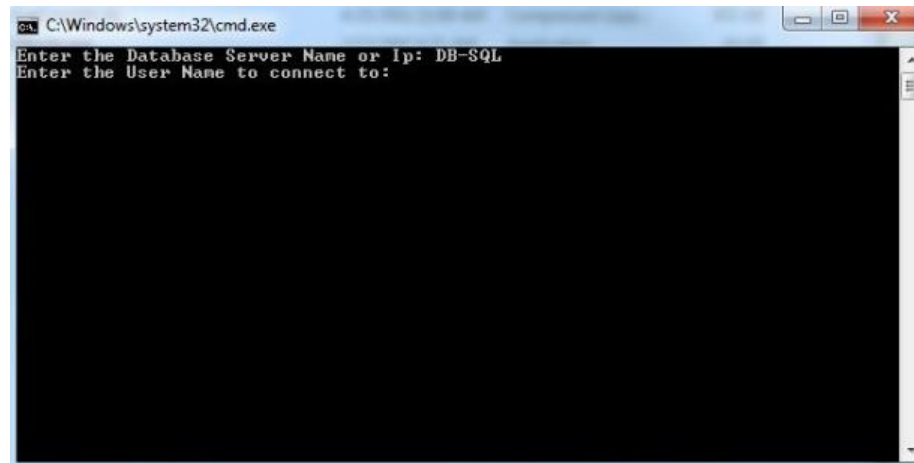
This section covers how to convert an Oracle database into a SQL Server database using SQL Server Migration Assistant for Oracle.

Prerequisites: A current database that has been checked to make sure it complies with the current SunGuide release’s database model. Access to active Windows Live account as this account will be used to retrieve SQL Server Migration Assistant for Oracle license.

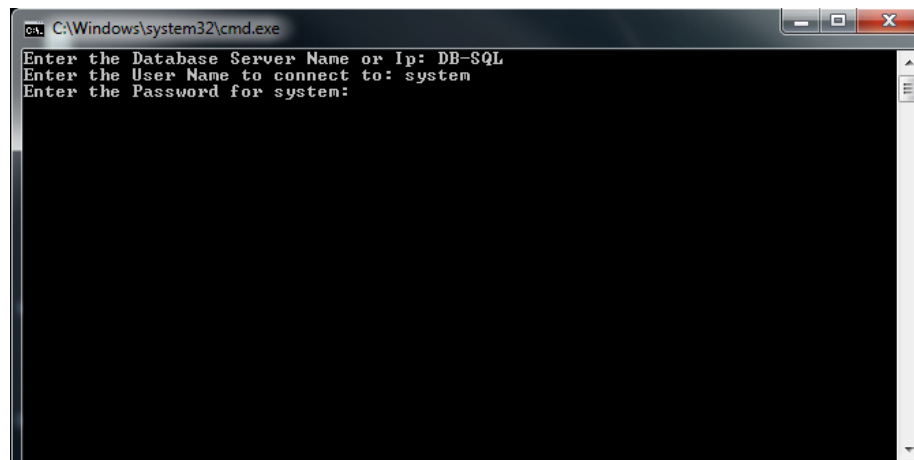
1. Create base SQL Server database
 - a. Create SQL Server file directory on the database server running SQL Server, C:\SqlServerFiles\Databasename
i.e.
C:\SqlServerFiles\SGDB
 - b. Run createSQLServerDB.bat scripts located on the distribution media.
 - c. Enter the DatabaseServer name or IP



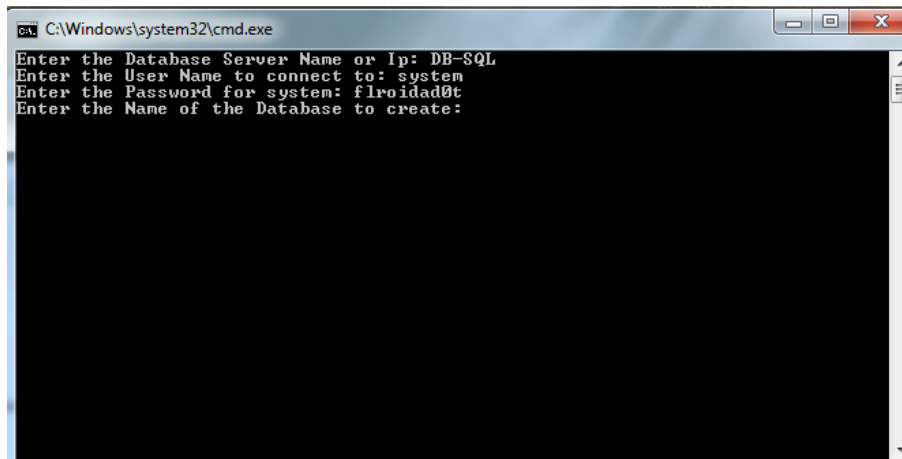
d. Enter User name



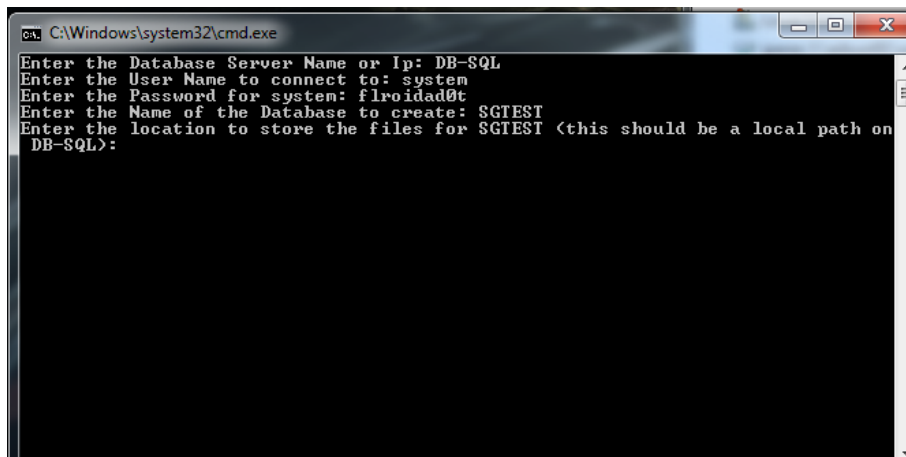
e. Enter the Password for User entered



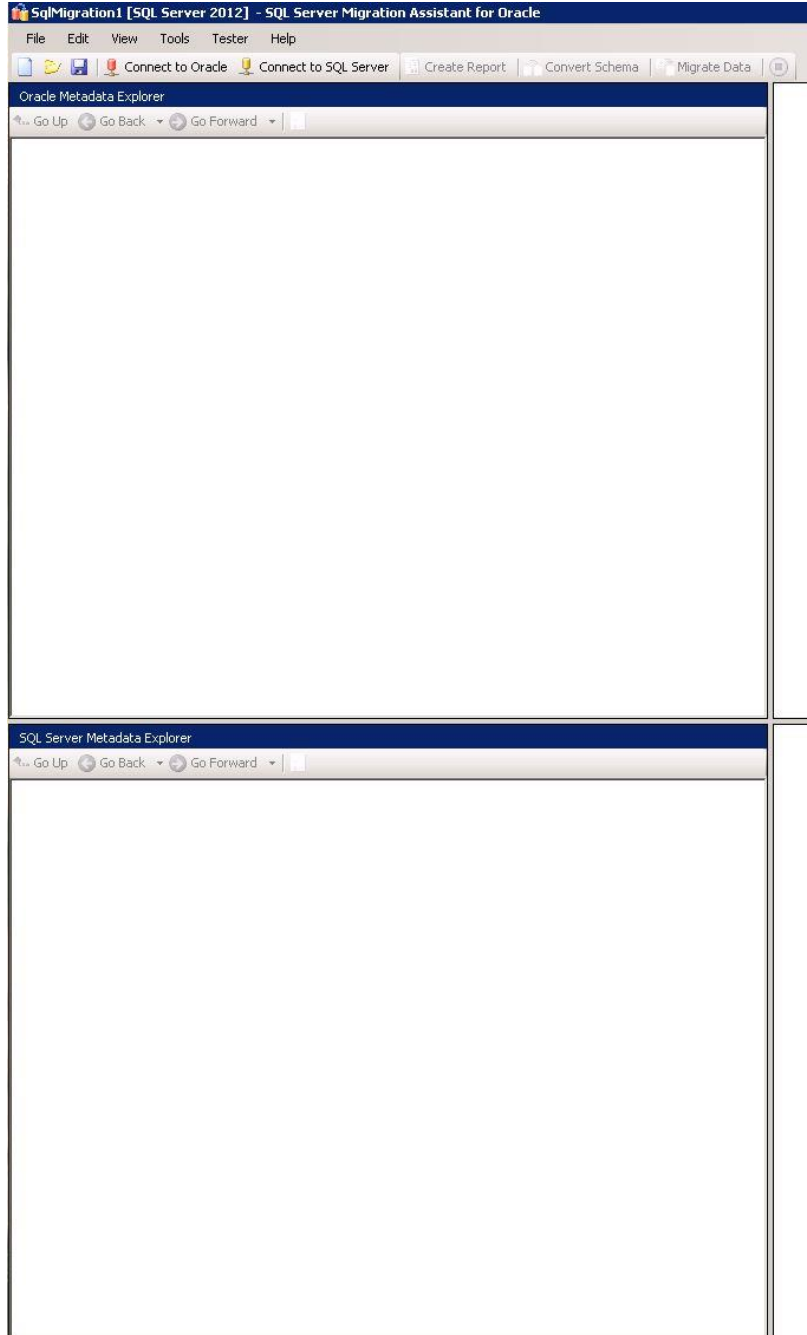
f. Enter name of database to create



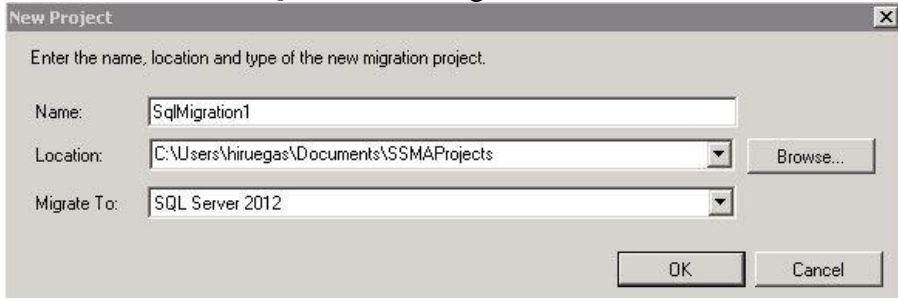
- g. Enter the location to place the Database files created in step a.



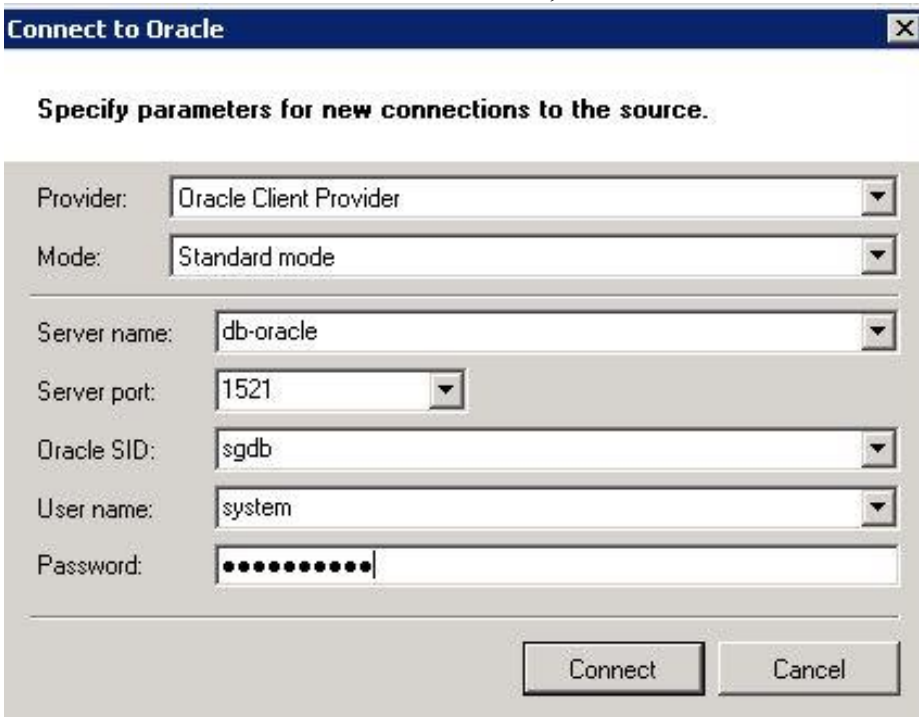
2. Install SQL Server Migration Assistant (SSMA) for Oracle
 - a. This must be run from a server with the Oracle client installed. Copy SSMA for Oracle5.2.zip file, located on the distribution media under “Misc”, to a local directory
 - b. Follow the instructions located at <http://msdn.microsoft.com/en-us/library/hh313197.aspx> to install and license SQL Server Migration Assistant.
3. Using SQL Server Migration Assistant to migrate database
 - a. Click on the “New Project” button



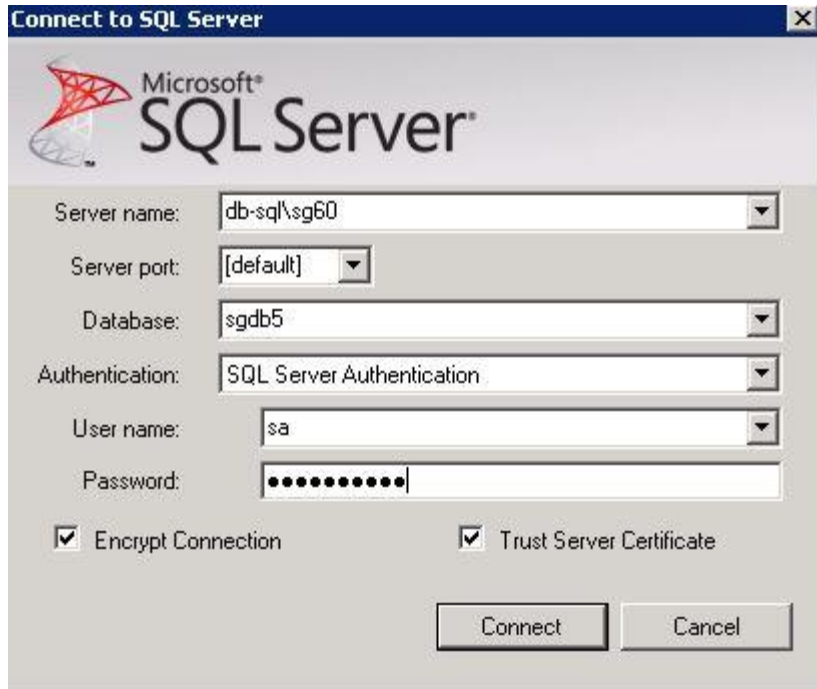
- b. The following window will display. Fill in the dialog with a Name, Location, and the version of SQL Server to migrate to. Once done, click the “OK” button.



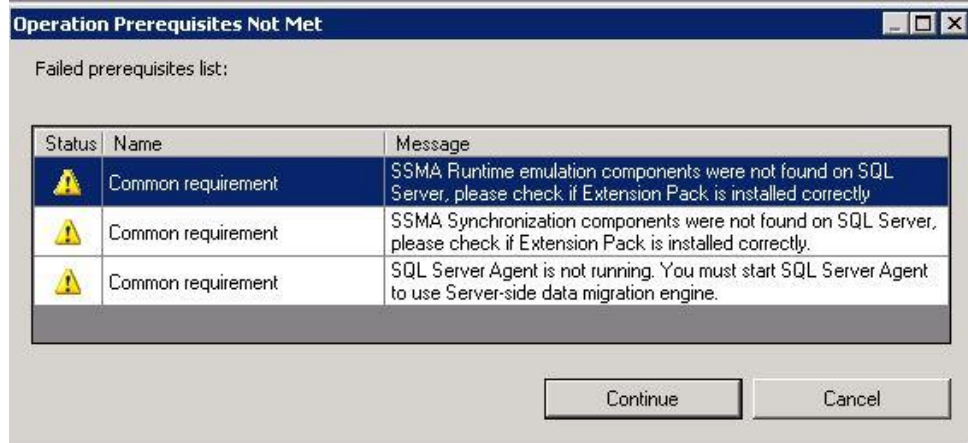
- c. Click the “Connect to Oracle” button and fill in with the proper parameters to connect to the Oracle database. Once done, click the “Connect” button.



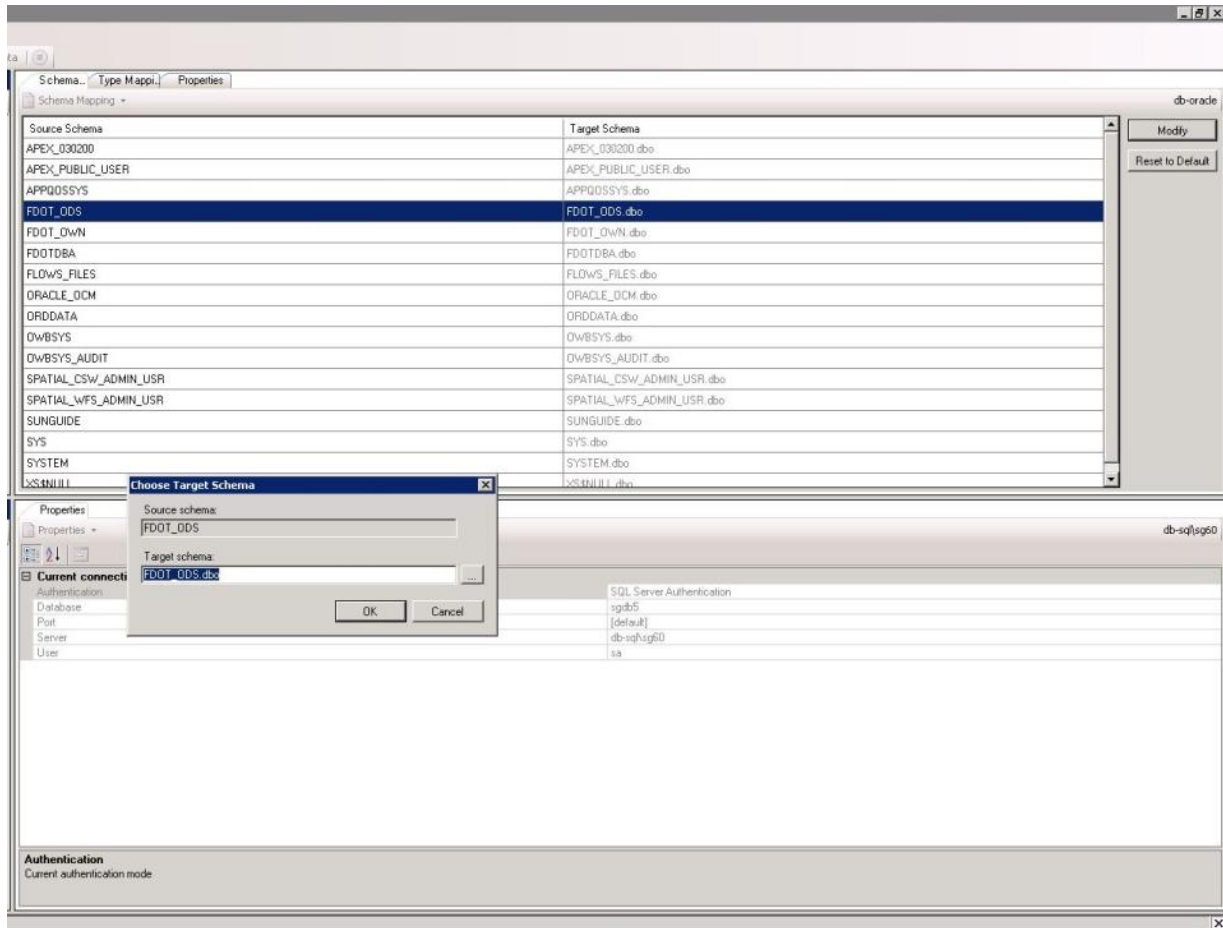
- d. Click the “Connect to SQL Server” button and fill in with the proper parameters to connect to the SQL Server database. Once done, click the “Connect” button.



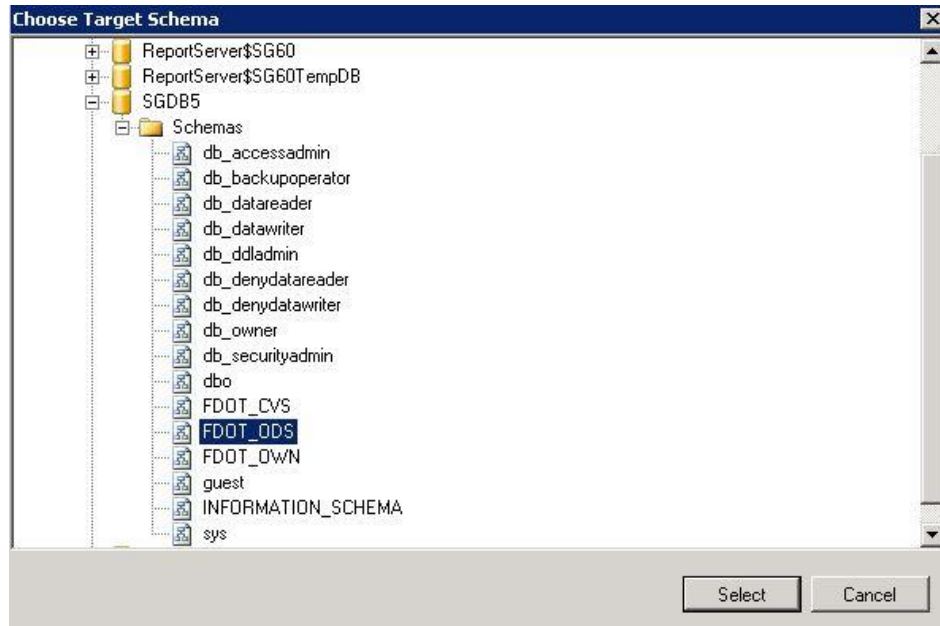
- e. The following window may appear, if so simply click the “Continue” button.



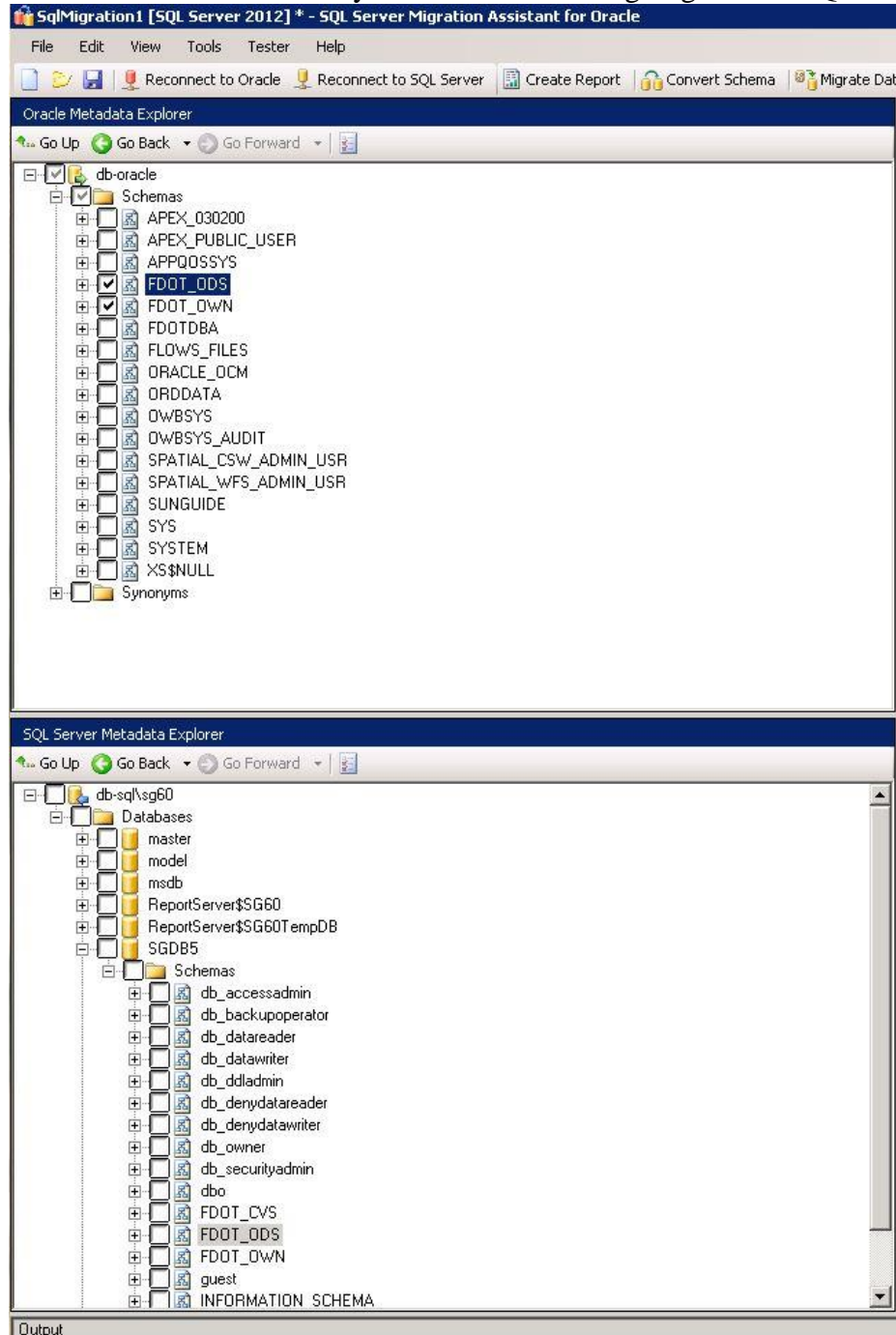
- f. Select the FDOT_ODS schema in the “Schema Mapping” tab and click on the “Modify” button, then click on the “...” button.



- g. Select the FDOT_ODS schema in SQL Server Database being migrated to and click the “Select” button and on the next window click the “OK” button.

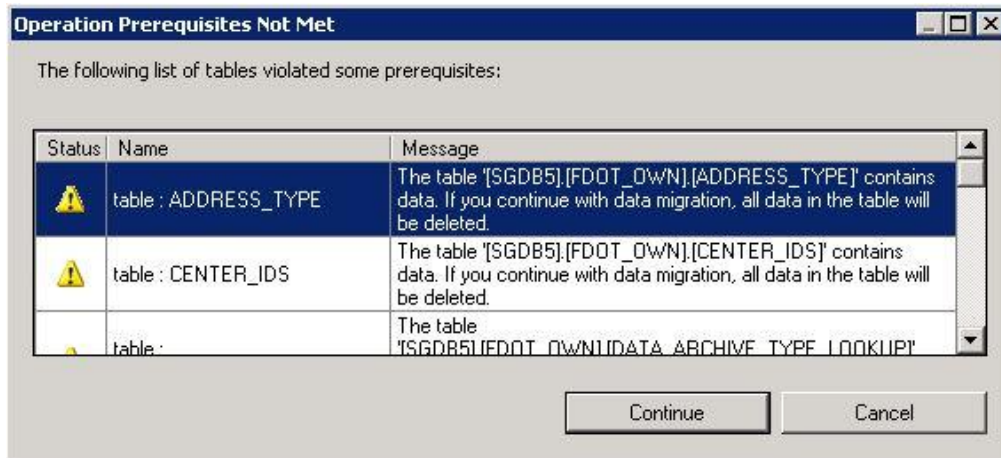


- h. Perform Steps (f) and (g) for every Schema being migrated.
- i. Click the checkbox for every Oracle Schema being migrated to SQL Server



- j. Select the “Schemas” item in the dropdown list and click the “Migrate Data” button.

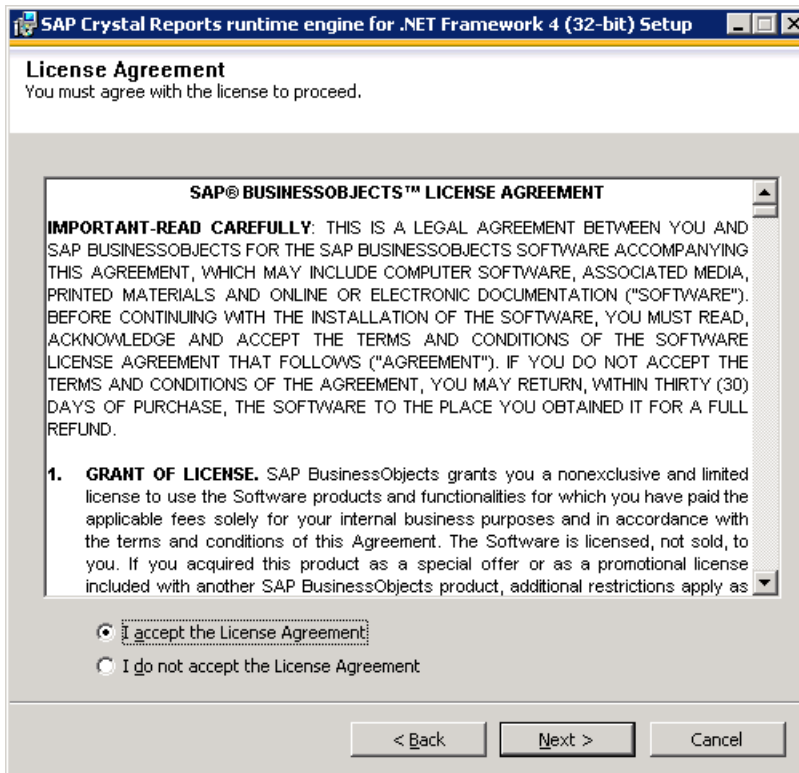
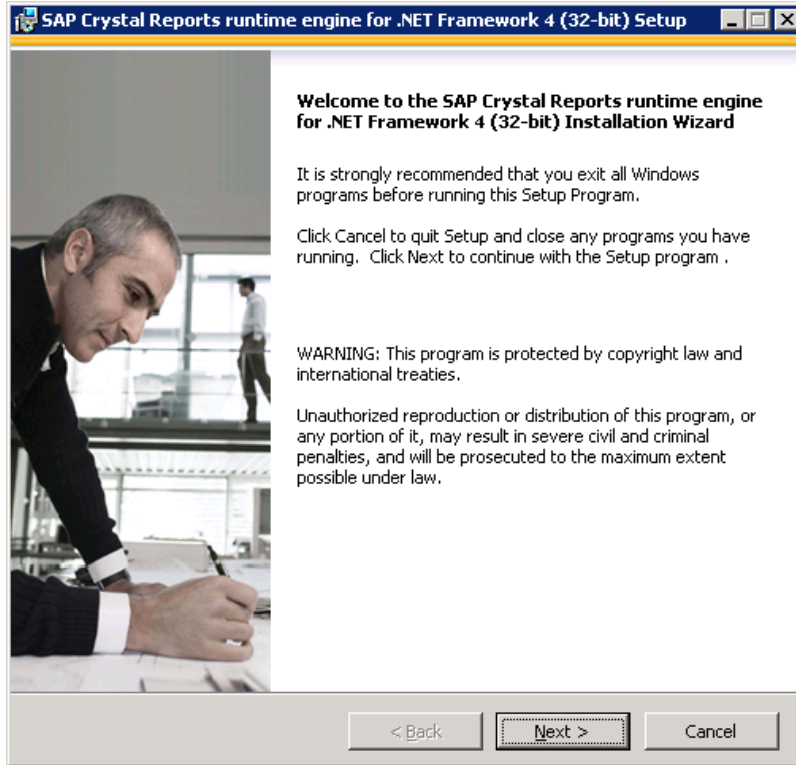
- k. Reconnect to Oracle and SQL Server windows may appear. Provide the same log in information for each and click the “Connect” button.
- l. Once the migration is about to start the following window may appear, simply click the “Continue” button.

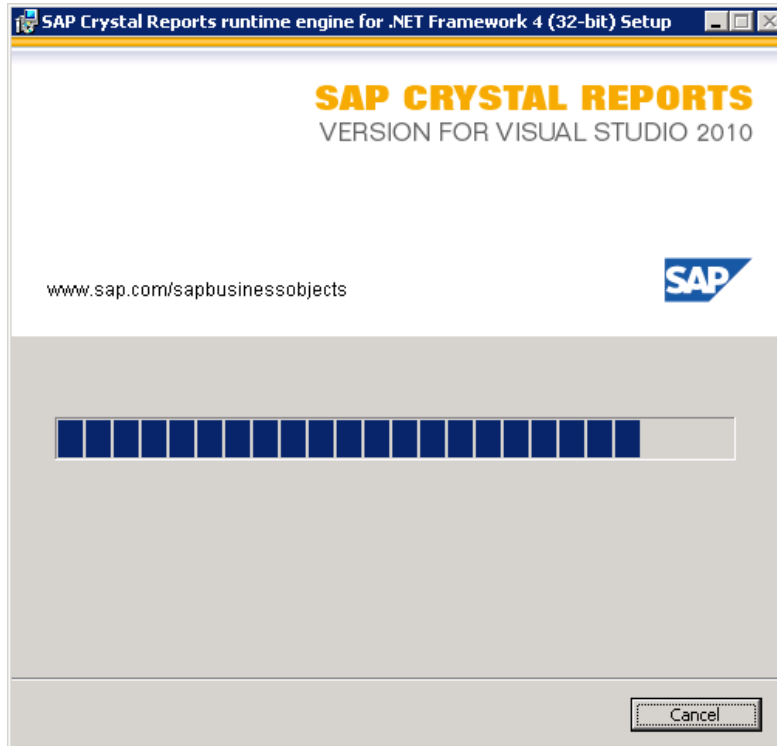
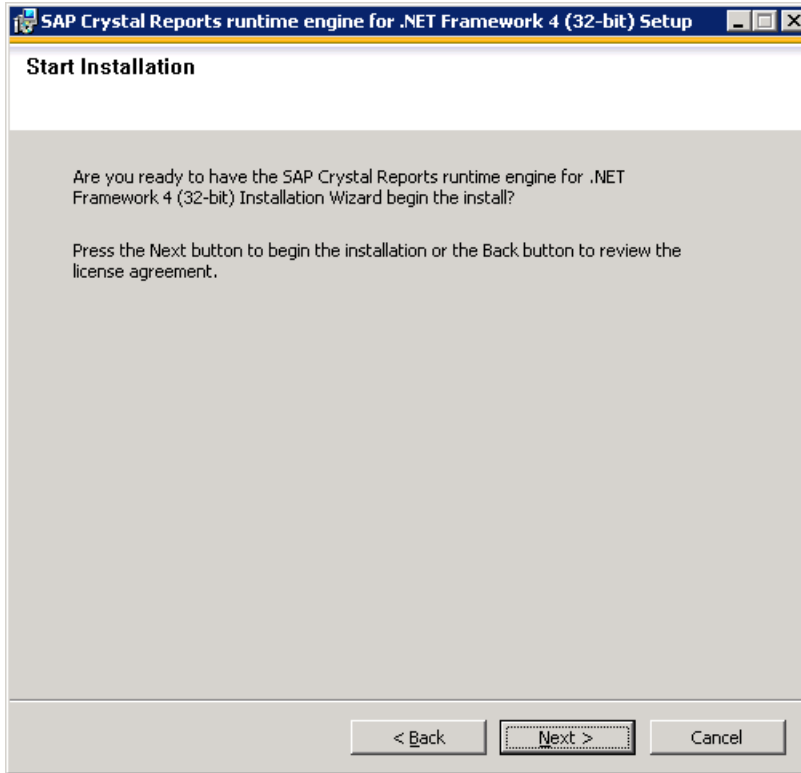


- m. Confirm all tables have been migrated successfully.

3.6 Crystal Reports Run-time Installation

The Crystal Reports 13run-time support needed by the SunGuide Reporting subsystem is installed using a dedicated Windows Installer package included with the SunGuide distribution CD. The setup is started by running **CRRuntime_xxbit_13_0.msi** (where xx is either 32 or 64 depending on the Server OS) from the *Setup* directory on the distribution CD. Note that the Windows .NET 4.0 Framework must be present before running the SunGuide installer. The following figures show the dialogs presented by the Crystal Reports 13 run-time installer; accept the license agreement and select the default values byby pressing the **Next** button on each dialog (always accept the defaults). Press the **Close** button on the last dialog to complete the installation.





3.7 Application Installation

The setup program is started by running **SunGuideInstallVxxxx.exe** (where **xxxx** is the current version of the software being installed) from the *Setup* directory on the distribution CD. Note that the Windows .NET 4.0 Framework must be present before running the SunGuide installer. When SunGuideInstallVxxxx.exe is run, the first dialog displayed is the one shown in Figure 3-1. 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 5.11.

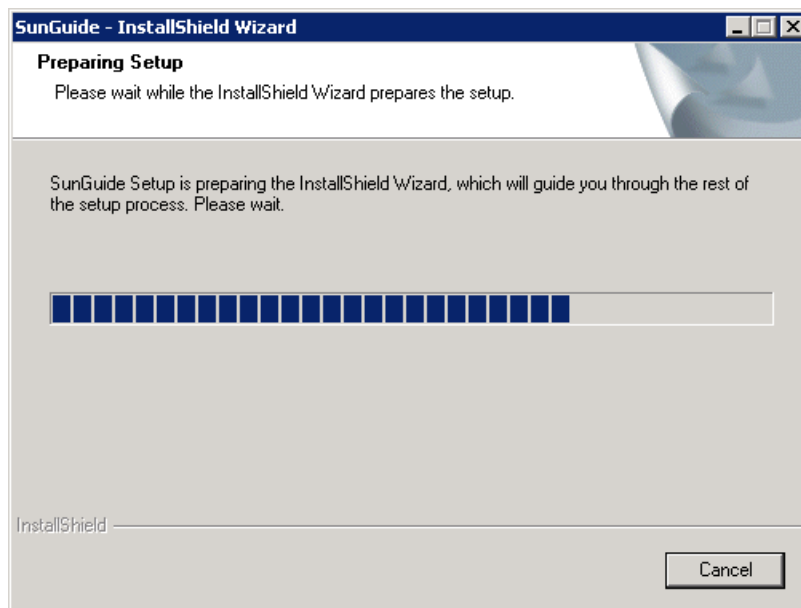


Figure 3-1 - Windows Installer Dialog

3.7.1 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 3-2. The only action required from this dialog is to either select **Next** to continue installation or **Cancel** to exit the installation.

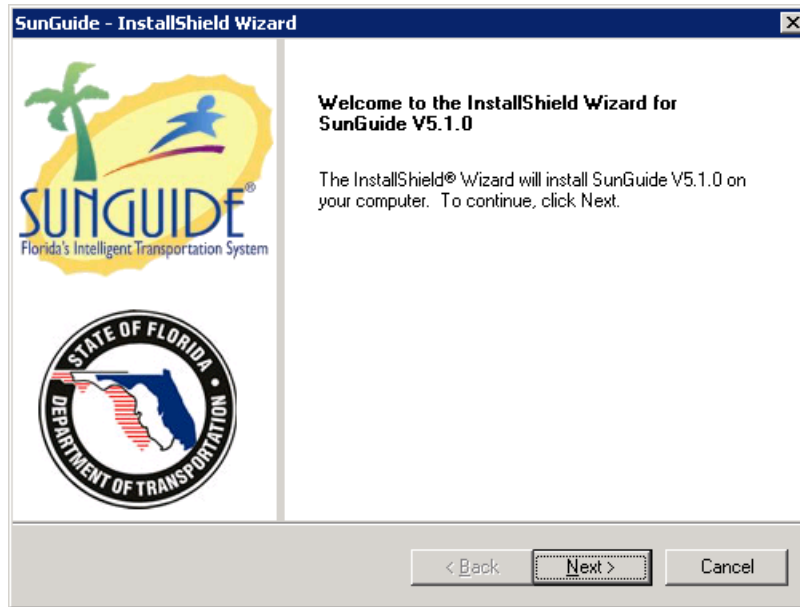


Figure 3-2 - SunGuide Setup Welcome Dialog

The next dialog displayed is the **Choose Destination Location** dialog shown in Figure 3-3. 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 **Browse** 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.

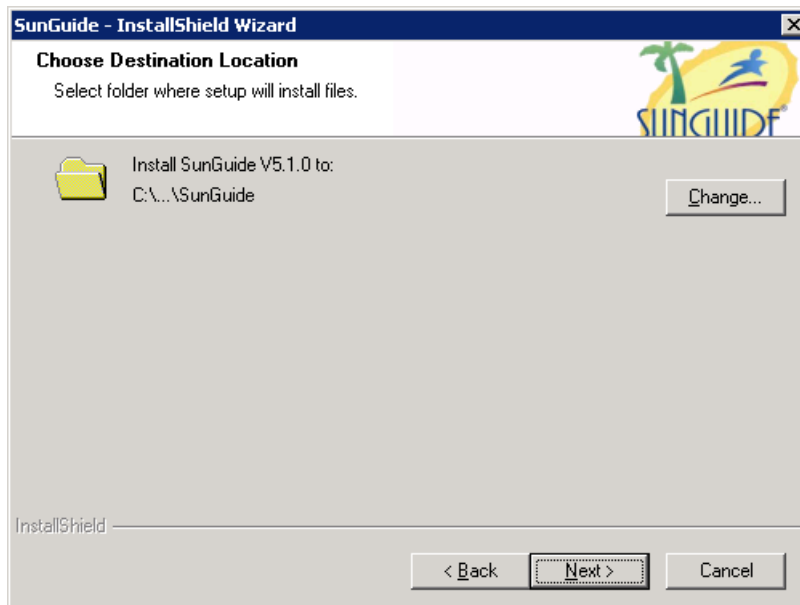


Figure 3-3 - SunGuide Setup Choose Destination Location Dialog

The next dialog displayed is the **Select Features** dialog shown in Figure 3-4. 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.

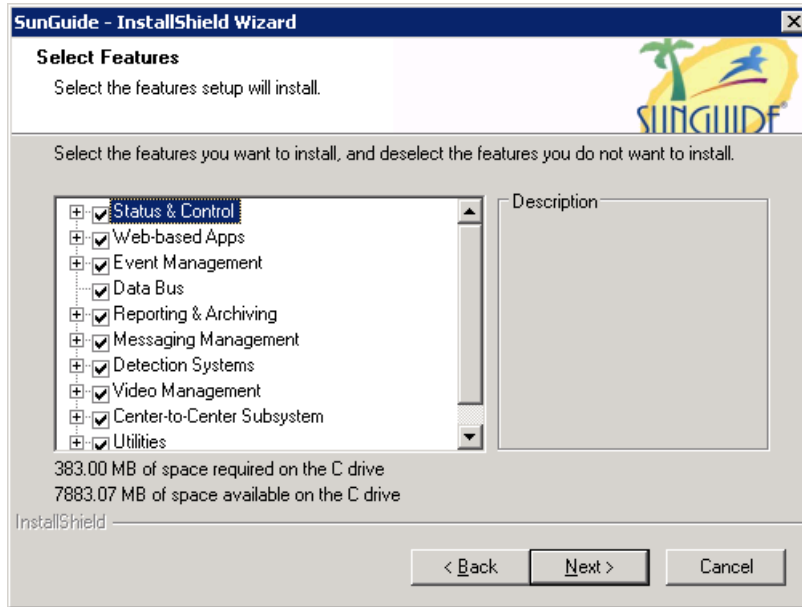


Figure 3-4 - SunGuide Setup Select Features Dialog

The next dialogs that are displayed (Figure 3-5 and Figure 3-6; if the Status Logger components are selected) are the **Status Log File Folder** and **Status Logger Host and Port** dialogs. Keep the default values unless some conflict exists. Press the **Next** button to keep those 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.

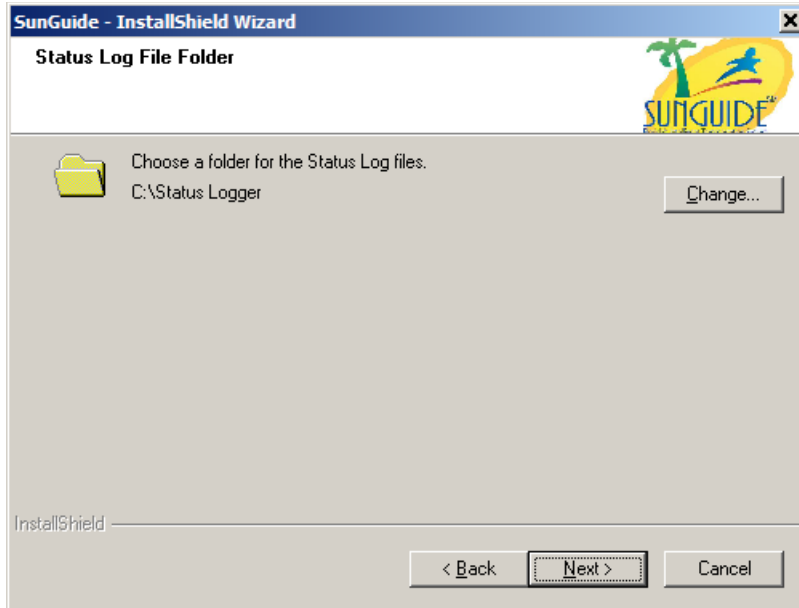


Figure 3-5 - SunGuide Setup Status Log File Folder Dialog

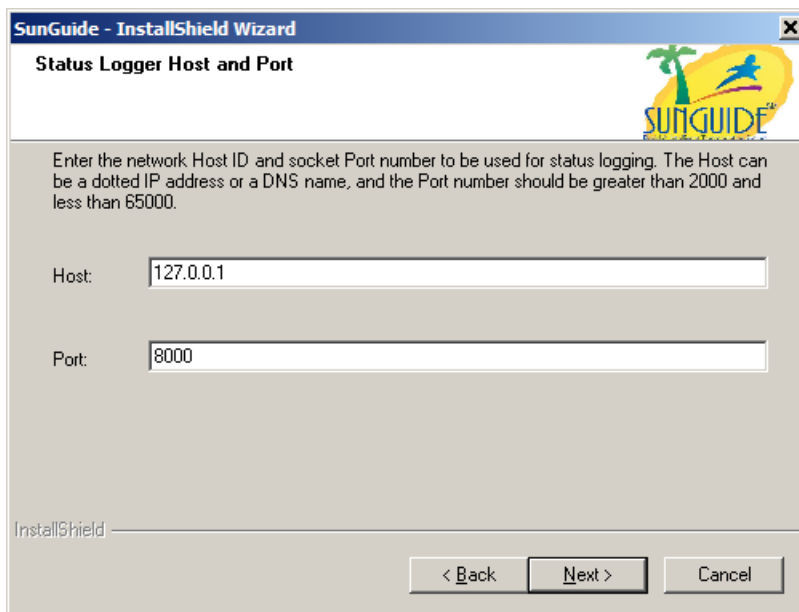


Figure 3-6 - SunGuide Setup Status Logger Host and Port Dialog

The next dialog that is displayed (Figure 3-7; if the Executive Handler components are selected) is the **Executive Handler Primary Port** dialog. Keep the default value unless some conflict exists. Additional items on this dialog include parameters that control how many times Executive Handler allows a process to fail in a specified period of time (in seconds) before it "gives up" and does not try to restart the process. Press the **Next** button to keep those 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.

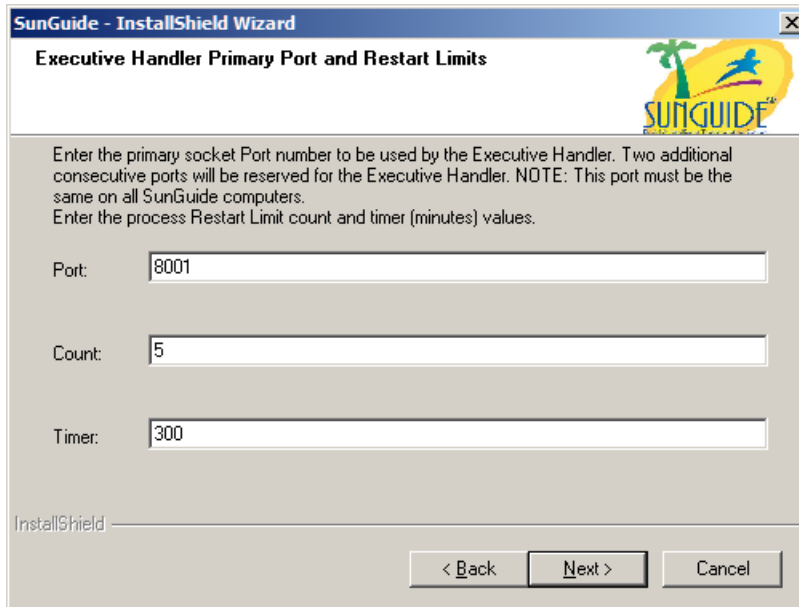


Figure 3-7 - SunGuide Setup Executive Handler Primary Port Dialog

The next dialog that is displayed (Figure 3-8; if the Executive Handler components are selected) is the **Executive Handler Application Start Options** dialog. The **Auto Startup** checkbox causes processes to be started when the Executive Handler server is started, and the **Auto Restart** checkbox causes processes to be restarted after failures. Press the **Next** button to keep those 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.

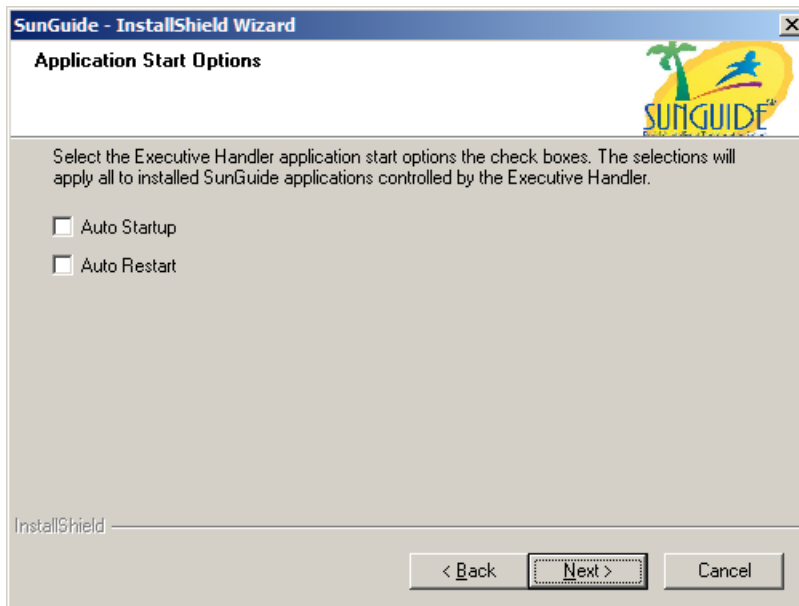


Figure 3-8 - SunGuide Setup Exec Handler App Startup Options Dialog

The next dialog that is displayed (Figure 3-9; if the Executive Handler components are selected) is the **Executive Handler Group Membership Values** dialog. The values Domain Group,

Domain Name and Domain Controller entered into this dialog control what users are allowed to run Executive Handler Viewer. The values can be left empty if access control of the viewer is not required. Press the **Next** button to keep those 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.

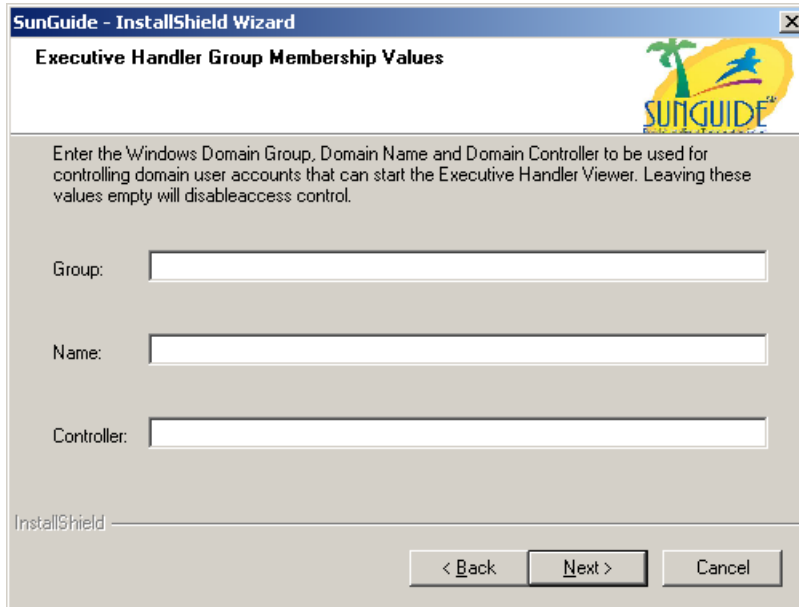


Figure 3-9 - SunGuide Executive Handler Group Membership Values Dialog

The next dialog that is displayed is the **Configuration File Host and Share Point** dialog (Figure 3-10). Enter the server of workstation name and defined share point where the SunGuide configuration file is located. Press the **Next** button to keep those 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.

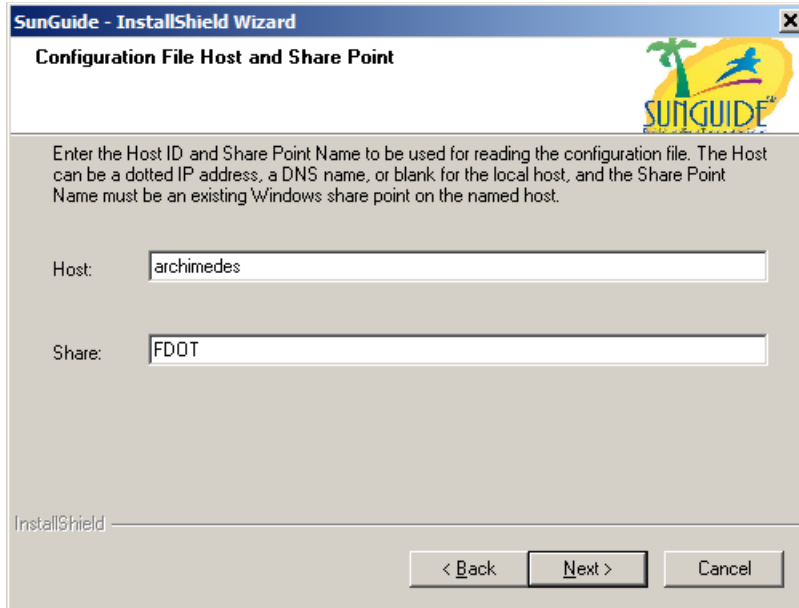


Figure 3-10 - SunGuide Setup Configuration File Host and Share Point Dialog

The next dialog that is displayed is the **Service Account Type Selection** dialog (Figure 3-11). Select the Windows service account type to be used by the services that access the shared configuration file. Press the **Next** button to keep those 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.

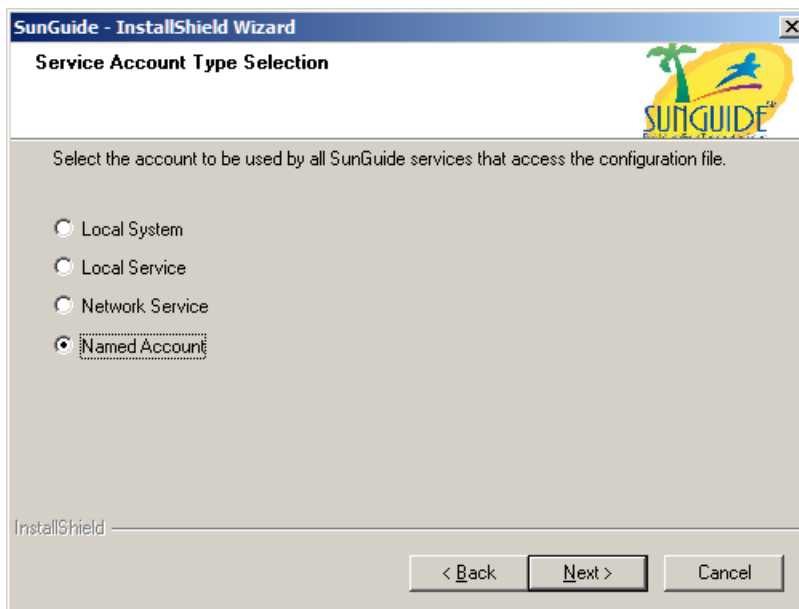


Figure 3-11 - SunGuide Service Account Type Selection Dialog

The next dialog displayed is the **Service Account Information** dialog (Figure 3-12) if the *Named Account* choice was selected from the **Service Account Type Selection** dialog. Enter the

Windows domain in the *Domain* field if using a domain account or leave it blank for a local machine account. Enter the account name and password in the *User* 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.

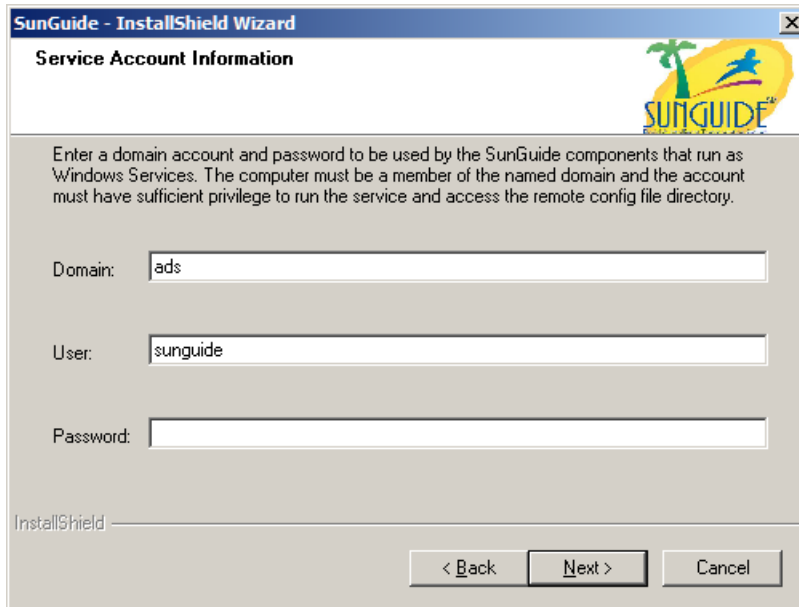


Figure 3-12 - SunGuide Service Account Information Dialog

The next dialog displayed is the **Report Templates Folder** dialog (Figure 3-13) if the *Report Templates* feature was selected from the **Setup Select Features** dialog. The default location can be changed using the **Browse** button. 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. Note: After installation, several of the report templates will require modification; refer to Section 5.10 for detailed instructions.

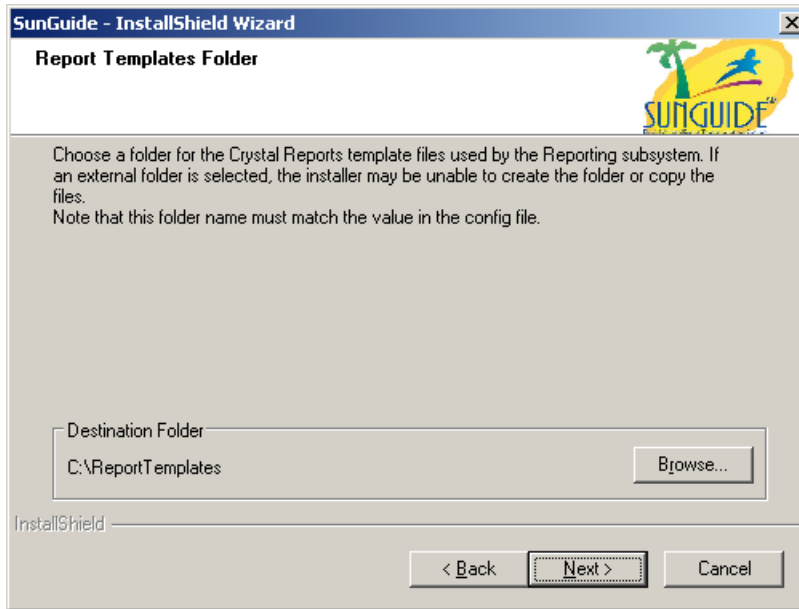


Figure 3-13 - SunGuide Reports Templates Folder Dialog

The next dialog displayed is the **Map Tiles Folder** dialog (Figure 3-14) if the *MapTiles* feature was selected from the **Setup Select Features** dialog and the folder the the installer was run from does not contain the compressed map tile file ("Tiles.7z"). The default location can be changed using the **Browse** button, but the selected location must contain the compressed map tile file. 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.

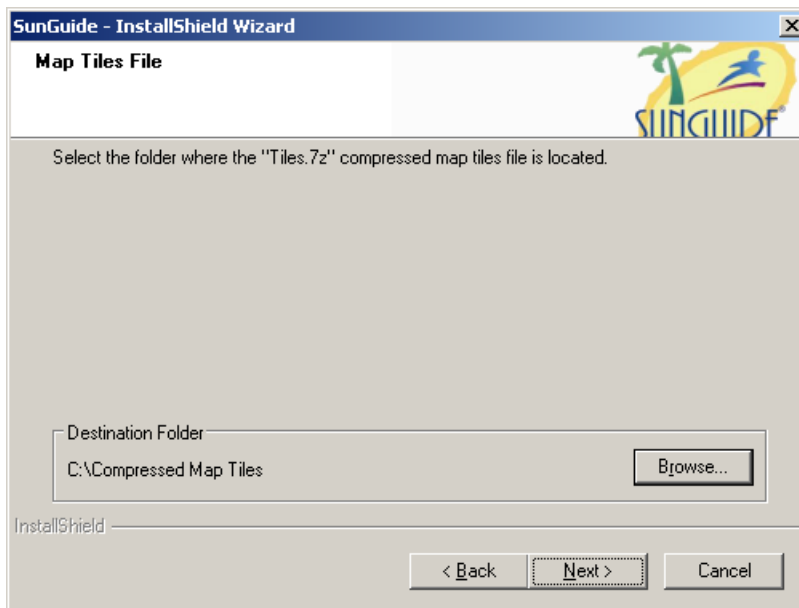


Figure 3-14 - SunGuide Map Tiles Folder Dialog

If the Map Tiles feature was selected, a dialog (Figure 3-15) is shown to verify that this lengthy operation is desired. Press the **Yes** button to proceed with the map tiles installation; or, press the **No** button to disable the map tiles installation.

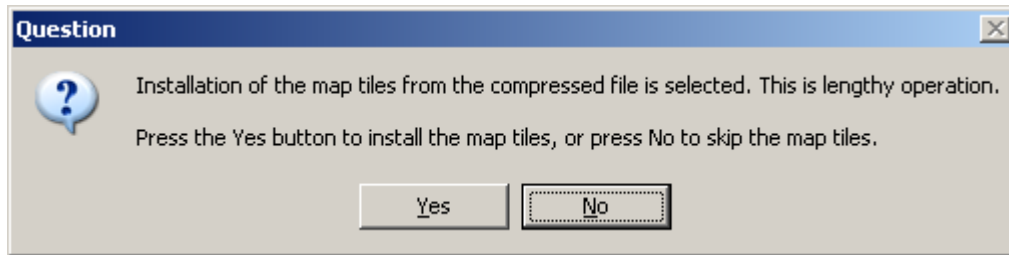


Figure 3-15 - SunGuide Map Tiles Verify Dialog

A review dialog is displayed before the setup program actually begins installation is the **Start Copying Files** dialog shown in Figure 3-16. This dialog displays for review the selections that were made in the previous dialogs. Press the **Next** button to keep those 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.

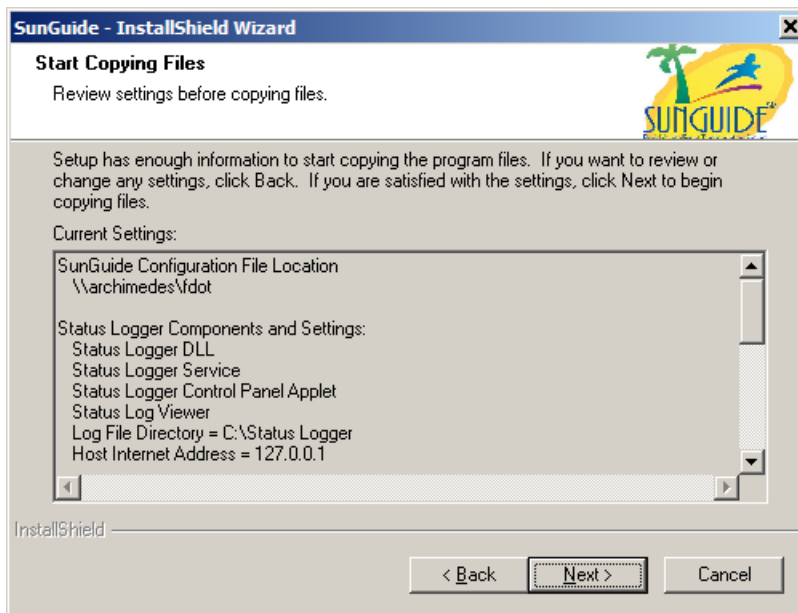


Figure 3-16 - SunGuide Setup Start Copying Files Dialog

The final dialog displayed before the setup program actually begins installation is the **Ready to Install the Program** dialog shown in Figure 3-17. 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.

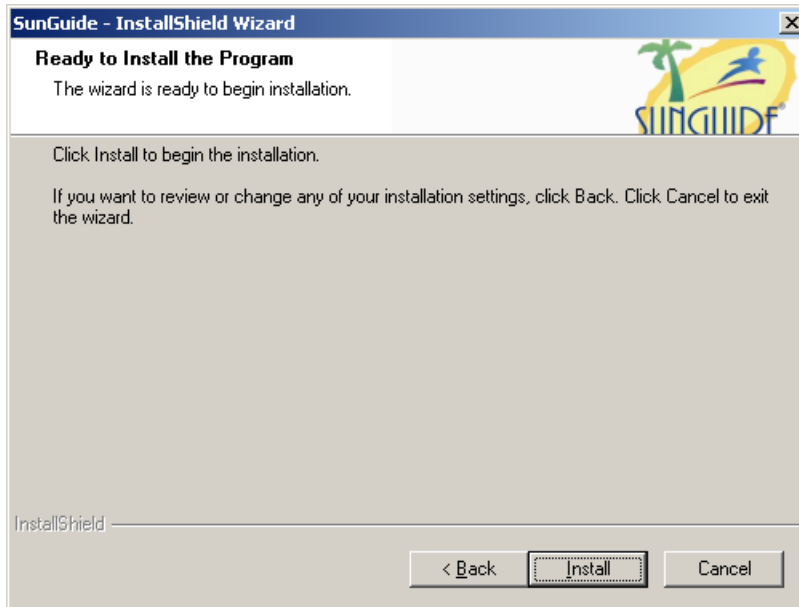


Figure 3-17 - SunGuide Setup Ready To Install Dialog

While the setup program is installing files, the **Setup Status** dialog shown in Figure 3-18 is displayed. This dialog shows the progress of the installation.

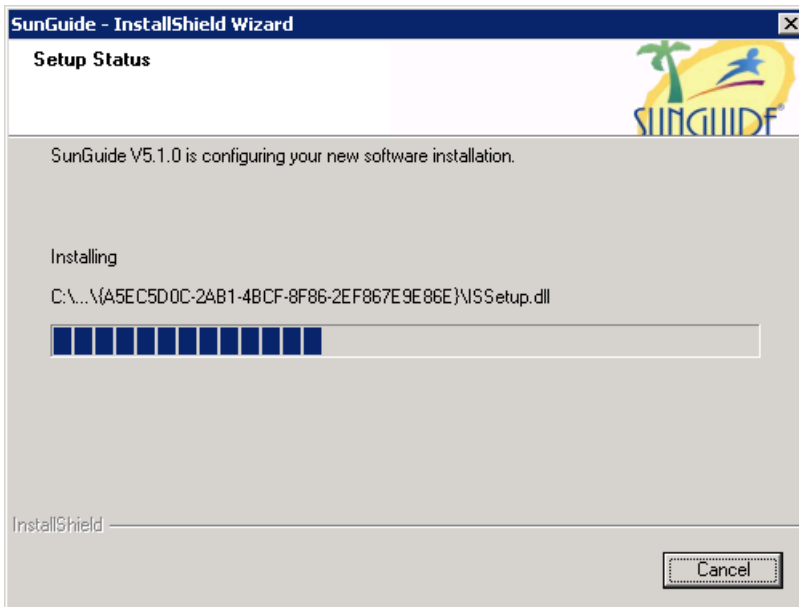


Figure 3-18 - SunGuide Setup Status Dialog

When the files have been installed, the **InstallShield Wizard Complete** dialog shown in Figure 3-19 is displayed. Press the **Finish** button to complete installation and exit setup.

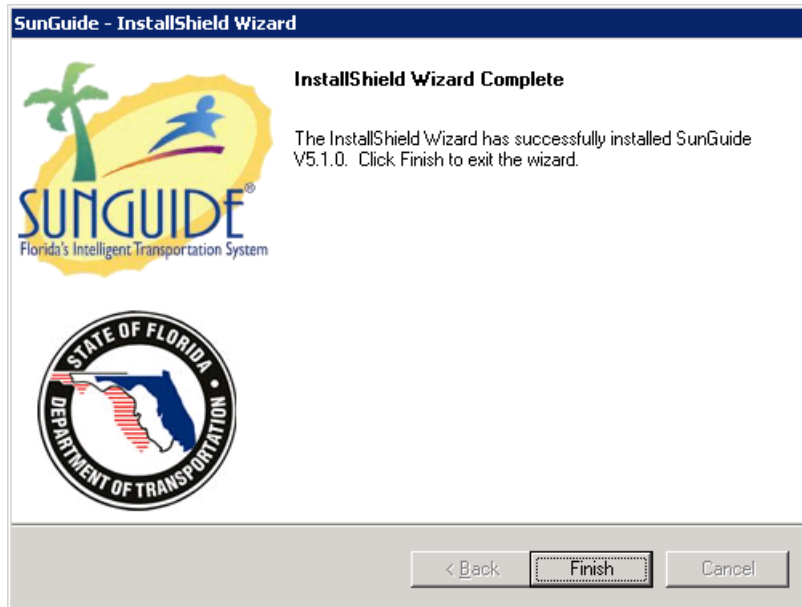


Figure 3-19 - SunGuide Setup InstallShield Wizard Complete Dialog

3.7.2 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 3-20. 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.

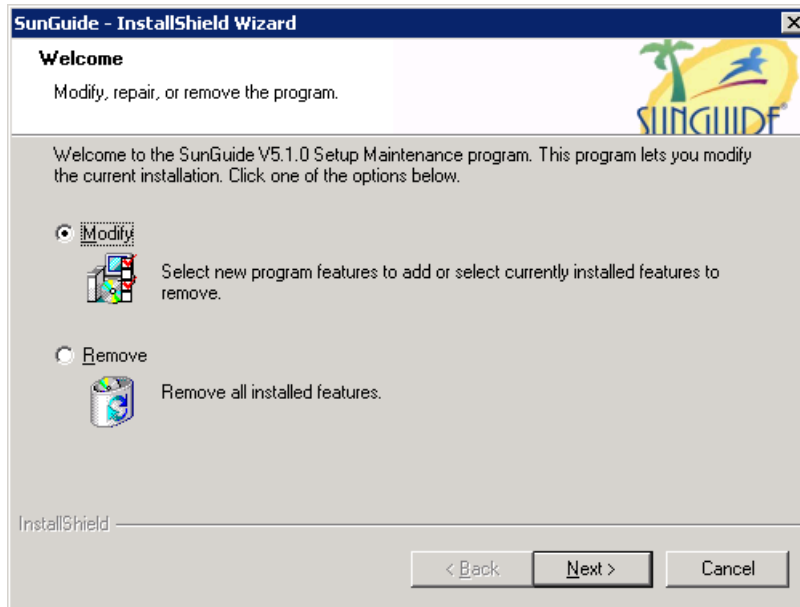


Figure 3-20 - SunGuide Setup Maintenance Dialog

If the *Remove* option is selected from the **SunGuide Maintenance** dialog, the next dialog displayed is the **Confirm Uninstall** dialog shown in Figure 3-21. To proceed with removing the installed SunGuide components, press **OK**. To cancel removing the components and return to the previous dialog, press **Cancel**.

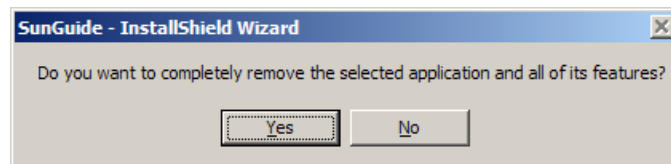


Figure 3-21 - SunGuide Setup Confirm Uninstall Dialog

If the removal of the components is confirmed, the setup program displays a **Setup Status** dialog similar to that shown in Figure 3-18, followed by a **Maintenance Complete** dialog similar to that shown in Figure 3-19.

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 3-18, followed by a **Maintenance Complete** dialog similar to that shown in Figure 3-19.

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 3-4 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.

3.8 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.

3.8.1 Internet Information Services Preparation

- The C2C Infrastructure web services are ASP.NET 4.0 applications. ASP.NET 4.0 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 4.0 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 2008 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.

3.8.2 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 Figure 3-22. The only action required from this dialog is to either select **Next** to continue installation or **Cancel** to exit the installation.



Figure 3-22 Welcome Dialog

The next dialog displayed is the Select Features Dialog shown in Figure 3-23. 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.

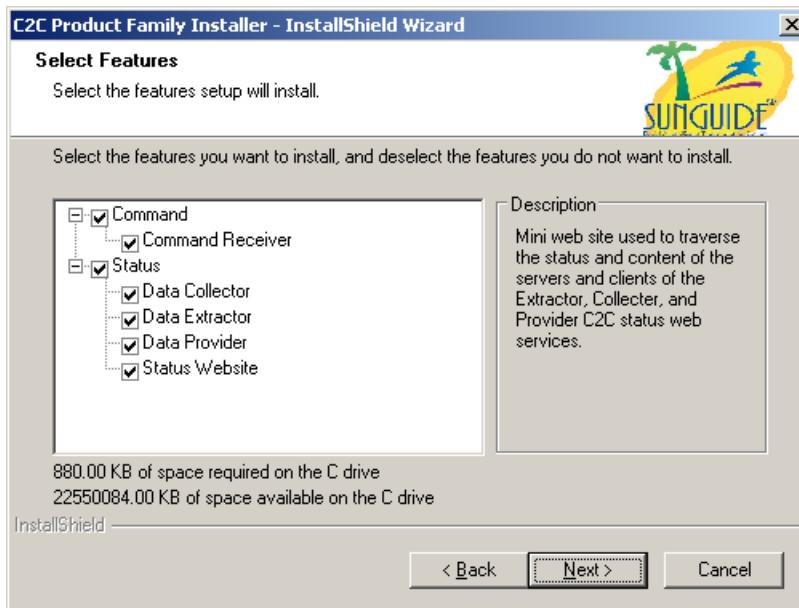


Figure 3-23 Select Features Dialog

The next dialog displayed is the Web Service Path Selection Dialog shown in Figure 3-24. 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.

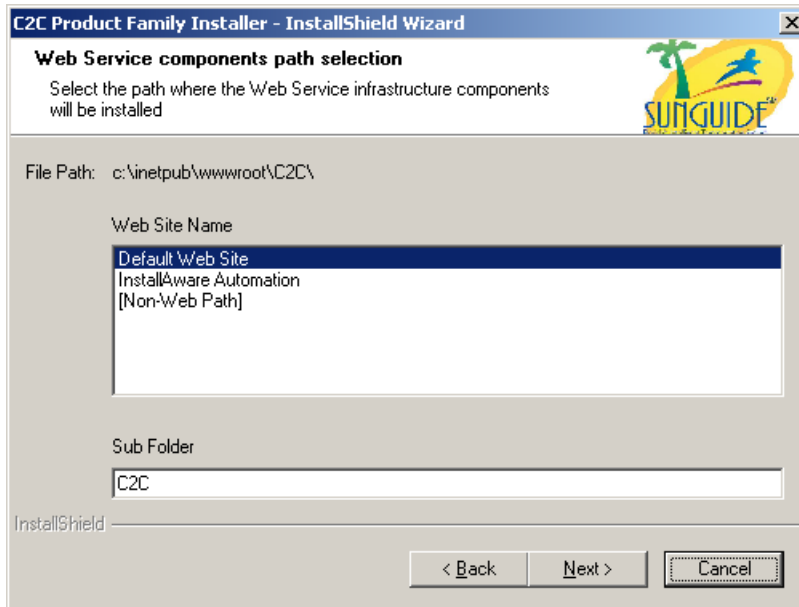


Figure 3-24 Web Service Path Selection Dialog

The next dialog displayed is the Status Logger Host and Port Dialog shown in Figure 3-25. 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 Users 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.

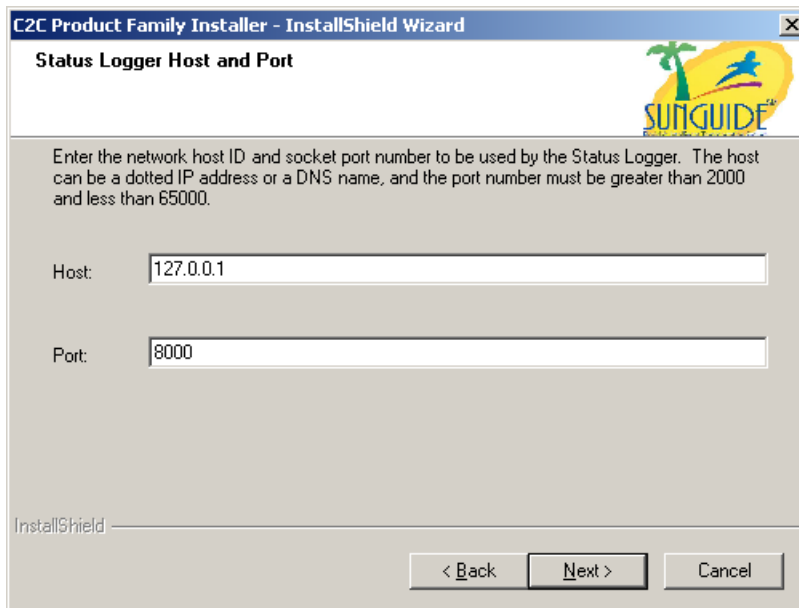


Figure 3-25 Status Logger Host and Port Dialog

The next dialog displayed is the Data Provider Configuration Dialog shown in Figure 3-26. 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.

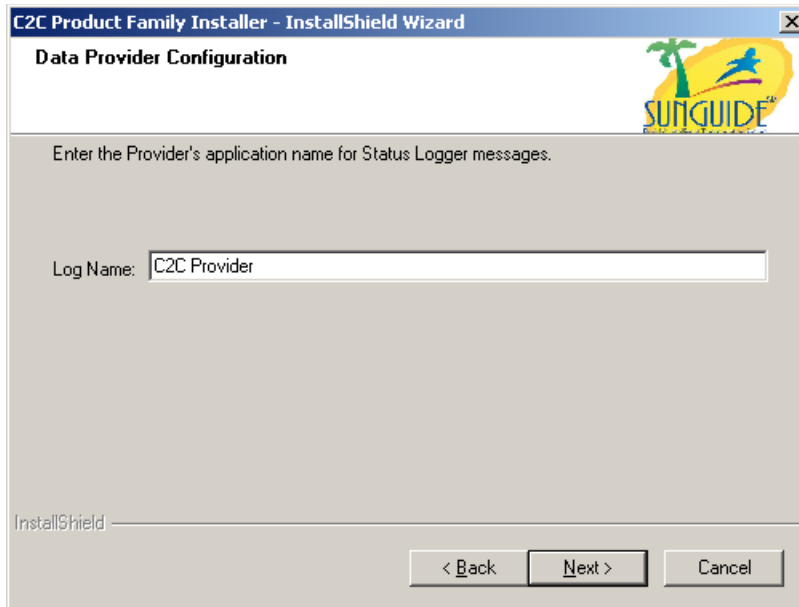


Figure 3-26 Data Provider Configuration Dialog

The next dialog displayed is the Data Provider Data Type Selection dialog shown in Figure 3-27. 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.

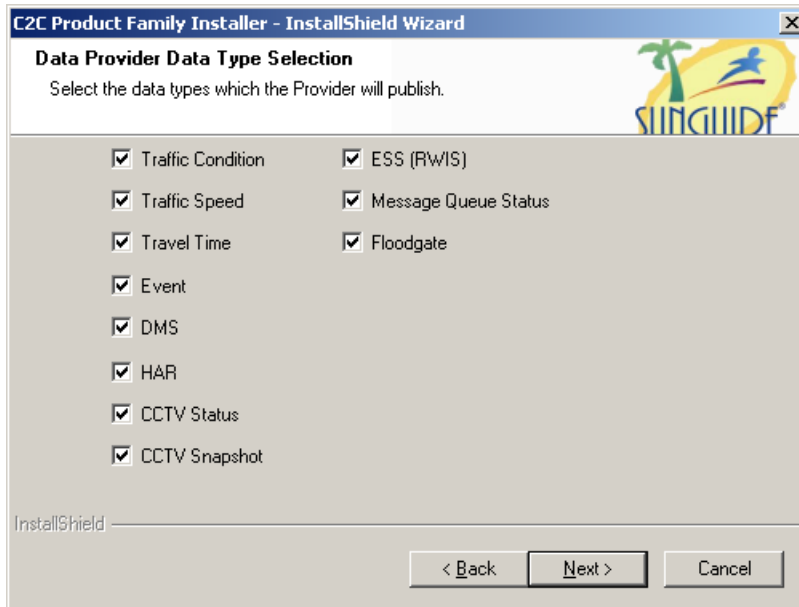


Figure 3-27 Data Provider Data Type Selection Dialog

The next dialog displayed is the Data Collector Configuration Dialog shown in Figure 3-28. 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.

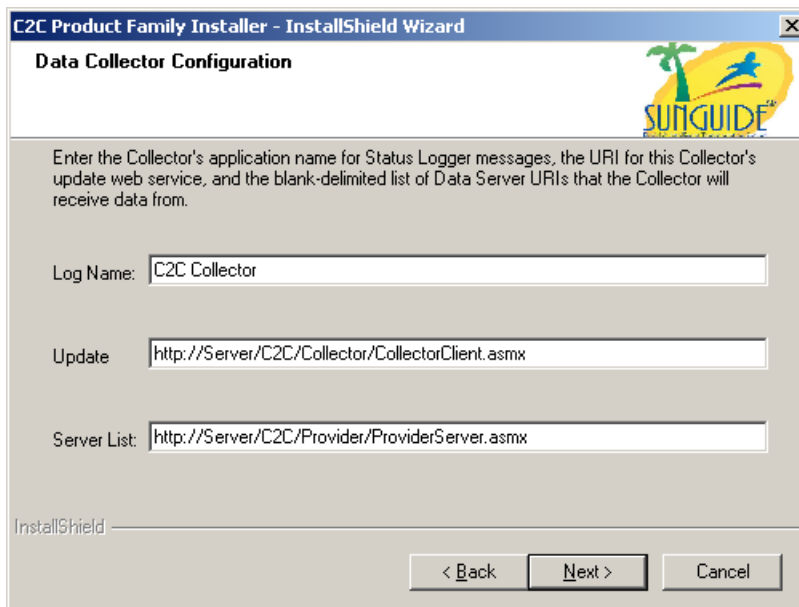


Figure 3-28 Data Collector Configuration Dialog

The next dialog displayed is the Data Collector Data Type Selection dialog shown in Figure 3-29. 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.

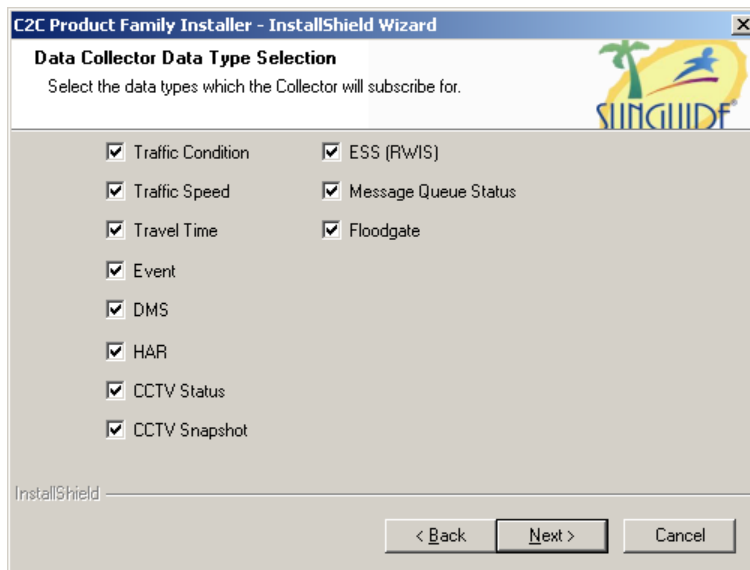


Figure 3-29 Data Collector Data Type Selection Dialog

The next dialog displayed is the Data Extractor Configuration Dialog shown in Figure 3-30. 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.

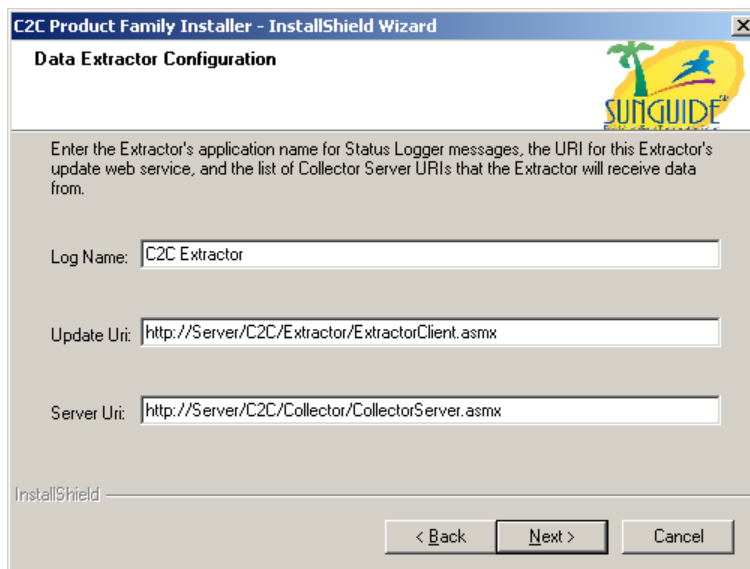


Figure 3-30 Data Extractor Configuration Dialog

The next dialog displayed is the Command Receiver Configuration Dialog shown in Figure 3-31. 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.

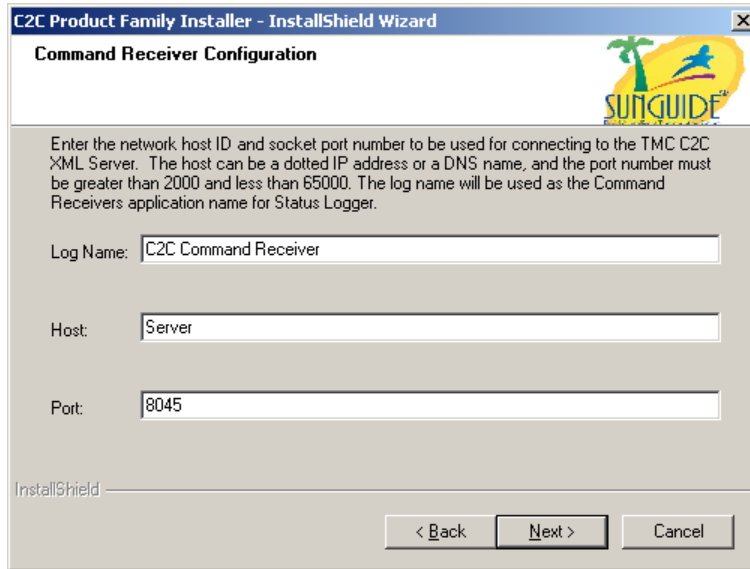


Figure 3-31 Command Receiver Configuration Dialog

The next dialog displayed is the Start Copying Files Dialog shown in Figure 3-32. 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.

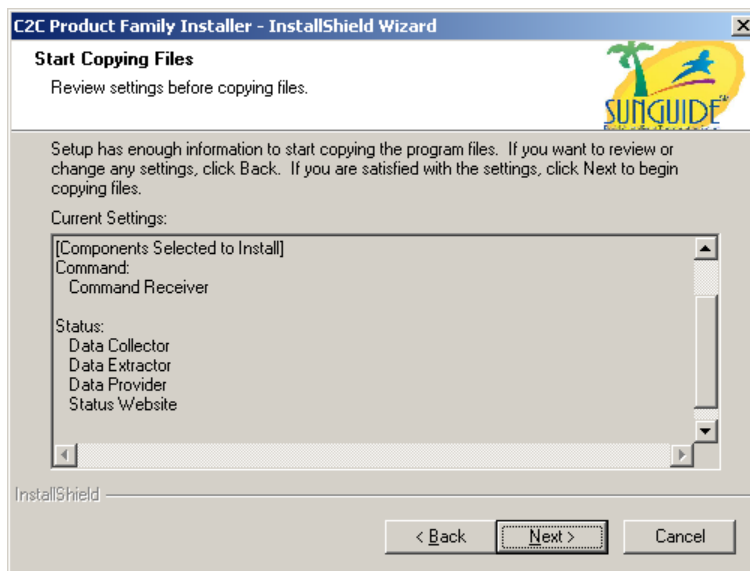


Figure 3-32 Start Copying Files Dialog

The next dialog displayed is the Setup Status Dialog shown in Figure 3-33. 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.

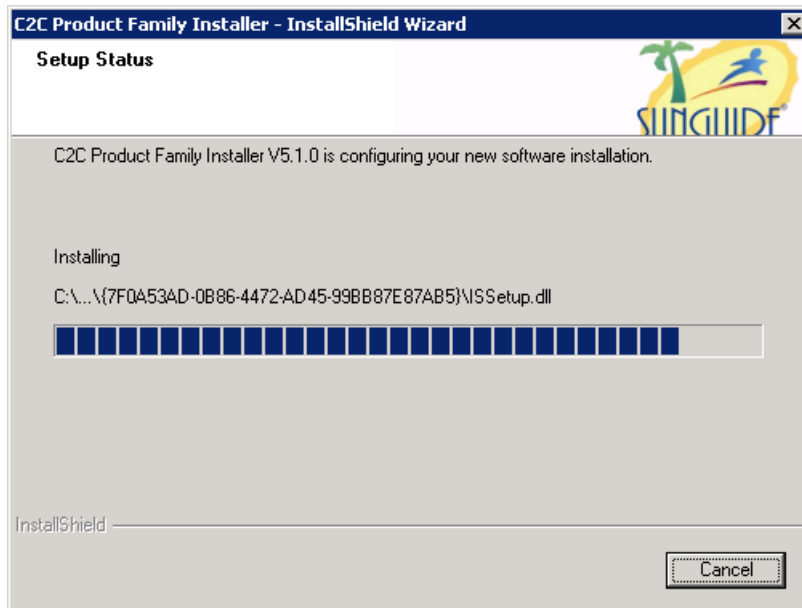


Figure 3-33 Setup Status Dialog

The next dialog displayed is the InstallShield Wizard Complete Dialog shown in Figure 3-34. 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.

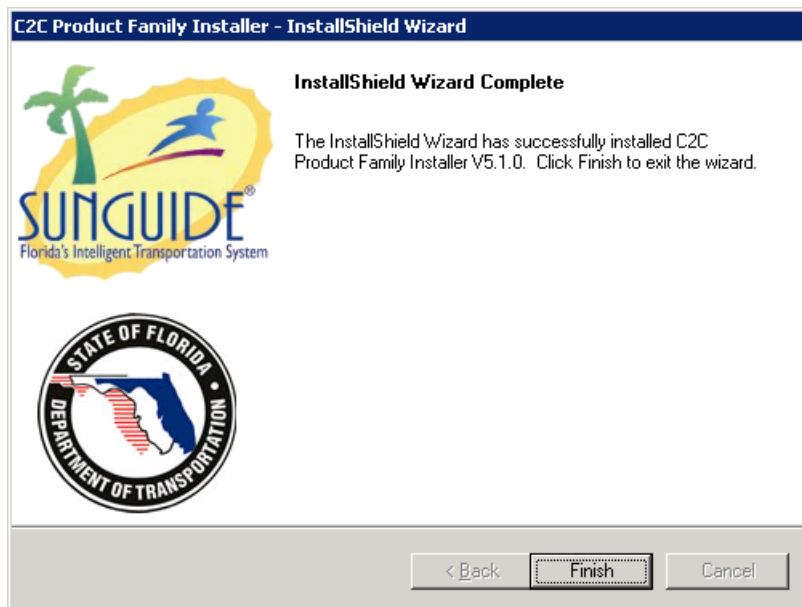


Figure 3-34 InstallShield Wizard Complete Dialog

3.8.3 Initiating a Session

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

3.8.4 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.

3.8.5 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 editing after the install to the data types selections.

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
incidentData	Depracated unplanned event data type
closureData	Depracated planned event data type
dmsData	Dynamic message sign status data
harData	Highway advisory radio status data
essData	Environmental status sensor status data, based on SunGuide RWIS data
cctvStatusData	Closed circuit TV status data
cctvSnapshotData	CCTV video snapshot data
trafficCondData	Traffic speed, volume and occupancy status data from the SunGuide TSS data

trafficSpeedData	Traffic speed data from the SunGuide TSS data, published in bulk at a configurable interval
tvStatusData	Travel time data from the SunGuide TVT data
remoteMsgData	Queued DMS and HAR messages from the SunGuide MAS subsystem
floodgateData	Floodgate data from the FL-ATIS system
rawPvdmData	Raw Probe data from RSE devices
rawTamData	Traveler Advisory Messages
graphicData	Configured DMS Graphics
fontData	Configured DMS Fonts
eventTypeData	Configured Event Types from SunGuide's EM system

For the Command Receiver, the C2C configuration information is shown in Table 3.1 below.

Table 3.1 - 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"/>

<!-- Process Status variables -->
<!--
  <add key="processUpdateInterval" value="15"/>
-->
<!-- XML dump file -->
<!--
  <add key="xmlDumpFile" value="e:\Tmp\CmdRecvXml.txt"/>
-->
</appSettings>
```

The parameters for configuring the Command Receiver are:

validateXml	Enables validation of the XML messages. The messages are validated against the schema and errors are logged for invalid messages. Due to performance considerations, this is intended primarily for debugging.
xmlServerHost	Host IP/name of the TMC's C2C XML Server.
xmlServerPort	IP Port of the TMC's C2C XML Server.
processName	A name which uniquely identifies this Command Receiver to the StatusLogger 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>
xmlDumpFile	If uncommented, the file specified will be used to store the XML-formatted responses for the TMC server.

For the Data Provider, the C2C configuration information is shown in Table 3.2 below.

Table 3.2 - Data Provider web.config Settings

```
<appSettings>

  <!-- the XML data types for the Subscribe web method -->
  <add key="subscriptionDataTypes" value="networkData localeData
trafficCondData trafficSpeedData tvStatusData eventData dmsData cctvStatusData
cctvSnapshotData harData essData remoteMsgData floodgateData rawProbeData
rawTamData" />

  <!-- the interval at which keepAlive messages are to be delivered -->
  <add key="keepAliveIntervalSeconds" value="30" />

  <!-- the process name to be recorded by the StatusLogger service -->
  <add key="processName" value="C2C Provider" />

  <!-- the host machine for the StatusLogger service -->
  <add key="statusLoggerHost" value="localhost" />

  <!-- the socket listener port for the StatusLogger service -->
  <add key="statusLoggerPort" value="8000" />

  <!-- the StatusLogger logging level -->
  <add key="StatusLoggerLevel" value="slDebug"/>

</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.
processName	A name which uniquely identifies this Data Provider to the StatusLogger 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 *slError*, *slWarn*, *slInfo*, *slDebug*, and *slDetail*

For the Data Collector, the C2C configuration information is shown in Table 3.3 below.

Table 3.3 - Data Collector web.config Settings

```
<appSettings>

  <!-- the XML data types for the Subscribe web method -->
  <add key="subscriptionDataTypes" value="networkData localeData
trafficCondData trafficSpeedData tvStatusData eventData dmsData cctvStatusData
cctvSnapshotData harData essData remoteMsgData floodgateData graphicData fontData
eventTypeData" />

  <!-- 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://machine_name/C2C/Provider/ProviderServer.asmx
http://other_machine/C2C/Collector/CollectorServer.asmx" />

  <!-- the URI of the Collec'or's client side Web Service. Sent to the
data providers when logging in to them -->
  <add key="updatesURI"
value="http://machine_name/C2C/Collector/CollectorClient.asmx" />

  <!-- the process name to be recorded by the StatusLogger service -->
  <add key="processName" value="C2C Provider" />

  <!-- the host machine for the StatusLogger service -->
  <add key="statusLoggerHost" value="localhost" />

  <!-- the socket listener port for the StatusLogger service -->
  <add key="statusLoggerPort" value="8000" />

  <!-- the StatusLogger logging level -->
  <add key="StatusLoggerLevel" value="slDebug"/>

</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 StatusLogger 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>

For the Data Extractor, the C2C configuration information is shown in Table 3.4 below.

Table 3.4 - Data Extractor web.config Settings

```
<appSettings>
<!-- Status Logger variables -->
  <add key="processName" value="C2C Extractor"/>
  <add key="statusLoggerHost" value="127.0.0.1"/>
  <add key="statusLoggerPort" value="8000"/>
  <add key="statusLoggerLevel" value="slDebug"/>
  <add key="keepAliveIntervalSeconds" value="30"/>
  <add key="updatesURI"
```

```
value="http://machine_name/C2C/Extractor/ExtractorClient.asmx"/>
  <add key="serverList"
value="http://machine_name/StatewideCollector/CollectorServer.asmx[DAL,FTW]"/>

  <!-- the XML data types for the Subscribe web method -->
  <add key="subscriptionDataTypes" value="networkData localeData
trafficCondData tvtStatusData eventData dmsData cctvStatusData cctvSnapshotData
harData essData remoteMsgData floodgateData" />
</appSettings>
```

The parameters for configuring the Data Extractor are:

processName	A name which uniquely identifies this Data Extractor to the StatusLogger 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>
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.
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.
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.

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 3.5.

Table 3.5 - Override Message Size web.config Settings

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

</system.web>

3.9 Configuration

The SunGuide software has a number of 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.

3.9.1 IP Port Usage

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

Table 3.6 Port Assignments

SunGuide Component	IP Port Used
AVL/RR Subsystem	41300
C2C Publisher Plug-in	8045
C2C Subscriber Plug-in client connections	40051
C2C Subscriber Plug-in Extractor connection	20001
CCTV American Dynamics Driver	12167
CCTV NTCIP 1205 Driver	12164
CCTV Subsystem	40009
Connected Vehicle Subsystem (CVS)	38956
Connected Vehicle Driver	40142
Data Archive	40511
Data Archive RITIS	38946
Databus	40007
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
GUI Preference Manager	40035
HAR DR2000 Driver	40107
Highway Advisory Radio Subsystem (HAR)	40017
Incident Detection Subsystem (IDS)	40011
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 Safety Barrier Driver	38590
INRIX Publisher	38943
Inventory Maintenance Subsystem (IMS)	40018

SunGuide Component	IP Port Used
Message Arbitration Subsystem (MAS)	38900
Notify Manager	8004
Oracle 11g	1521
Pricing Subsystem	40878
Ramp Meter Subsystem (RMS)	40003
RMS BiTran-170 Driver	9001
Road Ranger XML Driver	41400
Road Weather Information System Subsystem (RWIS)	40077
RWIS Driver	40078
Safety Barrier Driver (SB)	40088
Safety Barrier Subsystem	40008
Scheduled Actions Subsystem	40712
SPARR Driver	41302
Status Logger	8000
Transportation Sensor Subsystem (TSS)	40004
Travel Time Subsystem (TVT)	40012
TSS Bitrans Driver	12888
TSS Probe Fusion Driver	48889
TSS RTMS Driver	40009
TSS WsDOT Driver	8091
TSS CvTssDriver	40142
Video Switch Subsystem (VS)	40022
Video Wall Subsystem (VW)	40027
VisioPaD Subsystem	40097
VS IP Video Switch Driver	40010
Variable Speed Limit Subsystem (VSL)	40048
VW Activu Wall Driver	59207
VW Barco Wall Driver	40037
VW Jupiter Wall Driver	40038

3.9.2 IIS Configuration (Restrict Access to Admin Editor)

To restrict access to the SunGuide Administrative Editor to a > particular group of Windows users, log in to the machine hosting the > Administrative Editor and create a Windows user group named > SunGuideAdmin. Add any users who should have access to this group. Note that all members of the Administrators group will also have access to the page, by the design of Windows:

- Open the IIS Manager application:
 - In the left pane, open the item for the server (local computer), then open Web Sites, then open Default Web Site.
 - Right click on the SunGuideAdmin entry and select Properties.
 - Open the Directory Security tab, then under Authentication and access control, press the Edit button.

- Clear the "Enable anonymous access" checkbox, and make sure "Integrated Windows authentication" is checked.
- Press OK to dismiss both open dialogs.
- Using Windows Explorer:
 - Browse to the root directory of the web server (C:\Inetpub\wwwroot). Right click on SunGuideAdmin and select Properties.
 - Open the Security tab and click the Advanced button, then clear the "Allow inheritable permissions" checkbox and choose Copy.
 - Remove all permission entries except for those given to INTERACTIVE, NETWORK, NETWORK SERVICE, and SYSTEM.
 - Press the Add button and add the SunGuideAdmin group (hostname\SunGuideAdmin), then press OK.
 - Give SunGuideAdmin Full Control, then press OK. Select OK on the Advanced Security dialog, then select OK on the SunGuideAdmin Properties dialog.
- Browse to the Default.htm file in the SunGuideAdmin directory, and set up permissions the same was as was done for the directory itself, but remove all permissions for ALL users except the SunGuideAdmin group.
- Restart IIS to apply all the changes.

3.9.3 Executive Handler Configuration

- Run Executive Handler Editor, and add processes using the settings in Table 3.7 below (note that which process will be configured will vary based on the information contained in the deployment specific *Implementation Plan*):

Table 3.7 – SunGuide Application Configuration

What	Type	Executable	Name	Parameters	Subsystem
Data Bus Subsystem	Service	DataBusService.exe	Data Bus Subsystem	<config file loc> databus	Data Bus
Data Archive	Service	DataArchiveService.exe	Data Archive	<config file loc> DataArchive	Data Archive
Data Archive RITIS	Service	DarService.exe	Data Archive RITIS	<config file loc> dar	DAR
DMS Statewide driver	Service	DmsStatewideDriver.exe	DMS Statewide Driver	Retrieved from registry: <config file loc> StatewideDriver dms	DMS
DMS XML Interface	Service	DMSXMLInterface.exe	DMS XML Interface	Retrieved from registry: <config file loc> DmsXmlInterface dms	DMS
CCTV Subsystem	Service	CctvService.exe	CCTV Subsystem	<config file loc> cctv	CCTV
TSS Subsystem	Service	TssService.exe	TSS Subsystem	<config file loc> tss	TSS

What	Type	Executable	Name	Parameters	Subsystem
MCP Subsystem	Service	McpManagerSvc.exe	MCP Manager	<config file loc> McpManager	GUI
IP Video Switch Driver	Service	IpVideoSwitchDriverSvc.exe	IP Video Driver Driver	IpVideoSwitch <config file loc>	VS
Barco Driver	Service	BarcoDriverSve.exe	Barco Driver Service	BarcoWall <config file loc> VideoWallSystem	VW
TVT Subsystem	Service	TvtService.exe	TVT Subsystem	<config file loc> tvt	TVT
VideoWall Subsystem	Service	VwsService.exe	Video Wall Subsystem	<config file loc> VideoWallSystem	VW
VS Subsystem	Service	VsService.exe	Video Switching Subsystem	<config file loc> vs	VS
GUI Preference Manager	Service	GuiMgrService.exe	GUI Preferences Manager	<config file loc> gui	GUI
Notify Manager	Service	NotifyManagerSvc.exe	Notify Manager	<config file loc> notifyMgr	GUI
RTMS Driver Service	Service	RtmsDriverSvc.exe	RTMS Driver Service	RtmsDriver <config file loc> tss	TSS
BiTran238Driver	Service	BiTran238Driver.exe	BiTran238DriverService.exe	Retrieved from registry: <config file loc> BITran238_1 tss	TSS
CCTV NTCIP Driver	Service	NtcipCctvDriver.exe	CCTV NTCIP Driver	Retrieved from registry: <config file loc> NTCIP_1 cctv	CCTV
CCTV American Dynamic Driver	Service	AmerDynDriverSvc.exe	CCTV American Dynamics Driver	AD_SD_Driver <config file loc> cctv	CCTV
Message Arbitration Subsystem	Service	MasService.exe	Message Arbitration Subsystem	mas <config.file loc>	MAS
C2C Publisher Plug-in	Service	C2cServerService.exe	C2C Publisher Plug-in	<config file loc> C2cPublisher	C2C
C2C Subscriber Plug-in	Service	C2cClientService.exe	C2C Subscriber Plug-in	<config file loc> C2cSubscriber	C2C
INRIX Publisher	Service	InrixService.exe	INRIX Publisher	<config file loc> inrix	C2C

What	Type	Executable	Name	Parameters	Subsystem
Highway Advisory Radio Subsystem	Service	HarService.exe	HAR Subsystem	<config file loc> har	HAR
HAR DR2000 Driver Service	Service	HarDR2000Svc.exe	HAR DR2000 Driver	DR2000 <config file loc> har	HAR
Inventory and Maintenance System Service	Service	ImsService.exe	IMS Subsystem	<config file loc> ims	IMS
Road Weather Information Subsystem	Service	RwisService.exe	RWIS Subsystem	rwis <config file loc>	RWIS
RWIS Driver Service	Service	RwisDriverSvc.exe	RWIS Driver	RwisDriver <config file loc> rwis	RWIS
Safety Barrier Subsystem	Service	SbService.exe	Safety Barrier Subsystem	sb <config file loc>	SB
Safety Barrier Driver Service	Service	SbDriverSvc.exe	Safety Barrier Driver	SBDriver <config file loc> sb	SB
Scheduled Actions Subsystem	Service	SasService.exe	Scheduled Actions Subsystem	<config file loc> sas	SAS
Ramp Meter Subsystem	Service	RampMeterService.exe	Ramp Meter Subsystem	Retrieved from registry: rms <config file loc> protocolConfig.xml	RMS
Ramp Meter Driver	Service	RMS170DriverSvc.exe	RMS BiTran-170 Driver	Bitran-170 <config file loc> rms	RMS
VSL Subsystem	Service	VslService.exe	VSL Subsystem	<config file loc> vsl	VSL
EM Subsystem	Service	EmService.exe	EM Subsystem	<config file loc> em	EM
Reporting Subsystem	Service	RsService.exe	Reporting Subsystem	<config file loc> rs	EM
Pricing Subsystem	Service	PsService.exe	Pricing Subsystem	<config file loc> ps	EL
AVL Subsystem	Service	AvlService.exe	AVL Subsystem	<config file loc> avlrr	AVL/RR

What	Type	Executable	Name	Parameters	Subsystem
Road Ranger XML Driver	Service	RRXMLDriverService.exe	Road Ranger Subsystem	RRXMLDriver <config file loc> avlrr	AVL/RR
SPARR Driver	Service	SPARRDriverService.exe	SPARR Driver	SPARRDriver <config file loc> avlrr	AVL/RR
Incident Detection	Service	IdsService.exe	Incident Detection Sybssystem	<config file loc> ids	IDS
TSS Alarm Driver	Service	TssAlarmDriverSvc.exe	IDS TSS Alarm Driver	TssAlarmDriver <config file loc> ids	IDS
VisioPaD Driver	Service	VisioPadDriverSvc.exe	IDS VisioPaD Driver	VisioPadDriver <config file loc> ids	IDS
Weather Alert Driver	Service	WeatherAlertDriverSvc.exe	IDS Weather Alert Driver	WeatherAlertDriver <config file loc> ids	IDS
External Event Driver	Service	ExternalEventDriverSvc.exe	IDS External Event Driver	ExternalEventDriver <config file loc> ids	IDS
Probe Fusion Driver Service	Service	ProbeFusionDriverSvc.exe	Probe Fusion Driver Service	ProbeFusionDriver <config file loc> tss	TSS
FHP Incident Driver	Service	FhpIncidentService.exe	IDS FHP Incident Driver	FhpIncident Driver <config file loc> ids	IDS
Safety Barrier Driver	Service	SbAlarmDriverSvc.exe	IDS SB Driver	Safety Berrier Driver <config file loc> ids	IDS
Connected Vehicle Subsystem	Service	CvsService.exe	Connected Vehicle Subsystem	<config file loc>cvs	CVS
Connected Vehicle Driver	Service	J2735DriverSvc.exe	J2735 Connected Vehicle Driver	CvDriver <config file loc>cvs	CVS
Connected Vehicle TSS Driver	Service	CvTssDriverSvc.exe	CvTssDriver	CvTssDriver <config file loc> tss	TSS
Jupiter Video Wall Driver	Service	JupiterVwdService.exe	JupiterVideoWall	JupiterVideoWall <config file loc> VideoWallSystem	VW
Activu Video Wall Driver	Service	Activu SunGuide Service.exe	ActivuVideoWall	ActivuWall <config file loc> VideoWallSystem	VW

3.9.4 Configurable Parameters

The following sections detail the configuration parameters that the SunGuide subsystems have available at startup of the subsystem. Where applicable, the default value is noted in XML notation for each configuration parameter, for example:

```
<maxConnections>20</maxConnections>
```


indicates that the value of "20" is the default for the parameter "maxConnections".

There are several top-level parameters used by many applications that do not belong to a group:

- `<schemaLocation>///129.162.101.115/FDOT/XML/Schemas</schemaLocation>` The root location of the XML schema files that will be used if validation is enabled.
- `<debugMode>>true</debugMode>` Whether to generate extra debug messages when enabled (true, false).
- `<centerId>District 6</centerId>` The identifier of the FDOT TMC using the configuration.
- `<mapPath>//Server1/Navteq</mapPath>` Location of the Navteq shape files to be used for county, roadway and street name lookups
- `<smtpServer>` Host and port of the SMTP server used by PS and EM
 - `<emailFrom>XXXXXX@yahoo.com</emailFrom>`
 - `<enableSSL>>false</enableSSL>`
 - `<username></username>` Leave credentials empty if not needed
 - `<password></password>`

3.9.4.1 Database

The database `<Database>` has the following configuration parameters:

- `<type>oracle</type>`: Acceptable values are oracle and sqlserver
- `<host>dbServer</host>`: This is the IP Address or DNS Name of the Machine running the database
- `<port>1521</port>`: Port the Database is listening for incoming connections. Oracle default port is 1521. SQL Server default port is 1433
- `<databaseName>sgdb</databaseName>`: Name of the database on the actual server
- `<user>sunguide</user>`: user account established for internal system use.
- `<password>floridad0t</password>`: established password for internal account.
- `<jdbcDriver>oracle.jdbc.driver.OracleDriver</jdbcDriver>` fully qualified name of the class used by Java applications to communicate with the database.
 - For Oracle use: oracle.jdbc.driver.OracleDriver.
 - For SQLServer use: net.sourceforge.jtds.jdbc.Driver.

The ODS database `<odsDatabase>` has the following configuration parameters:

- `<user>sunguide</user>`: user account established for internal system use.
- `<password>floridad0t</password>`: established password for internal account.

The CVS database `<cvDatabase>` has the following configuration parameters:

- `<host>dbHost</host>`: machine on which the database is running
- `<port>1521</port>`: port which the database uses
- `<user>sunguide</user>`: user account established for internal system use.
- `<password>floridad0t</password>`: established password for internal account.

3.9.4.2 Administrative Editor

The administrative editor has the following configuration parameters:

- `<comDevice>databus</comDevice>` The Admin system should always talk to Data Bus, but it is possible to talk to a single subsystem directly (just not likely in production mode).
- `<logLevel>slDetail</logLevel>` Set by all subsystems, and indicates the default logging level. Valid values are: `slDetail`, `slDebug`, `slInfo`, `slWarning`, or `slError`.
- `<debugMode>>true</debugMode>` Whether to generate extra debug messages when enabled (true, false).
- `<defaultTimeout>15</defaultTimeout>` The value in seconds that the Admin editor will wait for a response after issuing a request before reporting a timeout error.
- `<username>Admin</username>` The username as specified in the database that is used when the Administrative Editor authenticates, retrieves data, and pushes equipment updates to each data provider.
- `<password>X03MO1qnZdYdgyfeuILPmQ==</password>` The password as specified in the database, in its encrypted value. This is used when the Administrative Editor authenticates, retrieves data, and pushes equipment updates to each data provider.

3.9.4.3 Status Logger

The Status Logger subsystem has the following configuration parameters that can be set in the Status Logger configuration file:

- `<host>localhost</host>` The name of the computer on which the Status Logger Server is running (DNS name, qualified as necessary, or the IP address).
- `<port>8000</port>` The TCP/IP port on which the Status Logger Server is listening for client connections.

The Status Logger subsystem has the following configuration parameters that are stored in the Windows Registry and can be set using the Status Logger Control Panel Applet:

- `<host>localhost</host>` The name of the computer on which the Status Logger Server is running (DNS name, qualified as necessary, or the IP address).
- `<port>8000</port>` The TCP/IP port on which the Status Logger Server is listening for client connections.
- `<directory>c:\StatusLogger</directory>` The directory where the Status Logger Server will write log files.
- `<interval>0</interval>` Index of new log file generation value (in hours): 24, 12, 8, 6, 4, 2, 1.
- `<reuse>1</reuse>` Flag value indicates if log files will be reused (0 or 1).
- `<useAppNames>0</useAppNames>` Flag value indicates if log files are named for applications (0 or 1).
- `<deleteDays>14</deleteDays>` The age of log files in days that will be deleted while the Status Logger Server is running.

3.9.4.4 Executive Handler

The Executive Handler has the following configuration parameters that are stored in the Windows Registry at "HKLM/Software/Florida Department of Transportation/Executive Handler":

- `<clientPort>8001</clientPort>` The TCP/IP port on which the Executive Handler Server is listening for client process connections.
- `<listPort>8003</listPort>` The TCP/IP port on which the Executive Handler Server is listening for EH Viewer list connections.
- `<mgrPort>8002</mgrPort>` The TCP/IP port on which the Executive Handler Server is listening for EH Viewer manager connections.
- `<connTimeout>60</connTimeout>` The time in seconds after which a client process is considered non-responsive.
- `<batchStartInterval>10</batchStartInterval>` The time in milliseconds to wait between starts when starting a list of processes.
- `<restartLimit>5</restartLimit>` The number of times a process will be automatically restarted.
- `<restartTimer>5</restartTimer>` The number of minutes within which the restart limit being reached will prevent further automatic restarts.

3.9.4.5 Notify Manager

The Notify Manager has the following configuration parameters:

- `<host>localhost</host>` The name of the computer on which the Notify Manager Server is running (DNS name, qualified as necessary, or the IP address).
- `<port>8004</port>` The TCP/IP port on which the Notify Manager Server is listening for client connections.

3.9.4.6 Data Bus

The Data Bus has the following configuration parameters:

- `<databus>`
 - `<host>pascal</host>` The name of the computer on which the Data Bus should be running (DNS name, qualified as necessary, or the IP address).
 - `<port>8009</port>` The port on which the Data Bus is listening for client connections.
 - `<icdVersion>1.0</icdVersion>` The ICD version for this system, this is appended to the schema location in the general section of config data. (Should be the version corresponding to the location of schemas for this system.)
 - `<maxConnections>20</maxConnections>` Maximum number of client connections to allow (1-20).
 - `<logLevel>slDetail</logLevel>` The level of status logging for this system; this can also be changed via the EH. (slError, slWarning, slInfo, slDebug, slDetail).

- `<validation>>false</validation>` Whether XML validation is on, this should be false when in a production environment. If validation is set to true, the subsystem performance will be slower (true, false).
- `<providerType>databus</providerType>` The provider type of this subsystem, used in XML to uniquely identify elements.
- `<username>databus</username>` The username as specified in the database that is used when the Data Bus authenticates and retrieves data from each data provider.
- `<password>X03MO1qnZdYdgyfeuILPmQ==</password>` The password as specified in the database, in its encrypted value. This is used when the Data Bus authenticates and retrieves data from each data provider.
- `<dataProviders></dataProviders>` The Data Bus attempts to connect with the data providers listed within this tag. Within each data provider tag, a `<subsystemType></subsystemType>` tag may be included to indicate the type of subsystem (e.g., dms, cctv, tss, etc). If this tag is not defined by the data provider, the Data Bus uses the provider name for the subsystem type value.

3.9.4.7 Dynamic Message Signs

The Dynamic Message Sign subsystem has the following configuration parameters:

- `<host>laplace</host>` The name of the computer on which the DMS Subsystem should be running (DNS name, qualified as necessary, or the IP address).
- `<port>40001</port>` The port on which the DMS Subsystem is listening for client connections.
- `<icdVersion>1.0</icdVersion>` The ICD version for this system, this is appended to the schema location in the general section of config data. (Should be the version corresponding to the location of schemas for this system.)
- `<logLevel>slDetail</logLevel>` The level of status logging for this system; this can also be changed via the EH (slError, slWarning, slInfo, slDebug, slDetail).
- `<validation>>false</validation>` Whether XML validation is on, this should be false when in a production environment. If validation is set to true, the subsystem performance will be slower (true, false).
- `<debugMode>>true</debugMode>` Whether to print out debug messages to console when running in console mode (true, false).
- `<clearReadBuffer>>false</clearReadBuffer>` Indicates whether the driver should clear the socket read buffer in between packet reads. This is used for DMSs that are on a ring configuration system.
- `<runWithMas>>true</runWithMas>` Set to true if DMS should connect to MAS to send sequence messages. Added for backward compatibility.
- `<masHost>laplace</masHost>` Host name for the connection for MAS.
- `<masPort>8988</masPort>` Port for the connection for MAS.
- `<masUser>dmsMain</masUser>` > The username as specified in the database that is used when the DMS authenticates and sends messages to MAS.
- `<masPwd> X03MO1qnZdYdgyfeuILPmQ==</masPwd>` > The password as specified in the database, in its encrypted value. This is used when the DMS authenticates and sends messages to MAS.

- `<checkSequenceConflicts>false</checkSequenceConflicts>` If true, the system will ensure two sequences do not run items on the same device simultaneously. If false, no checking for conflicts will occur, messages will just be added to the MAS queue.
- `<databaseClassName>oracle.jdbc.driver.OracleDriver</databaseClassName>` The oracle driver used by Java to communicate with the Oracle database.
- `<handlers>` These handlers are run when the system starts up. If a handler is not listed, that handler will not be instantiated by the system.
 - `<gov.its.dms.xmlinterface.xmlhandlers.AuthenticateHandler/>` Processes authentication of user.
 - `<gov.its.dms.xmlinterface.xmlhandlers.ConfigureDmsHandler/>` Processes adding, deleting or modifying DMSs.
 - `<gov.its.dms.xmlinterface.xmlhandlers.ConfigureApprovedWordsHandler/>` Processes adding or deleting words to/from the approved words list in the database.
 - `<gov.its.dms.xmlinterface.xmlhandlers.ConfigureSequenceHandler/>` Processes sequence requests.
 - `<gov.its.dms.xmlinterface.xmlhandlers.ConfigureSystemConfigurationHandler/>` Processes configuration of the system (i.e., polling cycles, default message, etc.)
 - `<gov.its.dms.xmlinterface.xmlhandlers.ConflictHandler/>` Handles message or spelling conflicts.
 - `<gov.its.dms.xmlinterface.xmlhandlers.ControlDmsHandler/>` Processes requests that pertain to controlling a DMS (i.e., send message, set control mode, set brightness, etc).
 - `<gov.its.dms.xmlinterface.xmlhandlers.DiagnosticDmsHandler/>` Processes requests that pertain to diagnosing a DMS for its detail hardware status (i.e., lamp status, pixel status, etc.).
 - `<gov.its.dms.xmlinterface.xmlhandlers.RetrieveDataHandler/>`Processes requests to retrieve DMS data from the system.
 - `<gov.its.dms.xmlinterface.xmlhandlers.RetrieveDmsInfoHandler/>` Processes requests to retrieve information about a DMS.
 - `<gov.its.dms.xmlinterface.xmlhandlers.SubscribeHandler/>` Processes user subscriptions.
 - `<gov.its.dms.xmlinterface.xmlhandlers.ConfigureUserHandler/>` Processes adding, modifying, deleting user and user permissions.
 - `<gov.its.dms.xmlinterface.xmlhandlers.ConfigureDmsGroupHandler/>`Processes configuring DMSs into groups.
 - `<gov.its.dms.xmlinterface.xmlhandlers.ConfigureMessageHandler/>` Processes adding message and message libraries into the database.
 - `<gov.its.dms.xmlinterface.xmlhandlers.ConfigurePropertyHandler/>` Processes turning validation on/off or turning logging on/off.
- `<subscriptions>` Used by the Data Bus to subscribe to updates.
 - `<dmsStatus/>` Used by Data Bus to subscribe to status changes.
 - `<dmsMessage/>` Used by Data Bus to subscribe to message changes.
 - `<dmsOpStatus/>` Used by Data Bus to subscribe to operational status changes (i.e., change from active to out of service or vice versa).
 - `<dmsData/>` Used by Data Bus to subscribe to DMS configuration changes.

- <statusUpdates> Used by the Data Bus to determine which messages should be examined for updating the cache.
 - <dms> Name of the Data Bus element to be updated (resource type).
 - <addDmsResp action="add"/> Used to notify the Data Bus that a DMS was added into the system and the Data Bus data cache needs to be updated.
 - <statusResp/> Used to notify the Data Bus that the status of one of the DMSs has changed and the Data Bus data cache needs to be updated.
 - <sendMsgResp/> Used to notify the Data Bus that a new message was placed on one of the DMSs and the Data Bus data cache needs to be updated.
 - <setOpStatusResp/> Used to notify the Data Bus that the op status has changed for a DMS.
 - <deleteDmsResp action="delete"/> Used to notify the Data Bus that a DMS was deleted from the database.
 - <modifyDmsResp action="modify"/> Used to notify the Data Bus that a DMS was modified.
 - <setBrightnessResp/> Used to notify the Data Bus that the brightness was changed on a DMS.
 - <setControlModeResp/> Used to notify the Data Bus that the control mode was changed on a DMS.
 - <echoMsgResp/> Used to notify the Data Bus that a message has been modified.
 - <statusTimesUpdateMsg action="modify"/> Used to notify Data Bus the time a dms was last polled
- <drivers>
 - <driver>
 - <identifier> DMSDriver</identifier> Name of the subsystem, this is used for the providerName in requests.
 - <host>serverName</host> Name or IP address of computer where this driver is running.
 - <port>40007</port> Port where this driver is listening for client connections.
 - <providerType>dms</providerType> Used when sending requests to the subsystem—should correspond to provider type in subsystem.
 - <logLevel>slDetail</logLevel> The level of status logging for this system, can also be changed via the EH (slError, slWarning, slInfo, slDebug, slDetail).
 - <debugMode>>true</debugMode> Increases logging when set to true
 - <slowPollMultiplier>10</slowPollMultiplier> Multiplier (based on poll cycle) that determines how often the dms should slow poll a device
 - <defaultPageOnTime>3.0</defaultPageOnTime> The amount of time in seconds that the first phase should be displaying
 - <defaultPageOffTime>0.0</defaultPageOffTime> The amount of time in seconds that the second phase should be displaying

- `<commTolerance>` Indicates how many times retransmission will occur after communication failure.
- `<debugMode>>false</debugMode>` sets the driver into debug mode on startup
- `<colorTransparencyThreshold>254</colorTransparencyThreshold>` sets the threshold where color is considered transparent or opaque
- `<tryToReuseGraphics>>true</tryToReuseGraphics>` if true, the driver attempt to use the graphics that have already be uploaded and will not resend the graphic if it has already been uploaded to the sign
- `<ignoreGraphicCrc>>false</ignoreGraphicCrc>` will ignore the check for the graphics CRC if true

3.9.4.8 Message Arbitration

The Message Arbitration subsystem has the following configuration parameters:

- `<host>serverName</host>` The name of the computer on which the message arbitration subsystem should be running (DNS name, qualified as necessary, or the IP address).
- `<port>38900</port>` The port on which the message arbitration system is listening for client connections.
- `<icdVersion>1.0</icdVersion>` The ICD version for this system, this is appended to the schema location in the general section of config data (Should be the version corresponding to the location of schemas for this system).
- `<maxConnections>20</maxConnections>` Maximum number of client connections to allow (1-20).
- `<logLevel>slInfo</logLevel>` The level of status logging for this system, can also be changed via the EH (slError, slWarning, slInfo, slDebug, slDetail).
- `<validation>>false</validation>` Whether xml validation is on, this should be false when in a production environment. If validation is set to true, the subsystem performance will be slower (true, false).
- `<loadQueueListOnStartup>>true</loadQueueListOnStartup>` If this is set to true, on restart MAS will retain what is in the queue.
- `<overrideSpellingConflicts>>false</overrideSpellingConflicts>` If this is set to true, messages sent through MAS will bypass all spelling or approved word conflicts.
- `<handlers>` These handlers are run when the system starts up. If a handler is not listed, that handler will not be instantiated by the system.
 - `<gov.its.mas.xml.MasRetrieveDataHandler/>` Processes requests to retrieve data from the system.
 - `<gov.its.mas.xml.MasMessageHandler/>` Processes requests to add, modify, remove and resend messages.
 - `<gov.its.mas.xml.MasQueueHandler/>` Processes requests to modify a queue.
 - `<gov.its.mas.xml.MasSubscribeHandler/>` Processes requests to subscribe to data.
- `<subscriptions/>` Used by the Data Bus to subscribe to updates. There are none for MAS, this should be empty.
- `<statusUpdates/>` Used by the Data Bus to determine which messages should be examined for updating the cache. There are none for MAS, this should be empty.

- <drivers> Contains a list of driver elements.
 - <driver>
 - <identifier>databus</identifier>Name of the Data Bus Process
 - <host>DATABUSHOSTNAME</host> Host where the Data Bus process is running
 - <port>DATABUSPORTNUMBER</port> Port on which to connect to Data Bus
 - <username>masMain</username> User name to authenticate to DMS and MAS with
 - <password>X03MO1qnZdYdgyfeuILPmQ==</password> Password to go along with the username above
 - <databusProviders> List of system to connect to through Data Bus
 - <databusProvider> DMS provider
 - <providerName>dms</providerName> Name of the DMS provider
 - <providerType>dms</providerType> Type of data being provided
 - <pageSeperator>[np]</pageSeperator> When sending messages, the type of break seen in the message plain text
 - </databusProvider>
 - <databusProvider> HAR Provider
 - <providerName>har</providerName> Name of the HAR Provider
 - <providerType>har</providerType> Type of data being provided
 - <pageSeperator>.</pageSeperator> When sending messages, the type of break seen in the message plain text
 - </databusProvider>
 - </databusProviders>
 - </driver>
- </drivers>

3.9.4.9 Video Wall

The Video Wall subsystem has the following configuration parameters:

- <host>laplace</host> The name of the computer on which the video wall subsystem should be running (DNS name, qualified as necessary, or the IP address).
- <apiURL>http://newton/ApolloApi</apiURL>The URL for the connection o
- <port>40027</port> The port on which the video wall system is listening for client connections.
- <icdVersion>1.0</icdVersion> The ICD version for this system, this is appended to the schema location in the general section of config data (Should be the version. corresponding to the location of schemas for this system).
- <maxConnections>20</maxConnections> Maximum number of client connections to allow (1-20).

- `<logLevel>slDetail</logLevel>` The level of status logging for this system, can also be changed via the EH (slError, slWarning, slInfo, slDebug, slDetail).
- `<sendConnRespForTour>>false</sendConnRespForTour>` Controls whether connection responses are sent to clients for video tours.
- `<validation>>false</validation>` Whether xml validation is on, this should be false when in a production environment. If validation is set to true, the subsystem performance will be slower (true, false).
- `<providerType>vw</providerType>` The provider type of this subsystem, used in xml to uniquely identify elements.
- `<handlers>` These handlers are run when the system starts up. If a handler is not listed, that handler will not be instantiated by the system.
 - `<gov.its.vw.xml.VwsConfigHandler />` Processes configuration data for the video wall.
 - `<gov.its.vw.xml.VwsControlHandler />` Processes connection requests.
 - `<gov.its.vw.xml.VwsSubscribeHandler />` Processes user subscriptions.
 - `<gov.its.vw.xml.VwsRetrieveDataHandler />` Processes requests to retrieve data from the system.
 - `<gov.its.vw.xml.VwsVideoTourHandler />` Processes activation and deactivation of video tours.
- `<subscriptions>` Used by the Data Bus to subscribe to updates.
 - `<wallData />` Used by the Data Bus to subscribe to updates in viewer geometry and source connections to viewers.
 - `<connectionData />` Used by the Data Bus to subscribe to updates to connections on the wall.
- `<statusUpdates>` Used by the Data Bus to determine which messages should be examined for updating the cache.
 - `<wall>` Name of the Data Bus element to be updated (resource type).
 - `<wallGeometryUpdateMsg />` Used to notify the Data Bus that when this type of message is received, a modification to Data Bus data cache is required.
 - `<connectionResp action="modify" />` Used to notify the Data Bus that when this type of message is received, a modification to Data Bus data cache is required.
- `<drivers>...` The video wall system will attempt connection to drivers that are listed in this section.

3.9.4.10 Barco Video Wall Driver

The Barco Video Wall driver has the following configuration parameters:

- `<driver>`
 - `<identifier>BarcoWall</identifier>` Name of this driver.
 - `<host>pascal</host>` The name of the computer on which the Barco driver should be running (DNS name, qualified as necessary, or the IP address).
 - `<port>40037</port>` The port on which the Barco driver is listening for client connections (from the Video wall subsystem).

- `<logLevel>slDetail</logLevel>` The level of status logging for this system; this can also be changed via the EH (slError, slWarning, slInfo, slDebug, slDetail).
- `<validation>>false</validation>` Whether xml validation is on, this should be false when in a production environment. If validation is set to true, the subsystem performance will be slower (true, false).
- `<icdVersion>1.0</icdVersion>` The ICD version for this system, this is appended to the schema location in the general section of config data. (Should be the version corresponding to the location of schemas for this system. If validation is turned on, this must be the same as for the VW subsystem.)
- `<maxConnections>20</maxConnections>`Maximum number of client connections to allow (1-20).
- `<providerType>vw</providerType>` The provider type of this driver, used in XML to uniquely identify elements.
- `<apiURL>http://Newton/ApolloApi/</apiURL>` This is the web location of the Barco Apollo SOAP API.
- `<stringToReplaceSpaces>-</stringToReplaceSpaces>`
- `<handlers>` These handlers are run when the system starts up. If a handler is not listed, that handler will not be instantiated by the system.
 - `<gov.its.vw.xml.BwdViewerControlHandler />` Processes viewer control data for the driver.
 - `<gov.its.vw.xml.BwdWallConfigHandler />` Processes wall config data for the driver.
 - `<gov.its.vw.xml.BwdRetrieveDataHandler />` Processes retrieve data for the driver.

3.9.4.11 Jupiter Video Wall Driver

The Jupiter Video Wall driver has the following configuration parameters:

- `<driver>`
 - `<identifier>JupiterVideoWall</identifier>` Name of this driver.
 - `<host>servername</host>` The name of the computer on which the Jupiter driver should be running (DNS name, qualified as necessary, or the IP address).
 - `<port>40038</port>` The port on which the Jupiter driver is listening for client connections (from the Video wall subsystem).
 - `<logLevel>slInfo</logLevel>` The level of status logging for this system; this can also be changed via the EH (slError, slWarning, slInfo, slDebug, slDetail).
 - `<validation>>false</validation>` Whether xml validation is on, this should be false when in a production environment. If validation is set to true, the subsystem performance will be slower (true, false).
 - `<icdVersion>1.0</icdVersion>` The ICD version for this system, this is appended to the schema location in the general section of config data. (Should be the version corresponding to the location of schemas for this system. If validation is turned on, this must be the same as for the VW subsystem.)
 - `<maxConnections>20</maxConnections>`Maximum number of client connections to allow (1-20).

- `<providerType>vw</providerType>` The provider type of this driver, used in XML to uniquely identify elements.
- `<packetRetries>4</packetRetries>` Number of retries a packet attempt if the message has failed
- `<jupiterIp>10.50.1.100</jupiterIp>` IP address of the Jupiter system
- `<jupiterPort>25456</jupiterPort>` Port number of the Jupiter system
- `<handlers>` These handlers are run when the system starts up. If a handler is not listed, that handler will not be instantiated by the system.
 - `<JupiterVwdLibrary.handlers.JwdWallConfigHandler/>` Processes viewer control data for the driver.
 - `<JupiterVwdLibrary.handlers.JwdRetrieveDataHandler/>` Processes wall config data for the driver.
 - `<JupiterVwdLibrary.handlers.JwdViewerControlHandler/>` Processes retrieve data for the driver.

3.9.4.12 Activu Video Wall Driver

The Activu Video Wall driver has the following configuration parameters:

- `<driver>`
 - `<identifier>ActivuWall</identifier>` Name of this driver.
 - `<host>servername</host>` The name of the computer on which the Activu driver should be running (DNS name, qualified as necessary, or the IP address).
 - `<port>59207</port>` The port on which the Activu driver is listening for client connections (from the Video wall subsystem).
 - `<logLevel>slInfo</logLevel>` The level of status logging for this system; this can also be changed via the EH (slError, slWarning, slInfo, slDebug, slDetail).
 - `<validation>>false</validation>` Whether xml validation is on, this should be false when in a production environment. If validation is set to true, the subsystem performance will be slower (true, false).
 - `<icdVersion>1.0</icdVersion>` The ICD version for this system, this is appended to the schema location in the general section of config data. (Should be the version corresponding to the location of schemas for this system. If validation is turned on, this must be the same as for the VW subsystem.)
 - `<maxConnections>20</maxConnections>` Maximum number of client connections to allow (1-20).
 - `<providerType>vw</providerType>` The provider type of this driver, used in XML to uniquely identify elements.
 - `<packetRetries>4</packetRetries>` Number of retries a packet attempt if the message has failed
 - `<packetTimeout>60000</packetTimeout>` Time in ms to wait for response
 - `<AIS_Address>192.168.8.11</AIS_Address>` Address of the Activu server
 - `<AIS_Port>12345</AIS_Port>` Port number of the Activu server
 - `<AIS_Compression>AsRequest</AIS_Compression>` Compression type
 - `<AIS_Username>Admin</AIS_Username>` Username for the Activu server
 - `<AIS_Password>password</AIS_Password>` Password for the Activu server

- <handlers> These handlers are run when the system starts up. If a handler is not listed, that handler will not be instantiated by the system.
 - <JupiterVwdLibrary.handlers.JwdWallConfigHandler/> Processes viewer control data for the driver.
 - <JupiterVwdLibrary.handlers.JwdRetrieveDataHandler/> Processes wall config data for the driver.
 - <JupiterVwdLibrary.handlers.JwdViewerControlHandler/> Processes retrieve data for the driver.

3.9.4.13 CCTV Control

The CCTV Control subsystem has the following configuration parameters:

- <host>laplace</host> The name of the computer on which the CCTV subsystem should be running (DNS name, qualified as necessary, or the IP address).
- <port>40009</port> The port on which the CCTV system is listening for client connections.
- <icdVersion>1.0</icdVersion> The ICD version for this system, this is appended to the schema location in the general section of config data (Should be the version corresponding to the location of schemas for this system).
- <maxConnections>20</maxConnections> Maximum number of client connections to allow (1-20).
- <logLevel>slDetail</logLevel> The level of status logging for this system, can also be changed via the EH (slError, slWarning, slInfo, slDebug, slDetail).
- <validation>>false</validation> Whether XML validation is on, this should be false when in a production environment. If validation is set to true, the subsystem performance will be slower (true, false).
- <commTolerance>3</commTolerance> Tells how many times that requests associated with a camera can error out before operational status of camera is set to Failed.
- <lockTimeout>120</lockTimeout> Tells how long lock will be issued for each lock request (in seconds).
- <centerId>District 4</centerId> Name of the center for the CCTV subsystem.
- <handlers> These handlers are run when the system starts up. If a handler is not listed, that handler will not be instantiated by the system.
 - <gov.its.cctv.xml.CctvControlRequestHandler/> Processes control requests for the CCTV subsystem.
 - <gov.its.cctv.xml.CctvControlResponseHandler/> Processes control responses for the CCTV subsystem.
 - <gov.its.cctv.xml.CctvLockHandler/> Processes lock requests for the CCTV subsystem.
 - <gov.its.cctv.xml.CctvCameraConfigurationHandler/> Processes camera configuration requests for the CCTV subsystem.
 - <gov.its.cctv.xml.CctvGroupConfigurationHandler/> Processes group configuration requests for the CCTV subsystem.
 - <gov.its.cctv.xml.CctvSubscribeHandler/> Processes subscribe requests for the CCTV subsystem.

- <gov.its.cctv.xml.CctvRetrieveHandler/> Processes retrieve requests for the CCTV subsystem.
- <gov.its.cctv.xml.CctvPresetHandler/> Processes camera preset requests for the CCTV subsystem.
- <subscriptions> Used by the Data Bus to subscribe to updates.
 - <cameraStatus/> Used by the Data Bus to subscribe to updates in camera status (operational status of camera and who holds the lock on camera).
 - <cameraData/> Used by the Data Bus to subscribe to updates in camera data (add, delete, and modify camera).
- <statusUpdates> Used by the Data Bus to determine which messages should be examined for updating the cache.
 - <camera> Name of the Data Bus element to be updated (resource type).
 - <addCameraResp action="add" /> Used to notify the Data Bus that when this type of message is received; an add to Data Bus data cache is required.
 - <changeCameraStateResp/> Used to notify the Data Bus that when this type of message is received, a modify to Data Bus data cache is required.
 - <lockCameraResp/> Used to notify Data Bus that when this type of message is received, a modification to the Data Bus data cache is required.
 - <deleteCameraResp action="delete"/> Used to notify Data Bus that when this type of message is received, a delete to Data Bus data cache is required.
 - <modifyCameraResp action="modify"/> Used to notify Data Bus that when this type of message is received, a modify to Data Bus data cache is required.
 - </camera>
- <drivers>... The CCTV system will attempt to connect to drivers that are listed in this section.
- <speedMultipliers>
 - <manufacturer>
 - <name>vicon</name>
 - <panMultiplier>1.5</panMultiplier> this value is the multiplier applied to the pan speed for a Vicon CCTV
 - <tiltMultiplier>2.0</tiltMultiplier> this value is the multiplier applied to the tilt speed for a Vicon CCTV
 - </manufacturer>
 - <manufacturer>
 - <name>pelco</name>
 - <panMultiplier>2.0</panMultiplier> this value is the multiplier applied to the pan speed for a Pelco CCTV
 - <tiltMultiplier>2.0</tiltMultiplier> this value is the multiplier applied to the tilt speed for a Pelco CCTV
 - </manufacturer>
- </speedMultipliers>

3.9.4.14 Data Archive RITIS

The DAR subsystem has the following configuration parameters:

- `<host>darHost</host>` The name of the computer on which the DAR subsystem should be running (DNS name, qualified as necessary, or the IP address).
- `<port>38946</port>` The port on which the CCTV system is listening for client connections.
- `<icdVersion>1.0</icdVersion>` The ICD version for this system, this is appended to the schema location in the general section of config data (Should be the version corresponding to the location of schemas for this system).
- `<maxConnections>20</maxConnections>` Maximum number of client connections to allow (1-20).
- `<logLevel>slDetail</logLevel>` The level of status logging for this system, can also be changed via the EH (slError, slWarning, slInfo, slDebug, slDetail).
- `<validation>>false</validation>` Whether XML validation is on, this should be false when in a production environment. If validation is set to true, the subsystem performance will be slower (true, false).
- `<ritisFtpHost>ritisFtpHost</ritisFtpHost>` Host of the RITIS FTP
- `<ritisFtpPort>21</ritisFtpPort>` Port for the RITIS FTP
- `<ritisUsername>ritis_ftpuser</ritisUsername>` FTP username
- `<ritisPassword>password</ritisPassword>` FTP Password
- `<ritisXmlPath>C:\local_xml_temporary_storage</ritisXmlPath>` Local folder on the file system to store updates until they can be zipped for delivery to the FTP
- `<ritisZipPath>C:\local_zip_storage</ritisZipPath>` Folder to store the undelivered zip files in case the FTP is inaccessible
- `<pollIntervalSeconds>60</pollIntervalSeconds>` Seconds to wait until the locally stored files should be sipped and sent to the FTP
- `<handlers>`
 - `<gov.its.dar.Handlers.DarRetrieveDataHandler/>` Handle retrieve data requests
- `</handlers>`
- `<subscriptions/>` none for this system
- `<statusUpdates/>` none for this system
- `<drivers>`
 - `<driver>`
 - `<identifier>databus</identifier>` databus name
 - `<host>databusHost</host>` host where databus is running
 - `<port>8009</port>` port where databus is running
 - `<username>darMain</username>` user to use to log into other systems
 - `<password>VXNsFN322RMe1iPJUT4r7A==</password>` password used to authenticate to other systems
 - `</driver>`
- `</drivers>`

3.9.4.15 NTCIP 1205 Driver

The CCTV NTCIP 1205 driver has the following configuration parameters:

- <driver>
 - <identifier>NTCIP_1</identifier> Name of this driver.
 - <host>localhost</host> The name of the computer on which the NTCIP 1205 driver should be running (DNS name, qualified as necessary, or the IP address).
 - <port>12164</port> The port on which the NTCIP 1205 driver is listening for client connections (from the CCTV subsystem).
 - <errorCodeStart>12000</errorCodeStart> Number at which status logger error messages should start.
 - <pulseRate>30</pulseRate> The number of seconds between communications to the device.
 - <executiveHandlerPort>8001</executiveHandlerPort> Port on which the EH is listening.
 - <statusLoggerHost>localhost</statusLoggerHost>
 - <statusLoggerPort>8000</statusLoggerPort>
 - <statusLoggerFileName> NtcipCCTVLog.txt</statusLoggerFileName> File to which log messages should be sent in case of status logger failure.
 - <backlog>50</backlog> Indicates how many commands will be queued for processing.
 - <timeout>50</timeout> Timeout in milliseconds for communication
 - <logLevel>5</logLevel> The log level for this system (1-5).
 - <deviceRetryLimit>3</deviceRetryLimit> Number of times a packet will be retried.
 - <deviceTimeOutInSecs>30</deviceTimeOutInSecs> Number of seconds before communication with a device will time out.
 - <ntcip_pmpp_wrapper>>false</ntcip_pmpp_wrapper> Whether or not to use NTCIP PMPP wrapping.
 - <CompressionThresholdInBytes>100000</CompressionThresholdInBytes> Number of bytes over which compression should occur: this value should not be changed as the compression between Java and C# does not work in the current version of Microsoft Visual Studio.

3.9.4.16 American Dynamics CCTV Driver

The American Dynamics (AD) CCTV driver has the following configuration parameters:

- <driver>
 - <identifier>AD_SD_Driver</identifier> Name of this driver.
 - <host>localhost</host> The name of the computer on which the AD_SD_Driver driver should be running (DNS name, qualified as necessary, or the IP address).
 - <port>12164</port> The port on which the AD_SD_Driver driver is listening for client connections (from the CCTV subsystem).
 - <logLevel>slDetail </logLevel> The level of status logging for this system; this can also be changed via the EH (slError, slWarning, slInfo, slDebug, slDetail).

- `<validation>>false</validation>` Whether XML validation is on, this should be false when in a production environment. If validation is set to true, the subsystem performance will be slower (true, false).
- `<icdVersion>1.0</icdVersion>` The ICD version for this system, this is appended to the schema location in the general section of config data (Should be the version corresponding to the location of schemas for this system.)
- `<maxConnections>10</maxConnections>` Maximum number of client connections to allow (1-20).
- `<providerType>cctv</providerType>` The provider type of this subsystem, used in xml to uniquely identify elements.
- `<packetTimeout>5000</packetTimeout>` Stores the packet timeout value (in milliseconds). This parameter is not used by this driver.
- `<packetRetries>1</packetRetries>` Number of times a packet will be retried before generating an error. This parameter is not used by this driver.
- `<handlers>` These handlers are run when the system starts up. If a handler is not listed, that handler will not be instantiated by the system.
 - `< gov.its.driver.xml.ADDriverConfigHandler />` Processes configuration requests for the American Dynamics camera driver.
 - `< gov.its.driver.xml.ADDriverControlHandler />` Processes connection requests for the American Dynamics camera driver.

3.9.4.17 Video Switch

The Video Switch subsystem has the following configuration parameters:

- `<host>laplace</host>` The name of the computer on which the VS subsystem should be running (DNS name, qualified as necessary, or the IP address).
- `<port>40022</port>` The port on which the VS subsystem is listening for client connections.
- `<icdVersion>1.0</icdVersion>` The ICD version for this system, this is appended to the schema location in the general section of config data. (Should be the version corresponding to the location of schemas for this system.)
- `<maxConnections>20</maxConnections>` Maximum number of client connections to allow (1-20).
- `<logLevel>slDetail</logLevel>` The level of status logging for this system; this can also be changed via the EH (slError, slWarning, slInfo, slDebug, slDetail).
- `<sendConnRespForTour>>false</sendConnRespForTour>` Controls whether connection responses are sent to clients for video tours.
- `<validation>>false</validation>` Whether xml validation is on, this should be false when in a production environment. If validation is set to true, the subsystem performance will be slower (true, false).
- `<centerId>District 4</centerId>` Name of the center for the VS subsystem.
- `<handlers>` These handlers are run when the system starts up. If a handler is not listed, that handler will not be instantiated by the system.
 - `<gov.its.vs.xml.VsConnectionHandler/>` Processes connection requests for the VS subsystem.

- <gov.its.vs.xml.VsDeviceConfigurationHandler/> Processes device configuration requests for the VS subsystem.
- <gov.its.vs.xml.VsSwitchConfigurationHandler/> Processes switch configuration requests for the VS subsystem.
- <gov.its.vs.xml.VsTourConfigurationHandler/> Processes video tour configuration requests for the VS subsystem.
- <gov.its.vs.xml.VsVideoTourHandler/> Processes video tour requests for the VS subsystem.
- <gov.its.vs.xml.VsSubscribeHandler/> Processes subscribe requests for the VS subsystem.
- <gov.its.vs.xml.VsRetrieveHandler/> Processes retrieve requests for the VS subsystem.
- <subscriptions> Used by the Data Bus to subscribe to updates.
 - <sourceStatus/> Used by the Data Bus to subscribe to updates in source status (restricted state of source).
 - <destinationStatus/> Used by the Data Bus to subscribe to updates in destination status (restricted state of destination and what source is currently being viewed on destination).
 - <sourceData/> Used by the Data Bus to subscribe to updates in source data (add, delete, and modify video source).
 - <destinationData/> Used by the Data Bus to subscribe to updates in destination data (add, delete, and modify destination).
- <statusUpdates> Used by the Data Bus to determine which messages should be examined for updating the cache.
 - <source> Name of the Data Bus element to be updated (resource type).
 - <addVideoSourceResp action="add" /> Notifies the Data Bus that when an addVideoSourceResp is received, the xml will be examined for an "id" element and the "status" element at the same level will be added to the cache.
 - <changeSourceRestrictedStateResp /> Notifies the Data Bus that when a changeSourceRestrictedStateResp is received, the xml will be examined for an "id" element and elements at the same level will be modified in the cache if found.
 - <deleteVideoSourceResp action="delete" /> Notifies the Data Bus that when an deleteVideoSourceResp is received, the xml will be examined for an "id" element and the matching element with that "id" will be removed from the cache.
 - <modifyVideoSourceResp action="modify" /> Notifies the Data Bus that when an modifyVideoSourceResp is received, the xml will be examined for an "id" element and the "status" element at the same level will be replaced in the cache.
 - <updateSnapshotMsg /> Notifies the Data Bus that when an updateSnapshotMsg is received, the XML will be examined for an "id" element and elements at the same level will be modified in the cache if found.

- `<destination>` Name of the Data Bus element to be updated (resource type).
 - `<addVideoDestinationResp action="add" />` Notifies the Data Bus that when an `addVideoDestinationResp` is received, the xml will be examined for an "id" element and the "status" element at the same level will be added to the cache.
 - `<changeDestinationRestrictedStateResp />` Notifies the Data Bus that when a `changeDestinationRestrictedStateResp` is received, the xml will be examined for an "id" element and elements at the same level will be modified in the cache if found.
 - `<deleteVideoDestinationResp action="delete" />` Notifies the Data Bus that when an `deleteVideoDestinationResp` is received, the xml will be examined for an "id" element and the matching element with that "id" will be removed from the cache.
 - `<modifyVideoDestinationResp action="modify" />` Notifies the Data Bus that when an `modifyVideoDestinationResp` is received, the xml will be examined for an "id" element and the "status" element at the same level will be replaced in the cache.
- `<drivers>...` The VS subsystem will attempt connection to drivers that are listed in this section.

3.9.4.18 IP Video Switch Driver

The IP Video Switch driver has the following configuration parameters:

- `<driver>`
 - `<identifier>IpVideoSwitch</identifier>` Name of this driver.
 - `<host>pascal</host>` The name of the computer on which the IP Video Switch driver should be running (DNS name, qualified as necessary, or the IP address).
 - `<port>40010</port>` The port on which the IP Video Switch driver is listening for client connections (from the VS subsystem).
 - `<logLevel>slInfo</logLevel>` The level of status logging for this system; this can also be changed via the EH (slError, slWarning, slInfo, slDebug, slDetail).
 - `<validation>>false</validation>` Whether XML validation is on, this should be false when in a production environment. If validation is set to true, the subsystem performance will be slower (true, false).
 - `<icdVersion>1.0</icdVersion>` The ICD version for this system, this is appended to the schema location in the general section of config data. (Should be the version corresponding to the location of schemas for this system. If validation is turned on, this must be the same as for the VS subsystem.)
 - `<maxConnections>1</maxConnections>` Maximum number of client connections to allow (1-20).
 - `<packetTimeout>5000</packetTimeout>` Stores the packet timeout value (in milliseconds).
 - `<packetRetries>1</packetRetries>` Number of times a packet will be retried before generating an error.
 - `<commandFile>IpVideoDevices.xml</commandFile>` Name of the file containing SNMP command information for the IP video decoders and encoders

- that can be controlled by the driver; the file will be located in working directory of driver.
- `<snapshotConfigFile>SnapshotDevices.xml</snapshotConfigFile>` Name of the file containing configuration information for the IP video decoders and video capture devices to be used for acquiring IP video encoder snapshots; the file will be located in working directory of driver.
 - `<snapshotDirectory>d:\Snapshots</snapshotDirectory>` Directory where snapshots will be stored.
 - `<snapshotInterval>1</snapshotInterval>` The number of minutes between scheduling of snapshots from IP Video encoder devices (1-60).
 - `<snapshotSettleTime>300</snapshotSettleTime>` The number of milliseconds the video capture device is allowed to settle before retrieving a snapshot. This parameter is optional and defaults to 300.
 - `<staleSnapshotThresholdMinutes>30</staleSnapshotThresholdMinutes>` The number of minutes before a snapshot is considered stale, causing an empty snapshot to sent to subscribers.
 - `<useExternalFiles>>false</useExternalFiles>` This flag will cause the use of externally generated image files instead of captured files. This parameter is optional and defaults to false.
 - `<externalFilesType>JPG</externalFilesType>` The external image file type used to specify image type in the C2C Snapshot message. This parameter is optional and defaults to "jpg".
 - `<operatorMapHost>fermat</operatorMapHost>` Name of computer where the OperatorMap is hosted; used as destination for posting snapshots.
 - `<handlers>` These handlers are run when the system starts up. If a handler is not listed, that handler will not be instantiated by the system.
 - `<gov.its.net.xml.driver.IpVideoSwitchConfigHandler />` Processes configuration requests for the IP Video Switch driver.
 - `<gov.its.net.xml.driver.IpVideoSwitchConnectHandler />` Processes connection requests for the IP Video Switch driver.

The IP Video Switch Driver has an XML file that configures the snapshot devices. Each entry `<snapshotDevice>` describes a snapshot device and a decoder that is attached to the analog video input of the encoder.

- `<snapshotDevice>`
 - `<deviceId>snapshotDecoder1</deviceId>` The name of the decoder attached to a snapshot card. The decoder produces an analog feed to the video capture card.
 - `<ipAddress>172.16.5.7</ipAddress>` The ip address of the named decoder above.
 - `<ipPort>0</ipPort>` The port number of the named decoder above.
 - `<cardNumber>2</cardNumber>` The card number within the decoder named above.
 - `<manufacturer>vbrick</manufacturer>` The manufacturer of the named decoder.
 - `<model>vb5200</model>` The model number of the named decoder.
 - `<streamingType>transport</streamingType>` The type of encoded MPEG-2 stream being decoded.

- <captureDeviceName>Osprey-100 Video Device 1</captureDeviceName> The name of the video capture card.
- <captureDeviceResolution>320 by 240</captureDeviceResolution> Resolution of the snapshot to be taken.
- <captureDeviceColorFormat>RGB24</captureDeviceColorFormat> Color format of the snapshot.
- <captureDevicePort>1</captureDevicePort> Video capture card port into which the analog video from the MPEG-2 decoder is fed.
- </snapshotDevice>

3.9.4.19 Transportation Sensor Subsystem

The Transportation Sensor Subsystem (TSS) has the following configuration parameters:

- <host>laplace</host> The name of the computer on which the TSS subsystem should be running (DNS name, qualified as necessary, or the IP address).
- <port>40004</port> The port on which the TSS subsystem is listening for client connections.
- <providerType>tss</providerType> The provider type of this subsystem, used in xml to uniquely identify elements.
- <icdVersion>1.0</icdVersion> The ICD version for this system, this is appended to the schema location in the general section of config data (Should be the version corresponding to the location of schemas for this system).
- <maxConnections>20</maxConnections> Maximum number of client connections to allow (1-20).
- <logLevel>slInfo</logLevel> The level of status logging for this system; this can also be changed via the EH (slError, slWarning, slInfo, slDebug, slDetail).
- <validation>>false</validation> Whether xml validation is on, this should be false when in a production environment. If validation is set to true, the subsystem performance will be slower (true, false).
- <commTolerance>3</commTolerance> Number of times a device can consecutively have an error before being changed to failed state.
- <avgPeriod>90</avgPeriod> Number of seconds over which the detector updates should be averaged.
- <changeTolerance>3</changeTolerance> This percentage indicates the tolerance level accepted by the system.
- <historicalDataPeriod>240</historicalDataPeriod> Number of minutes for which historical probe detector volume data is captured by the system and displayed on the map.
- <enableEmailAlerts>>false</enableEmailAlerts> IF true, enables tss to send detector alerts
- <systemWideFailedDetectorThreshold>30</systemWideFailedDetectorThreshold> Threshold to detmine what percentage of Failed detectors represent a systemwide failure.
- <systemWideFailedDetectorDelay>5</systemWideFailedDetectorDelay> Threshold, in minutes, for how long to wait before the systemwide threshold can be sent.
- <failedDetectorDelay>5</failedDetectorDelay> Threshold, in minutes, for how long to wait when a detector fails, before sending an email

- `<invalidDetectorDelay>5</invalidDetectorDelay>` Threshold, in minutes, for how long to wait when a detector reports invalid data, before sending an email
- `<handlers>` These handlers are run when the system starts up. If a handler is not listed, that handler will not be instantiated by the system.
 - `<gov.its.tss.xml.TSSConfigurationHandler />` Processes configuration data for the subsystem.
 - `<gov.its.tss.xml.TSSMappingHandler />` Processes mapping of detector to links for the subsystem.
 - `<gov.its.tss.xml.TSSUpdateHandler />` Processes updates for the subsystem.
 - `<gov.its.tss.xml.TSSSubscribeHandler />` Processes subscriptions for the subsystem.
 - `<gov.its.tss.xml.TSSStatusHandler />` Processes status data for the subsystem.
 - `<gov.its.tss.xml.TSSRetrieveDataHandler />` Processes retrieve data requests for the subsystem.
 - `<gov.its.tss.xml.TssDetectorDataAlertConfigHandler/>` Processes detector alert threshold configurations
- `<subscriptions>` Used by the Data Bus to subscribe to updates.
 - `<linkUpdate />` Used by the TSS subsystem to update link data.
 - `<detectorData />` Used by the TSS subsystem to update detector data.
 - `<onlineStatusUpdate />` Used by the TSS subsystem to update online status information.
 - `<mapDetectorData />` Used by the TSS subsystem to update detector link-lane mapping information.
- `<statusUpdates>` Used by the Data Bus to determine which messages should be examined for updating the cache.
 - `<detector>` Name of the Data Bus element to be updated (resource type).
 - `<addDetectorResp action="add" />` Notifies the Data Bus that when an `addDetectorResp` is received, the xml will be examined for an "id" element and the "status" element at the same level will be added to the cache.
 - `<onlineStatusResp />` Notifies the Data Bus that when a `onlineStatusResp` is received, the xml will be examined for an "id" element and elements at the same level will be modified in the cache if found.
 - `<setOnlineStatusResp />` Notifies the Data Bus that when a `setOnlineStatusResp` is received, the xml will be examined for an "id" element and elements at the same level will be modified in the cache if found.
 - `<setOnlineStatusMsg />` Notifies the Data Bus when a detector's operational status has changed.
 - `<onlineStatusMsg />` Notifies the Data Bus when a detector's operational status has changed.
 - `<modifyDetectorResp action="modify" />` Notifies the Data Bus that when an `modifyDetectorResp` is received, the xml will be examined for an "id" element and the "status" element at the same level will be replaced in the cache.
 - `<deleteDetectorResp action="delete" />` Notifies the Data Bus that when an `deleteDetectorResp` is received, the xml will be examined for an "id"

- element and the matching element with that "id" will be removed from the cache.
- `<link>`Name of the Data Bus element to be updated (resource type).
 - `<linkUpdateMsg />` Notifies the Data Bus that when a `linkUpdateMsg` is received, the xml will be examined for an "id" element and elements at the same level will be modified in the cache if found.
 - `<setDynamicLinkingResp />` Notifies the Data Bus that when a `setDynamicLinkingResp` is received, the xml will be examined for an "id" element and elements at the same level will be modified in the cache if found.
 - `<mapDetectorMsg action="add" />` Notifies the Data Bus that when a `mapDetectorMsg` is received, the xml will be examined for an "id" element and the "status" element at the same level will be added to the cache.
 - `<unMapDetectorMsg action="delete" />` Notifies the Data Bus that when an `unMapDetectorMsg` is received, the xml will be examined for an "id" element and the matching element with that "id" will be removed from the cache.
- `<drivers>...` The TSS subsystem will attempt connection to drivers that are listed in this section.

3.9.4.20 BiTran Driver

The TSS BiTran driver has the following configuration parameters:

- `<driver>`
 - `<identifier>BITran238_1</identifier>` Name of this driver.
 - `<host>serverName</host>` The name of the computer on which the Bitrans driver should be running (DNS name, qualified as necessary, or the IP address).
 - `<port>12888</port>` The port on which the Bitrans driver is listening for client connections (from the TSS subsystem).
 - `<errorCodeStart>22000</errorCodeStart>` Number at which status logger error messages should start.
 - `<icdVersion>1.0</icdVersion>` The ICD version for this system, this is appended to the schema location in the general section of config data (Should be the version corresponding to the location of schemas for this system. If validation is turned on, this must be the same as for the TSS subsystem).
 - `<appendIcdVersionToSchemaLocation>true</appendIcdVersionToSchemaLocation>` True if the schema location from the general section should have the icd version appended to it.
 - `<pulseRate>30</pulseRate>` The number of seconds between communications to the device.
 - `<executiveHandlerPort>8001</executiveHandlerPort>` Port on which the EH is listening.
 - `<executiveHandlerProcessName>BiTran238Driver</executiveHandlerProcessName>` Name of the process as added to the executive handler.

- `<statusLoggerFileName> Bitran238Log.txt</statusLoggerFileName>` File to which log messages should be sent in case of status logger failure.
- `<backlog>50</backlog>` Number of commands that will be queued for processing.
- `<timeout>5000</timeout>` Timeout in milliseconds for communication to the device.
- `<logLevel>slInfo</logLevel>` The log level for this system (slError, slWarn, slInfo, slDebug, slDetail).
- `<deviceRetryLimit>3</deviceRetryLimit>` Number of times a packet will be retried.
- `<deviceTimeOutInSecs>30</deviceTimeOutInSecs>` Number of seconds before communication with a device will time out.
- `<pollCycle>30</pollCycle>` The default poll cycle for devices.
- `<failedPollMultiplier>3</failedPollMultiplier>` A multiplier for the poll cycle that determines the slow poll interval of failed detectors.
- `<settlingTime>60</settlingTime>` The time in seconds that the data from a detector returning to active from offline or failed is ignored.
- `<CompressionThresholdInBytes>200000</CompressionThresholdInBytes>` Number of bytes over which compression should occur: this value should not be changed as the compression between Java and C# does not work in the current version of Microsoft Visual Studio.

3.9.4.21 TSS RTMS Driver

The TSS RTMS driver has the following configuration parameters:

- `<driver>`
 - `<identifier>RtmsDriver</identifier>` Name of this driver.
 - `<host>pascal</host>` The name of the computer on which the RTMS driver should be running (DNS name, qualified as necessary, or the IP address).
 - `<port>40009</port>` The port on which the RTMS driver is listening for client connections (from the TSS subsystem).
 - `<logLevel>slDetail</logLevel>` The level of status logging for this system; this can also be changed via the EH (slError, slWarning, slInfo, slDebug, slDetail).
 - `<validation>>false</validation>` Whether xml validation is on, this should be false when in a production environment. If validation is set to true, the subsystem performance will be slower (true, false).
 - `<icdVersion>1.0</icdVersion>` The ICD version for this system, this is appended to the schema location in the general section of config data (Should be the version corresponding to the location of schemas for this system. If validation is turned on, this must be the same as for the TSS subsystem).
 - `<maxConnections>20</maxConnections>` Maximum number of client connections to allow (1-20).
 - `<centerId>District 4</centerId>` Name of the center for the driver.
 - `<providerType>tss</providerType>` The provider type of this driver, used in XML to uniquely identify elements.

- `<packetTimeout>5000</packetTimeout>` Stores the packet timeout value (in milliseconds).
- `<packetRetries>1</packetRetries>` Number of times a packet will be retried before generating an error.
- `<pulseRate>30</pulseRate>` Stores the pulse interval (in seconds) for which the driver distributes detector update messages to connected clients.
- `<failedPollMultiplier>3</failedPollMultiplier>` A multiplier for the poll cycle that determines the slow poll interval of failed detectors.
- `<settlingTime>60</settlingTime>` The time in seconds that the data from a detector returning to active from offline or failed is ignored.
- `<handlers>` These handlers are run when the system starts up. If a handler is not listed, that handler will not be instantiated by the system.
 - `<gov.its.tss.xml.RtmsConfigurationHandler />` Processes configuration data for the driver.
 - `<gov.its.tss.xml.RtmsStatusHandler />` Processes status data for the driver.

3.9.4.22 TSS Probe Fusion Driver

The TSS Probe Fusion driver has the following configuration parameters:

- `<driver>`
 - `<identifier>ProbeFusionDriver</identifier>` Name of this driver.
 - `<host>pascal</host>` The name of the computer on which the Probe Fusion driver should be running (DNS name, qualified as necessary, or the IP address).
 - `<port>48888</port>` The port on which the Probe Fusion driver is listening for client connections (from the TSS subsystem).
 - `<logLevel>slInfo</logLevel>` The level of status logging for this system; this can also be changed via the EH (slError, slWarning, slInfo, slDebug, slDetail).
 - `<validation>>false</validation>` Whether xml validation is on, this should be false when in a production environment. If validation is set to true, the subsystem performance will be slower (true, false).
 - `<icdVersion>1.0</icdVersion>` The ICD version for this system, this is appended to the schema location in the general section of config data (Should be the version corresponding to the location of schemas for this system. If validation is turned on, this must be the same as for the TSS subsystem).
 - `<maxConnections>20</maxConnections>` Maximum number of client connections to allow (1-20).
 - `<providerType>tss</providerType>` The provider type of this driver, used in XML to uniquely identify elements.
 - `<packetTimeout>5000</packetTimeout>` Stores the packet timeout value (in milliseconds).
 - `<packetRetries>1</packetRetries>` Number of times a packet will be retried before generating an error.
 - `<pulseRate>2000</pulseRate>` Stores the pulse interval (in seconds) for which the driver distributes detector update messages to connected clients.

- `<allegroUdpListenPort>399</allegroUdpListenPort>` Stores the port number for which the driver opens a UDP listen port for Allegro devices.
- `<pollCycleAlertTolerance>2000</pollCycleAlertTolerance>` Stores the number of poll cycles to wait before generating and sending alerts to the operator when data is not received by devices during this time.
- `<failedPollMultiplier>3</failedPollMultiplier>` A multiplier for the poll cycle that determines the slow poll interval of failed detectors.
- `<settleTime>60</settleTime>` The time in seconds that the data from a detector returning to active from offline or failed is ignored.
- `<handlers>` These handlers are run when the system starts up. If a handler is not listed, that handler will not be instantiated by the system.
 - `<gov.its.pfd.xml.PFDConfigHandler />` Processes configuration data for the driver.
 - `<gov.its.pfd.xml.PFDStatusHandler />` Processes status data for the driver.
 - `<gov.its.pfd.xml.PFDControlHandler />` Processes control requests for the driver's devices.

3.9.4.23 TSS Connected Vehicle Driver

The TSS Connected Vehicle driver has the following configuration parameters:

- `<driver>`
 - `<identifier>CvTssDriver</identifier>` Name of this driver.
 - `<host>servername</host>` The name of the computer on which the Tss CV driver should be running (DNS name, qualified as necessary, or the IP address).
 - `<port>48888</port>` The port on which the Tss CV driver is listening for client connections (from the TSS subsystem).
 - `<logLevel>slInfo</logLevel>` The level of status logging for this system; this can also be changed via the EH (slError, slWarning, slInfo, slDebug, slDetail).
 - `<validation>>false</validation>` Whether xml validation is on, this should be false when in a production environment. If validation is set to true, the subsystem performance will be slower (true, false).
 - `<icdVersion>1.0</icdVersion>` The ICD version for this system, this is appended to the schema location in the general section of config data (Should be the version corresponding to the location of schemas for this system. If validation is turned on, this must be the same as for the TSS subsystem).
 - `<maxConnections>20</maxConnections>` Maximum number of client connections to allow (1-20).
 - `<providerType>tss</providerType>` The provider type of this driver, used in XML to uniquely identify elements.
 - `<packetTimeout>5000</packetTimeout>` Stores the packet timeout value (in milliseconds).
 - `<packetRetries>1</packetRetries>` Number of times a packet will be retried before generating an error.
 - `<pulseRate>2000</pulseRate>` Stores the pulse interval (in seconds) for which the driver distributes detector update messages to connected clients.

- `<failedPollMultiplier>3</failedPollMultiplier>` A multiplier for the poll cycle that determines the slow poll interval of failed detectors.
- `<settlingTime>60</settlingTime>` The time in seconds that the data from a detector returning to active from offline or failed is ignored.
- `<handlers>` These handlers are run when the system starts up. If a handler is not listed, that handler will not be instantiated by the system.
 - `<gov.its.pfd.xml. DeviceConfigurationHandler/>` Processes configuration data for the driver.
 - `<gov.its.pfd.xml. DetectorStatusHandler/>` Processes status data for the driver.
- `<databusConnection>`
 - `<identifier>databus</identifier>` databus identifier
 - `<host>fatsrv</host>` host where databus is running
 - `<port>8009</port>` port where databus is listening
 - `<username></username>` intentionally blank
 - `<password></password>` intentionally blank
 - `<databusProviders></databusProviders>` intentionally blank

3.9.4.24 Travel Time

The Travel Time subsystem has the following configuration parameters:

- `<host>laplace</host>` The name of the computer on which the TVT subsystem should be running (DNS name, qualified as necessary, or the IP address).
`<port>40012</port>` The port on which the TVT subsystem is listening for client connections.
- `<icdVersion>1.0</icdVersion>` The ICD version for this system, this is appended to the schema location in the general section of config data. (Should be the version corresponding to the location of schemas for this system.)
- `<maxConnections>20</maxConnections>` Maximum number of client connections to allow (1-20).
- `<logLevel>slDetail</logLevel>` The level of status logging for this system; this can also be changed via the EH (slError, slWarning, slInfo, slDebug, slDetail).
- `<validation>true</validation>` Whether XML validation is on, this should be false when in a production environment. If validation is set to true, the subsystem performance will be slower (true, false).
- `<expireRate>120</expireRate>` Stores the time (in seconds) for which TSS link data expires.
- `<percentLanesWithData>100</percentLanesWithData>` This is the percentage of lanes that must have data in order for travel time messages to be generated.
- `<blankIfNotGenerated>true</blankIfNotGenerated>` If true and no message is generated, the original travel time message will be removed from the queue.
- `<msgIfNotGenerated>No travel time message.</msgIfNotGenerated>` If `blankIfNotGenerated` is false, the message here will be used when no travel time message is generated.
- `<useTimeRange>true</useTimeRange>` If true, a range value is used for times `> minTimeInMins`. If false, single time value is displayed.

- `<timeRangeInterval>2</timeRangeInterval>` The range used for times `> minTimeInMins` and less than `changeRangeInterval`.
- `<changeRangeInterval>6</changeRangeInterval>` The time at which the `largeTimeRangeInterval` should be used.
- `<largeTimeRangeInterval>3</largeTimeRangeInterval>` The range used for times `> changeRangeInterval` and `< maxTimeInMins`.
- `<lessThanText>under</lessThanText>` Text used before time values that are `< minTimeInMins`.
- `<greaterThanText>over</greaterThanText>` Text used before time values that are `> maxTimeInMins`.
- `<minTimeInMins>2</minTimeInMins>` Minimum time displayed on time, times `< than` this are displayed with `lessThanText` preceding the `minTimeInMins`.
- `<maxTimeInMins>20</maxTimeInMins>` Maximum time displayed on time, times `> than` this are displayed with `greaterThanText` preceding the `maxTimeInMins`.
- `<distUnits>MI</distUnits>` Units to display for distances in messages (note: if no units are to be displayed then add an attribute to the units tag in TVT "`xml:space = 'preserve'`" (without the ") and change the units to a space).
- `<spdUnits>MPH</spdUnits>` Units to display for speeds in messages.
 - Use value `<spdUnits>NONE</spdunits>` for TVT to not use units
- `<minUnits>MIN</minUnits>` Units to display for times in messages.
- `<handlers>`
 - `<gov.its.tvt.xml.TvtLinkConfigurationHandler/>` Handles configuration of travel time links.
 - `<gov.its.tvt.xml.TvtDeviceTemplateHandler/>` Handles configuration of templates for a particular device.
 - `<gov.its.tvt.xml.TvtSubscribeHandler/>` Handles subscription requests for the system.
 - `<gov.its.tvt.xml.TvtRetrieveHandler/>` Handles retrieving travel time data.
 - `<gov.its.tvt.xml.TvtStatusUpdateHandler/>` Handles updates for tss links that are received from data bus.
 - `<gov.its.tvt.xml.TvtConfigHandler/>` Handles configuration of travel time options.
 - `<gov.its.tvt.xml.TvtMsgGeneratorHandler/>` Handles generating messages for travel times.
- `</handlers>`
- `<subscriptions>` Used by the Data Bus to subscribe to updates.
 - `<travelTimeData/>`Used by the Data Bus to subscribe to updates in travel time data (add, delete, and modify travel time links).
 - `<travelTimeMsgData/>`Used by the Data Bus to subscribe to updates in travel time data messages.
- `</subscriptions>`
- `<statusUpdates>` Used by the Data Bus to determine which messages should be examined for updating the cache.
 - `<tvt-link>` Name of the Data Bus element to be updated (resource type).
 - `<updateTravelTimeMsg />` Notifies the Data Bus that when an `updateTravelTimeMsg` is received, the xml will be examined for an "id"

- element and elements at the same level will be modified in the cache if found.
- `<setLinkTvtStatusResp />` Notifies the Data Bus that when a `setLinkTvtStatusResp` is received, the xml will be examined for an "id" element and elements at the same level will be modified in the cache if found.
- `</tvt-link>`
- `<tvt-msg>` Name of the Data Bus element to be updated (resource type).
 - `<updateTvtMessageMsg/>` Notifies the Data Bus that when an `updateTvtMessageMsg` is received, the xml will be examined for an "id" element and elements at the same level will be modified in the cache if found.
 - `<addTravelTimeMessageMsg action="add" />` Notifies the Data Bus that when an `addTravelTimeMessageMsg` is received, the xml will be examined for an "id" element and the "status" element at the same level will be added to the cache.
 - `<deleteTravelTimeMessageMsg action="delete" />` Notifies the Data Bus that when a `deleteTravelTimeMessageMsg` is received, the xml will be examined for an "id" element and the matching element with that "id" will be removed from the cache.
- `</tvt-msg>`
- `</statusUpdates>`
- `<drivers>` The processes to which this system connects.
 - `<driver>`
 - `<identifier>databus</identifier>` Connects to data bus for all provider connections and data.
 - `<host>pascal</host>` This should be the host on which data bus is running.
 - `<port>8009</port>` This should be the port on which data bus is listening for client connections. `<username>tvtMain</username>` The username as specified in the database that is used when the TVT subsystem authenticates and retrieves data from specified Data Bus data providers.
 - `<password>X03MO1qnZdYdgyfeuILPmQ==</password>` The password as specified in the database, in its encrypted value. This is used when the TVT subsystem authenticates and retrieves data from specified Data Bus data providers.
 - `<databusProviders>` The list of processes to which travel times should connect to send messages.
 - `<databusProvider>`
 - `<providerName>dms</providerName>` > Name of the DMS system running.
 - `<providerType>dms</providerType>`
 - `<resourceTypes />` Types of devices for which messages are generated.

- </databusProvider>
- <databusProvider>
 - <providerName>mas</providerName> > Name of the MAS system running.
 - <providerType>mas</providerType>
 - <resourceTypes> Types of devices for which messages are generated.
 - <type>
 - <name>dms</name> Name of the resource type.
 - <msgHeader/> Header for messages to be appended to the generated message.
 - <pageHeader>[pt30o0][j13]</pageHeader> Page header for messages, for instance, NTCIP tags.
 - <lineHeader/> Line header for messages, for instance, NTCIP tags.
 - <newLine>[nl]</newLine> Value used for replacing new lines in a generated message.
 - <newPage>[np]</newPage> Value used for replacing new pages in a generated message.
 - </type>
 - <type>
 - <name>har</name> Name of the resource type.
 - <msgHeader>This is a travel time message.</msgHeader> Header for messages to be appended to the generated message.
 - <pageHeader /> Page header for messages.
 - <lineHeader/> Line header for messages.
 - <newline /> Value used for replacing new lines in a generated message.
 - <newPage />Value used for replacing new pages in a generated message.
 - </type>
 - </resourceTypes>
 - </databusProvider>
 - </databusProviders>
 - </driver>

3.9.4.25 Incident Detection Subsystem

The Incident Detection Subsystem (IDS) has the following configuration parameters:

- `<host>pascal</host>` The name of the computer on which the IDS subsystem should be running (DNS name, qualified as necessary, or the IP address).
- `<port>40008</port>` The port on which the IDS subsystem is listening for client connections.
- `<icdVersion>1.0</icdVersion>` The ICD version for this system, this is appended to the schema location in the general section of config data. (Should be the version corresponding to the location of schemas for this system.)
- `<maxConnections>20</maxConnections>` Maximum number of client connections to allow (1-20).
- `<logLevel>slDetail</logLevel>` The level of status logging for this system; this can also be changed via the EH (slError, slWarning, slInfo, slDebug, slDetail).
- `<validation>>false</validation>` Whether XML validation is on, this should be false when in a production environment. If validation is set to true, the subsystem performance will be slower (true, false).
- `<commTolerance>3</commTolerance>` Tells how many times that requests associated with a device can error out before operational status of device is set to Failed.
- `<providerType>ids</providerType>` The provider type of this driver, used in XML to uniquely identify elements.
- `<liveImagePath>\\citius-ad04\jpeg</liveImagePath>` Location of live image files.
- `<liveImagePrefix>camera_</liveImagePrefix>` Prefix of live image file names.
- `<incidentImagePath>\\citius-ad04\jpeg</incidentImagePath>` Location of incident image files.
- `<incidentImagePrefix>camera_alarm_</incidentImagePrefix>` Prefix of incident image file names.
- `<incidentImageType>bmp</incidentImageType>` Incident image raster type; currently only "bmp" and "jpeg" supported.
- `<disabledCameraMsgInterval>1</disabledCameraMsgInterval>` The interval in minutes between operator notification when VisioPad cameras are disabled.
- `<userDefinedResolveActions>` List of actions that can be listed as reasons for a false alarm
 - `<action>Test Action 1</action>` Action that could be used as a reason for a false alarm
- `</userDefinedResolveActions>`
- `<handlers>` These handlers are run when the system starts up. If a handler is not listed, that handler will not be instantiated by the system.
 - `<gov.its.ids.CitilogCameraConfigHandler />` Processes Citilog camera configuration requests for the subsystem.
 - `<gov.its.ids.CitilogCameraBlockingHandler/>` Processes Citilog camera enable and disable requests for the subsystem.
 - `<gov.its.ids.IncidentAlarmHandler />` Processes incident alarm messages from the VisioPaD and TSS drivers for the subsystem.

- `<gov.its.ids.IdsRetrieveDataHandler />` Processes retrieve data requests for the subsystem.
- `<gov.its.ids.IdsSubscribeHandler />` Processes subscriptions for the subsystem.
- `<statusUpdates>` Used by the Data Bus to determine which messages should be examined for updating the cache.
 - `<citilogCamera>` Name of the Data Bus element to be updated (resource type).
 - `<addCitilogCameraResp action="add">` Used to notify Data Bus that a Citilog camera has been added and the Data Bus cache needs to be updated.
 - `<deleteCitilogCameraResp action="delete"/>` Used to notify Data Bus that a Citilog camera has been deleted from the system and the Data Bus cache needs to be updated.
 - `<modifyCitilogCameraResp action="modify"/>` Used to notify Data Bus that a Citilog camera's configuration has been modified and the Data Bus cache needs to be updated.
 - `<updateCitilogCameraStatusMsg />` Used to notify Data Bus that a Citilog camera's status has been modified and the Data Bus cache needs to be updated.
- `<drivers>` Contains a list of drivers for this subsystem.
 - `<driver>...</driver>`

3.9.4.26 CitiLog Driver

The CitiLog driver has the following configuration parameters:

- `<driver>`
 - `<identifier>VisioPadDriver</identifier>` Name of this driver.
 - `<host>pascal</host>` The name of the computer on which the VisioPaD driver should be running (DNS name, qualified as necessary, or the IP address).
 - `<port>40088</port>` The port on which the VisioPaD driver is listening for client connections (from the IDS subsystem).
 - `<logLevel>slDetail</logLevel>` The level of status logging for this system; this can also be changed via the EH (slError, slWarning, slInfo, slDebug, slDetail).
 - `<validation>>false</validation>` Whether xml validation is on, this should be false when in a production environment. If validation is set to true, the subsystem performance will be slower (true, false).
 - `<icdVersion>1.0</icdVersion>` The ICD version for this system, this is appended to the schema location in the general section of config data (Should be the version corresponding to the location of schemas for this system. If validation is turned on, this must be the same as for the IDS subsystem).
 - `<maxConnections>20</maxConnections>` Maximum number of client connections to allow (1-20).
 - `<citilogServerHost>pascal</citilogServerHost>` The name of the computer on which the Citilog server is running,
 - `<citilogServerPort>33000</citilogServerPort>` The port on which the Citilog server is communicating.

- `<providerType>ids</providerType>` The provider type of this driver, used in XML to uniquely identify elements.
- `<packetTimeout>5000</packetTimeout>` Stores the packet timeout value (in milliseconds).
- `<packetRetries>1</packetRetries >` Stores the packet retry count.
- `<pulseRate>20</pulseRate>` The number of seconds between communications to the device.
- `<handlers>` These handlers are run when the system starts up. If a handler is not listed, that handler will not be instantiated by the system.
 - `<gov.its.ids.driver.xml.VpDriverConfigHandler/>` Processes VisioPaD device configuration requests for the IDS subsystem.
 - `<gov.its.ids.driver.xml.VpDriverIncidentHandler/>` Processes incident alarms received from the Citilog server for the IDS subsystem.
 - `<gov.its.ids.driver.xml.VpDriverCameraBlockingHandler/>` Processes VisioPaD device block enable and disable requests for the IDS subsystem.
- `</handlers>`
- `</driver>`

3.9.4.27 TSS Alarm Driver

The IDS TSS Alarm driver has the following configuration parameters:

- `<driver>`
 - `<identifier>TssAlarmDriver</identifier>` Name of this driver.
 - `<host>pascal</host>` The name of the computer on which the TSS Alarm driver should be running (DNS name, qualified as necessary, or the IP address).
 - `<port>44444</port>` The port on which the TSS Alarm driver is listening for client connections (from the IDS subsystem).
 - `<logLevel>slDetail</logLevel>` The level of status logging for this system; this can also be changed via the EH (slError, slWarning, slInfo, slDebug, slDetail).
 - `<validation>>false</validation>` Whether xml validation is on, this should be false when in a production environment. If validation is set to true, the subsystem performance will be slower (true, false).
 - `<icdVersion>1.0</icdVersion>` The ICD version for this system, this is appended to the schema location in the general section of config data (Should be the version corresponding to the location of schemas for this system. If validation is turned on, this must be the same as for the IDS subsystem).
 - `<maxConnections>20</maxConnections>`Maximum number of client connections to allow (1-20).
 - `<providerType>ids</providerType>` The provider type of this driver, used in XML to uniquely identify elements.
 - `<handlers>` These handlers are run when the system starts up. If a handler is not listed, that handler will not be instantiated by the system.
 - `<gov.its.ids.driver.xml.TssAlarmDriverTssHandler/>` Processes alarm messages from the TSS subsystem.
 - `</handlers>`

- <providers> Contains a list of alarm providers. The TSS subsystem is the only alarm provider currently in use.
 - <provider> Contains information about the alarm provider to which the driver will connect.
 - <identifier>tss</identifier> Name of the subsystem, this is used for the providerName in requests.
 - <host>serverName</host> Name or IP address of computer where this subsystem is running. When running with data bus, this should be the data bus computer.
 - <port>40007</port> Port where this subsystem is listening for client connections. When running with data bus, this should be the data bus port.
 - <providerType>tss</providerType> Used when sending requests to the subsystem—should correspond to provider type in subsystem.
 - <username>IdsTssDriver</username> User name for driver to log into this subsystem.
 - <password>X03MO1qnZdYdgyfeuILPmQ==</password> Encrypted password for the username.
 - </provider>
- </providers>
- </driver>

3.9.4.28 Weather Alert Driver

The IDS Weather Alert driver has the following configuration parameters:

- <driver>
 - <identifier>WeatherAlertDriver</identifier> Name of this driver.
 - <host>pascal</host> The name of the computer on which the Weather Alert driver should be running (DNS name, qualified as necessary, or the IP address).
 - <port> 43159 </port> The port on which the Weather Alertdriver is listening for client connections (from the IDS subsystem).
 - <logLevel>slDetail</logLevel> The level of status logging for this system; this can also be changed via the EH (slError, slWarning, slInfo, slDebug, slDetail).
 - <validation>>false</validation> Whether xml validation is on, this should be false when in a production environment. If validation is set to true, the subsystem performance will be slower (true, false).
 - <icdVersion>1.0</icdVersion> The ICD version for this system, this is appended to the schema location in the general section of config data (Should be the version corresponding to the location of schemas for this system. If validation is turned on, this must be the same as for the IDS subsystem).
 - <maxConnections>20</maxConnections>Maximum number of client connections to allow (1-20).
 - <providerType>ids</providerType> The provider type of this driver, used in XML to uniquely identify elements.

- <handlers> These handlers are run when the system starts up. If a handler is not listed, that handler will not be instantiated by the system.
 - <gov.its.ids.driver.xml.WeatherAlertDtnHandler/> Processes weather alerts from DTN.
- </handlers>
- <weatherContact> Contains information about the external weather alert source.
 - <serverLocation> URL of the weather alert web service and method.
</serverLocation>
 - <agency>DTN</agency> Agency passed to EM when creating event from weather alert. Value must exist in EM Agency DB.
 - <contact>DTN</contact> Contact passed to EM when creating event from weather alert. Value must exist in EM Contact DB.
- </weatherContact>
- <pollingTime>15</pollingTime> The time in seconds between DTN web service accesses.
- <commentType>Data</commentType> Value for a required Operator Map field supplied with alerts.
- <counties> List of counties for which weather alerts should be provided; sent to DTN web service as a parameter.
 - <county>Indian River</county>
 - <county>St Lucie</county>
 - <county>Martin</county>
 - <county>Palm Beach</county>
 - <county>Broward</county>
 - <county>Baker</county>
- </counties>
- <alerts> Weather alert types published by DTN; used by driver to filter what alert types are sent to subsystem as new alerts.
 - <alert>Tornado warning</alert>
 - <alert>Tornado watch</alert>
 - <alert>Tornado</alert>
 - <alert>Severe thunderstorm warning</alert>
 - <alert>Severe thunderstorm watch</alert>
 - <alert>Severe thunderstorm</alert>
 - <alert>Flash flood warning</alert>
 - <alert>Flood warning</alert>
 - <alert>Flood watch</alert>
 - <alert>Flood advisory</alert>
 - <alert>Freezing precipitation advisory</alert>
 - <alert>Fog advisory</alert>
 - <alert>Fog</alert>
 - <alert>Wind advisory</alert>
 - <alert>High wind warning</alert>
 - <alert>Light snow</alert>
 - <alert>Rain</alert>
 - <alert>Light rain</alert>

- <alert>Heavy rain</alert>
- <alert>Freezing rain</alert>
- <alert>Mixed precipitation</alert>
- <alert>Strong wind</alert>
- <alert>Strong wind gusts</alert>
- <alert>Severe hail</alert>
- <alert>Hurricane</alert>
- <alert>Tropical storm</alert>
- <alert>Tropical depression</alert>
- </alerts>
- </driver>

3.9.4.29 External Event Driver

The IDS External Event driver has the following configuration parameters:

- <driver>
 - <identifier>ExternalEventDriver</identifier> Name of this driver.
 - <host>pascal</host> The name of the computer on which the External Event driver should be running (DNS name, qualified as necessary, or the IP address).
 - <port>38569</port> The port on which the External Event driver is listening for client connections (from the IDS subsystem).
 - <logLevel>slDetail</logLevel> The level of status logging for this system; this can also be changed via the EH (slError, slWarning, slInfo, slDebug, slDetail).
 - <validation>>false</validation> Whether xml validation is on, this should be false when in a production environment. If validation is set to true, the subsystem performance will be slower (true, false).
 - <icdVersion>1.0</icdVersion> The ICD version for this system, this is appended to the schema location in the general section of config data (Should be the version corresponding to the location of schemas for this system. If validation is turned on, this must be the same as for the IDS subsystem).
 - <maxConnections>20</maxConnections> Maximum number of client connections to allow (1-20).
 - <providerType>ids</providerType> The provider type of this driver, used in XML to uniquely identify elements.
 - <commentType>Data</commentType> Value for a required Operator Map field supplied with alerts.
 - <extEventContact> Contains information about the external event source.
 - <serverLocation> URL of the external event web service and method. </serverLocation>
 - <agency>FHP</agency> Agency passed to EM when creating event from external source. Value must exist in EM Agency DB.
 - <contact>FHP</contact> Contact passed to EM when creating event from external source. Value must exist in EM Contact DB.
 - </extEventContact>
 - <handlers> These handlers are run when the system starts up. If a handler is not listed, that handler will not be instantiated by the system.

- `<gov.its.ids.driver.xml.ExternalEventFhpHandler/>` Processes external events from FHP.
- `</handlers>`
- `</driver>`

3.9.4.30 FHP Incident Driver

The IDS FHP Incident driver has the following configuration parameters:

- `<driver>`
 - `<identifier>FhpIncidentDriver</identifier>` Name of this driver.
 - `<host>pascal</host>` The name of the computer on which the FHP Incident driver should be running (DNS name, qualified as necessary, or the IP address).
 - `<port>38521</port>` The port on which the FHP Incident driver is listening for client connections (from the IDS subsystem).
 - `<logLevel>slDetail</logLevel>` The level of status logging for this system; this can also be changed via the EH (slError, slWarning, slInfo, slDebug, slDetail).
 - `<validation>>false</validation>` Whether xml validation is on, this should be false when in a production environment. If validation is set to true, the subsystem performance will be slower (true, false).
 - `<icdVersion>1.0</icdVersion>` The ICD version for this system, this is appended to the schema location in the general section of config data (Should be the version corresponding to the location of schemas for this system. If validation is turned on, this must be the same as for the IDS subsystem).
 - `<maxConnections>20</maxConnections>` Maximum number of client connections to allow (1-20).
 - `<providerType>ids</providerType>` The provider type of this driver, used in XML to uniquely identify elements.
 - `<commentType>Data</commentType>` Value for a required Operator Map field supplied with alerts.
 - `<extEventContact>` Contains information about the external event source.
 - `<agency>FHP</agency>` Agency passed to EM when creating event from external source. Value must exist in EM Agency DB.
 - `<contact>FHP</contact>` Contact passed to EM when creating event from external source. Value must exist in EM Contact DB.
 - `</extEventContact>`
 - `<counties>` List of counties for which FHP incidents should be provided; sent to FHP Incident server as a parameter.
 - `<county>Indian River</county>`
 - `<county>St Lucie</county>`
 - `<county>Martin</county>`
 - `<county>Palm Beach</county>`
 - `<county>Broward</county>`
 - `<county>Baker</county>`
 - `</counties>`
 - `<roadways>` Optional list of roadways for which FHP incidents should be provided; sent to FHP Incident server as a parameter.

- `<roadway>SR9</roadway>`
- `<roadway>SR91</roadway>`
- `<roadway>I95</roadway>`
- `</roadways>`
- `<providers>` Contains a list of incident providers. The FHP Incident server is the only incident provider currently in use.
 - `<provider>` Contains information about the provider to which the driver will connect.
 - `<identifier>fhp</identifier>` Required identifier.
 - `<host>serverName</host>` Name or IP address of computer where this provider is running.
 - `<port>42124</port>` Port this provider is listening for client connections.
 - `<providerType>fhp</providerType>` Required value.
 - `<username>District 4</username>` User name for driver to log into this provider.
 - `<password>X03MO1qnZdYdgyfeuILPmQ==</password>` Encrypted password for the username.
 - `</provider>`
- `</providers>`
- `<handlers>` These handlers are run when the system starts up. If a handler is not listed, that handler will not be instantiated by the system.
 - `<gov.its.ids.driver.xml.FhpIncidentIdsHandler/>` Processes incidents from FHP.
- `</handlers>`
- `</driver>`

3.9.4.31 Safety Barrier Alarm Driver

The IDS SB Alarm driver has the following configuration parameters:

- `<driver>`
 - `<identifier>SbAlarmDriver</identifier>` Name of this driver
 - `<host>511fat</host>` The name of the computer on which the SB Alarm Incident driver should be running (DNS name, qualified as necessary, or the IP address).
 - `<port>38590</port>` The port on which the SB Alarm driver is listening for client connections (from the IDS subsystem).
 - `<logLevel>slInfo</logLevel>` The level of status logging for this system; this can also be changed via the EH (slError, slWarning, slInfo, slDebug, slDetail).
 - `<validation>>false</validation>` Whether xml validation is on, this should be false when in a production environment. If validation is set to true, the subsystem performance will be slower (true, false).
 - `<icdVersion>1.0</icdVersion>` The ICD version for this system, this is appended to the schema location in the general section of config data (Should be the version corresponding to the location of schemas for this system. If validation is turned on, this must be the same as for the IDS subsystem)

- `<maxConnections>10</maxConnections>` Maximum number of client connections to allow (1-20).
- `<providerType>ids</providerType>` The provider type of this driver, used in XML to uniquely identify elements.
- `<commentType>Data</commentType>` Value for a required Operator Map field supplied with alerts
- `<sbEventContact>` Contains information about the SB source
 - `<agency>Safety Barrier</agency>` Agency to use when creating event based on SB alerts
 - `<contact>SB</contact>` Contact first name at the agency from above
- `</sbEventContact>`
- `<handlers>` These handlers are run when the system starts up. If a handler is not listed, that handler will not be instantiated by the system.
 - `<gov.its.ids.driver.xml.SbAlarmDriverSbHandler/>` Processes incidents from FHP.
- `</handlers>`
- `<databusConnection>` Configuration information for the databus connection
 - `<identifier>databus</identifier>` Name of the databus provider
 - `<host>511fat</host>` Host that databus is running on
 - `<port>8009</port>` Port used by databus to connect to other systems
 - `<username>idsSbDriver</username>` username used by the SB Alarm Driver to authenticate to Safety Barrier Subsystem
 - `<password>X03MO1qnZdYdgyfeuILPmQ==</password>` password used the user from above
 - `<databusProviders>`
 - `<databusProvider>` list of subsystems the driver will connect to
 - `<providerName>sb</providerName>`
 - `</databusProvider>`
 - `</databusProviders>`
- `</databusConnection>`
- `</driver>`

3.9.4.32 IDS FHP Interface Server

The IDS FHP Interface Server has the following configuration parameters:

- `<host>pascal</host>` The name of the computer on which the service application should be running (DNS name, qualified as necessary, or the IP address).
- `<port>40008</port>` The port on which the application is listening for client connections.
- `<icdVersion>1.0</icdVersion>` The ICD version for this system, this is appended to the schema location in the general section of config data. (Should be the version corresponding to the location of schemas for this system.)
- `<logLevel>slDetail</logLevel>` The level of status logging for this system; this can also be changed via the EH (slError, slWarning, slInfo, slDebug, slDetail).

- `<validation>>false</validation>` Whether XML validation is on, this should be false when in a production environment. If validation is set to true, the subsystem performance will be slower (true, false).
- `<providerType>fhp</providerType>` The provider type of this server, used in XML to uniquely identify elements.
- `<retrieveInterval>30</retrieveInterval>` Time in seconds between polls of the FHP FTP site for updated incident data.
- `<staleAlertThreshold>12000</staleAlertThreshold>` Time in seconds before lack of updates from the FTP site will generate an alert to connected clients.
- `<staleAlertIntervalMultiplier>1</staleAlertIntervalMultiplier>` Multiplier for consecutive failed retrieval attempts before an alert is sent to connected clients.
- `<ftpServer>` Parameters for accessing the FHP CAD FTP site.
 - `<host>pythagoras</host>` The name of the computer on which the FHP FTP server running (DNS name, qualified as necessary, or the IP address).
 - `<port>21</port>` Optional port on which the FTP site is listening (defaults to the standard value of "21").
 - `<username>sunguide</username>` The User ID used for logging into the FTP server.
 - `<password>floridad0t</password>` Password to be used with the User ID.
 - `<localDir>c:\fdot\fhp</localDir>` Local folder where downloaded FHP CAD data files are stored.
- `<users>`
 - `<user>`
 - `<username>District 4</username>` The User ID used for requesting FHP incidents from the server by a SunGuide deployment .
 - `<password>HqTAo7KC0u36Tik3WRvZNg==</password>` Password to be used with the User ID.
 - `</user>`
- `<handlers>` These handlers are run when the system starts up. If a handler is not listed, that handler will not be instantiated by the system.
 - `<gov.its.fhp.xml.FhpInterfaceSubscribeHandler />` Processes county subscription requests, including roadway filtering.
- `<subscriptions/>`
- `<statusUpdates/>`
- `<drivers/>`

3.9.4.33 GUI Preference Manager

The GUI Preference Manager component has the following configuration parameters:

- `<host>laplace</host>` The hostname or IP address of the machine which the GUI Preference Manager will run on (DNS name, qualified as necessary, or the IP address).
- `<port>40035</port>` The port number which the GUI Preference Manager will listen for connections on.
- `<icdVersion>1.0</icdVersion>` The ICD version attribute that will be set in requests, responses and messages formulated by the IM system.

- `<maxConnections>20</maxConnections>` The maximum number of concurrent connections to the subsystem which are allowed.
- `<logLevel>slInfo</logLevel>` Initial log level to be used when logging messages to status logger (Valid values: `slError`, `slWarn`, `slInfo`, `slDebug`, `slDetail`).
- `<validation>>false</validation>` Flag indicating if the GUI Preference Manager should validate all XML messages.
- `<roadwayProximity>10</roadwayProximity>` The maximum number of feet a point can be from roadway or street for a name popup to be displayed on the Operator Map.
- `<actionTimeout>600</actionTimeout>` Time in seconds before an inter-operator message will expire.
- `<handlers></handlers>` A list of XML message handlers which process messages for the GUI Preference Manager. This should only contain the following child element:
 - `<gov.its.gui.xml.GuiHandler />` Processes messages for the GUI.
 - `<gov.its.gui.xml.GuiBroadcastHandler/>` Processes broadcast messages for the GUI.
 - `<gov.its.gui.xml.GuiSubscribeHandler/>` Processes subscriptions for the subsystem.
 - `<gov.its.gui.xml.GuiOperatorMessagingHandler/>` Handles operator request to send messages to other operators.
- `<subscriptions />` This parameter is not used by the GUI Preference Manager, but must be included as an empty element.
- `<statusUpdates />` This parameter is not used by the GUI Preference Manager, but must be included as an empty element.
- `<drivers>` The processes to which this subsystem connects (this provides support to change password):
 - `<driver>`
 - `<identifier>databus</identifier>` Connects to data bus for all provider connections and data.
 - `<host>pascal</host>` This should be the host on which data bus is running.
 - `<port>8009</port>` This should be the port on which data bus is listening for client connections.
 - `</driver>`

3.9.4.34 MCP Manager

The MCP Manager component has the following configuration parameters:

- `<host>localhost</host>` The hostname or IP address of the machine which the MCP Manager will connect to for Databus status data and command submission (DNS name, qualified as necessary, or the IP address).
- `<port>40035</port>` The port number which the Databus is listening on.
- `<icdVersion>1.0</icdVersion>` The ICD version attribute that will be set in requests, responses and messages formulated by the MCP Manager subsystem.
- `<logLevel>slInfo</logLevel>` Initial log level to be used when logging messages to status logger (Valid values: `slError`, `slWarn`, `slInfo`, `slDebug`, `slDetail`).

- `<validation>>false</validation>` Flag indicating if the MCP Manager should validate all XML messages.
- `<focusSpeed>50</focusSpeed>` Speed expressed as percentage of full scale for keyboard focus adjustments.
- `<irisSpeed>50</irisSpeed>` Speed expressed as percentage of full scale for keyboard iris adjustments.
- `<zoomSpeed>50</zoomSpeed>` Speed expressed as percentage of full scale for keyboard zoom adjustments.
- `<panTiltSpeedFactor>50</panTiltSpeedFactor>` Scaling factor for limiting PTZ speed to a fraction of the actual speed received from the keyboard.
- `<connectRetries>5</connectRetries>` Number of times the application attempts to connect to the keyboard device before an error is reported. Set to -1 for unlimited retries.
- `<connectDelay>250</connectDelay>` Delay in milliseconds between connection attempts.
- `<autoReconnect>>true</autoReconnect>` Flag enables automatic reconnection in the event of a disconnect.
- `<baud>9600</baud>` Baud rate for serial communication to the keyboard device.
- `<parity>none</parity>` Parity for serial communication to the keyboard device.
- `<stopBits>0</stopBits>` Number of stop bits for serial communication to the keyboard device.
- `<firstPreset>10</firstPreset>` Identifier of first preset in list of camera presets.
- `<lastPreset>19</lastPreset>` Identifier of last preset in list of camera presets.

- <databusConnection>
 - <identifier>databus</identifier> name of the databus connection
 - <host>databusHost</host> host where databus is running
 - <port>databusPort</port> port where databus is running
 - <username>mcpUserName</username> username for the MCP user
 - <password>mcPassword</password> password for the MCP user
 - <databusProviders> list of system from which MCP will receive information
 - <databusProvider>
 <providerName>vs</providerName> Video Switching
 </databusProvider>
 - <databusProvider>
 <providerName>cctv</providerName> CCTV
 </databusProvider>
 - <databusProvider>
 <providerName>VideoWallSystem</providerName> Video Wall
 </databusProvider>
 - </databusProviders></databusConnection>
 - <keyboards> The containing element that lists the keyboards to be hosted by the MCP Manager subsystem.
 - <keyboard> The containing element for a single keyboard instance.
 - <identifier>MCP1</identifier> The unique identifier of the keyboard instance
 - <resourceType>AD2088</resourceType> The keyboard type of the instance.
 - <username>bfarmer</username> The user ID that will be used by the keyboard instance for authentication with the subsystems.
 - <password>28JoogEaxYLx13CWpWcLXA==</password> The password that will be used for authentication with the subsystems.
 - <commType>socket</commType> The communication type that will be used by the keyboard instance: socket (terminal server) or serial.
 - <host>129.162.101.192</host> The DNS name of IP address of the socket terminal server.
 - <port>4001</port> The port on which the socket terminal server will be listening.</keyboard>
- </keyboards>

3.9.4.35 Trailblazer DMS Driver

The Trailblazer driver does not have a separate config file entry. It is just an additional protocol that the statewide driver supports. Therefore, the same driver parameters under the <dms> tag. Refer to Section 3.9.4.7.

3.9.4.36 HAR

The HAR subsystem has the following configuration parameters:

- `<host>pascal</host>` The name of the computer on which the HAR subsystem should be running (DNS name, qualified as necessary, or the IP address).
- `<port>40017</port>` The port on which the HAR subsystem is listening for client connections.
- `<icdVersion>1.0</icdVersion>` The ICD version for this system, this is appended to the schema location in the general section of config data. (Should be the version corresponding to the location of schemas for this system.)
- `<maxConnections>20</maxConnections>` Maximum number of client connections to allow (1-20).
- `<logLevel>slDetail</logLevel>` The level of status logging for this system; this can also be changed via the EH (slError, slWarning, slInfo, slDebug, slDetail).
- `<validation>>false</validation>` Whether XML validation is on, this should be false when in a production environment. If validation is set to true, the subsystem performance will be slower (true, false).
- `<commTolerance>3</commTolerance>` Tells how many times that requests associated with a device can error out before operational status of device is set to Failed.
- `<handlers>` These handlers are run when the system starts up. If a handler is not listed, that handler will not be instantiated by the system.
 - `<gov.its.har.xml.HarRetrieveDataHandler />` Processes retrieve data requests for the subsystem.
 - `<gov.its.har.xml.HarControlHandler />` Processes control requests for the HAR subsystem.
 - `<gov.its.har.xml.HarConfigHandler />` Processes configuration data for the subsystem.
 - `<gov.its.har.xml.HarSubscribeHandler />` Processes subscriptions for the subsystem.
- `<subscriptions>` Used by the Data Bus to subscribe to updates.
 - `<deviceStatus/>` Subscribes to device status updates.
- `<statusUpdates>` Used by the Data Bus to determine which messages should be examined for updating the cache.
 - `<harUpdateMsg action="add">` Used to notify Data Bus that a HAR device has been updated and the Data Bus cache needs to be updated.
 - `<statusResp/>` Used to notify Data Bus that the status of a HAR device has changed and the Data Bus cache needs to be updated.
 - `<sendMsgResp/>` Used to notify Data Bus that a new message has been sent to a HAR device and the Data Bus cache needs to be updated.
 - `<setBeaconStateResp/>` Used to notify Data Bus that the beacon status of a HAR device has been set and the Data Bus cache needs to be updated.
 - `<terminateMsgResp/>` Used to notify Data Bus that the message playing on a HAR device has been terminated and the Data Bus cache needs to be updated.
 - `<setOpStatusResp/>` Used to notify Data Bus that the operational status of a HAR device has changed and the Data Bus cache needs to be updated.
 - `<deleteHarResp action="delete"/>` Used to notify Data Bus that a HAR device has been deleted from the system and the Data Bus cache needs to be updated.
 - `<modifyHarResp action="modify"/>` Used to notify Data Bus that a HAR device's configuration has been modified and the Data Bus cache needs to be updated.

- <onlineStatusMsg/> Used to notify Data Bus that a HAR device's status has changed and the Data Bus cache needs to be updated.
- <drivers> Contains a list of drivers for this subsystem.
 - <driver>...</driver>

3.9.4.37 HAR DR2000 Driver

The HAR DR2000 driver has the following configuration parameters:

- <driver>
 - <identifier>DR2000</identifier> Name of this driver.
 - <host>pascal</host> The name of the computer on which the HAR DR2000 driver should be running (DNS name, qualified as necessary, or the IP address).
 - <port>40107</port> The port on which the RTMS driver is listening for client connections (from the TSS subsystem).
 - <logLevel>slDetail</logLevel> The level of status logging for this system; this can also be changed via the EH (slError, slWarning, slInfo, slDebug, slDetail).
 - <validation>>false</validation> Whether xml validation is on, this should be false when in a production environment. If validation is set to true, the subsystem performance will be slower (true, false).
 - <icdVersion>1.0</icdVersion> The ICD version for this system, this is appended to the schema location in the general section of config data (Should be the version corresponding to the location of schemas for this system. If validation is turned on, this must be the same as for the HAR subsystem).
 - <maxConnections>20</maxConnections>Maximum number of client connections to allow (1-20).

 - <providerType>har</providerType> The provider type of this driver, used in XML to uniquely identify elements.

 - <packetTimeout>5000</packetTimeout> Stores the packet timeout value (in milliseconds).
 - <sharedDirectory>\\dr2000\DR2000V54\SIMData</sharedDirectory> Location of the shared directory in which to place commands for the DR2000 Software Interface Module.
 - <operatorMapURL>http://pascal/OperatorMap</operatorMapURL> URL at which the operator map can be accessed.
 - <commandTimeout>10000</commandTimeout> Timeout (in milliseconds) when sending commands to the DR2000 shared directory.
 - <voiceID>HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Speech\Voices\Tokens\MSSam</voiceID> ID specifying the Microsoft SAPI voice which should be used in Text-To-Speech operations.
 - <voiceRate>0</voiceRate> Controls the rate that the Text-To-Speech voice speaks at (Ranges from -10 to 10).
 - <voiceVolume>100</voiceVolume> Controls the volume that the Text-To-Speech voice speaks at (Ranges from 0 to 100).

- `<availableMessageRange>101-110</availableMessageRange>` Indicates the inclusive range of available message ID's in the DR2000 software. These message ID's should be reserved for use solely by the DR2000 driver. Must be formatted as lowerValue-upperValue.
- `<handlers>` These handlers are run when the system starts up. If a handler is not listed, that handler will not be instantiated by the system.
 - `<gov.its.har.driver.xml. HarDR2000ConfigHandler />` Processes HAR device configuration requests for the HAR subsystem.
 - `<gov.its.har.driver.xml. HarDR2000ControlHandler />` Processes HAR device control requests for the HAR subsystem.
- `</handlers>`
- `</driver>`

3.9.4.38 Ramp Metering

The Ramp Metering subsystem has the following configuration parameters:

- `<appendVersionToSchemaLocation>>false</appendVersionToSchemaLocation>` If true the `icdVersion` will be appended to the `schemaLocation` to determine the real schema location. If false, the `schemaLocation` will be used as configured.
- `<icdVersion>1.0</icdVersion>` The ICD version attribute that will be set in all requests, responses and messages formulated by the Rmsystem.
- `<host>129.162.101.128</host>` The host that the RM system is running on.
- `<port>40003</port>` The port that the RM subsystem will listen for connections on.
- `<maxConnections>20</maxConnections>` The maximum number of simultaneous connections allowed.
- `<performXSDValidation>>false</performXSDValidation>` Flag indicating if the RM subsystem will validate all XML data against the XSD.
- `<providerType>rms</providerType>` The provider type of this subsystem, used in XML to uniquely identify elements.
- `<centerId>District 6</centerId>` The name of the operations center which the RM system is running in.
- `<numRequestThreads>1</numRequestThreads>` The number of threads the RM subsystem will use to handle incoming requests from databus per client connection.
- `<numProcessingThreads>10</numProcessingThreads>` The number of threads the RM subsystem will use to handle asynchronous processing. This parameter governs the number of threads that will service the RM subsystems task queue. All asynch processing that needs to be performed is added to this queue.
- `<requiresDB>>true</requiresDB>` Flag indicating if the RM subsystem will use a database for persistence. If this value is set to false, all persistence will be in memory only and all state will be lost when the RM subsystem is stopped.
- `<execHdlrConnEnabled>>true</execHdlrConnEnabled>` Configuration values used to run as a client to the executive handler.
- `<execHdlrHost>129.162.101.128</execHdlrHost>` The host that the executive handler system is running on.

- `<execHdlrPort>8001</execHdlrPort>` The port that executive handler will listen for connections.
- `<execHdlrHeartbeatSecs>30</execHdlrHeartbeatSecs>`The value to send heartbeat messages to the executive handler process.
- `<processName>RmsService</processName>`The RmsService process name
- `<initialLogLevel>slDetail</initialLogLevel>` The initial level to log messages to the status logger process.
- `<logToConsole>>false</logToConsole>`If set to true, the RM system will log to console.
- `<logToLocalFile>>false</logToLocalFile>`If set to true, will log to local file.
- `<appName>RM Subsystem</appName>` The application name to display in Status Logger for messages logged by this subsystem.
- `<databusClientReconIntSecs>30</databusClientReconIntSecs>` Number of seconds to wait between attempts to establish a client connection to the databus.
- `<deviceDriverReconIntSecs>30</deviceDriverReconIntSecs>` Number of seconds to wait between attempts to establish a connection to a device driver.
- `<requestTimeoutMillis>600000</requestTimeoutMillis>` Number of milliseconds to wait for a response from the device driver to a request.
- `<downloadIntervalInSeconds>60</downloadIntervalInSeconds>` Interval for downloading the metering rate to the ramp meter controller in seconds.
- `<maxNumberOfCentralAlgorithmTasksInEachTimer>10</maxNumberOfCentralAlgorithmTasksInEachTimer>` Maximum number of central algorithm tasks allocated by a single timer.
- `<timeoutForMarginal>3</timeoutForMarginal>` Time-out period (in seconds) to mark a device as Marginal status.
- `<timeoutForFailed>6</timeoutForFailed>` Time-out period (in seconds) to mark a device as Failed status.
- `<drivers>` Listing of drivers that the RM system will connect to
 - `<driver>` Refer to Ramp Metering driver configuration
- `<subscriptions>` Subscriptions the databus will subscribe to.
 - `<statusUpdate/>` The messages and responses that the Data Bus will receive
- `<statusUpdates>` Responses and messages the databus will receive due to its subscriptions, defined in a way that allow the databus to update its dom tree for an event.
 - `<rmc>`
 - `<addRmcUpdateMsg action="add"/>`
 - `<setOnlineStatusResp/>`
 - `<setMeteringStatusResp action="modify"/>`
 - `<rmcStatusUpdateMsg action="modify"/>`
 - `<deleteRMCRsp action="delete"/>`

3.9.4.39 Ramp Metering Driver

The Ramp Metering driver has the following configuration parameters:

- `<identifier>Bitran-170</identifier>`The name of the driver.
- `<host>129.162.101.128</host>`The host the driver resides.
- `<protocol>Bitran-170</protocol>`The protocol the driver will use.

- `<port>9001</port>`The port the driver listens for connections.
- `<logLevel>slDetail</logLevel>`Detail level the driver will log to the status logger.
- `<validation>>false</validation>` Flag to require XML validation.
- `<icdVersion>1.0</icdVersion>` The interface control document version used.
- `<maxConnections>10</maxConnections>` the maximum number of simultaneous connections.
- `<packetTimeout>5000</packetTimeout>`Time the driver will await a packet.
- `<providerType>rms</providerType>`The subsystem this driver interacts with.
- `<packetRetries>1</packetRetries>`Number of times the driver will resend a failed packet.
- `<pulseRate>20</pulseRate>` The number of seconds between communications to the device.
- `<clockSyncInterval>1440</clockSyncInterval>` Stores the clock synchronization interval (in minutes) for which the driver synchronizes device time with the local system time.
- `<handlers>` These handlers are run when the system starts up. If a handler is not listed, that handler will not be instantiated by the system.
 - `<gov.its.rms.driver.xml.RmsDrvConfigurationHandler/>` Processes RMC configuration requests/messages sent from the client and generates configuration responses and sends them to the client.
 - `<gov.its.rms.driver.xml.RmsDrvStatusHandler/>` Processes RMC status change requests/messages sent from the client and generates responses and sends them to the client.
 - `<gov.its.rms.driver.xml.RmsDrvOperationsHandler/>` Processes operations requests/messages sent from the client and generates responses and sends them to the client.
 - `<gov.its.rms.driver.xml.RmsTssInterfaceHandler/>` Processes requests from the TSS WSDOT Driver.

3.9.4.40 Ramp Metering WSDOT Driver

The Ramp Metering WSDOT driver has the following configuration parameters:

- `<identifier>WsDotTss</identifier>` The name of this driver.
- `<host>129.162.101.128</host>` The hostname of the computer that this process resides.
- `<port>8091</port>`The port that this process will listen for other processes to connect.
- `<executiveHandlerHost>localhost</executiveHandlerHost>`The location of the executive handler process this driver will connect with.
- `<executiveHandlerPort>8001</executiveHandlerPort>`The port to connect to the executive handler process.
- `<logLevel>slDetail</logLevel>`The initial log setting for logging to the status logger process.
- `<validation>>false</validation>`Flag to validate XML messaging.
- `<icdVersion>1.0</icdVersion>` The interface control document version being used.
- `<maxConnections>20</maxConnections>` The maximum number of simultaneous connections allowed.
- `<centerId>District 6</centerId>` The name of the center this driver is associated with.

- `<providerType>tss</providerType>`The provider this system interacts with and will be associated with.
- `<pulseRate>20</pulseRate>` The number of seconds between communications to the device.
- `<speedConstant>900</speedConstant>` The constant used for speed calculations.
- `<handlers>` These handlers are run when the system starts up. If a handler is not listed, that handler will not be instantiated by the system.
 - `<gov.its.tss.driver.WSDOT170TssDriver.xml.WSDOT170TssConfigurationHandler/>` Processes detector configuration requests/messages sent from the client and generates configuration responses and sends them to the client.
 - `<gov.its.tss.driver.WSDOT170TssDriver.xml.WSDOT170TssDetectorDataHandler/>` Processes detector data responses sent from the rms driver.
 - `<gov.its.tss.driver.WSDOT170TssDriver.xml.WSDOT170TssStatusHandler/>` Processes TSS status change requests/messages sent from the client and generates responses and sends them to the client.
- `</handlers>`
- `<rmsDriver>` The RMS driver the WsDOT driver will interact with.
 - `<identifier>Bitran-170</identifier>`The name of the RMS driver.
 - `<host>129.162.101.128</host>`The hostname of the computer that the RMS driver is running on.
 - `<port>9001</port>`The port the RMS driver will accept connections on.
- `</rmsDriver>`

3.9.4.41 RWIS

The RWIS subsystem has the following configuration parameters:

- `<host>pascal</host>` The name of the computer on which the RWIS subsystem should be running (DNS name, qualified as necessary, or the IP address).
- `<port>40077</port>` The port on which the RWIS subsystem is listening for client connections.
- `<icdVersion>1.0</icdVersion>` The ICD version for this system, this is appended to the schema location in the general section of config data (Should be the version corresponding to the location of schemas for this system).
- `<maxConnections>20</maxConnections>` Maximum number of client connections to allow (1-20).
- `<logLevel>slInfo</logLevel>` The level of status logging for this system, can also be changed via the EH (slError, slWarning, slInfo, slDebug, slDetail).
- `<validation>>false</validation>` Whether XML validation is on, this should be false when in a production environment. If validation is set to true, the subsystem performance will be slower (true, false).
- `<commTolerance>3</commTolerance>` Tells how many times requests associated with an RWIS station can error out before operational status of station is set to Failed.
- `<providerType>rwis</providerType>` The provider type of this subsystem, used in XML to uniquely identify elements.
- `<centerId>District 6</centerId>` Name of the center for the RWIS subsystem.

- <handlers> These handlers are run when the system starts up. If a handler is not listed, that handler will not be instantiated by the system.
 - <gov.its.rwis.xml.RwisRetrieveDataHandler/> Processes retrieve data requests sent from the client to get RWIS data.
 - <gov.its.rwis.xml.RwisSubscribeHandler/> Processes subscription requests from the client and generates subscription responses to send back to the client.
 - <gov.its.rwis.xml.RwisConfigurationHandler/> Processes configuration requests sent from the client to get RWIS data.
 - <gov.its.rwis.xml.RwisStatustHandler/> Processes status requests sent from the client to set and retrieve RWIS status data.
- <subscriptions> Used by the Data Bus to subscribe to updates.
 - <stationData/> Used by the Data Bus to subscribe to updates in RWIS station data (add, modify, and delete RWIS station).
 - <onlineStatusUpdate/> Used by the Data Bus to subscribe to updates in operational station status data (online status updates).
 - <statusUpdate/> Used by the Data Bus to subscribe to updates in status data (precipitation, pavement, temperature status of RWIS station).
- <statusUpdates> Used by the Data Bus to determine which messages should be examined for updating the cache.
 - <station> Name of the Data Bus element to be updated (resource type).
 - <addStationResp action="add" /> Used to notify the Data Bus that when this type of message is received, an addition should be made to the Data Bus data cache.
 - <modifyStationResp action="modify"/> Used to notify the Data Bus that when this type of message is received, the Data Bus cache should be modified.
 - <deleteStationResp action="delete"/> Used to notify Data Bus that when this type of message is received, item(s) should be removed from the Data Bus data cache.
 - <onlineStatusMsg/> Used to notify the Data Bus that when this type of message is received, the Data Bus cache should be modified.
 - <onlineStatusResp/> Used to notify the Data Bus that when this type of message is received, the Data Bus cache should be modified.
 - <setOnlineStatusResp/> Used to notify the Data Bus that when this type of message is received, the Data Bus cache should be modified.
 - <statusResp/> Used to notify the Data Bus that when this type of message is received, the Data Bus cache should be modified.
 - <statusMsg/> Used to notify the Data Bus that when this type of message is received, the Data Bus cache should be modified.
 - </station>
- <drivers>... The RWIS subsystem will attempt to connect to drivers that are listed in this section.

3.9.4.42 RWIS Driver

The RWIS driver has the following configuration parameters:

- <driver>
 - <identifier>RwisDriver</identifier> Name of this driver.
 - <host>pascal</host> The name of the computer on which the RWIS driver should be running (DNS name, qualified as necessary, or the IP address).
 - <port>40078</port> The port on which the RWIS driver is listening for client connections (from the RWIS subsystem).
 - <logLevel>slInfo</logLevel> The level of status logging for this system; this can also be changed via the EH (slError, slWarning, slInfo, slDebug, slDetail).
 - <validation>>false</validation> Whether xml validation is on, this should be false when in a production environment. If validation is set to true, the subsystem performance will be slower (true, false).
 - <icdVersion>1.0</icdVersion> The ICD version for this system, this is appended to the schema location in the general section of config data (Should be the version corresponding to the location of schemas for this system. If validation is turned on, this must be the same as for the RWIS subsystem).
 - <maxConnections>20</maxConnections>Maximum number of client connections to allow (1-20).
 - <providerType>rwis</providerType> The provider type of this driver, used in XML to uniquely identify elements.
 - <packetTimeout>5000</packetTimeout> Stores the packet timeout value (in milliseconds).
 - <packetRetries>1</packetRetries> Number of times a packet will be retried before generating an error.
 - <pulseRate>30</pulseRate> Stores the pulse interval (in seconds) for which the driver distributes status update messages to connected clients.
 - <handlers> These handlers are run when the system starts up. If a handler is not listed, that handler will not be instantiated by the system.
 - <gov.its.rwis.xml.RwisDriverConfigurationHandler /> Processes configuration data for the driver.
 - <gov.its.rwis.xml.RwisDriverStatusHandler /> Processes status data for the driver.

3.9.4.43 Safety Barrier

The Safety Barrier subsystem has the following configuration parameters:

- <host>pascal</host> The name of the computer on which the SB subsystem should be running (DNS name, qualified as necessary, or the IP address).
- <port>40008</port> The port on which the SB subsystem is listening for client connections.
- <icdVersion>1.0</icdVersion> The ICD version for this system, this is appended to the schema location in the general section of config data (Should be the version corresponding to the location of schemas for this system).
- <maxConnections>20</maxConnections> Maximum number of client connections to allow (1-20).
- <logLevel>slDetail</logLevel> The level of status logging for this system, can also be changed via the EH (slError, slWarning, slInfo, slDebug, slDetail).

- `<validation>>false</validation>` Whether XML validation is on, this should be false when in a production environment. If validation is set to true, the subsystem performance will be slower (true, false).
- `<commTolerance>3</commTolerance>` Tells how many times requests associated with an SB station can error out before operational status of station is set to Failed.
- `<providerType>sb</providerType>` The provider type of this subsystem, used in XML to uniquely identify elements.
- `<centerId>District 6</centerId>` Name of the center for the SB subsystem.
- `<handlers>` These handlers are run when the system starts up. If a handler is not listed, that handler will not be instantiated by the system.
 - `<gov.its.sb.xml.SbRetrieveDataHandler/>` Processes retrieve data requests sent from the client to get SB data.
 - `<gov.its.sb.xml.SbSubscribeHandler/>` Processes subscription requests from the client and generates subscription responses to send back to the client.
 - `<gov.its.sb.xml.SbStatusHandler/>` Processes status requests sent from the client to set and retrieve SB status data.
 - `<gov.its.sb.xml.SbBarrierEventHandler/>` Processes barrier event requests sent from the client and barrier event messages sent from a driver to schedule and manage events.
 - `<gov.its.sb.xml.SbConfigurationHandler/>` Processes configuration requests sent from the client to get SB data.
 - `<gov.its.sb.xml.SbControlHandler/>` Processes requests sent from the client to control SB devices.
- `<subscriptions>` Used by the Data Bus to subscribe to updates.
 - `<stationData/>` Used by the Data Bus to subscribe to updates in SB station data (add, modify, and delete SB station).
 - `<eventData/>` Used by the Data Bus to subscribe to updates in SB event data (new, canceled, and acknowledged events).
 - `<statusData/>` Used by the Data Bus to subscribe to updates in status data (operational status of SB station).
- `<statusUpdates>` Used by the Data Bus to determine which messages should be examined for updating the cache.
 - `<sbStation>` Name of the Data Bus element to be updated (resource type).
 - `<addSbResp action="add" />` Used to notify the Data Bus that when this type of message is received, an addition should be made to the Data Bus data cache.
 - `<modifySbResp action="modify"/>` Used to notify the Data Bus that when this type of message is received, the Data Bus cache should be modified.
 - `<deleteSbResp action="delete"/>` Used to notify Data Bus that when this type of message is received, item(s) should be removed from the Data Bus data cache.

- `<onlineStatusMsg/>` Used to notify the Data Bus that when this type of message is received, the Data Bus cache should be modified.
- `<setOnlineStatusMsg/>` Used to notify the Data Bus that when this type of message is received, the Data Bus cache should be modified.
- `<setOnlineStatusResp/>` Used to notify the Data Bus that when this type of message is received, the Data Bus cache should be modified.
- `<setStatusResp/>` Used to notify the Data Bus that when this type of message is received, the Data Bus cache should be modified.
- `</sbStation>`
- `<sbEvent>`
 - `<barrierEventMsg action="add"/>` Used to notify the Data Bus that when this type of message is received, an addition should be made to the Data Bus data cache.
 - `<cancelBarrierEventMsg action="delete"/>` Used to notify Data Bus that when this type of message is received, item(s) should be removed from the Data Bus data cache.
 - `<acknowledgeEventResp/>` Used to notify the Data Bus that when this type of message is received, the Data Bus cache should be modified.
- `</sbEvent>`

3.9.4.44 Safety Barrier Driver

The Safety Barrier driver has the following configuration parameters:

- `<driver>`
 - `<identifier>SBDriver</identifier>` Name of this driver.
 - `<host>pascal</host>` The name of the computer on which the Bitrans driver should be running (DNS name, qualified as necessary, or the IP address).
 - `<port>40088</port>` The port on which the driver is listening for client connections from the SB subsystem.
 - `<logLevel>slInfo</logLevel>` The log level for this system (slError, slWarn, slInfo, slDebug, slDetail).
 - `<validation>>false</validation>` Whether xml validation is on, this should be false when in a production environment. If validation is set to true, the subsystem performance will be slower (true, false).
 - `<icdVersion>1.0</icdVersion>` The ICD version for this system, this is appended to the schema location in the general section of config data (Should be the version corresponding to the location of schemas for this system. If validation is turned on, this must be the same as for the SB subsystem).
 - `<maxConnections>10</maxConnections>` Maximum number of client connections allowed.
 - `<providerType>sbStation</providerType>` The provider type of this driver, used in XML to uniquely identify elements.
 - `<packetTimeout>5000</packetTimeout>` Stores the packet timeout value (in milliseconds).
 - `<packetRetries>1</packetRetries>` Number of times a packet will be retried before generating an error.

- `<pulseRate>30</pulseRate>` Stores the pulse interval (in seconds) for which the driver sends status request messages to connected devices.
- `<handlers>` These handlers are run when the system starts up. If a handler is not listed, that handler will not be instantiated by the system.
 - `<gov.its.sb.driver.xml.SBDriverConfigHandler/>` Processes SB device configuration requests for the Safety Barrier subsystem.
 - `<gov.its.sb.driver.xml.SBDriverControlHandler/>` Processes SB device control requests for the Safety Barrier subsystem.
 - `<gov.its.sb.drier.xml.SBDriverUpdateHandler/>` Handles device polling and status requests for the Safety Barrier subsystem.

3.9.4.45 Data Archive

The Data Archive subsystem has the following configuration parameters:

- `<host>localhost</host>` The hostname or IP address of the machine which the Data Archive subsystem will connect to for Databus status data (DNS name, qualified as necessary, or the IP address).
- `<port>8009</port>` The port number which the Databus is listening on.
- `<icdVersion>1.0</icdVersion>` The ICD version attribute that will be set in requests, responses and messages formulated by the MCP Manager subsystem.
- `<logLevel>slInfo</logLevel>` Initial log level to be used when logging messages to status logger (Valid values: slError, slWarn, slInfo, slDebug, slDetail).
- `<validation>>false</validation>` Flag indicating if the MCP Manager should validate all XML messages.
- `<providerType>DA</providerType>` The provider type used by data archiving for requests/messages.
- `<centerId>TestCenter</centerId>` The center at which this system is running.
- `<username>dataArchive</username>` User name used for retrieving detector mapping from tss.
- `<password>X03MO1qnZdYdgyfeuILPmQ==</password>` Password for the user.
- `<centersToArchive>` A list of centers whose data should be archived. If a center is not in this list, DA will not store the data for the center.
 - `<centerId>District 5</centerId>`
 - `<centerId>OOCEA</centerId>`
 - `</centersToArchive>`
- `<rawDataPurgeInDays>90</rawDataPurgeInDays>` Days after which TSS raw data is purged.
- `<processedDataPurgeInDays>1095</processedDataPurgeInDays>` Days after which rolled up TSS data, 511, DMS message, and travel time data are purged.
- `<ehConnectionPort>8002</ehConnectionPort>` The port to which DA will connect to each host name in the config file to listen for process status updates.
- `<tagReadPurgeInDays>30</tagReadPurgeInDays>` Specifies the number of days in which archived tag read data will be purged from the database.
- `<emailRecipients>` list of recipients to send purge and rollup completions
 - `<emailTo>emailAddress</emailTo>` individual email addresses

- `</emailRecipients>`
- `<handlers>` These handlers are run when the system starts up. If a handler is not listed, that handler will not be instantiated by the system.
 - `<gov.its.dataArchive.DataArchiveRetrieveHandler/>` Handles requests to retrieve data from the system.
 - `<gov.its.dataArchive.DataArchiveProviderHandler/>` Handles provider reconnect and disconnect messages.
 - `<gov.its.dataArchive.handlers.DAOdsConfigHandler/>` Handler processes configuration requests for data which is archived.
- `</handlers>`
- `<drivers>` The processes to which this system connects.
 - `<driver>`
 - `<identifier>databus</identifier>` Connects to data bus for all provider connections and data.
 - `<host>pascal</host>` This should be the host on which data bus is running.
 - `<port>8009</port>` This should be the port on which data bus is listening for client connections.
 - `<username>databusUsername</username>` Username for the databus user
 - `<password>password</password>` Password for the databus user
 - `<databusProviders>` list of system from which DA will receive information. Names in this list must match the provider name
 - `<databusProvider>`
 - `<providerName>dms</providerName>`
`</databusProvider>`
 - `<databusProvider>`
 - `<providerName>tss</providerName>`
`</databusProvider>`
 - `<databusProvider>`
 - `<providerName>tvt</providerName>`
`</databusProvider>`
 - `<databusProvider>`
 - `<providerName>C2cSubscriber</providerName>`
`</databusProvider>`
 - `<databusProvider>`
 - `<providerName>rwis</providerName>`
`</databusProvider>`
 - `</driver>`

3.9.4.46 C2C Plug-in

The C2C Subscriber Plug-in has the following configuration parameters:

- `<host>laplace</host>` The name of the computer on which the C2C Subscriber plug-in should be running (DNS name, qualified as necessary, or the IP address).

- `<port>40022</port>` The port on which the C2C Subscriber Plug-in is listening for client connections.
- `<icdVersion>1.0</icdVersion>` The ICD version for this system, this is appended to the schema location in the general section of config data. (Should be the version corresponding to the location of schemas for this system.)
- `<maxConnections>20</maxConnections>` Maximum number of client connections to allow (1-20).
- `<logLevel>slDetail</logLevel>` The level of status logging for this system; this can also be changed via the EH (slError, slWarning, slInfo, slDebug, slDetail).
- `<validation>>false</validation>` Whether XML validation is on, this should be false when in a production environment. If validation is set to true, the subsystem performance will be slower (true, false).
- `<subsystemType>c2cClient</subsystemType>` The subsystem type of the plug-in.
- `<providerType>c2cClient</providerType>` The provider type of the plug-in.
- `<localApproval>>true</localApproval>` A flag that determines if an operator at the local center must approve placement of DMS or HAR messages from remote centers.
- `<FLATISFloodgateDataLocation>\\servername\FDOT\FL-ATIS_FloodGate_Data.xml</FLATISFloodgateDataLocation>` Location of the FLATIS floodgate data file
- `<dataExtractor>` This section defines the parameters of the single C2C Extractor web service to be used.
 - `<host>localhost</host>` Host name of computer where the web service is located.
 - `<webService>c2c/Extractor</webService>` Web service name.
 - `<updatePort>20001</updatePort>` Socket port used by Extractor to deliver status data to Plug-in.
 - `<subscribe>networkData localeData eventData dmsData cctvStatusData harData essData trafficCondData remoteMsgData floodgateData</subscribe>` The C2C data types that will be subscribed for from the Extractor.
- `<cmdReceivers>` This section defines one or more C2C Command Receiver web services to be used; each entry must have a unique center ID.
 - `<remote>` The section defines the parameters for an individual C2C Command Receiver web service.
 - `<centerId>District 6</centerId>` The C2C Network ID of the remote center.
 - `<host>localhost</host>` Host name of computer where the web service is located.
 - `<webService>c2c/CommandReceiver</webService>` Web service name.
 - `<username>User1</username>` The User ID passed when command requests originate from a subsystem.
 - `<password>HqTAo7KC0u36Tik3WRvZNg==</password>` Password to be used with the User ID.
 - `</remote>`

- <flatis> The section defines the parameters for C2C Command Receiver web service to receive floodgate and event command requests.
 - <centerId>FLATIS</centerId> The C2C Network ID of the remote center.
 - <host>localhost</host> Host name of computer where the web service is located.
 - <webService>c2c/CommandReceiver</webService> Web service name.
 - <username>User1</username> The User ID passed in floodgate command requests.
 - <password>HqTAo7KC0u36Tik3WRvZNg==</password> Password to be used with the User ID.
- </flatis>
- <handlers> These handlers are run when the system starts up. If a handler is not listed, that handler will not be instantiated by the system.
 - <gov.its.c2cClient.xml.C2cExtractorHandler/> Processes status data received from C2C Extractor web service.
 - <gov.its.c2cClient.xml.C2cClientSubscribeHandler/> Processes data subscription and retrieval requests.
 - <gov.its.c2cClient.xml.C2cClientCommandHandler/> Submits device control requests to remote center.
 - <gov.its.c2cClient.xml.C2cClientFloodgateStorageHandler/> Processes storage and retrieval of pre-recorded floodgate messages.
- <subscriptions> Used by the Data Bus to subscribe to updates.
 - <c2cNodeData/> The subscription type for C2C network node data.
 - <c2cLinkData/> The subscription type for C2C network link data.
 - <c2cEventData/> The subscription type for C2C event data.
 - <c2cDmsData/> The subscription type for C2C DMS data.
 - <c2cCctvData/> The subscription type for C2C CCTV status data.
 - <c2cSnapshotData/> The subscription type for C2C snapshot data.
 - <c2cHarData/> The subscription type for C2C HAR data.
 - <c2cRwisData/> The subscription type for C2C RWIS data.
 - <c2cRemoteMsgData/> The subscription type for C2C remote message data.
 - <linkPollData/> The subscription type for C2C traffic conditions status data formatted as TSS link poll data. This type is required to enable the link update subscription below.
 - <linkUpdate/> The subscription type for C2C traffic conditions status data formatted as TSS link update data.
 - <c2cFloodgateData/> The subscription type for C2C floodgate data.
- <statusUpdates> Used by the Data Bus to determine which messages should be examined for updating the cache.
 - <c2cNode> Resource type for network node data originating from the C2C Infrastructure.
 - <c2cNodeAddMsg action="add"/> Message type used for sending data add messages to clients.
 - <c2cNodeDeleteMsg action="delete"/> Message type used for sending data deletion messages to clients.

- `<c2cNodeModifyMsg action="modify"/>` Message type used for sending data modification messages to clients.
- `</c2cNode>`
- `<c2cLink>` Resource type for network link data originating from the C2C Infrastructure.
 - `<c2cLinkAddMsg action="add"/>` Message type used for sending data add messages to clients.
 - `<c2cLinkDeleteMsg action="delete"/>` Message type used for sending data deletion messages to clients.
 - `<c2cLinkModifyMsg action="modify"/>` Message type used for sending data modification messages to clients.
- `</c2cLink>`
- `<c2cEvent>` Resource type for Event data originating from the C2C Infrastructure.
 - `<c2cEventAddMsg action="add"/>` Message type used for sending event add messages to clients.
 - `<c2cEventDeleteMsg action="delete"/>` Message type used for sending event deletion messages to clients.
 - `<c2cEventModifyMsg action="modify"/>` Message type used for sending event modification messages to clients.
- `</c2cEvent>`
- `<c2cDms>` Resource type for DMS data originating from the C2C Infrastructure.
 - `<c2cDmsAddMsg action="add"/>` Message type used for sending device add messages to clients.
 - `<c2cDmsDeleteMsg action="delete"/>` Message type used for sending device deletion messages to clients.
 - `<c2cDmsModifyMsg action="modify"/>` Message type used for sending device modification messages to clients.
- `</c2cDms>`
- `<c2cCctv>` Resource type for CCTV data originating from the C2C Infrastructure.
 - `<c2cCctvAddMsg action="add"/>` Message type used for sending snapshot add messages to clients.
 - `<c2cCctvDeleteMsg action="delete"/>` Message type used for sending snapshot deletion messages to clients.
 - `<c2cCctvModifyMsg action="modify"/>` Message type used for sending snapshot modification messages to clients.
- `</c2cCctv>`
- `<c2cSnapshot>` Resource type for CCTV snapshot data originating from the C2C Infrastructure.
 - `<c2cSnapshotAddMsg action="add"/>` Message type used for sending device add messages to clients.
 - `<c2cSnapshotDeleteMsg action="delete"/>` Message type used for sending device deletion messages to clients.
 - `<c2cSnapshotModifyMsg action="modify"/>` Message type used for sending device modification messages to clients.
- `</c2cSnapshot>`

- <c2cHar> Resource type for HAR data originating from the C2C Infrastructure.
 - <c2cHarAddMsg action="add"/> Message type used for sending device add messages to clients.
 - <c2cHarDeleteMsg action="delete"/> Message type used for sending device deletion messages to clients
 - <c2cHarModifyMsg action="modify"/> Message type used for sending device modification messages to clients.
- </c2cHar>
- <c2cRwis> Resource type for RWIS data originating from the C2C Infrastructure.
 - <c2cRwisAddMsg action="add"/> Message type used for sending device add messages to clients.
 - <c2cRwisDeleteMsg action="delete"/> Message type used for sending device deletion messages to clients.
 - <c2cRwisModifyMsg action="modify"/> Message type used for sending device modification messages to clients.
- </c2cRwis>
- <c2cRemoteMsg> Resource type for DMS or HAR remote message data originating from the C2C Infrastructure.
 - <c2cRemoteMsgAddMsg action="add"/> Message type used for sending remote message add messages to clients.
 - <c2cRemoteMsgDeleteMsg action="delete"/> Message type used for sending remote message deletion messages to clients.
 - <c2cRemotwModifyMsg action="modify"/> Message type used for sending remote message modification messages to clients.
- </c2cRemoteMsg>
- <link> Resource type for link update data originating from the C2C Infrastructure traffic conditions data type.
 - <linkPollAddMsg action="add"/> Message type used when adding new data sources.
 - <linkPollDeleteMsg action="delete"/> Message type used when deleting existing data sources.
 - <linkUpdateMsg/> Message type used for sending data update messages to clients.
- </link>
- <c2cFloodgate> Resource type for floodgate data originating from the C2C Infrastructure.
 - <c2cFloodgateAddMsg action="add"/> Message type used for sending data add messages to clients.
 - <c2cFloodgateDeleteMsg action="delete"/> Message type used for sending data deletion messages to clients.
 - <c2cFloodgateModifyMsg action="modify"/> Message type used for sending data modification messages to clients.
- </ c2cFloodgate >
- <drivers> There are no drivers for the C2C Subscriber Plug-in.
- </drivers>

The C2C Publisher Plug-in has the following configuration parameters:

- `<centerName>District 4</centerName>` The C2C Network Name.
- `<dataHost>laplace</dataHost>` The name of the computer where the plug-in will attempt connection to the Data Bus.
- `<dataPort>8009</dataPort>` The socket port used for the Data Bus connection.
- `<icdVersion>1.0</icdVersion>` The ICD version for this system, this is appended to the schema location in the general section of config data. (Should be the version corresponding to the location of schemas for this system.)
- `<logLevel>slDetail</logLevel>` The level of status logging for this system; this can also be changed via the EH (slError, slWarning, slInfo, slDebug, slDetail).
- `<validation>>false</validation>` Whether XML validation is on, this should be false when in a production environment. If validation is set to true, the subsystem performance will be slower (true, false).
- `<subsystemType>c2cServer</subsystemType>` The subsystem type of the plug-in.
- `<providerType>c2cServer</providerType>` The provider type of the plug-in.
- `<username>c2cStatus</username>` The User ID used for requesting status data from the subsystems where status data originates.
- `<password>HqTAo7KC0u36Tik3WRvZNg==</password>` Password to be used with the User ID.
- `<debugMode>>true</debugMode>` Flag that enables extra debugging information to be written to the log and the console.
- `<networkData>TssMapLinks.xml</networkData>` XML file that defines the C2C Links and Nodes for this center to be published to the C2C Infrastructure.
- `<c2cProviderHost>localhost</c2cProviderHost>` Host name of computer where the C2C Provider web service to be used is located.
- `<c2cProviderWebSvc>c2c/Provider</c2cProviderWebSvc>` Web service name of C2C Provider; this is where SunGuide status data will be published.
- `<c2cCommandPort>8045</c2cCommandPort>` Socket port used by local C2C Command Receiver to deliver remote control requests to the plug-in.
- `<dmsMsgPriority>254</dmsMsgPriority>` Message priority to be used when submitting DMS message control requests from remote systems.
- `<harMsgPriority>254</harMsgPriority>` Message priority to be used when submitting HAR message control requests from remote systems.
- `<useShortName>>true</useShortName>` Optional flag that will cause short names to be used for location cross streets instead of the recommended long names.
- `<speedPublishInterval>60</speedPublishInterval>` The interval in seconds between publications of all traffic speed data in single update messages.
- `<statusList>` This section defines the subsystem names that will be used to gather SunGuide status data for C2C publication.
 - `<tvf type="tvf"/>` The TVT subsystem; it will provide travel time data.
 - `<cctv type="cctv"/>` The CCTV subsystem; it will provide CCTV status data.
 - `<vs type="vs"/>` The Video Switching subsystem; it will provide snapshot data.
 - `<tss type="tss"/>` The TSS subsystem; it will provide traffic link speed data.

- `<dms type="dms"/>` The DMS subsystem; it will provide DMS status data.
- `<har type="har"/>` The HAR subsystem; it will provide HAR status data.
- `<rwis type="rwis"/>` The RWIS subsystem; it will provide roadside weather status data.
- `<em type="em"/>` The Event Management subsystem; it will provide event status data.
- `<mas type="mas"/>` The MAS subsystem; it will provide queue message data used to generate and publish C2C remote messages.
- `<cvs type="cvs"/>` The CVS subsystem, it will provide raw TAM and raw PVDM data
- `<commandList>` This section defines the subsystems that will be used to submit device control requests from remote centers.
 - `<mas type="mas"/>` The MAS subsystem handles DMS and HAR control requests.
 - `<cctv type="cctv"/>` The CCTV subsystem handles camera control requests.

3.9.4.47 Inventory and Maintenance Subsystem

The IMS subsystem has the following configuration parameters:

- `<host>pascal</host>` The name of the computer on which the IMS subsystem should be running (DNS name, qualified as necessary, or the IP address).
- `<port>40018</port>` The port on which the IMS subsystem is listening for client connections.
- `<icdVersion>1.0</icdVersion>` The ICD version for this system, this is appended to the schema location in the general section of config data. (Should be the version corresponding to the location of schemas for this system.)
- `<maxConnections>20</maxConnections>` Maximum number of client connections to allow (1-20).
- `<logLevel>slDetail</logLevel>` The level of status logging for this system; this can also be changed via the EH (slError, slWarning, slInfo, slDebug, slDetail).
- `<validation>>false</validation>` Whether XML validation is on, this should be false when in a production environment. If validation is set to true, the subsystem performance will be slower (true, false).
- `<centerId>District 4</centerId>` Name of the center for the IMS subsystem.
- `<handlers>` These handlers are run when the system starts up. If a handler is not listed, that handler will not be instantiated by the system.
 - `<gov.its.ims.xml.IMSConfigurationHandler/>` Processes device configuration requests for the IMS subsystem.
 - `<gov.its.ims.xml.IMSDataHandler/>` Processes data retrieval requests for the IMS subsystem.
- `<subscriptions>` Used by the Data Bus to subscribe to updates.
 - This tag must exist but contain no entries. (Data Bus does not subscribe to IMS).
- `<statusUpdates>` Used by the Data Bus to determine which messages should be examined for updating the cache.
 - This tag must exist but contain no entries. (Data Bus does not cache data from IMS).

3.9.4.48 AVL/RR Subsystem

The AVL/RR subsystem has the following configuration parameters:

- `<host>pascal</host>` The name of the computer on which the AVL/RR subsystem should be running (DNS name, qualified as necessary, or the IP address).
- `<port>40018</port>` The port on which the AVL/RR subsystem is listening for client connections.
- `<icdVersion>1.0</icdVersion>` The ICD version for this system, this is appended to the schema location in the general section of config data. (Should be the version corresponding to the location of schemas for this system.)
- `<maxConnections>20</maxConnections>` Maximum number of client connections to allow (1-20).
- `<logLevel>slDetail</logLevel>` The level of status logging for this system; this can also be changed via the EH (slError, slWarning, slInfo, slDebug, slDetail).
- `<validation>>false</validation>` Whether XML validation is on, this should be false when in a production environment. If validation is set to true, the subsystem performance will be slower (true, false).
- `<commTolerance>3</commTolerance>` Tells how many times that requests associated with a Road Ranger can error out before operational status is set to Failed.
- `<providerType>avlrr</providerType>` The provider type of the subsystem.
- `<vehicleHistoryRetentionDays>7</vehicleHistoryRetentionDays>` The number of days to retain vehicle history data in the database. If zero, the data will be retained indefinitely. Data is purged daily between midnight and 1 a.m.
- `<roadwayProximity>300</roadwayProximity>`. The maximum distance in feet to use in roadway and street name lookups.
- `<handlers>` These handlers are run when the system starts up. If a handler is not listed, that handler will not be instantiated by the system.
 - `<gov.its.avlrr.xml.AvlrrSubscribeHandler/>` Processes subscriptions to this subsystem.
 - `<gov.its.avlrr.xml.AvlrrRetrieveDataHandler/>` Processes retrieve data requests.
 - `<gov.its.avlrr.xml.AvlrrDataProviderHandler/>` Processes responses and/or messages from configured subsystem "drivers".
 - `<gov.its.avlrr.xml.AvlrrAvailabilityStatusConfigHandler/>` Processes configuration requests (add/modify/delete) for availability statuses.
 - `<gov.its.avlrr.xml.AvlrrBeatConfigHandler/>` Processes configuration requests (add/modify/delete) for beats.
 - `<gov.its.avlrr.xml.AvlrrGeofenceConfigHandler/>` Processes configuration requests (add/modify/delete) for geofences.
 - `<gov.its.avlrr.xml.AvlrrVehicleAgencyConfigHandler/>` Processes configuration requests (add/modify/delete) for managed vehicle groups.
 - `<gov.its.avlrr.xml.AvlrrOperatorConfigHandler/>` Processes configuration requests (add/modify/delete) for operators.
 - `<gov.its.avlrr.xml.AvlrrRadioConfigHandler/>` Processes configuration requests (add/modify/delete) for radios.

- <gov.its.avlrr.xml.AvlrrTelephoneConfigHandler/> Processes configuration requests (add/delete) for telephones.
- <gov.its.avlrr.xml.AvlrrVehicleConfigHandler/> Processes configuration requests (add/modify/delete) for vehicles, also change vehicle service or state requests, and set op status requests.
- <gov.its.avlrr.xml.AvlrrVehicleDataHandler/> Processes vehicle status messages received from driver, vehicle history requests and approve geofence violation requests from client.
- <subscriptions> Used by the Data Bus to subscribe to updates.
 - <vehicleStatus/> Used by the AVLRR subsystem to update reported vehicle status data.
- <statusUpdates> Used by the Data Bus to determine which messages should be examined for updating the cache.
 - <vehicle>
 - <addVehicleResp action="add"/> Used to notify the data bus that when this type of message is received, an addition should be made to the data bus data cache.
 - <modifyVehicleResp action="modify"/> Used to notify the data bus that when this type of message is received, the data bus cache should be modified.
 - <deleteVehicleResp action="delete"/> Used to notify data bus that when this type of message is received, item(s) should be removed from the data bus data cache.
 - <setOpStatusResp/> Used to notify the data bus that the op status has changed for a vehicle.
 - <vehicleUpdateMsg/> Used to notify the data bus that when this type of message is received, the data bus cache should be modified.
 - <changeVehicleStateResp/> Used to notify the data bus that when this type of message is received, the data bus cache should be modified.
 - <changeVehicleServiceResp/> Used to notify the data bus that when this type of message is received, the data bus cache should be modified.
 - </vehicle>
- <drivers> Contains a list of drivers for this subsystem; currently only the Road Ranger XML Driver is defined. The "em" and "databus" entries define data providers that are used as "drivers" to AVL/RR.
 - <driver>
 - <identifier>RRXMLDriver</identifier> Documented in next section.
 - </driver>
 - <driver>
 - <identifier>SPARRDriver</identifier> Documented in section following RRXMLDriver.
 - </driver>
 - <driver>
 - <identifier>em</identifier> Name of the subsystem, this is used for the providerName in requests

- `<host>129.162.101.129</host>` Name or IP address of the computer where this subsystem is running. When running with data bus, this should be the databus computer.
- `<port>8009</port>` Port where this subsystem is listening for client connections. When running with data bus, this should be the databus port.
- `<resourceType>em</resourceType>` Used when sending requests to the subsystem, should correspond to resource type in subsystem.
- `<providerType>em</providerType>` Used when sending requests to the subsystem, should correspond to provider type in subsystem.
- `<package>gov.its.em.xml</package>`
- `<username>avlrrsubsystem</username>` User name for AVLRR to log onto this subsystem.
- `<password>X03MO1qnZdYdgyfeuILPmQ==</password>` Encrypted password for the user name.
- `<subscriptions>` A list of data items to which the AVLRR subsystem will subscribe with this "driver".
 - `<subscription>activityData</subscription>`
 - `<subscription>agencyData</subscription>`
 - `<subscription>countyData</subscription>`
 - `<subscription>eventTypeData</subscription>`
 - `<subscription>eventStatusData</subscription>`
 - `<subscription>injuryTypeData</subscription>`
 - `<subscription>laneMapData</subscription>`
 - `<subscription>laneTypeData</subscription>`
 - `<subscription>vehicleTypeData</subscription>`
 - `<subscription>vehicleMakeData</subscription>`
 - `<subscription>roadwayData</subscription>`
 - `<subscription>referencePointData</subscription>`
 - `<subscription>locationData</subscription>`
 - `<subscription>commentTypeData</subscription>`
 - `<subscription>stateData</subscription>`
 - `<subscription>colorData</subscription>`
- `</subscriptions>`
- `<messageTypes>` Contains a list of message types that may be received from this driver subsystem, along with the class that should handle each message type.
 - `<messageType>`
 - `<name>authenticateResp</name>` The name of the message, i.e. the name of the XML schema for the message.
 - `<underHandler>gov.its.avlrr.AvlrrAuthenticationUnderHandler</underHandler>` Class that should be used to process this message. These are generally called "under" handlers, because a general driver handler will pass the message to the "under" handler class.
 - `<packageType>response</packageType>`

- </messageType>
- < messageType>
 - <name>retrieveDataResp</name>
 - <underHandler>gov.its.avlrr.AvlrrEmRetrieveDataResponseUnderHandler</ underHandler>
 - < packageType>response</packageType>
- </messageType>
- < messageType>
 - <name>providerDisconnectMsg</name>
 - <underHandler>gov.its.avlrr.AvlrrProviderDisconnectMessageUnderHandler</ underHandler>
 - < packageType>message</packageType>
- </messageType>
- < messageType>
 - <name>providerReconnectMsg</name>
 - <underHandler>gov.its.avlrr.AvlrrProviderReconnectMessageUnderHandler</ underHandler>
 - < packageType>message</packageType>
- </messageType>
- < messageType>
 - <name>addEventResp</name>
 - <underHandler>gov.its.avlrr.AvlrrEmAddEventResponseUnderHandler</ underHandler>
 - < packageType>response</packageType>
- </messageType>
- < messageType>
 - <name>addActivityResp</name>
 - <underHandler>gov.its.avlrr.AvlrrEmUpdateUnderHandler</ underHandler>
 - < packageType>response</packageType>
- </messageType>
- < messageType>
 - <name>removeActivityResp</name>
 - <underHandler>gov.its.avlrr.AvlrrEmUpdateUnderHandler</ underHandler>
 - < packageType>response</packageType>
- </messageType>
- < messageType>
 - <name>modifyActivityResp</name>
 - <underHandler>gov.its.avlrr.AvlrrEmUpdateUnderHandler</ underHandler>
 - < packageType>response</packageType>
- </messageType>
- < messageType>
 - <name>addInjuryTypeResp</name>

- <underHandler>gov.its.avlrr.AvlrrEmUpdateUnderHandler
</ underHandler>
- < packageType>response</packageType>
- </messageType>
- < messageType>
- <name>removeInjuryTypeResp</name>
- <underHandler>gov.its.avlrr.AvlrrEmUpdateUnderHandler
</ underHandler>
- < packageType>response</packageType>
- </messageType>
- < messageType>
- <name>modifyInjuryTypeResp</name>
- <underHandler>gov.its.avlrr.AvlrrEmUpdateUnderHandler
</ underHandler>
- < packageType>response</packageType>
- </messageType>
- < messageType>
- <name>addEventStatusResp</name>
- <underHandler>gov.its.avlrr.AvlrrEmUpdateUnderHandler
</ underHandler>
- < packageType>response</packageType>
- </messageType>
- < messageType>
- <name>removeEventStatusResp</name>
- <underHandler>gov.its.avlrr.AvlrrEmUpdateUnderHandler
</ underHandler>
- < packageType>response</packageType>
- </messageType>
- < messageType>
- <name>modifyEventStatusResp</name>
- <underHandler>gov.its.avlrr.AvlrrEmUpdateUnderHandler
</ underHandler>
- < packageType>response</packageType>
- </messageType>
- < messageType>
- <name>addCommentTypeResp</name>
- <underHandler>gov.its.avlrr.AvlrrEmUpdateUnderHandler
</ underHandler>
- < packageType>response</packageType>
- </messageType>
- < messageType>
- <name>removeCommentTypeResp</name>
- <underHandler>gov.its.avlrr.AvlrrEmUpdateUnderHandler
</ underHandler>
- < packageType>response</packageType>
- </messageType>

- < messageType>
 - < name>modifyCommentTypeResp</name>
 - < underHandler>gov.its.avlrr.AvlrrEmUpdateUnderHandler</ underHandler>
 - < packageType>response</packageType>
- </messageType>
- < messageType>
 - < name>addEventTypeResp</name>
 - < underHandler>gov.its.avlrr.AvlrrEmUpdateUnderHandler</ underHandler>
 - < packageType>response</packageType>
- </messageType>
- < messageType>
 - < name>removeEventTypeResp</name>
 - < underHandler>gov.its.avlrr.AvlrrEmUpdateUnderHandler</ underHandler>
 - < packageType>response</packageType>
- </messageType>
- < messageType>
 - < name>modifyEventTypeResp</name>
 - < underHandler>gov.its.avlrr.AvlrrEmUpdateUnderHandler</ underHandler>
 - < packageType>response</packageType>
- </messageType>
- < messageType>
 - < name>addVehicleMakeResp</name>
 - < underHandler>gov.its.avlrr.AvlrrEmUpdateUnderHandler</ underHandler>
 - < packageType>response</packageType>
- </messageType>
- < messageType>
 - < name>removeVehicleMakeResp</name>
 - < underHandler>gov.its.avlrr.AvlrrEmUpdateUnderHandler</ underHandler>
 - < packageType>response</packageType>
- </messageType>
- < messageType>
 - < name>modifyVehicleMakeResp</name>
 - < underHandler>gov.its.avlrr.AvlrrEmUpdateUnderHandler</ underHandler>
 - < packageType>response</packageType>
- </messageType>
- < messageType>
 - < name>addVehicleTypeResp</name>
 - < underHandler>gov.its.avlrr.AvlrrEmUpdateUnderHandler</ underHandler>

- - `< packageType>response</packageType>`
- `</messageType>`
- `< messageType>`
 - `< name>removeVehicleTypeResp</name>`
 - `< underHandler>gov.its.avlrr.AvlrrEmUpdateUnderHandler</ underHandler>`
 - `< packageType>response</packageType>`
- `</messageType>`
- `< messageType>`
 - `< name>modifyVehicleTypeResp</name>`
 - `< underHandler>gov.its.avlrr.AvlrrEmUpdateUnderHandler</ underHandler>`
 - `< packageType>response</packageType>`
- `</messageType>`
- `< messageType>`
 - `< name>addColorResp</name>`
 - `< underHandler>gov.its.avlrr.AvlrrEmUpdateUnderHandler</ underHandler>`
 - `< packageType>response</packageType>`
- `</messageType>`
- `< messageType>`
 - `< name>removeColorResp</name>`
 - `< underHandler>gov.its.avlrr.AvlrrEmUpdateUnderHandler</ underHandler>`
 - `< packageType>response</packageType>`
- `</messageType>`
- `< messageType>`
 - `< name>modifyColorResp</name>`
 - `< underHandler>gov.its.avlrr.AvlrrEmUpdateUnderHandler</ underHandler>`
 - `< packageType>response</packageType>`
- `</messageType>`
- `< messageType>`
 - `< name>addRoadwayResp</name>`
 - `< underHandler>gov.its.avlrr.AvlrrEmUpdateUnderHandler</ underHandler>`
 - `< packageType>response</packageType>`
- `</messageType>`
- `< messageType>`
 - `< name>removeRoadwayResp</name>`
 - `< underHandler>gov.its.avlrr.AvlrrEmUpdateUnderHandler</ underHandler>`
 - `< packageType>response</packageType>`
- `</messageType>`
- `< messageType>`
 - `< name>modifyRoadwayResp</name>`

- <underHandler>gov.its.avlrr.AvlrrEmUpdateUnderHandler
</ underHandler>
- < packageType>response</packageType>
- </messageType>
- < messageType>
 - <name>addCountyResp</name>
 - <underHandler>gov.its.avlrr.AvlrrEmUpdateUnderHandler
</ underHandler>
 - < packageType>response</packageType>
- </messageType>
- < messageType>
 - <name>removeCountyResp</name>
 - <underHandler>gov.its.avlrr.AvlrrEmUpdateUnderHandler
</ underHandler>
 - < packageType>response</packageType>
- </messageType>
- < messageType>
 - <name>modifyCountyResp</name>
 - <underHandler>gov.its.avlrr.AvlrrEmUpdateUnderHandler
</ underHandler>
 - < packageType>response</packageType>
- </messageType>
- < messageType>
 - <name>addReferencePointResp</name>
 - <underHandler>gov.its.avlrr.AvlrrEmUpdateUnderHandler
</ underHandler>
 - < packageType>response</packageType>
- </messageType>
- < messageType>
 - <name>removeReferencePointResp</name>
 - <underHandler>gov.its.avlrr.AvlrrEmUpdateUnderHandler
</ underHandler>
 - < packageType>response</packageType>
- </messageType>
- < messageType>
 - <name>modifyReferencePointResp</name>
 - <underHandler>gov.its.avlrr.AvlrrEmUpdateUnderHandler
</ underHandler>
 - < packageType>response</packageType>
- </messageType>
- < messageType>
 - <name>addLaneTypeResp</name>
 - <underHandler>gov.its.avlrr.AvlrrEmUpdateUnderHandler
</ underHandler>
 - < packageType>response</packageType>
- </messageType>

- < messageType>
 - < name>removeLaneTypeResp</name>
 - < underHandler>gov.its.avlrr.AvlrrEmUpdateUnderHandler</ underHandler>
 - < packageType>response</packageType>
- </messageType>
- < messageType>
 - < name>modifyLaneTypeResp</name>
 - < underHandler>gov.its.avlrr.AvlrrEmUpdateUnderHandler</ underHandler>
 - < packageType>response</packageType>
- </messageType>
- < messageType>
 - < name>addLocationResp</name>
 - < underHandler>gov.its.avlrr.AvlrrEmUpdateUnderHandler</ underHandler>
 - < packageType>response</packageType>
- </messageType>
- < messageType>
 - < name>removeLocationResp</name>
 - < underHandler>gov.its.avlrr.AvlrrEmUpdateUnderHandler</ underHandler>
 - < packageType>response</packageType>
- </messageType>
- < messageType>
 - < name>modifyLocationResp</name>
 - < underHandler>gov.its.avlrr.AvlrrEmUpdateUnderHandler</ underHandler>
 - < packageType>response</packageType>
- </messageType>
- < messageType>
 - < name>statusUpdateMsg</name>
 - < underHandler>gov.its.avlrr.AvlrrEmUpdateUnderHandler</ underHandler>
 - < packageType>message</packageType>
- </messageType>
- < messageType>
 - < name>addAgencyContactResp</name>
 - < underHandler>gov.its.avlrr.AvlrrEmUpdateUnderHandler</ underHandler>
 - < packageType>response</packageType>
- </messageType>
- < messageType>
 - < name>modifyAgencyContactResp</name>
 - < underHandler>gov.its.avlrr.AvlrrEmUpdateUnderHandler</ underHandler>

- - < packageType>response</packageType>
- </messageType>
- < messageType>
 - < name>removeAgencyContactResp</name>
 - < underHandler>gov.its.avlrr.AvlrrEmUpdateUnderHandler</ underHandler>
 - < packageType>response</packageType>
- </messageType>
- < messageType>
 - < name>addAgencyResp</name>
 - < underHandler>gov.its.avlrr.AvlrrEmUpdateUnderHandler</ underHandler>
 - < packageType>response</packageType>
- </messageType>
- < messageType>
 - < name>modifyAgencyResp</name>
 - < underHandler>gov.its.avlrr.AvlrrEmUpdateUnderHandler</ underHandler>
 - < packageType>response</packageType>
- </messageType>
- < messageType>
 - < name>removeAgencyResp</name>
 - < underHandler>gov.its.avlrr.AvlrrEmUpdateUnderHandler</ underHandler>
 - < packageType>response</packageType>
- </messageType>
- < messageType>
 - < name>dispatchVehicleResp</name>
 - < underHandler>gov.its.avlrr.AvlrrEmUpdateUnderHandler</ underHandler>
 - < packageType>response</packageType>
- </messageType>
- < messageType>
 - < name>arriveVehicleResp</name>
 - < underHandler>gov.its.avlrr.AvlrrEmUpdateUnderHandler</ underHandler>
 - < packageType>response</packageType>
- </messageType>
- < messageType>
 - < name>departVehicleResp</name>
 - < underHandler>gov.its.avlrr.AvlrrEmUpdateUnderHandler</ underHandler>
 - < packageType>response</packageType>
- </messageType>
- < messageType>
 - < name>addEventCommentResp</name>

- `<underHandler>gov.its.avlrr.AvlrrEmUpdateUnderHandler`
`</ underHandler>`
 - `< packageType>response</packageType>`
 - `</messageType>`
 - `</ messageTypes>`
 - `<updateMsg/>`
- `</driver>`
- `<driver>`
 - `<identifier>databus</identifier>` Connects to data bus for all provider connections and data.
 - `<host>129.162.101.129</host>` Host on which the data bus is running.
 - `<port>8009</port>` Port on which the data bus is listening for client connections.
 - `<resourceType>databus</resourceType>` The data bus resource type.
 - `<providerType>databus</providerType>` The data bus provider type.
 - `<package> gov.its.databus.xml </package>`
 - `<databusSubscriptions>` A list of data items to which the AVLRR subsystem will subscribe with the data bus.
 - `< databusSubscribeDataType>event</databusSubscribeDataType>`
 - `</ databusSubscriptions>`
 - `<messageTypes>` Contains a list of message types that may be received from the data bus subsystem, along with the class that should handle each message type.
 - `< messageType>`
 - `<name>subscribeResp</name>`
 - `<underHandler>gov.its.avlrr.AvlrrDatabusResponseUnderHandler</ underHandler>`
 - `< packageType>response</packageType>`
 - `</messageType>`
 - `< messageType>`
 - `<name>statusResp</name>`
 - `<underHandler>gov.its.avlrr.AvlrrDatabusResponseUnderHandler</ underHandler>`
 - `< packageType>response</packageType>`
 - `</messageType>`
 - `< messageType>`
 - `<name>providerDisconnectMsg</name>`
 - `<underHandler>gov.its.avlrr.AvlrrProviderDisconnectMessageUnderHandler</ underHandler>`
 - `< packageType>message</packageType>`
 - `</messageType>`
 - `< messageType>`
 - `<name>providerReconnectMsg</name>`
 - `<underHandler>gov.its.avlrr.AvlrrProviderReconnectMessageUnderHandler</ underHandler>`
 - `< packageType>message</packageType>`

- `</messageType>`
- `</messageTypes>`
- `<connections>` Data bus connection to receive status data.
 - `<connection>`
 - `<resourceType>em</resourceType>`
 - `<subscriptions>statusData</subscriptions >`
 - `</connection>`
- `</connections>`
- `</driver>`

3.9.4.49 Road Ranger XML Driver

The Road Ranger XML driver has the following configuration parameters:

- `<driver>`
 - `<identifier>RRXMLDriver</identifier>` Name of this driver.
 - `<host>pascal</host>` The name of the computer on which the driver should be running (DNS name, qualified as necessary, or the IP address).
 - `<port>40088</port>` The port on which the driver is listening for client connections from the AVL/RR subsystem.
 - `<logLevel>slInfo</logLevel>` The log level for this system (slError, slWarn, slInfo, slDebug, slDetail).
 - `<validation>>false</validation>` Whether xml validation is on, this should be false when in a production environment. If validation is set to true, the subsystem performance will be slower (true, false).
 - `<icdVersion>1.0</icdVersion>` The ICD version for this system, this is appended to the schema location in the general section of config data (Should be the version corresponding to the location of schemas for this system. If validation is turned on, this must be the same as for the SB subsystem).
 - `<maxConnections>10</maxConnections>` Maximum number of client connections allowed.
 - `<providerType>avlrr</providerType>` The provider type of this driver, used in XML to uniquely identify elements.
 - `<packetTimeout>5000</packetTimeout>` Stores the packet timeout value (in milliseconds).
 - `<packetRetries>1</packetRetries>` Number of times a packet will be retried before generating an error.
 - `<pulseRate>30</pulseRate>` Stores the pulse interval (in seconds) for which the driver sends status request messages to connected devices.
 - `<proxyMode>>true</proxyMode>` If true, the district has a proxy server (addressed via 'proxyIp' and 'proxyPort') which acts as an intermediary between the driver and the devices. If false, the driver communicates directly with the devices, and 'proxyIp' and 'proxyPort' are not required.
 - `<proxyIp>129.162.101.129</proxyIp>` The IP or URL of the proxy server, if required.
 - `proxyPort>8010</proxyPort>` The port on which the proxy server communicates, if required.

- <handlers> These handlers are run when the driver starts up. If a handler is not listed, that handler will not be instantiated by the system.
 - <gov.its.avlrr.driver.AvailabilityStatusConfigHandler/> Processes configuration requests (add/modify/delete) for availability statuses.
 - <gov.its.avlrr.driver.BeatConfigHandler/> Processes configuration requests (add/modify/delete) for beats.
 - <gov.its.avlrr.driver.VehicleAgencyConfigHandler/> Processes configuration requests (add/modify/delete) for managed vehicle groups.
 - <gov.its.avlrr.driver.OperatorConfigHandler/> Processes configuration requests (add/modify/delete) for operators.
 - <gov.its.avlrr.driver.RadioConfigHandler/> Processes configuration requests (add/modify/delete) for radios.
 - <gov.its.avlrr.driver.TelephoneConfigHandler/> Processes configuration requests (add/delete) for telephones.
 - <gov.its.avlrr.driver.VehicleConfigHandler/> Processes configuration requests (add/modify/delete) for vehicles, also change vehicle service or state requests, and set op status.requests
 - <gov.its.avlrr.driver.InitializeCacheHandler/> Processes initialize avl or em cache messages from the subsystem.
 - <gov.its.avlrr.driver.RRMAReportHandler/> Handles all the requests and responses sent by the devices.

3.9.4.50 SPARR Driver

The AVL SPARR driver has the following configuration parameters:

- <driver>
 - <identifier>SPARRDriver</identifier> Name of this driver.
 - <host>pascal</host> The name of the computer on which the driver should be running (DNS name, qualified as necessary, or the IP address).
 - <port>41302</port> The port on which the driver is listening for client connections from the AVL/RR subsystem.
 - <logLevel>slInfo</logLevel> The log level for this system (slError, slWarn, slInfo, slDebug, slDetail).
 - <validation>>false</validation> Whether xml validation is on, this should be false when in a production environment. If validation is set to true, the subsystem performance will be slower (true, false).
 - <icdVersion>1.0</icdVersion> The ICD version for this system, this is appended to the schema location in the general section of config data (Should be the version corresponding to the location of schemas for this system. If validation is turned on, this must be the same as for the subsystem).
 - <username>avlrrsubsystem</username> User name for connecting to AVL subsystem.
 - <maxConnections>10</maxConnections> Maximum number of client connections allowed.
 - <providerType>avlrr</providerType> The provider type of this driver, used in XML to uniquely identify elements.

- `<packetTimeout>180000</packetTimeout>` This value is not used by the SPARR Driver but is generic to AVL Drivers. It must be present in the config file.
- `<packetRetries>0</packetRetries>` This value is not used by the SPARR Driver but is generic to AVL Drivers. It must be present in the config file.
- `<pulseRate>30</pulseRate>` This value is not used by the SPARR Driver but is generic to AVL Drivers. It must be present in the config file.
- `<webServiceName>SparrWebService</webServiceName>` The name of the Web Service to use in the Web Service URL.
- `<webServicePort>41555</webServicePort>` Port that the web service will be listening on.
- `<useSSL>>false</useSSL>` Flag determining if the web service will use SSL.
- `<sparrDatabaseConfiguration>` SQLite Database configuration. Note that template and live databases shouldn't be in the same path unless the filenames are different.
 - `<databaseConfiguration id="avlrr">` AVL/RR database
 - `<templateDatabase>\\server\FDOT\sparr\db\template\sparr-avl.db</templateDatabase>`
 - `<liveDatabase>\\server\FDOT\sparr\db\live\sparr-avlrr.db</liveDatabase>`
 - `<databaseConfiguration id="em">` Event Management database
 - `<templateDatabase>\\server\FDOT\sparr\db\template\sparr-em.db</templateDatabase>`
 - `<liveDatabase>\\server\FDOT\sparr\db\live\sparr-em.db</liveDatabase>`
- `<sparrConfiguration>`
 - `<contactList>` Contacts that the Phone Application will be able to call.
 - `<contact>` A contact the Phone Application will be able to call. This item may be repeated multiple times.
 - `<name>Jenny</name>` The name of a contact listing.
 - `<number>8675309</number>` The number to call for that contact.
 - `<dbUpdateDelay>100</dbUpdateDelay>` How long, in milliseconds, the phone application should wait between noticing a database update has occurred and requesting the updated data. Setting this value to a higher number allows multiple changes to be made to AVL or EM configuration without requiring field devices to request updated databases after each change.
 - `<positionUpdateFrequency>100</positionUpdateFrequency>` How often, in milliseconds, the phone application should report its GPS position.
 - `<updateFrequency>100</updateFrequency>` How often, in milliseconds, the phone application should poll the driver to see if new data is available.

- <handlers> These handlers are run when the driver starts up. If a handler is not listed, that handler will not be instantiated by the system.
 - <gov.its.avlrr.driver.AvailabilityStatusConfigHandler/> Processes configuration requests (add/modify/delete) for availability statuses.
 - <gov.its.avlrr.driver.BeatConfigHandler/> Processes configuration requests (add/modify/delete) for beats.
 - <gov.its.avlrr.driver.VehicleAgencyConfigHandler/> Processes configuration requests (add/modify/delete) for managed vehicle groups.
 - <gov.its.avlrr.driver.OperatorConfigHandler/> Processes configuration requests (add/modify/delete) for operators.
 - <gov.its.avlrr.driver.RadioConfigHandler/> Processes configuration requests (add/modify/delete) for radios.
 - <gov.its.avlrr.driver.TelephoneConfigHandler/> Processes configuration requests (add/delete) for telephones.
 - <gov.its.avlrr.driver.VehicleConfigHandler/> Processes configuration requests (add/modify/delete) for vehicles, also change vehicle service or state requests, and set op status.requests
 - <gov.its.avlrr.driver.InitializeCacheHandler/> Processes initialize avl or em cache messages from the subsystem.

3.9.4.51 Variable Speed Limit Subsystem

The Variable Speed Limit subsystem has the following configuration parameters:

- <host>servername</host> The hostname of the computer where the subsystem will execute.
- <port>40098</port> The port which the subsystem will use to listen for connections.
- <icdVersion>1.0</icdVersion> The version of the ICD to use.
- <maxConnections>20</maxConnections> The maximum number of connections to the process.
- <logLevel>slInfo</logLevel> The default logging level for the subsystem upon startup
- <validation>>false</validation> Whether or not to use XML validation, should be set to false for performance.
- <handlers> These handlers are run when the system starts up. If a handler is not listed, that handler will not be instantiated by the system.
 - <gov.its.vsl.VslSubscribeHandler/> This handler deals with subscriptions
 - <gov.its.vsl.VslRetrieveDataHandler/> This handler deals with retrieve data requests
 - <gov.its.vsl.VslGroupConfigHandler/>This handler deals with requests for changes to groups
 - <gov.its.vsl.VslPlanConfigHandler/>This handler deals with request for changes to plans
 - <gov.its.vsl.VslConfigHandler/>This handler deals with requests for changes to zone settings, threshold values, etc.
 - <gov.its.vsl.DataProviderHandler/>This handler deals with communications with other subsystems such as MAS and TSS
- </handlers>

- <subscriptions/> The subscriptions section should remain empty
- <statusUpdates/> The statusUpdates section should remain empty
- <drivers>The drivers section should contain four entries defined below. Each has an identifier the host and port where the provider resides and the resource type and provider type values associated with the provider. The databus driver contains example descriptions of driver entries. If the username and password entries are blank in the driver section for that driver, it can be left blank in the actual configuration file.
 - <driver> This driver handles data coming from the databus
 - <identifier>databus</identifier>
 - <host>servername</host>
 - <port>8009</port>
 - <resourceType>databus</resourceType> Used when sending requests to the subsystem—should correspond to resource type in subsystem.
 -
 - <providerType>databus</providerType> Used when sending requests to the subsystem—should correspond to resource type in subsystem.
 - <package>gov.its.tss.xml</package>
 - <subscriptions/>
 - <parseDataTypes/>
 - <retrieveDataTypes/>
 - <messageTypes> Contains a list of message types that may be received from this driver subsystem, along with the class that should handle each message type.
 - <messageType>
 - <name>statusResp</name>
 - <underHandler>gov.its.vsl.DbusStatusRespUnderHandle</underHandler> Processes the initial set of link data retrieved from databus
 - <packageType>response</packageType>
 - </messageType>
 - <messageType>
 - <name>subscribeResp</name>
 - <underHandler>gov.its.vsl.DbusSubscriptionResponseUnderHandler</underHandler> Processes the response from databus to the request for tss status updates
 - <packageType>response</packageType>
 - </messageType>
 - </messageTypes>
 - <updateMsg>updateTravelTimeMessage</updateMsg>
 - <username>vsluser</username> This is the user name used to authenticate to the provider
 - <password>X03MO1qnZdYdgyfeuILPmQ==</password>The password used to authenticate to the provider
 - </driver>
 - <driver>
 - <identifier>tss</identifier>

- <host>servername</host>
- <port>40007</port>
- <resourceType>tss</resourceType>
- <providerType>tss</providerType>
- <package>gov.its.tss.xml</package>
- <subscriptions>
 - <subscription>linkUpdate</subscription>
- </subscriptions>
- <parseDataTypes>
 - <parseDataType>travelTimeInfo</parseDataType>
- </parseDataTypes>
- <retrieveDataTypes>
 - <retrieveDataType>statusList</retrieveDataType>
- </retrieveDataTypes>
- <messageTypes>
 - <messageType>
 - <name>statusUpdateMsg</name>
 - <underHandler>gov.its.vsl.DBusStatusUpdateMsgUnderHandler</underHandler> This processes the incoming updates to TSS status data
 - <packageType>message</packageType>
 - </messageType>
- </messageTypes>
- <updateMsg>updateTravelTimeMessage</updateMsg>
- <username/>
- <password/>
- </driver>
- <driver>
 - <identifier>mas</identifier>
 - <host>129.162.101.175</host>
 - <port>38900</port>
 - <resourceType>mas</resourceType>
 - <providerType>mas</providerType>
 - <package>gov.its.databus.xml</package>
 - <subscriptions>
 - <subscription>linkUpdate</subscription>
 - </subscriptions>
 - <parseDataTypes>
 - <parseDataType>travelTimeInfo</parseDataType>
 - </parseDataTypes>
 - <retrieveDataTypes>
 - <retrieveDataType>statusList</retrieveDataType>
 - </retrieveDataTypes>
 - <messageTypes>
 - <messageType>
 - <name>authenticateResp</name>

- <underHandler>gov.its.vsl.MASAuthenticationUnderHandler</underHandler>This processes the response from MAS to the subsystem's authentication requests
- <packageType>response</packageType>
- </messageType>
- <messageType>
 - <name>addMsgResp</name>
 - <underHandler>gov.its.vsl.MASAddMessageResponseUnderHandler</underHandler>This processes the responses to attempts to create new messages in the MAS queue
 - <packageType>response</packageType>
- </messageType>
- <messageType>
 - <name>modifyMsgResp</name>
 - <underHandler>gov.its.vsl.MASModifyMessageResponseUnderHandler</underHandler>This processes the responses to attempts to modify a MAS message
 - <packageType>response</packageType>
- </messageType>
- <messageType>
 - <name>getQueueResp</name>
 - <underHandler>gov.its.vsl.MasGetQueueRespUnderHandler</underHandler>This processes list of messages on a MAS queue in preparation for their deletion
 - <packageType>response</packageType>
- </messageType>
- <messageType>
 - <name>removeMsgResp</name>
 - <underHandler>gov.its.vsl.MASRemoveMsgRespUnderHandler</underHandler>This processes the response to the request to remove any stale messages from a MAS queue
 - <packageType>response</packageType>
- </messageType>
- </messageTypes>
- <updateMsg>updateTravelTimeMessage</updateMsg>
- <username>vsluser</username>
- <password>X03MO1qnZdYdgyfeuILPmQ==</password>
- </driver>
- <driver>
 - <identifier>vsl</identifier>
 - <host>129.162.101.175</host>
 - <port>40048</port>
 - <resourceType>vsl</resourceType>
 - <providerType>vsl</providerType>
 - <package>gov.its.tss.xml</package>
 - <subscriptions>

- <subscription>linkUpdate</subscription>
- </subscriptions>
- <parseDataTypes>
 - <parseDataType>travelTimeInfo</parseDataType>
- </parseDataTypes>
- <retrieveDataTypes>
 - <retrieveDataType>statusList</retrieveDataType>
- </retrieveDataTypes>
- <messageTypes>
 - <messageType>
 - <name>approvePlanMsg</name>
 - <underHandler>gov.its.vsl.ClientPlanApprovalUnderHandler</underHandler>This processes attempts to approve a plan that has been recommended
 - <packageType>message</packageType>
 - </messageType>
 - <messageType>
 - <name>setVslPlanReq</name>
 - <underHandler>gov.its.vsl.ClientSetVslPlanUnderHandler</underHandler>This processes attempts to set a specific vsl plan as the current active plan
 - <packageType>request</packageType>
 - </messageType>
- </messageTypes>
- <updateMsg>updateTravelTimeMessage</updateMsg>
- <username/>
- <password/>
- </driver>
- </drivers>

3.9.4.52 Event Management Subsystem

The Event Management subsystem is a data provider identified by the tag having the following configuration parameters:

- <host>lagrange</host> The hostname of the computer where the subsystem will execute
- <port>41400</port> The port which the subsystem will use to listen for connections
- <icdVersion>1.0</icdVersion> The version of the ICD to use
- <maxConnections>20</maxConnections> The maximum number of connections to the process
- <logLevel>slInfo</logLevel> The default logging level for the subsystem upon startup
- <validation>true</validation> Whether or not to use XML validation, should be set to false for performance.
- <commTolerance>3</commTolerance>
- <lockTimeout>120</lockTimeout>
- <emailFrom>admin@somehost.com</emailFrom> Return email address to use on response plan emails

- `<saeCodes>1494 205 203 ... </saeCodes>` List of FDOT-modified SAE event codes ordered by importance. NOTE: The codes and their ordering should be consistent with those in the current FDOT-modified SAE code spreadsheet, unless there is an explicit need to use a different order.
- `<useLongNameInEmail>>false</useLongNameInEmail>` If true, email generated in response plans will use the long name of the reference point and the description of the roadway as the pregenerated email message
- `<ATISSeverityConfig>` The maximum blockage values for the ATIS event severity thresholds.
 - `<minorThreshold>`
 - `<maxValue>25</maxValue>`
 - `<intermediateThreshold>`
 - `<maxValue>50</maxValue>`
- `<dmsProximityConfig>` The number of miles to use when searching for DMS devices to include in a generated suggested response plan. The number of miles is defined per severity. Severity is determined by percentage of lanes blocked and presence of hazardous materials.
 - `<severe>80</severe>` The number of miles to use when searching for DMS devices for a severe event.
 - `<moderate>35</moderate>` The number of miles to use when searching for DMS devices for a moderate event .
 - `<minor>15</minor>` The number of miles to use when searching for DMS devices for a minor event.
- `<harProximityConfig>` The number of miles to use when searching for HAR devices to include in a generated suggested response plan. The number of miles is defined per severity. Severity is determined by percentage of lanes blocked and presence of hazardous materials.
 - `<severe>50</severe>` The number of miles to use when searching for DMS devices for a severe event.
 - `<moderate>25</moderate>` The number of miles to use when searching for DMS devices for a moderate event.
 - `<minor>10</minor>` The number of miles to use when searching for DMS devices for a minor event.
- `<eventSeverityConfig>` Defines the percentage of lanes that must be blocked before an event is considered a particular severity. If the event is below the moderate threshold, then it will be considered minor. The calculation of percentage of lanes blocked considers only lanes with the same heading as the direction of the event.
 - `<severe>50</severe>` The minimum percentage of blocked lanes for a severe event.
 - `<moderate>25</moderate>` The minimum percentage of blocked lanes for a moderate event.
- `<suggestedDMSMessageDurationSecs>3600</suggestedDMSMessageDurationSecs>` The duration that will be given to DMS messages that are suggested by the RPG Subsystem.

- `<suggestedHARMessageDurationSecs>3600</suggestedHARMessageDurationSecs>`
The duration that will be given to HAR messages that are suggested by the RPG Subsystem.
- `<suggestedDMSMessagesUseBeacons>>false</suggestedDMSMessagesUseBeacons>`
Flag indicating if the RPG Subsystem should enable beacons in its DMS suggestions.
- `<suggestedHARMessagesUseBeacons>>true</suggestedHARMessagesUseBeacons>`
Flag indicating if the RPG Subsystem should enable beacons in its HAR suggestions.
- `<applyAbbreviations>>true</applyAbbreviations>` Flag indicating if abbreviations will be applied to suggested messages generated by RPG (Default: true).
- `<limitMessagesToOnePhase>>true</limitMessagesToOnePhase>` Flag indicates whether or not formatted messages should truncate words before specified newlines when words do not fit on a row. When set, only single pages are allowed (Default: true).
- `<dmsSearchAlgorithmName>link-map</dmsSearchAlgorithmName>`
- `<harSearchAlgorithmName>radius-map</harSearchAlgorithmName>`
- `<deviceLinkingConfigLoc>Server1/Inetpub/wwwroot/OperatorMapAx_SVG/Data/DeviceLinking/ScriptOutput/devicesequence.xml</deviceLinkingConfigLoc>`
- `<presentationRegionAngleThreshold>60</presentationRegionAngleThreshold>` Angle difference at which an automatically generated TAM will create a new presentation region
- `<presentationRegionOffset>1000</presentationRegionOffset>` Width, in feet, of the presentation region automatically generated for response plans
- `<distanceSuffix> MI AHEAD</distanceSuffix>` text to be displayed after the distance tag in a response plan template, assuming the distance is over 1 mile
- `<distanceUnderOneText>UNDER 1 MI AHEAD</distanceUnderOneText>` text to be displayed instead of the distance tag when the distance is less than 1 mile
- `<handlers>` These handlers are run when the system starts
 - `<gov.its.em.xml.EmConfigurationHandler/>` Processes configuration of EM data
 - `<gov.its.em.xml.EmEventHandler/>` Processes event data
 - `<gov.its.em.xml.EmResponsePlanHandler/>` Processes response plan data
 - `<gov.its.em.xml.EmRetrieveHandler/>` Processes retrieve request & responses
 - `<gov.its.em.xml.EmSubscribeHandler/>` Processes subscribe requests & responses
 - `<gov.its.em.xml.EmDeviceTemplateHandler/>`
 - `<gov.its.em.xml.EmPreDefinedResponsePlanHandler/>`
- `<subscriptions>` Used by databus to subscribe to updates
 - `<eventVehicleData/>` Used by databus to subscribe to event vehicle updates
 - `<eventData/>` Used by databus to subscribe to event updates
- `<statusUpdates>`
 - `<event>`
 - `<addEventUpdateMsg action="add"/>` used to notify Data Bus that an event was added
 - `<deleteEventMsg action="delete"/>` used to notify Data Bus that an event was deleted
 - `<addEventCommentResp/>` used to notify Data Bus that an Event Comment was added

- <addEventContactResp/> used to notify Data Bus that an Event Contact was added
- <addEventDmsAssignmentResp/> used to notify Data Bus that an Event Dms Assignment was added
- <addEventLocationCongestionResp/> used to notify Data Bus that an Event Location Congestion was added
- <addEventRrProcErrorResp/> used to notify Data Bus that an Event Road Ranger Procedural Error was added
- <addEventVehicleResp/> used to notify Data Bus that an Event Vehicle was added
- <modifyEventContactResp/> used to notify Data Bus that an Event Contact was modified
- <modifyEventDetailsResp/> used to notify Data Bus that an Event Details was modified
- <modifyEventLocationCongestionResp/> used to notify Data Bus that an Event Location Congestion was modified
- <modifyEventMsg/> used to notify Databus that entire event has been modified
- <modifyEventOwnerResp/> used to notify Data Bus that an Event owner was changed
- <modifyEventRrProcErrorResp/> used to notify Data Bus that an Event Road Ranger Procedural Error was modified
- <modifyEventVehicleResp/> used to notify Data Bus that an Event Vehicle was modified
- <removeEventContactResp/> used to notify Data Bus that an Event Contact was removed
- <removeEventRrProcErrorResp/> used to notify Data Bus that an Event Road Ranger Procedural Error was removed
- <removeEventVehicleResp/> used to notify Data Bus that an Event Vehicle was removed
- <setEventLaneBlockageResp/> used to notify Data Bus that an Event that lane blockage is set
- <setEventResponderListResp/> used to notify Data Bus that an Event responder list was set
- <setEventWeatherConditionListResp/> used to notify Data Bus that an Event Weather Condition was set
- <setVehicleActivityResp/> used to notify Data Bus that an Event Vehicle Activity was set
- <deleteVehicleActivityResp/> used to notify that a vehicle activity has been deleted from an event
- <dispatchVehicleResp/> used to notify Data Bus that an event vehicle was dispatched
- <departVehicleResp/> used to notify Data Bus that an event vehicle has departed
- <cancelVehicleResp/> used to notify Data Bus that an event vehicle was canceled

- <arriveVehicleResp/> used to notify Data Bus that an event vehicle has arrived
- <activateResponsePlanResp/> used to notify Data Bus that a response plan for the event has been activated
- <addItemToResponsePlanResp/> used to notify Data Bus that an item has been added to the response plan for the event
- <removeItemFromResponsePlanResp/> used to notify Data Bus that an item has been removed from the response plan for the event
- <revokeResponsePlanResp/> used to notify Data Bus that a response plan for the event has been revoked
- <drivers>
 - <driver>
 - <identifier>databus</identifier> Name of the subsystem used to route subsystem requests
 - <host>laplace</host> Name or IP address of the computer where this subsystem is running. When running with data bus, this should be the databus computer.
 - <port>40007</port> Port where this subsystem is listening for client connections. When running with data bus, this should be the databus port.
 - <username>pssubsystem</username> User name for EM to log into this subsystem.
 - <password>X03MO1qnZdYdgyfeuILPmQ==</password> Encrypted password for the user name.
 - <databusProviders> List of providers to use via the Databus connection
 - <databusProvider> DMS provider name and connection parameters
 - <providerName>dms</providerName>
 - <resendRate>15</resendRate>
 - <maxResend>3</maxResend>
 - </databusProvider>
 - <databusProvider> HAR provider name and connection parameters
 - <providerName>har</providerName>
 - <resendRate>15</resendRate>
 - <maxResend>3</maxResend>
 - </databusProvider>
 - <databusProvider> MAS provider name and connection parameters
 - <providerName>mas</providerName>
 - <dresendRate>15</resendRate>
 - <maxResend>3</maxResend>
 - </databusProvider>
 - <databusProvider> CVS provider name and connection parameters
 - <providerName>cvs</providerName>
 - <resendRate>15</resendRate>
 - <maxResend>3</maxResend>

- </databusProvider>
- <databusProvider> C2Csubscriber provider name and connection parameters
 - <providerName>C2cSubscriber</providerName>
 - <resendRate>15</resendRate>
 - <maxResend>3</maxResend>
- </databusProvider>
- </driver>

3.9.4.53 Reporting Subsystem

The Reporting subsystem is a data provider identified by the <rs> tag having the following configuration parameters:

- <host>lagrange</host> The hostname of the computer where the subsystem will execute
- <port> 40013 </port> The port which the subsystem will use to listen for connections
- <icdVersion>1.0</icdVersion> The version of the ICD to use
- <maxConnections>20</maxConnections> The maximum number of connections to the process
- <logLevel>slInfo</logLevel> The default logging level for the subsystem upon startup
- <validation>true</validation> Whether or not to use XML validation, should be set to false for performance.
- <commTolerance>3</commTolerance>
- <lockTimeout>120</lockTimeout>
- <rptFilePath>archimedes\FDOT\RS\SunguideReportFiles</rptFilePath> Path for the template files
- <reportExportFilePath>archimedes\FDOT\RS\SunguideExportReportFiles</reportExportFilePath> Path for the export of reports
- <handlers>
 - <gov.its.rs.xml.RsConfigurationHandler/> Processes configuration changes
 - <gov.its.rs.xml.RsRetrieveHandler/> Processes retrieve requests
 - <gov.its.rs.xml.RsGenerateHandler/> Processes the generation of reports
 - <gov.its.rs.xml.RsSubscribeHandler/> Processed subscribe requests
- <statusUpdates/> No status updates
- <subscriptions/> No subscriptions
- <drivers/> No drivers

3.9.4.54 Scheduled Actions Subsystem

The Scheduled Actions Subsystem has the following configuration parameters:

- <host>127.0.0.1</host> The hostname of the computer where the subsystem will execute.
- <port>40097</port> The port which the subsystem will use to listen for connections.
- <icdVersion>1.0</icdVersion> The version of the ICD to use.
- <maxConnections>20</maxConnections> The maximum number of connections to the process.

- `<logLevel>slDebug</logLevel>` The default logging level for the subsystem upon startup
- `<validation>>false</validation>` Whether or not to use XML validation, should be set to false for performance.
- `<broadcastSuspendTimeouts>>false</broadcastSuspendTimeouts>` Whether or not to broadcast suspend timeout notifications to all SAS authenticated users.
- `<handlers>` These handlers are run when the system starts up. If a handler is not listed, that handler will not be instantiated by the system. The handler settings must be defined as below for the subsystem to function properly.
 - `<gov.its.sas.handlers.ActionListHandler/>` Processes add/modify/delete of action lists
 - `<gov.its.sas.handlers.RetrieveDataHandler/>` Process the retrieve data requests
 - `<gov.its.sas.handlers.SubscribeHandler/>` Process the subscription requests
 - `<gov.its.sas.handlers.ScheduleHandler/>` Process the add/modify/delete of new schedules
 - `<gov.its.sas.handlers.ScheduledItemHandler/>` Process the add/modify/delete of schedule items
- `</handlers>`
- `<subscriptions>` Used by the Data Bus to subscribe to updates.
 - `<sequenceData/>` The subscription type for sequence data.
 - `<scheduleData/>` The subscription type for schedule data.
 - `<sequenceStatusData/>` The subscription type for sequence status data.
 - `<scheduleStatusData/>` The subscription type for schedule status data.
 - `<sasResourceStatusData/>` The subscription type for resource status data.
- `<statusUpdates>` Used by the Data Bus to determine which messages should be examined for updating the cache.
 - `<sequence>` Resource type for sequence data.
 - `<addSequenceResp action="add"/>` Response type used for adding sequences.
 - `<modifySequenceResp action="modify"/>` Response type used for modifying sequences.
 - `<deleteSequenceResp action="delete"/>` Response type used for deleting sequences.
 - `<updateManuallyActivatedMsg/>` Message type used to update manually activated sequences.
 - `<schedule>` Resource type for schedule data.
 - `<addScheduleResp action="add"/>` Response type used for adding schedules.
 - `<modifyScheduleResp action="modify"/>` Response type used for modifying schedules.
 - `<deleteScheduleResp action="delete"/>` Response type used for deleting schedules.
 - `<activateScheduleResp/>` Response type used when activating schedules.
 - `<suspendScheduleResp/>` Response type used when suspending schedules.
 - `<resumeScheduleResp/>` Response type used when resuming a suspended schedule.

- <deactivateScheduleResp/> Response type used when deactivating a schedule.
- <updateScheduleStateMsg/> Message type used to update the schedule state.
- <sasResource> Resource type used for SAS resources.
 - <addSasResourceMsg action="add"/> Message type used to add a SAS resource.
 - <deleteSasResource action="add"/> Message type used to delete a SAS resource.
 - <updateSuspendedResourceMsg/> Message type used to update a suspended resource.
- <drivers> Contains a list of driver elements., where the host and port in each case match the settings given to Databus.
 - <driver> Connection information for databus.
 - <identifier>databus</identifier> databus identifier
 - <host>127.0.0.1</host> databus host
 - <port>8009</port> databus port
 - <username>sassubsystem</username> user to authenticate and use to perform actions
 - <password>X03MO1qnZdYdgyfeuILPmQ==</password> user password

3.9.4.55 Pricing Subsystem

The Pricing subsystem is a data provider identified by the <ps> tag having the following configuration parameters:

- <host>127.0.0.1</host> The hostname of the computer where the subsystem will execute.
- <port>40878</port> The port which the subsystem will use to listen for connections.
- <icdVersion>1.0</icdVersion> The version of the ICD to use.
- <maxConnections>20</maxConnections> The maximum number of connections to the process.
- <logLevel>slInfo</logLevel> The default logging level for the subsystem upon startup
- <validation>>false</validation> Whether or not to use XML validation, should be set to false for performance.
- <providerType>ps</providerType> Provider type; usually the same as the provider name.
- <tollAuthWebSvcUrl><http://10.100.14.62:18080/VRTMW/rateQuery></tollAuthWebSvcUrl> URL of the FTE Middleware web service.
- <tollAuthRespAlertInterval> The elapsed time in minutes and seconds before a Middleware failure causes an alert to be generated; in effect the Middleware retry timer value.
 - <minutes>0</minutes>
 - <seconds>45</seconds>
- <tollAuthHeartbeatInterval> The time interval in minutes and seconds between Middleware communication attempts.
 - <minutes>1</minutes>

- <seconds>30</seconds>
- <nonTODAlertInterval>90</nonTODAlertInterval> The time interval in seconds between non-TOD alerts being sent to the operator GUI.
- <tollAuthRetryCount>3</tollAuthRetryCount> The number of retry attempts for sending a set toll rate request to the Middleware: zero for a single attempt with no retries.
- <mapPath>\\Its-share\fdot\DynaMap\DynaMap 9.2\usa</mapPath> Path to map shape files used to calculate event proximity in PS report logs.
- <maxEventDistance>5280</maxEventDistance> Maximum event distance (in feet) used in PS report logs.
- <dailyLogTime>02:00:00</dailyLogTime> The time of day to generate the report logs and send the discrepancy e-mail of the previous days operation
- <dailyLogDirectory>C:\TollPricingLogs</dailyLogDirectory> The directory to store the daily report logs.
- <emailContacts> List of contacts to send the discrepancy reports to.
 - <contact>xxx@xxx.xxx</contact>
- <dailySynchronizationTime>02:00:00</dailySynchronizationTime> Daily time when a file is generated with rates that were not sent to Middleware.
- <offlineSynchronizationDirectory>C:\TollSync</offlineSynchronizationDirectory> Folder where the synchronization files will be logged.
- <handlers> These handlers are run when the system starts up. If a handler is not listed, that handler will not be instantiated by the system. The handler settings must be defined as below for the subsystem to function properly.
 - <gov.its.ps.PsSubscribeHandler /> Processes subscription requests.
 - <gov.its.ps.PsRetrieveDataHandler /> Processes retrieve data requests.
 - <gov.its.ps. PsSystemConfigHandler/> Processes requests to set system configuration parameters.
 - <gov.its. ps.PsDailyRateScheduleConfigHandler/> Processes configuration requests (add/modify/delete) for daily rate schedules.
 - <gov.its. ps.PsExpressSegmentConfigHandler/> Processes configuration requests (add/modify/delete) for express segments.
 - <gov.its. ps.PsHolidayConfigHandler/> Processes configuration requests (add/modify/delete) for holidays.
 - <gov.its. ps.PsSegmentRateScheduleConfigHandler/> Processes configuration requests (add/modify/delete) for segment rate schedules.
 - <gov.its. ps.PsTollRateSignConfigHandler/> Processes configuration requests (add/modify/delete) for toll rate signs.
 - <gov.its.ps. PsTollAlertHandler/> Processes requests to acknowledge toll alerts.
 - <gov.its.ps.PsSegmentStateHandler/> Handler for segment state changes.
 - <gov.its.ps.PsOfflineSynchronizationHandler/> Handler for offline synchronization.
 - <gov.its.ps.PsRestartModeHandler/> Handles mode to use on a restart.
- </handlers>
- <subscriptions> Used by the Data Bus to subscribe to updates.
 - <segmentStatusData/> The subscription type for express segment status data.

- <statusUpdates> Used by the Data Bus to determine which messages should be examined for updating the cache.
 - <expressSegment> Resource type for express segment data.
 - <addExpressSegmentResp action="add"/> Response type used for adding express segments.
 - <modifyExpressSegmentResp action="modify"/> Response type used for modifying express segments.
 - <deleteExpressSegmentResp action="delete"/> Response type used for deleting express segments.
 - <rateUpdateMsg /> Message type used to update toll rate status.
 - <setSegmentOverrideStateResp /> Message type used to update segment override state.
- <drivers>
 - <driver>
 - <identifier>databus</identifier> Name of the subsystem used to route subsystem requests
 - <host>laplace</host> Name or IP address of the computer where this subsystem is running. When running with data bus, this should be the databus computer.
 - <port>40007</port> Port where this subsystem is listening for client connections. When running with data bus, this should be the databus port.
 - <username>pssubsystem</username> User name for Pricing to log into this subsystem.
 - <password>X03MO1qnZdYdgyfeuILPmQ==</password> Encrypted password for the user name.
 - <databusProviders> List of provides to use via the Databus connection
 - <databusProvider> DMS provider name and connection parameters
 - <providerName>dms</providerName>
 - <dmsResendRate>15</dmsResendRate>
 - <dmsMaxResend>3</dmsMaxResend>
 - </databusProvider>
 - </driver>

3.9.4.56 Toll Viewer

The Toll Viewer web application retrieves settings from a standard file named "web.config". The settings are defined as "key" and "value" attributes of <add> elements within the <appSettings> element.

- URL of the web service used to retrieve database content:
 - key="TollViewerSvc.TollViewerSvc"
 - value=<http://pythagoras.dyn.datasys.swri.edu/TollViewerWebSvc/TollViewerSvc.asmx>
- Required time format types (The following Time keys are used as "values" in "timeFormat" configuration to override/set the global display format of all Time fields in the Toll Viewer web application.):

- key="time_AmPm"; value="h:mm:ss tt"
 - key="time_24mm"; value="HH:mm"
- Required date format types (The following Date keys are used as "values" in "dateFormat" configuration to override/set the global display format of all Date fields in the Toll Viewer web application.):
 - key="date_Dash"; value="MM'-dd'-'yyyy"
 - key="date_YMD"; value="yyyyMMdd"
 - key="date_Coln"; value="MM':dd':'yyyy"
 - key="date_FrSl"; value="MM'/'dd'/'yyyy"
 - key="date_BkSl"; value="MM'\dd'\yyyy"
- Time and date format overrides (Used to set the global display format of all Time and Date fields in the Toll Viewer web application.):
 - key="timeFormat"; value="time_AmPm"
 - key="dateFormat"; value="date_Dash"
- Image text and path to Static Map (The "SiteMapText" value is the actual text to be displayed in the Toll Viewer web application navigation bar that links to the static map image. The "StaticMapLink" value identifies physical path/location and name of the image file.):
 - key="StaticMapText"; value="Static Map Link"
 - key="StaticMapLink"; value="~/mapImages/I95 Device Locations - 2008-01-09.JPG"
- Optional switches:
 - key="srtAllColumns"; value="true" (When set to true this switch allows the Ascending and Descending sort icon images to be placed on all data view tables at the same time. When set to false the, sort icon images only appear at the most recently sorted table column.)
 - key="addScrollbars"; value="false" (When set to true this switch allows the User to select how many data rows to be displayed in each data view table and provides scroll bars in each data view for rows and columns that exceed the users selection.)
 - key="showOvrEffEndTime"; value="false" (This switch is set to false for this release in order to hide the Effective End Time column in the Overrides data view table of the Detail View.)
 - key="applyScreenResolution"; value="false" (This switch should always be set to false for this release, and is included only for future enhancements of the screen resolution size that is currently set to 1024x780)
 - key="sortGantryPrim"; value="true" (When set to true this switch causes all data view tables that contain a column entry for Gantry to be sorted first by Gantry and then by the column selected by the User or by the initialized sort column as described below.)
- Initial sort column for each data view (The following key/value settings allow initial sort configuration of data view tables with out requiring a change to application code or SQL queries.):
 - key="iscTOLL_RATES"; value="TIMESTAMP"
 - key="iscDMS_ATTEMPTS"; value="TIME_ACKNOWLEDGED"
 - key="iscTOLL_RATE_ATTEMPTS"; value="TIME_SENT"

- key="iscOVERRIDES"; value="START_TIME"
- key="iscEVENTS"; value="START_TIME"

3.9.4.57 INRIX Publisher

The INRIX Publisher subsystem is a data provider identified by the <inrix> tag having the following configuration parameters:

- <host>127.0.0.1</host> The hostname of the computer where the subsystem will execute.
- <port>38943</port> The port which the subsystem will use to listen for connections.
- <icdVersion>1.0</icdVersion> The version of the ICD to use.
- <maxConnections>20</maxConnections> The maximum number of connections to the process.
- <logLevel>slInfo</logLevel> The default logging level for the subsystem upon startup
- <validation>>false</validation> Whether or not to use XML validation, should be set to false for performance.
- <providerType>inrix</providerType> Provider type; usually the same as the provider name.
- <updateSeconds>120</updateSeconds> Period between data fetch from INRIX web service.
- <c2cProviderHost>Server1</c2cProviderHost> C2C Provider host address.
- <c2cProviderPath>Inrix/Provider</c2cProviderPath> C2C Provider path and web service.
- <primaryPath><http://na.api.inrix.com/V3/Traffic/Inrix.ashx></primaryPath> URL of the INRIX web service.
- <vendorId>743011617</vendorId> INRIX-provided vendor ID.
- <consumerId>2d80f7c2-28d8-49bb-be64-5a44f2f8474b</consumerId> INRIX-provided consumer ID.
- <navteqDataFolder>c:/navteq</navteqDataFolder> Folder containing NAVTEQ map files used by the application.
- <inrixNetworkId>District 4 Inrix</inrixNetworkId> C2C Network ID that will be used for published data. Should be local Center ID with "INRIX" appended.
- <inrixNetworkName>District 4 Inrix</inrixNetworkName>C2C Network Name that will be used for published data.
- <counties> List of counties used to filter INRIX links.
 - <county>Hernando</county>
 - <county>Sumter</county>
- <tmcPathFile>c:/navteq/I95TmcLocation.dat</tmcPathFile> Full path file name of INRIX-provided TMC Location file.
- <minVertexLength>35</minVertexLength> Minimum distance, in feet, between added adjacent midpoints.
- <confidenceThreshold>20</confidenceThreshold> Minimum confidence value of INRIX speed data to be published.

- `<handlers>` These handlers are run when the system starts up. If a handler is not listed, that handler will not be instantiated by the system. The handler settings must be defined as below for the subsystem to function properly.
 - `<gov.its.inrix.handlers.InrixStatusHandler/>` Processes status requests.
 - `<gov.its.inrix.handlers.InrixSubscribeHandler/>` Processes subscription requests.
 - `<gov.its.inrix.handlers.InrixRetrieveDataHandler/>` Processes retrieve data requests.
- `<subscriptions/>` Not used by this provider.
- `<statusUpdates/>` Not used by this provider.
- `<drivers/>` Not used by this provider.

3.9.4.58 Connected Vehicle Subsystem

The Connected Vehicle subsystem is a data provider identified by the `<cvs>` tag having the following configuration parameters:

- `<host>127.0.0.1</host>` The hostname of the computer where the subsystem will execute.
- `<port>38956</port>` The port which the subsystem will use to listen for connections.
- `<icdVersion>1.0</icdVersion>` The version of the ICD to use.
- `<maxConnections>20</maxConnections>` The maximum number of connections to the process.
- `<logLevel>slInfo</logLevel>` The default logging level for the subsystem upon startup
- `<validation>>false</validation>` Whether or not to use XML validation, should be set to false for performance.
- `<providerType>cvs</providerType>` Provider type; usually the same as the provider name.
- `<archiveData>>true</archiveData>` If true, archive to BSM and Probe data
- `<rseRadius>10</rseRadius>` Number of miles an RSE can be away from a presentation region and still be included automatically
- `<handlers>`
 - `<gov.its.cvs.handlers.CvsConfigHandler/>` Process Configuration requests of RSEs
 - `<gov.its.cvs.handlers.CvsRetrieveDataHandler/>` Process Retrieve Data Requests
 - `<gov.its.cvs.handlers.CvsSubscribeHandler/>` Process subscription requests
 - `<gov.its.cvs.handlers.CvsTamHandler/>` Process add/modify/delete of TAMs
 - `<gov.its.cvs.handlers.CvsJ2735DataHandler/>` Process probe data from driver
- `<subscriptions>`
 - `<rseConfig/>` Subscription for data relating to RSE configuration
 - `<rseData/>` Subscription for data relating to configuration and status of an RSE
 - `<tamData/>` Subscription for data relating to the current TAMs in the system
 - `<rseStatusData/>` Subscription for op status data
 - `<rawProbeData/>` Subscription for raw probe data
 - `<rawTamData/>` Subscription for raw TAM data
- `<statusUpdates>`
 - `<rse>`
 - `<setOpStatusResp/>` Response used for changing status of an RSE

- `<rseUpdateMsg/>` Message to notify of changing RSE data
- `<addRseResp action="add"/>` Response used for adding an RSE
- `<modifyRseResp action="modify"/>` Response used for modifying an RSE
- `<deleteRseResp action="delete"/>` Response used for deleting an RSE
- `<tam>`
 - `<addTamResp action="add"/>` Response used for adding a TAM
 - `<modifyTamResp action="modify"/>` Response used for modifying a TAM
 - `<deleteTamResp action="delete"/>` Response used for deleting a TAM
- `<rawProbeData>`
 - `<rseRawProbeReportMsg action="modify"/>` Message used to update raw probe data
- `<rawTamData>`
 - `<tamReportMsg action="modify"/>` Message used to update current TAM messages

3.9.4.59 Connected Vehicle Driver (J2735)

The Connected Vehicle driver has the following configuration parameters:

- `<driver>`
 - `<identifier>CvDriver</identifier>` Name of this driver.
 - `<host>127.0.0.1</host>` The name of the computer on which the driver should be running (DNS name, qualified as necessary, or the IP address).
 - `<port>40142</port>` The port on which the driver is listening for client connections.
 - `<logLevel>slInfo</logLevel>` The level of status logging for this system; this can also be changed via the EH (slError, slWarning, slInfo, slDebug, slDetail).
 - `<validation>>false</validation>` Whether xml validation is on, this should be false when in a production environment. If validation is set to true, the subsystem performance will be slower (true, false).
 - `<icdVersion>1.0</icdVersion>` The ICD version for this system, this is appended to the schema location in the general section of config data (Should be the version corresponding to the location of schemas for this system. If validation is turned on, this must be the same as for the HAR subsystem).
 - `<maxConnections>20</maxConnections>` Maximum number of client connections to allow (1-20).
 - `<providerType>Cvs</providerType>` The provider type of this driver, used in XML to uniquely identify elements.
 - `<snmpTimeout>2000</snmpTimeout>` Timeout value in milliseconds
 - `<snmpPollTimeMS>5000</snmpPollTimeMS>` Snmp Poll time to RSE devices in milliseconds
 - `<snmpSowPollTimeMS>30000</ snmpSowPollTimeMS>` Snmp slow poll time in milliseconds
 - `<commTolerance>3</commTolerance>` Number of failed poll attempts before moving to the failed state

- <viiPocBsmPort>40040</viiPocBsmPort> port to listen for BSM data for the VIPOC Protocol
- <viiPocPvdPort>40041</viiPocPvdPort> port to listen for PVDM data for the VIPOC Protocol
- <r200911BsmPort>40030</r200911BsmPort> port to listen for BSM data for the 2009-11 Protocol
- <r200911PvdPort>40031</r200911PvdPort> port to listen for PVDM data for the 2009-11 Protocol
- <snmpStatusPort>161</snmpStatusPort> Port to communicate status from the RSEs
- <snmpCommunityName>public</snmpCommunityName> Community Name used for TAMs
- <snmpStatusLogTimeMS>30000</snmpStatusLogTimeMS> Status log time for SNMP poll cycle in milliseconds
- <bsmFilterIntervalMS>500</bsmFilterIntervalMS> Interval at which the same BSM will be ignored in milliseconds
- <agencyId>10001</agencyId> Agency Id, used when sending data to an RSE
- <taCategory>12289</taCategory> TAM category
- <tamBroadcastIntervalMS>2000</tamBroadcastIntervalMS> Frequency to broadcast TAMs in milliseconds
- <sdn>
 - <enabled>>false</enabled> If true, forwards data to the SDN
 - <id>Oak Ridge</id> SDN Id
 - <X509PrivateKey>RootCATest.cer</X509PrivateKey> certificate name
 - <pdsEndpoint>http://12.172.124.74:8080/sdn/services/ManageProbeDataMessageSubscription</pdsEndpoint> location to forward probe data
 - <amdsEndpoint>http://12.172.124.74:8080/sdn/services/ManageAdvisoryMessageDelivery</amdsEndpoint> location to forward TAMs
- <sdnProbeForward>
 - <enabled>>false</enabled> If true, forward PVDM data
 - <ipAddress>12.168.58.73</ipAddress> UDP address to forward data
 - <port>2509</port> UDP port to send data
- <handlers>
 - <gov.its.cvs.driver.xml.J2735TamConfigHandler/> Process TAM add/modify/delete
 - <gov.its.cvs.driver.xml.J2735RSEConfigHandler/> Process RSE add/modify/delete
 - <gov.its.cvs.driver.xml.J2735SendDataHandler/> Send data to Clients

3.10 System Configuration

The final step in setup of a SunGuide installation is to run the configuration editors for the "system." These editors are described in the SunGuide User manual. These editors are:

Administrative Editor: Used to configure users, roadways, devices, etc.

3.11 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.

4. 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.

4.1 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.

4.1.1 COTS Development Tools Installation

Microsoft® Windows XP Professional 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 2010 with SP1 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 2008 SP1 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.

NetToolWorks SNMP .NET Version 1.4.2 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.

Pegasus Imaging CapturePRO 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.

Macrovision Corporation InstallShield® Version 2011 is installed on the development workstation using the included setup utility.

4.1.2 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.

4.1.2.1 Source Code Installation

The SunGuide source code is installed on the development system by copying it from the distribution CD 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.

To install the source code on a development workstation, create a destination directory on the development system named **Projects\SunGuide\Source**, and copy the entire contents of the

\Source\SunGuide directory on the distribution CD to the destination directory on the development system.

4.1.2.2 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 4.1.1.
- Install the SunGuide source code as described in Section 4.1.2.1.

4.1.2.2.1 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)
SunGuideAdmin.sln (C# Project)	SunGuideAdmin.dll
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
BarcoDriverSvc.sln (C# Project)	BarcoDriverLib.dll BarcoDriverSvc.exe
C2cClientService.sln (C# Project)	C2cClientLib.dll C2cClientService.exe C2cEmLib.dll C2cSharedLib.dll
C2cServer.sln (C# Project)	C2cEmLib.dll C2cServerLib.dll C2cServerService.exe C2cSharedLib.dll
CctvService.sln (C# Project)	CctvLib.dll CctvService.exe
Cvs.sln (C# Project)	CvsLibrary.dll CvsService.exe
CvTssDriver.sln (C# project)	CvTssDriverLib.dll CcTssDriverSvc.exe

Solution File	Component(s)
ConfigEditor.sln (C# Project)	AbstractComponentFactoryFramework.dll AbstractComponentFramework.dll ConfigEditor.exe Creators.dll Editors.dll UIToolset.dll Validator.dll
DataArchive.sln (C# Project)	DataArchiveLib.dll DataArchiveService.exe
Dar.sln (C# Project)	Dar.exe DarLib.dll
DataBusService.sln (C# Project)	DataBusLib.dll DataBusService.exe
Em.sln (C# Project)	EmLib.dll EmService.exe
EventViewer.sln (C# Project)	EventViewer.dll OMInterface.dll Preprocessor.exe
ExecClientLib.sln (C# Project)	FDOT.ExecClientLib.dll
ExecutiveHandler.sln (C++ Projects)	FDOT.ExecHandlerDll.dll ExecHandlerEditor.exe ExecHandlerSvc.exe ExecHandlerViewer.exe
ExternalEventDriver.sln	IdsDataLib.dll ExternalEventDriverLib.dll ExternalDriverSvc.exe
GuiMgrService.sln (C# Project)	GuiMgrLib.dll GuiMgrService.exe SpatialLib.dll
HarDR2000Svc.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
ImsService.sln (C# Project)	ImsLib.dll ImsService.exe

Solution File	Component(s)
Inrix.sln (C# Project)	C2cSharedLib.dll InrixDataLib.dll InrixLib.dll InrixService.exe
IpVideoSwitchSvc.sln (C# Project)	IpVideoSwitchLib.dll IpVideoSwitchSvc.exe
ItsGenericLibrary.sln (C# Project)	FDOT.ItsGenericLibrary.dll
J2735Driver.sln (C# Project)	J2735DriverLib.dll ASN_200911.dll ASN_200911_WIN32.dll ASN_200911_WIN32_MGDLIB.dll ASN_VIPOC.dll ASN_VIPOC_WIN32.dll ASN_VIPOC_WIN32_MGDLIB.dll J2735DriverService.exe
JupiterVwd.sln (C# Project)	JupiterVwdService.exe JupiterVwdLibrary.dll
MasService.sln (C# Project)	MasLib.dll MasService.exe
McpManager.sln (C# Project)	McpControlLib.dll McpManagerLib.dll McpManagerSvc.exe
NotifyManager.sln (C# Projects)	NotifyMgrLib.dll NotifyManagerSvc.exe
OMInterface.sln (C# Project)	OMInterface.dll
OperatorMap.sln (C# Project)	OperatorMap.exe OperatorMap.xbap
ProbeFusionDriverSvc.sln (C# Project)	ProbeFusionDriverLib.dll ProbeFusionDriverSvc.exe
Ps.sln (C# Project)	PsLib.dll PsService.dll TollInterfaceLib.dll
Rms170DriverSvc.sln (C# Project)	Rms170DriverLib.dll Rms170DriverSvc.exe
RsService.sln (C# Project)	RsLib.dll RsService.exe
RRXMLDriver.sln (C# Project)	RRXMLDriverService.exe RRXMLLib.dll
RwisDriverSvc.sln (C# Project)	RwisDriverLib.dll RwisDriverSvc.exe

Solution File	Component(s)
RwisService.sln (C# Project)	RwisLib.dll RwisService.exe
RtmsDriverSvc.sln (C# Project)	RtmsDriverLib.dll RtmsDriverSvc.exe
Sas.sln (C# Project)	SasLib.dll SasService.exe
SbAlarmDriver.sln	SbAlarmDriverLib.dll SbAlarmDriverSvc.exe
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
SpatialLib.sln (C# Project)	SpatialLib.dll
StatusLogger.sln (C++ Projects)	FDOT.StatusLoggerDll.dll StatusLogger.cpl StatusLogService.exe StatusLogViewer.exe
StatusLogClientLib.sln (C# Project)	FDOT.StatusLogClientLib.dll
SunGuideAdmin.sln (C# Project)	SunGuideAdmin.dll
TollViewer.sln (C# Project)	AppCode.dll App_WebReferences.dll App_Web_abc.dll App_Web_xyz.dll SortControl.dll TollViewerLib.dll TollViewerSvc.dll
TssAlarmDriver.sln	IdsDataLib.dll TssAlarmDriverLib.dll TssAlarmDriverSvc.exe
Tss.sln (C# Project)	TssLib.dll TssService.exe
TvtService.sln (C# Project)	TvtLib.dll TvtService.exe
VisioPadDriver.sln (C# Project)	VisioPadDriverLib.dll VisioPadDriverSvc.exe
Vsl.sln (C# Project)	VslLib.dll VslService.exe

Solution File	Component(s)
Vs.sln (C# Project)	VsLib.dll VsService.exe
VwsService.sln (C# Project)	VwsLibrary.dll VwsService.exe
WeatherAlertDriver.sln	IdsDataLib.dll WeatherAlertLib.dll WeatherAlertDriverSvc.exe
WsDOTDriverSvc.sln (C# Project)	WsDOT170TssDriverLib.dll WsDOTDriverSvc.exe

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 folder **Projects\SunGuide\Source** 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).

4.1.3 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.

4.1.3.1 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.

4.1.3.2 Build Instructions

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

- Install the COTS development tools as described in Section 4.1.1.
- Install the SunGuide system installer source code as described in Section 4.1.3.1.

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\SunGuide** on the development workstation and double click on that file to start InstallShield DevStudio using that project file.
2. If there have been changes to the SunGuide system installation files (executable files, DLLs or support files), the new files must be copied from their respective project directories (located under **Projects\SunGuide\Source**) to the InstallShield target file directory (located under **Installers\SunGuide\InstallFiles**).
3. From the Build menu on the InstallShield IDE, select Build Release to rebuild the installation package. The installation package will be built to **Installers\SunGuide\Media\Release1\Package\SunGuideInstall.exe**.

4.2 Installation on Target System

4.2.1 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 Users Manual.

4.2.2 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.

4.2.2.1 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**.

5. Notes

5.1 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

5.2 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.

5.3 Compression Problems

XML compression should not be invoked between C# and Java applications as the compression between Java and C# does not work in the current version of Microsoft Visual Studio.

Note: As of SunGuide Release 4.2.0, the (unused) compression library linked by the C# applications has been removed from all SunGuide C# projects and the SunGuide installer.

5.4 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.

5.5 Operator Map Interface Assembly

The Operator Map Interface assembly (OMInterface.dll) is an ActiveX module loaded into Internet Explorer by the Operator Map and serves as the operator map's data source and communications link with the Data Bus and the rest of the SunGuide system.

The Operator Map requires that the Microsoft .NET Framework 4.0 be installed on each client workstation to allow the "OMInterface.dll" to run and to allow the WPF XAML to run. Further, specific security permissions must be granted to the application after installing the .NET Framework. These are granted by selecting and running the ".NET Security Permissions" link on the default SunGuide web page installed by the SunGuide installer. After running this script, Internet Explorer must be restarted for the new permissions to take effect. The permission settings are only valid for the specific hostname through which the link is clicked. For example, if the .NET Security Permissions link is executed from "<http://sunguide>", then accessnig the

map through "<http://sunguide.datasys.swri.edu>" would fail - even though they technically point to the same machine.

5.6 Daylight Savings Time Adjustments

The change to the start and stop dates of DST will require some patches to the Java virtual machines used by SunGuide and Oracle. The following list summarizes the changes:

- None of the SunGuide applications need any changes; times are provided either by the OS (in the case of C/C++/C#) or the JVM.
- Operating System
 - Microsoft has a page where you can specify any OS and products you are using and determine patches that you will need: <http://support.microsoft.com/dst2007/>
- JVM: Java, since it uses internal timezone data, needs to be updated. Here is the page explaining: http://java.sun.com/developer/technicalArticles/Intl/USDST_Faq.html
 - Here's the link to download the update tool for Java JREs (JDK US DST Timezone Update Tool): <http://java.sun.com/javase/downloads/index.jsp>
 - Follow the instructions in the readme. Each app must be stopped before applying the patch.
- Database
 - Oracle, given that it runs a JVM, has issues. The fixes involve updating the JVM and Oracle timezone data: <http://www.oracle.com/technology/pub/notes/daylight-saving-time-update-guide.html#2>

5.7 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 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 Speed Dome 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 Speed Dome 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.

5.8 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, section 3.9.4.18. 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.

5.9 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.

5.10 Resetting Datasource in Report Templates

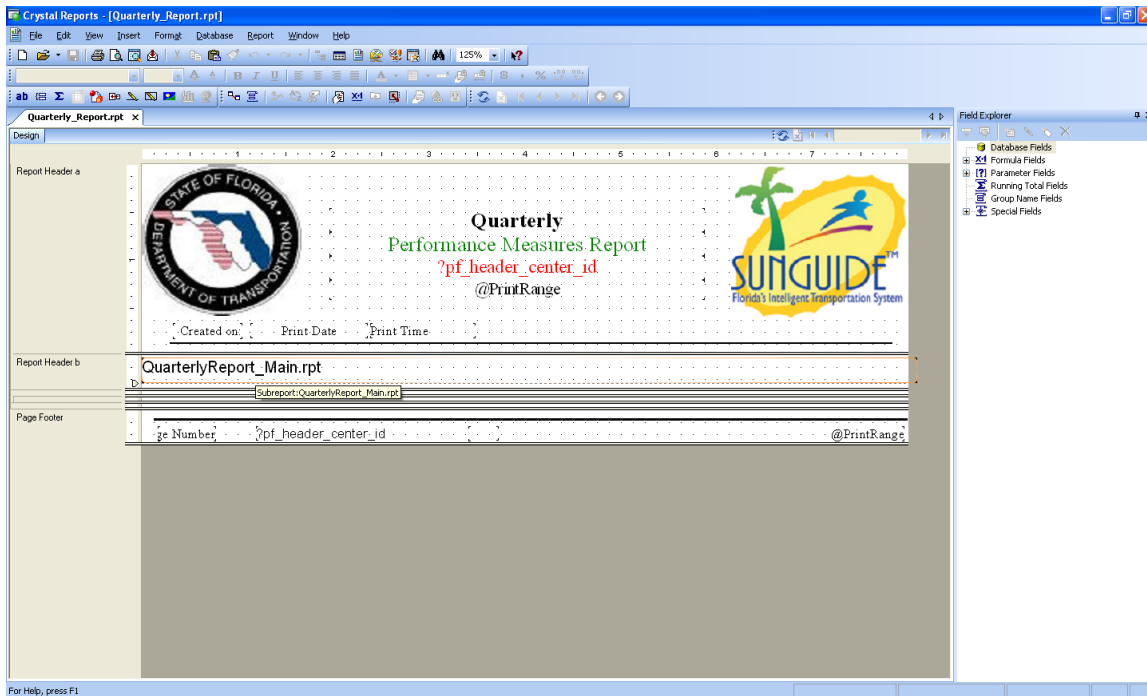
The four performance measures reports (weekly, monthly, quarterly and annually) all make use of Oracle stored procedures to properly access and process data for reporting. Unfortunately, there is a "bug" in Crystal Reports which does not properly handle database connection substitution at report run time. The work-around to this is to open each report and sub-report and use the "Set Datasource Location" command in Crystal Reports Developer. This must be done

for each sub-report within a report. The table below enumerates the sub-reports for each of the four reports.

Report	Sub-Reports
Annually_Report.rpt	YearlyReport_Main.rpt
Quarterly_Report.rpt	QuarterlyReport_Main.rpt
Monthly_Report.rpt	WeeklyMonthly_main.rpt CrystalReport4.rpt CrystalReport6.rpt CrystalReport7_3.rpt CrystalReport8.rpt CrystalReport11.rpt CrystalReport10.rpt
Weekly_Report.rpt	WeeklyReport_main.rpt CrystalReport4.rpt CrystalReport6.rpt CrystalReport7_3.rpt CrystalReport8.rpt CrystalReport11.rpt CrystalReport10.rpt

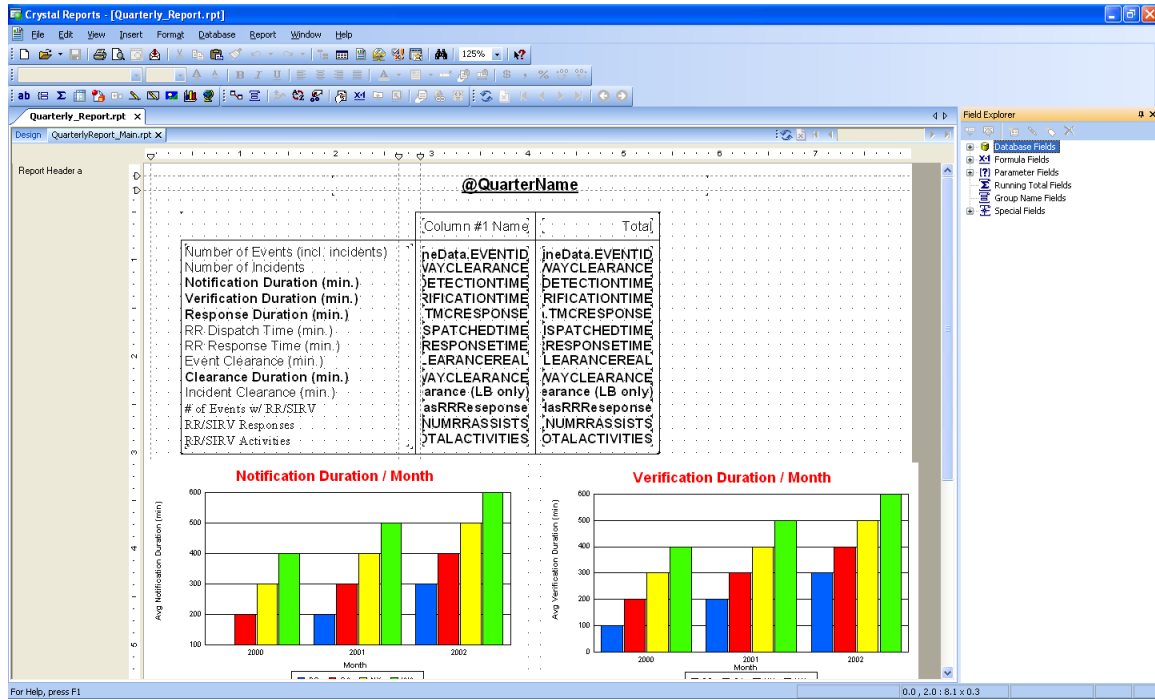
The steps below describe how to set the Datasource Location for the "Quarterly_Report.rpt" template. The same process must be performed on all the report templates in order for them to work properly.

1. Open the "Quarterly_Report.rpt" report template.

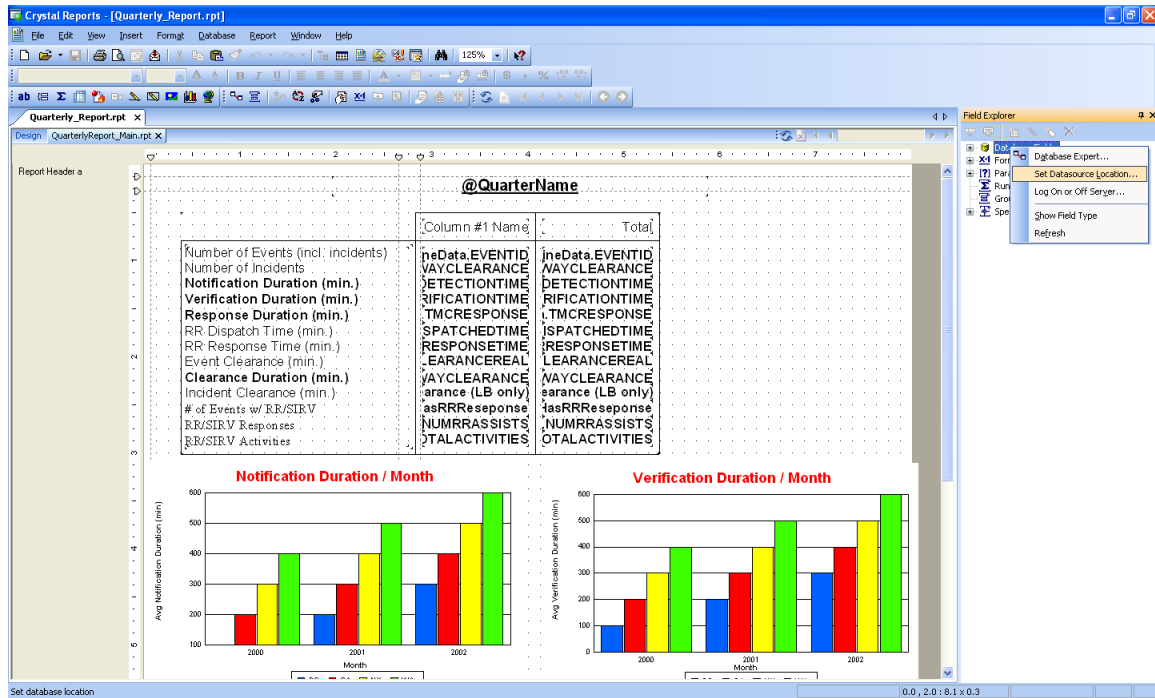


Version Description Document

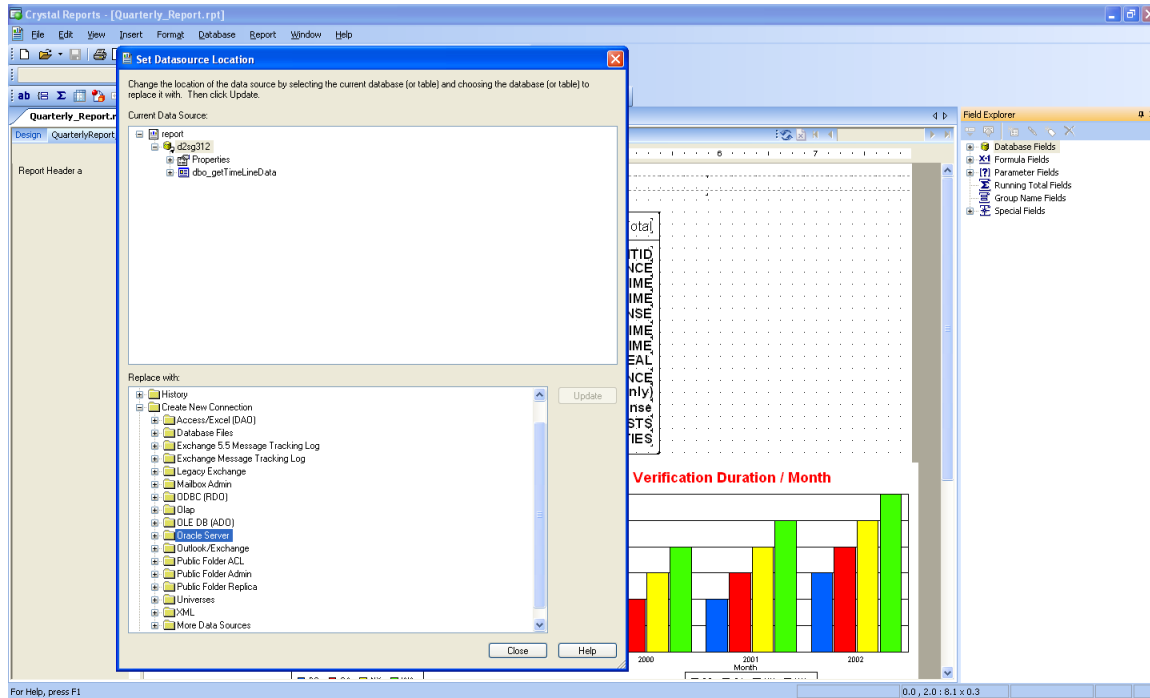
2. Double click on the sub-report QuarterlyReport_Main.rpt – this opens the sub-report



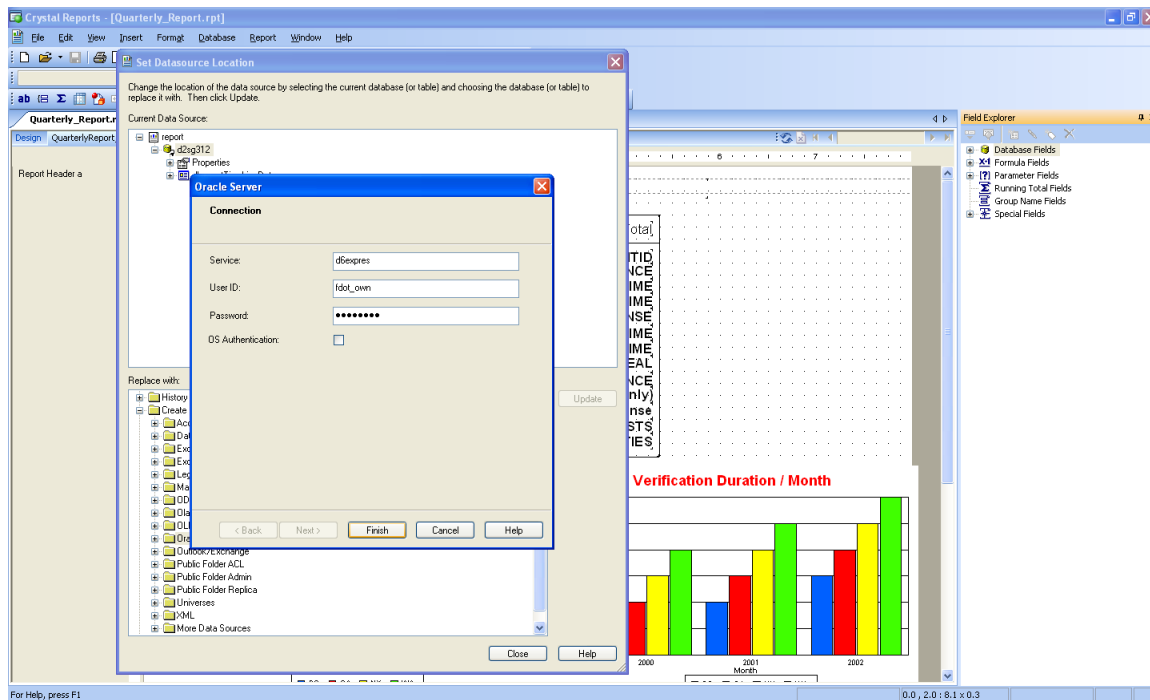
3. In the field explorer, right-click "Database Fields" then "Set Datasource Location"



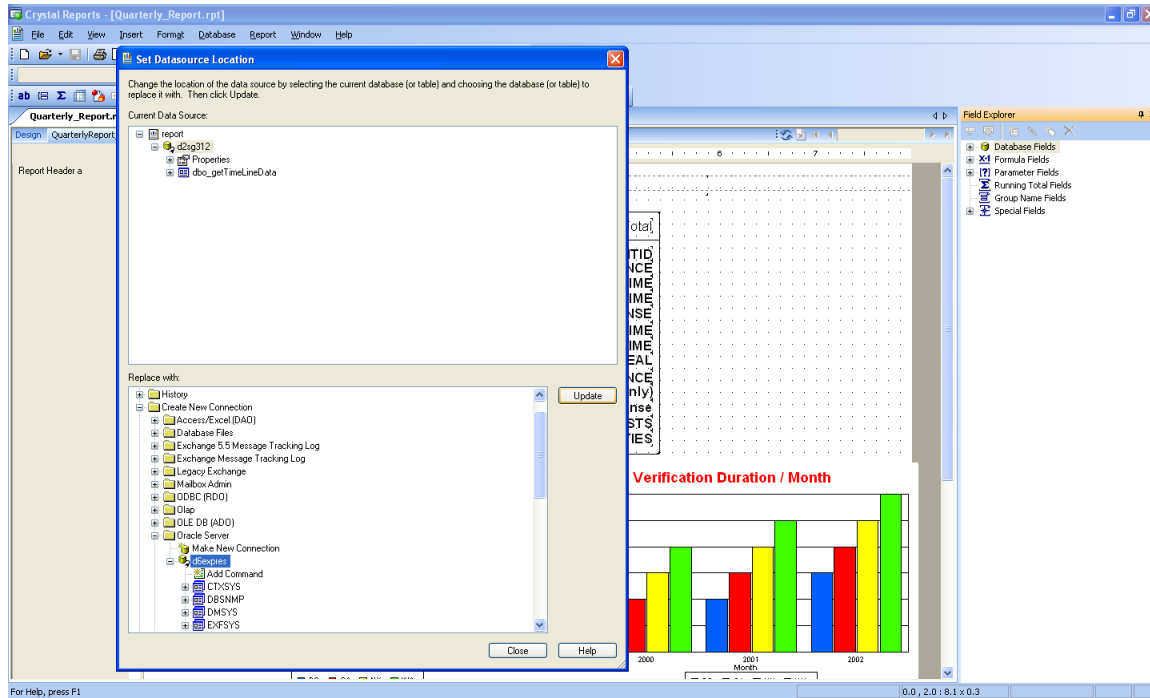
4. In the bottom panel expand "Create new connection".



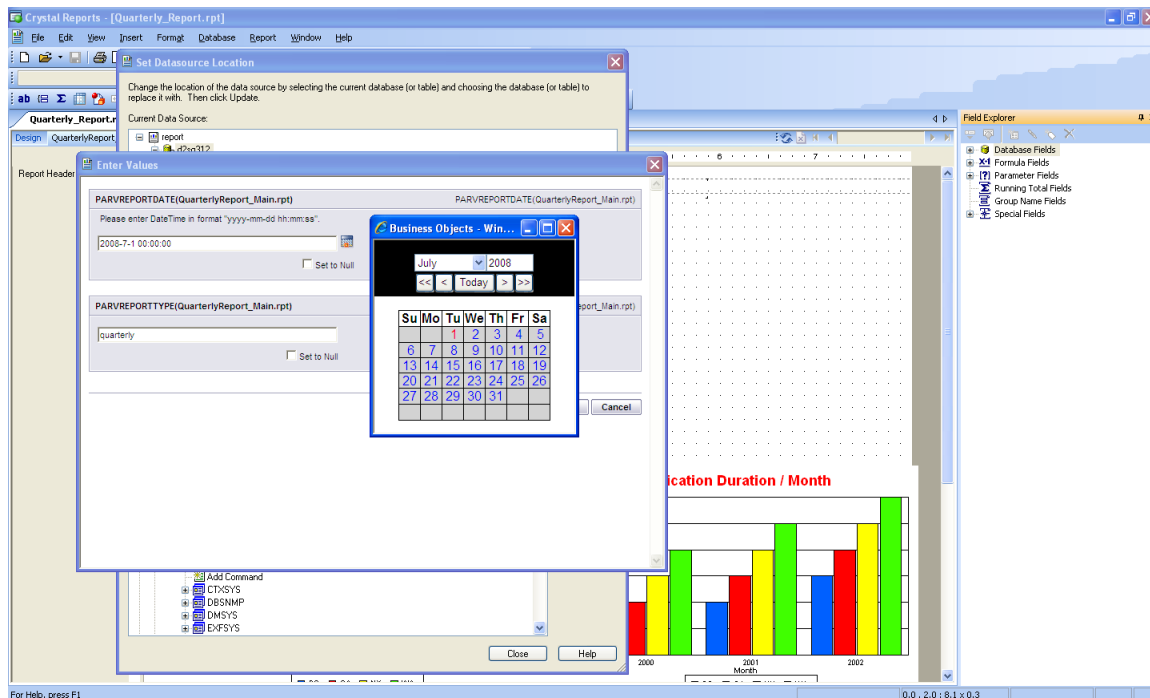
5. The dialog will either prompt for credentials or it will expand and display the database connection entered above, or the "Make New Connection" choice will need to be clicked; perform one of these actions.



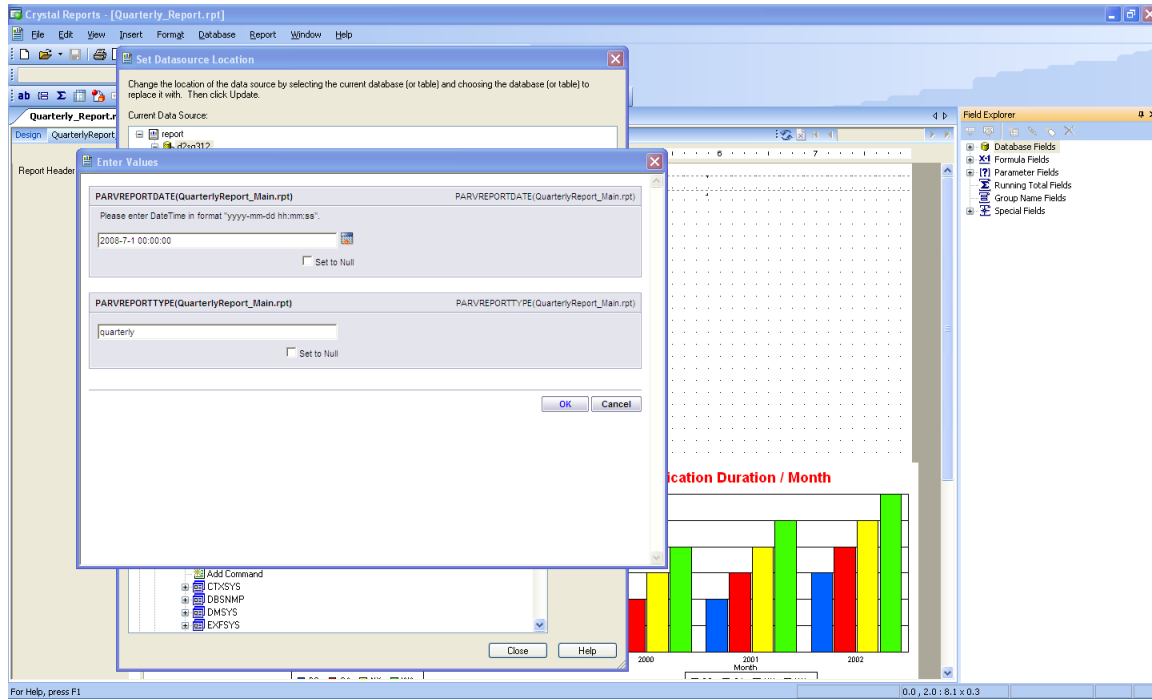
6. Select the desired connection and click "Update".



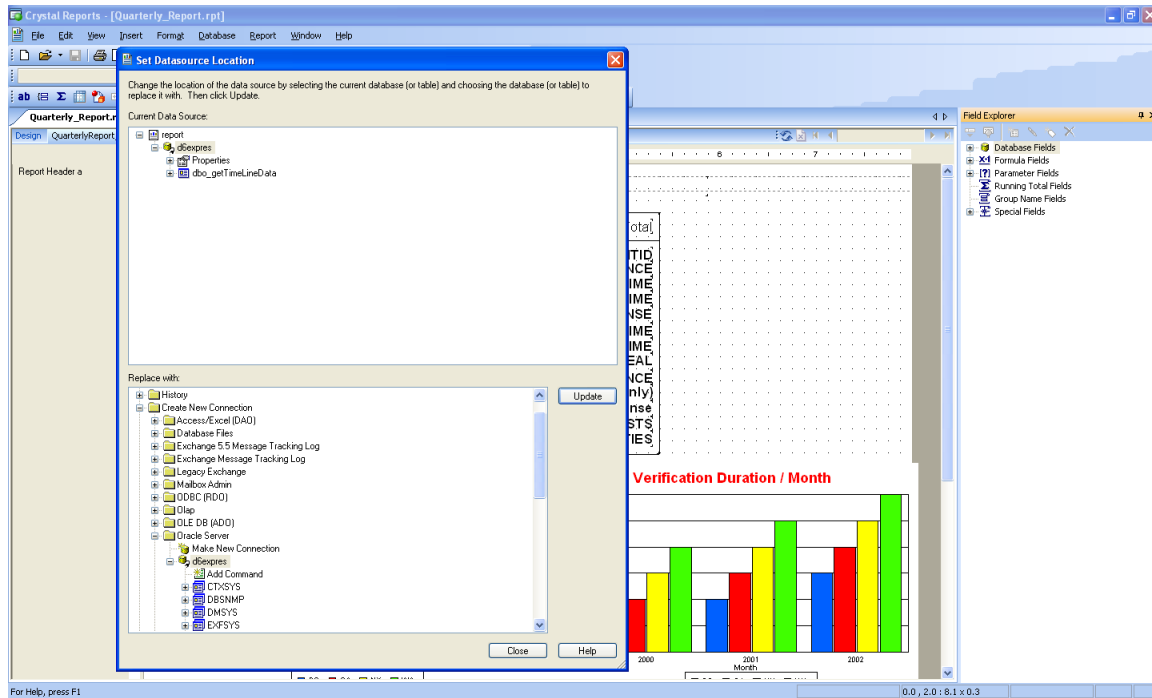
7. When prompted for parameter values, click on the calendar, choose "July 1, 2008", and enter the type of report to be modified (Annual, Quarterly, Monthly, Weekly).



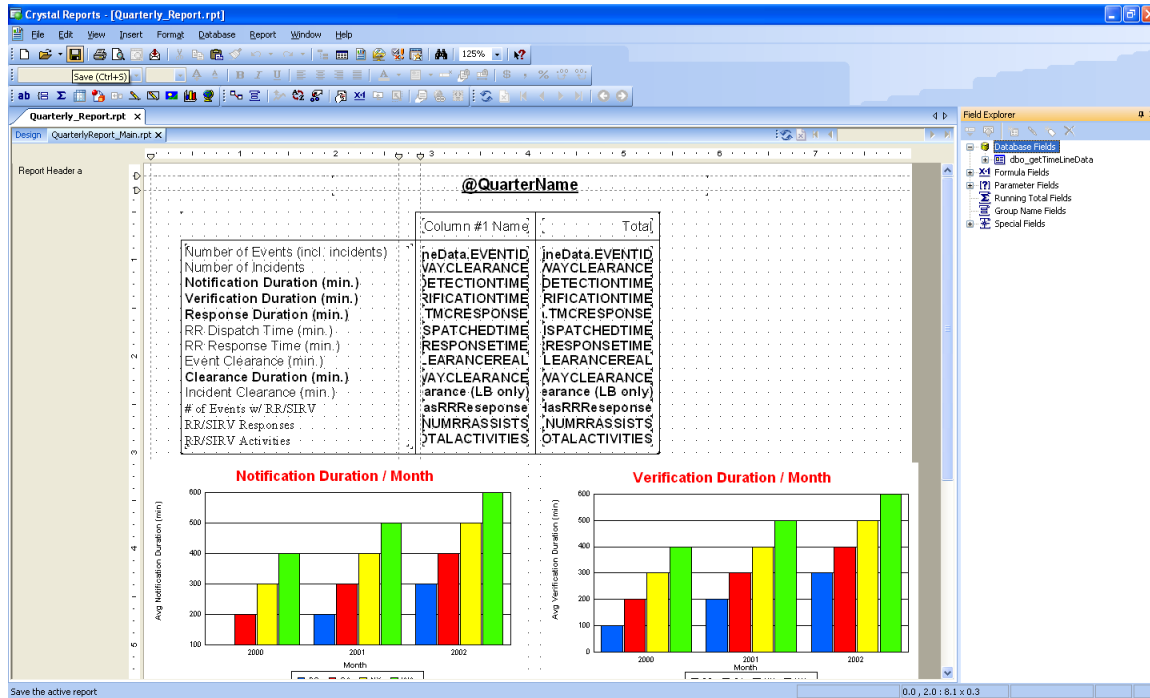
8. Click OK.



9. The current data source is now the database just selected.



10. Close this screen, and save the changes.



5.11 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. Section 3.9.4.32.

5.12 SPARR Installation and Configuration

5.12.1 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.

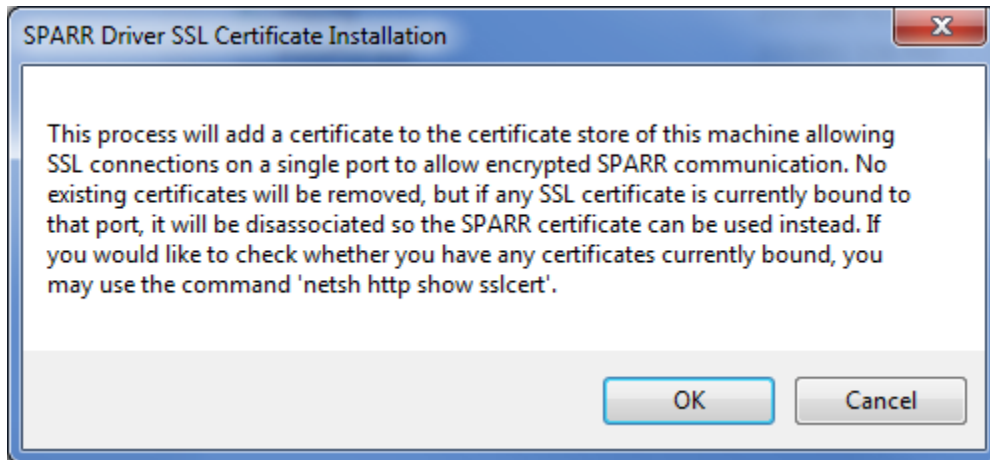
Usage Notes:

- 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.

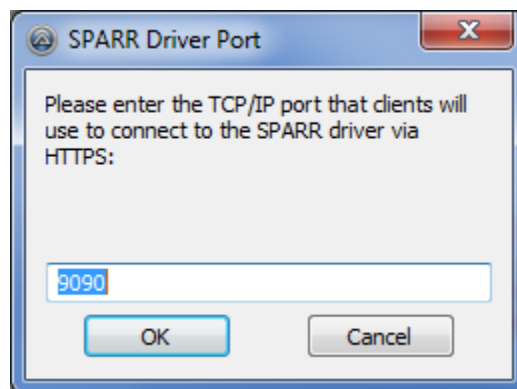
5.12.1.1 All Versions of Windows

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

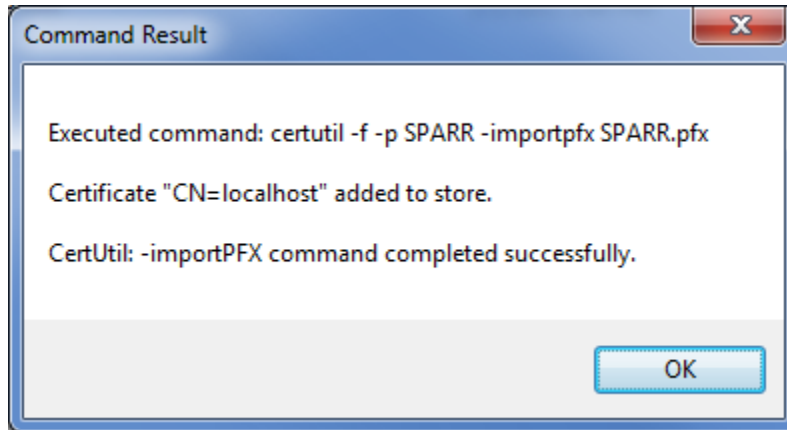
This dialog simply explains what will be done to the system. Press the OK button to continue.



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.



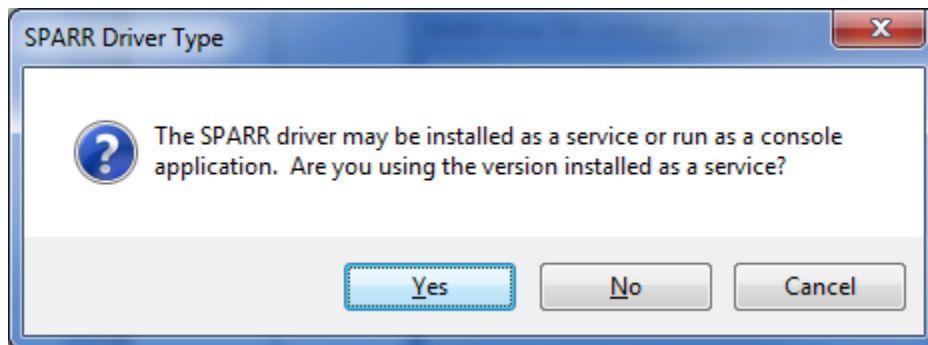
This dialog shows the import certificate command that was run and the result. Press the OK button to continue.



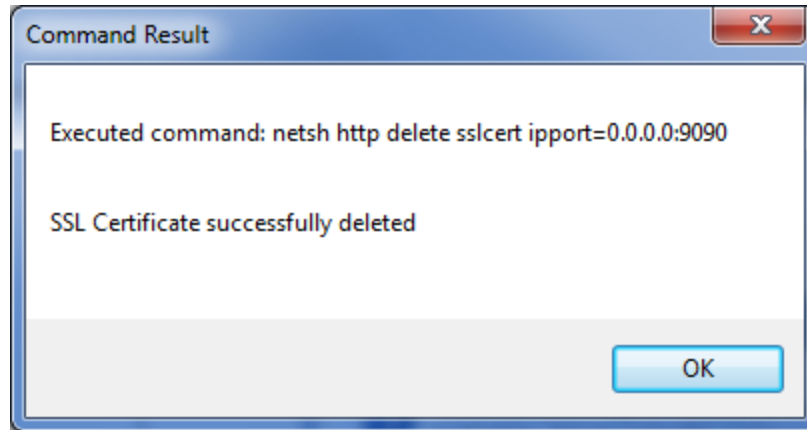
5.12.1.2 Newer Versions of Windows

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

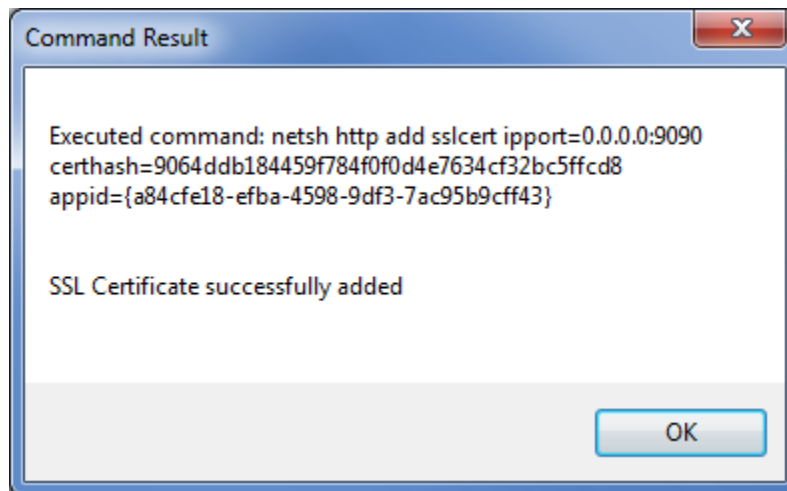
This dialog is asking how the SPARR driver will be used: as a Windows service, or as a console application. Press Yes to indicate the Windows service is being installed, as this is what is provided by the installer. The console app option is only used for testing purposes.



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.



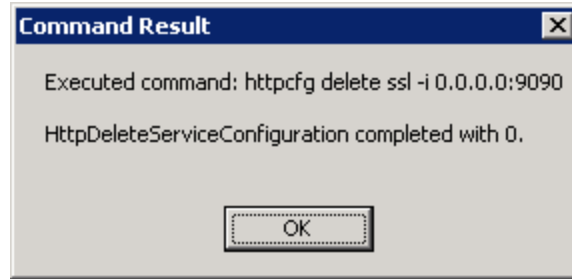
This dialog shows the add certificate command that was run and the result. Press the OK button to complete the SPARR SSL certificate installation on newer systems.



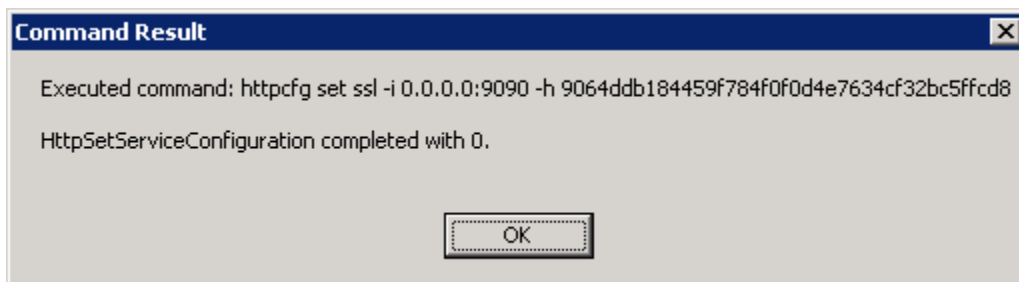
5.12.1.3 Older Versions of Windows

For Windows XP and Server 2003, the following dialogs will be presented

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 older systems.



5.12.1.4 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}
```

5.13 Video Wall Drivers

As of version 5.1.1, both Activu and 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

5.14 Operator Map Troubleshooting

- For each browser that wishes to run the Operator Map, please verify the following setting in Internet Explorer. Under Tools > Internet Options > Browsing History > Settings the “Check for newer versions of stored pages” should be set to “Every time I visit a webpage”
- If experiencing issues with the hotfix, try clearing the browser cache and reloading the application
- Please ensure .NET 4.5 is NOT installed on any of the application or database servers as well as the Operator workstations

5.15 Currently Supported version of IE

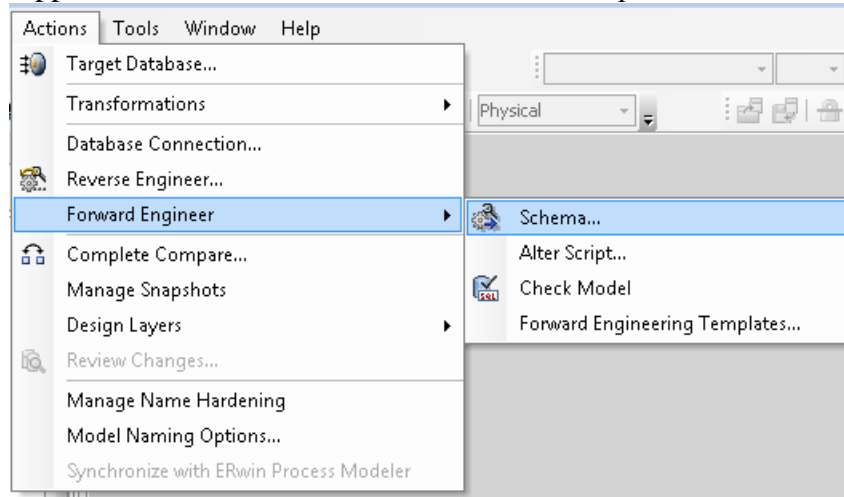
- Please ensure the Internet Explorer version is either IE 8 or IE 9. IE 10 is known to have issues that are currently being addressed
- Please ensure the 32 bit version of Internet Explorer is being run as opposed to the 64 bit version.
- Please ensure to run in Compatibility Mode if running in IE 9 to ensure consistent behavior.

5.16 Generation of Database Creation Scripts from ERWIN

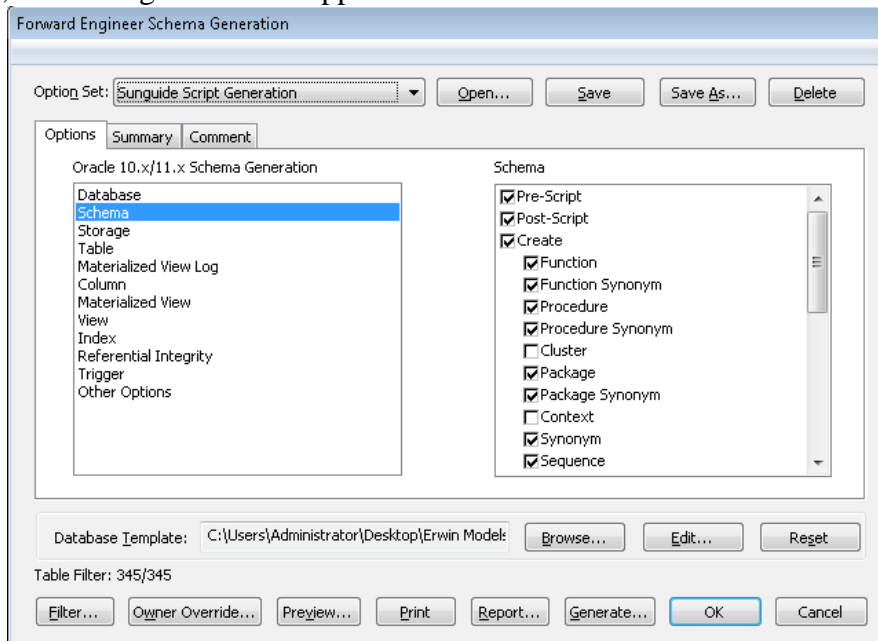
5.16.1 Generating Oracle Database Scripts

This section will cover how to generate the Oracle scripts to create a complete SunGuide database with the minimal data set needed to allow the SunGuide software to run without error. Unlike the SQL Server script generation, the Oracle scripts can be generated in both ERWIN 8 and ERWIN 9 without error.

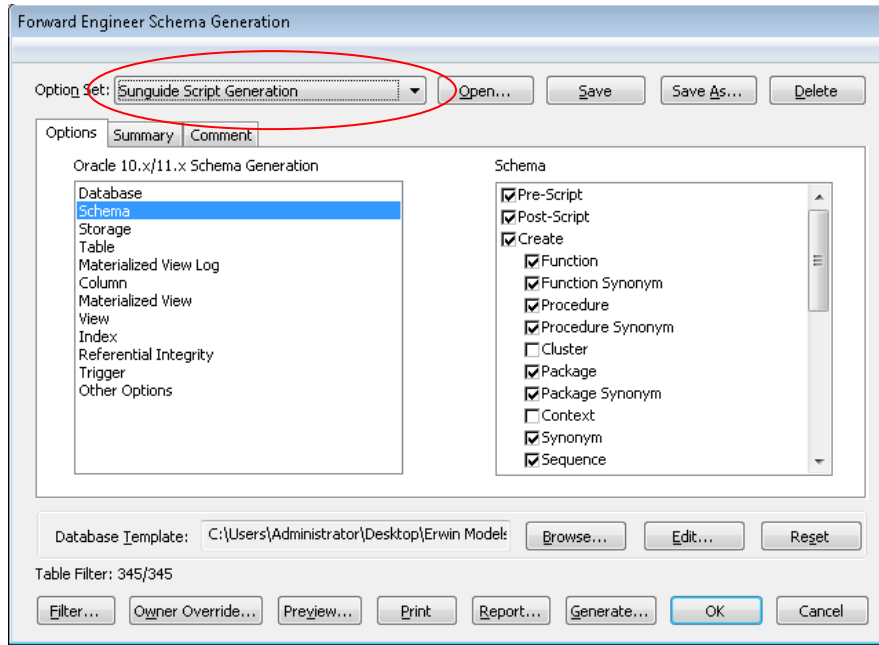
With ERWIN open and the “SunGuide_Model-ORACLE-PHYSICAL” model loaded, navigate to the “Actions” menu item and hover over the “Forward Engineer” item. After a short period a small menu will appear to the side, left-click the “Schema...” option.



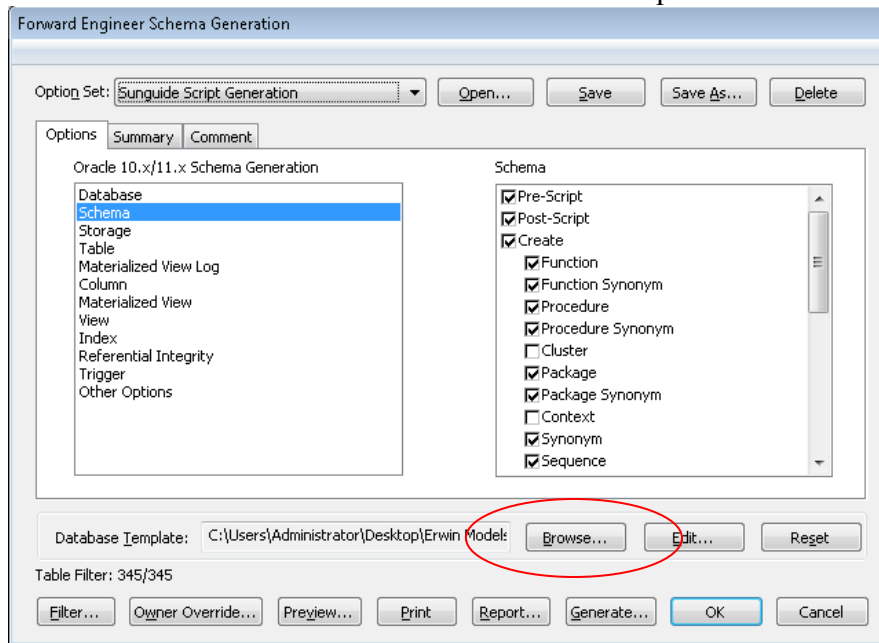
Once selected, The dialog below will appear.



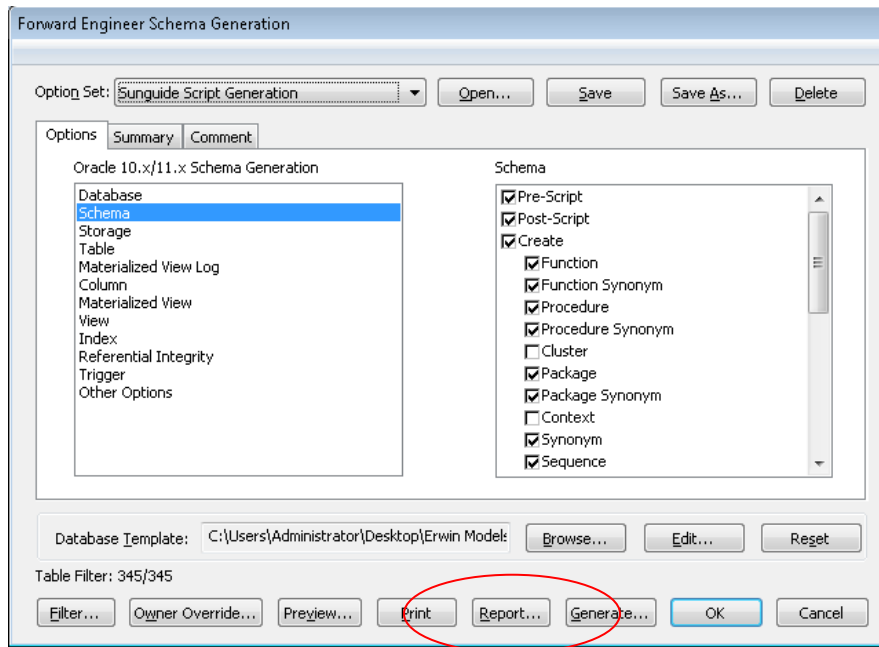
In the window, select “SunGuide Script Generation” in the “Option Set” drop down box.



Next, click on the “Browse...” button next to the “Database Template” label.



In the “Open File” dialog that appears, navigate to the “Oracle_Sunguide.fet” that was included with the installation media and click on the “Open” button. Once the “Select File” dialog closes click on the “Report...” button located at the bottom of the “Schema Generation” dialog.

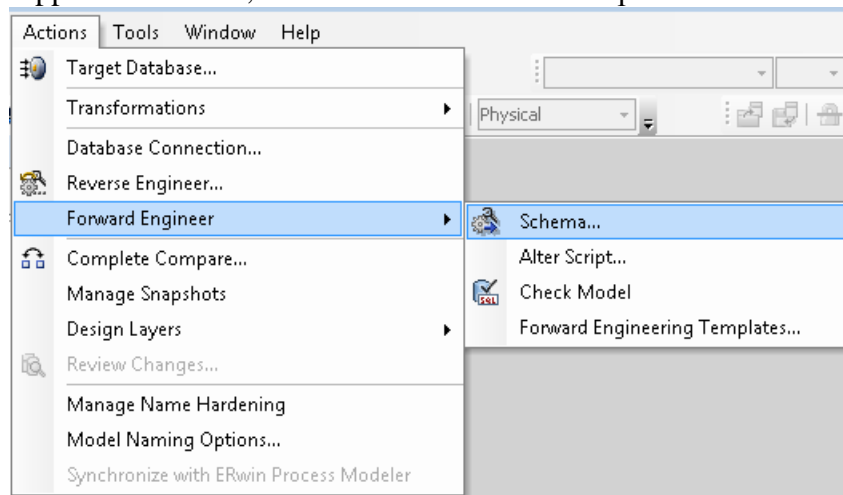


Once pressed, another “Save File” dialog will appear, give a name to the file to generate and navigate to the location where ERWIN should save the file to and click the “Save” button. A small dialog will appear showing that ERWIN is currently generating the script and will disappear once the script has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

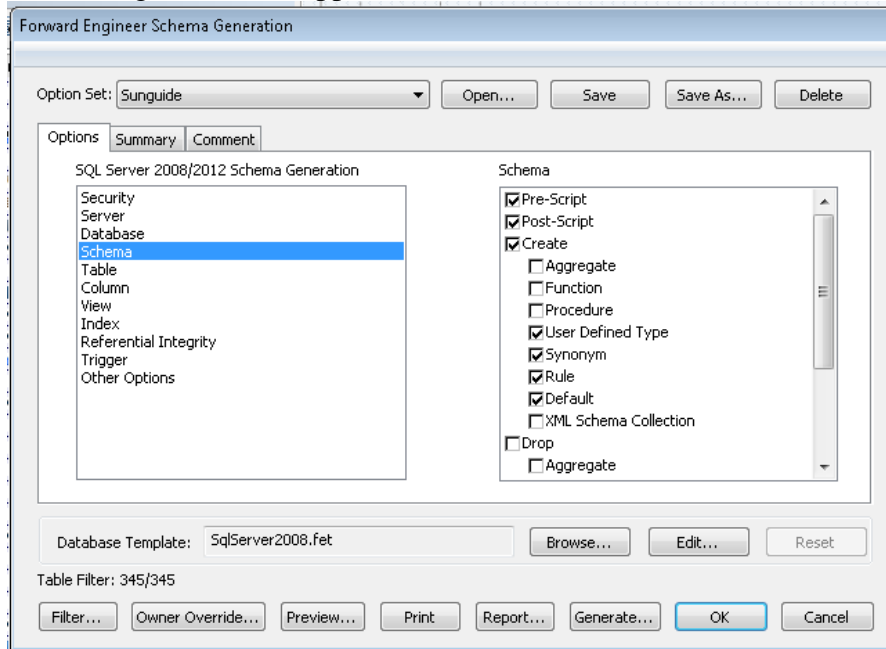
5.16.2 Generating SQL Server Database Scripts

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.

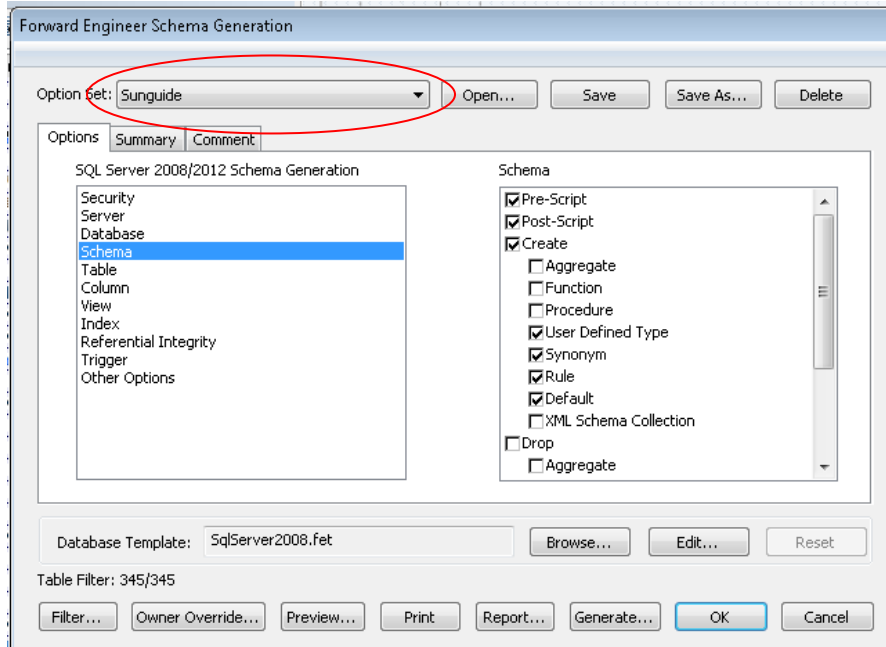
With ERWIN open and the “SunGuide_Model-SQL Server-PHYSICAL” model loaded, navigate to the “Actions” menu item and hover over the “Forward Engineer” item. After a short period a small menu will appear to the side, left-click the “Schema...” option.



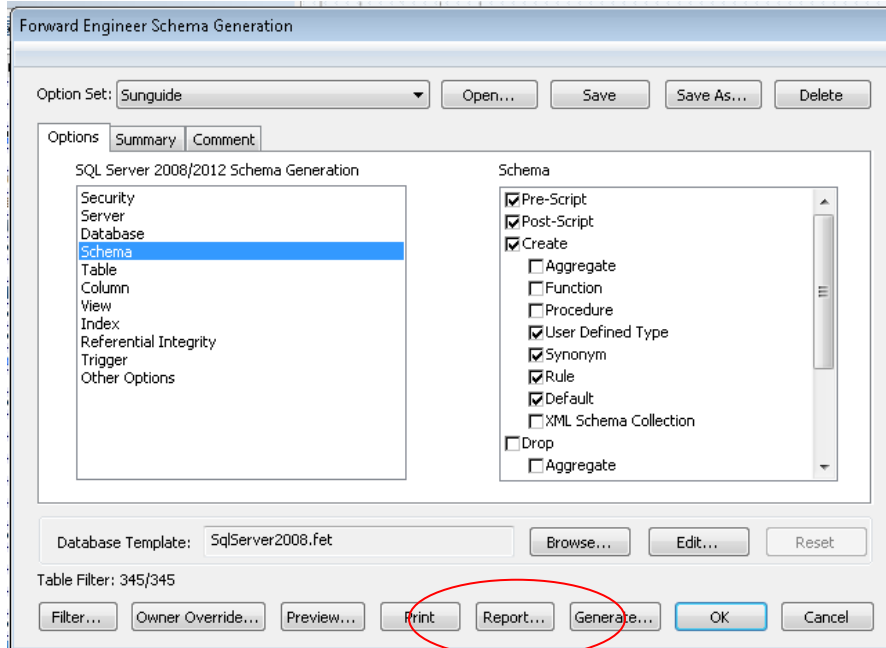
Once selected, the dialog below will appear.



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.