

SunGuide®:

Software Integration Case Procedures

SunGuide-SICP-7.1



Prepared for:

Florida Department of Transportation
Traffic Engineering and Operations Office
605 Suwannee Street, M.S. 90
Tallahassee, Florida 32399-0450
(850) 410-5600

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Table of Contents

	Page
List of Acronyms	vi
Revision History	v
1. Scope 1	
1.1 Document Identification	1
1.2 Project Overview	1
1.3 Related Documents	2
1.4 Contacts	2
2. Test Descriptions	3
2.1 Test Description Organization	3
2.1.1 Integration Cases.....	3
2.1.2 Test Case Organization	3
2.1.3 SunGuide System Installation.....	3
2.1.4 Equipment Needed	3
2.1.5 Hardware Preparation.....	3
2.1.6 Software Preparation.....	4
2.1.7 Record Keeping.....	5
2.2 IC-1: User Interface - Admin	6
2.2.1 Objectives.....	6
2.2.2 Requirements to be tested	6
2.2.3 Test Approach	6
2.2.4 Test Descriptions.....	6
2.3 IC-2: User Interface – C2C	9
2.3.1 Objectives.....	9
2.3.2 Requirements to be tested	9
2.3.3 Test Approach	9
2.3.4 Test Descriptions.....	9
2.4 IC-3: User Interface - Floodgates	13
2.4.1 Objectives.....	13
2.4.2 Requirements to be tested	13
2.4.3 Test Approach	13
2.4.4 Test Descriptions.....	13
2.5 IC-4: TAPCO Device Integration	18
2.5.1 Objectives.....	18
2.5.1 Requirements to be tested	18
2.5.2 Test Approach	18
2.5.3 Test Descriptions.....	18
2.6 IC-5: NTCIP Ramp Meter Device Integration	20
2.6.1 Objectives.....	20

2.6.2	Requirements to be tested	20
2.6.3	Test Approach	20
2.6.4	Test Descriptions.....	20
2.7	IC-6: Device Permissions	24
2.7.1	Objectives.....	24
2.7.2	Requirements to be tested	24
2.7.3	Test Approach	27
2.7.4	Test Descriptions.....	28
2.8	IC-7: Footprints (FP)	35
2.8.1	Objectives.....	35
2.8.2	Requirements to be Tested	35
2.8.3	Test Approach	35
2.8.4	Test Descriptions.....	35
2.8.5	Footprints to be tested	35
3.	Notes	62

List of Acronyms

AVL	Automatic Vehicle Location
BMS.....	Beacon Management Subsystem
C2C.....	Center to Center
CCTV	Closed Circuit Television
CF.....	Configuration File
DMS.....	Dynamic Message Sign
EH.....	Executive Handler
EM.....	Event Management
FAT.....	Factory Acceptance Test
FDOT	Florida Department of Transportation
FP.....	Footprints
GUI	Graphical User Interface
IC.....	Integration Case
ICD.....	Interface Control Document
IDS.....	Incident Detection Subsystem
IN.....	Installer
ITN.....	Invitation to Negotiate
ITS.....	Intelligent Transportation Systems
MLS.....	Managed Lanes Subsystem
NTCIP.....	Nation Transportation Communication for ITS Protocol
ONVIF.....	Open Network Video Interface Forum
RWIS.....	Roadside Weather Information Sensor
SAA.....	Software Administration Application
SAS.....	Scheduled Action Subsystem
SE.....	Small Enhancements
SICP	Software Integration Case Procedures
SIP.....	Software Integration Plan
SPARR.....	Smartphone Application for Road Rangers
SQL.....	Structured Query Language
SRS	Software Requirements Specification
SwRI	Southwest Research Institute
TCP.....	Transmission Control Protocol
TCS.....	Traffic Control Subsystem
TMC.....	Transportation Management Center
TPS.....	Truck Parking Subsystem
TSS.....	Traffic Sensor Subsystem
TVT.....	Travel Times Subsystem
WWD.....	Wrong Way Driving

REVISION HISTORY

Revision	Date	Changes
7.1 -Draft	September 25, 2017	Initial release for Release 7.1 functionality

1. Scope

1.1 Document Identification

This document serves as the Software Integration Plan (SIP) for Release 7.1 of the SunGuide® software. This version is implementing:

- User Interface
 - C2C
 - RMS
- Admin to User Interface
 - DA
 - HAR
 - IDS
 - RMS
 - RWIS
 - SB
 - Centers, Device Drivers, Manufacturers
- TAPCO WWD Device Integration
- NTCIP Ramp Meter Driver
- Device Permissions

The SICP contains the detail test procedures for conducting Factory Integration Testing (FAT).

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 starting in October 2003. 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:

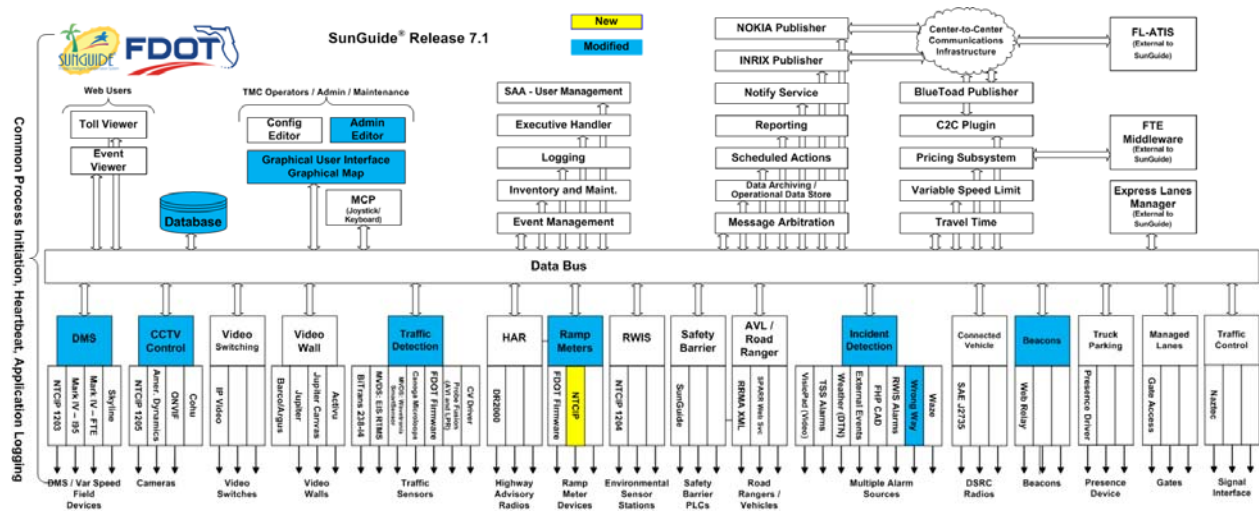


Figure 1-1 - High-Level Architectural Concept

The SunGuide development effort began in October 2003, seven major releases have been developed and this document is addressing an incremental update of seventh 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

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

- 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 Southwest Research Institute® (SwRI®) for BDQ69, July 1, 2010
- Letter of Authorization 017: Letter to SwRI for BDQ69, June 7, 2016.
- Letter of Authorization 017: Supplement #1: Letter to SwRI for BDQ69, April 20, 2017.
- SunGuide Project website: <http://www.sunguidesoftware.com>.

1.4 Contacts

The following are contact persons for the SunGuide software project:

- Fred Heery, ITS Section, Traffic Engineering and Operations Office Central Office, fred.heery@dot.state.fl.us, 850-410-5606
- Derek Vollmer, FDOT SunGuide Project Manager, derek.vollmer@dot.state.fl.us, 850-410-5615
- Mark Dunthorn, AECOM Project Manager, mark.dunthorn@dot.state.fl.us, 850-410-5623.
- Tucker Brown, SwRI Project Manager, tbrown@swri.com, 210-522-3035
- Roger Strain, SwRI Software Project Manager, rstrain@swri.com, 210-522-6295

2. Test Descriptions

The requirements contained in the following sections were extracted from the Software Requirements Specification (SRS), identifier: SunGuide-SRS-7.0.

2.1 Test Description Organization.

2.1.1 Integration Cases

The following integration cases have been created for the purposes of acceptance testing. The test cases are organized by the integration cases. Additionally, each test case is given both a descriptive name and test case number. The test case number has a prefix which denotes which SunGuide subsystem is being tested. The integration cases and test case prefixes are listed below:

- IC-1: User Interface – Admin
- IC-2: User Interface – C2C
- IC-3: User Interface – Floodgates
- IC-4: TAPCO WWD Device Integration
- IC-5: NTCIP Ramp Meter Driver
- IC-6: Device Permissions
- IC-7: Footprints

2.1.2 Test Case Organization

Each test case consists of

- A statement describing the test case
- The requirements to be tested by the test case
- Preconditions which must be satisfied prior to running the test
- The test procedure itself in table format with space for marking pass / fail

2.1.3 SunGuide System Installation

The test cases are intended to be performed and demonstrated on a SunGuide system at the SwRI development laboratory. This section describes the minimal configuration that is utilized for these integration cases. Individual *Test Procedures* which have additional equipment requirements or conditions which must be met before running the test procedure have been noted within the description of the *Test Procedure*.

2.1.4 Equipment Needed

The tests described within this document are written with the assumption that the described testing will occur in SwRI ITS testing facilities. The following sections further describe the hardware and software that are necessary for the testing.

2.1.5 Hardware Preparation

These test procedures are designed to be generic for any SunGuide testing activity. The tests that will be performed at SwRI during the Factory Acceptance Test (FAT) will utilize the Operator Map, XML Test Client, hardware devices such as cameras and DMSs, and various simulators to feed data into SunGuide. The figure below provides a high-level overview of the software/hardware that will be used to perform the Release 7.1 testing. All testing will be completed against a SunGuide server with a SQL Server database and a SunGuide server with an Oracle database. There will also be a SunGuide 7.0 application available for comparison to older

dialogs during the GUI testing portion of the testing. Note that each integration case uses the same hardware setup so this diagram is not duplicated at the beginning of each test case.

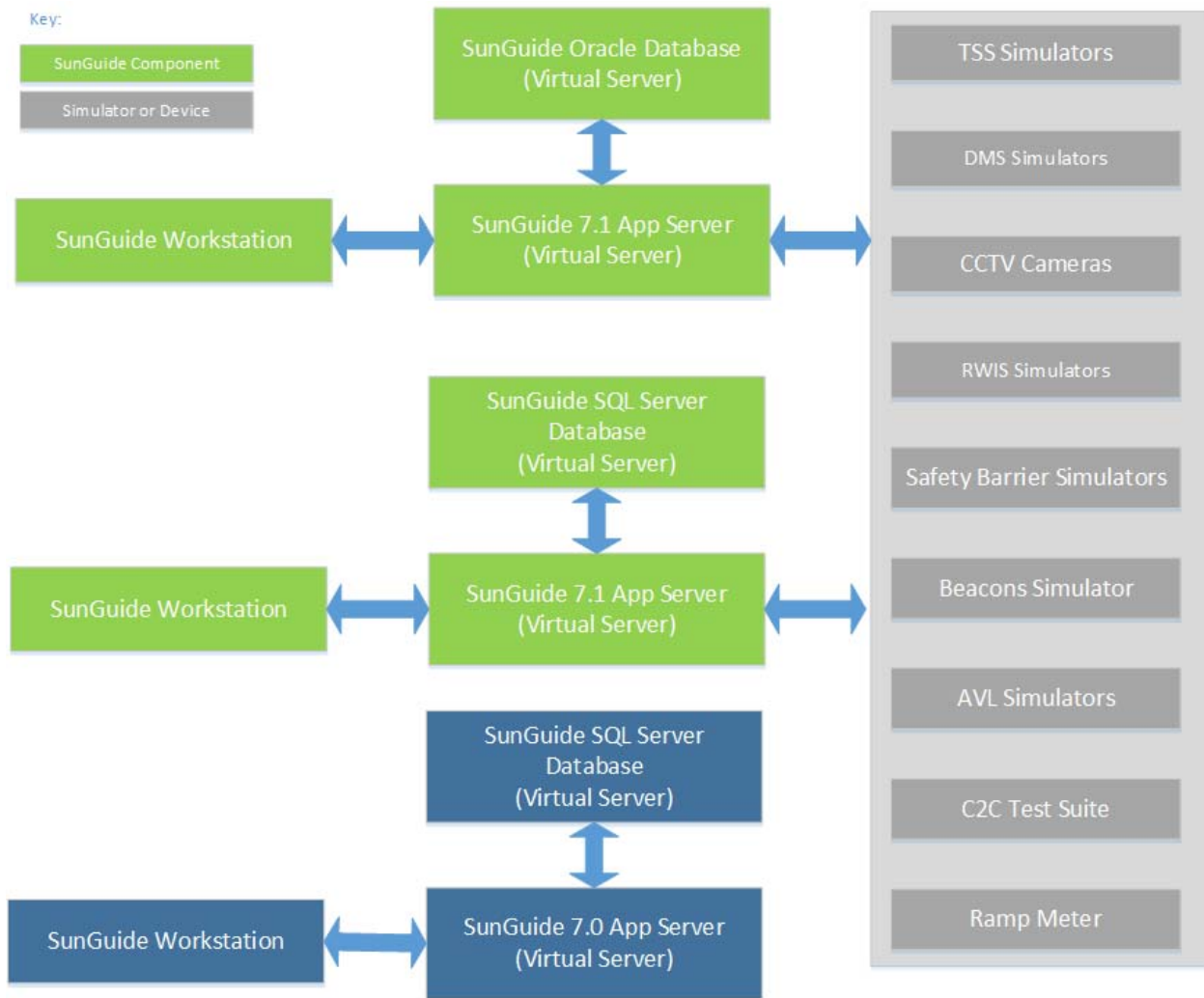


Figure 2-1. Hardware/Software Testing Environment

2.1.6 Software Preparation

Software needs to be installed as shown in the following table. The SunGuide software installation makes use of two configuration files, one for the non-Internet Information Service (IIS) applications, and one for the IIS applications¹.

¹ This is due to the inability of the IIS applications (administrative subsystem) to access files outside the IIS directory structure.

Software Installation	SunGuide Application Servers	SunGuide Database Servers	SunGuide Workstation A	SunGuide Workstation B	SunGuide Workstation C
Minimum of Windows 2008 Server with current service packs and hot fixes	✓	✓			
IIS	✓				
Oracle RDBMS		✓			
SQL Server		✓			
SunGuide software	✓				
Windows 7			✓	✓	✓
ODP.NET	✓	✓	✓	✓	✓
SQL Developer		✓	✓	✓	✓
Status Logger (SL) Viewer	✓		✓	✓	✓
Executive Handler Viewer	✓		✓	✓	✓
TSS Simulator	✓				
DMS Simulator	✓				
RWIS Simulator	✓				
Safety Barrier Simulator	✓				
C2C Test Suite	✓				
Alert Simulator	✓				
CCTV Cameras	✓				

2.1.7 Record Keeping

Each test step within this test procedure includes a space to note whether a specific test step passed or failed. This shall be maintained in both hardcopy and softcopy form. The hardcopy will be signed by witnesses from FDOT and SwRI respectively. Witnesses will note the start time and stop time for each test.

2.2 IC-1: User Interface - Admin

2.2.1 Objectives

The objective of this integration case is to test the dialogs in the User Interface that have been changed from IE to WPF in this release. This will be a combination of configurations not previously in the Operator Map and dialogs that previously existed that have simply been redesigned.

2.2.2 Requirements to be tested

Since the dialogs that were redesigned did not change the functionality, there are no requirements to test.

2.2.3 Test Approach

The following is a brief description of the test procedures that will be used to test this integration case:

- For each dialog that was redesigned, the dialogs will be tested to exercise all of its functionality to ensure nothing was broken during the conversion. The 7.0 system and the design reviews slides/comment will also be available for review during this time.

2.2.4 Test Descriptions

Subsystems Required

- DA
- HAR
- IDS
- SB
- TSS
- RWIS
- TVT

Devices Required

The following devices will be used during the test:

- TSS Simulator
- RWIS Simulator

Configuration Required

The following will be setup/configured before the test is performed:

- Simulators and devices should be configured to provide data

Test Procedure

Test Start Date / Time	
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Perform the following steps from a workstation:

	Dialog Name	Test Steps	Expected Result	P	F
1	Data Archive	<p>Data Archive properties have been moved to the config file.</p> <p>View the dataArchive section of the SunGuide config file for the archive location and frequency for TSS, TravelLink, and Rwis.</p> <p>View the data files and show the timestamps are current for new data being entered.</p> <p>From the config file, change the locations for the data files. Restart Data Archive to pick up the changes. View the data files in the new location and show the timestamps are current for new data being entered.</p>	<p>Data is being archived based on the config file settings.</p>	<input type="checkbox"/>	<input type="checkbox"/>
2	HAR Config	<p>Add a HAR using the Place on Map feature.</p> <p>Use the Find on Map to locate the HAR.</p> <p>Ensure the new HAR is available for use in the HAR Status Dialog.</p> <p>Edit a HAR.</p> <p>Remove a HAR.</p>	<p>HARs can be added, modified, and deleted.</p> <p>Added items are instantly available for use.</p>	<input type="checkbox"/>	<input type="checkbox"/>
3	IDS Citilog Config	<p>Add a Citilog Camera associating it to a CCTV camera.</p> <p>Use the Find on Map to locate the Citilog Camera.</p> <p>Ensure the new Citilog Camera is available for use in the VisioPad Detection Status Dialog.</p> <p>Edit a Citilog Camera.</p> <p>Remove a Citilog Camera.</p>	<p>Citilog Cameras can be added, modified, and deleted.</p> <p>Added items are instantly available for use.</p>	<input type="checkbox"/>	<input type="checkbox"/>

Software Integration Case Procedures

	Dialog Name	Test Steps	Expected Result	P	F
4	Safety Barrier Config	<p>Add a Safety Barrier using the Place on map feature.</p> <p>Use the Find on Map to locate the Safety Barrier.</p> <p>Ensure the new Safety Barrier is available for use in the Safety Barrier Status dialog.</p> <p>Edit a Safety Barrier.</p> <p>Remove a Safety Barrier.</p>	<p>Safety Barriers can be added, modified, and deleted.</p> <p>Added items are instantly available for use.</p>	<input type="checkbox"/>	<input type="checkbox"/>
5	Manufacturers Config	<p>Add a Manufacturer.</p> <p>Ensure the new Manufacturer is available for use in the device configuration Dialog.</p> <p>Remove a Manufacturer.</p>	<p>Manufacturers can be added, modified, and deleted.</p> <p>Added items are instantly available for use.</p>	<input type="checkbox"/>	<input type="checkbox"/>

Test End Date & Time	
FDOT Witness	
SwRI Witness	

2.3 IC-2: User Interface – C2C

2.3.1 Objectives

The objective of this integration case is to test the dialogs in the User Interface that have been changed from IE to WPF in this release. This will be a combination of configurations not previously in the Operator Map and dialogs that previously existed that have simply been redesigned.

2.3.2 Requirements to be tested

Since the dialogs that were redesigned did not change the functionality, there are no requirements to test.

2.3.3 Test Approach

The following is a brief description of the test procedures that will be used to test this integration case:

- For each dialog that was redesigned, the dialogs will be tested to exercise all of its functionality to ensure nothing was broken during the conversion. The 7.0 system and the design reviews slides/comment will also be available for review during this time.

2.3.4 Test Descriptions

The following sections detail the tests to be performed.

Prerequisite Conditions

The following will be setup/configured before the test is performed:

- C2C connection with the another SunGuide installation
 - Cameras
 - A live camera should be configured in both systems
 - Events
 - HAR with an operational simulator
 - RWIS with an operational simulator
 - TSS with an operational simulator
 - DMS with an operational simulator
- Command Receiver on a remote system should be set up in the local configuration file.
- Option for Operator Approval of Remote Messages (Center-to-Center >> Operator Approval of Remote Messages) should be set to Off.

Test Procedure

Test Start Date / Time	
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Perform the following steps from a workstation:

	Requirement Number	Test Steps	Expected Result	P	F
1	Camera Control	<p>Open the C2C Camera Control Dialog.</p> <p>Select a camera and choose Find on Map. Ensure the correct camera is highlighted on the Map.</p> <p>Enter a username and password that would be valid on the remote system.</p> <p>Cycle through each option under Pan Left noting the behavior of the camera on the remote system.</p> <p>Cycle through each option under Pan Right noting the behavior of the camera on the remote system.</p> <p>Cycle through each option under Tilt Up noting the behavior of the camera on the remote system.</p> <p>Cycle through each option under Tilt Down noting the behavior of the camera on the remote system.</p> <p>Cycle through each option under Zoom Wide noting the behavior of the camera on the remote system.</p> <p>Cycle through each option under Zoom Narrow noting the behavior of the camera on the remote system.</p> <p>Change to an active preset and note the behavior of the camera on the remote system.</p> <p>Release the lock on the remote camera.</p>	<p>A camera can be located on a map.</p> <p>A remote camera can be PTZ'ed and will move to presets.</p> <p>Cameras can be locked and unlocked.</p>	<input type="checkbox"/>	<input type="checkbox"/>

2	DMS Control	<p>*This dialog was not modified however the internal objects were changed so it is being re-tested at this point*</p> <p>Open the C2C DMS Status dialog.</p> <p>Enter valid credentials and send a message to the remote DMS. Note the behavior of the remote DMS.</p> <p>Remove the message from the remote DMS. Note the behavior of the remote DMS.</p> <p>Using the remote system, modify the DMS message. Note the status of the C2C DMS in the local system.</p>	<p>DMS messages can be added and removed.</p> <p>Status of the C2C DMS reflects the status of the DMS in the remote system.</p>	<input type="checkbox"/>	<input type="checkbox"/>
3	Event List	<p>Open the C2C Event List dialog. View the list of current events and compare to the list of the events in the remote system.</p> <p>Modify a field of the event in the remote system. Verify the change in the local system.</p>	<p>Data for the events are up to date with the current data on the remote system.</p>	<input type="checkbox"/>	<input type="checkbox"/>
4	HAR Status	<p>Open the C2C HAR Dialog.</p> <p>Select a HAR and choose Find on Map. Ensure the correct HAR is highlighted on the Map.</p> <p>Enter a username and password that would be valid on the remote system.</p> <p>Send a message to a remote HAR and note the behavior of the HAR on the remote system.</p> <p>Remove a message on the remote HAR and note the behavior of the HAR on the remote system.</p> <p>Modify a message on the remote system. Note the status view of the C2C HAR on the local system.</p>	<p>HAR messages can be added and removed.</p> <p>Status of the C2C HAR reflects the status of the HAR in the remote system.</p>	<input type="checkbox"/>	<input type="checkbox"/>
5	RWIS Status	<p>Open the C2C RWIS dialog. Select a station and select the Find On Map button. Ensure the proper station is highlighted. Compare the data on the remote station to the remote system. Modify the data on the remote system and verify the data is changed in the local system.</p>	<p>Stations can be found on the Operator map.</p> <p>Data for the station is up to date with the current data on the remote system.</p>	<input type="checkbox"/>	<input type="checkbox"/>

Software Integration Case Procedures

6	Traffic Conditions	<p>Open the C2C Traffic Conditions dialog. Select a link and select the Find On Map button. Ensure the proper link is highlighted. Compare the data of the link to the remote system. Modify the data on the remote system and verify the data is changed in the local system.</p>	<p>Links can be found on the Operator map.</p> <p>Data for the links is up to date with the current data on the remote system.</p>	<input type="checkbox"/>	<input type="checkbox"/>
7	Remote Message Approval	<p>Set the Remote Messages to ON.</p> <p>From the remote system, attempt to post a DMS message. Approve the message for posting.</p> <p>Send another DMS message from the remote. Do not approve the message.</p> <p>Set the Remote Messages to OFF.</p> <p>From the remote system, attempt to post a DMS message. Note the state of the DMS.</p>	<p>If Remote Message Approval is ON, messages must be approved prior to posting on the DMS.</p> <p>If Remote Message Approval is OFF, messages do not require approval and will be posted to the DMS.</p>	<input type="checkbox"/>	<input type="checkbox"/>

Test End Date & Time	
FDOT Witness	
SwRI Witness	

2.4 IC-3: User Interface - Floodgates

2.4.1 Objectives

The objective of this integration case is to test the requirements associated with the GUI components related to C2C Floodgates. This includes the configuration dialog for stored floodgates and the dialog for management of active floodgates in the system.

2.4.2 Requirements to be tested

Since the dialogs that were redesigned did not change the functionality, there are no requirements to test.

2.4.3 Test Approach

The following is a brief description of the test procedures that will be used to test this integration case:

- A Provider and Command Receiver dedicated to the C2C Test Server set up to act as FL-ATIS. Saved floodgates will be added, modified, and deleted. Floodgates will be published and removed. A previous version of the software running on a separate server will be utilized to ensure that proper compatibility exists with prior versions.

2.4.4 Test Descriptions

The following sections detail the tests to be performed.

Prerequisite Conditions

The following will be setup/configured before the test is performed:

- Simulated FL-ATIS environment:
 - On a single server, ensure a dedicated Provider and Command Receiver are installed and the C2C Test Server is connected to each.
 - Install a new instance of the C2C components: **Provider and Command Receiver**.
 - Use **TestSuiteC2C** for the directory.
 - Choose port **8046** for the Command Receiver port.
 - Start the C2C Test Server
 - Load the data set (any)
 - Configure and connect to the Status Connection (Provider)
 - Configure and connect to the Command Server (Command Receiver)
 - Ensure '(Connected)' appears next to each in the status bar.
- Ensure C2C Subscriber configuration
 - Ensure C2cSubscriber/cmdReceivers/flatis is pointed at the Simulated FL-ATIS component. centerId=**Statewide**, webService=**TestSuiteC2C/CommandReceiver**
 - Ensure configured C2cSubscriber/dataExtractor is configured to receive data from the Simulated FL-ATIS Provider. (check its C2C component chain, e.g. Extractor -> Collector -> Provider)

Test Procedure

Test Start Date / Time	
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Perform the following steps from a workstation:

	Requirement Number	Test Steps	Expected Result	P	F
1	Manage Floodgates	Open the C2C Floodgate Management dialog by right clicking the map and choosing Configuration -> Center-to-Center -> Floodgate Message Library.	The dialog opens to allow for management of recorded floodgates.	<input type="checkbox"/>	<input type="checkbox"/>
2	Add Recorded Floodgate Folder	Select a target folder. Select Add Folder from the ribbon.	A folder is added with the name "New Folder" * A number may be appended to the folder name in order to make it a unique name.	<input type="checkbox"/>	<input type="checkbox"/>
3	Rename Recorded Floodgate Folder	Select a folder. Alter the name of the folder by typing in the textbox that contains the existing name. Press enter or tab to leave the cell.	The folder is renamed in the system.	<input type="checkbox"/>	<input type="checkbox"/>
4	Move Recorded Floodgate Folder	Click and drag an existing folder to another folder (not its own parent)	The folder is relocated to the desired destination folder.	<input type="checkbox"/>	<input type="checkbox"/>
5	Delete Recorded Floodgate Folder	Select a target folder. Click Delete Folder.	The folder is deleted.	<input type="checkbox"/>	<input type="checkbox"/>
6	Add Recorded Floodgate	Select a target folder. Click Add Floodgate	A floodgate is added with the name "New Floodgate" * A number may be appended to the floodgate name in order to make it a unique name.	<input type="checkbox"/>	<input type="checkbox"/>

7	<p>Modify Recorded Floodgate</p>	<p>Select a target recorded floodgate entry. This may be the newly created empty entry.</p> <p>Select the language for which this is targeted.</p> <p>Configure the entry by doing one or both of the following:</p> <ul style="list-style-type: none"> • Add or modify the recorded message and message text by clicking the Record button and typing the description of the recording in the Message Text box. • Add or modify the banner text by typing in the Banner Text box. <p>Click Save.</p>	<p>The desired data is saved in the system for later use.</p>	<input type="checkbox"/>	<input type="checkbox"/>
8	<p>Manage Active Floodgates</p>	<p>Open the C2C Floodgate Status dialog by right clicking the map and choosing Center-to-Center -> Floodgate Messages.</p>	<p>The dialog opens to allow for management of active Floodgate messages.</p>	<input type="checkbox"/>	<input type="checkbox"/>

9	Add Active Floodgates	<p>Click New button.</p> <p>Select the Floodgate Type, Language and Number/Slot.</p> <p>Select Add Floodgate to add it to the list of Target Floodgates</p> <p>Select the desired optional Floodgate Details.</p> <p>Optionally, select the associated event.</p> <p>Optionally add a comment.</p> <p>Optionally select an existing pre-configured floodgate message from the Message Libraries tree.</p> <p>Configure one or both of the following:</p> <ul style="list-style-type: none"> • Add or modify the recorded message and message text by clicking the Record button and typing the description of the recording in the Message Text box. • Add or modify the banner text by typing in the Banner Text box. <p>Click Send Floodgates.</p>	<p>The desired floodgate information is sent to the system.</p> <p>Each of the target floodgates now has an active floodgate with the specified details and message.</p> <p>The status window shows a Flag for a floodgate with banner text and a speaker icon for a floodgate with audio for each existing floodgate in the appropriate language and slot.</p>	<input type="checkbox"/>	<input type="checkbox"/>
10	Modify Active Floodgates	<p>Select an existing Floodgate by selecting the flag and clicking the Modify ribbon button.</p> <p>Note the selected Floodgate is in the list of Target Floodgates and all of the existing data appears in the editable areas.</p> <p>Make any change to any of the fields.</p> <p>Click Send Floodgates.</p> <p>If not already selected, select the target floodgate.</p>	<p>The desired floodgate information is sent to the system.</p> <p>The desired floodgate has been updated in the details pane of the status dialog.</p>	<input type="checkbox"/>	<input type="checkbox"/>

Software Integration Case Procedures

11	Store Active Floodgate to Library	<p>Select an existing Floodgate.</p> <p>Click Store Floodgate.</p> <p>Select a desired target (parent) folder.</p> <p>Type a name for the desired entry.</p> <p>Click Store.</p> <p>Review the Floodgate Message Library and note that the floodgate has been stored and is ready for use.</p>	<p>The selected floodgate's information (Language, Message Audio/Text, and Banner Text) have been stored in the Message Library.</p>	<input type="checkbox"/>	<input type="checkbox"/>
12	Delete/ Terminate Active Floodgates	<p>Select an existing Floodgate.</p> <p>Click Terminate.</p>	<p>The desired floodgate information is no longer in the system.</p>	<input type="checkbox"/>	<input type="checkbox"/>

Test End Date & Time	
FDOT Witness	
SwRI Witness	

2.5 IC-4: TAPCO Device Integration

2.5.1 Objectives

The objective of this integration case is to test the integration of the TAPCO Wrong Way Driving Detector and view the alerts within SunGuide.

2.5.1 Requirements to be tested

There are no formal requirements for this test.

2.5.2 Test Approach

The following is a brief description of the test procedures that will be used to test this integration case:

A device will be configured within SunGuide and an alarm will be generated to show the system response. The database will be examined for verification.

2.5.3 Test Descriptions

The following sections detail the tests to be performed.

Prerequisite Conditions

The following will be setup/configured before the test is performed:

- IDS and the IDS Wrong Way Driver operational.
- Ensure the FDOT TAPCO device is not currently configured in the system.

Test Procedure

Test Start Date / Time	
-------------------------------	--

Perform the following steps from a workstation:

	Requirement Number	Test Steps	Expected Result	P	F
1	Device Configuration	Using the information for the FDOT TAPCO device, configure a new WWD device. Note the direction of travel set for the detector. Assign cameras to the detector that have video feeds available. View the device status and note the poll timing. Wait for the device to get a successful status update.	A new WWD Detector is configured.	<input type="checkbox"/>	<input type="checkbox"/>

Software Integration Case Procedures

2	Alert Creation	<p>Trigger an alert for the configured WWD Detector.</p> <p>In SunGuide, note the pop up alert dialog for the WWD alert.</p> <p>View the associated images.</p> <p>Note the Video on Desktop cameras in the dialog below the alert.</p> <p>Note the direction of the travel for the image.</p> <p>Create an event from the alert.</p>	<p>An alert is created with images and direction of travel.</p> <p>The alert can be handled as a standard WWD alert.</p>	<input type="checkbox"/>	<input type="checkbox"/>
3	Database	<p>View the alert incident table in the database and note the alert from above.</p> <p>Note the storage of the alert but NOT the images.</p>	<p>The alert is stored in the database however the camera images are NOT stored.</p>	<input type="checkbox"/>	<input type="checkbox"/>

Test End Date & Time	
FDOT Witness	
SwRI Witness	

2.6 IC-5: NTCIP Ramp Meter Device Integration

2.6.1 Objectives

The objective of this integration case is to test the integration of the NTCIP compliant Ramp Meter device within SunGuide.

2.6.2 Requirements to be tested

There are no formal requirements for this test.

2.6.3 Test Approach

The following is a brief description of the test procedures that will be used to test this integration case:

A device will be configured within SunGuide and rates will be calculated and sent to the device.

2.6.4 Test Descriptions

The following sections detail the tests to be performed.

Prerequisite Conditions

The following will be setup/configured before the test is performed:

- Ramp Meter Subsystem and both drivers should be operational
- Ensure the NTCIP Controller is not currently configured in the system.
- TSS simulators should NOT be running.

These are configurations to be used in the testing:

To configure RMC:

* Add new RMC to the list:

- Driver is NTCIP driver
- Protocol is NTCIPv2
- Poll cycle is 20
- Associated detector is TSS detector from above
- IP is 129.162.108.242
- Port is 161
- Address is 1
- Community name is "public"
- Fuzzy lanes

> Add at least one lane association for each lane type: Mainline, Ramp Queue, Upstream, Downstream

- Fuzzy Parameters
 - > Make sure the "Metering Rate" parameter has a low limit of 0 and high limit of 25
- General Parameters
 - > Communication refresh to 30
- Ramp Lane Parameters
 - > Lane 1, Metered Lane Mode = "Enabled"
 - > Lane 1, Minimum Metering Time = 1
 - > Lane 1, Startup Green Time = 30
 - > Lane 1, Minimum Green Time = 1
 - > Lane 1, Maximum Green Time = 3
 - > Lane 1, Shutdown Normal Metering Rate = 1200
 - > Lane 1, Post-Metering Green Time = 60

Test Procedure

Test Start Date / Time	
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Perform the following steps from a workstation:

	Requirement Number	Test Steps	Expected Result	P	F
1	TSS Configuration	<p>Open the TSS Detector configuration dialog.</p> <p>Configure a new TSS Detector to use the NTCIP protocol.</p> <ul style="list-style-type: none"> - Driver should RTMS - Protocol should be NTCIPv2 - IP is 129.162.108.242 - Port is 161 - Address is 1 - Community name is "public" <p>Open the TSS Link configuration dialog.</p> <p>Configure at least one link with lanes.</p> <p>Start TSS Simulators.</p>	A TSS Detector can be configured to use the NTCIP TSS protocol.	<input type="checkbox"/>	<input type="checkbox"/>
2	RMC Configuration	<p>Create and configure a new ramp meter controller associated with the TSS detector from step 1.</p> <p>Review the defaults and make some changes to the metering lanes, fuzzy lanes, fuzzy rules, fuzzy parameters, and ramp meter firmware parameters.</p> <p>Save the controller and configuration.</p> <p>Verify the controller was added successfully</p>	<p>A ramp meter controller can be created and associated with a TSS detector.</p> <p>The user can configure the metering lanes, fuzzy lanes, fuzzy rules, and ramp meter firmware parameters for the controller.</p>	<input type="checkbox"/>	<input type="checkbox"/>
3	Set Status	<p>Open the ramp meter status dialog.</p> <p>Using the configured controller, set the status of the controller to Active.</p>	The status of the ramp meter controller can be manually set.	<input type="checkbox"/>	<input type="checkbox"/>

4	Polling Status	<p>Set the NTCIP Ramp meter driver to Detail logging mode.</p> <p>From the controller status dialog, verify the device is being polled and note the amount of time between polls.</p> <p>Perform a manual poll of the device and monitor the Status Logger for the poll messages.</p> <p>Set the NTCIP Ramp Meter driver to Info logging mode.</p>	<p>The device is being periodically polled for status.</p> <p>A manual poll can be performed on the device.</p>	<input type="checkbox"/>	<input type="checkbox"/>
5	Modifying Parameters	<p>Open the ramp meter configuration dialog and modify one of the firmware parameters for the configured controller (ex. First mainline occupancy level in local algorithm).</p> <p>Change the value (ex. 25) and save.</p> <p>Verify the parameter was saved and downloaded to the controller.</p>	<p>Parameters may be modified in real time.</p> <p>The last download time shows an updated timestamp.</p>	<input type="checkbox"/>	<input type="checkbox"/>
6	Download Parameters	<p>Select the configured controller from the ramp meter status dialog.</p> <p>Manually download the parameters to the controller.</p>	<p>Parameters can be manually downloaded to the controller.</p> <p>The last download time shows an updated timestamp.</p>	<input type="checkbox"/>	<input type="checkbox"/>
7	Fuzzy Metering	<p>Select the configured ramp meter device and put the device in Fuzzy Metering Mode.</p>	<p>The device has entered Fuzzy Metering mode.</p>	<input type="checkbox"/>	<input type="checkbox"/>
8	Manual Metering	<p>Select the configured ramp meter controller and set a manual rate range.</p> <p>Send a metering rate to the controller.</p>	<p>The rates being sent to the controller are adjusted to fit within the specified metering range.</p> <p>The controller metering mode changes to Manual and begins metering at the specified rate.</p>	<input type="checkbox"/>	<input type="checkbox"/>
9	Local Metering	<p>Select the configured ramp meter device and put the device in Local Metering Mode.</p>	<p>The device has entered Local Metering Mode.</p>	<input type="checkbox"/>	<input type="checkbox"/>
10	Off Metering	<p>Select the configured ramp meter controller and put the device into the Off Metering Mode.</p>	<p>The device has entered the Off Metering Mode.</p>	<input type="checkbox"/>	<input type="checkbox"/>

Software Integration Case Procedures

11	Local TOD Metering	<p>Open the ramp metering configuration dialog and modify the Time of Day table for the controller.</p> <p>Save the configuration to send the TOD table to the controller and verify it made it to the controller.</p> <p>Open the ramp metering status dialog and place the controller Out of Service.</p> <p>Monitor the ramp meter controller via the web app.</p>	<p>The time of day configuration was correctly saved to the controller.</p> <p>The connection between SunGuide and the ramp meter controller was closed.</p> <p>The device starts metering at the scheduled time.</p> <p>The device stops metering at the scheduled time.</p>	<input type="checkbox"/>	<input type="checkbox"/>
12	Controller Reset	<p>Make sure the device is set to Active.</p> <p>Put the driver in detail logging mode.</p> <p>Perform a controller reset.</p> <p>Using Status Log, verify the reset command was sent as well as a resend on all the current system parameters to that controller.</p>	<p>The reset command is sent to the controller.</p>	<input type="checkbox"/>	<input type="checkbox"/>
13	Device Configuration	<p>Set the device to Out of Service.</p> <p>Delete the device from the configuration.</p>	<p>Devices can be removed from the system.</p>	<input type="checkbox"/>	<input type="checkbox"/>
14	Poll TSS Detector	<p>Put the RTMS driver in detail mode.</p> <p>Set the TSS detector configured in step 1 to an "Active" status, if not already.</p> <p>Use Status Log Viewer to review the bytes being sent.</p>	<p>The RTMS driver uses NTCIP commands to poll the detector for speed, occupancy, and volume from each zone number associated with the detector's lanes.</p>	<input type="checkbox"/>	<input type="checkbox"/>

Test End Date & Time	
FDOT Witness	
SwRI Witness	

2.7 IC-6: Device Permissions

2.7.1 Objectives

The objective of this integration case is to test the requirements associated with setting device permissions within SunGuide for various device types.

2.7.2 Requirements to be tested

The following table contains a list of the requirements associated with this integration case that will be tested during the formal acceptance testing of the SunGuide software.

Table 1: Device Permission Requirements

SunGuide ID	Requirement Number	Requirement Name	Requirement Text
FEAT65.8.1	SAA01	Device Groups	SunGuide shall allow a user with appropriate permissions to configure device groups including certain device types.
FEAT65.8.1.1	SAA01A	Different Device Types	SunGuide shall allow a single device group to include multiple different device types.
FEAT65.8.1.2	SAA01B	DMS Devices	SunGuide shall allow a DMS to be part of a device group.
FEAT65.8.1.3	SAA01C	CCTV Device	SunGuide shall allow a CCTV to be part of a device group.
FEAT65.8.1.4	SAA01D	TSS Device	SunGuide shall allow a TSS detector to be part of a device group.
FEAT65.8.1.5	SAA01E	RMS Device	SunGuide shall allow a ramp meter controller to be part of a device group.
FEAT65.8.1.6	SAA01F	Beacon Device	SunGuide shall allow a beacon to be part of a device group.
FEAT65.8.2	SAA02	Configure Device Permissions	SunGuide shall allow a user with appropriate permissions to configure device-specific permissions for device types which support device-specific permissions.
FEAT65.8.2.1	SAA02A	Add Remove User Device Permissions	SunGuide shall allow a user to add or remove devices in a user's individual permission list.
FEAT65.8.2.2	SAA02B	Add Remove User Device Group Permissions	SunGuide shall allow a user to add or remove device groups in a user's individual permission list.
FEAT65.8.2.3	SAA02C	Add Remove Group Device Permissions	SunGuide shall allow a user to add or remove devices in a user group's permission list.
FEAT65.8.2.4	SAA02D	Add Remove Group Device Group Permission	SunGuide shall allow a user to add or remove device groups in a user group's permission list.

FEAT65.8.3	SAA03	Restrict Actions	SunGuide shall restrict user actions based on device permissions.
FEAT65.8.3.1	SAA03A	Configurable Device Permissions	SunGuide will provide a configuration value to enforce or disable device permissions for each subsystem which supports device permissions.
FEAT65.8.3.2	SAA03B	Whitelist	SunGuide shall determine whether a user has permission to access a device based on a whitelist, group-based approach.
FEAT65.8.3.2.1	SAA03B1	Given Permission Directly	If a user has been given individual permission to a device, that user shall be considered to have permission to access that device; or
FEAT65.8.3.2.2	SAA03B2	Given Permission to Group	If a user has been given permission to a group which includes a device, that user shall be considered to have permission to access that device; or
FEAT65.8.3.2.3	SAA03B3	Given Group Permission	If a user belongs to a group which has been given permission to a device, that user shall be considered to have permission to access that device; or
FEAT65.8.3.2.4	SAA03B4	Permission to Group having Group Permissions	If a user belongs to a group which has been given permission to a group which includes a device, that user shall be considered to have permission to access that device; or
FEAT65.8.3.2.5	SAA03B5	No Permissions	If none of the preceding conditions were met, the user shall be considered NOT to have permission to access that device.
FEAT65.8.3.3	SAA03C	Enabling Device Permissions	If device permissions are enabled for the subsystem, certain subsystems shall restrict user actions based on device permissions. (This should not be considered to restrict system-wide user actions which affect all devices globally, such as disabling travel times system-wide or disabling a top-level schedule.)
FEAT65.8.3.3.1	SAA03C1	Subsystem and Device Permission	Subsystems shall require both an appropriate subsystem permission and device permission to allow a user to perform a restricted action.
FEAT65.8.3.3.2	SAA03C2	Subsystem Permissions	Subsystems shall allow users to retrieve and view device information based on their subsystem permissions rather than device permissions.
FEAT65.8.3.3.3	SAA03C3	DMS User Permissions	Subsystems shall restrict access to a

			DMS to users with permission to that DMS
FEAT65.8.3.3.3.1	SAA03C3A	Configure Control DMS	The DMS subsystem shall only allow users with permission to a specific DMS to modify, delete, issue commands to, or otherwise configure or control that DMS.
FEAT65.8.3.3.3.2	SAA03C3B	Response Plan DMS	The Event Management subsystem shall not allow a user to configure or activate a response plan including a DMS which that user does not have permission to access.
FEAT65.8.3.3.3.3	SAA03C3C	SAS DMS Control	The Scheduled Action Subsystem shall not allow a user to create, modify, delete, activate, or deactivate a scheduled action which affects a DMS which that user does not have permission to access.
FEAT65.8.3.3.3.4	SAA03C3D	MAS DMS Control	The Message Arbitration Subsystem shall not allow a user to resend the top message of or modify the queue for a DMS which that user does not have permission to access.
FEAT65.8.3.3.3.5	SAA03C3E	Travel Time DMS	The Travel Time subsystem shall not allow a user to configure, activate, or deactivate travel times for a DMS which that user does not have permission to access.
FEAT65.8.3.3.3.6	SAA03C3F	Truck Parking DMS	The Truck Parking subsystem shall not allow a user to modify, delete, issue commands to, or otherwise configure a truck parking facility which is associated to a DMS which that user does not have permission to access.
FEAT65.8.3.3.3.7	SAA03C3G	Managed Lanes DMS	The Managed Lanes subsystem shall not allow a user to modify, delete, issue commands to, or otherwise configure a managed lane ramp which is associated to a DMS which that user does not have permission to access.
FEAT65.8.3.3.4	SAA03C4	CCTV Permissions	Subsystems shall restrict access to a CCTV camera to users with permission to that camera.
FEAT65.8.3.3.4.1	SAA03C4A	Configure Control CCTV	The CCTV subsystem shall only allow users with permission to a specific camera to modify, delete, issue commands to, or otherwise configure or

			control that camera.
FEAT65.8.3.3.4.2	SAA03C4B	SAS CCTV	The Scheduled Action Subsystem shall not allow a user to create, modify, delete, activate, or deactivate a scheduled action which affects a camera which that user does not have permission to access.
FEAT65.8.3.3.5	SAA03C5	TSS Permissions	Subsystems shall restrict access to TSS detectors to users with permission to that detector.
FEAT65.8.3.3.5.1	SAA03C5A	Configure Control TSS	The TSS subsystem shall only allow users with permission to a specific detector to modify, delete, issue commands to, or otherwise configure or control that detector.
FEAT65.8.3.3.6	SAA03C6	Ramp Meter Permissions	Subsystems shall restrict access to ramp meter controllers to users with permission to that controller.
FEAT65.8.3.3.6.1	SAA03C6A	Configure Control RMS	The RM subsystem shall only allow users with permission to a specific controller to modify, delete, issue commands to, or otherwise configure or control that controller.
FEAT65.8.3.3.6.2	SAA03C6B	SAS RMS	The Scheduled Action Subsystem shall not allow a user to create, modify, delete, activate, or deactivate a scheduled action which affects a controller which that user does not have permission to access.
FEAT65.8.3.3.7	SAA03C7	Beacon Permissions	Subsystems shall restrict access to BMS beacons to users with permission to that beacon.
FEAT65.8.3.3.7.1	SAA03C7A	Configure Control Beacon	The BMS subsystem shall only allow users with permission to a specific beacon to modify, delete, issue commands to, or otherwise configure or control that beacon.
FEAT65.8.3.3.7.2	SAA03C7B	EM Beacons	The Event Management subsystem shall not allow a user to configure or activate a response plan including a beacon which that user does not have permission to access.

2.7.3 Test Approach

The following is a brief description of the test procedures that will be used to test this integration case:

Device permissions will be assigned to combinations of users and user groups and various devices will be tested to show which devices the user is able to control.

2.7.4 Test Descriptions

The following sections detail the tests to be performed.

Prerequisite Conditions

The following will be setup/configured before the test is performed:

- The following subsystems should be operational and have configured devices
 - DMS
 - TSS
 - CCTV
 - RMS
 - BMS
- 2 users should be logged into the system
 - 1 user should have administrative rights to change permissions
- Enforce Device Permissions should be enabled.

Test Procedure

Test Start Date / Time	
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Perform the following steps from a workstation:

	Requirement Number	Test Steps	Expected Result	P	F
1	FEAT65.8.1 FEAT65.8.1.1 FEAT65.8.1.2 FEAT65.8.1.3 FEAT65.8.1.4 FEAT65.8.1.5 FEAT65.8.1.6	Using a user with permission, create a Device Group with a DMS and save. Add a TSS, CCTV, Beacon, and RMS device to the Device Group and save. Using a user with no permissions to change device groups, attempt to create or modify a device group.	Users with permission are able to create or modify device groups will user with no permission are unable to create or modify device groups. Groups can be made of a single device type or include a variety of devices.	<input type="checkbox"/>	<input type="checkbox"/>
2	FEAT65.8.2 FEAT65.8.2.1 FEAT65.8.3 FEAT65.8.3.2 FEAT65.8.3.2.1 FEAT65.8.3.2.5	For a single user, assign a single device to the user. Open the device control window for the device type and attempt to control the device. Attempt to control a different device of the same type that the user does not have permission to control. Remove the device permission from the user for the selected device. Attempt to control the same device.	A single device can be added for the user to control.	<input type="checkbox"/>	<input type="checkbox"/>

3	<p>FEAT65.8.2 FEAT65.8.2.2 FEAT65.8.3 FEAT65.8.3.2 FEAT65.8.3.2.2 FEAT65.8.3.2.5</p>	<p>For a single user, assign a device group to the user.</p> <p>Open the device control window for one of the devices and attempt to control the devices.</p> <p>Attempt to control a device not in the device group.</p> <p>Remove the device group.</p> <p>Attempt to control a device in the permission group.</p>	<p>A group of devices can be added for the user to control.</p>	<input type="checkbox"/>	<input type="checkbox"/>
4	<p>FEAT65.8.2 FEAT65.8.2.3 FEAT65.8.3 FEAT65.8.3.2 FEAT65.8.3.2.3 FEAT65.8.3.2.5</p>	<p>Find a device group in which the user is currently a member. Pick a device type and open the control window for that type. Observe the currently controllable devices.</p> <p>Add a device to the group. Attempt to control the device that was added.</p> <p>Attempt to control a device not in the device group.</p> <p>Remove the device from the device group.</p> <p>Attempt to control a device that was just removed.</p>	<p>When a device group is edited by adding or removing a device, the changes are immediately applied to users who are part of the group.</p>	<input type="checkbox"/>	<input type="checkbox"/>
5	<p>FEAT65.8.2 FEAT65.8.2.4 FEAT65.8.3 FEAT65.8.3.2 FEAT65.8.3.2.4 FEAT65.8.3.2.5</p>	<p>Find a device group in which the user is currently a member. Add a device group to the group.</p> <p>Open the device control window for one of the devices in the group just added and attempt to control the devices.</p> <p>Attempt to control a device not in the device group that was just added.</p> <p>Remove the device group.</p> <p>Attempt to control a device that was in the device group that was removed.</p>	<p>When a device group is edited by adding or removing a group, the changes are immediately applied to users who are part of the group.</p>	<input type="checkbox"/>	<input type="checkbox"/>
6	<p>FEAT65.8.3.3.2</p>	<p>From the Operator Map, log in as a user that does NOT have device permission for any device. View the Operator and note the presence of DMS, TSS, RMS, BMS, and CCTV devices. View and status for each of these device types.</p>	<p>Devices are viewable even the user doesn't have device permissions.</p>	<input type="checkbox"/>	<input type="checkbox"/>

7	<p>FEAT65.8.3.3.1 FEAT65.8.3.3.3 FEAT65.8.3.3.3.1</p>	<p>Log into the Operator Map as a user with device permissions to a DMS as well as permission to configure a DMS.</p> <p>Modify and delete a DMS the user has access too.</p> <p>Remove the user permission to configure a DMS. Attempt to modify or delete a DMS.</p>	<p>The user must have both permission to the DMS and device permission for the DMS to configure the device.</p>	<input type="checkbox"/>	<input type="checkbox"/>
8	FEAT65.8.3.3.3.2	<p>Log into the Operator Map as a user with device permissions to a DMS that can be used in a response plan.</p> <p>Create a new event. Add a DMS the user can access to a response plan.</p> <p>Attempt to add a DMS the user would not have access to.</p> <p>Activate the response plan.</p> <p>Create a predefined plan. Add a DMS the user has permission to use and attempt to add a DMS the user does not have permission to use.</p>	<p>Users may not use DMS in EM response plans unless they have permission to the DMS.</p> <p>Users may not use DMS in EM predefined plans unless they have permission to the DMS.</p>	<input type="checkbox"/>	<input type="checkbox"/>
9	FEAT65.8.3.3.3.3	<p>Log into the Operator Map as a user with device permissions to a DMS that can be used in SAS.</p> <p>Create a scheduled item containing a DMS the user has access to. Modify the scheduled item.</p> <p>Delete the scheduled item.</p> <p>Attempt to modify a scheduled action containing a DMS the user does NOT permission to use. Attempt to delete a scheduled action containing a DMS the user does NOT permission to use.</p>	<p>User may not modify scheduled items unless they have permission to the DMS signs included in the scheduled item.</p>	<input type="checkbox"/>	<input type="checkbox"/>
10	FEAT65.8.3.3.3.4	<p>Log into the Operator Map as a user with device permissions to a DMS.</p> <p>Resend the top of the queue to the sign.</p> <p>Attempt to resend the top of the queue to a DMS the user does not have permission to control.</p>	<p>User may not resend the top of the queue unless they have permission to control the DMS.</p>	<input type="checkbox"/>	<input type="checkbox"/>

11	FEAT65.8.3.3.3.5	<p>Log into the Operator Map as a user with device permissions to a DMS.</p> <p>Configure a TVT device template for the DMS. Turn On and Off the travel times for that DMS.</p> <p>Attempt to add or modify a device template for a DMS the user does not have permission to control. Attempt to turn On and Off the sending of travel times to that sign.</p>	<p>User may not configure templates or change travel time states unless they have permission to control the DMS.</p>	<input type="checkbox"/>	<input type="checkbox"/>
12	FEAT65.8.3.3.3.6	<p>Log into the Operator Map as a user with device permissions to a DMS.</p> <p>Add, modify, and delete a truck parking facility including the DMS the user has permission to access.</p> <p>Attempt to add or modify a truck parking facility containing a DMS the user does NOT have permission to access.</p>	<p>User may not configure truck parking facilities unless they have permission to control the DMS associated with that facility.</p>	<input type="checkbox"/>	<input type="checkbox"/>
13	FEAT65.8.3.3.3.7	<p>Log into the Operator Map as a user with device permissions to a DMS.</p> <p>Add, modify, and delete a managed lane ramp including the DMS the user has permission to access.</p> <p>Attempt to add or modify a managed lane ramp containing a DMS the user does NOT have permission to access.</p>	<p>User may not configure a managed lane ramp unless they have permission to control the DMS associated with that ramp.</p>	<input type="checkbox"/>	<input type="checkbox"/>
14	<p>FEAT65.8.3.3</p> <p>FEAT65.8.3.3.1</p> <p>FEAT65.8.3.3.4</p> <p>FEAT65.8.3.3.4.1</p>	<p>Log into the Operator Map as a user with device permissions to a CCTV as well as permission to configure a CCTV.</p> <p>Modify and delete a CCTV the user has access too.</p> <p>Remove the user permission to configure a CCTV. Attempt to modify or delete a CCTV.</p>	<p>The user must have both permission to the CCTV and device permission for the CCTV to configure the device.</p>	<input type="checkbox"/>	<input type="checkbox"/>

15	FEAT65.8.3.3.4.2	<p>Log into the Operator Map as a user with device permissions to a CCTV that can be used in SAS.</p> <p>Create a scheduled item containing a CCTV the user has access to. Modify the scheduled item. Delete the scheduled item.</p> <p>Attempt to modify a scheduled action containing a CCTV the user does NOT permission to use. Attempt to delete a scheduled action containing a CCTV the user does NOT permission to use.</p>	<p>User may not modify scheduled items unless they have permission to the CCTV included in the scheduled item.</p>	<input type="checkbox"/>	<input type="checkbox"/>
16	<p>FEAT65.8.3.3</p> <p>FEAT65.8.3.3.1</p> <p>FEAT65.8.3.3.5</p> <p>FEAT65.8.3.3.5.1</p>	<p>Turn off the TSS Simulators.</p> <p>Log into the Operator Map as a user with device permissions to a TSS as well as permission to configure a TSS detector.</p> <p>Modify and delete a TSS detector the user has access too.</p> <p>Remove the user permission to configure a TSS detector. Attempt to modify or delete a detector.</p>	<p>The user must have both permission to the TSS detector and device permission for the TSS detector to configure the device.</p>	<input type="checkbox"/>	<input type="checkbox"/>
17	<p>FEAT65.8.3.3</p> <p>FEAT65.8.3.3.1</p> <p>FEAT65.8.3.3.6</p> <p>FEAT65.8.3.3.6.1</p>	<p>Log into the Operator Map as a user with device permissions to RMS as well as permission to configure a RMS controller.</p> <p>Modify and delete a RMS controller the user has access too.</p> <p>Remove the user permission to configure a RMS controller. Attempt to modify or delete a controller.</p>	<p>The user must have both permission to the RMS controller and device permission for the RMS controller to configure the device.</p>	<input type="checkbox"/>	<input type="checkbox"/>
18	FEAT65.8.3.3.6.2	<p>Log into the Operator Map as a user with device permissions to a RMS controller that can be used in SAS.</p> <p>Create a scheduled item containing a RMS controller the user has access to. Modify the scheduled item. Delete the scheduled item.</p> <p>Attempt to modify a scheduled action containing a RMS controller the user does NOT permission to use. Attempt to delete a scheduled action containing a RMS Controller the user does NOT permission to use.</p>	<p>User may not modify scheduled items unless they have permission to the RMS controller included in the scheduled item.</p>	<input type="checkbox"/>	<input type="checkbox"/>

19	<p>FEAT65.8.3.3 FEAT65.8.3.3.1 FEAT65.8.3.3.7 FEAT65.8.3.3.7.1</p>	<p>Log into the Operator Map as a user with device permissions to BMS as well as permission to configure a beacon.</p> <p>Modify and delete a beacon the user has access too.</p> <p>Remove the user permission to configure a beacon. Attempt to modify or delete a beacon.</p>	<p>The user must have both permission to the beacon and device permission for the beacon to configure the device.</p>	<input type="checkbox"/>	<input type="checkbox"/>
20	<p>FEAT65.8.3.3.7.2</p>	<p>Log into the Operator Map as a user with device permissions to a beacon that can be used in a response plan.</p> <p>Create a new event. Add a beacon the user can access to a response plan.</p> <p>Attempt to add a beacon the user would not have access to.</p> <p>Activate the response plan.</p>	<p>Users may not use beacons in EM response plans unless they have permission to the beacon.</p>	<input type="checkbox"/>	<input type="checkbox"/>

21	FEAT65.8.3.3	<p>Log into the Operator Map with a user that has all subsystem permissions but no device permissions.</p> <p>Disable the enforcement of device permissions.</p> <p>Configure a DMS.</p> <p>Add a DMS response plan.</p> <p>Add a DMS to a Scheduled Action.</p> <p>Resend the top message to a DMS.</p> <p>Set up a TVT device template for a DMS.</p> <p>Set up a new Truck Parking facility including a DMS.</p> <p>Set up a Managed Lanes lane ramp including a DMS.</p> <p>Configure a CCTV.</p> <p>Add a CCTV to a schedule item.</p> <p>Configure a TSS Detector.</p> <p>Configure a ramp meter.</p> <p>Configure a beacon.</p> <p>Add a beacon to a response plan.</p>			
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Test End Date & Time	
FDOT Witness	
SwRI Witness	

2.8 IC-7: Footprints (FP)

2.8.1 Objectives

The objective of this integration case is to test Footprints issues fixed in this release.

2.8.2 Requirements to be Tested

Since these are bug fixes that violate existing requirements, new requirements are not necessary.

2.8.3 Test Approach

The following is a brief description of the test procedures that will be used to test this integration case:

- A workstation will run through different scenarios to test Footprints issues that have been resolved.
- Test cases will be run against a system with an Oracle database and a SQL Server database. In order to pass the test step, both systems must successfully execute the test step. Notes will be made if a test step fails indicating the system and type of failure.

2.8.4 Test Descriptions

The following sections detail the tests to be performed.

2.8.5 Footprints to be tested

- FP 3559 – GovComm Radar Device
- FP 3662 – Operator Map Crashes After a Few Hours of Use
- FP 3897 – Unable to add new event - no notifying contact information
- FP 3910 – Event Duration Time Not Adjusting
- FP 3928 – Waze alerts association does not provide request pop-up to event owner
- FP 3930 – Visibility-only RWIS devices failing to poll (NOT TESTABLE)
- FP 3933 – Add New Event dialog not selecting location (offset) automatically if there is only one location (offset) for the selected reference point
- FP 3936 – Event list reports sort order for county.
- FP 4003 – When a Waze alert is associated with an event, it blanks the "FHP Incident #" field entry box.
- FP 4033 – Alarm handling issues
- FP 4040 – Next Message column in DMS Status display shows Data Error/No Message Loaded - Please Report To System Administrator
- FP 4050 – Unable to update RR status - AVLRR memory growing
- FP 4065 – Static cameras going to error
- FP 4071 – DA is not purging data
- FP 4076 – Response plan - "Load Predefined" not showing response plans in alphabetical order
- FP 4099 – Probe Fusion Falsely Reporting Unknown Device ID for BlueMAC. [NOT TESTABLE]

2.8.5.1 FP 3559 – GovComm Radar Device

Reporting District: TERL

At this time there is not a GovComm radar device at the TERL, but they will be sending one soon. I am authorizing the development of a driver for the GovComm radar device to be done under the support task work order. Originally, GovComm wanted to develop their own driver, but since we will ultimately be maintaining and troubleshooting issues that might be reported down the road, I felt it best that we develop the driver. If you have any questions or concerns with any of the documentation provided by GovComm, please initially work through me. Since this is to help support APL testing, I would like to have a hotfix or something that can be applied against SunGuide version 6.2, and then we can incorporate it into 7.0. I'll let you know the make/model of the product as soon as I hear back from Svet with GovComm.

The following sections detail the tests to be performed.

Subsystems Required

- TSS

Devices Required

The following devices will be used during the test:

- None

Configuration Required

The following will be setup/configured before the test is performed:

- None

Test Procedure

Test Start Date / Time	
-------------------------------	--

Perform the following steps from a workstation:

	Test Steps	Previous Result	Expected Result	P	F
1	*SwRI does not have access to a live GovComm device.* Configure a TSS detector with the GovComm protocol.	Was not present as an option.	User is able to add a detector with the GovComm protocol.	<input type="checkbox"/>	<input type="checkbox"/>

Test End Date & Time	
FDOT Witness	
SwRI Witness	

2.8.5.2 FP 3662 – Operator Map Crashes After a Few Hours of Use

Reporting District: District 5

FDOT D5 operators have reported CFX's operator map crashes every few hours, requiring them to close out and log back in. To get a better handle on this issue, I set up a script to log the current memory usage of the operator map and presentation host processes on the workstation that is logged into CFX SunGuide. The attached graph shows the memory usage of a period of about 2 days. Note that every time the memory usage drops is when the operator had to close out and log back in.

Their description of the issue is the map just "freezes" and the workstation does not respond to any clicks and they can't even close it - making the system inoperable for 10 to 15 minutes. When it recovers after 10 to 15 minutes, the map response very slowly, requiring them to close out of the map and log back in.

The following sections detail the tests to be performed.

Subsystems Required

- C2C

Devices Required

The following devices will be used during the test:

- None

Configuration Required

The following will be setup/configured before the test is performed:

- Configure the system to get half a state's worth or Nokia links (filter by county)

Test Procedure

Test Start Date / Time	
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Perform the following steps from a workstation:

	Test Steps	Previous Result	Expected Result	P	F
1	<p>On a 6.2 system that has not been given the latest version of the Operator Map, start at the top zoom level and move down to level 9. Watch the memory usage of the Operator Map.</p> <p>On a 7.1 system that has not been given the latest version of the Operator Map, start at the top zoom level and move down to level 9. Watch the memory usage of the Operator Map.</p>	The memory for the 6.2 map with spike and cause the Map to crash.	The memory for the 7.1 Map will stay stable and still allow the use to perform operations.	<input type="checkbox"/>	<input type="checkbox"/>

Test End Date & Time	
FDOT Witness	
SwRI Witness	

2.8.5.3 FP 3897 – Unable to add new event - no notifying contact information

Reporting District: Lee County

FDOT D5 operators have reported CFX's operator map crashes every few hours, requiring them to close out and log Unable to add new event. When Notifying Agency is selected in "Add new event" window, the Notifying contact does not populate. 2 Screen shots attached. Agency contact information is in SG (SG Agency Contact). No Notifying Contact populates in window (Add New Event).

The following sections detail the tests to be performed.

Subsystems Required

- EM

Devices Required

The following devices will be used during the test:

- None

Configuration Required

The following will be setup/configured before the test is performed:

- Disable AVL in the configuration file. (Must restart Databus)

Test Procedure

Test Start Date / Time	
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Perform the following steps from a workstation:

	Test Steps	Previous Result	Expected Result	P	F
1	Add an event to the system.	With AVL disabled, the user was not able to select a notifying agency and contact.	Event is able to be added successfully.	<input type="checkbox"/>	<input type="checkbox"/>

Test End Date & Time	
FDOT Witness	
SwRI Witness	

2.8.5.4 FP 3910 – Event Duration Time Not Adjusting

Reporting District: District 2

Event Chronology report

User audited a report to update the end time of an event to reflect the correct time of it closing. Next, the user ran an event chronology report to verify adjustment and noticed that the event duration did not adjust in correlation to the adjusted event closing time.

See attachment.

The following sections detail the tests to be performed.

Subsystems Required

- EM

Devices Required

The following devices will be used during the test:

- None

Configuration Required

The following will be setup/configured before the test is performed:

- None

Test Procedure

Test Start Date / Time	
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Perform the following steps from a workstation:

	Test Steps	Previous Result	Expected Result	P	F
1	Run a report to conform the 1 st closed time of an event. Audit the event to change the 1 st closed date timestamp. Run a Chronology report.	The 1 st closed time in the report did not update based on the audit.	The 1 st closed time is the same as the audited time.	<input type="checkbox"/>	<input type="checkbox"/>

Test End Date & Time	
FDOT Witness	
SwRI Witness	

2.8.5.5 FP 3928 – Waze alerts association does not provide request pop-up to event owner

Reporting District: FTE

When an Operator selects to associated a Waze alert with an existing event, the message advises it is waiting on the event owner to accept, but the event owner does not receive the request.

The following sections detail the tests to be performed.

Subsystems Required

- EM, IDS

Devices Required

The following devices will be used during the test:

- None

Configuration Required

The following will be setup/configured before the test is performed:

- Alert simulator should simulate a Waze alert

Test Procedure

Test Start Date / Time	
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Perform the following steps from a workstation:

	Test Steps	Previous Result	Expected Result	P	F
1	Log into the map with a user. Take ownership of the event. Using a different user that is NOT the owner of the event, associate a Waze alert with an existing event.	The event owner did not receive a popup.	Event owner receives a popup and can complete the association.	<input type="checkbox"/>	<input type="checkbox"/>

Test End Date & Time	
FDOT Witness	
SwRI Witness	

2.8.5.6 FP 3930 – Visibility-only RWIS devices failing to poll (**NOT TESTABLE**)

Reporting District: District 7

Jared requested via email that we take a look at why some of his RWIS devices are failing to poll. These devices are Visibility only so any other values that do not have data are likely responding with default values.

I have found what I believe to be the cause and would like to put a test-build of the Rwis Driver out to verify.

The following sections detail the tests to be performed.

Subsystems Required

- RWIS

Devices Required

The following devices will be used during the test:

- None

Configuration Required

The following will be setup/configured before the test is performed:

- None

Test Procedure

Test Start Date / Time	
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Perform the following steps from a workstation:

	Test Steps	Previous Result	Expected Result	P	F
1	This was caused by a device failing to provide a specific field which we are unable to duplicate in devices or simulators we have.			<input type="checkbox"/>	<input type="checkbox"/>

Test End Date & Time	
FDOT Witness	
SwRI Witness	

2.8.5.7 FP 3933 – Add New Event dialog not selecting location (offset) automatically if there is only one location (offset) for the selected reference point.

Reporting District: District 5

In the Add New Event dialog, selecting a Reference Point with a single Location (offset) should automatically select the Location (offset).

The following sections detail the tests to be performed.

Subsystems Required

- EM

Devices Required

The following devices will be used during the test:

- None

Configuration Required

The following will be setup/configured before the test is performed:

- Find an event location that only has one location offset of a given reference point

Test Procedure

Test Start Date / Time	
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Perform the following steps from a workstation:

	Test Steps	Previous Result	Expected Result	P	F
1	Open the Add New Event dialog and select a location up to the reference point for the location with only 1 offset.	Location would not populate automatically.	Location will automatically populate.	<input type="checkbox"/>	<input type="checkbox"/>

Test End Date & Time	
FDOT Witness	
SwRI Witness	

2.8.5.8 FP 3936 – Event list reports sort order for county.

Reporting District: District 1

The user would like the county to be sorted differently since it is currently sorted in alphabetical order. This was not the case in the previous version of SunGuide which made it easier for the user to generate reports from the event list. I have included screenshots. We have attached a screenshot of the arterial roadways since that section is not sorted in an alphabetical order.

The following sections detail the tests to be performed.

Subsystems Required

- EM
- RS

Devices Required

The following devices will be used during the test:

- None

Configuration Required

The following will be setup/configured before the test is performed:

- None

Test Procedure

Test Start Date / Time	
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Perform the following steps from a workstation:

	Test Steps	Previous Result	Expected Result	P	F
1	Open the reporting dialog and select the Event List report. Find the Counties filter and note the ordering.	Counties were populated alphabetically.	Counties are populated by sort order.	<input type="checkbox"/>	<input type="checkbox"/>

Test End Date & Time	
FDOT Witness	
SwRI Witness	

2.8.5.9 FP 4003 – When a Waze alert is associated with an event, it blanks the "FHP Incident #" field entry box.

Reporting District: FTE

When a Waze alert is associated with an event, it blanks the "FHP Incident #" field box. It places the Waze event ID in the "Waze Incident #" field.

We still need the FHP CAD # in the "FHP Incident #" box, even if we are associating it with a Waze alert.

The following sections detail the tests to be performed.

Subsystems Required

- EM

Devices Required

The following devices will be used during the test:

- None

Configuration Required

The following will be setup/configured before the test is performed:

- Alert sim should produce a Waze and FHP alert

Test Procedure

Test Start Date / Time	
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Perform the following steps from a workstation:

	Test Steps	Previous Result	Expected Result	P	F
1	Create an event out the FHP alert. Note the FHP Incident # is present. Associate the Waze alert with the event. Note the FHP and Waze incident numbers.	FHP Incident # was cleared.	Both the FHP and Waze Incident #'s are populated.	<input type="checkbox"/>	<input type="checkbox"/>

Test End Date & Time	
FDOT Witness	
SwRI Witness	

2.8.5.10 FP 4033 – Alarm handling issues.

Reporting District: District 1

Received the following email from Isaac:

"We are currently having issues removing the alerts off the SunGuide event list. The alarms stay stuck in the event list and when we try to dismiss them, the alert will stay stuck in the resolving alarm loading screen. I have attached a screen shot. Would this have anything to do with the issue that we were experiencing with the AVLRR subsystem earlier today."

The following sections detail the tests to be performed.

Subsystems Required

- EM
- IDS

Devices Required

The following devices will be used during the test:

- None

Configuration Required

The following will be setup/configured before the test is performed:

- Alert sim should produce a Waze alert

Test Procedure

Test Start Date / Time	
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Perform the following steps from a workstation:

	Test Steps	Previous Result	Expected Result	P	F
1	Create an event out the Waze alert. Create a new Waze alert with a closed timestamp. Associate it to the event from above.	Error occurred when handling the alert.	Alert is properly associated.	<input type="checkbox"/>	<input type="checkbox"/>

Test End Date & Time	
FDOT Witness	
SwRI Witness	

2.8.5.11 FP 4040 – Next Message column in DMS Status display shows Data Error/No Message Loaded - Please Report To System Administrator.

Reporting District: District 7

Via email:

We're experiencing an interesting DMS issue, where when our operators (or Ops Managers) attempt to merge a DMS they're getting an error within the DMS "Device Messaging" status window, under the column "Next Message".

Once the merge command is issued, the proposed merged message shows as blank, and the attached error message (Data Error/No Message Loaded - Please Report To System Administrator) shows up inside the Device Messaging window. The sign in the field does not display the error message.

We've restarted all SunGuide systems, and this has not resolved the issue. This was first reported as happening last Friday.

The following sections detail the tests to be performed.

Subsystems Required

- DMS
- MAS

Devices Required

The following devices will be used during the test:

- None

Configuration Required

The following will be setup/configured before the test is performed:

- DMS has a message but only one and nothing else on the queue

Test Procedure

Test Start Date / Time	
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Perform the following steps from a workstation:

	Test Steps	Previous Result	Expected Result	P	F
1	View the Next Message column for the DMS.	Default text was shown.	Message is blank because nothing else is on the queue.	<input type="checkbox"/>	<input type="checkbox"/>

Test End Date & Time	
FDOT Witness	
SwRI Witness	

2.8.5.12 FP 4050 – Unable to update RR status - AVLRR memory growing.

Reporting District: District 6

Multiple times over the weekend, operators were unable to update RR status. A restart of AVLRR addressed the problem each time. The log file shows that AVLRR is using a lot of memory. In the attached log, around 12:50 PM, it was using over 19 GB - around the time of the one of the failures to update status. There were issues over the weekend with SunGuide getting data from <http://d6sg.gf-locate.com>, which may have been a factor.

The following sections detail the tests to be performed.

Subsystems Required

- EM
- AVL

Devices Required

The following devices will be used during the test:

- None

Configuration Required

The following will be setup/configured before the test is performed:

- None

Test Procedure

Test Start Date / Time	
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Perform the following steps from a workstation:

	Test Steps	Previous Result	Expected Result	P	F
1	<p>Note the memory in Task Manager for AVL.</p> <p>Create an EM event and add as many DMS as possible to a response plan. Activate and Terminate the response plan 25 times.</p> <p>Run a query to determine the number of chronology entries for the event. More than 2000 should be sufficient.</p> <p>Check the memory for AVL and show there is not a significant climb in memory usage.</p> <p>Dispatch a road ranger to an event.</p>	<p>AVL would rise in memory until it locked up.</p>	<p>The memory of AVL does not show a significant increase and the road ranger is successfully dispatched.</p>	<input type="checkbox"/>	<input type="checkbox"/>

Test End Date & Time	
FDOT Witness	
SwRI Witness	

2.8.5.13 FP 4065 – Static cameras going to error.

Reporting District: MDX

Multiple times over the weekend, operators were unable to update RR status. A restart of AVLRR addressed the problem each time. The log file shows that AVLRR is using a lot of memory. In the attached log, around 12:50 PM, it was using over 19 GB - around the time of the one of the failures to update status. There were issues over the weekend with SunGuide getting data from <http://d6sg.gf-locate.com>, which may have been a factor.

The following sections detail the tests to be performed.

Subsystems Required

- CCTV
- CCTV NTCIP driver

Devices Required

The following devices will be used during the test:

- None

Configuration Required

The following will be setup/configured before the test is performed:

- A camera configure for PTZ and one configured to be static, neither of which point to a live device.

Test Procedure

Test Start Date / Time	
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Perform the following steps from a workstation:

	Test Steps	Previous Result	Expected Result	P	F
1	<p>Turn off the CCTV NTCIP Driver.</p> <p>For a PTZ camera and a static camera, set them both Out of Service. Ensure the polling for each camera is set to 1 minute.</p> <p>Set the cameras Active and turn on the driver. Make sure the cameras enter an Error state as they are unable to reach a device when polled.</p> <p>Turn off the driver.</p> <p>Set the cameras Out of Service. Change the poll cycle on both cameras to 0 minutes (not polled).</p> <p>Set the camera to Active state and turn on the driver. The cameras remain active beyond 1 minute as they are no longer polled.</p>	<p>Static cameras had requests sent to them which caused them to remain in error states.</p>	<p>Since polling was introduced, status messages are only sent when the camera is set to poll.</p>	<input type="checkbox"/>	<input type="checkbox"/>

Test End Date & Time	
FDOT Witness	
SwRI Witness	

2.8.5.14 FP 4071 – DA is not purging data.

Reporting District: District 4

DA Subsystem is not Purging Data from ODS_TSS_ROLLUP_DATA. I'm retaining 7 years of Data and have the following for the config

```
<tagReadPurgeInDays>2555</tagReadPurgeInDays>  
<rawDataPurgeInDays>7</rawDataPurgeInDays>  
<processedDataPurgeInDays>2555</processedDataPurgeInDays>
```

Data is being purged from ODS_TSS_LANE_POLL_DATA fine using <rawDataPurgeInDays>7</rawDataPurgeInDays>

The data for ROLLUP_TIMESTAMP is 2010-08-04 20:45:00.0000000 in ODS_TSS_ROLLUP_DATA for since early this month.

The following sections detail the tests to be performed.

Subsystems Required

- TSS
- DA

Devices Required

The following devices will be used during the test:

- None

Configuration Required

The following will be setup/configured before the test is performed:

- Purge the DA TSS raw data.
- Turn on the RTMS simulator to get data into the system.
- Set the *rawDataPurgeInDays* in the config file to 0 and restart Data Archive

Test Procedure

Test Start Date / Time	
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Perform the following steps from a workstation:

	Test Steps	Previous Result	Expected Result	P	F
1	<p>Ensure data is being archived into the rollup TSS data tables of Data Archive.</p> <p>Stop the TSS simulator. Ensure there are less than 1000 rows in the rollup TSS data table.</p> <p>Leave overnight for the system to purge the data.</p> <p>Ensure the data was purged.</p>	<p>If there were less than 1000 entries to purge, the purge would not execute.</p>	<p>The purge is executed and no data remains in the raw data tables.</p>	<input type="checkbox"/>	<input type="checkbox"/>

Test End Date & Time	
FDOT Witness	
SwRI Witness	

2.8.5.15 FP 4076 – Response plan - "Load Predefined" not showing response plans in alphabetical order.

Reporting District: FTE

When clicking "load predefined" in an event's response plan under the suggestions tab, a list of the predefined response plan suggestions pops up. One of the lead operators brought to my attention that this list of predefined response plans is presented where the last added response plan gets added to the bottom of the list, and the list is displayed in the order in which the response plans added. The operator mentioned to me that this list used to be in alphabetical order which helped greatly in selecting the proper predefined response plan, however it changed to the current state in an update to the Operator Map.

The operators usually use this list in time-sensitive situations so they would benefit greatly in having this list changed back into alphabetical order. Would you be able to change the order of this list?

The following sections detail the tests to be performed.

Subsystems Required

- EM

Devices Required

The following devices will be used during the test:

- None

Configuration Required

The following will be setup/configured before the test is performed:

- None

Test Procedure

Test Start Date / Time	
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Perform the following steps from a workstation:

	Test Steps	Previous Result	Expected Result	P	F
1	Load or create an event. Get a response plan. View the available predefined plans and note the order.	Plans were not sorted alphabetically.	Plans are sorted alphabetically.	<input type="checkbox"/>	<input type="checkbox"/>

Test End Date & Time	
FDOT Witness	
SwRI Witness	

2.8.5.16 FP 4099 – Probe Fusion Falsely Reporting Unknown Device ID for BlueMAC. [NOT TESTABLE]

Reporting District: District 5

Status logger is falsely reporting a number of "unknown BlueMAC device ID" entries for devices that are already configured within SunGuide. Some of these device IDs include the following:

unknown BlueMAC device ID: 0060351b6d44 SR 434 & SR 424 (Edgewater Dr.), 28.609183, -81.416565

unknown BlueMAC device ID: 0060351bd462 Livingston St & Summerlin Av, 28.547585, -81.368519

unknown BlueMAC device ID: 00603523bf5c University Bv at Dean Rd, 28.597571, -81.244583

unknown BlueMAC device ID: 00603514cdc2 SR 436 & Tg Lee Rd., 28.456816, -81.310383

unknown BlueMAC device ID: 0060351781e9 Anderson St & Summerlin Av, 28.536661, -81.368363

unknown BlueMAC device ID: 006035179485 Taft Vineland Rd E of SR 441, 28.42129, -81.40248

unknown BlueMAC device ID: 00603517b463 Livingston St & Orange Av, 28.547521, -81.379121

unknown BlueMAC device ID: 00603519294e US 441 @ Whisper Lakes Blvd, 28.39999, -81.40479

unknown BlueMAC device ID: 006035192968 Alafaya TI (SR 434) at Central Florida Bv, 28.593586, -81.208303

unknown BlueMAC device ID: 0060351afa5d SR 50 & Fairvilla Rd, 28.552816, -81.434539

Why is SunGuide reporting unknown BlueMAC device IDs for devices configured?

The following sections detail the tests to be performed.

Subsystems Required

- EM

Devices Required

The following devices will be used during the test:

- None

Configuration Required

The following will be setup/configured before the test is performed:

- None

Test Procedure

Test Start Date / Time	
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Perform the following steps from a workstation:

	Test Steps	Previous Result	Expected Result	P	F
1	This was caused by a background thread randomly throwing an exception that was not caught and handled. This caused the process to crash but was immediately restarted. This has not been reproducible by SwRI but was resolved from the district level based on the stack trace.			<input type="checkbox"/>	<input type="checkbox"/>

Test End Date & Time	
FDOT Witness	
SwRI Witness	

3. Notes