



## Avaya Solution & Interoperability Test Lab

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# **Application Notes for RedSky Technologies E-911 Manager and Emergency On-site Notification (EON) with Avaya Communication Manager and Avaya Communication Manager Application Programming Interface - Issue 1.0**

## **Abstract**

These Application Notes describe a compliance-tested configuration comprised of Avaya Communication Manager, Avaya Communication Manager Application Programming Interface, and the RedSky Technologies E-911 Manager with Emergency On-Site Notification (EON). The RedSky E-911 Manager retrieves station numbering and location information from a PBX, and validates, reformats, and uploads the information to public Automatic Location Identification (ALI) databases. EON is an add-on module to the RedSky E-911 Manager that detects emergency calls originated by PBX stations and notifies EON clients and other notification subscribers (reached via e-mail, pager, etc.) when such calls are detected. During compliance testing, the RedSky E-911 Manager produced correct station numbering and location information as Avaya Communication Manager stations were added, deleted, and changed. In addition, the RedSky EON server successfully detected emergency calls placed by Avaya Communication Manager stations and notified EON clients of such calls. Information in these Application Notes has been obtained through compliance testing and additional technical discussions. Testing was conducted via the *DeveloperConnection* Program at the Avaya Solution and Interoperability Test Lab.

# 1. Introduction

These Application Notes describe a compliance-tested configuration comprised of Avaya Communication Manager 2.2, Avaya Communication Manager Application Programming Interface, and the RedSky Technologies E-911 Manager with Emergency On-Site Notification (EON). The RedSky E-911 Manager retrieves station numbering and location information from Avaya Communication Manager, and validates, reformats, and uploads the information to public Automatic Location Identification (ALI) databases. When a Public Safety Answering Point (PSAP) receives an Enhanced 911 (E911) call, the PSAP searches the ALI databases to obtain the specific address/location associated with the Calling Party Number (CPN).

EON is an add-on module to the RedSky E-911 Manager that detects emergency calls originated by Avaya Communication Manager stations and notifies EON clients and other notification subscribers when such calls are detected.

**Figure 1** illustrates a sample configuration consisting of:

- an Avaya S8500 Media Server
- an Avaya G650 Media Gateway
- an Avaya Communication Manager API server
- Avaya IP and Digital Telephones
- analog telephones
- an Avaya C364T-PWR Converged Stackable Switch
- a RedSky Technologies E-911 Manager with Emergency On-site Notification (EON) server
- RedSky Technologies EON clients

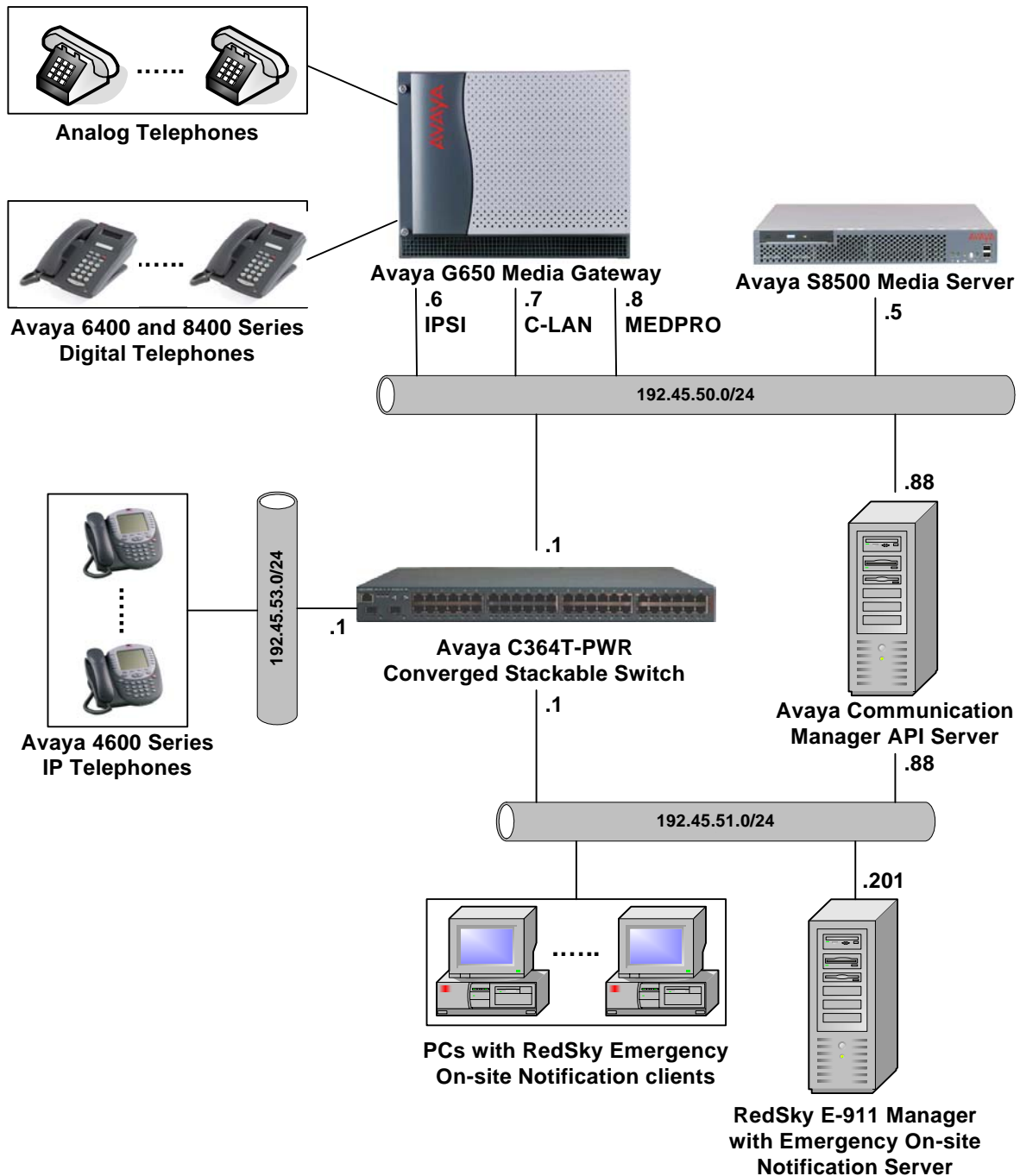
Avaya Communication Manager runs on the S8500 Media Server, though the solution described herein is also extensible to other Avaya Media Servers and Media Gateways. The RedSky E-911 Manager retrieves station numbering and location information from Avaya Communication Manager at user defined intervals. The RedSky EON server registers with Avaya Communication Manager, via the Avaya Communication Manager API server, as an exclusive<sup>1</sup> mode Avaya Communication Manager API station. This station is configured in Avaya Communication Manager with a “Crisis Alert” button. When an Avaya Communication Manager telephone originates an E911 call, Avaya Communication Manager alerts all stations configured with a Crisis Alert button, including the RedSky EON server. The RedSky EON server thereby detects the E911 call and notifies all EON clients of the call.

During compliance testing, one of the Avaya 4600 Series IP Telephones was also configured with a “Crisis Alert” button to confirm the Crisis Alert function on a physical telephone. Physical telephones configured with “Crisis Alert” buttons are not required by the solution

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<sup>1</sup> In exclusive mode registration, the Communication Manager API station exclusively owns an extension until it unregisters the extension. In shared control mode registration, the Communication Manager API station shares the extension of an already registered physical station for the purpose of controlling the physical station. Shared mode registration is not used by the RedSky EON server.

described herein, but are recommended for wider alerting coverage, particularly where EON clients are not running.



**Figure 1: Sample configuration.**

## 2. Equipment and Software Validated

The following equipment and software/firmware were used for the sample configuration provided:

Equipment		Software/Firmware
Avaya S8500 Media Server		2.2 (R012x.02.0.111.4)
Avaya G650 Media Gateway		-
	TN2312BP IP Server Interface	13
	TN799DP C-LAN Interface	14
	TN2302AP IP Media Processor	104
Avaya Communication Manager Application Programming Interface Server		2.1.25
Avaya 4600 Series IP Telephones		2.2.3 (4610SW) 2.2.3 (4620SW)
Avaya 6400 and 8400 Series Digital Telephones		-
Analog Telephones		-
Avaya C364T-PWR Converged Stackable Switch		4.5.14
RedSky Technologies E-911 Manager Server		
	E-911 Manager	5.0.1.17827
	PhoneDataExtract.dll	1.0.2110.30299
RedSky Technologies Emergency On-site Notification (EON) Server		5.0.1.11855
RedSky Technologies Emergency On-site Notification (EON) Client		1.0.2105.24236
RedSky Technologies Emergency On-site Notification (EON) Client PC		Windows 2000 Professional/Server (SP4 or higher) Windows XP Professional (SP1 or higher)

### 3. Configure Avaya Communication Manager

This section describes the steps for configuring station name and location information (room, floor, building), public/unknown numbering formats, and “Crisis Alert” stations.

#### 3.1. Define Site Data

From the Avaya Communication Manager System Access Terminal (SAT), enter the **change site-data** command. On Pages 1 and 2 of the **site-data** form, define the values that may be used for the **Building** field in the **station** form. In the example below, buildings “**East**”, “**North**”, “**South**”, and “**West**” are defined.

change site-data	SITE DATA USER DEFINITION VALID BUILDING FIELDS	Page 1 of 4
<b>East</b>		
<b>North</b>		
<b>South</b>		
<b>West</b>		

Similarly, on Page 3 of the **site-data** form, define the values that may be used for the **Floor** field in the **station** form. In the example below, floors 1 through 5 are defined.

change site-data	SITE DATA USER DEFINITION VALID FLOOR FIELDS	Page 3 of 4
<b>1</b>		
<b>2</b>		
<b>3</b>		
<b>4</b>		
<b>5</b>		

### 3.2. Configure Station Location Information

From the SAT, enter the **change station n** command, where **n** is an existing station extension. On Page 1 of the **station** form, enter a **Name** if one has not been entered yet.

change station 50001		Page 1 of 4
STATION		
Extension: 50001	Lock Messages? n	BCC: 0
Type: 4610	Security Code: *	TN: 1
Port: S00118	Coverage Path 1:	COR: 1
<b>Name: John Connell</b>	Coverage Path 2:	COS: 1
	Hunt-to Station:	
STATION OPTIONS		
Loss Group: 19	Personalized Ringing Pattern: 1	
	Message Lamp Ext: 50001	
Speakerphone: 2-way	Mute Button Enabled? y	
Display Language: english		
Survivable GK Node Name:	Media Complex Ext:	
	IP SoftPhone? n	

On Page 2 of the **station** form, if external callers can directly reach the station extension, for example, the station extension is a DID number, then set **Emergency Location Ext** to the station extension (default). If not, set **Emergency Location Ext** to a DID extension as in the example below (where station **50001** has an **Emergency Location Ext** of **53001**). The **Emergency Location Ext** is used, along with any numbering modification defined in the public-unknown-numbering form (see Section 3.3), to form the Calling Party Number in outbound 911 calls and provides the PSAP with a direct call back number. In addition, if **Always Use** is set to “n”, and the station is an IP phone, then the **Emergency Location Ext** may be overridden by an Emergency Location Extension defined in the ip-network-map form. Refer to [1] for further details on administering Emergency Location Extensions in the ip-network-map form. Otherwise, the **Emergency Location Ext** is always used. In the record uploaded to the ALI database, the RedSky E-911 Manager replaces the station extension with an Emergency Location Extension defined in the ip-network-map form when applicable or with the **Emergency Location Ext** defined in the station form. The RedSky E-911 Manager does not currently consider the **Always Use** parameter.

**Note:** The ip-network-map form was not configured with Emergency Location Extensions during compliance testing.

change station 50001	Page 2 of 4
STATION	
FEATURE OPTIONS	
LWC Reception: spe	Auto Select Any Idle Appearance? n
LWC Activation? y	Coverage Msg Retrieval? y
LWC Log External Calls? n	Auto Answer: none
CDR Privacy? n	Data Restriction? n
Redirect Notification? y	Idle Appearance Preference? n
Per Button Ring Control? n	
Bridged Call Alerting? n	Restrict Last Appearance? n
Active Station Ringing: single	
H.320 Conversion? n	Per Station CPN - Send Calling Number?
Service Link Mode: as-needed	
Multimedia Mode: enhanced	
MWI Served User Type: qsig-mwi	Display Client Redirection? n
	Select Last Used Appearance? n
	Coverage After Forwarding? s
	Direct IP-IP Audio Connections? y
<b>Emergency Location Ext: 53001</b>	<b>Always Use? n</b> IP Audio Hairpinning? y

On Page 3 of the **station** form, enter location information for **Room**, **Floor**, and **Building**. The valid **Floor** and **Building** values that may be entered were defined in Section 3.1.

change station 50001	Page 3 of 4
STATION	
SITE DATA	
<b>Room: 101</b>	Headset? n
Jack:	Speaker? n
Cable:	Mounting: d
<b>Floor: 1</b>	Cord Length: 0
<b>Building: North</b>	Set Color:
ABBREVIATED DIALING	
List1:	List2: List3:
BUTTON ASSIGNMENTS	
1: call-appr	5:
2: call-appr	6:
3: call-appr	7:
4:	8:

### 3.3. Configure Numbering

From the SAT, enter the **change public-unknown-numbering** command to invoke the **Numbering – Public/Unknown Format** table. This table specifies the digit(s) to pre-pend to the calling party numbers of outbound calls routed to ISDN trunk groups. The entry in the example below states that all **5**-digit calling party numbers that begin with “**5**” will be pre-pended with “**73285**” to form **10**-digit calling party numbers. If **Trk Grp(s)** is blank, then the entry applies to all calls originated by “5xxxx” extensions and routed to any ISDN trunk group. If one or more consecutive trunk groups are specified for **Trk Grp(s)**, then the entry applies to calls originated by “5xxxx” extensions and routed to those specific trunk groups. Additional entries may be similarly configured for other extension lengths and prefixes - for example, for “72xxx” extensions. The RedSky E-911 Manager also retrieves the information in this table from Avaya Communication Manager and uses the information to form full 10-digit numbers for Avaya Communication Manager stations before uploading to the ALI databases.

change public-unknown-numbering								
NUMBERING - PUBLIC/UNKNOWN FORMAT								
Page 1 of 8								
Total								
Ext	Ext	Trk	CPN	CPN		Ext	Ext	Total
Len	Code	Grp(s)	Prefix	Len	Len	Code	Grp(s)	CPN
5	5		73285	10				

### 3.4. Avaya Communication Manager API Station for EON Server

Step	Description
1.	As described in the Introduction, the EON server registers as an Avaya Communication Manager API station. Each Avaya Communication Manager API station requires an “IP_API_A” license. Note that this is separate and independent of Avaya IP Softphone licenses, which are required for Avaya IP Softphones but not required for Avaya Communication Manager API stations. From the SAT, enter the <b>display system-parameters customer-options</b> command and verify that there are sufficient <b>IP_API_A</b> licenses.
display system-parameters customer-options	
MAXIMUM IP REGISTRATIONS BY PRODUCT ID	
Page 10 of 11	
Product ID	Rel. Limit Used
IP_API_A	: 1000 1
IP_API_B	: 0 0
IP_API_C	: 0 0
IP_Agent	: 1000 0
IP_IR_A	: 1000 0
IP_Phone	: 2400 6
IP_ROMax	: 2400 0
IP_Soft	: 1000 0
IP_eCons	: 0 0



Step	Description
2.	<p>Enter the <b>add station s</b> command, where <b>s</b> is an extension that is valid under the provisioned dial plan. On Page 1 of the <b>station</b> form, set <b>Type</b> to “<b>8410D</b>”, <b>Port</b> to “<b>IP</b>”, and <b>IP SoftPhone</b> to “<b>y</b>”, and enter a descriptive <b>Name</b> and a <b>Security Code</b>.</p> <pre> add station 60001                                     Page 1 of 4                                  STATION  Extension: 60001                                Lock Messages? n                BCC: 0   Type: 8410D                                Security Code: *                TN: 1   Port: IP                                Coverage Path 1:                COR: 1   Name: EON Server                        Coverage Path 2:                COS: 1   Hunt-to Station:  STATION OPTIONS     Loss Group: 2                                Personalized Ringing Pattern: 1     Data Module? n                                Message Lamp Ext: 60001     Speakerphone: 2-way                        Mute Button Enabled? y     Display Language: english  Media Complex Ext:   IP SoftPhone? y </pre>
3.	<p>On Page 3 of the <b>station</b> form, configure the <u>first</u> button as a “<b>crss-alert</b>” button.</p> <pre> add station 60001                                     Page 3 of 4                                  STATION  SITE DATA   Room:                                Headset? n   Jack:                                Speaker? n   Cable:                                Mounting: d   Floor:                                Cord Length: 0   Building:                            Set Color:  ABBREVIATED DIALING   List1:                                List2:                                List3:  BUTTON ASSIGNMENTS   1: crss-alert                                6:   2: call-appr                                7:   3: call-appr                                8:   4:   9:   5:   10: </pre>

Step	Description
4.	Enter the <b>change system-parameters crisis-alert</b> command. Set <b>Every User Responds</b> to “y” to require every station configured with a “crss-alert” button to acknowledge a Crisis Alert call. This ensures that physical telephones configured with “crss-alert” buttons continue to be alerted audibly and visually after the RedSky EON server acknowledges the Crisis Alert on its Avaya Communication Manager API station.
	<pre> change system-parameters crisis-alert                                 CRISIS ALERT SYSTEM PARAMETERS                                 Page 1 of 1  ALERT STATION     Every User Responds? y  ALERT PAGER     Alert Pager? n </pre>

### 3.5. Configure ARS Dial Plan for Alert

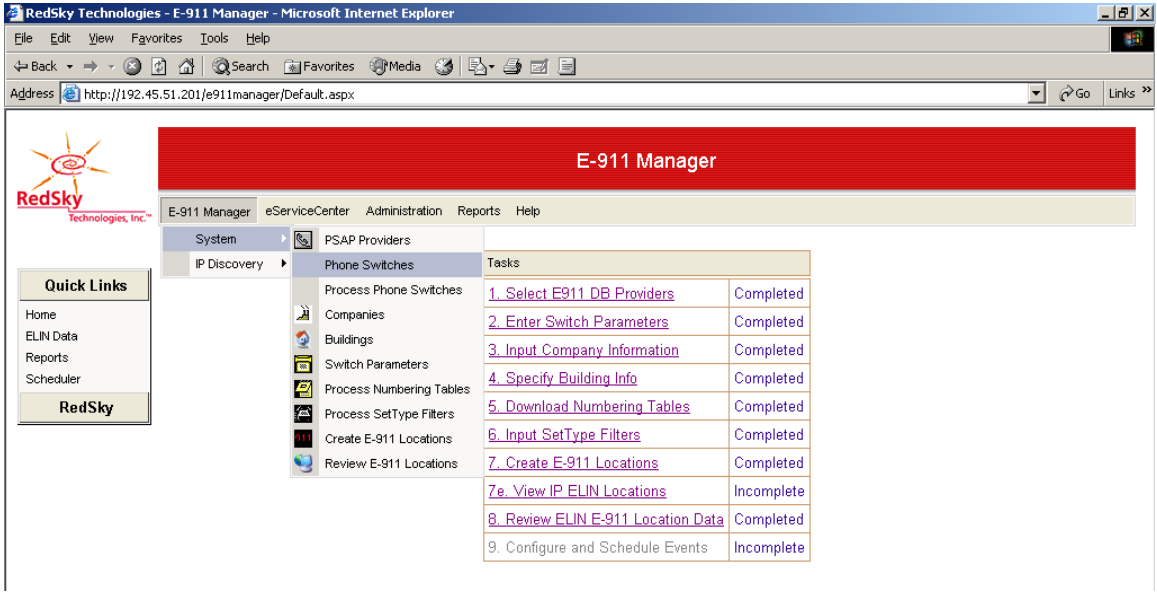
From the SAT, enter the **change ars analysis 911** command. For the “911” entry, set **Call Type** to “**alrt**”. If the digit 9 is used as the ARS Feature Access Code in Avaya Communication Manager, then add an entry for the **Dialed String** of “11” with **Call Type** set to “**alrt**”. These two entries allow the caller to dial either “911” or “9911” when placing a 911 call.

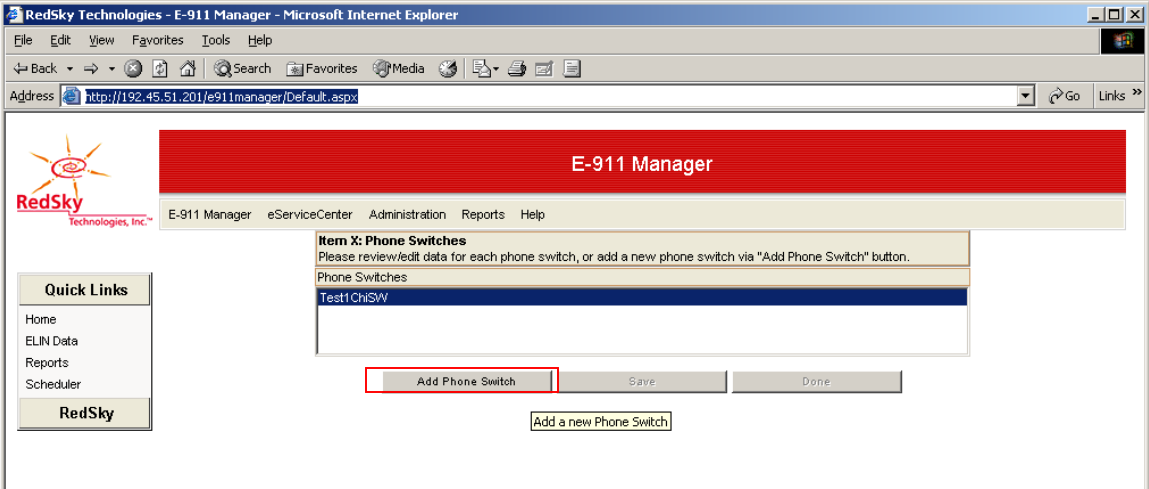
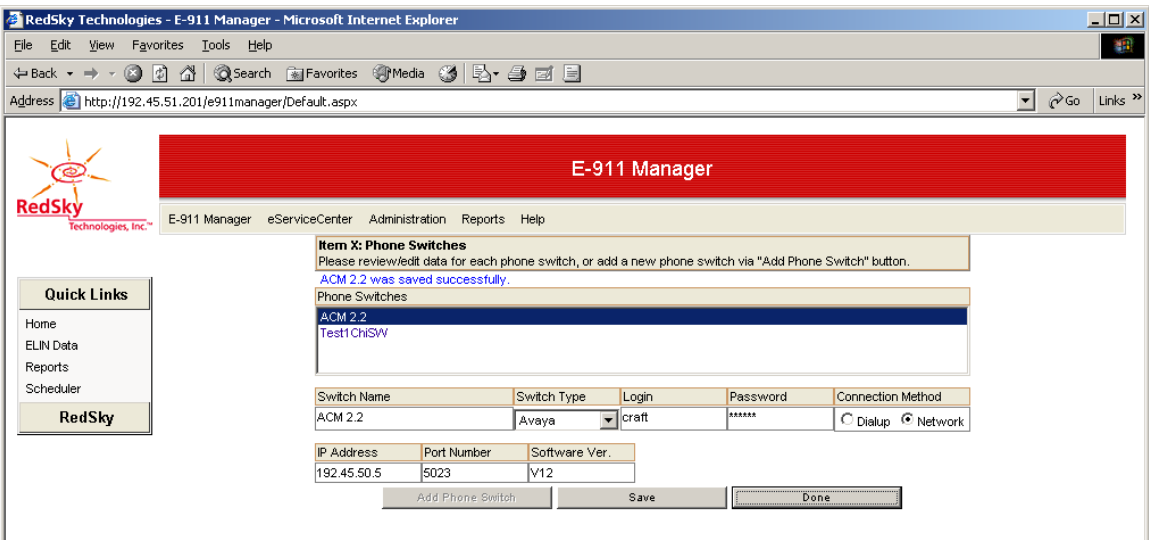
change ars analysis 911						Page	1 of	2
ARS DIGIT ANALYSIS TABLE								
Location: all						Percent Full:	1	
Dialed String	Total Min	Total Max	Route Pattern	Call Type	Node Num	ANI	Reqd	
911	3	3	15	alrt		n		
976	7	7	deny	hnpa		n		
11	2	2	15	alrt		n		

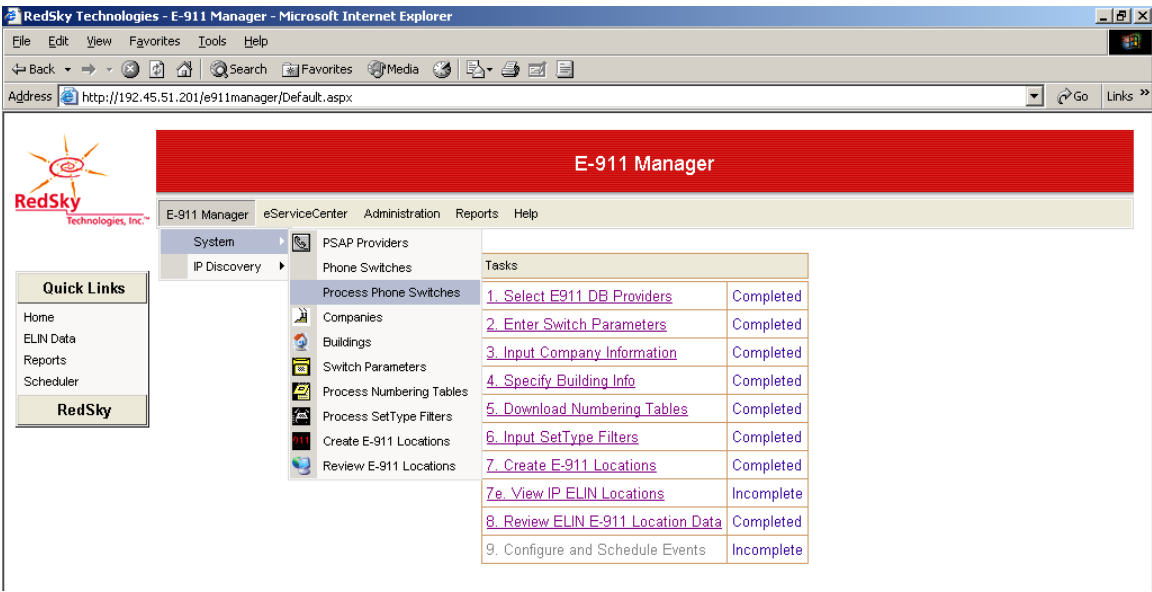
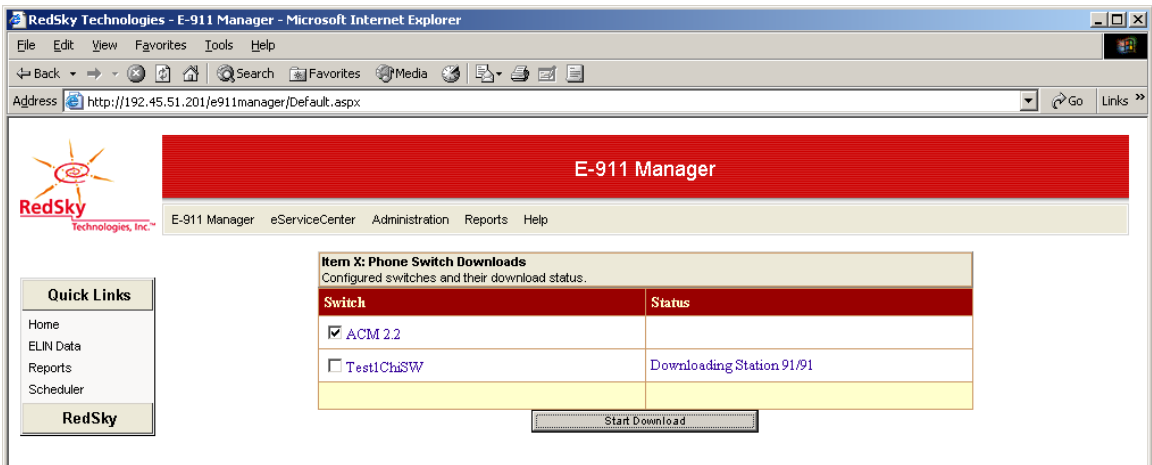
## 4. Configure RedSky E-911 Manager and Emergency On-site Notification (EON)

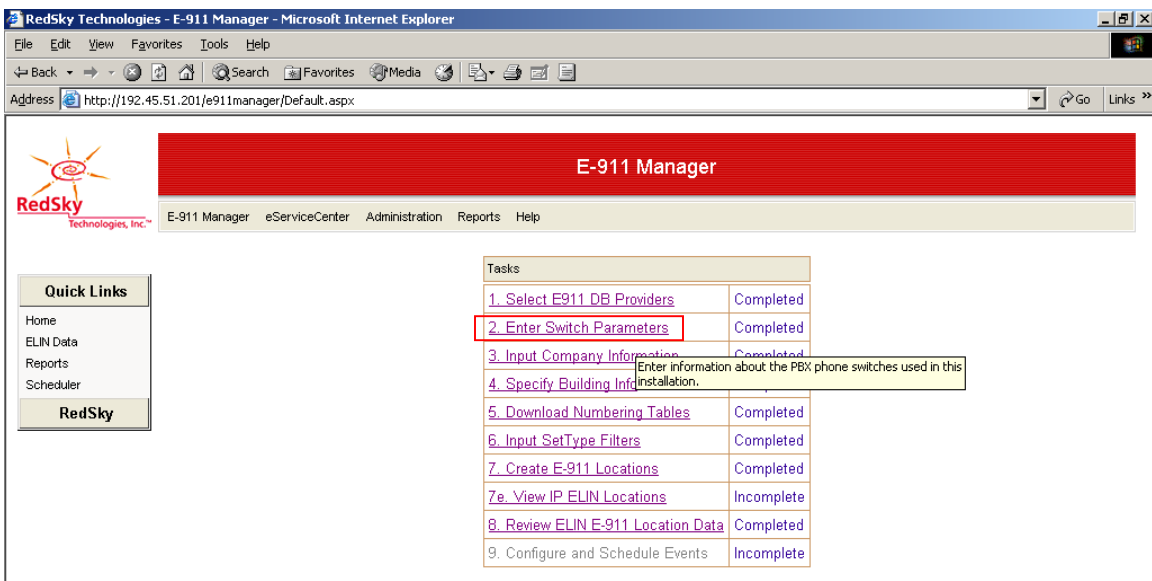
This section provides the relevant steps for configuring the RedSky E-911 Manager to retrieve station numbering and location information from Avaya Communication Manager, and configuring the RedSky EON server to detect emergency calls and notify EON clients.

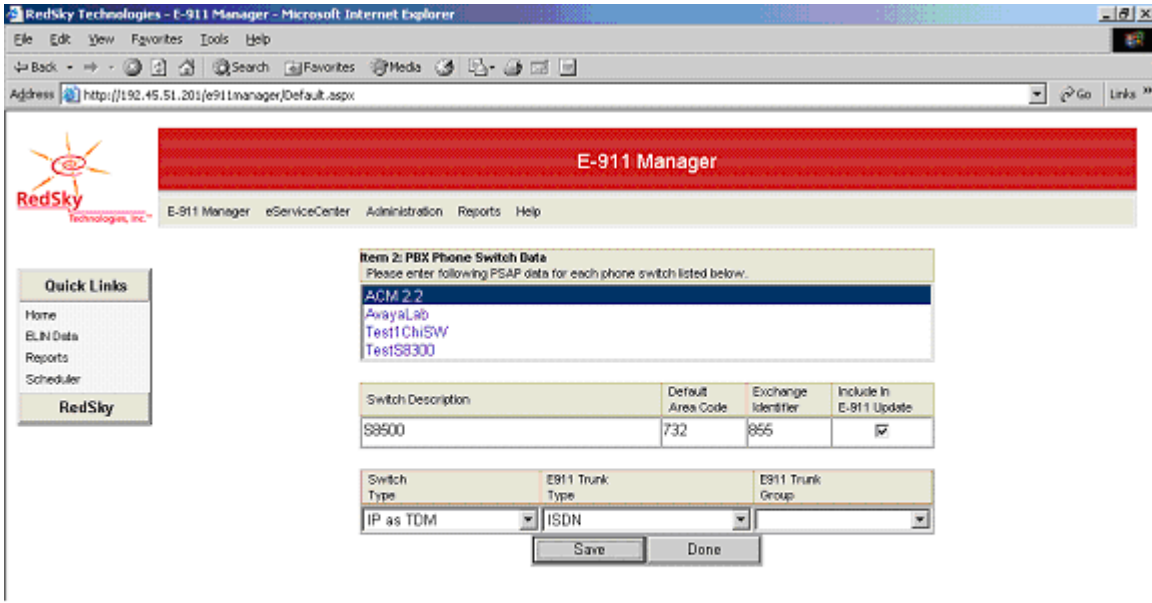
### 4.1. E-911 Manager

Step	Description
1.	Launch a web browser, enter <a href="http://&lt;IP address of E-911 Manager server&gt;/e911manager">http://&lt;IP address of E-911 Manager server&gt;/e911manager</a> in the URL, and log in with the appropriate credentials.
2.	From the <b>E-911 Manager</b> menu, select <b>System -&gt; Phone Switches</b> . 

Step	Description
3.	<p>Click on “Add Phone Switch”.</p>  <p>The screenshot shows the E-911 Manager web application in a Microsoft Internet Explorer browser. The address bar shows the URL http://192.45.51.201/e911manager/Default.aspx. The application has a red header with the title 'E-911 Manager'. Below the header is a navigation menu with links: E-911 Manager, eServiceCenter, Administration, Reports, and Help. On the left side, there is a 'Quick Links' section with links to Home, ELIN Data, Reports, and Scheduler. The main content area displays 'Item X: Phone Switches' with a message: 'Please review/edit data for each phone switch, or add a new phone switch via "Add Phone Switch" button.' Below this, there is a table with one row: 'Test1ChSW'. At the bottom of the main content area, there is a red box highlighting the 'Add Phone Switch' button, along with 'Save' and 'Done' buttons. A small button 'Add a new Phone Switch' is also visible at the bottom right.</p>
4.	<p>Configure the following parameters and click on “Save”:</p> <ul style="list-style-type: none"> <li>• <b>Switch Name</b> – enter a descriptive name.</li> <li>• <b>Switch Type</b> – select “Avaya” from the drop-down menu box.</li> <li>• <b>Login</b> and <b>Password</b> – enter a valid Avaya Communication Manager login and password.</li> <li>• <b>Connection Method</b> – set to “Network”.</li> <li>• <b>IP Address</b> – enter the IP address of the Avaya Media Server.</li> <li>• <b>Port Number</b> – enter “5023”.</li> <li>• <b>Software Ver.</b> – enter “V12” (corresponds to Communication Manager 2.x).</li> </ul> <p>Click on “Done” after the save operation is completed successfully.</p>  <p>The screenshot shows the E-911 Manager web application after the configuration step. The address bar shows the same URL. The main content area displays 'Item X: Phone Switches' with a message: 'Please review/edit data for each phone switch, or add a new phone switch via "Add Phone Switch" button.' Below this, there is a table with one row: 'ACM 2.2'. Below the table, there is a form with the following fields: 'Switch Name' (ACM 2.2), 'Switch Type' (Avaya), 'Login' (craft), 'Password' (*****), 'Connection Method' (Network), 'IP Address' (192.45.50.5), 'Port Number' (5023), and 'Software Ver.' (V12). At the bottom of the form, there are 'Add Phone Switch', 'Save', and 'Done' buttons. A small message 'ACM 2.2 was saved successfully.' is visible above the table.</p>


Step	Description																						
5.	<p>From the <b>E-911 Manager</b> menu, select <b>System -&gt; Process Phone Switches</b>.</p>  <p>The screenshot shows the E-911 Manager web application in a Microsoft Internet Explorer browser. The address bar shows the URL: http://192.45.51.201/e911manager/Default.aspx. The application has a red header with the 'E-911 Manager' title. Below the header is a navigation menu with options: E-911 Manager, eServiceCenter, Administration, Reports, and Help. The 'E-911 Manager' option is selected, and a sub-menu is displayed with options: System, IP Discovery, PSAP Providers, Phone Switches, Process Phone Switches, Companies, Buildings, Switch Parameters, Process Numbering Tables, Process SetType Filters, Create E-911 Locations, and Review E-911 Locations. The 'Process Phone Switches' option is selected, and a table of tasks is displayed:</p> <table border="1"> <thead> <tr> <th>Task</th> <th>Status</th> </tr> </thead> <tbody> <tr> <td>1. Select E911 DB Providers</td> <td>Completed</td> </tr> <tr> <td>2. Enter Switch Parameters</td> <td>Completed</td> </tr> <tr> <td>3. Input Company Information</td> <td>Completed</td> </tr> <tr> <td>4. Specify Building Info</td> <td>Completed</td> </tr> <tr> <td>5. Download Numbering Tables</td> <td>Completed</td> </tr> <tr> <td>6. Input SetType Filters</td> <td>Completed</td> </tr> <tr> <td>7. Create E-911 Locations</td> <td>Completed</td> </tr> <tr> <td>7e. View IP ELIN Locations</td> <td>Incomplete</td> </tr> <tr> <td>8. Review ELIN E-911 Location Data</td> <td>Completed</td> </tr> <tr> <td>9. Configure and Schedule Events</td> <td>Incomplete</td> </tr> </tbody> </table>	Task	Status	1. Select E911 DB Providers	Completed	2. Enter Switch Parameters	Completed	3. Input Company Information	Completed	4. Specify Building Info	Completed	5. Download Numbering Tables	Completed	6. Input SetType Filters	Completed	7. Create E-911 Locations	Completed	7e. View IP ELIN Locations	Incomplete	8. Review ELIN E-911 Location Data	Completed	9. Configure and Schedule Events	Incomplete
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6.	<p>Check the checkbox corresponding to the phone switch configured in Steps 2 – 4, and click on <b>“Start Download”</b>. The browser will automatically update with the <b>Status</b> of the download. After the download is completed, click on <b>“Home”</b> under the <b>Quick Links</b> menu on the left.</p>  <p>The screenshot shows the E-911 Manager web application in a Microsoft Internet Explorer browser. The address bar shows the URL: http://192.45.51.201/e911manager/Default.aspx. The application has a red header with the 'E-911 Manager' title. Below the header is a navigation menu with options: E-911 Manager, eServiceCenter, Administration, Reports, and Help. The 'E-911 Manager' option is selected, and a sub-menu is displayed with options: System, IP Discovery, PSAP Providers, Phone Switches, Process Phone Switches, Companies, Buildings, Switch Parameters, Process Numbering Tables, Process SetType Filters, Create E-911 Locations, and Review E-911 Locations. The 'Process Phone Switches' option is selected, and a table of phone switch downloads is displayed:</p> <table border="1"> <thead> <tr> <th>Switch</th> <th>Status</th> </tr> </thead> <tbody> <tr> <td><input checked="" type="checkbox"/> ACM 22</td> <td></td> </tr> <tr> <td><input type="checkbox"/> Test1ChSW</td> <td>Downloading Station 91/91</td> </tr> </tbody> </table> <p>Below the table is a button labeled 'Start Download'.</p>	Switch	Status	<input checked="" type="checkbox"/> ACM 22		<input type="checkbox"/> Test1ChSW	Downloading Station 91/91																
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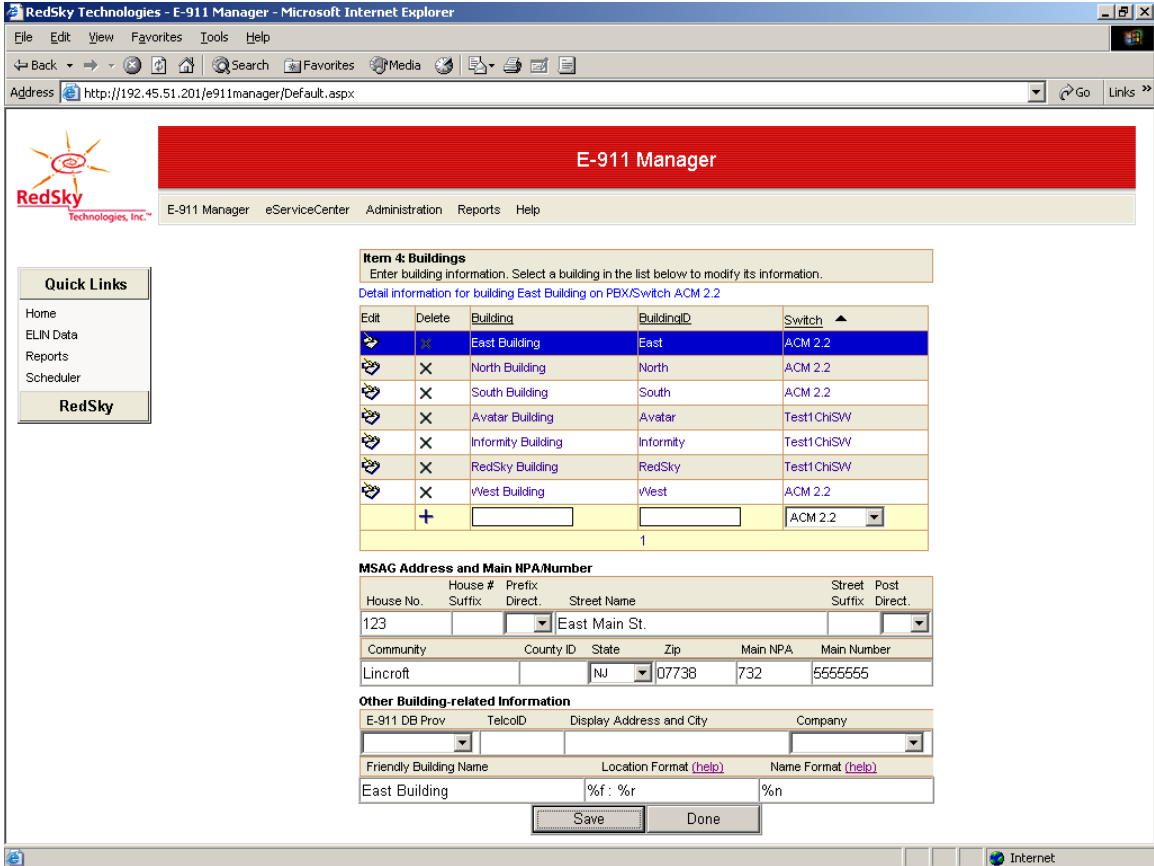
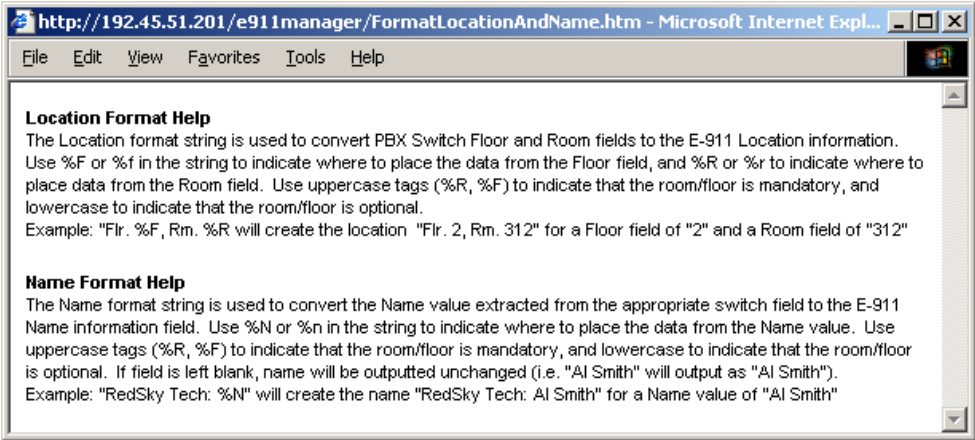
Step	Description																						
7.	<p>Select “Enter Switch Parameters” from the Tasks list.</p>  <table border="1" data-bbox="803 546 1128 856"> <thead> <tr> <th data-bbox="803 546 1047 577">Tasks</th><th data-bbox="1047 546 1128 577"></th></tr> </thead> <tbody> <tr> <td data-bbox="803 577 1047 609">1. <a href="#">Select E911 DB Providers</a></td><td data-bbox="1047 577 1128 609">Completed</td></tr> <tr> <td data-bbox="803 609 1047 640">2. <a href="#">Enter Switch Parameters</a></td><td data-bbox="1047 609 1128 640">Completed</td></tr> <tr> <td data-bbox="803 640 1047 672">3. <a href="#">Input Company Information</a></td><td data-bbox="1047 640 1128 672">Completed</td></tr> <tr> <td data-bbox="803 672 1047 703">4. <a href="#">Specify Building Info</a></td><td data-bbox="1047 672 1128 703">-</td></tr> <tr> <td data-bbox="803 703 1047 735">5. <a href="#">Download Numbering Tables</a></td><td data-bbox="1047 703 1128 735">Completed</td></tr> <tr> <td data-bbox="803 735 1047 766">6. <a href="#">Input SetType Filters</a></td><td data-bbox="1047 735 1128 766">Completed</td></tr> <tr> <td data-bbox="803 766 1047 798">7. <a href="#">Create E-911 Locations</a></td><td data-bbox="1047 766 1128 798">Completed</td></tr> <tr> <td data-bbox="803 798 1047 829">7e. <a href="#">View IP ELIN Locations</a></td><td data-bbox="1047 798 1128 829">Incomplete</td></tr> <tr> <td data-bbox="803 829 1047 861">8. <a href="#">Review ELIN E-911 Location Data</a></td><td data-bbox="1047 829 1128 861">Completed</td></tr> <tr> <td data-bbox="803 861 1047 892">9. <a href="#">Configure and Schedule Events</a></td><td data-bbox="1047 861 1128 892">Incomplete</td></tr> </tbody> </table>	Tasks		1. <a href="#">Select E911 DB Providers</a>	Completed	2. <a href="#">Enter Switch Parameters</a>	Completed	3. <a href="#">Input Company Information</a>	Completed	4. <a href="#">Specify Building Info</a>	-	5. <a href="#">Download Numbering Tables</a>	Completed	6. <a href="#">Input SetType Filters</a>	Completed	7. <a href="#">Create E-911 Locations</a>	Completed	7e. <a href="#">View IP ELIN Locations</a>	Incomplete	8. <a href="#">Review ELIN E-911 Location Data</a>	Completed	9. <a href="#">Configure and Schedule Events</a>	Incomplete
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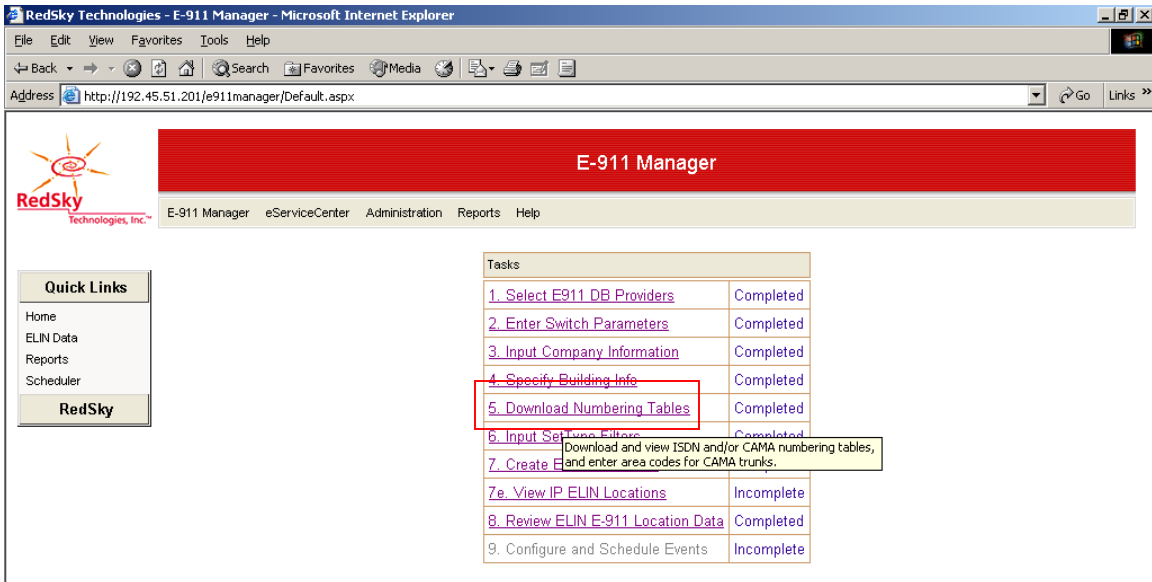
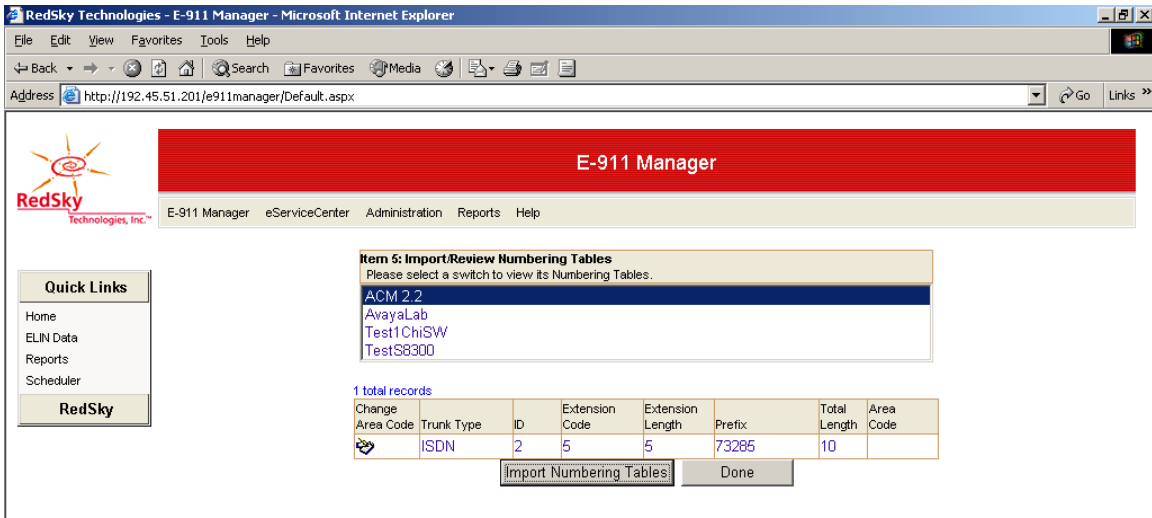
Step	Description
8.	<p>Enter information for <b>Switch Description</b>, <b>Default Area Code</b>, and <b>Exchange Identifier</b>. Check the <b>Include in E-911 Update</b> checkbox and configure the following parameters:</p> <ul style="list-style-type: none"> <li>• <b>Switch Type</b> – select “<b>IP as TDM</b>” from the drop-down menu box.</li> <li>• <b>E911 Trunk Type</b> – select “<b>ISDN</b>” from the drop-down menu box.</li> <li>• <b>E911 Trunk Group</b> – Leave blank if a trunk group is not specified in the public-unknown-numbering form (see Section 3.3). Alternatively, if outbound 911 calls are routed to a specific trunk group, and that trunk group is specified in the public-unknown-numbering form, then select the number of that trunk group in Avaya Communication Manager.</li> </ul> <p>Click on “<b>Save</b>” and then “<b>Done</b>”.</p> 

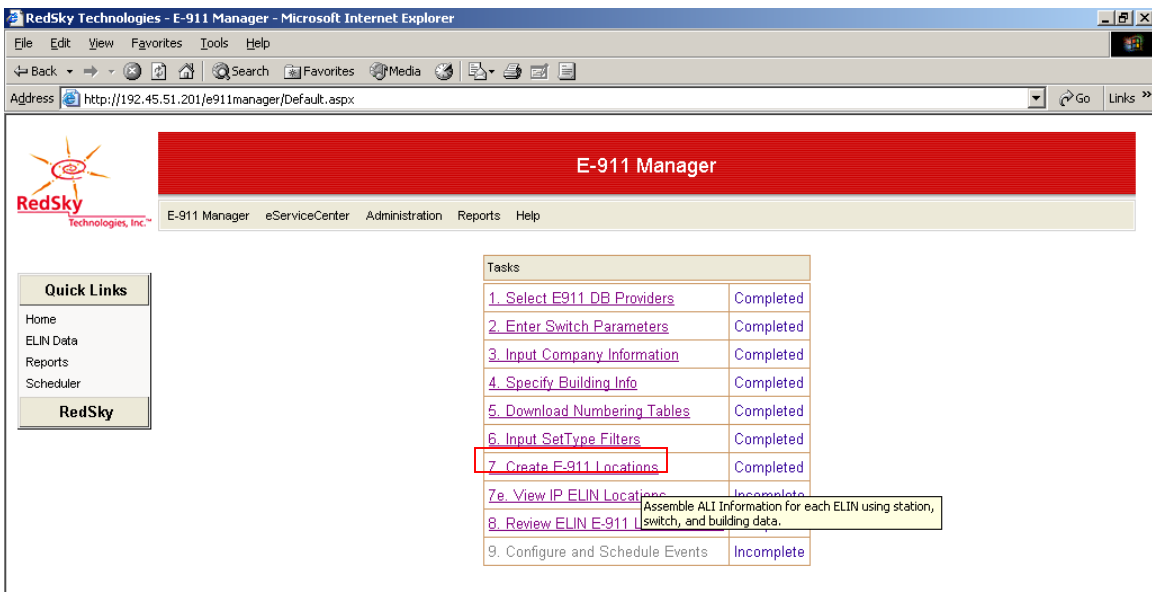
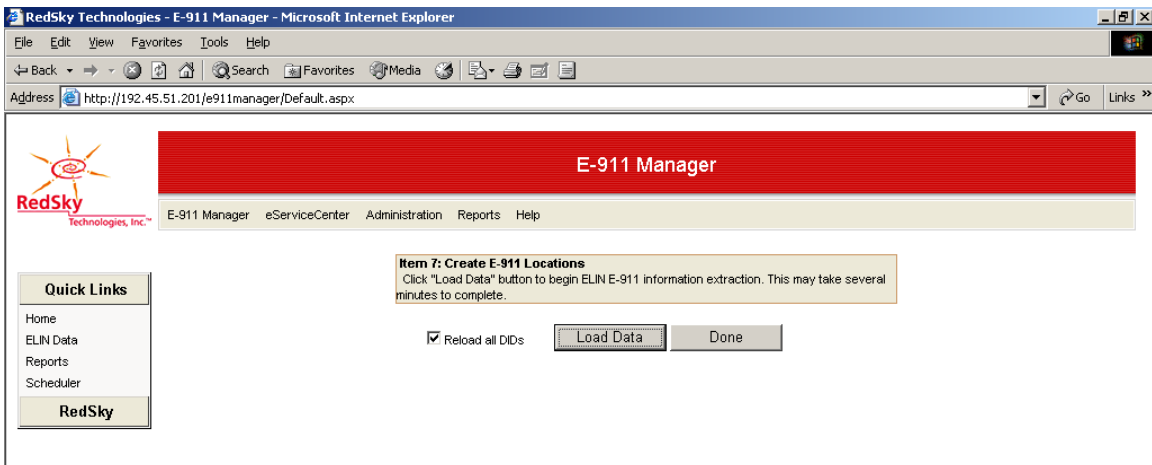
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9.	<p>Select “Specify Building Info” from the Tasks list.</p> <table border="1"> <thead> <tr> <th colspan="2">Tasks</th></tr> </thead> <tbody> <tr> <td><a href="#">1. Select E911 DB Providers</a></td><td>Completed</td></tr> <tr> <td><a href="#">2. Enter Switch Parameters</a></td><td>Completed</td></tr> <tr> <td><a href="#">3. Input Company Information</a></td><td>Completed</td></tr> <tr> <td><b><a href="#">4. Specify Building Info</a></b></td><td>Completed</td></tr> <tr> <td><a href="#">5. Download Nura</a></td><td>Completed</td></tr> <tr> <td><a href="#">6. Input SetType</a></td><td>Completed</td></tr> <tr> <td><a href="#">7. Create E-911 Locations</a></td><td>Completed</td></tr> <tr> <td><a href="#">7e. View IP ELIN Locations</a></td><td>Incomplete</td></tr> <tr> <td><a href="#">8. Review ELIN E-911 Location Data</a></td><td>Completed</td></tr> <tr> <td><a href="#">9. Configure and Schedule Events</a></td><td>Incomplete</td></tr> </tbody> </table>	Tasks		<a href="#">1. Select E911 DB Providers</a>	Completed	<a href="#">2. Enter Switch Parameters</a>	Completed	<a href="#">3. Input Company Information</a>	Completed	<b><a href="#">4. Specify Building Info</a></b>	Completed	<a href="#">5. Download Nura</a>	Completed	<a href="#">6. Input SetType</a>	Completed	<a href="#">7. Create E-911 Locations</a>	Completed	<a href="#">7e. View IP ELIN Locations</a>	Incomplete	<a href="#">8. Review ELIN E-911 Location Data</a>	Completed	<a href="#">9. Configure and Schedule Events</a>	Incomplete
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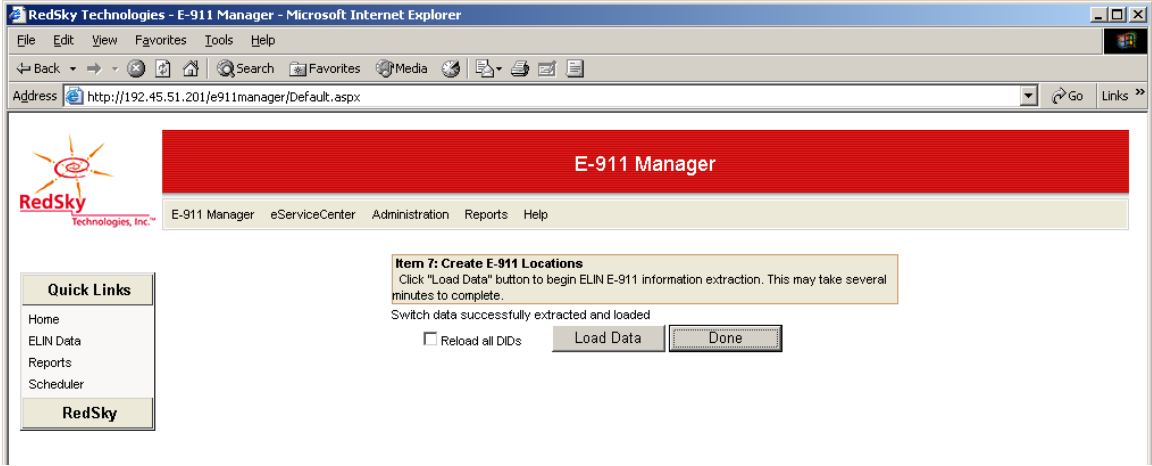
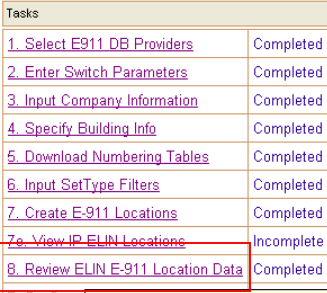


Step	Description																																																																											
10.	<p>For each building defined in Avaya Communication Manager in Section 3.1, enter the <b>BuildingID</b> and a descriptive <b>Building</b> name. The <b>BuildingID</b> value must match the value configured in Avaya Communication Manager. For <b>Switch</b>, select the phone switch configured in Steps 2 – 4 from the drop-down menu box. Click on the “+” icon under the <b>Delete</b> column.</p> <div><div>RedSky Technologies - E-911 Manager - Microsoft Internet Explorer</div><div><div>File Edit View Favorites Tools Help</div><div>⏮ Back ⏭ Forward 🔍 Search 📁 Favorites 🌐 Media 🖨 Print 📧 Mail 📧 Mail</div><div>Address <a href="http://192.45.51.201/e911manager/Default.aspx">http://192.45.51.201/e911manager/Default.aspx</a> Go Links »</div></div><div><div><div><div>Quick Links</div><div>Home ELIN Data Reports Scheduler</div><div>RedSky</div></div></div><div><div>E-911 Manager</div><div>E-911 Manager eServiceCenter Administration Reports Help</div></div><div><div>Item 4: Buildings</div><div>Enter building information. Select a building in the list below to modify its information.</div><div>One item deleted</div><table><tr><th>Edit</th><th>Delete</th><th>Building</th><th>BuildingID</th><th>Switch</th></tr><tr><td></td><td>X</td><td>East Building</td><td>East</td><td>ACM 2.2</td></tr><tr><td></td><td>X</td><td>North Building</td><td>North</td><td>ACM 2.2</td></tr><tr><td></td><td>X</td><td>South Building</td><td>South</td><td>ACM 2.2</td></tr><tr><td></td><td>X</td><td>Avatar Building</td><td>Avatar</td><td>Test1 ChiSW</td></tr><tr><td></td><td>X</td><td>Informity Building</td><td>Informity</td><td>Test1 ChiSW</td></tr><tr><td></td><td>X</td><td>RedSky Building</td><td>RedSky</td><td>Test1 ChiSW</td></tr><tr><td></td><td>+</td><td>West Building</td><td>West</td><td>ACM 2.2</td></tr></table><div>MSAG Address and Main NPA/Number</div><table><tr><th>House No.</th><th>House #</th><th>Prefix</th><th>Street Name</th><th>Street</th><th>Post</th></tr><tr><th>Suffix</th><th>Direct</th><th>Direct</th><th></th><th>Suffix</th><th>Direct</th></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td></tr></table><div>Community County ID State Zip Main NPA Main Number</div><table><tr><td></td><td></td><td></td><td></td><td></td><td></td></tr></table><div>Other Building-related Information</div><table><tr><th>E-911 DB Prov</th><th>TelcoID</th><th>Display Address and City</th><th>Company</th></tr><tr><td></td><td></td><td></td><td></td></tr></table><div>Friendly Building Name Location Format (help) Name Format (help)</div><table><tr><td></td><td></td><td></td></tr></table><div>Save Done</div></div></div><div><div>javascript: __doPostBack('dgrBuildings\$ctl9\$LinkButton2','')</div><div>Internet</div></div></div>	Edit	Delete	Building	BuildingID	Switch		X	East Building	East	ACM 2.2		X	North Building	North	ACM 2.2		X	South Building	South	ACM 2.2		X	Avatar Building	Avatar	Test1 ChiSW		X	Informity Building	Informity	Test1 ChiSW		X	RedSky Building	RedSky	Test1 ChiSW		+	West Building	West	ACM 2.2	House No.	House #	Prefix	Street Name	Street	Post	Suffix	Direct	Direct		Suffix	Direct													E-911 DB Prov	TelcoID	Display Address and City	Company							
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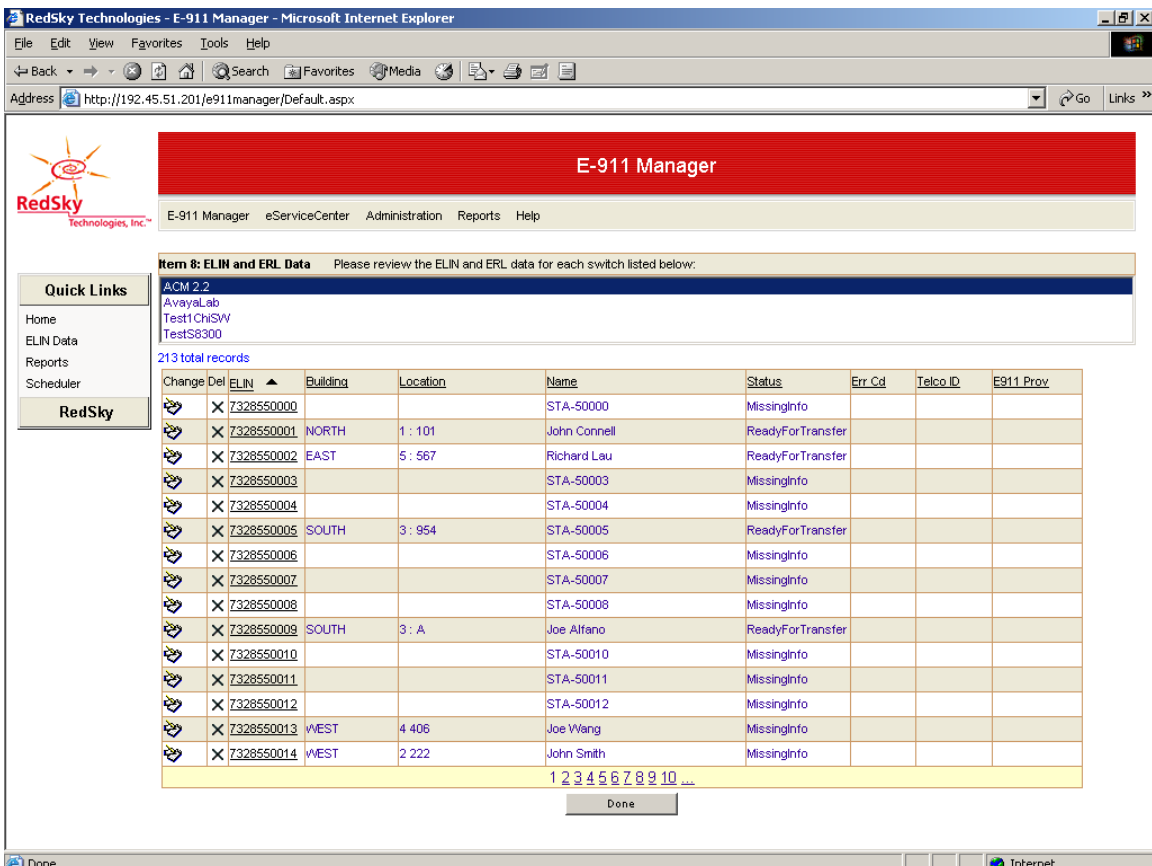
Step	Description
11.	<p>Click on the <b>Edit</b> icon corresponding to a building defined in Step 10, and enter address and main telephone number information for the building in the <b>MSAG Address and Main NPA/Number</b> section.</p>  <p>Specify the <b>Location Format</b> and <b>Name Format</b> according to the instructions below. Click on <b>“Save”</b>.</p> 

Step	Description
12.	Repeat Steps 10 – 11 for each building defined in Avaya Communication Manager and click on “Done”.
13.	<p>Select “Download Numbering Tables” from the Tasks list.</p> 
14.	<p>Select the phone switch configured in Steps 2 – 4 and click on “Import Numbering Tables”. Click on “Done” after the import is completed.</p>  <p><b>Note:</b> The ID column in the above screenshot is an E-911 Manager index and is NOT an Avaya trunk group number.</p>

Step	Description																						
15.	<p>Select “Create E-911 Locations” from the Tasks list.</p>  <p>The screenshot shows the RedSky E-911 Manager interface in Microsoft Internet Explorer. The browser address bar shows <a href="http://192.45.51.201/e911manager/Default.aspx">http://192.45.51.201/e911manager/Default.aspx</a>. The page has a red header with the RedSky logo and navigation links: E-911 Manager, eServiceCenter, Administration, Reports, and Help. On the left is a 'Quick Links' sidebar with Home, ELIN Data, Reports, Scheduler, and a RedSky button. The main content area features a 'Tasks' table:</p> <table border="1"> <thead> <tr> <th>Tasks</th> <th>Status</th> </tr> </thead> <tbody> <tr><td><a href="#">1. Select E911 DB Providers</a></td><td>Completed</td></tr> <tr><td><a href="#">2. Enter Switch Parameters</a></td><td>Completed</td></tr> <tr><td><a href="#">3. Input Company Information</a></td><td>Completed</td></tr> <tr><td><a href="#">4. Specify Building Info</a></td><td>Completed</td></tr> <tr><td><a href="#">5. Download Numbering Tables</a></td><td>Completed</td></tr> <tr><td><a href="#">6. Input SetType Filters</a></td><td>Completed</td></tr> <tr><td><b><a href="#">7. Create E-911 Locations</a></b></td><td>Completed</td></tr> <tr><td><a href="#">7e. View IP ELIN Locations</a></td><td>Incomplete</td></tr> <tr><td><a href="#">8. Review ELIN E-911</a></td><td>Incomplete</td></tr> <tr><td><a href="#">9. Configure and Schedule Events</a></td><td>Incomplete</td></tr> </tbody> </table> <p>A tooltip for item 8 is visible, stating: 'Assemble ALL Information for each ELIN using station, switch, and building data.'</p>	Tasks	Status	<a href="#">1. Select E911 DB Providers</a>	Completed	<a href="#">2. Enter Switch Parameters</a>	Completed	<a href="#">3. Input Company Information</a>	Completed	<a href="#">4. Specify Building Info</a>	Completed	<a href="#">5. Download Numbering Tables</a>	Completed	<a href="#">6. Input SetType Filters</a>	Completed	<b><a href="#">7. Create E-911 Locations</a></b>	Completed	<a href="#">7e. View IP ELIN Locations</a>	Incomplete	<a href="#">8. Review ELIN E-911</a>	Incomplete	<a href="#">9. Configure and Schedule Events</a>	Incomplete
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16.	<p>Check the “Reload all DIDs” checkbox and click on “Load Data”.</p>  <p>The screenshot shows the 'Item 7: Create E-911 Locations' screen. It includes a message box: 'Click "Load Data" button to begin ELIN E-911 information extraction. This may take several minutes to complete.' Below this is a checkbox labeled 'Reload all DIDs' which is checked, and two buttons: 'Load Data' and 'Done'.</p>																						

Step	Description																						
17.	<p>After loading is completed, click on “Done”.</p> 																						
18.	<p>Select “Review ELIN E-911 Location Data” from the Tasks list.</p>  <thead> <tr> <th>Tasks</th> <th>Status</th> </tr> </thead> <tbody> <tr><td><a href="#">1. Select E911 DB Providers</a></td><td>Completed</td></tr> <tr><td><a href="#">2. Enter Switch Parameters</a></td><td>Completed</td></tr> <tr><td><a href="#">3. Input Company Information</a></td><td>Completed</td></tr> <tr><td><a href="#">4. Specify Building Info</a></td><td>Completed</td></tr> <tr><td><a href="#">5. Download Numbering Tables</a></td><td>Completed</td></tr> <tr><td><a href="#">6. Input SetType Filters</a></td><td>Completed</td></tr> <tr><td><a href="#">7. Create E-911 Locations</a></td><td>Completed</td></tr> <tr><td><a href="#">7a. View IP ELIN Locations</a></td><td>Incomplete</td></tr> <tr><td><a href="#">8. Review ELIN E-911 Location Data</a></td><td>Completed</td></tr> <tr><td><a href="#">9. Configure</a></td><td></td></tr> </tbody>	Tasks	Status	<a href="#">1. Select E911 DB Providers</a>	Completed	<a href="#">2. Enter Switch Parameters</a>	Completed	<a href="#">3. Input Company Information</a>	Completed	<a href="#">4. Specify Building Info</a>	Completed	<a href="#">5. Download Numbering Tables</a>	Completed	<a href="#">6. Input SetType Filters</a>	Completed	<a href="#">7. Create E-911 Locations</a>	Completed	<a href="#">7a. View IP ELIN Locations</a>	Incomplete	<a href="#">8. Review ELIN E-911 Location Data</a>	Completed	<a href="#">9. Configure</a>	
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<a href="#">9. Configure</a>																							

 The link '8. Review ELIN E-911 Location Data' is highlighted with a red rectangle. A tooltip for the '9. Configure' link reads: 'Review data and status for ELIN E-911 Location data for each PBS switch.'

Step	Description
19.	<p>Select the phone switch configured in Steps 2 – 4 to view the numbering and location information for stations retrieved from Avaya Communication Manager. Click on a station record to view the specific information to be delivered to the ALI databases.</p> 

## 4.2. EON Server

Configure the following parameters in the “EONServer.exe.config” file in the \RedSkyFiles\EON\ subdirectory on the EON server:

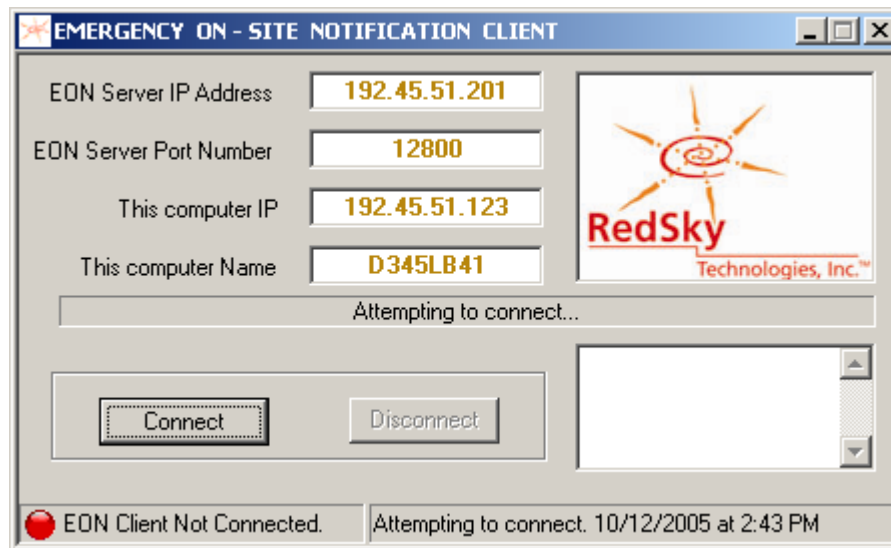
- **ClientListeningPortNumber** – set to “12800”.
- **CMAPIServer IP** – set to the IP address of the Avaya Communication Manager API server interface facing the CMAPI client (192.45.51.88 in **Figure 1**).
- **CMServerIP** – set to the IP address of a C-LAN board (for Avaya S8500 and S8700 Media Servers) or Avaya S8300 Media Server.
- **CMAPIPort** – set to “4721”.
- **CrisisAlertPhoneNum** and **CrisisAlertPhonePw** – set to the extension and password of the Avaya Communication Manager API station created in Section 3.4.

### 4.3. EON Client

Configure the following parameters in the “EONClient.exe.config” file on the EON client:

- **ServerIPAddress** – set to the IP address of the EON server.
- **serverListeningPort** – set to “12800”.

Start the EON client and click on “**Connect**” to connect to the EON server.



## 5. Interoperability Compliance Testing

The interoperability compliance testing included functionality, serviceability, and performance testing. The functionality testing evaluated the ability of the RedSky E-911 Manager to accurately retrieve station numbering and location information from Avaya Communication Manager, and the RedSky Emergency On-site Notification (EON) server to correctly detect 911 calls originated by Avaya Communication Manager stations. The serviceability testing introduced failure scenarios to see if the RedSky E-911 Manager and EON server can resume operation after failure recovery. The performance testing stressed the RedSky EON server by continuously placing 911 calls over an extended period of time.

### 5.1. General Test Approach

The main objectives were to verify that:

- The RedSky E-911 Manager accurately retrieves station numbering and location information from Avaya Communication Manager before and after stations are added, deleted, and changed.
- The RedSky EON server correctly detects 911 calls placed by Avaya IP, digital, and analog telephones.
- The RedSky EON server notifies RedSky EON clients of the 911 calls in a timely manner and with the correct caller numbering and location information.

For serviceability testing, connection and cable disconnects and reconnects, and device resets were applied. For performance testing, an Avaya IP Softphone controlling an Avaya Communication Manager physical station continuously originated 911 calls; the off-hook, dialing, and on-hook operations on the Avaya IP Softphone were controlled by a test automation script.

## 5.2. Test Results

The main objectives of Section 5.1 were verified. For serviceability testing, the RedSky E-911 Manager was able to retrieve station numbering and location information from Avaya Communication Manager after the connection to the Avaya S8500 Media Server was disconnected and reconnected, as well as after resets of Avaya Communication Manager and the RedSky E-911 Manager server. The RedSky EON server was able to detect 911 calls and notify RedSky EON clients after resets of Avaya Communication Manager and the RedSky E-911 Manager server. For performance testing, a 911 call was generated once every minute for five hours and the RedSky EON server successfully detected the calls and notified RedSky EON clients.

The following observations were made during testing:

- If Avaya Communication Manager or the Avaya Communication Manager API server is reset, then the RedSky EON server software must be restarted.
- Alerts on RedSky EON clients are not queued up. For example, if two 911 calls are placed, and the RedSky EON client does not acknowledge the first alert, the second alert does not appear on the RedSky EON client display. Alerts to other notification subscribers (reached via e-mail, pager, etc.) are sent independently, so the notification subscribers should receive alerts for both calls (not verified during testing).

## 6. Verification Steps

The following steps may be used to verify the configuration:

- Compare the station numbering and location information reported in the RedSky E-911 Manager and Avaya Communication Manager, and verify consistency. Add, delete, and change Avaya Communication Manager station information. From the RedSky E-911, schedule an update in the near future or wait for the next scheduled update. After the update completes, re-verify consistency.
- Place 911 calls from Avaya Communication Manager stations and verify that all EON clients are notified of the calls along with the correct caller numbering and location information.



## 7. Support

For technical support on RedSky Technologies products, contact RedSky Technologies at:

- Phone: 1-866-RST-CIELO
- E-mail: [support@redskytech.com](mailto:support@redskytech.com)

## 8. Conclusion

These Application Notes described a compliance-tested configuration comprised of Avaya Communication Manager 2.2, Avaya Communication Manager Application Programming Interface, and the RedSky Technologies E-911 Manager with Emergency On-Site Notification (EON). The RedSky E-911 Manager retrieves station numbering and location information from a PBX, and validates, reformats, and uploads the information to public Automatic Location Identification (ALI) databases. EON is an add-on module to the RedSky E-911 Manager that detects emergency calls originated by PBX stations and notifies EON clients and other notification subscribers (reached via e-mail, pager, etc.) when such calls are detected. During compliance testing, the RedSky E-911 Manager produced correct station numbering and location information as Avaya Communication Manager stations were added, deleted, and changed. In addition, the RedSky EON server successfully detected emergency calls placed by Avaya Communication Manager stations and notified EON clients of such calls.

## 9. Additional References

Product documentation for Avaya products may be found at <http://support.avaya.com>.

Product information for RedSky Technologies products may be found at [http://www.redskytech.com/src/03\\_sec/software/index.htm](http://www.redskytech.com/src/03_sec/software/index.htm).

[1] *Avaya Communication Manager Application Notes: Emergency Calling*

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Please e-mail any questions or comments pertaining to these Application Notes along with the full title name and filename, located in the lower right corner, directly to the Avaya Developer*Connection* Program at [devconnect@avaya.com](mailto:devconnect@avaya.com).