



Avaya Solution & Interoperability Test Lab

Application Notes for the RedSky Technologies E-911 Manager with Avaya Communication Manager - Issue 1.0

Abstract

These Application Notes describe a compliance-tested configuration comprised of Avaya Communication Manager and the RedSky Technologies E-911 Manager. The RedSky E-911 Manager retrieves station emergency numbering and location information from a PBX, and validates, reformats, and uploads the information to public Automatic Location Identification (ALI) databases. During compliance testing, the RedSky E-911 Manager successfully obtained station emergency numbering and location information after Avaya Communication Manager stations were added, deleted, and changed. 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 3.1 and the RedSky Technologies E-911 Manager 5.1. The RedSky E-911 Manager retrieves station emergency 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).

Figure 1 illustrates a sample configuration consisting of:

- a pair of redundant Avaya S8710 Media Servers running Avaya Communication Manager
- an Avaya G650 Media Gateway
- Avaya IP and Digital Telephones
- analog telephones
- a RedSky Technologies E-911 Manager server.

The compliance testing focused on verifying the generation of ALI records and not on the transfer of ALI records to ALI databases.

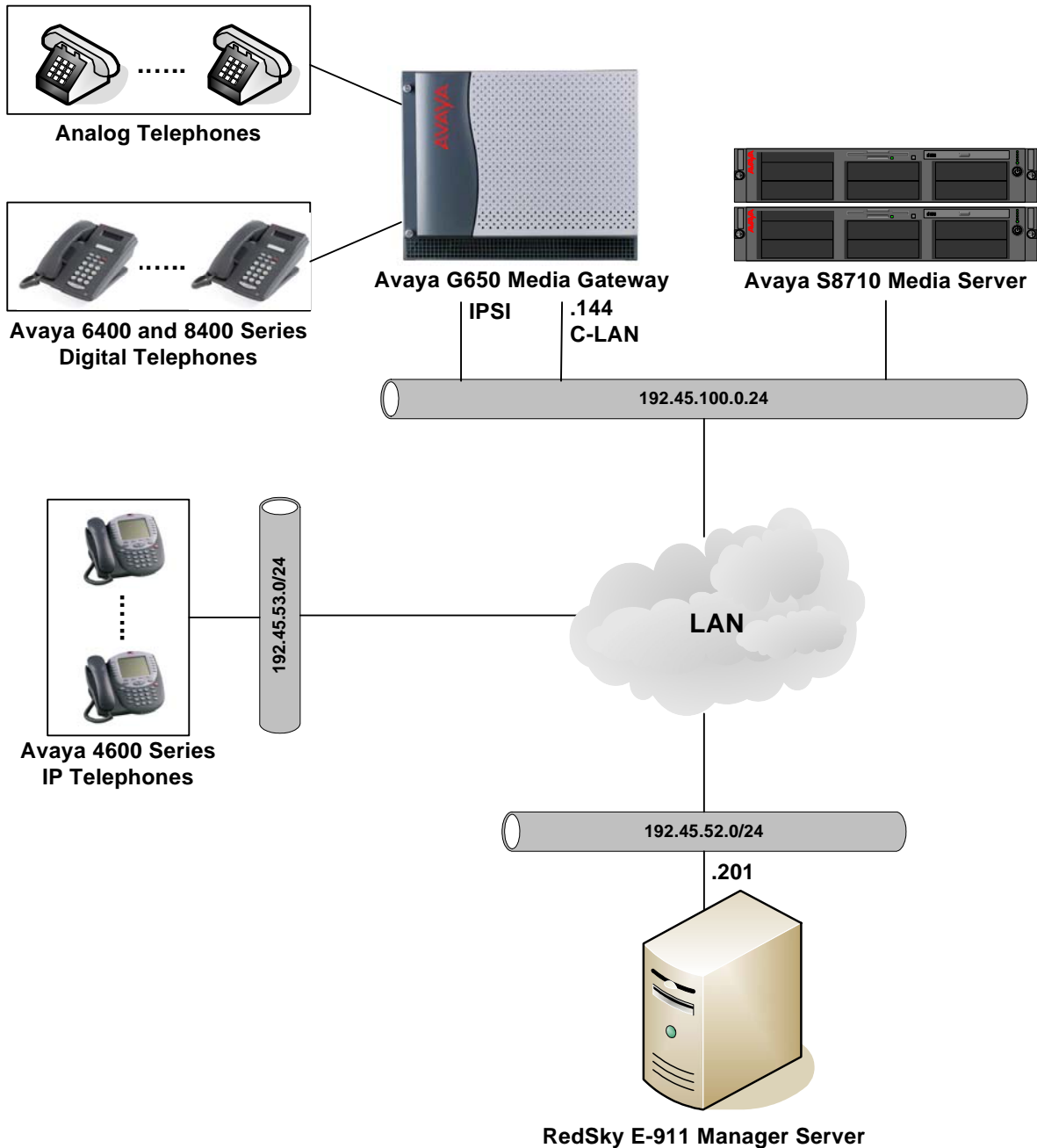


Figure 1: Sample configuration.

2. Equipment and Software Validated

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

Equipment		Software/Firmware
Avaya S8710 Media Server		3.1 (R013x.01.0.628.6)
Avaya G650 Media Gateway		-
	TN2312BP IP Server Interface	30
	TN799DP C-LAN Interface	17
Avaya 4600 Series IP Telephones		2.3 (4602SW) 2.3 (4610SW) 2.3 (4620SW) 2.5 (4525SW)
Avaya 6400 and 8400 Series Digital Telephones		-
Analog Telephones		-
RedSky Technologies E-911 Manager Server		
	E-911 Manager	5.1.0.16249
	PhoneData.exe	5.1.0.16250
	PhoneDataExtract.dll	5.1.0.16248

3. Configure Avaya Communication Manager

This section describes the steps for configuring public/unknown numbering formats, station name and location information (room, floor, building), and System Access Terminal (SAT) services.

3.1. 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 prepend 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 “**50**” 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 “50xxx” extensions and routed to those specific trunk groups. Additional entries may be similarly configured for other extension lengths and prefixes - for example, for “54xxx” 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 0									
NUMBERING - PUBLIC/UNKNOWN FORMAT									
Total									
Ext	Ext	Trk	CPN	CPN	Ext	Ext	Trk	CPN	Total
Len	Code	Grp(s)	Prefix	Len	Len	Code	Grp(s)	Prefix	CPN
5	50	6	73285	10					

3.2. Define Site Data

From the Avaya Communication Manager 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 “**307**” and “**456**” are defined.

change site-data									
SITE DATA USER DEFINITION									
VALID BUILDING FIELDS									
307									
456									

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	Page 3 of 4
SITE DATA USER DEFINITION VALID FLOOR FIELDS	
1	
2	
3	
4	
5	

3.3. 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 60001	Page 1 of 4	
STATION		
Extension: 60001	Lock Messages? n	BCC: 0
Type: 4610	Security Code: *	TN: 1
Port: S00002	Coverage Path 1:	COR: 1
Name: STA-60001	Coverage Path 2:	COS: 1
	Hunt-to Station:	
STATION OPTIONS		
Loss Group: 19	Personalized Ringing Pattern: 1	
	Message Lamp Ext: 60001	
Speakerphone: 2-way	Mute Button Enabled? y	
Display Language: english		
Survivable GK Node Name:		
Survivable COR: internal	Media Complex Ext:	
Survivable Trunk Dest? y	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 the extension of a DID station as in the example below (where station **60001** has an **Emergency Location Ext** of **50001**). The **Emergency Location Ext** is used, along with any numbering modification defined in the public-unknown-numbering form (see Section 3.1), to form the Calling Party Number in an outbound 911 call 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 station, then the **Emergency Location Ext** might not be used. Specifically, if the IP address of the IP station falls into an IP address range configured in the ip-network-map form, then the extension used to form the Calling Party Number is as follows:

- If the Emergency Location Extension associated with that IP address range is the same as the **Emergency Location Ext** of the station, then the station extension is used.
- If the Emergency Location Extension associated with that IP address range is NOT the same as the **Emergency Location Ext** of the station, then the Emergency Location Extension is used.

If the IP address of the IP station does not fall into any IP address range configured in the ip-network-map form, then the behavior is the same as that for non-IP stations, i.e. the **Emergency Location Ext** is used to form the Calling Party Number. Lastly, if **Always Use** is set to “y”, then the **Emergency Location Ext** is always used to form the Calling Party Number, regardless of the ip-network-map form configuration.

change station 60001		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 Idle Line Preference? n	
Bridged Call Alerting? n	Restrict Last Appearance? y	
Active Station Ringing: single	Conf/Trans on Primary Appearance? n	
H.320 Conversion? n	Per Station CPN - Send Calling Number?	
Service Link Mode: as-needed		
Multimedia Mode: enhanced		
MWI Served User Type:	Display Client Redirection? n	
AUDIX Name:	Select Last Used Appearance? n	
	Coverage After Forwarding? s	
	Direct IP-IP Audio Connections? y	
Emergency Location Ext: 50001	Always Use? y	IP Audio Hairpinning? y

Since the RedSky E-911 Manager does not currently take into account the **Always Use** parameter and the relationship between **Emergency Location Ext** and the ip-network-map form, some additional consideration is warranted. If the E-911 Manager Switch Type setting is “IP Range”, then the E-911 Manager produces an ALI record for each Emergency Location Extension referenced in the ip-network-map form (assuming the referenced Emergency Location Extension is the extension of an existing administered station), but ignores the station form configurations of IP stations. For non-IP stations, an ALI record is produced for each unique **Emergency Location Ext** referenced in the station forms of the non-IP stations. As a result, there may be inconsistencies between the ALI records and the actual Calling Party Numbers of outbound 911 calls placed from IP stations whose **Emergency Location Ext** is not also referenced in the ip-network-map form. To avoid inconsistencies, Red Sky recommends that if the E-911 Manager Switch Type setting is “IP Range”, then **Emergency Location Ext** should be set to the station extension (default), **Always Use** should be set to “n” on all IP stations, and the ip-network-map form should be configured with all possible IP address ranges used by IP stations and all necessary Emergency Location Extensions.

If the E-911 Manager Switch Type setting (see Section 4 Step 14) is “IP as TDM”, then the E-911 Manager produces an ALI record for each unique **Emergency Location Ext** referenced in the station forms, but ignores the ip-network-map form configuration. As a result, the ALI records produced by the E-911 Manager may not always be consistent with the actual Calling Party Numbers of outbound 911 calls placed from IP stations whose **Always Use** setting is “n”, particularly if the ip-network-map form is configured with Emergency Location Extensions. To address the inconsistencies, RedSky recommends that if the E-911 Manager Switch Type setting is “IP as TDM”, then **Always Use** should be set to “y” on all stations, so that Avaya Communication Manager does not use the ip-network-map form data in forming the Calling Party Numbers in outbound 911 calls.

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 3.2.

change station 60001		Page 3 of 4	
STATION			
SITE DATA			
Room: 999	Headset? n		
Jack:	Speaker? n		
Cable:	Mounting: d		
Floor: 5	Cord Length: 0		
Building: 456	Set Color:		
ABBREVIATED DIALING			
List1:	List2:	List3:	
BUTTON ASSIGNMENTS			
1: call-appr	5:		
2: call-appr	6:		
3: call-appr	7:		
4:	8:		

3.4. Configure IP Network Map

If the RedSky E-911 Manager Switch Type setting is “IP Range”, then from the SAT, enter the **change ip-network-map** command. Enter IP address ranges covering the IP address spaces of all Avaya IP phones in the enterprise. For each range, specify an **Emergency Location Extension**.

change ip-network-map						Page 1 of 32	
IP ADDRESS MAPPING							
		Subnet				Emergency Location Extension	
From IP Address	(To IP Address	or Mask)	Region	VLAN			
192.45 .53 .51	192.45 .53 .60		3	n	50001		
192.45 .53 .61	192.45 .53 .70		3	n	50016		
.	n		

3.5. IP Node Names and IP Services

From the SAT, enter the **change node-names ip** command. Create a node name for the RedSky E-911 Manager and enter the IP address of the E-911 Manager server. Also note the node-name and IP address of the C-LAN board to which the E-911 Manager will connect to retrieve station numbering and location information from Avaya Communication Manager.

change node-names ip				Page 1 of 1	
		IP NODE NAMES			
Name	IP Address	Name	IP Address		
CLAN-1A02	192.45 .100.144		.	.	.
CLAN-1A06	192.45 .100.147				
MEDPRO-1A03	192.45 .100.145				
RedSkyE911Mgr	192.45 .52 .201		.	.	.

Enter the **change ip-services** command. On Page 1 of the **ip-services** form, configure an entry as follows:

- **Service Type** – set to “SAT”.
- **Enabled** – set to “y”.
- **Local Node** – set to the node name of the C-LAN noted above.
- **Local Port** – set to “5023”.
- **Remote Node** – set to the node name created for the E-911 Manager above.

change ip-services					Page	1 of	3
IP SERVICES							
Service	Enabled	Local	Local	Remote	Remote		
Type		Node	Port	Node	Port		
SAT	y	CLAN-1A02	5023	RedSkyE911Mr	0		

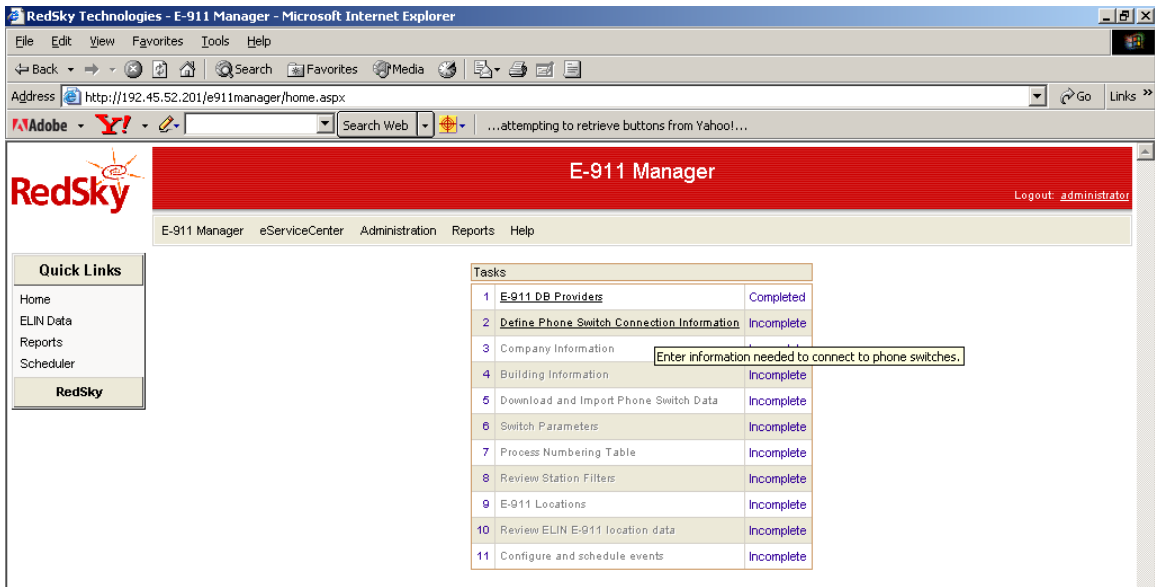
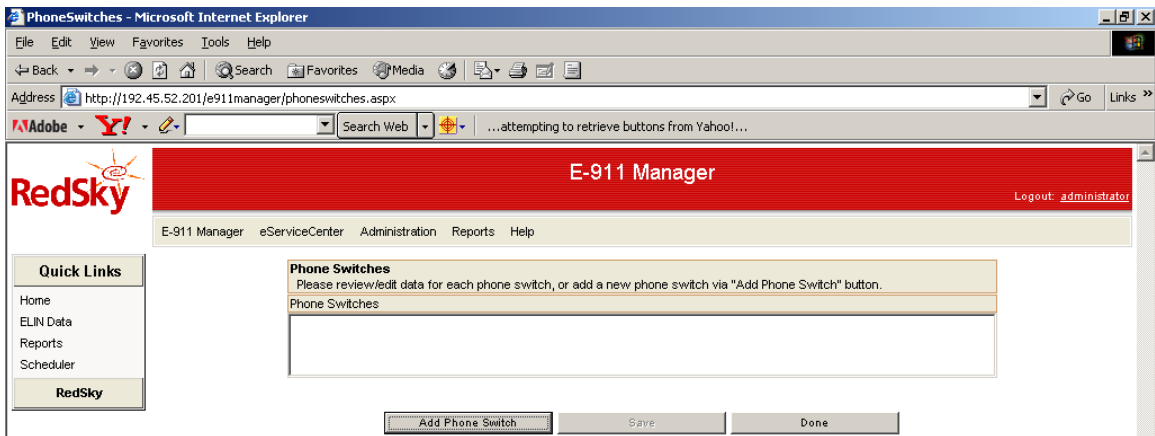
3.6. Create Login for RedSky E-911 Manager

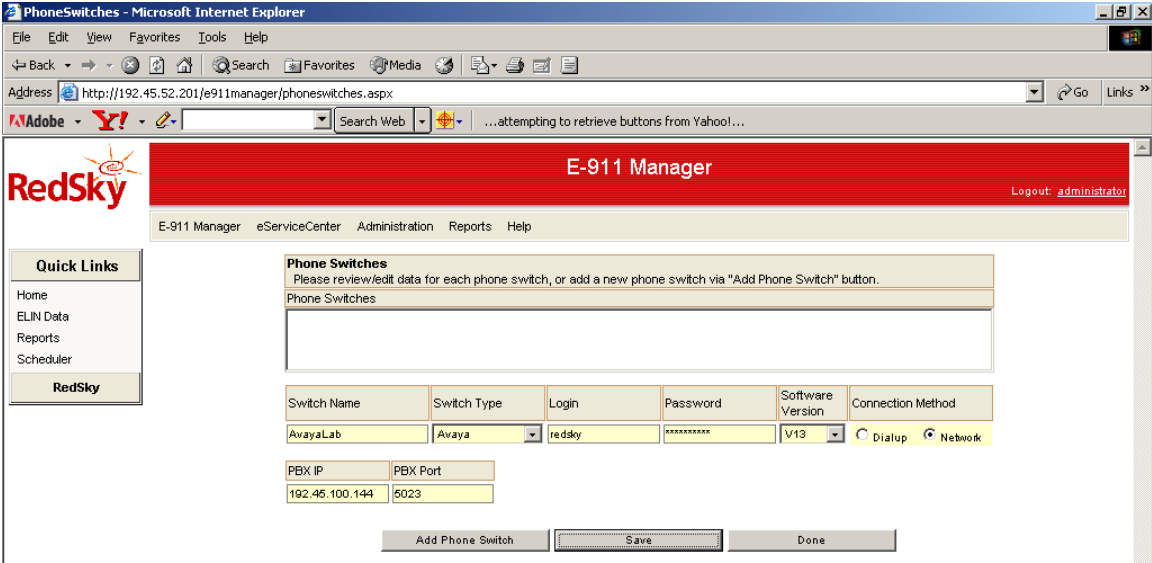
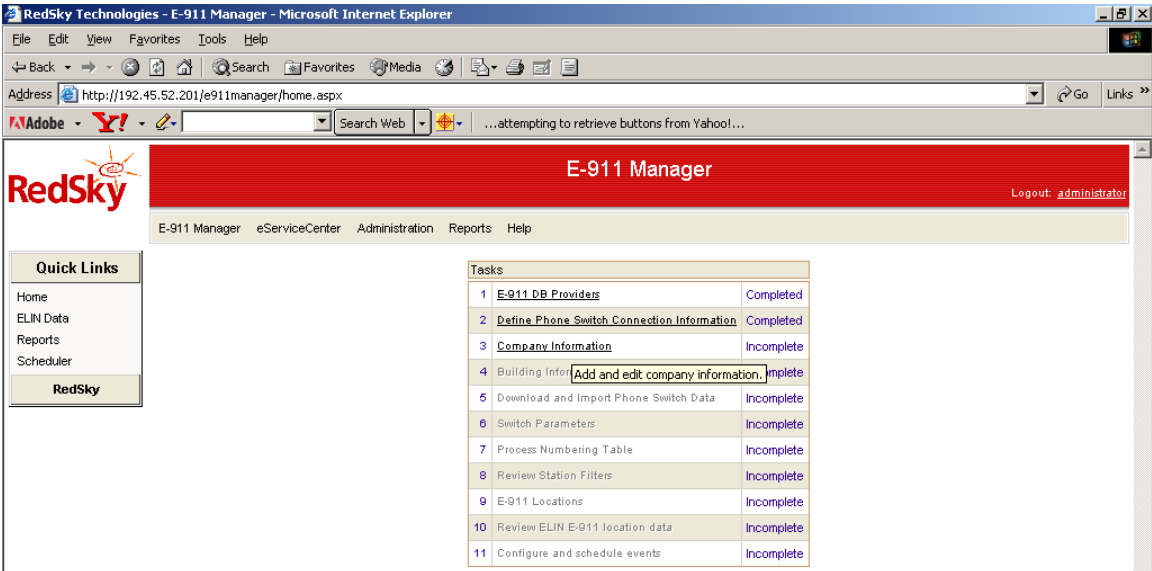
From the SAT, enter the **add login <login-id>** command, where <login-id> is a 2 – 8 alphanumeric character login ID. In the **login** form, set **Login Type** to “**customer**” and **Service Level** to “**super-user**”, and assign a **Password**. The other fields may be left at the defaults.

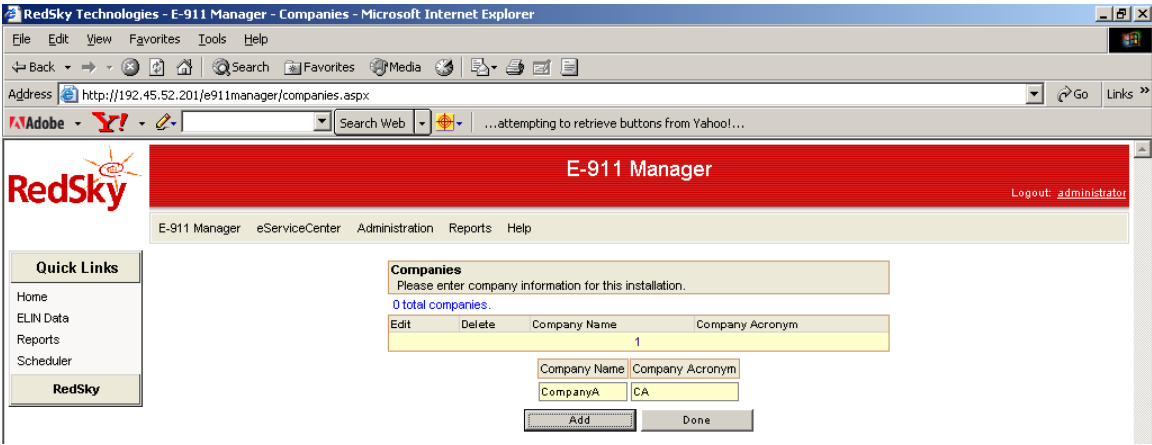
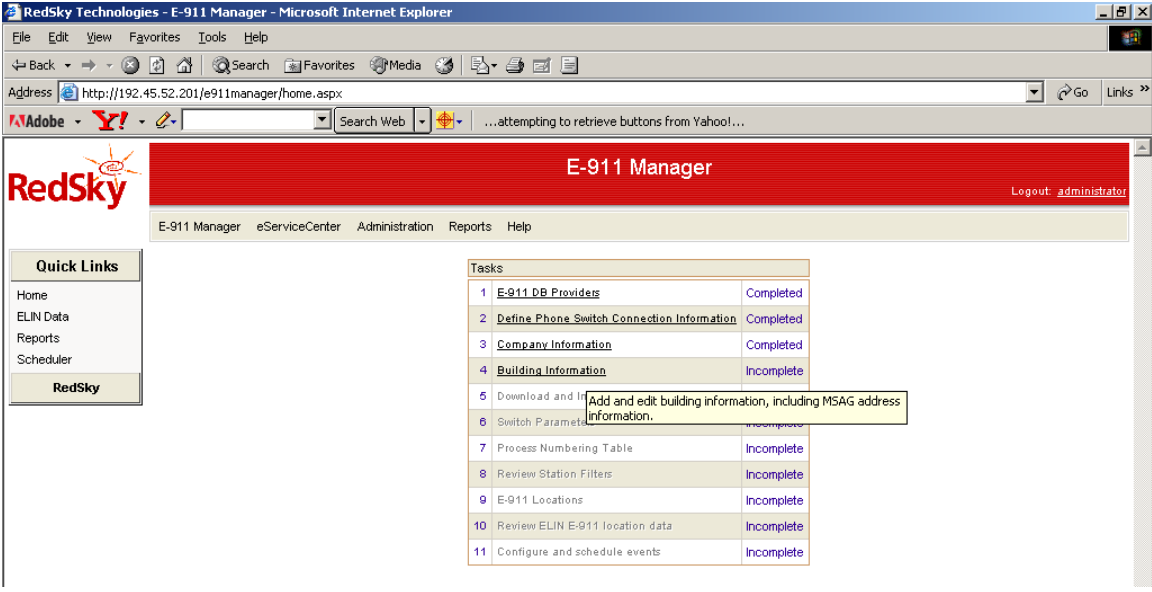
add login redsky	Page 1 of 1
LOGIN ADMINISTRATION	
LOGIN BEING ADMINISTERED	
Login's Name: redsky	
Login Type: customer	
Service Level: super-user	
Days To Disable After Inactivity:	
LOGIN'S PASSWORD INFORMATION	
Login's Password:	
Reenter Login's Password:	
Password Aging Cycle Length (Days):	
LOGOFF NOTIFICATION	
Facility Test Call Notification? y	Acknowledgement Required? y
Remote Access Notification? y	Acknowledgement Required? y

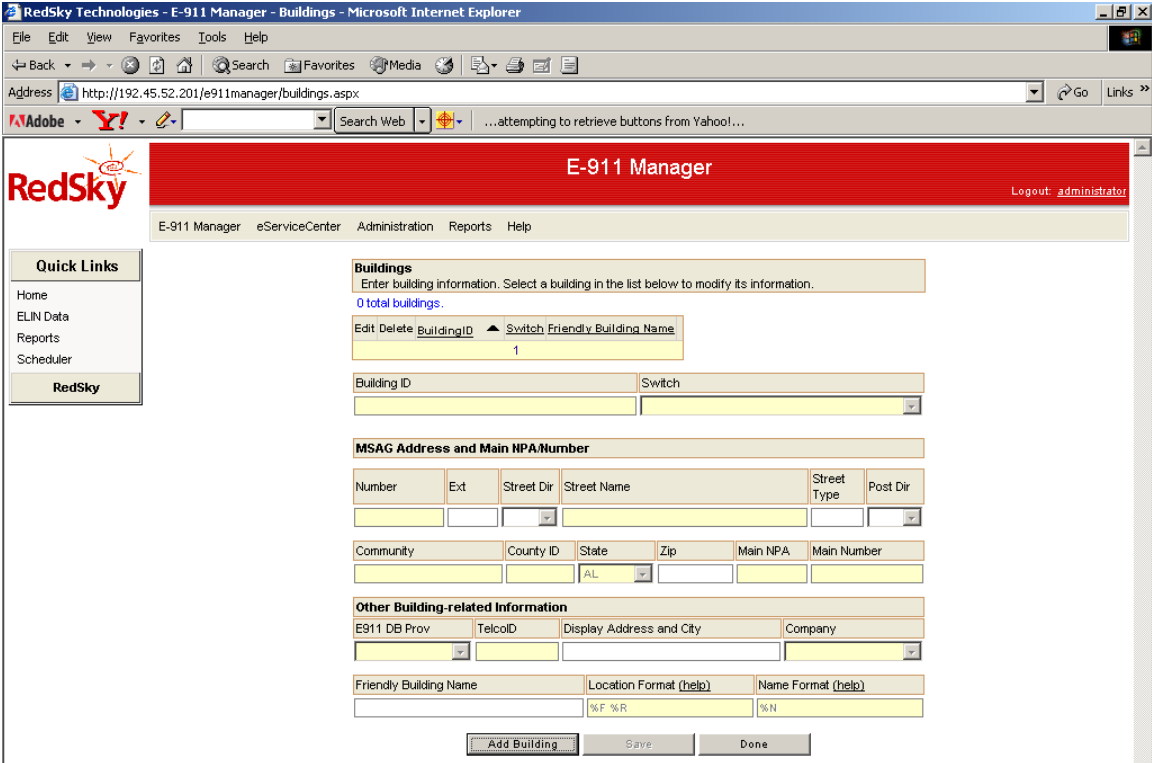
4. Configure RedSky E-911 Manager

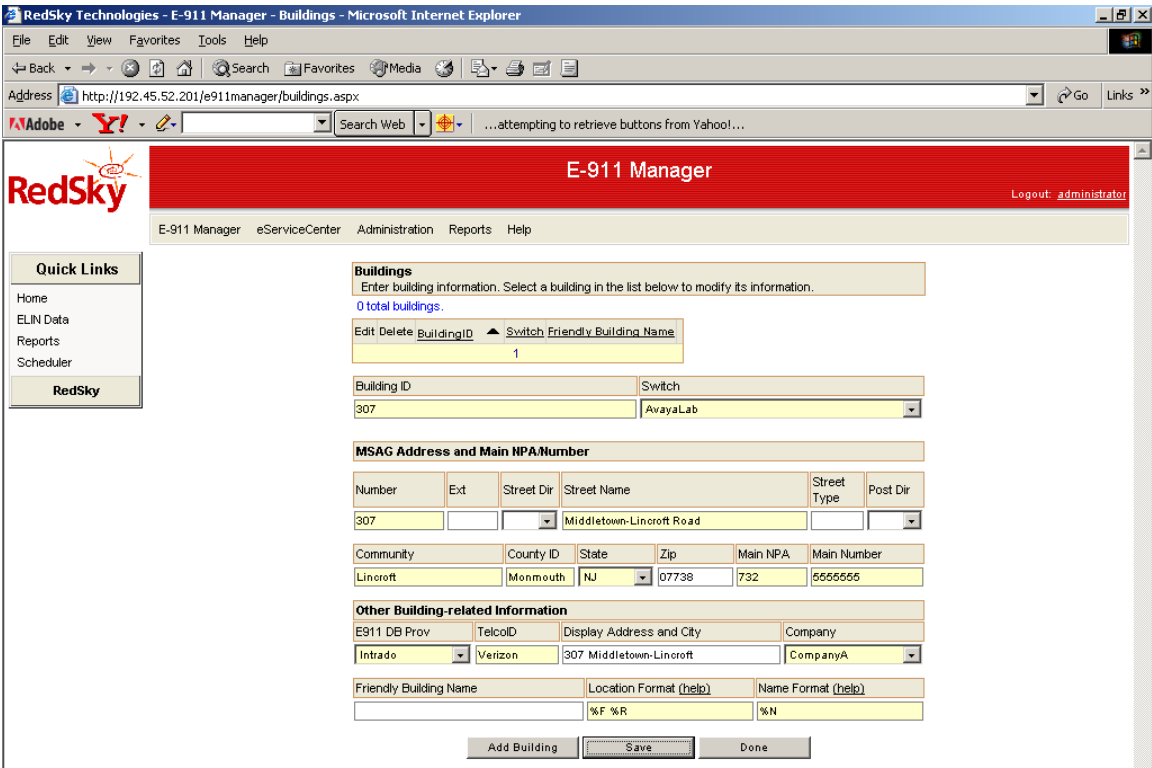
This section provides the relevant steps for configuring the RedSky E-911 Manager to retrieve station numbering and location information from Avaya Communication Manager.

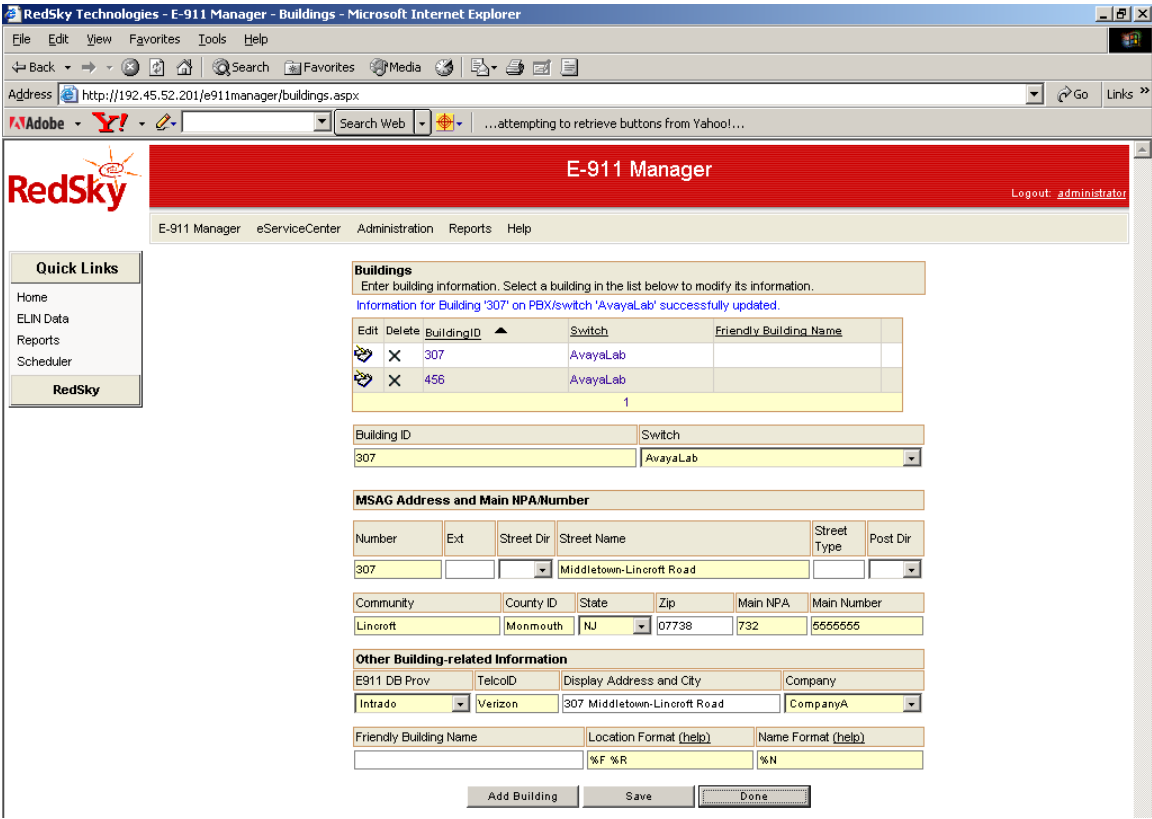
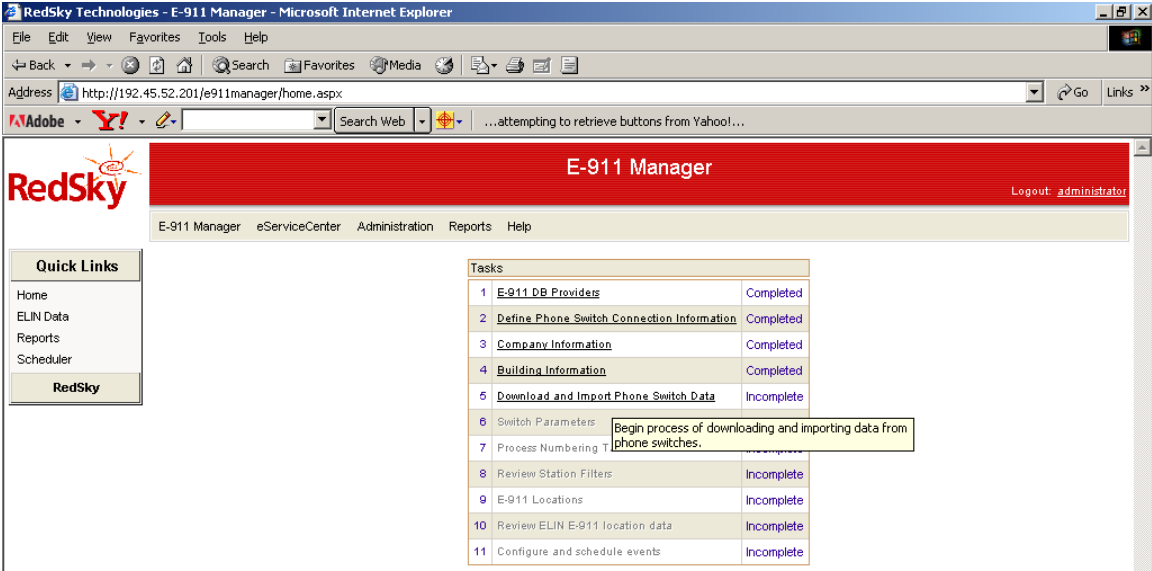
Step	Description
1.	Launch a web browser and enter <a href="http://<IP address of E-911 Manager server>/e911manager">http://<IP address of E-911 Manager server>/e911manager in the URL and log in with the appropriate credentials.
2.	<p>From the Tasks list, click on “Define Phone Switch Connection Information”.</p> <p>Note: This and subsequent steps assume that the “E-911 DB Providers” task has been completed according to RedSky instructions.</p> 
3.	<p>Click on “Add Phone Switch”.</p> 

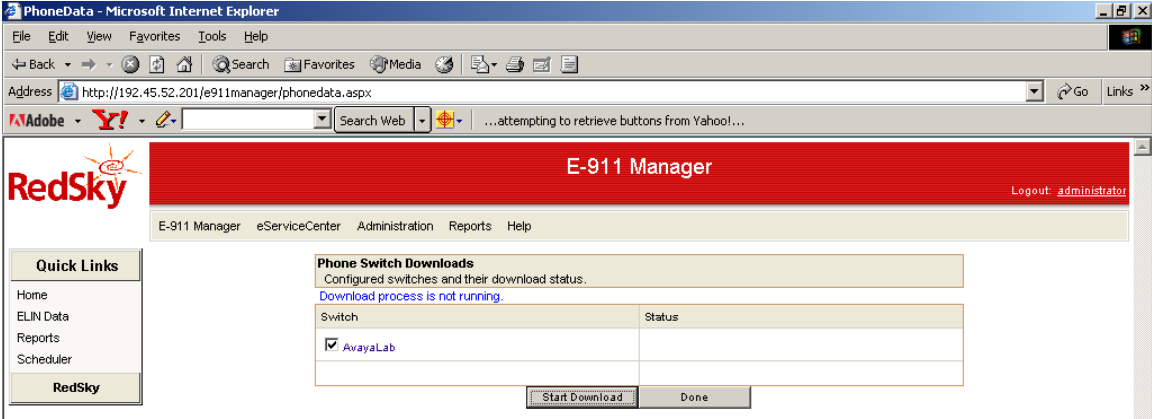
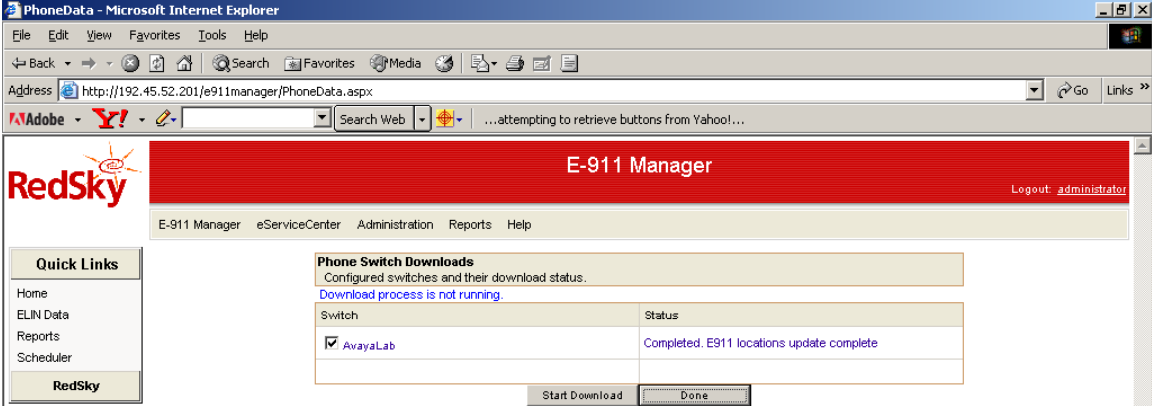
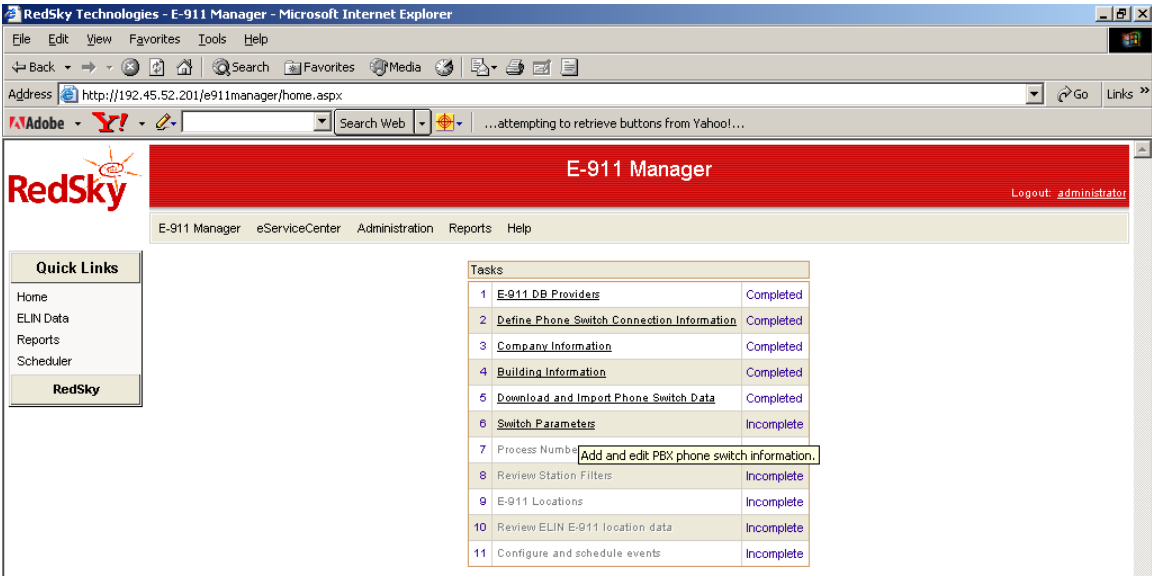
Step	Description																								
4.	<p>Configure the following parameters, and click on “Save” and then “Done”:</p> <ul style="list-style-type: none"> • Switch Name – enter a descriptive name. • Switch Type – select “Avaya” from the drop-down menu box. • Login and Password – enter the login and password created in Section 3.6. • Connection Method – set to “Network”. • IP Address – enter the IP address of the C-LAN board on which the SAT service is enabled (see Section 3.5). • Port Number – enter “5023”. • Software Version – enter “V13”. 																								
5.	<p>From the Tasks list, click on “Company Information”.</p>  <table border="1" data-bbox="789 1497 1130 1801"> <thead> <tr> <th data-bbox="789 1497 1065 1518">Tasks</th> <th data-bbox="1065 1497 1130 1518"></th> </tr> </thead> <tbody> <tr> <td data-bbox="789 1518 1065 1539">1 E-911 DB Providers</td> <td data-bbox="1065 1518 1130 1539">Completed</td> </tr> <tr> <td data-bbox="789 1539 1065 1560">2 Define Phone Switch Connection Information</td> <td data-bbox="1065 1539 1130 1560">Completed</td> </tr> <tr> <td data-bbox="789 1560 1065 1581">3 Company Information</td> <td data-bbox="1065 1560 1130 1581">Incomplete</td> </tr> <tr> <td data-bbox="789 1581 1065 1602">4 Building Information Add and edit company information.</td> <td data-bbox="1065 1581 1130 1602">Incomplete</td> </tr> <tr> <td data-bbox="789 1602 1065 1623">5 Download and Import Phone Switch Data</td> <td data-bbox="1065 1602 1130 1623">Incomplete</td> </tr> <tr> <td data-bbox="789 1623 1065 1644">6 Switch Parameters</td> <td data-bbox="1065 1623 1130 1644">Incomplete</td> </tr> <tr> <td data-bbox="789 1644 1065 1665">7 Process Numbering Table</td> <td data-bbox="1065 1644 1130 1665">Incomplete</td> </tr> <tr> <td data-bbox="789 1665 1065 1686">8 Review Station Filters</td> <td data-bbox="1065 1665 1130 1686">Incomplete</td> </tr> <tr> <td data-bbox="789 1686 1065 1707">9 E-911 Locations</td> <td data-bbox="1065 1686 1130 1707">Incomplete</td> </tr> <tr> <td data-bbox="789 1707 1065 1728">10 Review ELIN E-911 location data</td> <td data-bbox="1065 1707 1130 1728">Incomplete</td> </tr> <tr> <td data-bbox="789 1728 1065 1749">11 Configure and schedule events</td> <td data-bbox="1065 1728 1130 1749">Incomplete</td> </tr> </tbody> </table>	Tasks		1 E-911 DB Providers	Completed	2 Define Phone Switch Connection Information	Completed	3 Company Information	Incomplete	4 Building Information Add and edit company information.	Incomplete	5 Download and Import Phone Switch Data	Incomplete	6 Switch Parameters	Incomplete	7 Process Numbering Table	Incomplete	8 Review Station Filters	Incomplete	9 E-911 Locations	Incomplete	10 Review ELIN E-911 location data	Incomplete	11 Configure and schedule events	Incomplete
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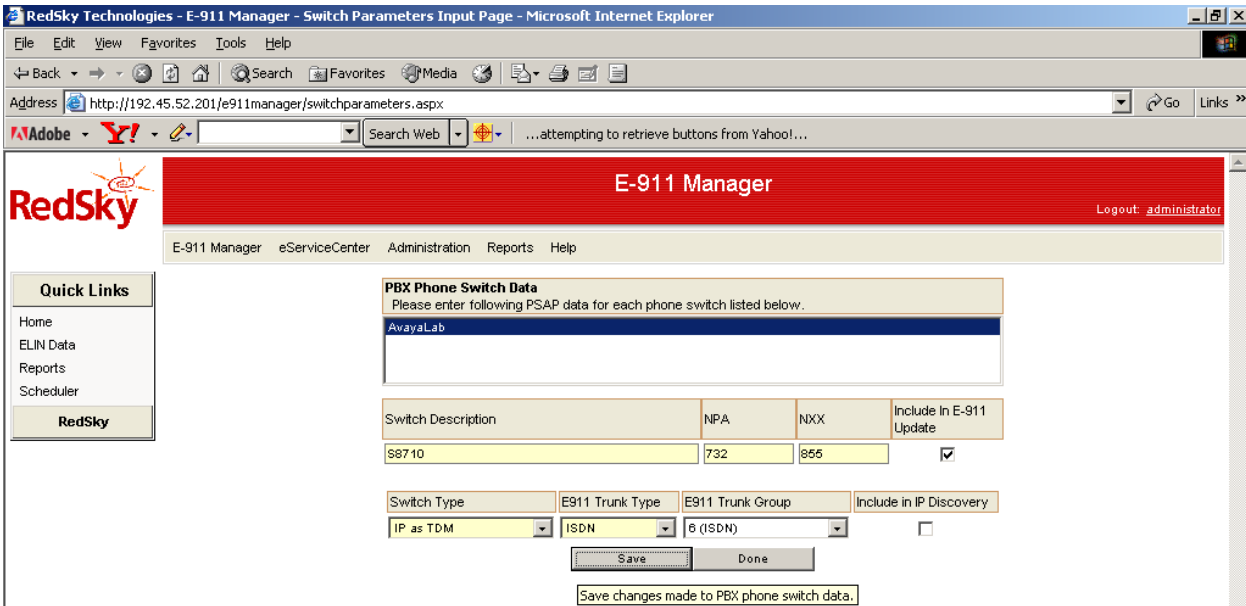
Step	Description																						
6.	<p>Enter a Company Name and an associated Company Acronym. Click on “Add” and then “Done”.</p>  <p>The screenshot shows the 'E-911 Manager' interface in a Microsoft Internet Explorer browser. The address bar shows 'http://192.45.52.201/e911manager/companies.aspx'. The page has a red header with the 'RedSky' logo and 'E-911 Manager' text. A navigation bar includes links for 'E-911 Manager', 'eServiceCenter', 'Administration', 'Reports', and 'Help'. On the left, there is a 'Quick Links' sidebar with links to 'Home', 'ELIN Data', 'Reports', 'Scheduler', and 'RedSky'. The main content area is titled 'Companies' and contains a form for adding new companies. It includes a table with columns 'Edit', 'Delete', 'Company Name', and 'Company Acronym'. One row is visible with 'CompanyA' and 'CA'. Below the table are input fields for 'Company Name' and 'Company Acronym', and 'Add' and 'Done' buttons.</p>																						
7.	<p>From the Tasks list, click on “Building Information”.</p>  <p>The screenshot shows the 'E-911 Manager' interface in a Microsoft Internet Explorer browser. The address bar shows 'http://192.45.52.201/e911manager/home.aspx'. The page has a red header with the 'RedSky' logo and 'E-911 Manager' text. A navigation bar includes links for 'E-911 Manager', 'eServiceCenter', 'Administration', 'Reports', and 'Help'. On the left, there is a 'Quick Links' sidebar with links to 'Home', 'ELIN Data', 'Reports', 'Scheduler', and 'RedSky'. The main content area is titled 'Tasks' and contains a list of tasks. The tasks are listed in a table with columns for task number, task name, and status. Task 4, 'Building Information', is marked as 'Incomplete'. A tooltip is visible over task 6, 'Download and Install Switch Parameters', with the text 'Add and edit building information, including MSAG address information.'</p> <table border="1" data-bbox="792 1108 1130 1409"> <thead> <tr> <th>Task</th> <th>Status</th> </tr> </thead> <tbody> <tr> <td>1 E-911 DB Providers</td> <td>Completed</td> </tr> <tr> <td>2 Define Phone Switch Connection Information</td> <td>Completed</td> </tr> <tr> <td>3 Company Information</td> <td>Completed</td> </tr> <tr> <td>4 Building Information</td> <td>Incomplete</td> </tr> <tr> <td>5 Download and Install Switch Parameters</td> <td>Incomplete</td> </tr> <tr> <td>6 Process Numbering Table</td> <td>Incomplete</td> </tr> <tr> <td>7 Review Station Filters</td> <td>Incomplete</td> </tr> <tr> <td>8 E-911 Locations</td> <td>Incomplete</td> </tr> <tr> <td>9 Review ELIN E-911 location data</td> <td>Incomplete</td> </tr> <tr> <td>10 Configure and schedule events</td> <td>Incomplete</td> </tr> </tbody> </table>	Task	Status	1 E-911 DB Providers	Completed	2 Define Phone Switch Connection Information	Completed	3 Company Information	Completed	4 Building Information	Incomplete	5 Download and Install Switch Parameters	Incomplete	6 Process Numbering Table	Incomplete	7 Review Station Filters	Incomplete	8 E-911 Locations	Incomplete	9 Review ELIN E-911 location data	Incomplete	10 Configure and schedule events	Incomplete
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Step	Description
8.	<p>Click on “Add Building”.</p>  <p>The screenshot shows the RedSky E-911 Manager web application. The browser window title is 'RedSky Technologies - E-911 Manager - Buildings - Microsoft Internet Explorer'. The address bar shows 'http://192.45.52.201/e911manager/buildings.aspx'. The page has a red header with the 'RedSky' logo and 'E-911 Manager' text. Below the header is a navigation bar with links: 'E-911 Manager', 'eServiceCenter', 'Administration', 'Reports', and 'Help'. On the left is a 'Quick Links' sidebar with links to 'Home', 'ELIN Data', 'Reports', 'Scheduler', and 'RedSky'. The main content area is titled 'Buildings' and contains the text 'Enter building information. Select a building in the list below to modify its information.' and '0 total buildings.'. Below this is a table with columns 'Edit', 'Delete', 'BuildingID', and 'Switch Friendly Building Name'. The table contains one row with 'BuildingID' 1. Below the table is a form for adding a new building. The form has sections for 'MSAG Address and Main NPA/Number' and 'Other Building-related Information'. The 'MSAG Address and Main NPA/Number' section includes fields for 'Number', 'Ext', 'Street Dir', 'Street Name', 'Street Type', and 'Post Dir'. The 'Other Building-related Information' section includes fields for 'E911 DB Prov', 'TelcoID', 'Display Address and City', 'Company', 'Friendly Building Name', 'Location Format (help)', and 'Name Format (help)'. At the bottom of the form are three buttons: 'Add Building', 'Save', and 'Done'.</p>

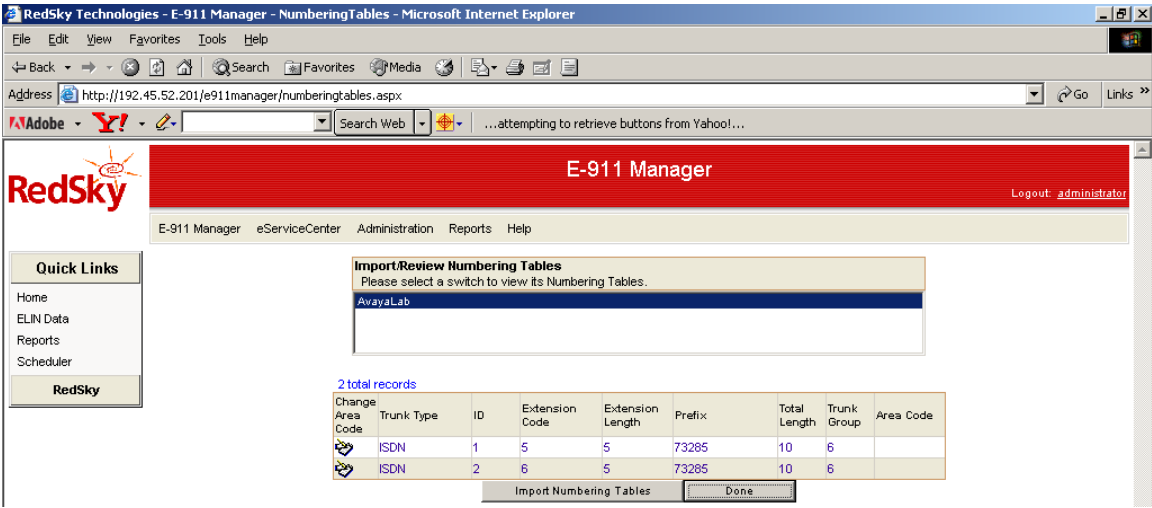
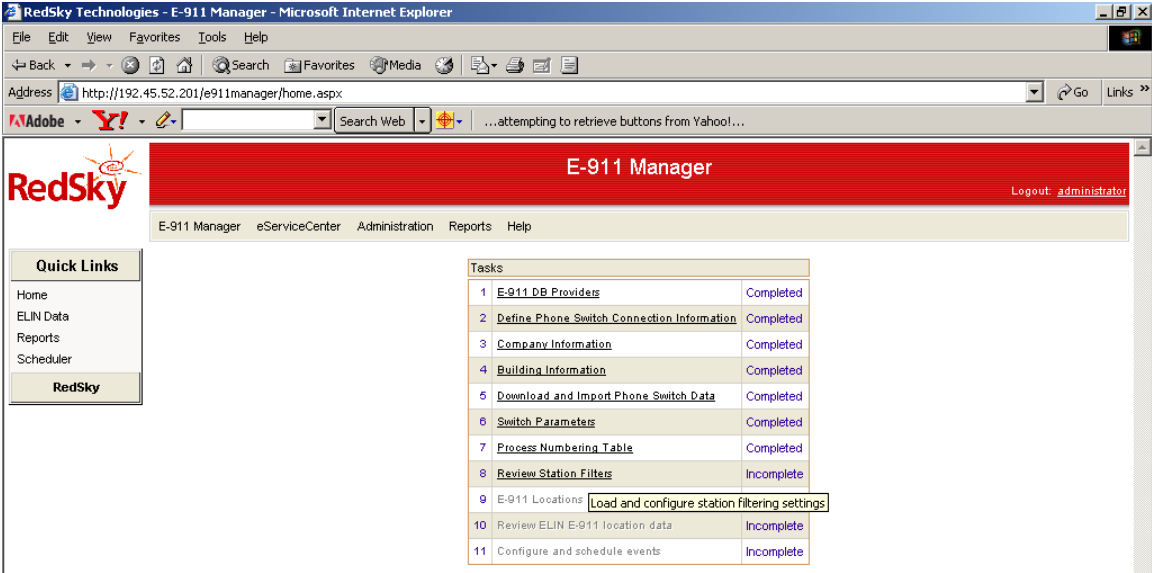
Step	Description
9.	<p>Configure the following parameters and click on “Save”:</p> <ul style="list-style-type: none"> • Building ID – enter one of the buildings defined in Avaya Communication Manager in Section 3.2. • Switch - select the phone switch configured in Steps 2 - 4. • Number, Street Name, Community, County ID, State, Zip, Main NPA, Main Number – enter the address and main telephone number information for the building. • E911 DB Prov – select the appropriate E911 database service provider. • TelcoID – select the appropriate telephone service provider. • Company – select the company defined in Steps 5 – 6. • Location Format and Name Format – specify formats according to the instructions provided in the help link.  <p>Location Format Help</p> <p>The Location format string is used to convert PBX Switch Floor and Room fields to the E-911 Location information. Use %F or %f in the string to indicate where to place the data from the Floor field, and %R or %r to indicate where to place data from the Room field. Use uppercase tags (%R, %F) to indicate that the room/floor is mandatory, and lowercase to indicate that the room/floor is optional. Example: "Flr. %F, Rm. %R" will create the location "Flr. 2, Rm. 312" for a Floor field of "2" and a Room field of "312"</p> <p>Name Format Help</p> <p>The Name format string is used to convert the Name value extracted from the appropriate switch field to the E-911 Name information field. Use %N or %n in the string to indicate where to place the data from the Name value. Use uppercase tags (%R, %F) to indicate that the room/floor is mandatory, and lowercase to indicate that the room/floor is optional. If field is left blank, name will be outputted unchanged (i.e. "Al Smith" will output as "Al Smith"). Example: "RedSky Tech: %N" will create the name "RedSky Tech: Al Smith" for a Name value of "Al Smith"</p>

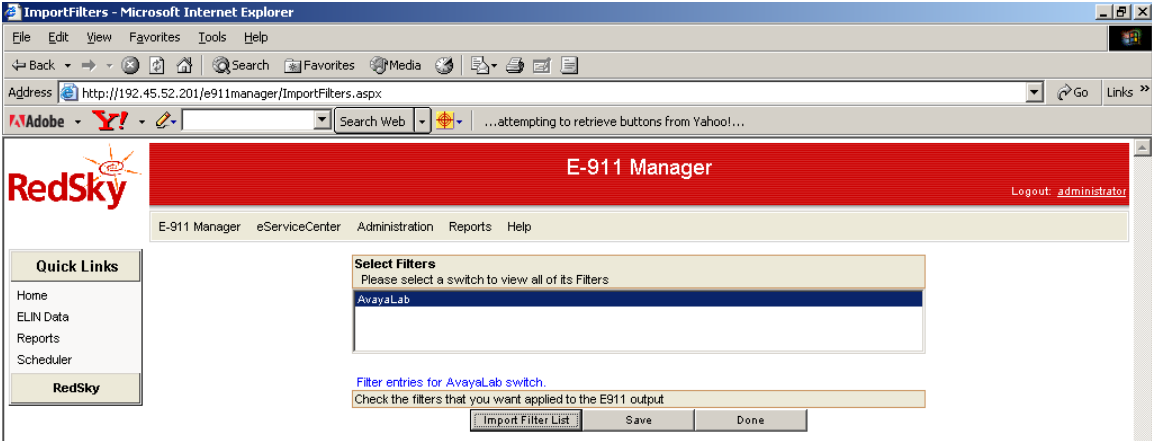
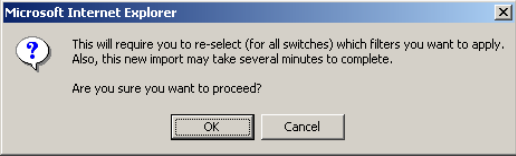
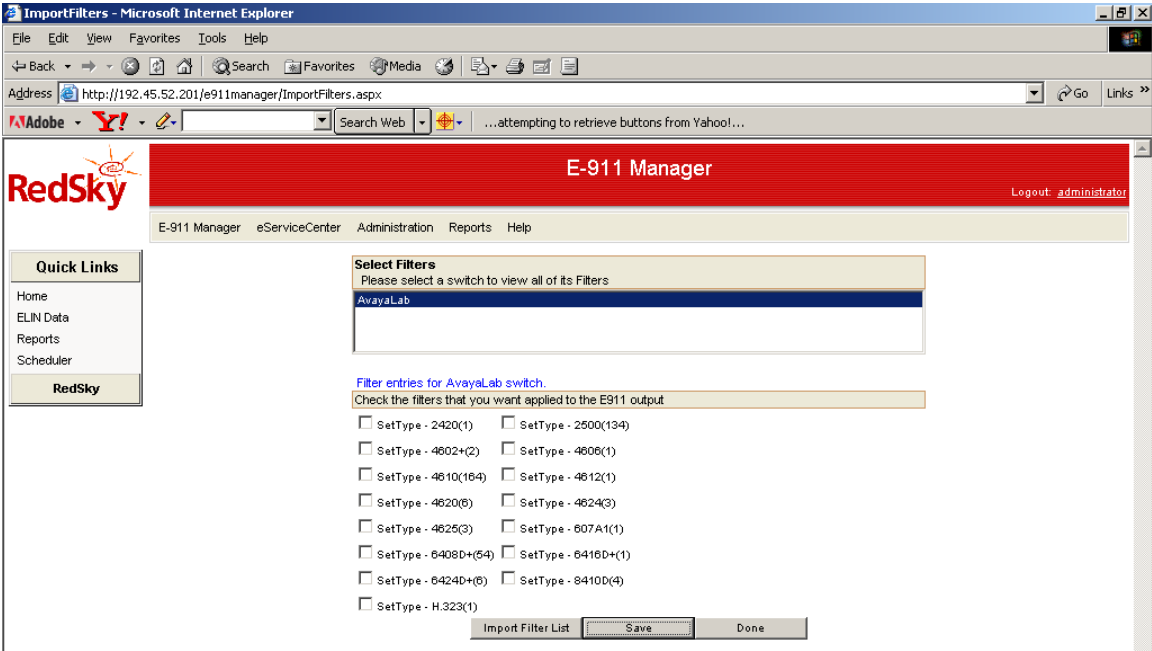
Step	Description
10.	<p>Repeat Steps 8 - 9 as necessary to configure additional buildings. When finished, click on “Done”.</p> 
11.	<p>From the Tasks list, click on “Download and Import Phone Switch Data”.</p> 

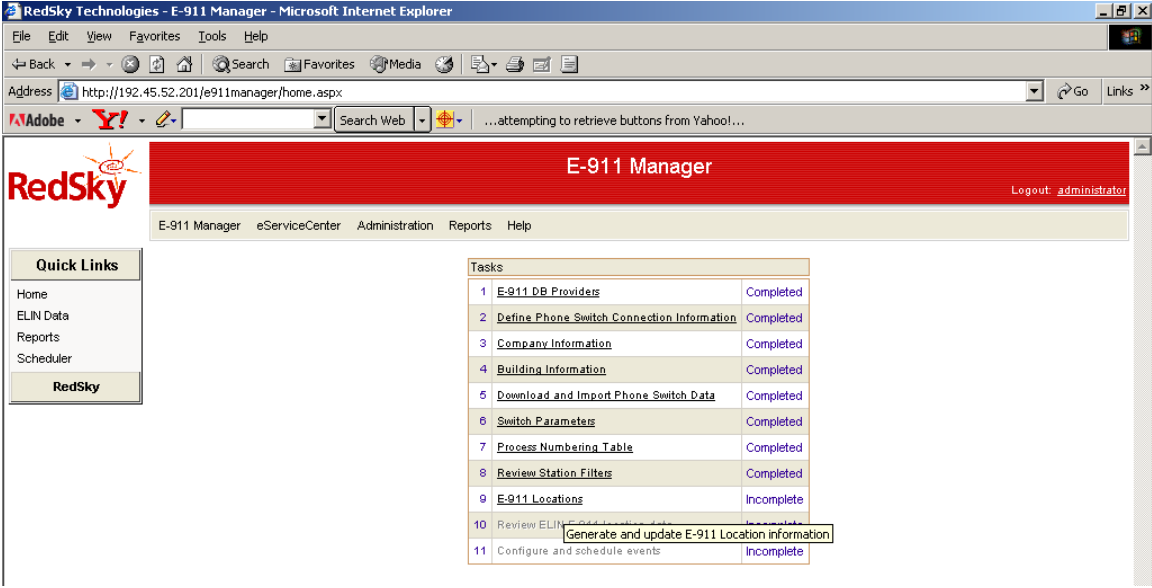
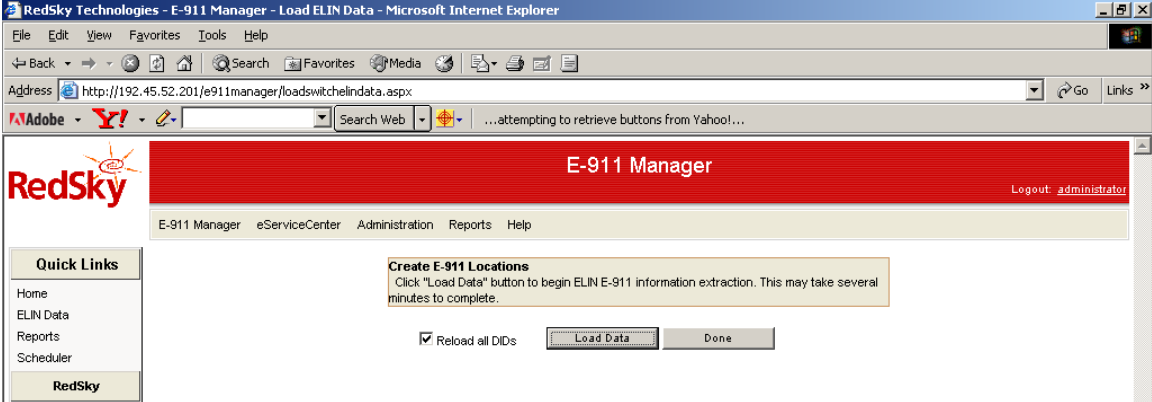
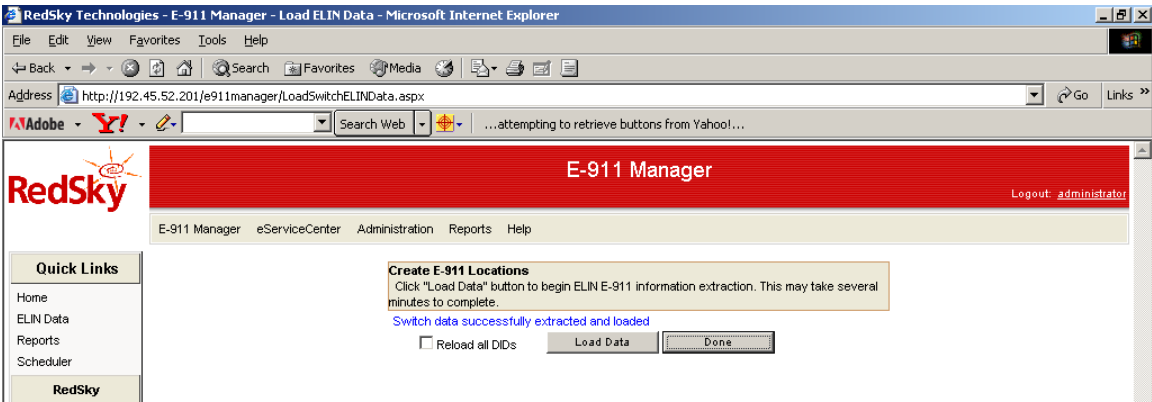
Step	Description
12.	<p>For Switch, select the phone switch configured in Steps 2 – 4, and click on “Start Download”.</p>  <p>After the download completes, click on “Done”.</p> 
13.	<p>From the Tasks list, click on “Switch Parameters”.</p> 

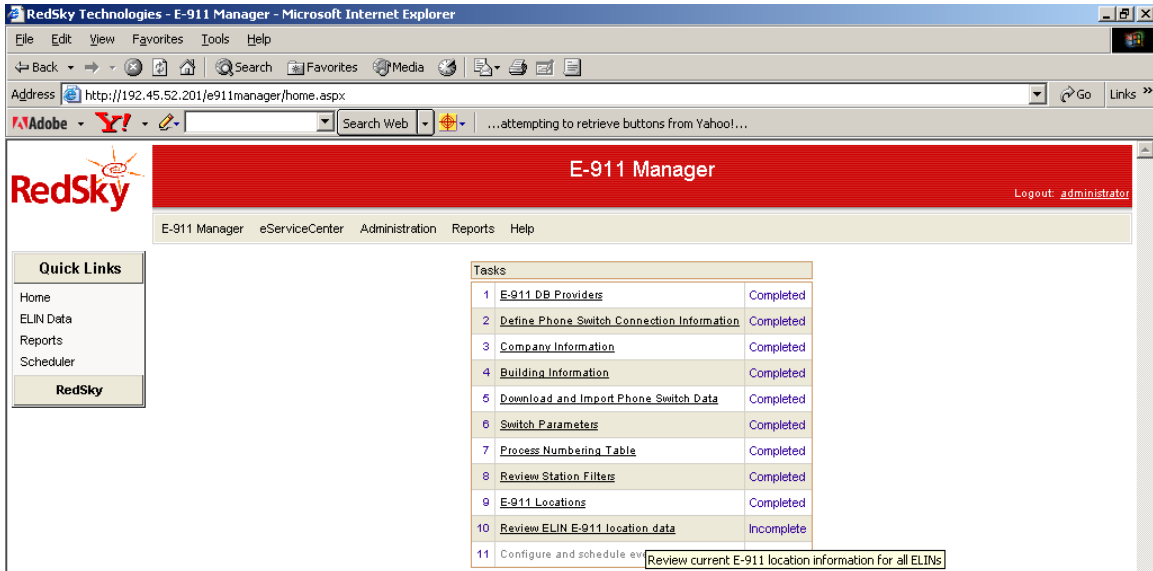
Step	Description
14.	<p>Select the phone switch configured in Steps 2 – 4, and enter the appropriate information for Switch Description, NPA, and NXX. Check the Include in E-911 Update checkbox and configure the following parameters:</p> <ul style="list-style-type: none"> • Switch Type = select “IP as TDM” or “IP Range” from the drop-down menu box. See Sections 3.3 and 3.4 for a discussion on the implications of using either option. • E911 Trunk Type – select “ISDN” from the drop-down menu box. • E911 Trunk Group – Leave blank if a trunk group is not specified in the public-unknown-numbering form (see Section 3.1) in Avaya Communication Manager. 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. <p>Click on “Save” and then “Done”.</p> 

Step	Description																																				
15.	<p>From the Tasks list, click on “Process Numbering Table”.</p> <p>The screenshot shows the E-911 Manager interface in Microsoft Internet Explorer. The browser address bar shows <code>http://192.45.52.201/e911manager/home.aspx</code>. The page has a red header with the RedSky logo and 'E-911 Manager' text. Below the header is a navigation bar with links: E-911 Manager, eServiceCenter, Administration, Reports, Help. On the left is a 'Quick Links' sidebar with links to Home, ELIN Data, Reports, Scheduler, and RedSky. The main content area displays a 'Tasks' table:</p> <table><thead><tr><th>Task ID</th><th>Task Name</th><th>Status</th></tr></thead><tbody><tr><td>1</td><td>E-911 DB Providers</td><td>Completed</td></tr><tr><td>2</td><td>Define Phone Switch Connection Information</td><td>Completed</td></tr><tr><td>3</td><td>Company Information</td><td>Completed</td></tr><tr><td>4</td><td>Building Information</td><td>Completed</td></tr><tr><td>5</td><td>Download and Import Phone Switch Data</td><td>Completed</td></tr><tr><td>6</td><td>Switch Parameters</td><td>Completed</td></tr><tr><td>7</td><td>Process Numbering Table</td><td>Incomplete</td></tr><tr><td>8</td><td>Review Station Filenames</td><td>Incomplete</td></tr><tr><td>9</td><td>E-911 Locations</td><td>Incomplete</td></tr><tr><td>10</td><td>Review ELIN E-911 location data</td><td>Incomplete</td></tr><tr><td>11</td><td>Configure and schedule events</td><td>Incomplete</td></tr></tbody></table> <p>A tooltip for the 'Process Numbering Table' task displays the text: 'Download and view ISDN and/or CAMA numbering tables.'</p>	Task ID	Task Name	Status	1	E-911 DB Providers	Completed	2	Define Phone Switch Connection Information	Completed	3	Company Information	Completed	4	Building Information	Completed	5	Download and Import Phone Switch Data	Completed	6	Switch Parameters	Completed	7	Process Numbering Table	Incomplete	8	Review Station Filenames	Incomplete	9	E-911 Locations	Incomplete	10	Review ELIN E-911 location data	Incomplete	11	Configure and schedule events	Incomplete
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16.	<p>Select the phone switch configured in Steps 2 - 4, and click on “Import Numbering Tables”.</p> <p>The screenshot shows the 'Import/Review Numbering Tables' screen in the E-911 Manager. The browser address bar shows <code>http://192.45.52.201/e911manager/numberingtables.aspx</code>. The page layout is similar to the previous screenshot. The main content area has a section titled 'Import/Review Numbering Tables' with the instruction: 'Please select a switch to view its Numbering Tables.' Below this is a list box containing 'AvayaLab', which is currently selected. Below the list box, it says '0 total records'. At the bottom of the main content area, there is a table with columns: Change Area Code, Trunk Type, ID, Extension Code, Extension Length, Prefix, Total Length, Trunk Group, Area Code. Below this table are two buttons: 'Import Numbering Tables' and 'Done'.</p>																																				

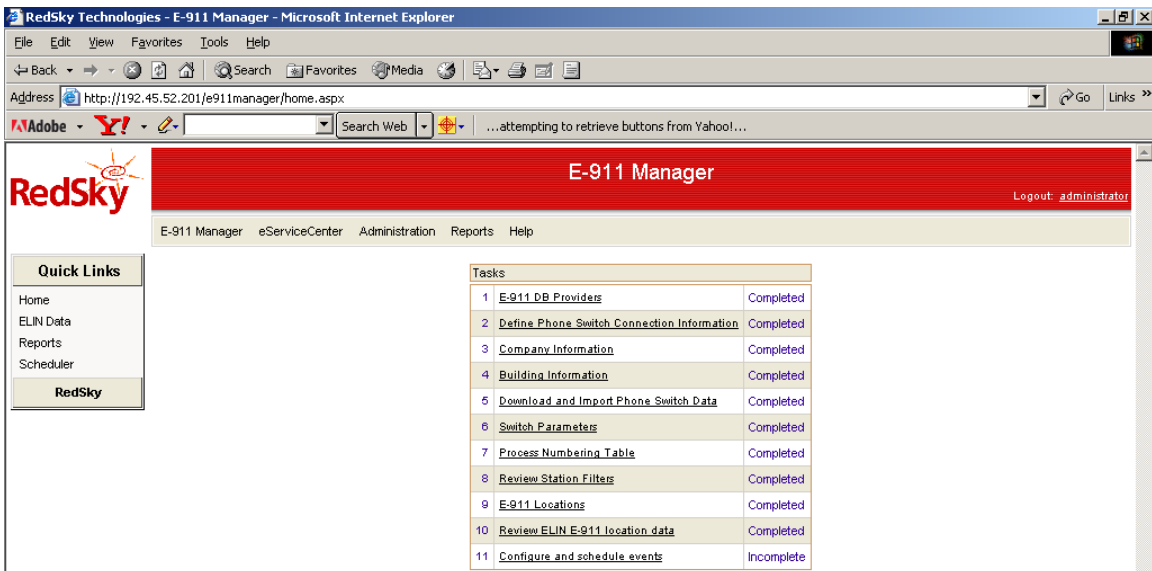
Step	Description
17.	<p>After the import completes, review the table entries and verify consistency with the public-unknown-numbering form entries in Avaya Communication Manager. Click on “Done”.</p> 
18.	<p>From the Tasks list, click on “Review Station Filters”.</p> 

Step	Description
19.	<p>Select the phone switch configured in Steps 2 – 4, and click on “Input Filter List”.</p>  <p>Click on “OK” in the warning pop-up window.</p>  <p>Check the checkboxes of the phone types for which ALI records are NOT to be generated. Click on “Save” and then “Done”.</p> 

Step	Description
20.	<p>From the Tasks list, click on “E-911 Locations”.</p>  <p>The screenshot shows the RedSky E-911 Manager web application in Microsoft Internet Explorer. The address bar shows the URL: http://192.45.52.201/e911manager/home.aspx. The page has a red header with the RedSky logo and 'E-911 Manager' text, and a 'Logout: administrator' link. Below the header is a navigation menu with 'E-911 Manager', 'eServiceCenter', 'Administration', 'Reports', and 'Help'. On the left is a 'Quick Links' sidebar with 'Home', 'ELIN Data', 'Reports', 'Scheduler', and 'RedSky'. The main content area displays a 'Tasks' list with 11 items. Item 9, 'E-911 Locations', is highlighted in blue, and a tooltip points to it with the text 'Generate and update E-911 Location information'. Other tasks include 'E-911 DB Providers', 'Define Phone Switch Connection Information', 'Company Information', 'Building Information', 'Download and Import Phone Switch Data', 'Switch Parameters', 'Process Numbering Table', 'Review Station Filters', 'Review ELIN Data', and 'Configure and schedule events'.</p>
21.	<p>Check the “Reload all DIDs” and click on “Load Data”.</p>  <p>The screenshot shows the 'Load ELIN Data' page in the RedSky E-911 Manager. The address bar shows the URL: http://192.45.52.201/e911manager/loadswitchelindata.aspx. The page layout is similar to the previous screenshot, but the main content area features a 'Create E-911 Locations' section. It contains a message: 'Click "Load Data" button to begin ELIN E-911 information extraction. This may take several minutes to complete.' Below this message is a checkbox labeled 'Reload all DIDs' which is checked, and two buttons: 'Load Data' and 'Done'.</p> <p>After the reload completes, click on “Done”.</p>  <p>The screenshot shows the 'Load ELIN Data' page after the reload is complete. The address bar shows the URL: http://192.45.52.201/e911manager/loadswitchelindata.aspx. The 'Create E-911 Locations' section now includes a message: 'Switch data successfully extracted and loaded'. Below this message is an unchecked checkbox labeled 'Reload all DIDs' and two buttons: 'Load Data' and 'Done'. The 'Done' button is highlighted with a mouse cursor.</p>

Step	Description
22.	<p>From the Tasks list, click on “Review ELIN E-911 location data”.</p> 

Step	Description																																																																																																																									
23.	<p>The subsequent table shows the ALI records that were generated based on the information retrieved from Avaya Communication Manager. Only those records with “Ready For Transfer” Status will be uploaded to the E911 database service provider. Those records with “Missing Information” Status are missing Building, Floor, Room or Name information. Enter the missing information in Avaya Communication Manager, and repeat Steps 11 - 12, and then Steps 20 - 23.</p> <div><div>RedSky Technologies - E-911 Manager - ELIN Data - Microsoft Internet Explorer</div><div><div>File Edit View Favorites Tools Help</div><div>Back Forward Stop Search Favorites Media Print Copy Paste</div><div>Address http://192.45.52.201/e911manager/elin.aspx Go Links</div><div>Adobe Y! Search Web ...attempting to retrieve buttons from Yahoo!</div></div><div><div>E-911 Manager eServiceCenter Administration Reports Help</div><div><div>ELIN and ERL Data</div><div>Please review the ELIN and ERL data for each switch listed below:</div><div>382 total records</div><div><div>Company: ALL Status: ALL</div><div>Building: ALL PBX/Switch: ALL Filter</div></div><div><div><div>Quick Links</div><div>Home</div><div>ELIN Data</div><div>Reports</div><div>Scheduler</div><div>RedSky</div></div><table><tr><th>Change</th><th>Delete</th><th>ELIN</th><th>Building</th><th>Location</th><th>Name</th><th>Status</th><th>Err Cd</th><th>Telco ID</th><th>E911 Prov</th><th>Ext. Count</th></tr><tr><td></td><td>X</td><td>7328550001</td><td>456</td><td>5 999</td><td>John Smith</td><td>Ready For Transfer ()</td><td></td><td></td><td></td><td>1</td></tr><tr><td></td><td>X</td><td>7328550002</td><td>456</td><td>3 223</td><td>STA-50002</td><td>Ready For Transfer ()</td><td></td><td></td><td></td><td>1</td></tr><tr><td></td><td>X</td><td>7328550004</td><td>307</td><td>1 104</td><td>STA-50004</td><td>Ready For Transfer ()</td><td></td><td></td><td></td><td>1</td></tr><tr><td></td><td>X</td><td>7328550005</td><td>307</td><td>2 123</td><td>Parking Lot Main</td><td>Ready For Transfer ()</td><td></td><td></td><td></td><td>1</td></tr><tr><td></td><td>X</td><td>7328550006</td><td>456</td><td>4 123</td><td>50006 chagne</td><td>Ready For Transfer ()</td><td></td><td></td><td></td><td>1</td></tr><tr><td></td><td>X</td><td>7328550007</td><td>307</td><td>2 257</td><td>STA-50007</td><td>Ready For Transfer ()</td><td></td><td></td><td></td><td>1</td></tr><tr><td></td><td>X</td><td>7328550008</td><td>307</td><td>2 258</td><td>STA-50008</td><td>Ready For Transfer ()</td><td></td><td></td><td></td><td>1</td></tr><tr><td></td><td>X</td><td>7328550009</td><td>307</td><td>2 259</td><td>STA-50009</td><td>Ready For Transfer ()</td><td></td><td></td><td></td><td>1</td></tr><tr><td></td><td>X</td><td>7328550010</td><td>307</td><td>2 260</td><td>STA-50010</td><td>Ready For Transfer ()</td><td></td><td></td><td></td><td>1</td></tr><tr><td></td><td>X</td><td>7328550011</td><td></td><td></td><td>STA-50011</td><td>Missing Information</td><td></td><td></td><td></td><td>1</td></tr></table><div><div>1 2 3 4 5 6 7 8 9 10 ...</div><div><div>Search In: ELIN Search For:</div><div>Search</div></div><div><div>Normal: 0 Missing Info: 332</div><div>In Transfer: 0 Rejected: 0</div><div>Ready For Transfer: 41 Deleted: 0 Invalid ELIN: 9</div></div><div><div>Done</div><div>Reset In-transfer Items</div></div></div></div></div></div></div>	Change	Delete	ELIN	Building	Location	Name	Status	Err Cd	Telco ID	E911 Prov	Ext. Count		X	7328550001	456	5 999	John Smith	Ready For Transfer ()				1		X	7328550002	456	3 223	STA-50002	Ready For Transfer ()				1		X	7328550004	307	1 104	STA-50004	Ready For Transfer ()				1		X	7328550005	307	2 123	Parking Lot Main	Ready For Transfer ()				1		X	7328550006	456	4 123	50006 chagne	Ready For Transfer ()				1		X	7328550007	307	2 257	STA-50007	Ready For Transfer ()				1		X	7328550008	307	2 258	STA-50008	Ready For Transfer ()				1		X	7328550009	307	2 259	STA-50009	Ready For Transfer ()				1		X	7328550010	307	2 260	STA-50010	Ready For Transfer ()				1		X	7328550011			STA-50011	Missing Information				1
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Step	Description																								
24.	<p>From the Tasks list, click on “Configure and schedule events” and follow the instructions in the E-911 Manager documentation to configure schedules for retrieving data from Avaya Communication Manager and uploading ALI records to the E911 database service provider.</p>  <table border="1" data-bbox="792 619 1128 919"> <thead> <tr> <th colspan="2">Tasks</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>E-911 DB Providers Completed</td> </tr> <tr> <td>2</td> <td>Define Phone Switch Connection Information Completed</td> </tr> <tr> <td>3</td> <td>Company Information Completed</td> </tr> <tr> <td>4</td> <td>Building Information Completed</td> </tr> <tr> <td>5</td> <td>Download and Import Phone Switch Data Completed</td> </tr> <tr> <td>6</td> <td>Switch Parameters Completed</td> </tr> <tr> <td>7</td> <td>Process Numbering Table Completed</td> </tr> <tr> <td>8</td> <td>Review Station Filters Completed</td> </tr> <tr> <td>9</td> <td>E-911 Locations Completed</td> </tr> <tr> <td>10</td> <td>Review ELIN E-911 location data Completed</td> </tr> <tr> <td>11</td> <td>Configure and schedule events Incomplete</td> </tr> </tbody> </table>	Tasks		1	E-911 DB Providers Completed	2	Define Phone Switch Connection Information Completed	3	Company Information Completed	4	Building Information Completed	5	Download and Import Phone Switch Data Completed	6	Switch Parameters Completed	7	Process Numbering Table Completed	8	Review Station Filters Completed	9	E-911 Locations Completed	10	Review ELIN E-911 location data Completed	11	Configure and schedule events Incomplete
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5. Interoperability Compliance Testing

The interoperability compliance testing included functionality and serviceability testing. The functionality testing evaluated the ability of the RedSky E-911 Manager to accurately obtain station emergency numbering and location information from Avaya Communication Manager, and produce ALI records based on the obtained information. The serviceability testing introduced failure scenarios to see if the RedSky E-911 Manager can resume operation after failure recovery.

5.1. General Test Approach

The main objective was to verify that the RedSky E-911 Manager accurately obtains station emergency numbering and location information for ALI record generation from Avaya Communication Manager after stations are added, deleted, and changed, and after emergency location extensions are changed. For serviceability testing, connection and cable disconnects and reconnects, and device resets were applied.

5.2. Test Results

The objectives of Section 5.1 were verified. For serviceability testing, the RedSky E-911 Manager was able to retrieve station emergency numbering and location information from Avaya Communication Manager after the connection to the active Avaya S8710 Media Server was disconnected and reconnected, as well as after resets of Avaya Communication Manager and the RedSky E-911 Manager server.

6. Verification Steps

The following steps may be used to verify the configuration:

- Compare the station emergency 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 and verify that the RedSky E-911 Manager retrieves and processes the updates accurately at the scheduled time.

7. Support

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

- Phone: 1-866-778-2435
- E-mail: support@redskytech.com

8. Conclusion

These Application Notes described a compliance-tested configuration comprised of Avaya Communication Manager 3.1 and the RedSky Technologies E-911 Manager 5.1. The RedSky E-911 Manager retrieves station emergency numbering and location information from a PBX, and validates, reformats, and uploads the information to public Automatic Location Identification (ALI) databases. During compliance testing, the RedSky E-911 Manager successfully obtained station emergency numbering and location information after Avaya Communication Manager stations were added, deleted, and changed.

9. Additional References

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

Product information for RedSky Technologies solutions may be found at <http://www.redskytech.com/solutions>.

- [1] *Avaya Communication Manager Application Notes: Emergency Calling*
- [2] *Feature Description and Implementation for Avaya Communication Manager*, Issue 4, February 2006, Document Number 555-245-205.

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