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Sundew User Manual

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THIS DOCUMENT CONSISTS OF 29 PAGES

Sundew User Manual.....	1
2 Introduction.....	3
Sundew Overview.....	6
3 Operating Sundew.....	8
4 Mission Planning.....	14
5 Log and Configuration Files.....	27
6 System Configuration.....	28
7 GPS Support.....	28

1

2 Introduction

Sundew is a Linux-based wireless survey tool used to identify the make and model of wireless devices. It may also be used to re-flash the firmware on supported devices.

2.1 Definitions

Common terms used throughout this document include: network, network device, survey, profile (Device Profile, Network Profile, and Device Type Profile), Auto-Survey, and Mission.

2.2 Network

The term network, when used in conjunction with Sundew, is meant to refer to a wireless local area network (WLAN) operating in infrastructure mode. In this architecture, a wireless network is identified by an ESSID (the network name, often just referred to as a SSID) and may contain one or more wireless Access Points (AP). Each AP may then be associated with one or more clients. Each AP is identified by a BSSID value, which in infrastructure mode is always a MAC address.

2.3 Network Device

A network device is any wireless node that Sundew has identified through wireless scanning. Each wireless device discovered by sundew is at least an Access Point (AP), but it may include additional functionality (router, gateway, modem, etc.) so the more generic term “network device” is used throughout this document.

Each wireless node is identified by a MAC address (BSSID), and it is assumed that no two nodes will have the same MAC address. The information collected from a single device is referred to as a “Device Profile”.

2.4 Survey

A survey is a series of tasks that inspect a network device, with the goal of identifying the device’s unique characteristics such as its make and model. The supported survey techniques are covered in 4.5 Survey Task Configuration.

2.5 Profiles

Profiles are used to define or initialize the properties of devices or networks. Sundew uses three profile types: Device, Network, and Device Type. The interaction of these profiles is shown in Figure 1 Profile Interaction Diagram. Profile creation or editing is covered in sections 4.3 and 4.4.

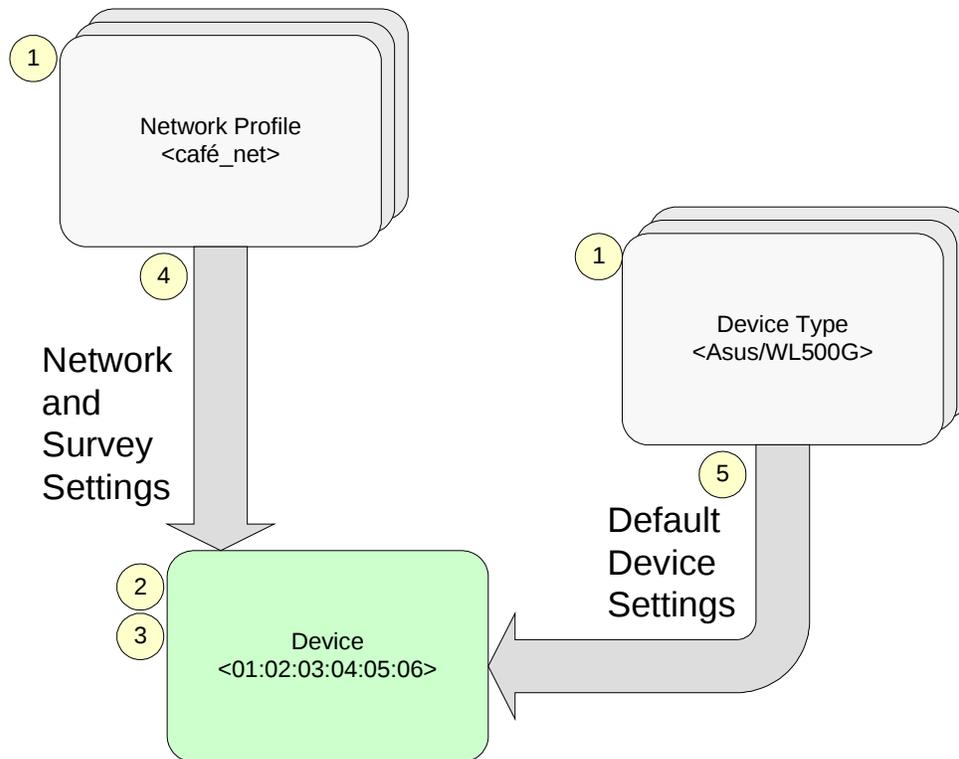


Figure 1 Profile Interaction Diagram

1. Network and Device Type profiles are added to a Mission by the operator.
2. Sundew begins scanning and a device having a BSSID (MAC) address of 01:02:03:04:05:06 and a SSID of “café_net” is discovered.
3. Sundew automatically generates a Device Profile for the newly discovered device. This Device has a BSSID address of 01:02:03:04:05:06 and a SSID value of “café_net”.
4. The SSID of the new Device matches the name of a Network Profile. The network and survey settings for the matching Network Profile are applied to the new Device.
5. The operator requests a survey of the device and Sundew successfully identifies the device as an Asus WL500G. The device type identification occurs early in the survey process, so Sundew automatically looks up values from an Asus/WL500G Device Type profile. The values from the Device Type profile may help complete the rest of the survey tasks.

2.5.1 Device Profile

The Device Profile describes a single network in a WLAN. Any information gathered about a device during a scan or survey is added to the Device Profile. Device Profiles are either created by the operator from a previous survey data set or are generated automatically by Sundew when a new device is discovered.

2.5.2 Network Profile

A Network Profile directs the survey of wireless devices discovered within a WLAN. When a new device is discovered in a WLAN, a Device Profile is automatically created and initialized with survey information (e.g., IP settings, encryption settings, survey tasks, etc) from a Network Profile. The Network Profile provides a convenient means of handling the survey of multiple devices in the same network without having to specify each device in the WLAN. This can be helpful for surveying areas like a hotel where there may be many different network devices sharing a common SSID.

2.5.3 Device Type Profile

A Device Type profile describes the default characteristics of a device make and model. This information includes the firmware image (if supported) and other properties (e.g., SSID, username, password, and WLAN IP address, etc) of the device. These settings are used by Sundew during a survey for a matching device type.

2.6 Auto-Survey

Auto-Survey is a special survey task that can be enabled for each Device Profile or Network Profile. When enabled, Sundew will automatically perform a survey of the designated device/network when the signal strength reaches or exceeds the level specified in its profile.

2.7 Mission

A Sundew mission combines the three supported profile types (Device, Network, and Device Type) for a single operation. These profiles describe the devices and networks to survey plus the results of any previous surveys. Missions typically cover operations over the duration of a day or in a small geographic region.

Profiles common to one or more operations and used in multiple missions are stored in the Mission Repository. This repository allows profiles common to more than one mission to be shared. The Mission Repository is accessed from the Profile Management dialog, which is described in a later section.

Sundew Overview

Sundew's main interface is the "Mission Window" (see below), from which an operator can access Sundew's basic functions:

- View information collected from wireless scans or surveys
- Scan for additional wireless networks
- Initiate an active survey against a wireless device
- Plan Missions for future operations

The screenshot shows the Sundew Mission Window interface. The window title is "Sundew - mission 05_18_2007_16_46_02.xml". The main area contains a table of wireless networks with columns for Activity, MAC ID, SSID, Encryption, Signal strength, Channel, Last Seen, Make, Model, Auto Survey, and Status. The selected device is a Linksys WRT54G with MAC ID 00:13:10:44:98:B0 and SSID sdl. Below the table is the "Survey Details" section for the selected device, showing a progress bar at 0%, a status of "Successful", and a list of tasks: Auto Survey (unchecked), HTTP Survey (checked), UPnP Survey (checked), SNMP Survey (unchecked), and Upgrade (unchecked). There are buttons for "Stop Survey", "Edit Details", "Reset Status", and "Exit". The "Connection Status" at the bottom shows "Not Connected (Scanning)".

Activity	MAC ID	SSID	Encr...	Signal d...	Channel	Last Seen	Make	Model	Auto Survey	Status
●	00:0F:66:11:E9:C2	linksys-g		-85	6	:03	Unknown			
●	00:0F:66:E9:ED:D7	LittleRedRooster	🔒	-68	11	:00	Unknown			
●	00:13:10:44:98:B0	sdl	🔓	-69	6	:05	Linksys	WRT54G		✓
●	00:13:10:44:98:B3	linksys		-90	11	:05	Unknown			
●	00:13:D4:68:D5:DD	default		-73	1	:00	Unknown			

Survey Details
 Progress: 0%
 Status: Successful
 Tasks: Auto Survey HTTP Survey UPnP Survey SNMP Survey Upgrade
 Buttons: Stop Survey, Edit Details, Reset Status
 Connection Status: Not Connected (Scanning)
 Button: Exit

Figure 2 Sundew Mission Window

2.8 Device Profile

Information collected during a wireless scan or survey is displayed in the Mission Window as Device Profiles. Only the most recently seen devices are displayed when scanning is enabled, otherwise all devices seen since the Mission was created are displayed.

Detailed properties are available for each network device shown in the Mission Window. Details of these devices can be viewed or edited by right-clicking on a row in the Mission Window and selecting “Profile Details”. This opens the Profile Details dialog, where additional information such as the device’s location, security settings, and survey techniques are listed. Note that the operator is responsible for entering some properties (e.g., “Location”).

The Profile Details dialog can also be used to configure the survey task deployed against the network device. Survey options are found on the Connection Settings and Survey Settings tabs. The configuration of survey tasks is discussed in section 4.5 Survey Task Configuration.

2.9 Scanning

Scanning refers to the process of searching for wireless networks. When scanning is enabled, the Mission Window is continuously updated with information about locally detected wireless network devices. This device information includes:

- Unique MAC address (BSSID)
- SSID (ESSID)
- Encryption status
- Signal strength
- Channel number
- Last seen time (in seconds)

For more information on configuring scanning see section 3.5.1 Scan Configuration.

The activity icon, displayed in the first column, provides feedback on how often Sundew detects a network. This icon closely corresponds to the last seen time for the network and not the signal level of the device; there is some correlation, however, as the device will be seen less often as the signal level drops. Figure 3 illustrates the operation of the activity icon.

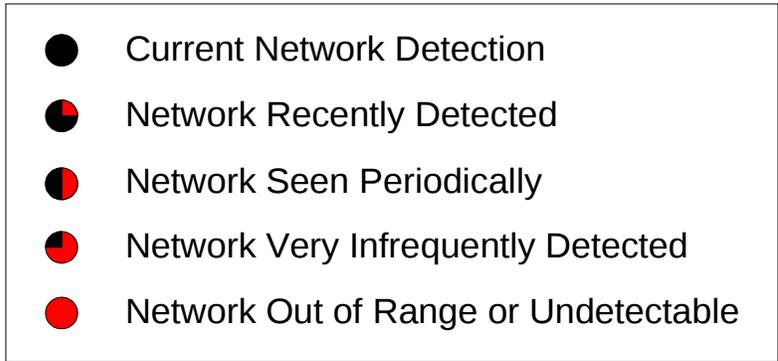


Figure 3 Active Scanning Icons

In addition to the scan activity icon, several icons are used to show the security settings on the device, as shown in Figure 4. No icon is displayed for an unencrypted network.

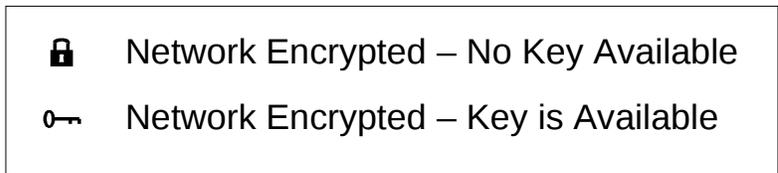


Figure 4 Encryption Icons

2.10 Survey

A survey actively engages a wireless network to determine information that cannot be gathered from wireless scanning. When a survey is in progress, the row of the surveyed network is highlighted, and a “lighting bolt” is displayed in the status column. Additional survey status and progress information is displayed at the bottom of the Mission Window.

After the survey finishes, the status column will contain either a check symbol if the survey was successful or an “X” symbol if the survey failed. The current survey status can be reset by pressing “Reset Status” at the bottom of the Mission Window. Figure 5 shows the survey status icons.

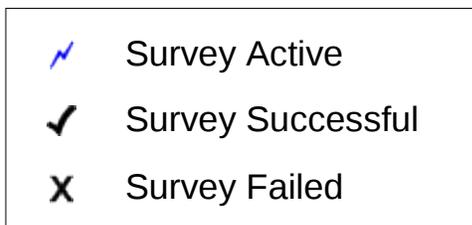


Figure 5 Survey Icons

3 Operating Sundew

Sundew supports either an interactive mode or a batch mode. The interactive mode includes a GUI and is used to plan Missions or review survey data and past Missions. The

batch mode does not include a GUI and is intended for use with a pre-planned Mission where user input is not required.

3.1 Starting Sundew in Interactive Mode

From the command line type:

```
cd /home/sundew  
./runSundew.sh
```

When Sundew starts up, the operator is prompted for the Mission to open, as shown in Figure 6. By default, the most recently created Mission is selected, but the operator may choose to open another recent Mission, a new Mission, or an existing Mission located in an alternative directory.



Figure 6 Choosing a Mission During Startup

A new Mission contains no Network or Device Profiles, but Device Type profiles from the Standard Mission are automatically copied to this Mission

3.2 Starting Sundew in Batch Mode

From the command line type:

```
cd /home/sundew  
./runSundewCmdLn.sh
```

As Sundew starts up, you will be prompted for the name of the Mission to run. Select an existing Mission or create a “New Mission” and then press “OK”. Once started in this mode, Sundew will automatically begin to scan for networks and perform any surveys configured in the Mission. To exit Sundew in this mode, press “CTRL + C”.

3.3 Changing the Current Mission

Once Sundew has started, the current mission can be changed at any time from the file menu on the main menu bar. As shown in Figure 1, selecting “File->New” creates a new

Mission, while selecting “File->Open” allows the operator to specify an existing Mission to use. See Figure 7 below for a summary of the Mission change options.

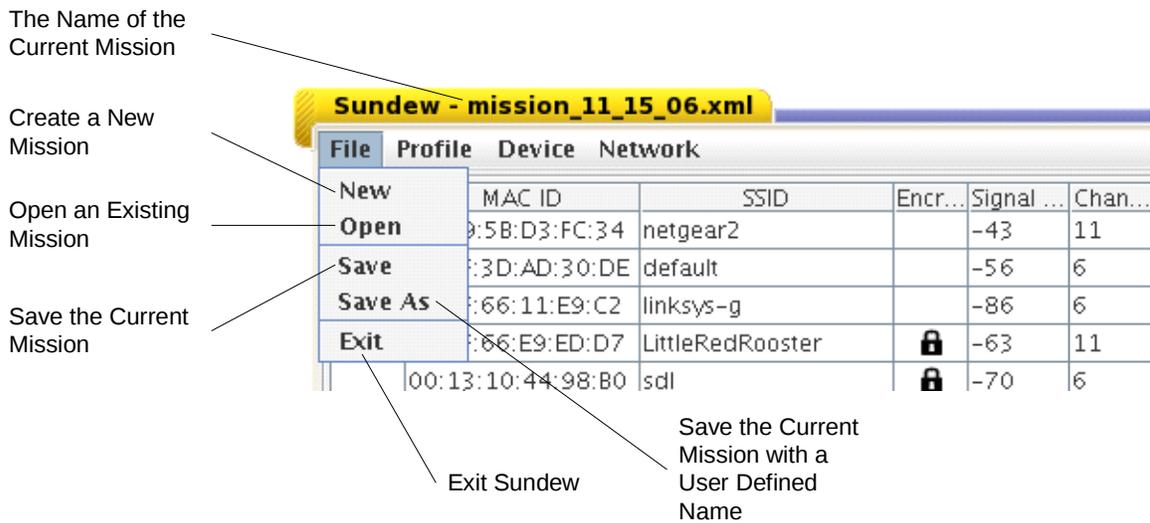


Figure 7 Changing the Current Mission

3.4 Toggle Wireless Scanning

Selecting “Network->Scan” from the main menu bar will toggle wireless scanning. When scanning is enabled, there will be a check next to “Scan”; see Figure 8 (scanning is disabled in this figure).

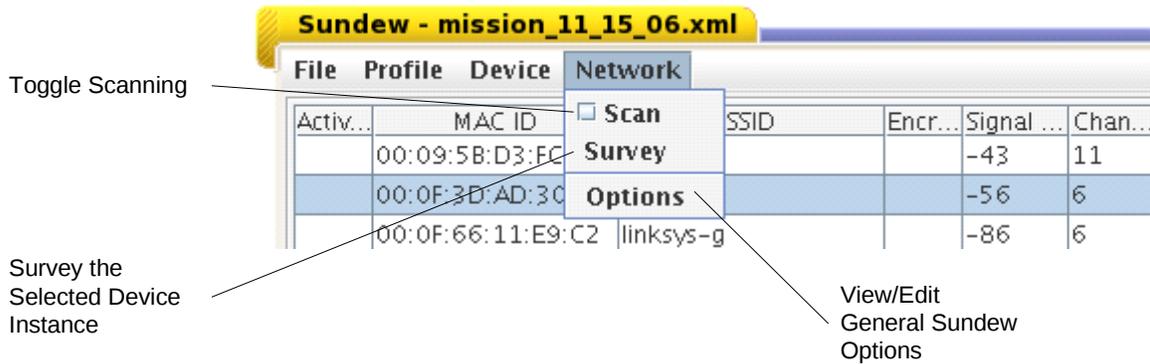


Figure 8 Scan Options

3.5 Global Options

The Global options dialog (available by selecting “Network->Options” from the main menu bar – see Figure 8 Scan Options) allows the type of scanning to be configured, survey tasks to be disabled for all profiles, and provide system information. Figure 9 shows the Global Options dialog.

3.5.1 Scan Configuration

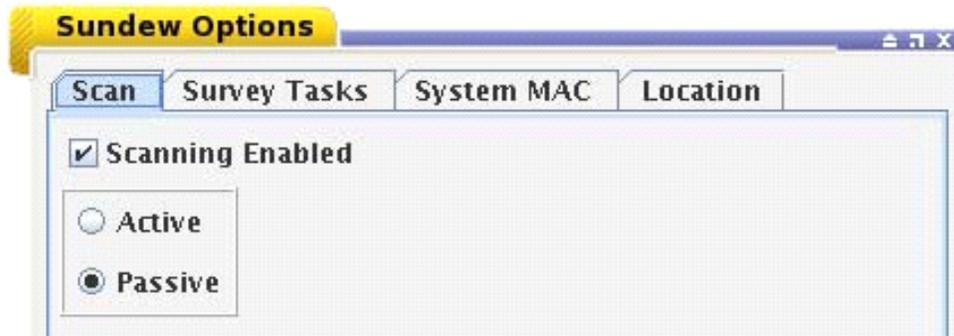


Figure 9 Global Options Dialog - Scan Settings

Wireless scanning types include active scanning and passive scanning. Active scanning uses the Linux wireless tools package to actively probe for wireless networks. Passive scanning relies on the Kismet sniffer to collect wireless network data without sending probe request. Both techniques use channel hopping so that all 802.11 frequencies and channels are scanned.

In general, it is preferable to use passive scanning over active scanning. Active scanning has not been demonstrated to better detect wireless networks, plus it has the undesirable side effect of sending probe requests that could identify the Sundew survey client.

3.5.1.1 Active Scanning Considerations

When active scanning is enabled, the wireless card will periodically send probe requests, making active scanning a somewhat “noisy” process. This can help detect networks since this technique helps discover networks with little or no current network traffic.

3.5.1.2 Passive Scanning Considerations

Passive scanning places the card in passive mode and monitors wireless channels for networks. Since probe requests are not sent, some networks may be missed; but in practice this rarely occurs and it is generally preferable to use passive scanning over active scanning.

3.5.1.3 Scan Errors

If the Mission Window becomes empty, then either no wireless networks are being detected or an error has occurred within the wireless driver. To recover from a driver error, first try to toggle scanning (as described in section 3.4 Toggle Wireless Scanning). If toggling scanning does not fix the problem, then eject the wireless PC Card and reinsert it.

3.5.2 Global Survey Configuration

The “Survey Tasks” tab on the Global Options dialog (Figure 10) allows certain survey tasks to be disabled for all profiles. In other words when a task is disabled on this dialog, it will be disabled for all survey attempts until re-enabled. For a detailed description of the available survey tasks see section 4.5 Survey Task Configuration.

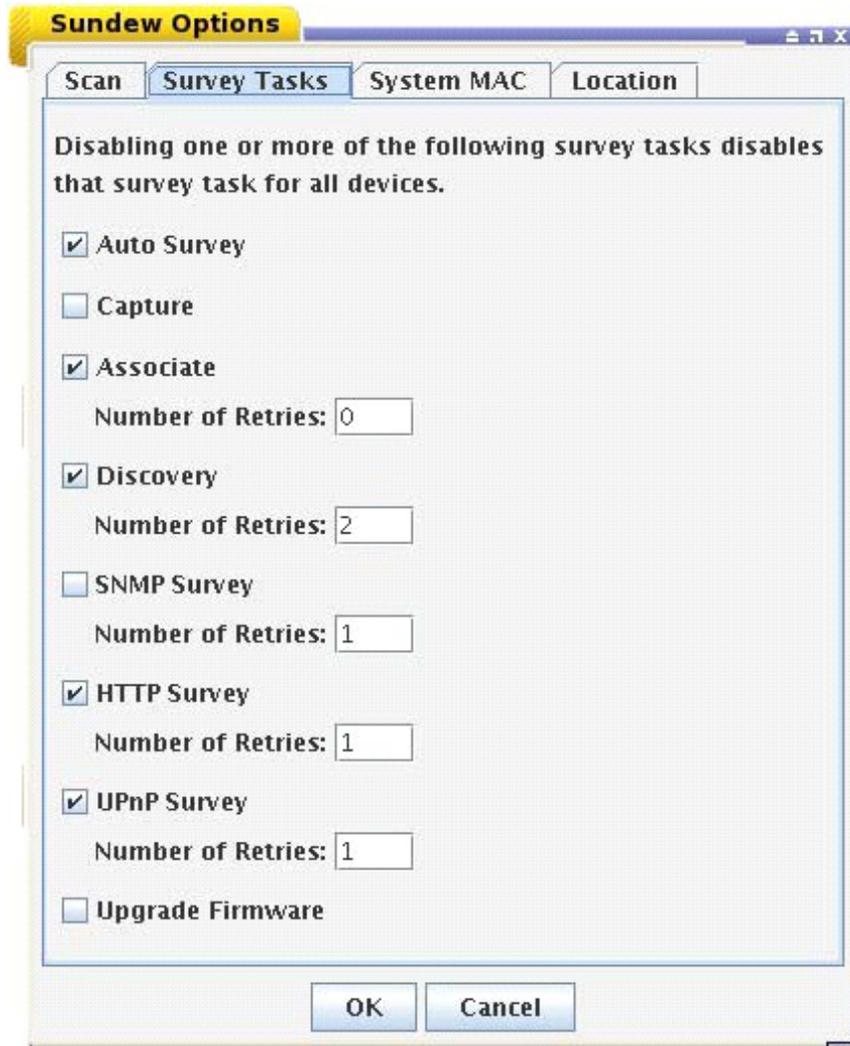


Figure 10 Global Options Dialog - Survey Tasks

3.5.3 MAC Address

The “System MAC” tab, shown in Figure 11, displays the current MAC address assigned to the wireless interface. This tab also provides an option for manually assigning a new MAC address to the wireless interface, but the preferred method for assigning a MAC address is to set it for each device/network profile during an association attempt. See section 4.5.3 for information on setting the MAC address during an association attempt.

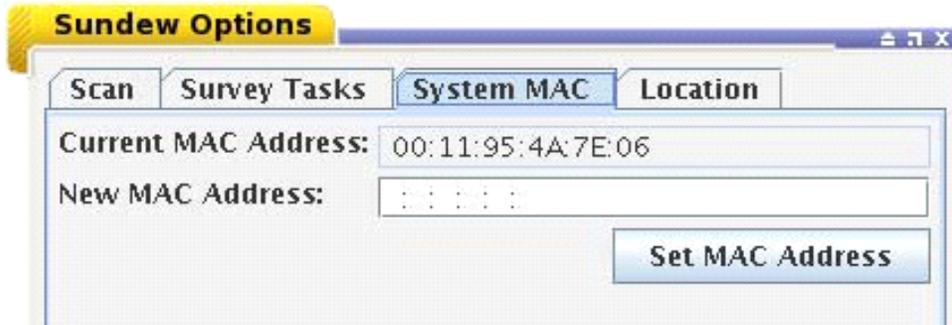


Figure 11 Global Options Dialog - MAC Address

The MAC address can be reset to its original value by removing and reinserting the PC Card.

3.5.4 Location

The "Location" tab, see Figure 12, displays the current latitude/longitude as reported by the local GPSd daemon. This is a helpful utility for verifying that GPSd is running and connected to a GPS receiver. The latitude/longitude values will be blank if the GPS data is not available (as shown in Figure 12).

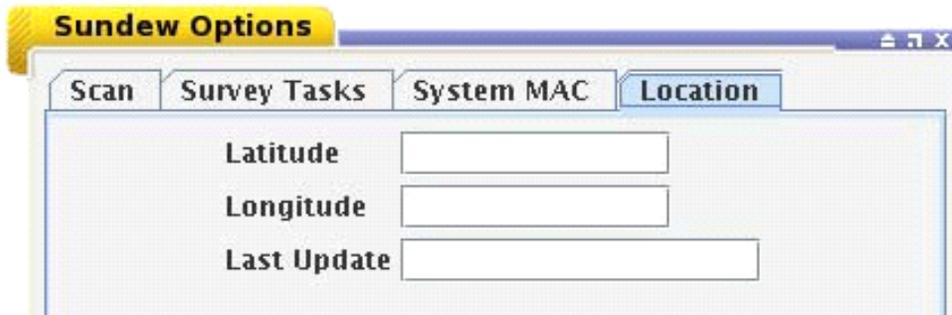


Figure 12 Global Options Dialog – Location

3.6 Starting a Survey

A new survey can be started any time the Mission Window contains one or more networks and a survey is not currently running (only one survey can be ran at a time). The survey is always started from the Mission Window by invoking one of these methods:

- Select a row and hit the Enter key once
- Select a row and double click
- Right-click on a row and select the "Survey" option

The survey task performed depends on the survey configuration for the selected network. Section 4.5 "Survey Task Configuration" provides detailed information about how to configure survey tasks.

If a new survey is started while scanning is enabled, then scanning will be disabled for the duration of the survey. Scanning will resume when the survey finishes.

The survey process can also be configured to automatically run when the signal strength reaches a specified signal level. See 4.5.1 “Auto-Survey” for information on configuring the Auto-Survey task.

4 Mission Planning

Planning a new Mission involves adding Device or Network Profiles and then configuring survey tasks for these profiles. Profiles may also be imported from the Profile Repository.

4.1 Creating a New Mission

There are two methods for creating a new Mission:

- Selecting “New Mission” from the dialog displayed when first starting Sundew
- Pressing “File->New” from the Sundew menu bar.

Both of these options automatically create a new Mission saved to a file prefixed with the word “mission” followed by the date the Mission was created and an .xml extension.

Mission naming examples:

- mission 11_14_2006 17_34_00-.xml
- mission 11_15_2006 11_12_34.xml
- mission 11_15_2006 07_52_05.xml

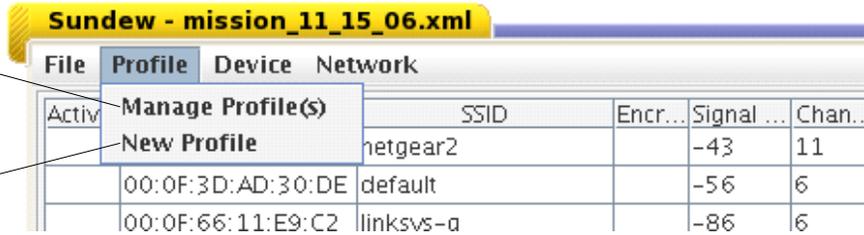
A new Mission will contain no Device or Network Profiles, but it will contain the Device Type profiles copied from the Profile Repository.

4.2 Managing Profiles

All three profile types can be managed from the Profile menu item, shown in Figure 13. Selecting “Manage Profile(s)” will open the Profile Management dialog for the current Mission, as shown in Figure 14

Open the Profile Management Dialog Window

Create a New Profile and Add it to the Current Mission



Activ	Profile	Device	Network	SSID	Encr...	Signal ...	Chan..
	Manage Profile(s)						
	New Profile			netgear2		-43	11
		00:0F:3D:AD:30:DE	default			-56	6
		00:0F:66:11:E9:C2	linksvs-a			-86	6

Figure 13 Profile Management

This dialog allows the operator to add, remove, or edit profiles in the current Mission or move profiles from/to the Profile Repository. The profiles in the left column belong to the current Mission, while the profiles in the right column belong to the Profile Repository.

The Name and Location of the Current Mission

Toggles Profile Types Displayed in the Table

Profiles in the Current Mission

Right Click to Edit or View Profile Properties

Blue Text Indicates this Profile has been added to this Mission

Check to Select where to add the New Profile

Profile Management - /home/sundew/profile/mission 05_18_2007 16_41

View Profile Types

Network
 Device Instance
 Device Type

Delete	Mission Profiles	Copy	Profile Repository	Delete
X	Actiontec-F5D7231_4	<< >>	Actiontec-F5D7231_4	X
X	Asus-WL500G	<< >>	Asus-WL500G	X
X	Asus-WL500GDLX	<< >>	Asus-WL500GDLX	X
X	Asus-WL530G	<< >>	Asus-WL530G	X
X	Buffalo-WBR2- Edit Profile	<< >>	Buffalo-WBR2_G545	X
X	Buffalo-WZR_RS_G108	<< >>	Buffalo-WZR_RS_G108	X
X	Buffalo-WZR_RS_G54	<< >>	Buffalo-WZR_RS_G54	X
X	Dell-TRUEMOBILE_2300	<< >>	Dell-TRUEMOBILE_2300	X
X	Linksys-WRT54GS	<< >>	Linksys-WRT54GS	X
X	Linksys-WRV54G	<< >>	Linksys-WRV54G	X
X	USRobotics-USR5461	<< >>	USRobotics-USR5461	X
X	00:09:5B:D3:FC:34	<< >>	00:09:5B:D3:FC:34	X
X	00:0F:3D:AD:30:DE	<< >>		X
X	00:0F:66:11:E9:C2	<< >>		X
X	00:0F:66:E9:ED:D7	<< >>	00:0F:66:E9:ED:D7	X
X	00:13:10:44:98:B0	<< >>	00:13:10:44:98:B0	X

Create New Profile

Add to Mission Profiles Add to Profile Repository **Create**

Change Mission

Save **Cancel**

Profile Repository Contains Profiles Common to More than one Mission)

Remove Profile from Mission/Repository

Red Text Indicates that the Profile has been Deleted

Undo a Delete

Opens a New Dialog Window Used to Create a new Profile

Changes the Current Mission Being Edited

Transfer Standard Profile to the Mission Profiles

Transfer Current Mission Profile to the Standard Profiles

Save any Changes and Close Window

Discard any Changes and Close Window

Figure 14 Profile Management Dialog

4.3 Creating New Profiles

The Profile Management dialog (see Figure 15) is used to create new profiles. Open the Profile Management dialog by selecting “Profile->New profile”. Any new profiles created from this dialog are added to the current Mission. Follow these rules when creating a new profile:

- The name (SSID) of a new Network Profile must be unique. If multiple Network Profiles are needed for the same SSID then they should be added to separate Missions
- The MAC Address of a Device Profile must be unique

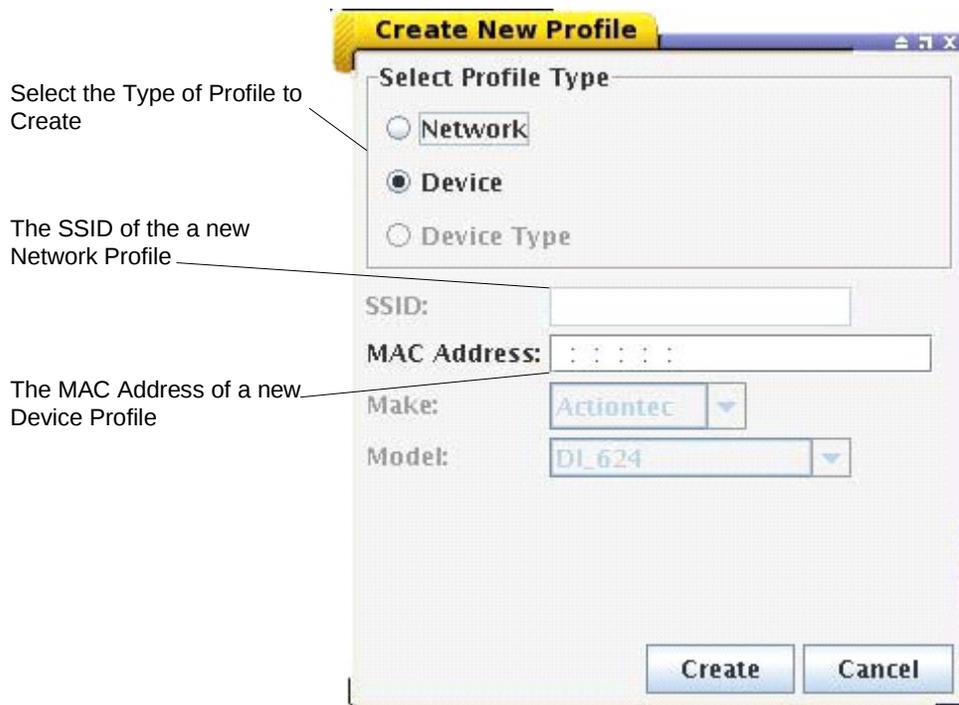


Figure 15 Creating New Profiles

4.4 Editing Profiles

All profile types are editable from the Profile Management dialog. Device Profiles can be edited from the Mission Window by right-clicking on the desired profile and selecting “edit”.

4.4.1 Manually Editing Profiles

It is possible to edit profiles outside of the Sundew GUI, but it is strongly advised not to do so. The complex number of options needed to configure a profile makes it much less error prone to use the Sundew GUI.

4.5 Survey Task Configuration

Survey options can be configured for any profile type from the Profile Details Dialog (shown in Figure 16). This dialog can be opened from the Profile Management Dialog (see section 4.2) or from the Mission Window by right clicking on a Device Profile.

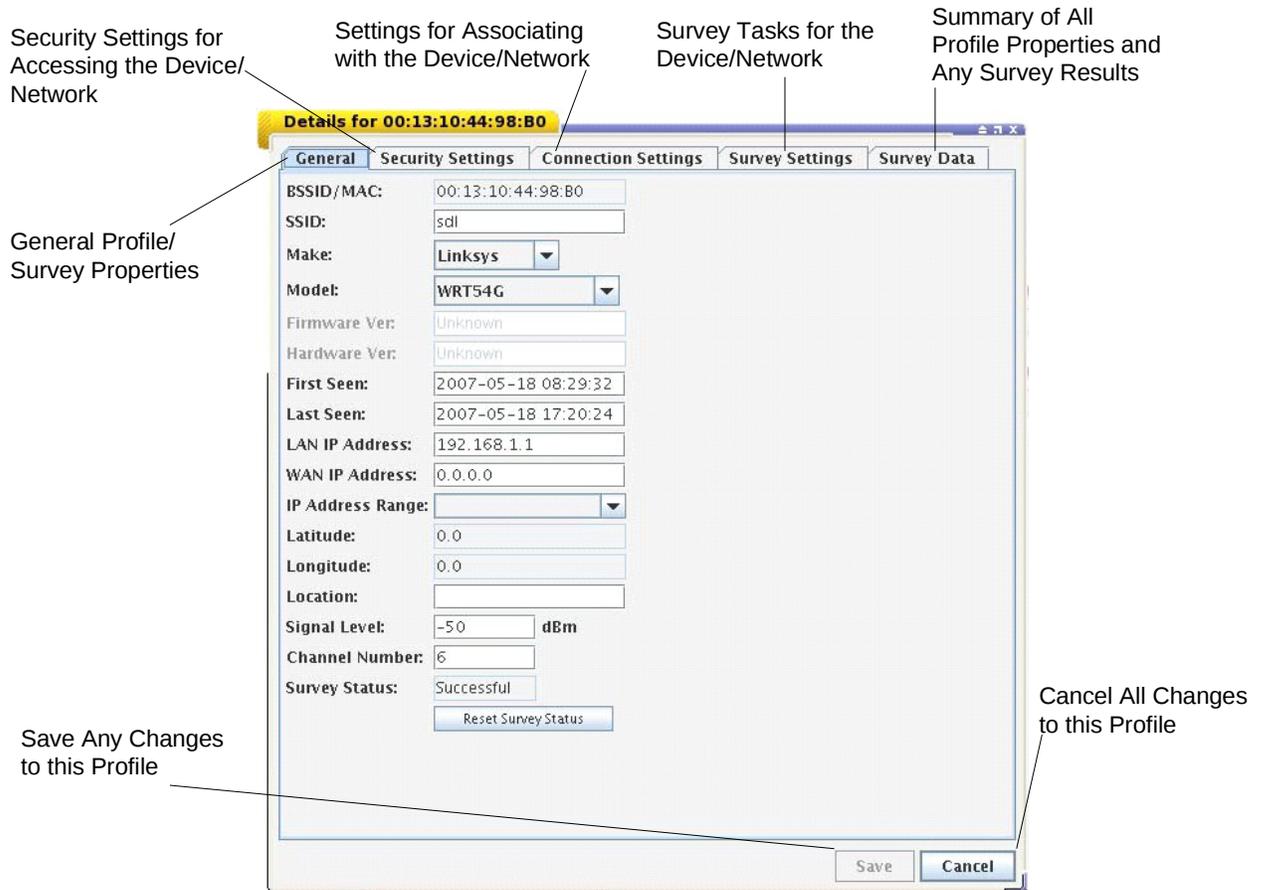


Figure 16 Profile Details Dialog

These survey capabilities are configured from the Profile Details Dialog:

- Auto-Survey
- Packet Capture
- Association
- Network Discovery
- SNMP Survey
- HTTP Survey
- UPnP Survey
- Firmware Upgrade

4.5.1 Auto-Survey

As shown in Figure 17, the Auto-Survey option is available from the “Survey Settings” tab on the Profile Details Dialog. If enabled, Auto-Survey directs Sundew to automatically survey a device or network when the specified signal quality threshold is met. NOTE - scanning mode (either active or passive) must be enabled to calculate the signal quality threshold.

The Auto-Survey capability allows surveys to be executed without operator input, which is necessary when Sundew operates in batch mode.

Should an Auto-Survey attempt fail, it will be restarted once it meets the signal level threshold. Auto-Survey is disabled for a Device Profile after the first successful survey.

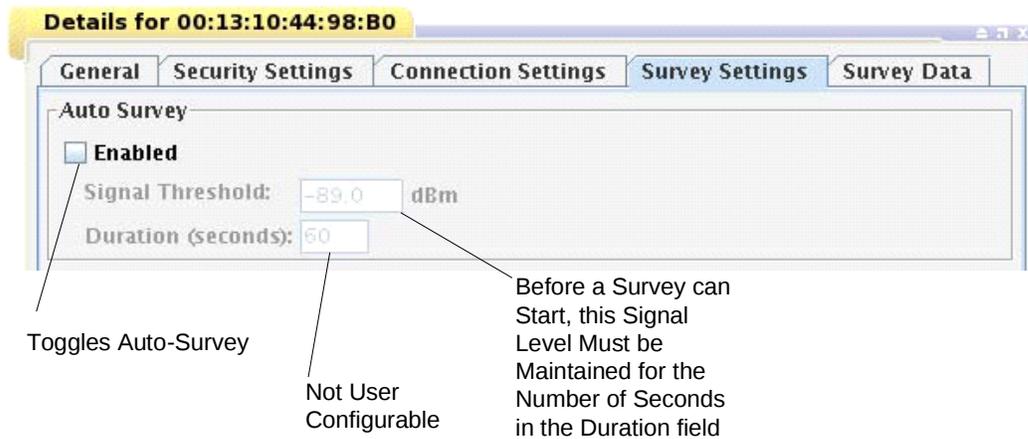


Figure 17 Auto-Survey Configuration Options

4.5.2 Packet Capture

The Packet Capture task can be used to collect network traffic while performing a survey or outside of a survey. To enable/disable Packet Capture during a survey, edit the “Connection Settings” tab on the Profile Details Dialog, see Figure 18. If enabled, the Packet Capture will continue until all survey tasks finish.



Toggles the Packet Capture Task

Figure 18 Packet Capture Configuration Options

A Packet Capture can be started outside of a survey by right clicking on the desired device in the Mission Window and selecting “Packet Capture”. This standalone packet capture will continue until stopped the operator.

All capture data is stored in the Sundew distribution “capture” subdirectory. These capture files can be viewed with Ethereal or any other network analyzer capable of reading PCAP files.

4.5.3 Association

As shown in Figure 19, the Association task is enabled or disabled from the “Connections Settings” tab on the Profile Details dialog. This task controls how Sundew associates (connects) with a wireless network. The packet capture, DHCP, and MAC cloning tasks are closely related to this task since they all need to work together to crate a successful association.

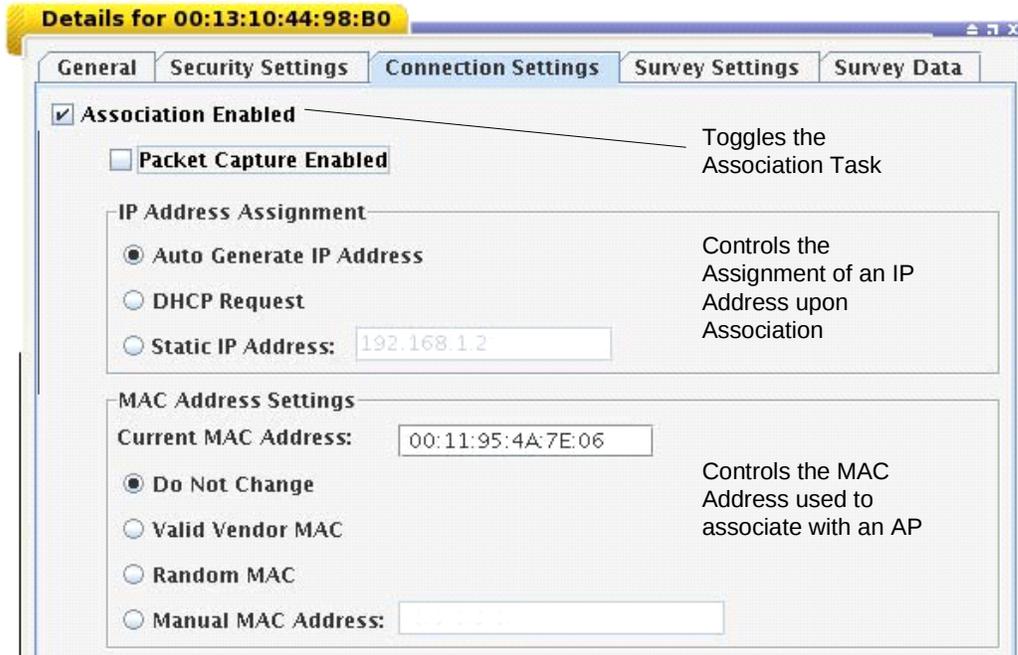


Figure 19 Association Configuration

In addition, the security settings must be correctly configured for an association attempt to be successful. If encryption is enabled for a network, and a key/passphrase is not set for the network, then the association (and survey) will fail. Encryption values are configured on the “Security Settings” tab, shown in Figure 20.

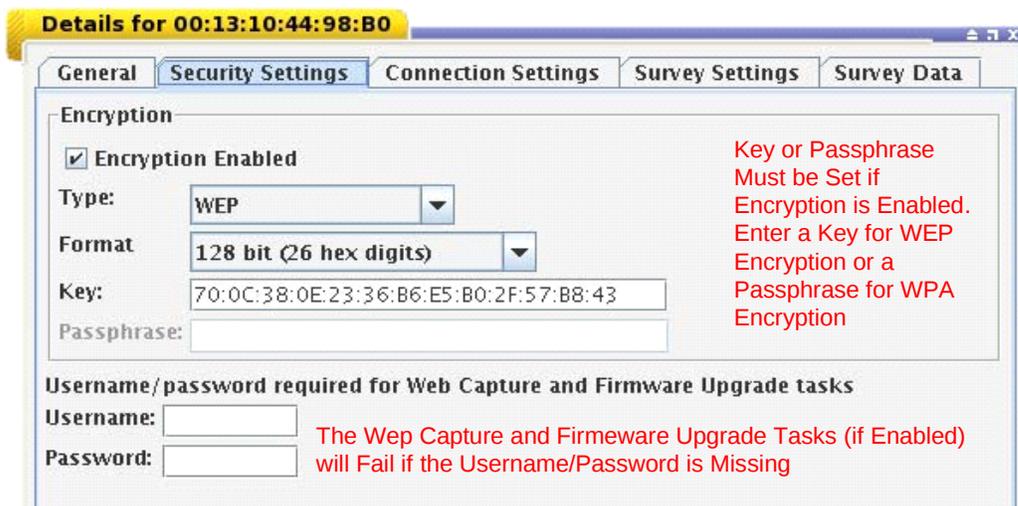


Figure 20 Survey Security Settings

The “Connection Settings” tab (Figure 19) also provides several options for setting the MAC address of the wireless interface. The default action is to leave the MAC address at its factory setting (“Do Not Change”). If another MAC address setting is chosen, then

Sundew will modify the MAC address prior to starting an association. Table 1 MAC Address Configuration Options” summaries the MAC Address configuration options:

Table 1 MAC Address Configuration Options

MAC Address Option	Description
Do Not Change	Leave the MAC Address at its current value
Valid Vendor MAC	Create a MAC Address whose first three octets match that of a valid manufacturer OUI name
Random MAC	Create a MAC Address whose first three octets may or may not correspond to a manufacturer OUI name
Manual MAC	The operator must specify the MAC Address value

Many survey attempts fail because Sundew does not receive an IP address from a DHCP server on the associated network. Many of these association failures can be prevented by using the “Auto Generate IP Address” or “Static IP Address” options, as shown in Figure 19. IP address options are described in Table 2 IP Address Configuration Options.

Table 2 IP Address Configuration Options

IP Address Option	Description
Auto Generate IP Address	If enabled, Sundew will attempt to generate and use a static IP Address after associating with the network. If a static IP address could not be generated, then a DHCP request will be sent. The association attempt will fail if a static address could not be generated and the DHCP request failed.
DHCP Request	If enabled, Sundew will make a DHCP request for the IP address of the wireless interface. The association attempt will fail if no DHCP response is received.
Static IP Address	If enabled, a valid IP address for the network must be entered. This IP address will be assigned to the wireless interface. An invalid IP address will cause the HTTP, SNMP, and Firmware Upgrade survey tasks to fail.

4.5.4 Network Discovery

The Network Discovery task (see Figure 21), attempts to identify the IP address of a network device. This IP address may be required for additional survey tasks such as the HTTP survey or Firmware Upgrade. This task is dependent on the Association task successfully associating with the network.

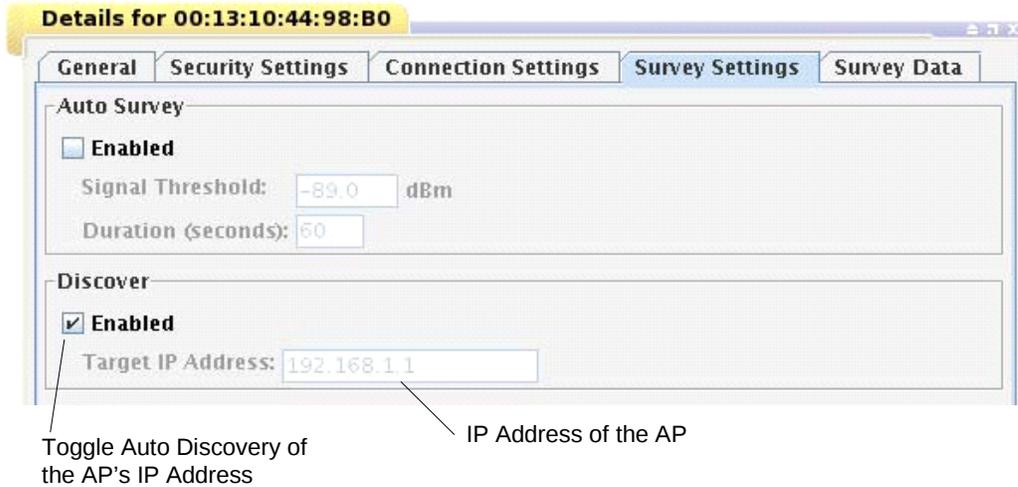


Figure 21 Network Discovery Settings

The task can be disabled, but the user must enter the IP address of the wireless device. In most cases, it is assumed the user will not know the IP address of the device, so this task is normally required.

4.5.5 HTTP Survey

The HTTP survey task depends on the Sundew being able to successfully associate with the network and identify the IP address of the AP. This task will not run if either the Association task or Network Discovery tasks fail.

If the HTTP survey task is enabled, as shown in Figure 22, then Sundew will attempt to access the web interface of the network device and determine the device's make and model. If successful, this information will be displayed in the main Mission Window and the in "General" tab of the Profile Details dialog.



Toggles the HTTP Survey Task

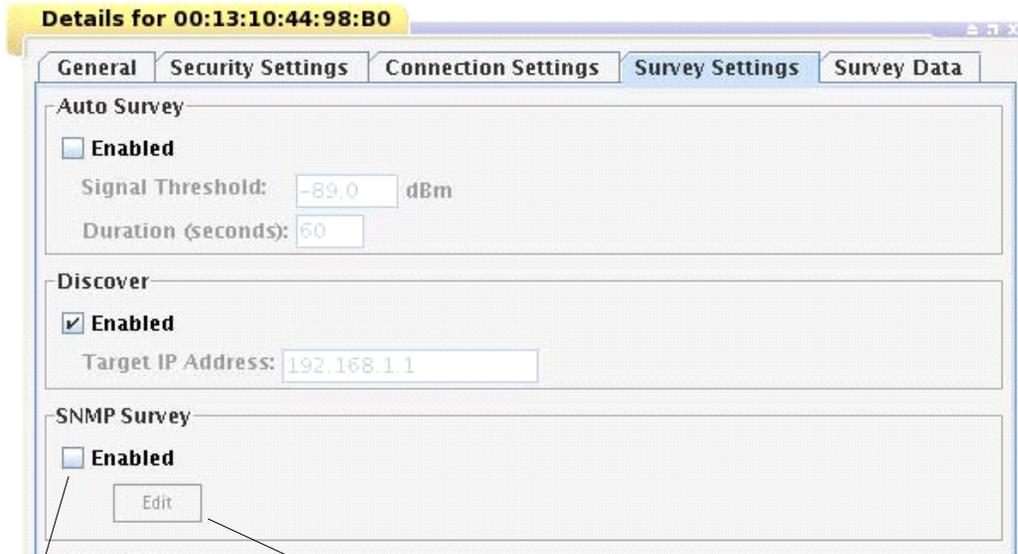
Figure 22 HTTP Survey Configuration

When the Web Capture option is enabled, Sundew will also attempt to log into the web interface (using the username/password set on the Security Settings tab) and capture the entire web site hosted on the device. This option can only be enabled if a username and password have been entered on the Security Settings tab.

4.5.6 SNMP Survey

This survey task depends on Sundew being able to successfully associate with the network and identify the IP address of the AP. This task will not run if either the Association task or Network Discovery tasks failed.

If the SNMP survey is enabled using the dialog shown in Figure 23, Sundew will send one or more SNMP requests to the device. In order for this survey technique to work, the device must host a SNMP agent. Most consumer level device do not host such an agent, but many enterprise level devices do.



Toggles the HTTP Survey Task

Edits the OID Values Requested During the Survey (Advanced Users Only)

Figure 23 SNMP Survey Configuration

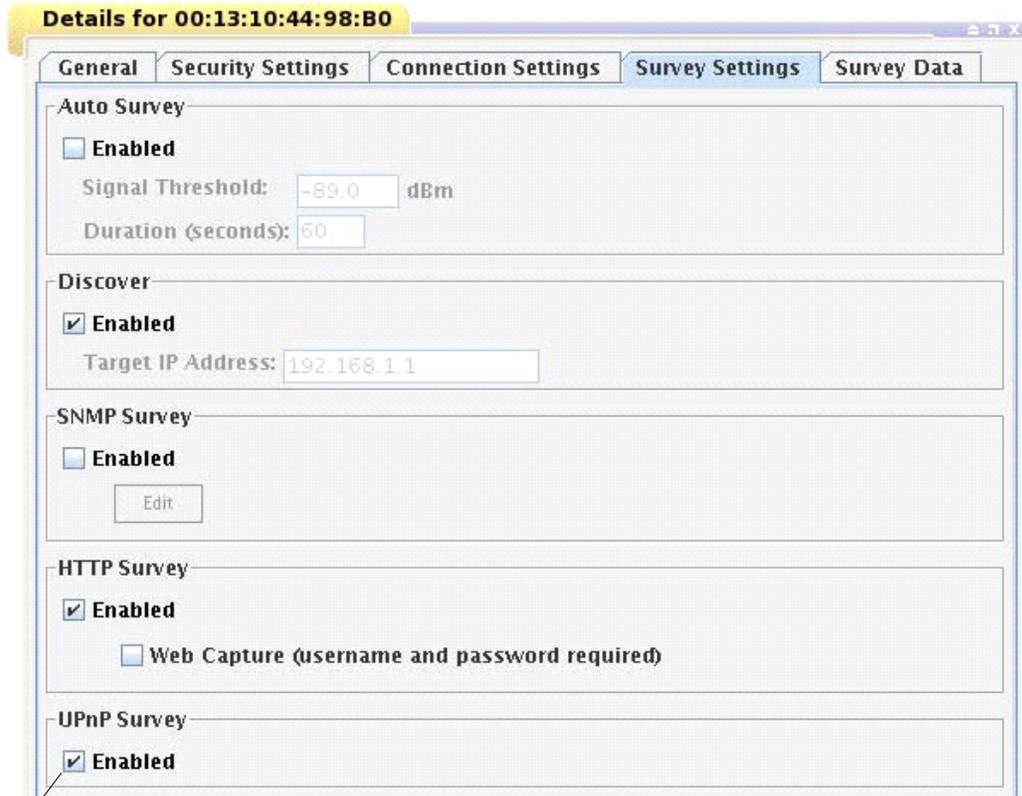
Sundew has been configured to request standard 802.11 MIB values specified by the IEEE MIB. If desired some of the requests can be disabled to make this task less noisy. To modify the SNMP request sent to the AP, click on the “Edit” button and toggle the requested values.

In general, the UPnP survey task (described in section 4.5.7 UPnP Survey) should be used over the SNMP survey since more devices support UPnP than SNMP.

4.5.7 UPnP Survey

This survey task depends on the successful completion of the Association task. The task will not run if the Association task fails.

If enabled as shown in Figure 24, the UPnP survey task will send UPnP requests to the wireless device. If the device supports UPnP, then it is often possible to determine the make, model, and IP information of the device.

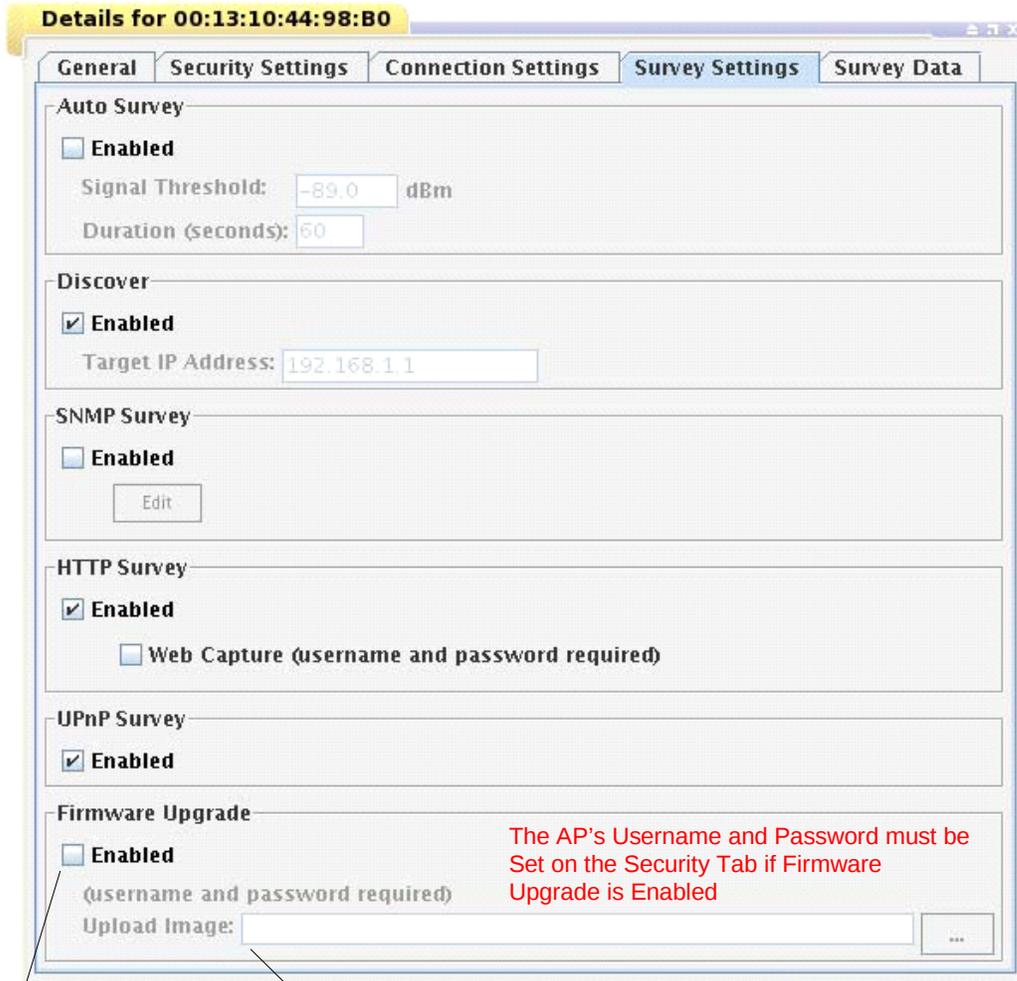


Toggles the UPnP Survey Task

Figure 24 UPnP Survey Configuration

4.5.8 Firmware Upgrade

If Sundew can associate with the desired network, discover the IP address of the device, and determine the make/model of the device, then a firmware upgrade can be attempted by enabling the Firmware Upgrade as shown in Figure 25. The Firmware Upgrade task is device specific; only the **Linksys WRT54G is currently supported.**



Toggles the Firmware Upgrade Task

Name of the Firmware Image

Figure 25 Firmware Upgrade Configuration

Extreme caution should be used when enabling this option. If the firmware upgrade fails, then the device may become inoperable. Again, the upgrade process varies by device, but normally the image uploaded completes within one minute. Once uploaded, it may take several minutes for the network device to finish installing the image and rebooting. During that time the device may not be fully functional and it may not be possible to associate with the network and verify that the upgrade worked.

5 Log and Configuration Files

Sundew generates a number of log and report files. The following table lists the files created by Sundew. Unless otherwise noted, all files listed in the table below are located relative to the Sundew installation directory.

File Type	Naming Convention	Location	Description
Mission	mission MM-dd-yyyy HH-mm-ss .xml ex: mission 05-23-2007 18-46-02.xml	./profile	Mission data containing Device and Network Profiles. There may be many Mission files
Profile Repository	standard_profiles.xml	./profile	The Profile Repository.
Configuration	sundew_config.xml	./config	The Sundew application configuration file
Log File	sundew.log	./logs	The general log file for Sundew. All Sundew messages (error, info, etc) are logged to this file.
Error Log File	sundew_error.log	./logs	Only Sundew error messages are logged to this file
Scan Log File	scan.log	./logs	Only scan data is logged to this file.
Survey Log File	survey.log and survey.html	./logs	All survey data is logged to this file (survey.log and survey.html contain the same data, except survey.html is formatted so that it can be viewed as HTML in a web browser)
Packet Capture	cap-*.cap	./capture	Packets collected while the Packet Capture task was running
Kismet Packet Capture	Kismet- MMM-dd-yyyy .dump Ex: Kismet-Apr-20-2007.dump	/home/ sundew/ kismetlogs	Packets collected by Kismet while passive scanning was enabled.
HTTP Capture	SSID_MACAddress Ex: default_01:02:03:04:05:06	./capture/http	The web interface of a device, if the Web Capture task was enabled during a survey

6 System Configuration

Sundew requires a Linux 2.6+ kernel with Java 1.5 or later. Sundew has been primarily used with the Fedora Core 6 and Zenwalk Linux (3.x) distributions.

In addition, Sundew requires an Atheros based wireless PC-card or mini-PCI card supported by the Linux wireless tools package and the MadWifi driver.

6.1 Wireless Settings

The ath0 interface is used for network association, while the ath1 interface is used for monitor mode.

7 GPS Support

On startup Sundew will attempt to connect to a local GPSd daemon. If a connection to the daemon is established, then latitude and longitude values will be added to the survey and scan data.

Sundew will not attempt to start the GPSd daemon nor connect to a GPS device. It is assumed these tasks are handled prior to Sundew starting up.