axon
POS SYSTEMS

DOT500

Manuale di configurazione del modulo
Wi-Fi SUMMIT.

Summit SCU User's Guide

Introduction to the Summit Client Utility

Summit delivers a connection management and monitoring utility called the Summit Client Utility (SCU). SCU allows you to view all radio and security settings, and status; and enables you to troubleshoot connectivity issues. The following is a detailed list of what you can view using the SCU:

- Individual Summit radio configuration profile contents including radio and security settings.
- Global settings, which apply to every profile.
- A snapshot status of the current wireless network connection.
- More detailed status information on the radio, the access point to which it is connected, and the RF connection or link between the two.
- In-depth diagnostic information on the connection and the radio, so users can accurately report key data to an administrator when there is a connection or performance issue.
- Other information on the radio, such as software versions and regulatory domain.

Note: All SCU management functions are only available to administrators. For more information on administrator functions, refer to the Summit Administrator's Guide which can be accessed from the Documentation page of the Summit Data Communications website.

This SCU User's Guide provides the following information:

- Instructions on how to access SCU.
- Detailed information regarding each SCU window including Main, Profile, Status, Diags, and Global.
- Instructions on how to use the Summit System Tray icon (only available for Windows CE and Windows Mobile).

Accessing the Summit Client Utility

The SCU is available for Windows Embedded CE, Windows Mobile, and Windows XP. Depending on your operating system, use one of the following methods to access SCU:

- Windows Embedded CE or Windows Mobile - From the Start menu, select **Programs > Summit > Summit Client Utility**
- Windows XP - From the Start menu, select **All Programs > Summit > Summit Client Utility**.

SCU has five tabbed windows which, depending on your operating system, may be accessed from the bottom of the screen (Windows CE or Windows Mobile) or from the top of the screen (Windows XP):

- Main
- Profile
- Status
- Diags (for troubleshooting)
- Global

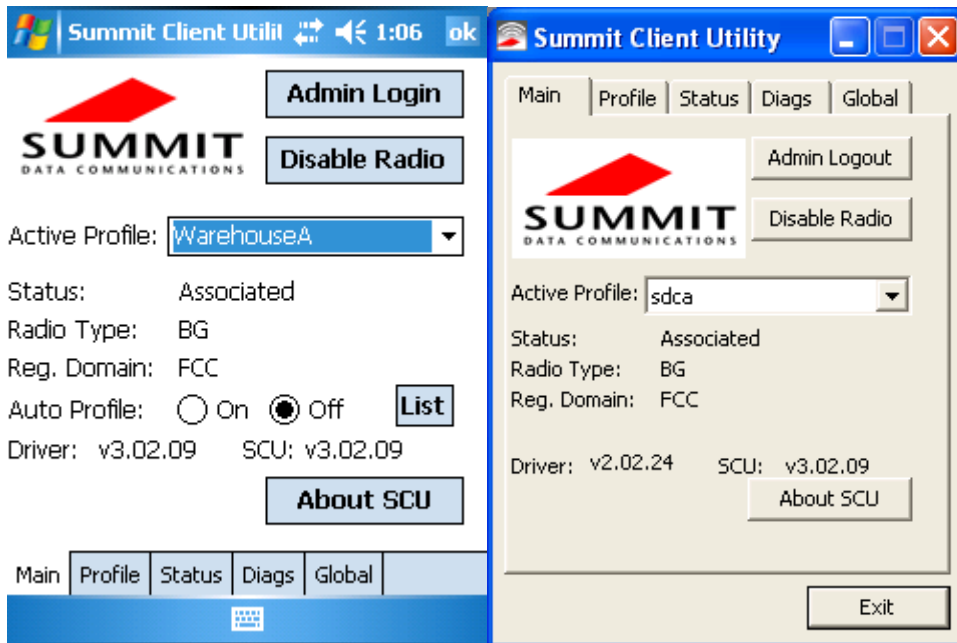To view a window, tap the applicable tab.

Main Window

Figure 1: Main window

The Main window provides an overview of the current wireless network connection configuration (Active Profile), a snapshot of connection information as well as access to administrator functions (Admin Login/Logout - *administrator use only*), and additional information regarding SCU (About SCU).

The two images at right (Figure 1) are the SCU Main windows for Windows CE/Windows Mobile and Windows XP operating systems.

Table 1 describes the SCU elements available from the Main window.

Table 1: Main Window Elements

Element	Description	
Admin Login/Logout	*Administrator use only.*	
Enable Radio /Disable Radio	When the radio is enabled, select this button (which displays **Disable Radio**) to disable it. When the radio is disabled, select the same button (which now displays **Enable Radio**) to enable it. **Note:** When the radio is enabled, it attempts to make and/or maintains a connection to an access point. When a radio is disabled, its power remains on but it does not attempt to make a connection to an access point.	
Status	Indicates the current status of the Summit radio. Connection statuses include:	
	Down	The radio is not recognized by Summit software and therefore is not associated nor authenticated.
	Disabled	The radio is disabled. To enable the radio, tap **Enable Radio** located on the SCU Main window.

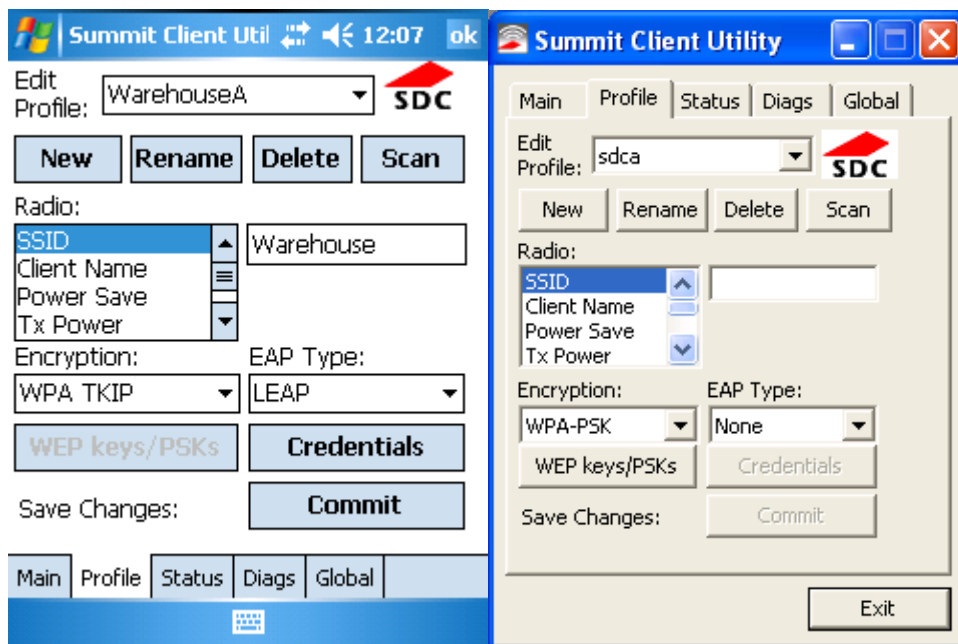|		When the radio is disabled, it does not attempt to make a connection to an access point.
	Not Associated	The radio has not established a connection to an access point.
	Associated	The radio has established a connection to an access point but is not EAP authenticated. The radio can not communicate unless it is associated **and** EAP authenticated.
		Note: If the Encryption type is set to WEP or Open (None), it can communicate (send data) while in the Associated state.
	<EAP type> Authenticated	The radio has established a connection to an access point and has completed EAP authentication successfully. In this state, the radio can communicate (send data).
Radio Type		Indicates the type of radio installed in the device. For example:
	BG	Indicates a Summit 802.11g radio which supports 802.11b and 802.11g.
	ABG	Indicates a Summit 802.11a/g radio which supports 802.11a , 802.11b, and 802.11g.
	N	Indicates Summit 802.11n radio which supports 802.11a, 802.11b, 802.11g, and 802.11n.
Reg. Domain		Indicates the regulatory domain(s) for which the radio is configured, including FCC, ETSI, MIC, and KCC.
Auto Profile		Auto profile enables you to activate or deactivate automatic profile selection. Tap **List** and use the dialog box to select a created profile.
		Note: There is a limit of 19 profiles in the Auto Profile list.
		Note: Auto Profile is only available on Windows CE and Windows Mobile operating systems.
Driver		Indicates the current version of the device driver.
SCU		Indicates the SCU version currently running on the device. Displays only if space permits.

Profile Window

Figure 2: Profile window

Profile settings are radio and security settings that are stored for each configuration profile. Other than viewing the settings for each profile, the functions and settings located on the Profile window are only available to administrators. Non-administrators may not edit any items on this tab.

The two images at right (Figure 2) are the SCU Profile windows for Windows CE and Windows XP operating systems.

Note: The Summit Knowledge Center provides detailed information for the following radio setting terms located on the Profile tab. Refer to the Administrator's Guide for SCU-specific radio settings including default settings.

- AES-CCMP
- Authentication
- Auth Type
- Bit Rate
- CKIP
- Client Name
- Credentials
- EAP

- EAP-FAST
- EAP-TLS
- EAP-TTLS
- Encryption
- LEAP
- PEAP
- PEAP-GTC
- PEAP-MSCHAP2

- PEAP-TLS
- Power Save
- PSK
- Radio Mode
- SSID
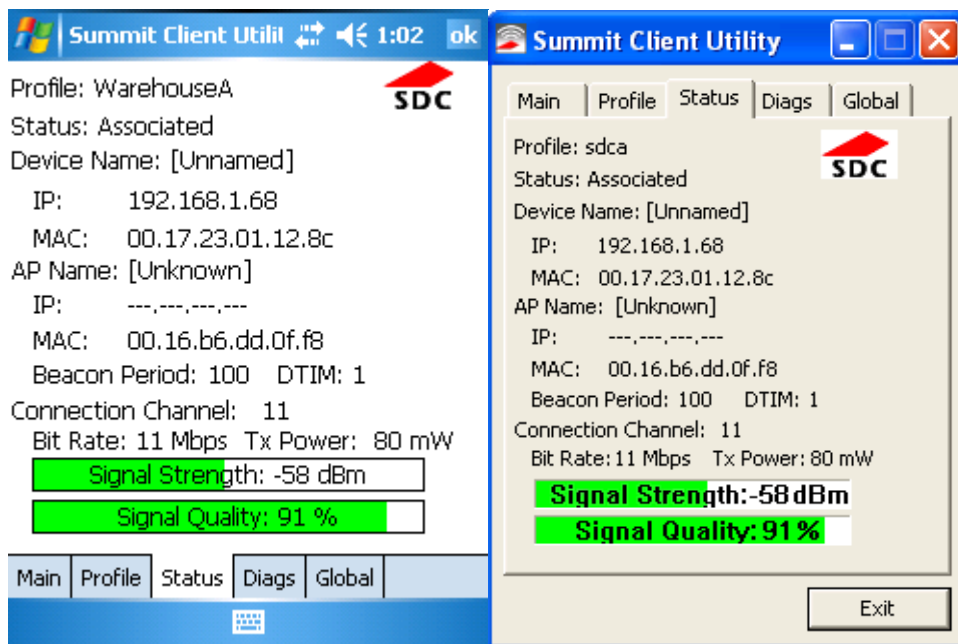- Tx Power
- WEP
- WPA/WPA2

Status Window

Figure 3: Status window

The Status window provides status information on the radio connection between the client device and the access point to which it's associated.

The two images at right (Figure 3) are the SCU Status windows for Windows CE and Windows XP operating systems.

Table 2 describes the SCU elements available from the Status window.

Table 2: Status Window Elements

Element	Description	
Profile	The active profile.	
Status	Indicates the active status of the Summit radio. Status also displays on the Main tab window. See Main Window > Status for details on individual status options. Connection statuses include:	
	Down	The radio is not recognized by Summit software and therefore is not associated nor authenticated.
	Disabled	The radio is disabled. To enable the radio, tap **Enable Radio** located on the SCU Main window. When the radio is disabled, it does not attempt to make a connection to an access point.
	Not Associated	The radio has not established a connection to an access point.
	Associated	The radio has established a connection to an access point but is not EAP authenticated. The radio can not communicate unless it is associated ***and*** EAP authenticated. **Note:** If the Encryption type is set to WEP or Open (None), it can

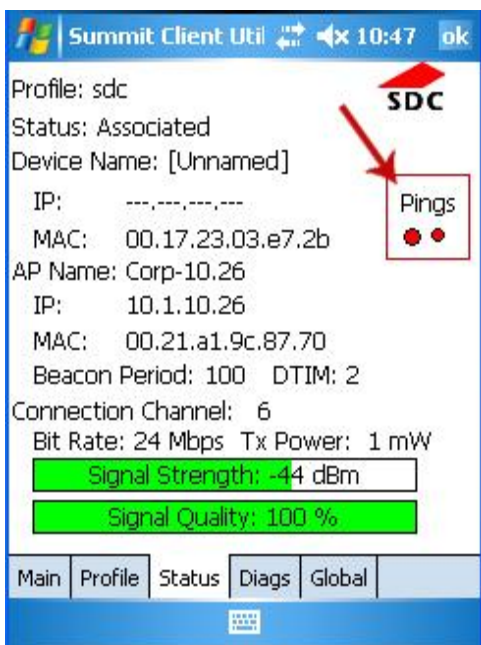|		
		communicate (send data) while in the Associated state.
	<EAP type> Authenticated	The radio has established a connection to an access point and has completed EAP authentication successfully. In this state, the radio can communicate (send data).
Device Information		Device information including the device name, IP address, and MAC address.
AP Information		Access point information including the name of the access point to which the radio is associated, the IP address of the access point, and the MAC address of the access point. Also displayed in this section are the beacon period and DTIM.
Connection Information		Connection information including the channel the radio is using to connect to the access point along with the bit rate (in Mbps) and Tx Power. This section also displays the signal strength (or RSSI) in dBm and quality. **Note:** For more information on 802.11 channels, refer to the Summit Knowledge Center.

Figure 4: Status Window, ping indicator

Note: When a ping initiated from the Diags window is active, the Status window displays a ping indicator consisting of two lights that flash green (for a successful ping) or red (for an unsuccessful ping). The image at right (Figure 4) highlights the ping indicator.
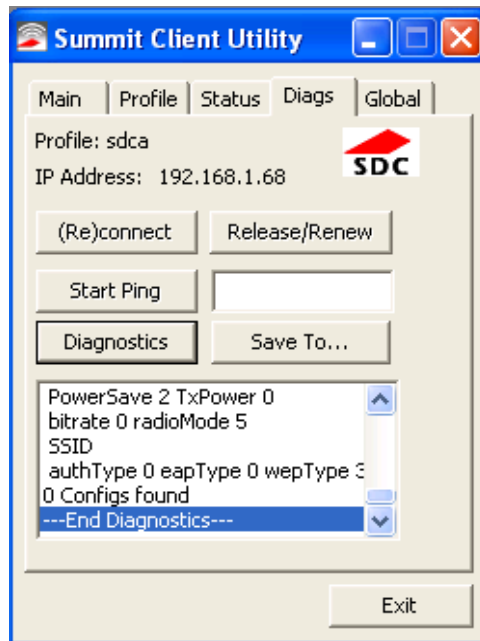
Diags Window

Figure 5: Diags window

The Diags windows enables you to troubleshoot connection issues with SCU. The two images at right (Figure 5) are the SCU Diags windows for Windows CE and Windows XP operating systems.

Table 3 describes the SCU elements available from the Diags window.

Table 3: Diags Window Elements

Element	Description
(Re)connect	Initiate a reconnect of the radio: Disable and enable the radio, apply (or reapply) the current profile, attempt to associate to the wireless LAN, and attempt to authenticate to the wireless LAN. SCU logs all activity in the output area at the bottom of the Diags window.
Release/Renew	Obtain a new IP address through DHCP release/renew. SCU logs all activity in the output area at the bottom of the Diags window.
Start Ping/Stop Ping	Start a continuous ping to the address in the edit box next to the button. Once the button is tapped, its name and function changes to Stop Ping. Pings continue until you tap **Stop Ping**, move to a different SCU window (other than Diags or Status), exit SCU, or remove the radio. **Note:** If your device has both a Summit radio and another network adapter active, then pings may go out over the non-Summit network adapter. **Note:** The access point's IP address is the default for a ping although any valid IP address can be manually entered.
Diagnostics	Attempt to (re)connect to an access point and provide a more thorough dump of data than is obtained with (Re)connect. The dump includes radio state, profile settings, global settings, and a BSSID list of access points in the area.
Save To...	Indicate where you want to save the diagnostics file. Tap **Save To...** to open the Save As window. From here, you can change the SDC diagnostics

	file name, the folder in which SCU saves the file, the format in which the file is saved (the file type), and the location of the saved file (Main memory or System).

Global Window

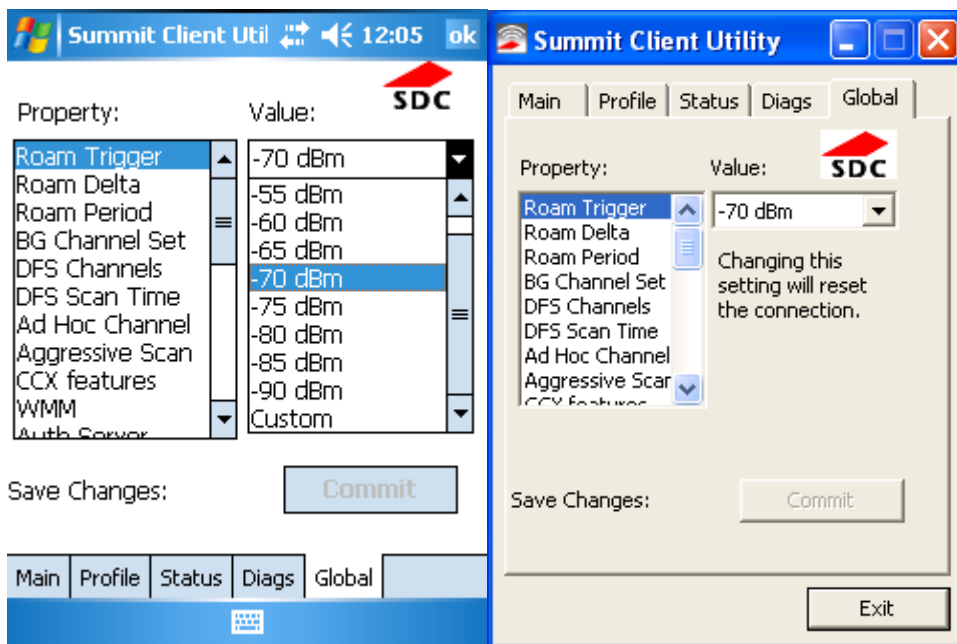

Figure 6: Global window

Global settings include radio and security settings that apply to all profiles and settings that apply to SCU itself. *Administrator use only.*

The images at right (Figure 6) are the SCU Global windows for Windows CE and Windows XP operating systems.

Detailed definitions of all properties located on the Global window can be found in the Summit Glossary of Technical Terms:

- Roam Trigger
- Roam Delta
- Roam Period
- BG Channel Set
- DFS Channels
- DFS Scan Time
- Ad Hoc Channel
- Aggressive Scan
- CCX features
- WMM
- Auth Server
- TTLS Inner Method
- PMK Caching
- Tx Diversity

- Rx Diversity
- Frag Thresh
- RTS Thresh
- LED
- Tray Icon
- Hide Passwords
- Admin Passwords (*Admin Only*)
- Auth Timeout
- Certs Path
- Ping Payload
- Ping Timeout
- Ping Delay
- Logon Options

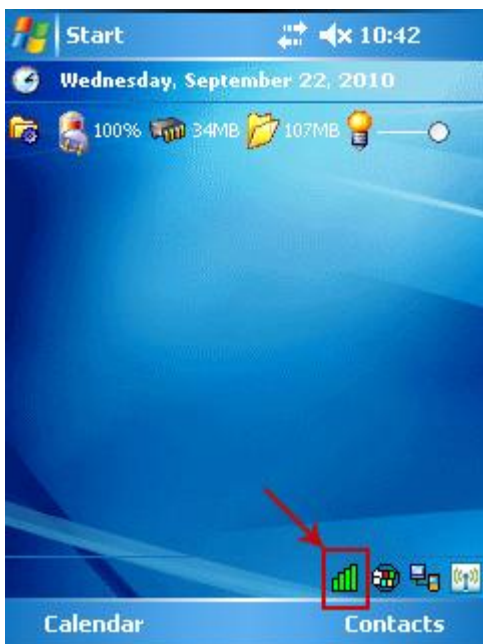# Using the Summit System Tray Icon (Windows CE and Windows Mobile only)

Figure 7: Summit System Tray Icon

On Windows CE or Windows Mobile, Summit software includes a service that displays an icon in the Windows System Tray. This icon provides a visual status for the Summit radio in the device and it provides access to the SCU application. The image at right (Figure 7) shows the Summit System Tray Icon.

Note: Tap the icon to launch the SCU application.

The service is active and displays an icon in the System Tray only when all of the following conditions are met:

- A Summit radio is installed in the device or inserted in an external slot in the device.
- The device is active.
- [Windows Zero Config](#) (WZC) is not active.
- The SCU Tray Icon global setting is On (the default setting).

When the service is active, it queries the radio every three seconds for connection status. Based on the radio's response to the query, the service displays one of the following icons:

Table 4: SCU Tray Icons

	The radio is not associated/authenticated to an AP.
	The signal strength (RSSI) for the current AP (to which the radio is associated) is -90 dBm or weaker, which means that a Summit 802.11b/g radio will operate at 802.11b data rates only.
	The RSSI for the current AP is stronger than -90 dBm but not stronger than -70 dBm, which means that a Summit radio will operate at 802.11g or 802.11a data rates that are less than 54 Mbps
	The RSSI for the current AP is stronger than -70 dBm but not stronger than -50 dBm, which means that a Summit radio should operate consistently at 54 Mbps
	The RSSI for the current AP is stronger than -50 dBm.

On most CE devices, the System Tray icon is not visible while SCU is running, but the service remains active.

Radio

- [Radio Mode](#)
- [Radio Profile](#)
- [Radio Settings (SCU Profile Window)](#)
- [Radio Type](#)
- [RC4](#)
- [(Re)connect](#)
- [Regulatory Domains](#)
- [Release/Renew](#)
- [Repeater](#)
- [Revision Control System](#)

- [RF](#)
- [RFCOMM](#)
- [Roaming](#)
- [Roam Delta](#)
- [Roam Period](#)
- [Roam Trigger](#)
- [RSSI](#)
- [RTS Thresh](#)
- [Rx Diversity](#)

Radio Mode (SCU Profile setting)

Radio mode is an [SCU Profile setting](#) that indicates the use of [802.11a](#), [802.11g](#), [802.11b](#), and [802.11n](#) frequencies and data rates when interacting with an access point, or the use of [ad hoc mode](#) to associate to a station radio instead of an access point.

When SCU operates with a Summit 802.11g radio, an administrator can select from among the following radio mode values:

- B rates only - 1, 2, 5.5, and 11 Mbps.
- G rates only - 6, 9, 12, 18, 24, 36, 48, and 54 Mbps.
- BG rates full - All B and G rates, plus N rates if supported.
- BG Subset - 1, 2, 5.5, 6, 11, 24, 36, and 54 Mbps. This should only be used with Cisco APs running IOS in autonomous mode (without controllers). For Cisco APs that are tied to controllers and for non-Cisco APs, Summit recommends BG rates full.
- Ad Hoc - When selected, the Summit radio uses ad hoc mode instead of infrastructure mode. In infrastructure mode, the radio associates to an AP. In ad hoc mode, the radio associates to another station radio that is in ad hoc mode and has the same SSID and, if configured, static WEP key.

Note: The default is BG rates full.

Note: See "[802.11a/g Radio Mode with 802.11g Radio](#)" for additional information.

When SCU operates with a Summit 802.11a/g radio, an administrator can select from the following radio mode values:

- B rates only - 1, 2, 5.5, and 11 Mbps.
- G rates only - 6, 9, 12, 18, 24, 36, 48, and 54 Mbps.
- BG rates full - All B and G rates, plus N rates if supported.
- A rates only - 6, 9, 12, 18, 24, 36, 48, and 54 Mbps (same as G rates), plus N rates if supported.
- ABG rates full - All A rates and all B and G rates, with A rates (the 802.11a radio) preferred, plus N if supported.

    See "[Preferred Band for 802.11a/g Radio](#)" for more information.

- BGA rates full - All B and G rates and all A rates, with B and G rates (the .11g radio) preferred, plus N rates if supported.

- BG Subset - 1, 2, 5.5, 6, 11, 24, 36, and 54 Mbps. This should only be used with Cisco APs running IOS in autonomous mode (without controllers). For Cisco APs that are tied to controllers and for non-Cisco APs, Summit recommends BG rates full.
- Ad Hoc - When selected, the Summit radio uses ad hoc mode instead of infrastructure mode. In infrastructure mode, the radio associates to an AP. In ad hoc mode, the radio associates to another station radio that is in ad hoc mode and has the same SSID and, if configured, static WEP key.

Note: The default is ABG rates full.

Note: See "802.11a/g Radio Mode with 802.11g Radio" for additional information.

Preferred Band for 802.11a/g Radio

When the radio mode value is ABG rates full, the 5 GHz (A) band is preferred over the 2.4 GHz (BG) band. When the radio mode value is BGA rates full, the 2.4 GHz (BG) band is preferred over the 5 GHz (A) band.

When trying to associate to an access point, the radio considers access points in the preferred band. If the radio is able to associate to one of these access points, then the radio will not try to associate to an access point in the other band. The only time that the radio attempts to associate to an access point in the non-preferred band is when the radio is not associated and cannot associate in the preferred band.

When roaming, the radio considers only access points in the current band (the band in which the radio is currently associated). The radio will consider an access point in the other band only if it loses association.

802.11a/g Radio Mode with 802.11g Radio

When an administrator tries to create or edit a profile, SCU determines which radio is operating in the device and populates the available radio mode values according to the radio type. Suppose a profile created for an 802.11a/g card is loaded on a device with an 802.11g card. If a radio mode value of A rates only, ABG rates full, or BGA rates full was set in the profile, then SCU displays a value of BG rates full. If the administrator does not save any changes to the profile, then SCU leaves the profile, including the radio mode, unchanged. If the administrator saves any changes to the profile, then SCU saves the radio mode value as BG rates full.

Radio Profile

A radio profile (configuration profile) is a set of parameters that are stored in the registry and that define the manner in which the radio (station) associates to a wireless LAN (WLAN) infrastructure.

A profile contains information including the System Set Identifier (SSID or the "name" of the WLAN infrastructure), the means of data encryption, authentication type, security credentials, etc. A station device that operates with more than one WLAN infrastructure (perhaps in different buildings) tends to have more than one profile set up on the device.

Radio Settings *(SCU Profile Window)*

The following are SCU Radio Settings:

SSID	Service set identifier for the WLAN to which the radio connects.
	• Value - A string of up to 32 characters.
	• Default - None.

Client Name	The name assigned to the Summit radio and the client device that uses it. - Value - A string of up to 16 characters. - Default - None.

Power Save	Indicates the radio's current power save setting. Power save mode allows you to set the radio to its optimum power-consumption setting.
	
	- Value:
	  - CAM
	  - Maximum
	  - Fast
	- Default - Fast

Tx Power	In SCU, Tx Power displays on the Status window to indicate of the power of the radio, in milliwatts (mW). - Value - Maximum (maximum defined for current regulatory domain) or one of the following Tx power settings (in mW): 50, 30, 20, 10, 5, or 1. - Default - Maximum
Bit Rate	Indicates the bit rate used by a radio when interacting with a WLAN AP. - Value - Auto (rate negotiated automatically with AP) or one of the following rates in megabits per second (Mbps): 1, 2, 5.5, 6, 9, 11, 12, 18, 24, 36, 48, or 54. - Default - Auto **Note:** If you select a specific bit rate, then the radio connects to an AP only if that AP has the specified SSID configured with the selected bit rate as the only required rate. **Note:** This feature is not supported when using select Summit modules. When the Bit Rate option is unavailable, this setting defaults to Auto.

Radio Mode	Radio mode is an SCU Profile setting that indicates the use of 802.11a, 802.11g, 802.11b, and 802.11n frequencies and data rates when interacting with an access point, or the use of ad hoc mode to associate to a client radio instead of an access point.
	
	When SCU operates with a Summit 802.11g radio, an administrator can select from among the following radio mode values:
	
	- Value:
	  - B rates only - 1, 2, 5.5, and 11 Mbps.
	  - G rates only - 6, 9, 12, 18, 24, 36, 48, and 54 Mbps.
	  - BG rates full - All B and G rates, plus N rates if supported.
	  - BG Subset - 1, 2, 5.5, 6, 11, 24, 36, and 54 Mbps. This should only be used with Cisco APs running IOS in autonomous mode (without controllers). For Cisco APs that are tied to controllers and for non-Cisco APs, Summit recommends BG rates full.
	  - Ad Hoc - When selected, the Summit radio uses ad hoc mode instead of infrastructure mode. In infrastructure mode, the radio associates to an AP. In ad hoc mode, the radio associates to another client radio that is in ad hoc mode and has the same SSID and, if configured, static WEP key.

	o CAM - Constantly Awake Mode • Default - BG rates full. When SCU operates with a Summit 802.11a/g radio, an administrator can select from the following radio mode values: • Value: o B rates only - 1, 2, 5.5, and 11 Mbps. o G rates only - 6, 9, 12, 18, 24, 36, 48, and 54 Mbps. o BG rates full - All B and G rates, plus N rates if supported. o A rates only - 6, 9, 12, 18, 24, 36, 48, and 54 Mbps (same as G rates), plus N rates if supported. o ABG rates full - All A rates and all B and G rates, with A rates (the 802.11a radio) preferred, plus N rates if supported. See "Preferred Band for 802.11a/g Radio" for more information. o BGA rates full - All B and G rates and all A rates, with B and G rates (the .11g radio) preferred, plus N rates if supported. See "Preferred Band for 802.11a/g Radio" for more information. o BG Subset - 1, 2, 5.5, 6, 11, 24, 36, and 54 Mbps. This should only be used with Cisco APs running IOS in autonomous mode (without controllers). For Cisco APs that are tied to controllers and for non-Cisco APs, Summit recommends BG rates full. o Ad Hoc - When selected, the Summit radio uses ad hoc mode instead of infrastructure mode. In infrastructure mode, the radio associates to an AP. In ad hoc mode, the radio associates to another client radio that is in ad hoc mode and has the same SSID and, if configured, static WEP key. • Default - ABG rates full.
Auth Type	Indicates the 802.11 authentication type used when associating to an access point. • Value - Open, shared-key, or LEAP (Network-EAP) • Default - Open **Note:** Summit highly recommends the use of Open which is also the SCU default. This setting can be edited from the Profile window of SCU. **Note:** For a Cisco explanation of 802.11 authentication using Open and Network-EAP, see: Products Configuration Example.

Radio Type (SCU parameter)

Status is an SCU parameter that indicates the type of radio installed in the device. See Radio Mode for more information.

RC4

RC4 is a widely-used software stream cipher that is used in protocols such as SSL (Secure Sockets Layer - to protect Internet traffic) and WEP (to secure wireless networks).

(Re)connect (SCU Diags window)

From the SCU Diags window, (Re)connect allows you to initiate a reconnect of the radio. A reconnect of the radio includes the following actions: Disable and enable the radio, apply (or reapply) the current profile, attempt to associate to the wireless LAN, and attempt to authenticate to the wireless LAN. SCU logs all activity in the output area at the bottom of the Diags window.

Related Topics

- [Diags Window - SCU]()

Regulatory Domains

A regulatory domain is a set of countries that have adopted a common, or nearly common set of regulations that relate to the use of public airwaves. For 802.11 technology, the notion of regulatory domains applies to the 2.4 and 5 GHz frequency bands. A Summit radio's regulatory domain determines the radio's maximum transmit power and the operating channels available to the radio.

Summit radios are certified for operation in the following regulatory domains:

- [Federal Communications Commission (FCC)]() - The regulatory agency and standards body for the Americas and parts of Asia.
- [European Telecommunications Standards Institute (ETSI)]() - The standards body applicable to most of Europe, Africa, the Middle East, and parts of Asia.
- [Telecom Engineering Center (TELEC)]() - The standards body for Japan.
- [Korea Communications Commission (KCC)]() - The standards body for Korea.
- [Industry Canada (IC)]() - The regulatory agency and standards body for Canada.

Note: Specific regulatory information is provided to device manufacturers in the Hardware Integration Guide (HIG) for the applicable radio. These HIGs can be accessed from the product pages of the Summit Data Communications website: http://www.summitdatacom.com/product.html

A Summit radio can be programmed for any one of these four domains. By default, Summit radios are set to a "[Worldwide]()" regulatory domain which is a "lowest common denominator" (a set of channels operating at a transmit power that is allowable within all regulatory domains).

Related Topics:

- [Channels]()
- [802.11d]()

Release/Renew (SCU Diags window)

From the SCU Diags window, Release/Renew allows you to obtain a new IP address through [DHCP]() release/renew. SCU logs all activity in the output area at the bottom of the Diags window.

Related Topics:

- [Diags Window - SCU]()

Repeater

In networks where one radio is out of range, a repeated or "daisy chain" can be established to carry traffic to the out-of-range radio. A repeater is a bridge between two areas of the network. For example, if two networks exist on opposite ends of the wireless environment and are out of range from each other, a repeater radio can be placed between the two to carry traffic from one end to the other. A repeater functions like a

signal booster, and may be composed of multiple radios depending on the distance that the range must be extended.

Revision Control System

A Revision Control System (RCS) is a software utility or collection of utilities that can track, store, restore, and merge revisions of files. This is very useful for documents (most commonly code) that undergo frequent and heavy revisions. A Revision Control System simplifies the process of keeping track of separate iterations of a document (with aid of another utility, like the Linux diff function) and logs these iterations with version numbers, which increase incrementally with each saved revision. This is especially helpful with revisions of computer software, where changes made in consecutive revisions have the potential to break the code or create unexpected and unwanted behavior.

RF

Radio Frequency. Electromagnetic energy with wavelengths between the audio range and the light range.

RFCOMM

A Bluetooth protocol that emulates the serial cable line settings and status of an RS-232 serial port; used to provide serial data transfers.

Roaming

As a station device moves throughout a facility, it will tend to move in and out of the range of the access points that make up the network infrastructure. In order to maintain constant connectivity and stable performance, a moving station device will disassociate from one access point and then reassociate to another access point that provides for better connectivity. Roaming is the term applied to this action. The "decision" to initiate a roam is based on a number of conditions and parameters. With Summit software release 1.02.20 and later, Summit provides two complementary sets of roaming algorithms to provide for more reliable connectivity. Those sets of algorithms are:

- Standard, which manages roaming behavior under typical conditions. Users can adjust Standard Roaming parameters to customize roaming behavior for a particular environment.
- Aggressive, which manages roaming behavior when the station device is in areas of particularly low coverage and is in imminent jeopardy of losing its connection to the network infrastructure. Users may not adjust Aggressive Roaming parameters but may disable this feature.

Standard Roaming

The standard roaming algorithm is employed when Summit-enabled station devices are operating in areas of relatively strong RF coverage. This roaming algorithm is based on the signal strength, or Received Signal Strength Indication (RSSI, which is measured in dBm) of the current AP (the access point to which the station is currently associated) and any other APs that are within range of the station. The Summit radio calculates a moving-average RSSI for the current AP and treats it as the "current RSSI". This value is displayed on the Status tab of the Summit Client Utility (SCU).

The administrator can configure three parameters for the standard roaming algorithm:

- Roam Trigger
- Roam Delta
- Roam Period

A Standard Roam scenario would be as follows: A station that is associated to an AP sees the RSSI go below the -75 dB Roam Trigger value, e.g. it goes to -80 dB. This prompts it to initiate a roam scan looking

for a better AP ("better" in terms of signal strength). If it finds one, it will roam to it if the RSSI on the target AP is greater than the current AP by the Roam Delta value and it has been associated to the current AP for at least the Roam Period value.

Changing these parameters allows users to customize the roaming behavior of the station for environments that might be somewhere on a continuum between two extremes: if an environment has under-coverage (i.e., relatively few APs for the size of the facility) then the user can set the Roam Trigger to look for a new AP sooner and set the Roam Delta and Roam Period to smaller values so that the station will roam more quickly when it finds an alternative to the current AP. On the other hand, if an environment has over-coverage (i.e., a relatively large number of APs for the size of the facility) the user can set the Roam Trigger to a high value so that the station will only start looking for a new AP if the current AP signal gets very low, the new AP has a much stronger signal (Roam Delta), and the station has been associated to the current AP for some larger amount of time (30 seconds perhaps). How a given customer will configure these settings will depend on their RF environment, but also on the types of devices they use (laptop vs. data terminal for example), how those devices are used (truck-mounted going 25 MPH (40 KPH) or carried on a belt and being walked around), and what types of data they handle (voice/video vs. low data rate/latency insensitive bar-code scanning).

Aggressive Roaming

Aggressive Roaming is employed when Summit-enabled station devices are operating in areas of relatively weak RF coverage such as the edge of a coverage area. Aggressive roaming uses settings that are not configurable but have been determined in real customer environments to be optimal for reliable connectivity in areas of relatively weak coverage. Aggressive Roaming can, however, be disabled as per the below. Aggressive roaming is triggered when the radio misses too many of the beacons expected from the current AP during a defined interval. The number of expected beacons is determined from the AP's beacon rate and DTIM interval.

Once aggressive roaming is triggered, the radio scans for a "better" AP every second. If Aggressive Roaming is triggered Aggressive Roaming will stop only when the station finds an AP with an RSSI that is stronger than that of the current AP and the station then roams to that AP. Aggressive Roaming will stop after a successful roam or if the number of received beacons returns to the expected number. If the station moves completely out of the coverage area for all APs, it will miss all beacons, determine that it no longer is associated to an AP, and will change its status to "Not Associated". The station will then revert to Standard Roaming.

In some environments such as environments with more than enough RF coverage (and significant co-channel interference) it may be desirable to disable Aggressive Roaming. This may be done through the "Aggressive Scan" menu item on the Global Settings tab in the Summit Client Utility (SCU). Changing the Aggressive Scan value from "On" to "Off" will disable this feature.

Aggressive Scanning may also be disabled by adding the below DWord to the registry and setting it to all zeroes as per the below:

"aggScanTimer"=dword:00000000

Roam Delta (SCU Global Setting)

Roam delta indicates the signal strength (RSSI) level (in dBm) that the radio looks for in a different access point (after the roam trigger is met) before it attempts to roam to the new access point.

Note: For an example of how Roam Delta works, refer to Standard Roaming.

Related Topics:

- Global Settings - SCU
- Roaming
- Standard Roaming
- Roam Period
- Roam Trigger

Roam Period (SCU Global Setting)

Roam period indicates the amount of time a radio collects RSSI scan data (after association or a roam scan) before it considers roaming to a different access point.

Note: For an example of how Roam Period works, refer to Standard Roaming.

Related Topics:

- Global Settings - SCU
- Roaming
- Standard Roaming
- Roam Delta
- Roam Trigger

Roam Trigger (SCU Global Setting)

Roam trigger indicates the signal strength (RSSI) (in dBm) at which the radio scans for an access point with a better signal strength. When scanning for a different access point, the radio looks for one with a RSSI at the indicated roam delta dBm level or stronger.

Note: For an example of how Roam Trigger works, refer to Standard Roaming.

Related Topics:

- Global Settings - SCU
- Roaming
- Standard Roaming
- Roam Delta
- Roam Period

RSSI

RSSI (Received Signal Strength Indication) refers to the strength of a transmitted signal as measured by a receiving device and typically is expressed as a negative number of decibels (dB). As a received signal weakens, the RSSI value decreases (becomes a larger negative number); as the received signal strengthens, the RSSI value increases. Typical Wi-Fi RSSI values in real-world environments range from a high of -50 dBm to a low of -95 dBm.

RSSI is a key value used by rate shifting algorithms. As RSSI decreases, these algorithms employ increasingly robust modulation schemes to maintain connectivity while decreasing data rate and throughput.

The Summit Client Utility (SCU) displays the RSSI value and also a graphical representation of the signal on the Status tab:

- A green color indicates a strong signal, meaning that the Summit radio should operate at or near the maximum supported data rate.
- A yellow color indicates a weakening signal, meaning that the Summit radio will rate shift to maintain connectivity at the expense of performance.

- A red color indicates a marginal signal, meaning that loss of connectivity is imminent.

The Roam Trigger global setting is the RSSI value at which a Summit radio begins to scan for an AP to which to roam.

Note: For Summit 10, 15, and 20 Series radios, SCU handles RSSI as an absolute value. For Summit 30 Series radios, SCU handles RSSI as a relative value of received signal strength less ambient noise. Therefore, the RSSI reported in SCU and compared to the Roam Trigger will be lower with the 30 Series than with the 10, 15, and 20 series. Other parameters related to scanning and roaming, such as Roam Delta, behave similarly for different radios under like conditions.

RTS Thresh (SCU Global Setting)

RTS Thresh (Request To Send threshold) is an SCU Global setting that indicates the packet size (in bytes) at which a Request To Send (RTS) or Clear To Send (CTS) is required on the link.

For SCU, the RTS Thresh integer range is 0 to 2347 (bytes) with a default setting of 2347 bytes.

Note: For 30AG (MSD30AG and SSD30AG) radio modules, this parameter is disabled.

Rx Diversity (SCU Global Setting)

Antenna diversity refers to the use of multiple antennas to increase the odds that a functional signal is received.

Rx (Receive) Diversity is an SCU Global setting that indicates how to handle antenna diversity when receiving data from an access point. Rx Diversity setting options include:

- On-Start on Main - Indicates use of the main antenna upon startup.
- On-Start on Aux - Indicates use of the auxiliary antenna upon startup.

Note: The 'Start on' setting indicates the first antenna that is used upon startup if there is no history or failed history. After the initial start, SCU first samples the antenna that was last successfully used.

- Main only - Indicates use of the main antenna only.
- Aux only - Indicates use of the auxiliary antenna only.