Title:

SX-ULPAN-2401

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XX	First Version	Sep. 27, 15	Y.Aoyama	K.Yagi	H.Miura
XA	Changed Lease time option of DHCP.	Nov. 20, 15	Y.Aoyama	K.Yagi	H.Miura
XB	Modified the properties of document	Feb. 25, 16	Y.Aoyama	K.Yagi	H.Miura
XC	Added the max value of argument of the suspend command	Mar. 03, 16	Y.Aoyama	K.Yagi	H.Miura

1. Overview

This document describes the console commands and API of SX-ULPAN-2401.

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(1) Overview of the command

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2. Console Commands

iwconfig Status			**AP**	✔	**Config**	-
			STA	✔	**Reference**	✔
Description	The list of Wireless status information is displayed.					
Command	wmiconfig					
Command example	wmiconfig					
Command parameter	None	-				
Output	SSID	Current ESSID				
	Phy mode	Current communication mode setting (11a/11b/11g/mixed)				
	Power mode	Current power save mode Power Save: power save mode Max Perf: Normal mode				
	Mac Addr	MAC address				
	mode	Current operation mode station adhoc softap				
	passphrase	Password				
	channel	Channel connected				
Output (example)	shell> wmiconfig ssid = sxulpan@ap Phy mode = mixed Power mode = Max Perf Mac Addr = 00:80:92:01:23:45 mode = softap passphrase = 12345678 channel = 1					
Notes	None					

Beacon interval configuration in AP mode			**AP**	✔	**Config**	✔
			STA	-	**REF**	-
Description	Configure a beacon interval in AP mode.					
Command	wmiconfig --ap bconint <interval>					
Command example	wmiconfig --mode ap wmiconfig --ap bconint 100 wmiconfig --connect test					
Command parameter	interval	Beacon interval (100-1000 millisecond)				
Output	None					
Output example	None					
Default	None					
Notes	None					

Country code configuration in AP mode			AP	✔	Config	✔
			STA	-	REF	-
Description	Configure a country code in AP mode.					
Command	wmiconfig --ap country <CC>					
Command example	wmiconfig --mode ap wmiconfig --ap country AR wmiconfig --connect test					
Command parameter	CC	Country code: See the following country code list. FF: Country information is removed from the world wide mode and the beacon.				
Output	None					
Output example	None					
Default	None					
Notes	With driver version v3.0.2.14, channel information is improper depending on the country code. When SX-ULPAN-EVK(US) is used, the country code cannot be changed.					

[Country code (supported)]

"AR", "AM", "AT", "AU", "AZ", "BH", "BE", "BG", "BN", "BO", "BR", "BY", "BZ", "CH", "CL", "CN", "CY", "CZ", “DB", "DE", "DK", "DO", "EE", "EG", "ES", "FI", "FR", "GB", "GE", "GR", "GT", "HN", "HK", "HR", "HU", "ID", "IE", "IL", "IN", "IR", "IS", "IT", "KP", "KR", "KW", "KZ", "LI", "LT", "LU", "LV", "MA", "MC", "MK", "MY","NL", "NZ", "OM", "PA", "PE", "PH", "PK", "PL", "PT", "QA", "RO", "RU", "SA", "SE", "SG", "SK", "SI", "SV", "SY", "TH", "TT", "TN", "TW", "UA", "US", "UY", "UZ", "VE","YE", "ZA”

DTIM interval configuration in AP mode			AP	✔	Config	✔
			STA	✔	REF	-
Description	Configure a DTIM intervals in AP mode. DTIM is a function to transfer a data frame of broadcast to STA during power saving.					
Command	wmiconfig --ap dtim <period>					
Command example	wmiconfig --ap dtim 10 wmiconfig --connect test					
Command parameter	period	The number of beacon before DTIM transfer (1-255)				
Output	None					
Output example	None					
Default	None					
Notes	None					

ESSID configuration			AP	✔	Config	✔
			STA	✔	REF	-
Description	Configure character strings as ESSID.					
Command	wmiconfig --connect <ssid>					
Command example	wmiconfig --connect test					
Command parameter	ssid	ESSID to be set. Character strings (1-32 characters)				
Output	None					
Output example	None					
Default	None					
Notes	None					

Disconnect	AP	✔	Config	✔
	STA	✔	REF	-

Description	Disconnect the wireless connection
Command	wmiconfig --disc
Command example	wmiconfig --disc
Command parameter	None
Output	None
Output example	None
Default	None
Notes	None

Transmission rate display	AP	✔	Config	-
	STA	✔	REF	✔

Description	Display a transmission rate of the last data frame sent.	
Command	wmiconfig --getrate	
Command example	wmiconfig --getrate	
Command parameter	None	-
Output	last tx rate	The transmission rate of the last data frame
Output example	shell> wmiconfig --getrate last tx rate : 52000 kbps	
Default	None	
Notes	An incorrect value is indicated with driver version v3.0.2.14 when the rate is referred just after starting.	

IP configuration display	AP	✔	Config	-
	STA	✔	REF	✔

Description	Display the IP configuration.	
Command	wmiconfig --ipconfig	
Command example	wmiconfig --ipconfig	
Command parameter	None	-
Output	mac addr	MAC address
	IP	IP address
	Mask	Subnet mask
	Gateway	Gateway
	HostName	Hostname
	Link-local IPv6 Address	IPv6 link-local address
	Global IPv6 Address	IPv6 global address
	Default Gateway	IPv6 default gateway
	Global IPv6 Address 2	IPv6 global address 2
Output example	shell> wmiconfig --ipconfig mac addr = 00:80:92:01:23:45 IP:c0a8010a Mask:ffffff00, Gateway:0 IP:192.168.1.10 Mask:255.255.255.0, Gateway:0.0.0.0 HostName: QCA4002 Link-local IPv6 Address ..... : FE80::865D:D7FF:FE40:4B32/64 Global IPv6 Address ..... : :: Default Gateway ..... : ::	

	Global IPv6 Address 2 ..... : ::
Default	None
Notes	None

Acquire IP address with DHCP			**AP**	✔	**Config**	✔
			STA	✔	**REF**	-
Description	Startup DHCP client and acquire an IP address.					
Command	wmiconfig --ipdhcp					
Command example	wmiconfig --ipdhcp					
Command parameter	None	-				
Output	IP	192.168.0.100				
	Mask	255.255.255.0				
	Gateway	0.0.0.0				
Output example	shell> wmiconfig --ipdhcp IP:192.168.0.100 Mask:255.255.255.0, Gateway:0.0.0.0					
Default	None					
Notes	None					

IP address release		**AP**	✔	**Config**	✔
		STA	✔	**REF**	-
Description	Release an IP address.				
Command	wmiconfig --ipdhcp_release				
Command example	wmiconfig --ipdhcp wmiconfig --ipdhcp_release wmiconfig --ipconfig				
Command parameter	None				
Output	None				
Output example	None				
Default	None				
Notes	Use this command and an IP address is released even if a fixed IP address is configured.				

XA

Leased IP address configuration for DHCP server			**AP**	✔	**Config**	✔
			STA	-	**REF**	-
Description	Configure a leased IP address of DHCP server.					
Command	wmiconfig --ipdhcppool <start ipaddr> <End ipaddr> <Lease time>					
Command example	wmiconfig --ipdhcppool 192.168.0.150 192.168.0.160 60					
Command parameter	start ipaddr	Start of the leased IP address				
	End ipaddr	End of the leased IP address				
	Lease time	Lease time ~~(0-2147483647 sec.)~~ fixed “-1”				
Output	None					
Output example	None					
Default	start ipaddr: 192.168.1.100 end ipaddr: 192.168.1.199 Lease time: 4294967295 (-1)					
Notes	Lease time は使用できません。-1 を指定してください。					

Host name configuration			AP	✔	Config	✔
			STA	✔	REF	-
Description	Configure a host name.					
Command	wmiconfig --iphostname [<domain name>]					
Command example	wmiconfig --iphostname a234567890b234567890c234567890d2					
Command parameter	domain name	Host name (1-31 characters)				
Output	None					
Output example	None					
Default	None					
Notes	None					

Fixed IP address configuration			AP	✔	Config	✔
			STA	✔	REF	-
Description	Configure a fixed IP address.					
Command	wmiconfig --ipstatic <ip addr> <subnet mask> <Gateway>					
Command example	wmiconfig --ipstatic 192.168.0.10 255.255.255.0 0.0.0.0					
Command parameter	ip addr	IP address				
	subnet mask	Subnet mask				
	Gateway	Gateway				
Output	None					
Output example	None					
Default	IP:192.168.1.10 Mask:255.255.255.0, Gateway:0.0.0.0					
Notes	None					

AP mode configuration			AP	—	Config	✔
			STA	✔	REF	-
Description	Configure the operation mode “AP”.					
Command	wmiconfig --mode ap <hidden><wps>					
Command example	wmiconfig --mode ap					
Command parameter	hidden	Enable Hidden SSID. (Optional)				
	wps	Enable WPS. (Optional)				
Output	None					
Output example	None					
Default	None					
Notes	WPS is not available with Hidden SSID due to WPS2.0 specifications.					

STA mode configuration			AP	✔	Config	✔
			STA	—	REF	-
Description	Configure the operation mode as STA.					
Command	wmiconfig --mode station					
Command example	wmiconfig --mode station					
Command parameter	None	-				
Output	None					
Output example	None					
Default	None					
Notes	None					

WPA/WPA2 password configuration			AP	✔	Config	✔
			STA	✔	REF	-
Description	Configure passwords for WPA/WPA2.					
Command	wmiconfig --p <passphrase>					
Command example	wmiconfig --p 12345678 wmiconfig --wpa 2 CCMP CCMP wmiconfig --connect test@wpa2					
Command parameter	passphrase	passwords ASCII: 8-63 characters HEX: 64 characters				
Output	None					
Output example	None					
Default	None					
Notes	None					

Power save mode configuration			AP	-	Config	✔
			STA	✔	REF	-
Description	Configure the power save mode.					
Command	wmiconfig --pwrmode <value>					
Command example	wmiconfig --pwrmode 1					
Command parameter	value	0: Normal mode 1: Power save mode				
Output	None					
Output example	None					
Default	1: Power Save					
Notes	None					

Listen interval configuration			AP	-	Config	✔
			STA	✔	REF	-
Description	Configure the listen interval.					
Command	wmiconfig --listen <value>					
Command example	wmiconfig --listen 100					
Command parameter	value	Listen interval (1-65535 msec)				
Output	None					
Output example	None					
Default	100					
Notes	None					

Suspend			AP	-	Config	✔
			STA	✔	REF	-
Description	Execute suspend.					
Command	wmiconfig --suspstart <time>					
Command example	wmiconfig --suspstart 1000					
Command parameter	time	Suspend device for specified time in milliseconds (100-3600000)				
Output	None					
Output example	None					
Default	None					
Notes	None					

XC

Region code display			AP	✔	Config	-
			STA	✔	REF	✔
Description	Display a current region code.					
Command	wmiconfig --regdomain					
Command example	wmiconfig --regdomain					
Command parameter	None	-				
Output	Regulatory Domain	Region code				
Output example	shell> wmiconfig --regdomain Regulatory Domain 0x80000348					
Default	None					
Notes	None					

Region code configuration			AP	✔	Config	✔
			STA	✔	REF	-
Description	Configure the region code.					
Command	wmiconfig --set_regdomain <regcode>					
Command example	wmiconfig --set_regdomain 0x80000348					
Command parameter	regcode	Region code US : 0x80000348 JP : 0x80000188				
Output	None					
Output example	None					
Default	0x4000006a					
Notes	When SX-ULPAN-EVK(US) is used, the region code cannot be changed.					

Wireless LAN I/F initialization			AP	✔	Config	✔
			STA	✔	REF	-
Description	Initialize wireless LAN I/F.					
Command	wmiconfig --reset					
Command example	wmiconfig --reset					
Command parameter	None	-				
Output	None					
Output example	None					
Default	None					
Notes	None					

Radio wave intensity display			AP	-	Config	-
			STA	✔	REF	✔
Description	Display radio wave intensity of connected AP.					
Command	wmiconfig --rssi					
Command example	wmiconfig --rssi					
Command parameter	None	-				
Output	indicator	Radio wave intensity (0-95 dB)				
Output example	wmiconfig --rssi indicator = 49 dB					
Default	None					
Notes	Not Connected : -128 dB					

Version information display			AP	✔	Config	-
			STA	✔	REF	✔
Description	Display a driver version information.					
Command	wmiconfig --version					
Command example	wmiconfig --version					
Command parameter	None	-				
Output	Host version	Host version				
	Target version	Target version				
	Firmware version	Firmware version				
	Interface version	Interface version (Always 1)				
Output example	shell> wmiconfig --version Host version : 3.3.0.sx1 Target version : 0x31c80997 Firmware version : 3.3.4.sx1 Interface version: 1					
Default	None					
Notes	None					

Communication mode configuration			AP	✔	Config	✔
			STA	✔	REF	-
Description	Configure communication mode of wireless LAN I/F.					
Command	wmiconfig --wmode <a,b,g,n>					
Command example	wmiconfig --wmode b					
Command parameter	a,b,g,n	a: 11a mode b: 11b mode g: 11g mode n: 11n mode				
Output	None					
Output example	None					
Default	mixed					
Notes	None					

Communication channel configuration			AP	✔	Config	✔
			STA	-	REF	-
Description	Configure communication channel.					
Command	wmiconfig --channel <value>					
Command example	wmiconfig --channel 1					
Command parameter	value	channel (1-165)				
Output	None					
Output example	None					
Default	Auto					
Notes	None					

WPA/WPA2 authentication configuration			AP	✔	Config	-
			STA	✔	REF	✔
Description	Configure WPA/WPA2 authentication method					
Command	wmiconfig --wpa <ver> <ucipher> <mcipher>					
Command	wmiconfig --p 12345678					

example	wmiconfig --wpa 2 CCMP CCMP wmiconfig --connect test@wpa	
Command parameter	ver	WPA version 1: WPA 2: WPA2
	ucipher	Unicast encryption method (TKIP or CCMP)
	mcipher	Multicast encryption method (TKIP or CCMP)
Output	None	
Output example	None	
Default	None	
Notes	In the STA mode, TKIP/CCMP is selected depending on the status and multicast encryption configurations are ignored. ucipher and mcipher should be the same.	

WPS execution			**AP**	✔	**Config**	✔
			STA	✔	**REF**	-
Description	Execute WPS.					
Command	wmiconfig --wps <connect> <mode> <*pin>					
Command example	wmiconfig --wps 1 push					
Command parameter	connect	0: Not connecting after WPS success. 1: Connect after WPS success.				
	mode	pin: PIN mode push: Push Button mode				
	*pin	PIN code (Omissible for Push Button)				
Output	SSID received	SSID				
	Security type	Security mode				
	Passphrase	password				
Output example	shell> wmiconfig --wps 1 pin 10203040 Not Connected SSID received test@wps Security type is WPA2 Passphrase 12345678					
Default	None					
Notes	A console response may get worse after WPS success with the driver version v3.0.2.14.					

Scanning			**AP**	-	**Config**	✔
			STA	✔	**REF**	-
Description	Execute scanning.					
Command	iwconfig scan <ssid*>					
Command example	iwconfig scan					
Command parameter	ssid*	Specify a SSID during search (can be omitted.)				
Output	ssid	SSID				
	bssid	BSSID				
	channel	channel				
	indicator	Reception radio wave intensity (0-95 dB)				
	security	Security method				
Output example	shell> iwconfig scan test ssid = test bssid = 00:80:92:12:34:56 channel = 1 indicator = 51 security = NONE!					
Default	None					
Notes	None					

Diversity antenna configuration			AP	-	Config	✔
			STA	✔	REF	-
Description	Enable/Disable the diversity antenna function as well as configure each parameter.					
Command	wmiconfig --setdivparam <idleTime> <RSSIThresh> <Enable> <Threshold Rate>					
Command example	wmiconfig --setdivparam 10000 10 1 48					
Command parameter	idleTime	Check interval to switch the antenna by communication rate. (0- 2147483647 millisecond)				
	RSSIThresh	This is the RSSI threshold value for interrupt. Used as difference from the present RSSI. (0-127 dB) The interrupt occurs when the changes exceeding RSSIThresh is made to the beacon frame of the connected AP since the RSSI is registered. If the change is for upper limit, RSSIThresh will be used for the next upper limit as well as lower limit values. If the change is for lower limit, RSSIThresh will be used for the next upper limit value, while a half value of RSSIThresh will be set for lower limit value. <When RSSI exceeds the upper limit value> Upper limit value = RSSI + RSSIThresh Lower limit value = RSSI - RSSIThresh <When RSSI exceeds the lower limit value> Upper limit value = RSSI + RSSIThresh Lower limit value = RSSI – (RSSIThresh / 2)				
	Enable	Enable/Disable the Diversity Antenna 0:Disable (fixed to Ant1) 1:Enable 2:Disable (fixed to Ant2)				
	Threshold Rate	This is the threshold value of communication rate for the received data frames to switch the antenna. The antenna will switch when the communication rate for the data frame most recently received is lower than Threshold Rate during the antenna switch check. If there are no data frames, it will be treated as the communication rate is lower than Threshold Rate. (0-32767)				
Output	None					
Output example	None					
Default	idleTime	10000				
	RSSIThresh	10				
	Enable	0				
	Threshold Rate	48				
Notes	None					

HTTP server configration			AP	✔	Config	✔
			STA	-	REF	-
Description	Start or stop the HTTP Server at run time.					
Command	wmiconfig --ip_http_server <value>					
Command example	wmiconfig --ip_http_server start					
Command parameter	value	start stop				
Output	None					
Output example	shell> wmiconfig --ip_http_server start HTTP server start success					
Default	None					
Notes	None					

Post the object to HTML page			AP	✔	Config	✔
			STA	-	REF	-
Description	Post or update the object to HTML page. This updated database is reflected on the browser for the subsequent GET requests.					
Command	wmiconfig --ip_http_post <page name> <obj_name> <obj_type> <obj_len> <obj_value>					
Command example	wmiconfig --ip_http_post index.html Item-01 3 6 Value1					
Command parameter	page name	The name of the Page for which the data is to be updated. (1-31 characters)				
	obj_name	Object name to update (1-31 characters)				
	obj_type	3 = string				
	obj_len	Length of the object (1-31)				
	obj_value	Object value (1-31 characters)				
Output	None					
Output example	shell> wmiconfig --ip_http_post index.html Item-01 3 6 Value1					
Default	None					
Notes	None					

Get the object of HTML page			AP	✔	Config	-
			STA	-	REF	✔
Description	Get the updated database object of a given HTML page.					
Command	wmiconfig --ip_http_post <page name> <obj_name>					
Command example	wmiconfig --ip_http_post index.html Item-01					
Command parameter	page name	The name of the Page from which the data is to be fetched. (1-31 characters)				
	obj_name	Object name to get (1-31 characters)				
Output	None					
Output example	shell> wmiconfig --ip_http_post index.html Item-01 Value1					
Default	None					
Notes	None					

Connection with HTTP client			AP	✔	Config	✔
			STA	✔	REF	-
Description	Connect to a server with a HTTP client.					
Command	wmiconfig --ip_http_client connect <ip_addr>					
Command example	wmiconfig --ipstatic 192.168.0.10 255.255.255.0 0.0.0.0 wmiconfig --ip_http_client connect 192.168.0.5 80					
Command parameter	ip_addr	IP address to be connected.				
Output	None					
Output example	shell> wmiconfig --ip_http_client connect 192.168.0.5 80 HTTPClient cmd succeeded					
Default	None					
Notes	None					

GET HTTP client			AP	✔	Config	-
			STA	✔	REF	✔
Description	Acquire data from a HTTP server.					
Command	wmiconfig --ip_http_client get <data1>					
Command example	wmiconfig --ip_http_client connect 192.168.0.5 80 wmiconfig --ip_http_client get /index.htm					
Command parameter	data1	File name (1-31 characters)				
Output	Size	Response data size				
	Resp_code	Response code (HTTP Status Code)				
	Data	Response data				
Output example	shell> wmiconfig --ip_http_client get /index.htm Size:14 Resp_code:200 <html></html>					
Default	None					
Notes	The data size to be gotten is up to 1500Byte. Only available during connecting to the HTTP server.					

HTTP client disconnection			AP	✔	Config	✔
			STA	✔	REF	-
Description	Disconnect from a HTTP server.					
Command	wmiconfig --ip_http_client disc					
Command example	wmiconfig --ip_http_client disc					
Command parameter	None	-				
Output	None					
Output example	shell> wmiconfig --ip_http_client disc HTTPClient cmd succeeded					
Default	None					
Notes	None					

Query GET of HTTP client			AP	✔	Config	✔
			STA	✔	REF	-
Description	Specify a URL query parameter.					
Command	wmiconfig --ip_http_client query <data1> <data2>					
Command example	wmiconfig --ip_http_client query arg1 value1 wmiconfig --ip_http_client query arg2 value2 wmiconfig --ip_http_client get /index.htm					
Command parameter	data1	Query parameter name (1-31 characters)				
	data2	Parameter value (1-63 characters)				
Output	None					
Output example	None					
Default	None					
Notes	Specify a query parameter for a request "--ip_http_client get/post" (to be executed the next) . GET index.htm?arg1=value1&arg2=value2					

POST of HTTP client			AP	✔	Config	✔
			STA	✔	REF	-
Description	Request POST to the HTTP server.					
Command	wmiconfig --ip_http_client post <data1>					
Command example	wmiconfig --ip_http_client query arg1 value1 wmiconfig --ip_http_client query arg2 value2 wmiconfig --ip_http_client post /index.htm					
Command parameter	data1	File name (1-31 characters)				
Output	Size	Response data size				
	Resp_code	Response code (HTTP Status Code)				
	Data	Response data				
Output example	shell> wmiconfig --ip_http_client post /index.htm Size:0 Resp_code:0					
Default	None					
Notes	Post the query parameter. arg1=value1&arg2=value2					

DNS client configuration			AP	✔	Config	✔
			STA	✔	REF	-
Description	Configure a DNS client service.					
Command	wmiconfig --ip_dns_client <value>					
Command example	wmiconfig --ip_dns_client stop					
Command parameter	value	start stop				
Output	None					
Output example	None					
Default	None					
Notes	None					

Deletion of DNS server registration			AP	✔	Config	✔
			STA	✔	REF	-
Description	Delete DNS server registration.					
Command	wmiconfig --ip_dns_delete_server_addr <ip addr>					
Command example	wmiconfig --ip_dns_delete_server_addr 172.25.1.52					
Command parameter	ip_addr	Registered IP address				
Output	None					
Output example	None					
Default	None					
Notes	None					

DNS server registration			AP	✔	Config	✔
			STA	✔	REF	-
Description	Register a DNS server.					
Command	wmiconfig --ip_dns_server_addr <ip addr>					
Command example	wmiconfig --ip_dns_server_addr 172.25.1.55					
Command parameter	ip_addr	IP address of DNS server				
Output	None					
Output example	None					
Default	None					
Notes	None					

Host name resolution 1			AP	✔	Config	-
			STA	✔	REF	✔
Description	Resolve a host name.					
Command	wmiconfig --ip_gethostbyname <host name>					
Command example	wmiconfig --ip_gethostbyname google.com					
Command parameter	host name	Host name (1-32 characters)				
Output	addr	IPv4 address				
Output example	shell> wmiconfig --ip_gethostbyname google.com addr:173.194.38.36					
Default	None					
Notes	None					

Host name resolution 2			AP	✔	Config	-
			STA	✔	REF	✔
Description	Resolve a host name.					
Command	wmiconfig --ip_gethostbyname2 <host name> <domain_type>					
Command example	wmiconfig --ip_gethostbyname2 google.com 2					
Command parameter	host name	Host name (1-32 characters)				
	domain_type	2: IPv4 3: IPv6				
Output	addr	IPv4 address (displayed by domain_type=2)				
	Resolved IP6Addr	IPv6 address (displayed by domain_type=3)				
Output example	shell> wmiconfig --ip_gethostbyname2 google.com 2 addr:173.194.38.36 shell> wmiconfig --ip_gethostbyname2 google.com 3 Resolved IP6Addr ..... : 2404:6800:400A:800::1007					
Default	None					
Notes	None					

Host name resolution 3			AP	✔	Config	-
			STA	✔	REF	✔
Description	Resolve a host name.					
Command	wmiconfig --ip_resolve_hostname [<host name> <domain_type]					
Command example	wmiconfig --ip_resolve_hostname google.com 2					
Command parameter	host name	Host name (1-32 characters)				
	domain_type	2: IPv4 3: IPv6				
Output	resolved IP	IPv4 address (displayed by domain_type=2)				
	Resolved IP6Addr	IPv6 address (displayed by domain_type=3)				
Output example	shell> wmiconfig --ip_resolve_hostname google.com 2 resolved IP:173.194.38.36 shell> wmiconfig --ip_resolve_hostname google.com 3 Resolved IP6Addr ..... : 2404:6800:400A:800::1007					
Default	None					
Notes	None					

Times of day display			AP	✔	Config	-
			STA	✔	REF	✔
Description	Get UTC time form SNTP client.					
Command	wmiconfig --ip_sntp_get_time					
Command example	wmiconfig --ip_sntp_get_time					
Command parameter	None					
Output	TimeStamp	Times of day				
Output example	shell> wmiconfig --ip_sntp_get_time TimeStamp: Mon Feb 1, 2000 18:0:0					
Default	Mon Feb 1, 2000 18:0:0					
Notes	None					

Seconds display			AP	✔	Config	-
			STA	✔	REF	✔
Description	Get time of day (seconds).					
Command	wmiconfig --ip_sntp_get_time_of_day					
Command example	wmiconfig --ip_sntp_get_time_of_day					
Command parameter	None					
Output	Seconds	Unitx time (number of seconds that have elapsed since 1 January 1970)				
Output example	shell> wmiconfig --ip_sntp_get_time_of_day sntp time of day done. Seconds = 949514400					
Default	949514400					
Notes	None					

SNTP Time zone configuration			AP	✔	Config	✔
			STA	✔	REF	-
Description	Modify time zone.					
Command	wmiconfig --ip_sntp_zone [UTC+<hour:min>] DSE disable					
Command example	wmiconfig --ip_sntp_zone UTC-08:00 DSE disable					
Command parameter	hour:min	Time zone				
Output	None					
Output example	None					
Default	None					
Notes	DSE is not available					

SNTP server configuration			AP	✔	Config	✔
			STA	✔	REF	-
Description	Configures the SNTP server address.					
Command	wmiconfig --ip_sntp_srvr <value> <Host name>					
Command example	wmiconfig --ip_sntp_srvr add foo.bar					
Command parameter	value	add delte				
	Host name	Host name (1-63 characters)				
Output	None					
Output example	None					
Default	pool.ntp.org					
Notes	None					

SNTP server display			AP	✔	Config	-
			STA	✔	REF	✔
Description	Display the SNTP server address.					
Command	wmiconfig --ip_show_sntpconfig					
Command example	wmiconfig --ip_show_sntpconfig					
Command parameter	None					
Output	SNTP SERVER ADDRESS	SNTP Server address				
Output example	shell> wmiconfig --ip_show_sntpconfig SNTP SERVER ADDRESS : pool.ntp.org					
Default	None					
Notes	None					

SNTP client configuration			AP	✔	Config	✔
			STA	✔	REF	-
Description	Enable/disable SNTP client.					
Command	wmiconfig --ip_sntp_client <value>					
Command example	wmiconfig --ip_sntp_client start					
Command parameter	value	start stop				
Output	None					
Output example	None					
Default	stop					
Notes	None					

Starting SSL			AP	✔	Config	✔
			STA	✔	REF	-
Description	Start SSL as either server of client.					
Command	wmiconfig --ssl_start <value>					
Command example	wmiconfig --ssl_start server					
Command parameter	value	server client				
Output	None					
Output example	shell> wmiconfig --ssl_start server SSL server started					
Default	None					
Notes	None					

Stop SSL			AP	✔	Config	✔
			STA	✔	REF	-
Description	Stop SSL as either server or client.					
Command	wmiconfig --ssl_stop <value>					
Command example	wmiconfig --ssl_stop server					
Command parameter	value	server client				
Output	None					
Output example	shell> wmiconfig --ssl_stop server SSL server stopped					
Default	None					
Notes	None					

SSL configuration			AP	✔	Config	✔
			STA	✔	REF	-
Description	Configure SSL server or client					
Command	wmiconfig --ss_config <value> [protocol <protocol>] [time 0|1] [domain 0|<name>] [alert 0|1] [cipher <cipher>]					
Command example	wmiconfig --ssl_ config server protocol TLS1.2 cipher TLS_RSA_WITH_AES_128_CBC_SHA					
Command parameter	value	server client				
	protocol	Protocol options: SSL3, TLS1.0, TLS1.1, TLS1.2				
	time	Disable/enable certificate time validation. (Optional)				
	domain	Disable/enable validation of peer domain name against name.				
	alert	Disable/enable sending SSL alert when certificate validation fails.				
	cipher	Select cipher (enum name) suite to use. Can be repeated 8 times. (Optional) TLS_RSA_WITH_AES_256_GCM_SHA384 TLS_RSA_WITH_AES_256_CBC_SHA256 TLS_RSA_WITH_AES_256_CBC_SHA TLS_RSA_WITH_AES_128_GCM_SHA256 TLS_RSA_WITH_AES_128_CBC_SHA256 TLS_RSA_WITH_AES_128_CBC_SHA TLS_RSA_WITH_3DES_EDE_CBC_SHA				
Output	None					
Output example	shell> wmiconfig --ssl_config server cipher TLS_RSA_WITH_AES_256_CBC_SHA SSL server configuration changed					
Default	None					
Notes	None					

Certificate or CA list registration			AP	✔	Config	✔
			STA	✔	REF	-
Description	Add a certificate or CA list to SSL server or client					
Command	wmiconfig --ssl_add_cert <value> certificate|calist [<name>]					
Command example	wmiconfig --ssl_add_cert server certificate foo.crt					
Command parameter	value	server client				
	file type	certificate calist				
	name	Name of the file to be loaded from flash				
Output	None					
Output example	shell> wmiconfig --ssl_store_cert foo.crt foo.crt is stored in FLASH					
Default	None					
Notes	None					

Deletion of Certificate or CA list registration			AP	✔	Config	✔
			STA	✔	REF	-
Description	Delete a certificate or CA list by name from flash.					
Command	wmiconfig --ssl_delete_cert <name>					
Command example	wmiconfig --ssl_delete_cert foo.crt					
Command parameter	name	Name of the file to be deleted from the flash				
Output	None					
Output example	shell> wmiconfig --ssl_delete_cert foo.crt Deleted foo.crt from FLASH					
Default	None					
Notes	None					

Certificates or CA lists display	AP	✔	Config	-
	STA	✔	REF	✔
Description	List the names of the certificates and CA lists stored in the flash.			
Command	wmiconfig --ssl_list_cert			
Command example	wmiconfig --ssl_list_cert			
Command parameter	None			
Output	File name			
Output example	shell> wmiconfig --ssl_list_cert 1 files stored in FLASH foo.crt			
Default	None			
Notes	None			

Certificate or CA list downloading	AP	✔	Config	✔
	STA	✔	REF	-
Description	Download and flash the certificate or CA list.			
Command	getcert <remote name> <ipaddr> -s <flash name>			
Command example	getcert foo.cert.bin 192.168.1.1 –s foo.crt			
Command parameter	remote name	Remote file name		
	ipaddr	Certificate server address		
	flash name	Local file name		
Output	Result of download			
Output example	shell> getcert foo.cert.bin 192.168.1.1 -s foo.crt RX: 1304 Received 1296 bytes from 192.168.1.1:1443 'foo.crt' is stored in FLASH			
Default	None			
Notes	None			

SSL operation example：Preparation of certificate

1. Generate an RSA device certificate using OpenSSL on a Linux PC.

Option 1: Generate an RSA certificate.

i Generate a private key.

openssl genrsa -des3 -out foo.key 1024

ii Generate a self-signed certificate.

openssl req -new -key foo.key -out foo.pem -x509 -days 365

iii Remove the passphrase from the key.

mv foo.key foo.key.withpass

openssl rsa -in foo.key.withpass -out foo.key

Option 2: Generate an ECC certificate.

i Generate a private key.

openssl ecparam -name secp224r1 -genkey -noout -out foo.key

ii Generate a self-signed certificate.

openssl req -new -key foo.key -out foo.pem -x509 -days 365

2. Convert certificate to SharkSSL binary format on a Windows PC.

a. Generate binary certificate file.

SharkSSLParseCert foo.pem foo.key -b foo.cert.bin

b. Generate binary CA List file.

SharkSSLParseCAList -b foo.calist.bin foo.pem

3. Start the certificate server on a Linux PC.

a. Copy the foo.cert.bin and foo.calist.bin files to the certcs directory which also contains the certcs executable.

b. Start the certificate server.

./certcs -s

SSL operation example：SSL Server

4. Download the certificate and CA list from the server and write them to the flash.
   IPPADDR is the IP address of the certificate server.
   a. Download and flash the certificate.
      getcert foo.cert.bin IPADDR -s kf.crt

5. Use the certificate and the CA list stored in the flash.
   The kf.crt and kf.ca will be subsequently used with the other SSL wmiconfig commands.
   a. Add certificate to the server SSL context
      wmiconfig --ssl_start server
      wmiconfig --ssl_add_cert server certificate kf.crt

6. Test example, SSL/TLS server
   a. run the following commands:
      wmiconfig --ssl_config server cipher TLS_RSA_WITH_AES_128_CBC_SHA
      benchrx ssl 1443

SSL operation example：SSL Client

4. Download the certificate and CA list from the server and write them to the flash.
   IPPADDR is the IP address of the certificate server.
   b. Download and flash the CA list.
      getcert foo.calist.bin IPADDR -s kf.ca

5. Use the certificate and the CA list stored in the flash.
   The kf.crt and kf.ca will be subsequently used with the other SSL wmiconfig commands.
   b. Add CA list to the client SSL context.
      wmiconfig --ssl_start client
      wmiconfig --ssl_add_cert client calist kf.ca

6. Test example, SSL/TLS server
   b. run the following commands:
      wmiconfig --ssl_config client protocol SSL3 cipher TLS_RSA_WITH_AES_128_CBC_SHA
      benchtx 192.168.1.100 1443 ssl 1576 1 100 0

ping			AP	✔	Config	-
			STA	✔	REF	✔
Description	ping					
Command	ping <host> -c <count> -s <size> -i <interval>					
Command example	ping 192.168.1.100					
Command parameter	host	host ip address or name (1-32 characters)				
	count	number of pings (0-2147483647)				
	size	size of ping packet (1-1575)				
	interval	interval between packet(0-21474836 millisecond)				
Output	Result of ping					
Output example	shell> ping 192.168.1.100 Ping reply from 192.168.1.100: time<1ms					
Notes	None					

ping6			**AP**	✔	**Config**	-
			STA	✔	**REF**	✔
Description	ping6					
Command	ping6 <host> -c <count> -s <size>					
Command example	ping6 fe80::1					
Command parameter	host	host ip address or name (1-32 characters)				
	count	number of pings (0-2147483647)				
	size	size of ping packet (1-1575)				
Output	Result of ping6					
Output example	shell> ping6 fe80::1 Ping reply from fe80::1: time<1ms					
Notes	None					

Transmission throughput test			AP	✔	Config	-
			STA	✔	REF	✔
Description	Execute the transmission throughput test.					
Command	benchtx <Rx IP> <port> <protocol> <size> <test mode> <packets|times> <delay>					
Command example	benchtx 192.168.1.100 5000 tcp 1024 1 1000 0					
Command parameter	Rx IP	IP address of the remote end (receiver).				
	port	Listening port (1-65535)				
	protocol	tcp | udp | ssl				
	size	Packet size in bytes (1-1576)				
	test mode	0: Time test (test run for a specified time period) 1: Packet test (test run for specified number of packets)				
	packets|times	Test mode = 0 : Enter the test time in seconds. (1-2147483647) Test mode = 1 : Enter the number of packets to transmit. (1-2147483647)				
	delay	Delay in milliseconds between packets (bandwidth control). The delay is used to prevent one stream starving the other in cases where two streams run simultaneously. (0-21474836 millisedond)				
Output	Result of transmission throughput (in KByte/sec)					
Output example	shell> benchtx 192.168.0.10 5555 tcp 1400 0 60 0 ********** IOT TCP TX Test ********** Remote IP addr. 192.168.0.10 Remote port 5555 Message size1400 Number of messages 0 Type benchquit to cancel ********** Connecting. Sending. ..... Results for TCP Transmit test: 111506 KBytes 456 bytes in 59 seconds 740 ms throughput 14864 kb/sec IOT Throughput Test Completed.					
Notes	None					

Set IP mode of throughput test			AP	✔	Config	✔
			STA	✔	REF	-
Description	Set the IP mode to IPv4 or IPv6.					
Command	benchmode <v4|v6>					
Command example	benchmode v4					
Command parameter	mode	v4: Enable IPv4 mode v6: Enable IPv6 mode				
Output	None					
Output example	None					
Default	v4					
Notes	None					

Receiving throughput test			AP	✔	Config	-
			STA	✔	REF	✔
Description	Execute the receiving throughput test.					
Command	benchrx <protocol> <port> <multicast IP> <Local IP>					
Command example	benchrx tcp 5000					
Command parameter	protocol	tcp | udp | ssl				
	port	Receiver port (1-65535)				
	multicast IP	IP address of multicast group to join (optional)				
	Local IP	IP address of interface (optional)				
Output	Result of receiving throughput (in KByte/sec)					
Output example	shell> benchrx tcp 5555 ********** TCP RX Test ********** Local port 5555 Type benchquit to terminate test ********** Waiting. Receiving from 192.168.1.100:53679 Results for TCP Receive test: 82787 KBytes 312 bytes in 60 seconds 155 ms throughput 11032 kb/sec Waiting.					
Notes	None					

Quit the throughput test.		AP	✔	Config	-
		STA	✔	REF	✔
Description	Quit the transmission / receiving throughput test.				
Command	benchquit				
Command example	benchquit				
Command parameter	None				
Output	Latest transmission / receiving throughput results (in KByte/sec)				
Output example	shell> benchquit Results for TCP Receive test: 82787 KBytes 312 bytes in 60 seconds 155 ms throughput 11032 kb/sec **********IOT Throughput Test Completed **********				
Notes	None				

3. Socket API

t_socket		
prototype	A_INT32 t_socket (	
	A_VOID* handle,	Driver context
	A_UINT32 domain,	Protocol Family
	A_UINT32 type,	Socket Type
	A_UINT32 protocol	Protocol
	)	
Description	Open/create a socket. This call blocks until a socket handle is returned. If no response is received or socket creation fails, error code is returned.	
Return Value	Socket handle on success, -1 on failure	

t_shutdown		
Prototype	A_INT32 t_shutdown(	
	A_VOID* handle,	Driver context
	A_UINT32 sockHandle	Socket handle
	)	
Description	Close an existing socket. If socket does not exist, error code is returned.	
Return Value	0 on success, -1 on failure	

t_connect		
Prototype	A_INT32 t_connect(	
	A_VOID* handle,	Driver context
	A_UINT32 sockHandle,	Socket handle
	A_VOID* name,	Sockaddr structure indicating peer information
	A_UINT16 length	Length of sockaddr structure
	)	
Description	Connect to another socket. If the socket type is UDP, this call specifies: ・ The peer with which the socket is to be associated; ・ The address to which datagrams are sent; ・ The only address from which datagrams are received. If the socket type is TCP, this call attempts making a connection to another socket. This call blocks until a connection is established or an error is returned.	
Return Value	0 on success, -1 on failure	

t_bind		
Prototype	A_INT32 t_bind(	
	A_VOID* handle,	Driver context
	A_UINT32 sockHandle,	Socket handle
	A_VOID* name,	Sockaddr structure indicating local address to bind
	A_UINT16 length	Length on sockaddr structure
	)	
Description	Assign a local socket address to an unnamed socket. The address is provided in the name field in form of the sockaddr (or sockaddr_6) structure.	
Return Value	0 on success, -1 on failure.	

t_listen		
Prototype	A_INT32 t_listen(	
	A_VOID* handle,	Driver context
	A_UINT32 sockHandle,	Socket handle
	A_UINT32 backlog	Maximum length of pending connections
	)	
Description	Listen for incoming connections. When a connection request arrives, a t_accept() call is used to accept it. The t_listen is only used with socket type SOCK_STREAM. The backlog parameter defines the maximum length for the queue of pending connections (rather than maximum open connections). If a connection request arrives while the queue is full, error code ECONNREFUSED is returned to the client.	
Return Value	0 on success, -1 on failure	

t_accept		
Prototype	A_INT32 t_accept(	
	A_VOID* handle,	Driver context
	A_UINT32 sockHandle,	Socket handle
	A_VOID* name,	Sockaddr structure indicating local address to bind
	A_UINT16 length	Length on sockaddr structure
	)	
Description	Accept incoming connections on an open socket. This API is used after the socket is created and bound to an address, and success is returned from t_listen(). It extracts the first connection from a queue of pending connections. The t_accpet()is only used with socket type SOCK_STREAM. The call blocks if no connection is present and the socket is not non-blocking.	
Return Value	Non-negative socket descriptor on success, A_ERROR on error	

t_select		
Prototype	A_INT32 t_select(	
	A_VOID* handle,	Driver context
	A_UINT32 sockHandle,	Socket handle
	A_UINT32 tv	Block time in ms
	)	
Description	Allow an application thread to block on a given socket handle for a specified time period. This API checks for any activity on specified socket, for example arrival of a packet at the receive queue.	
Return Value	・ A_SOCK_INVALID: Socket does not exist, or socket closed by peer ・ A_OK: Activity detected (packet available) ・ A_ERROR: Timeout occurred, no activity	

t_setsockopt		
Prototype	A_INT32 t_setsockopt(	
	A_VOID* handle,	Driver context
	A_UINT32 sockHandle,	Socket handle
	A_UINT32 level,	Option level
	A_UINT32 optname,	Option name
	A_UINT8* optval,	Option value
	A_UINT32 optlen	Option length
	)	
Description	Set options for an existing socket.	
Return Value	0 on success, -1 on failure	

t_getsockopt		
Prototype	A_INT32 t_getsockopt(	
	A_VOID* handle,	Driver context
	A_UINT32 sockHandle,	Socket handle
	A_UINT32 level,	Option level
	A_UINT32 optname,	Option name
	A_UINT8* optval,	Option value
	A_UINT32 optlen	Option length
	)	
Description	Get options from an existing socket.	
Return Value	0 on success, -1 on failure	

t_sendto		
Prototype	A_INT32 t_sendto(	
	A_VOID* handle,	Driver context
	A_UINT32 sockHandle,	Socket handle
	A_UINT8* buffer,	Pointer to data
	A_UINT32 length,	Payload length
	A_UINT32 flags,	Send flags
	A_VOID* name,	Sockaddr structure (v4 or v6)
	A_UINT32 socklength	Length of sockaddr
	)	
Description	Send data on a datagram socket. The destination address must be specified in the name parameter. The API works for both IPv4 and IPv6 using the sockaddr and sockaddr_6 structure respectively in the name parameter.	
Return Value	Number of bytes transmitted to the target on success	

t_send		
Prototype	A_INT32 t_send(	
	A_VOID* handle,	Driver context
	A_UINT32 sockHandle,	Socket handle
	A_UINT8* buffer,	Pointer to data
	A_UINT32 length,	Payload length
	A_UINT32 flags,	Send flags
	)	
Description	Send data on a stream socket which is in connected state. The API works for both IPv4 and IPv6.	
Return Value	Number of bytes transmitted to the target on success	

t_recvfrom		
Prototype	A_INT32 t_recvfrom(	
	A_VOID* handle,	Driver context
	A_UINT32 sockHandle,	Socket handle
	void** buffer,	Pointer to data
	A_UINT32 length,	Payload length
	A_UINT32 flags,	Recv flags
	A_VOID* name,	Sockaddr structure (v4 or v6)
	A_UINT32* socklength	Length of sockaddr
	)	
Description	Receive data on a datagram socket. The socket blocks if no packet is available, unless it is designated as non-blocking (in which case it returns immediately).	
Return Value	Number of bytes received on success, -1 on error.	

t_recv		
Prototype	A_INT32 t_recv(	
	A_VOID* handle,	Driver context
	A_UINT32 sockHandle,	Socket handle
	A_UINT8* buffer,	Pointer to data
	A_UINT32 length,	Payload length
	A_UINT32 flags,	Recv flags
	)	
Description	Receive data on a stream socket which is in connected state. The socket blocks if no packet is available, unless it is designated as non-blocking (in which case it returns immediately).	
Return Value	Number of bytes received on success, -1 on error.	