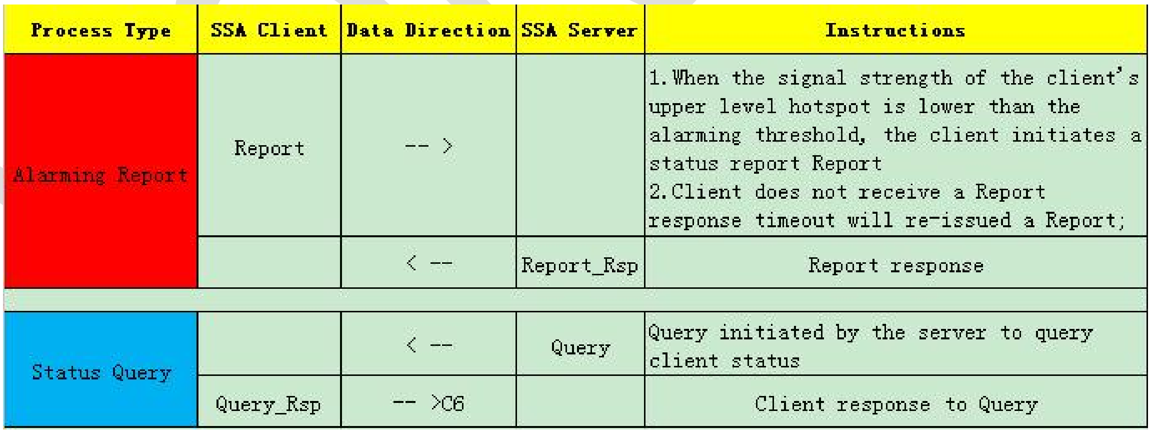
VONETS SSA_1.1 Detailed communication protocol

SSA is short for WiFi Signal strength alarming, this communication protocol is used to explain the SSA communication process and related programming development factors. The operating end of the SSA communication protocol is divided into a client and a server. The client is the initiator of the WiFi signal strength early alarming, and the server is the receiving end of the early alarming signal. The entire communication uses UDP protocol, based on the SOCKET standard programming.

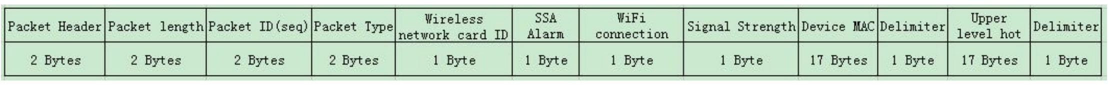
The SSA communication protocol packet is divided into report, query, and corresponding response packet, send and receive flow as shown below:



Process Type	SSA Client	Data Direction	SSA Server	Instructions
Alarming Report	Report	-- >		1.When the signal strength of the client's upper level hotspot is lower than the alarming threshold, the client initiates a status report Report 2.Client does not receive a Report response timeout will re-issued a Report;
		< --	Report_Rsp	Report response
Status Query		< --	Query	Query initiated by the server to query client status
	Query_Rsp	-- >C6		Client response to Query

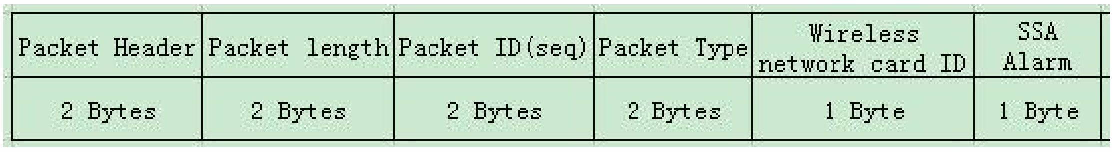
The SSA packet format specification is as follows:

- The Report and Query_Rsp formats are the same as follows:



Packet Header	Packet length	Packet ID(seq)	Packet Type	Wireless network card ID	SSA Alarm	WiFi connection	Signal Strength	Device MAC	Delimiter	Upper level hot	Delimiter
2 Bytes	2 Bytes	2 Bytes	2 Bytes	1 Byte	1 Byte	1 Byte	1 Byte	17 Bytes	1 Byte	17 Bytes	1 Byte

- Query and Report_Rsp formats are the same as follows:



Packet Header	Packet length	Packet ID(seq)	Packet Type	Wireless network card ID	SSA Alarm
2 Bytes	2 Bytes	2 Bytes	2 Bytes	1 Byte	1 Byte

- Fields are explained below:

1) Header, which occupies 2 bytes, and the specific value is hexadecimal 2121;

2) The length of the packet, which occupies 2 bytes, is an unsigned 16-bit integer. When the value from the network packet is converted to an integer, pay attention to the size of the value side, the high 8 bits and the low 8 bits should be exchanged;

3) Packet ID, 2 bytes, is the unique number of the packet。

3.1 The package ID initiated by the process must match the package ID of the corresponding response package. Otherwise, the response package will be ignored ;

3.2 The report's package ID starts at 101 and reaches 65535 and overflows and circulates. Query's package ID starts from 201 to 65535, and it overflows and cycles back and forth;

3.3 Process initiated package ID must be different, otherwise it will be ignored by the client module.

4) Package type, 2 bytes (Pay attention to the difference between the value of the network packet and the size of the integer variable), the specific type and type codes are as follows:

Report=0

Report_Rsp=1

Query = 2

Query_Rsp = 3

5) Wireless network card ID, 1 byte, 0 for 2.4G network card, 1 for 5G network card;

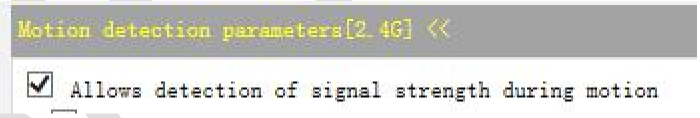
6) SSA Alarming enable 1 byte.

6.1 0 indicates that the alarm is disabled, and the client disables the automatic signal strength alarm function, but it can still respond to the query of the server; 1 indicates that the client is enabled to automatically signal strength alarm.

6.2 The server can change the value of this field to dynamically control the client's automatic alarm function in Report_Rsp and Query as needed to reduce unnecessary alarm data packets;

6.3 When programming on the server side, the value of this field in the Report_Rsp and Query of the server must be the same. Otherwise, this function will be enabled and disabled in the client loop, causing the module to crash. This operation must be used with caution.

6.4 This field needs to be reset by the server after restarting the module. If it is not set, the value of the related item on the web page is used.



Motion detection parameters[2.4G] <<

☑ Allows detection of signal strength during motion

7) WiFi connection status, byte 1, 0 means disconnection, 1 means connection;

8) Signal strength, byte 1, the value is 0-100;

9) MAC， 17-byte MAC text string；

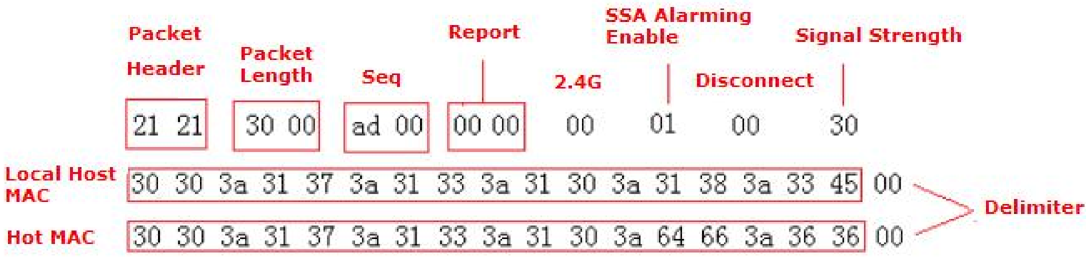
10) Delimiter, byte 1, the value is 0.

● About LAN and WAN Communication, when the client is in the LAN and the server is in the WAN, after the client initiates the first Report, the server can use the timer to send a heartbeat handshake periodically to keep the reverse communication. Generally, the recommended interval is not greater than 180 seconds;

- Packet Instance Analysis:

1) Report: (2.4G)

The data below are all in hexadecimal



Report_Rsp : (SSA Alarming enable)

21 21 0a 00 ad 00 01 00 00 01

Report_Rsp: (Disable SSA Alarming)

21 21 0a 00 ad 00 01 00 00 00

2) Query: (5G, SSA Alarming enable)

21 21 0a 00 c9 00 02 00 01 01

Query_Rsp:

21 21 30 00 c9 00 03 00 01 01 01 32

30 30 3a 31 37 3a 31 33 3a 31 30 3a 31 38 3a 33 47 00

30 30 3a 31 37 3a 31 33 3a 31 35 3a 32 39 3a 36 42 00