

Specification of **XKGW API**

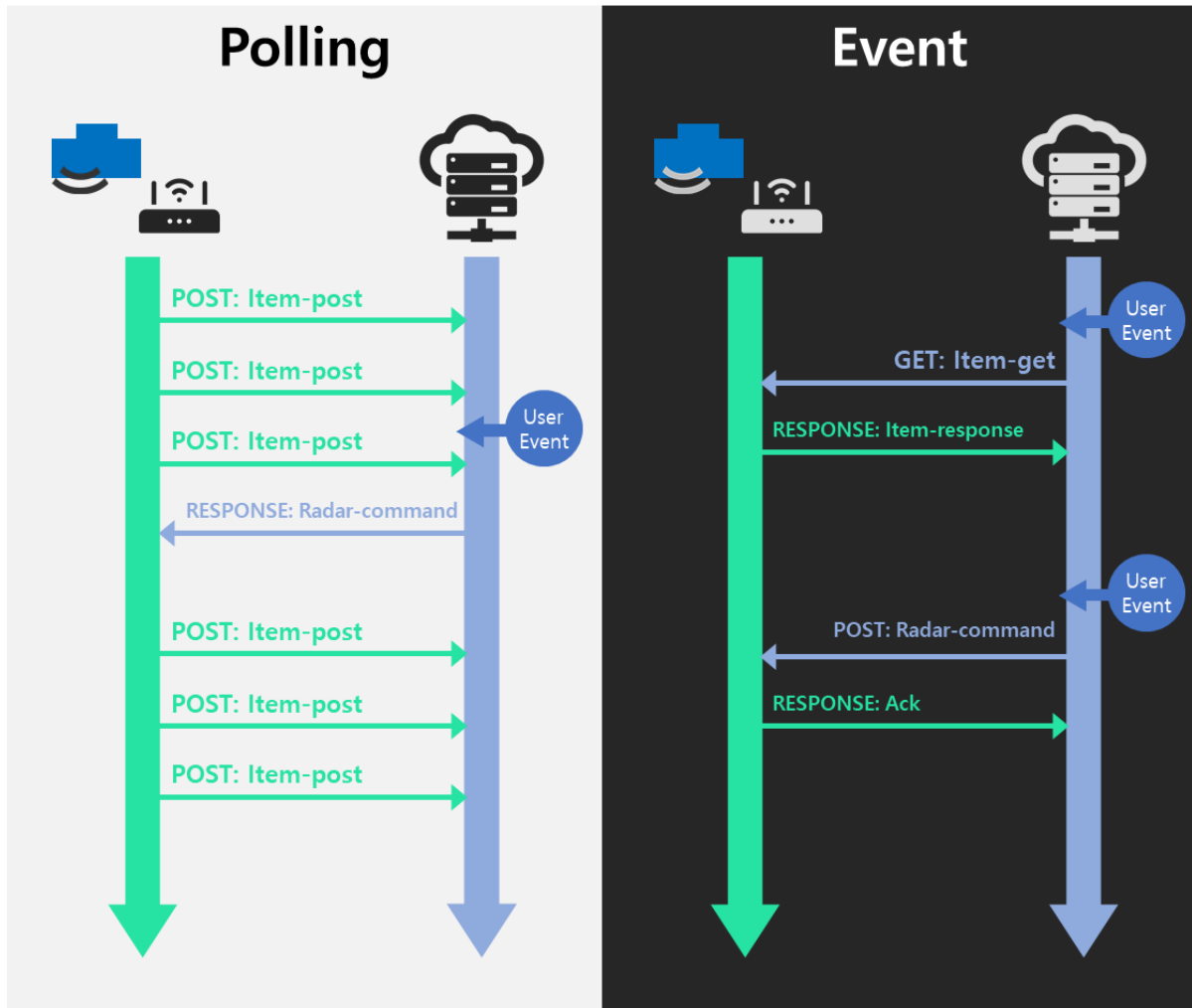
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- **Release notes**

Date	Release	Edit	Note	
19-06-26	1.0	Jerry	Created.	
19-07-02	1.1	Jerry	Request body format changed Added the SDK version information.	
19-08-13	1.2	Jerry	Added 'Event' mode.	

1. Chart

1.1. Sequence chart



2. Specification

2.1. Client

Platform:

It uses 'XK-SDK' platform in Linux environment.

The platform uses the API to communicate data. And it does IP based communication(HTTP, HTTPS).

This is called 'XKGW-API'.

XK-SDK version: 2.0.0 or later applied

2.2. Server

Endpoint:

The endpoint settings are changed in the 'XK-SDK' platform. Allow IP address type, Domain name type.

Supports HTTP and HTTPS.

2.3. Mode

You can change the mode by changing the 'mode' value inside 'config.json'(later version 2.0.0, it is in /boot/XandarKardian).

Polling mode:

It periodically transmits data to the server.

There is no logic for GET, and if you want to send data to the gateway, you can include it in the response.

It uses JSON format data.

Event mode:

Conditional support: If the address of the gateway is an external address or an internal address that can be port forwarded

The data can be read by 'GET' when the server needs data.

In the case of the command, use 'POST' to input the command to the gateway.

It uses JSON format data.

3. API

3.1. Polling mode

3.1.1. Item-post

<i>Endpoint</i>	(POST) anywhere
<i>Description</i>	Request gateway data and radar data to server. It periodically makes a request. (Changeable period) Item to be transferred can be changed in 'XK-SDK'.
<i>Request Example</i>	POST /api/v1/poc HTTP/1.1 Host: pilot.xandarkardian.com Connection: keep-alive Content-Type: application/json Authorization: Basic none x-access-serial: BCM2835/00000000f0a01dd1 Content-Length: 1027 <pre>{ "client": "Google", "device": "XKRP3BP", "function": "XK-Radar-Gateway", "start-date": "2019-08-12T21:06:24-09:00", "time": "2019-08-13T04:12:03-09:00", "eth0": "0.0.0.0", "wlan0": "192.168.0.18", "free-mem": 618332, "cpu-usage": 11, "cpu-temp": 44.01, "123456789123":{ "status":1, "radarID":22, "application":0, "serial":"123456789123", "port":1, "v0":0.00, "v1":0.69, "v2":7.00, ... }, "000055000055":{ "status":1, "radarID":55, "application":0, "serial":"000055000055", "port":0, "v0":55.00, "v1":0.20, "v2":7.00, }, }</pre>

	<pre> "0000000000000000":{ "status":1, "radarID":99, "application":0, "serial":"00000000000000", "port":2, "v0":0.00, "v1":0.20, "v2":7.00, } </pre>
<i>Response With command Example Status 200</i>	<pre> { "param":[31001, -1] } </pre>
<i>Response Without command Example Status 200</i>	<pre> { "param":[] } </pre>
<i>Response Example Status 401</i>	No response

3.2. Event mode

3.2.1. Item-get

Endpoint	(POST) /api/v1/item-get
Description	Request radar data from gateway
Request Example	<pre>{ (body no content) }</pre>
Response Example Status 200	<pre>{ "client": "Google", "device": "XKRP3BP", "function": "XK-Radar-Gateway", "start-date": "2019-08-12T12:00:10+09:00", "time": "2019-08-13T16:31:41+09:00", "eth0": "192.168.0.3", "wlan0": "192.168.2.1", "free-mem": 39500, "cpu-usage": 31, "cpu-temp": 60.15, "9999999999999999": { "status": 1, "radarID": 0, "application": 30, "serial": "99999999999999", "port": 0, "v0": 573, "v1": 0.8, "v2": 300, } }</pre>
Response Example Status 401	No response

3.2.2. radar-command

Endpoint	(POST) /api/v1/radar-cmd
Description	Send command to the desired radar ID among the radars connected to the gateway. Send command to the gateway
Request Example1	<pre>{ "param": [999, -1] }</pre>

<i>Request Example2</i>	{ "param": [999, 1010.1010, 0, 888, 255.255, 255.255] }
<i>Request Example3</i>	{ "param": [999, 4040.4040, 0, 255.255, 255.255] }
<i>Response Example Status 200</i>	{ (body no content) }
<i>Response Example Status 401</i>	{ (body no content) }

4. Data

4.1. Received Data from Gateway

4.1.1. Description of the sending data

POST /api/v1/poc HTTP/1.1	- HTTP API header to send
Host: pilot.xandarkardian.com	- Host URL or IP address to send
Connection: keep-alive	- Connection option
Content-Type: application/json	- Content type: It uses JSON format
Authorization: Basic none	- Authorization for sending to XK-server
x-access-serial: BCM2835/00000000f0a01dd1	- Gateway serial number
Content-Length: 1027	- Content length
{	
"client": "Google",	- Client name: it can be change by user
"device": "XKRP3BP",	- Gateway device name
"function": "XK-Radar-Gateway",	- Gateway function
"start-date": "2019-08-12T21:06:24-09:00",	- Time started XK-SDK
"time": "2019-08-13T04:12:03-09:00",	- Time sent from Gateway
"eth0": "0.0.0.0",	- Network IP address: ethernet
"wlan0": "192.168.0.18",	- Network IP address: wifi
"free-mem": 618332,	- Free memory space
"cpu-usage": 11,	- CPU usage
"cpu-temp": 44.01,	- CPU temperature
"123456789123": {	- Radar data title: Radar serial number, It can be changed to Radar ID type by user
"status": 1,	- Radar data status: 1-normal, 0-noconnect
"radarID": 22,	- Radar ID
"application": 0,	- Radar application number
"serial": "123456789123",	- Radar Serial number
"port": 1,	- Radar port number connected to the gateway

```

        "v0":0.00,
        "v1":0.69,
        "v2":7.00,
        ...
    },
    "000055000055":{
        "status":1,
        "radarID":55,
        "application":0,
        "serial":"000055000055",
        "port":0,
        "v0":55.00,
        "v1":0.20,
        "v2":7.00,
    },
    "000000000000":{
        "status":1,
        "radarID":99,
        "application":0,
        "serial":"000000000000",
        "port":2,
        "v0":0.00,
        "v1":0.20,
        "v2":7.00,
    }
}

```

- Radar application parameter set
Refer application manual

5. Command

5.1. Command to Radar

In the polling mode, a command is always included in the response to send a command to the gateway or radar. And in the event mode, must send "param" in body using POST

5.1.1. To Radar

- Ack

Example

The server received the data well.

➔ "param": []

- Radar system command

Radar ID	Command	Payload 0	Payload 1	...	Payload n
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Example

If you want to reset the Radar #31001.

➔ "param": [31001, -1]

If you want to return to the initial the Radar #31001's parameters.

➔ "param": [31001, 100100]

- Radar parameter change

Radar ID	SOF R	Parameter Number 0	Parameter Value 0	...	Parameter Number n	Parameter Value n	EOF R	EOF R
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* SOF (Start of Frame for radar): 1010.1010

* EOF (End of Frame for radar): 255.255

Example

If you want to change Radar #31001's ID to 31002.

➔ "param": [31001, 1010.1010, 0, 31002, 255.255, 255.255]

If you want to change Radar #31001's ID to 31002 and LED status on to off at once.

➔ "param": [31001, 1010.1010, 0, 31002, 4, 0, 255.255, 255.255]

5.1.2. To Gateway

- Gateway system command

Radar ID	SOF G	Command	Payload 0	Payload 1	...	Payload n	EOF G
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* SOF (Start of Frame for gateway): 4040.4040

* EOF (End of Frame for gateway): 255.255

Example

If you want to OTA update Radar #31001.

➔ "param": [31001, 4040.4040 1 255.255]

If you want to receive only 11, 12, 13 of radar parameters.

➔ "param": [31001, 4040.4040 0 11 12 13 255.255]