

# ASUS IoT Middleware

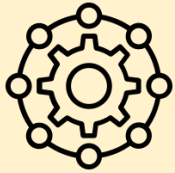
2023/Q4



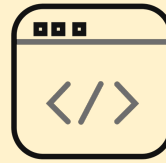
# Value

Built for System Integrator's Innovations by providing **Tools, API, Protocols**

Target Customers



SI of no code/low code



SI with coding capability

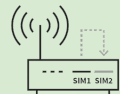
Key Features



Config tools (Command & GUI)



API



Always connected



Protocols (Modbus, MQTT...)

Customer's Benefits

- Quick config, easy customize

- Access all hardware features
- Protocols & code template to easily connect sensors





# | Key Features

# Command Line (CLI) config tool

## Windows

```
Command Prompt
Microsoft Windows [Version 10.0.18362.267]
(c) 2019 Microsoft Corporation. All rights reserved.

C:\Users\gabri>
```

## Linux (Debian, Ubuntu)

```
Terminal
raju@raju-HP-Laptop-15-bs1xx: ~/rc_c
raju@raju-HP-Laptop-15-bs1xx:~$ ls
a.out  compiler  denoising.c  Documents  examples.desktop  lena_rotate.bmp  me.txt  op.c  Public  rc_c  rc_sm  rtlwifi_n
cn  datasets  Desktop  Downloads  lena.bmp  matchanal.py  Music  Pictures  qw.c  rc_hw  rc_ts  snap
raju@raju-HP-Laptop-15-bs1xx:~/Downloads$ ls
30740779_1219877821476758_1154882784242696192_n.jpg  datasets  lena.bmp  salt_n_pepper.bmp  se05
balloons_noisy.png  lena1.bmp  saltandpeppernoise.jpeg  se04  xampp-linux-x64-7
raju@raju-HP-Laptop-15-bs1xx:~/Downloads$ cd ..
raju@raju-HP-Laptop-15-bs1xx:~$ cd rc_c
raju@raju-HP-Laptop-15-bs1xx:~/rc_c$ ls
9march1.cpp  a.out  b2d.cpp  countwords.cpp  d2b_part2.cpp  homework_ds  possible_combinations_backtra
9march2.cpp  ap.cpp  complementtriangle.cpp  d2b.cpp  gp.cpp  largest_island.cpp  reverse_words_in_sentence.cpp
raju@raju-HP-Laptop-15-bs1xx:~/rc_c$ ls -l
total 92
-rw-r--r-- 1 raju raju 162 Mar 9 17:09 9march1.cpp
-rw-r--r-- 1 raju raju 237 Mar 9 17:15 9march2.cpp
-rwxr-xr-x 1 raju raju 23008 Apr 19 22:15 a.out
-rw-r--r-- 1 raju raju 216 Mar 9 17:40 ap.cpp
-rw-r--r-- 1 raju raju 341 Apr 19 22:15 b2d.cpp
-rw-rw-r-- 1 raju raju 416 Mar 9 17:40 complementtriangl
-rw-r--r-- 1 raju raju 186 Mar 10 17:09 countwords.cpp
-rw-r--r-- 1 raju raju 133 Apr 19 22:15 d2b.cpp
-rw-r--r-- 1 raju raju 133 Apr 19 22:15 d2b_part2.cpp
-rw-r--r-- 1 raju raju 133 Apr 19 22:15 gp.cpp
-rw-r--r-- 1 raju raju 133 Apr 19 22:15 largest_island.cpp
-rw-r--r-- 1 raju raju 133 Apr 19 22:15 possible_combinations_backtra
-rw-r--r-- 1 raju raju 133 Apr 19 22:15 reverse_words_in_sentence.cpp
-rw-r--r-- 1 raju raju 133 Apr 19 22:15 saltandpeppernoise.jpeg
-rw-r--r-- 1 raju raju 133 Apr 19 22:15 salt_n_pepper.bmp
-rw-r--r-- 1 raju raju 133 Apr 19 22:15 se04
-rw-r--r-- 1 raju raju 133 Apr 19 22:15 se05
-rw-r--r-- 1 raju raju 133 Apr 19 22:15 xampp-linux-x64-7
```



# GUI config tool (IoT Suite)

## Features

- Monitor hardware
- Config Watchdog
- Config GPIO
- Config Power schedule
- Config Smart Fan

Hardware Information

Temperature Fan Speed Voltage

Real-time data

3.3V Vol	5V Vol	12V Vol
3300	6400	12560

GPIO Control

GPIO 1 Get Status

Please enter the GPIO pin.

Direction Value

Output High

Output Set Value

No Set Input

Output

Watchdog Settings

System Watchdog Timer ON

120 sec

If the system crashes or runs abnormally, the system will automatically restarts when timeout.

Fan Control

Fan Settings Auto Manual

System Fan Trigger Settings

	Trigger Temp.	PWM Level
Trigger Point 1	15 °C	100 %
Trigger Point 2	60 °C	40 %
Trigger Point 3	70 °C	63 %
Trigger Point 4	80 °C	90 %

CPU Fan Trigger Settings

	Trigger Temp.	PWM Level
Trigger Point 1	15 °C	100 %
Trigger Point 2	60 °C	40 %
Trigger Point 3	70 °C	63 %
Trigger Point 4	80 °C	90 %

Load Previous Settings Apply

Power Scheduling

Boot up ON

Schedule a Boot up time for your device. Click the trigger, choose the frequency and enter a time, and then click Apply.

Frequency Daily event

Time 8:00 AM

Shut down Restart Shut down

Shutdown time for your device. Click the trigger, choose the frequency and enter a time, and then click Apply.

Frequency Daily event

Time 8:00 AM

Load Previous Settings Apply

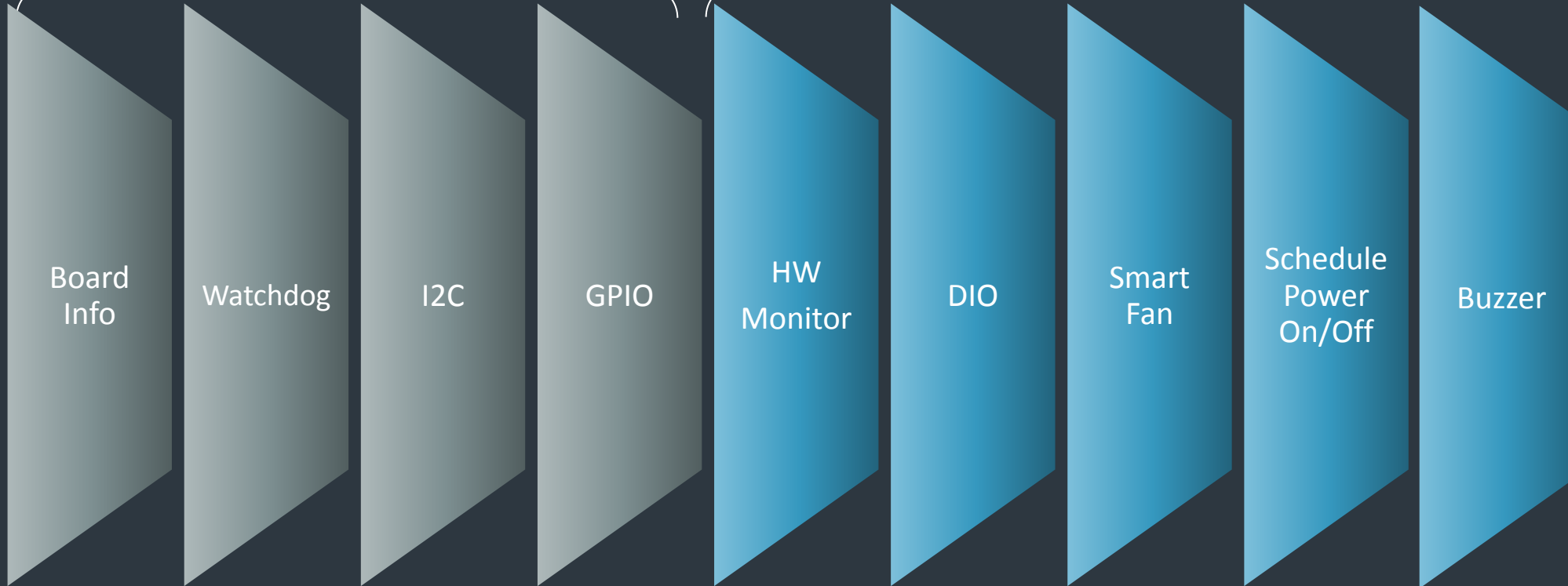
# ASUS IoT Middleware API

provides complete HW programming control and configuration for ASUS IoT devices



**EAPI (Embedded API) standard compliant**

**ASUS API**



*API support would be varied in different OS*

## Advantage

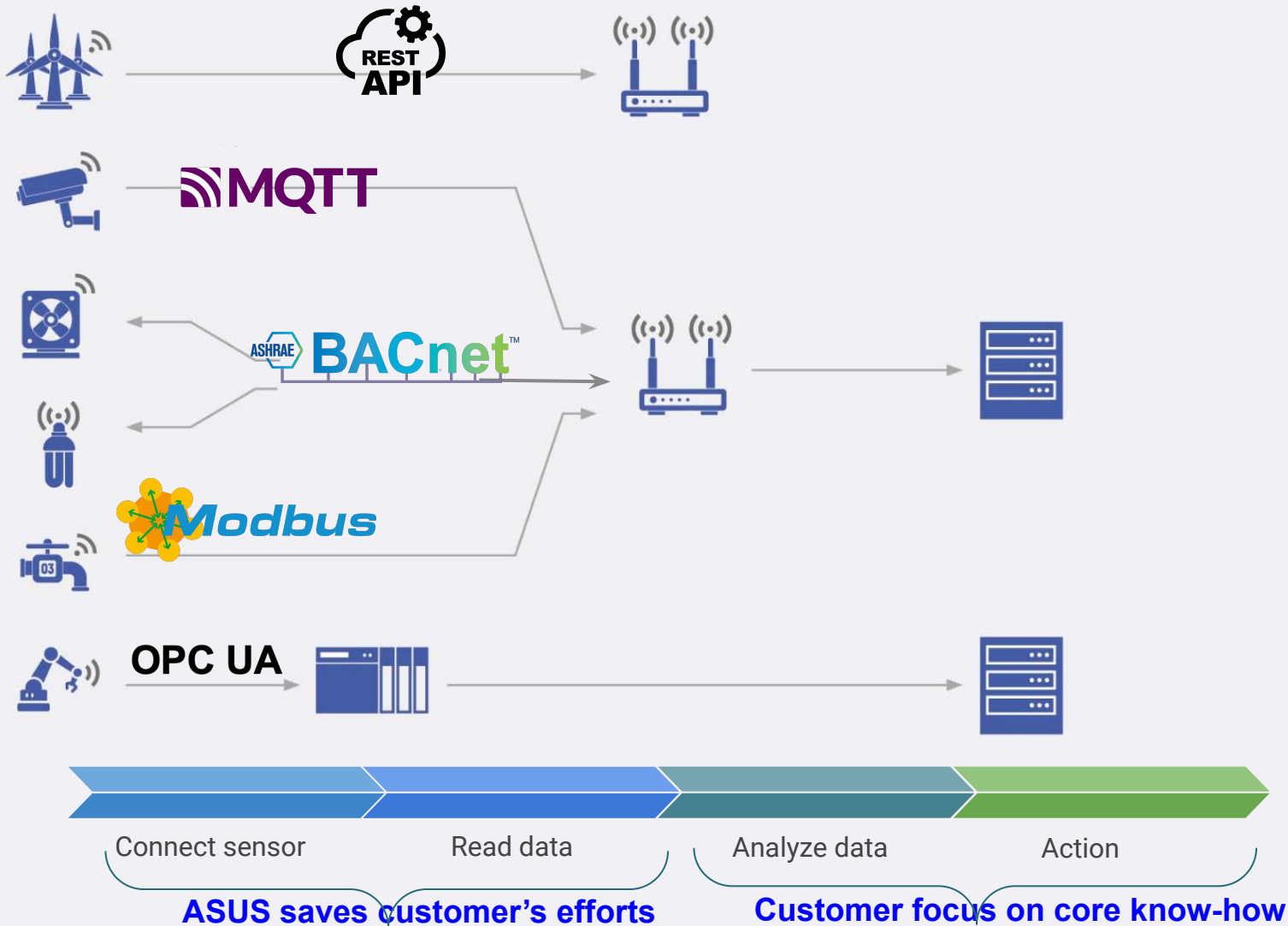
- ASUS API
- Multi-OS support

## Benefits

- Fully access ASUS hardware
- Reduce integration efforts



# Connect sensors easily



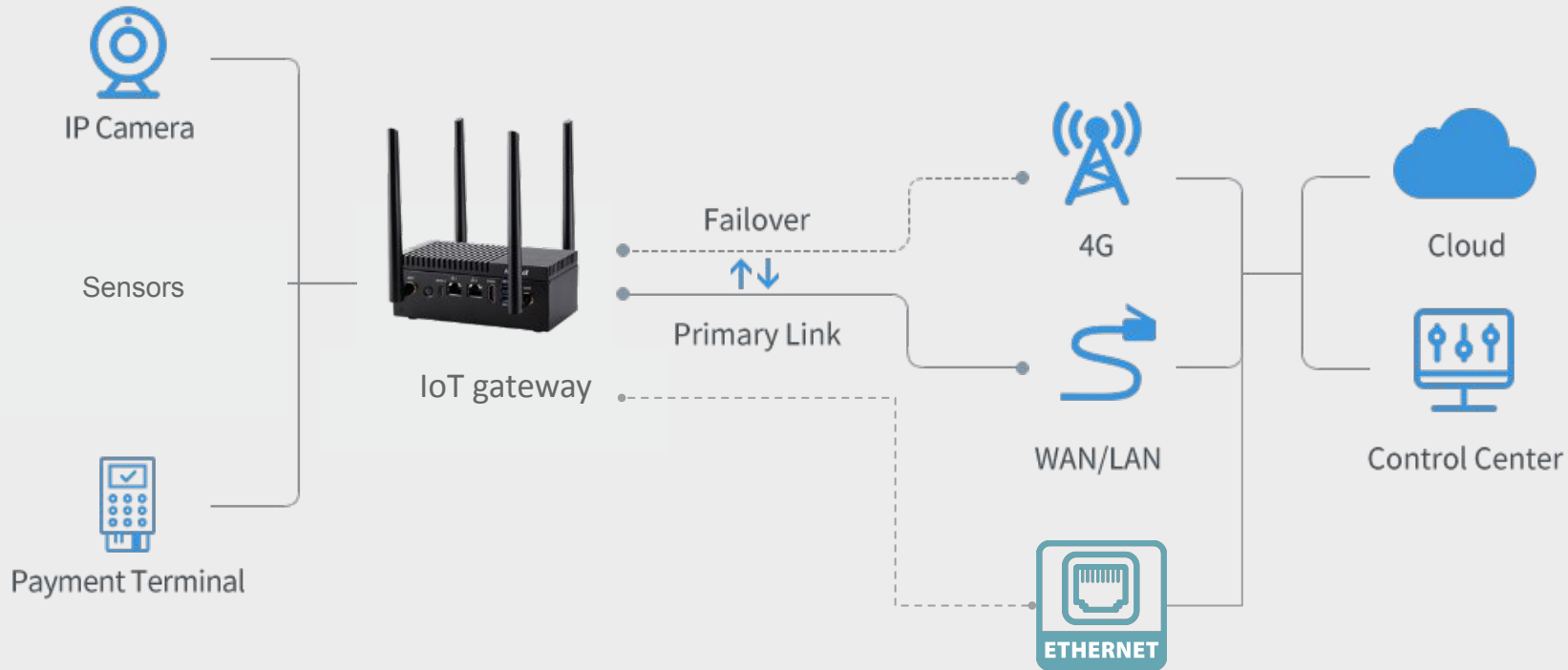
## Features

- REST
- MQTT
- Modbus RTU
- Modbus TCP
- BACnet

## Benefits

- Code templates & protocols to easily connect sensors
- Rule engine at Edge

# System is Always Connected



## Features

- LTE automatic recover
- Multi-Networks automatic failover

## Benefits

- Always connected system
- Minimum disconnection & data loss

## DOWNLOADS

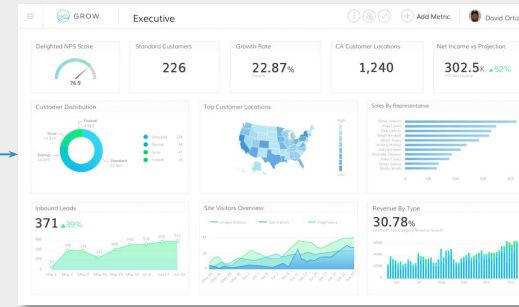
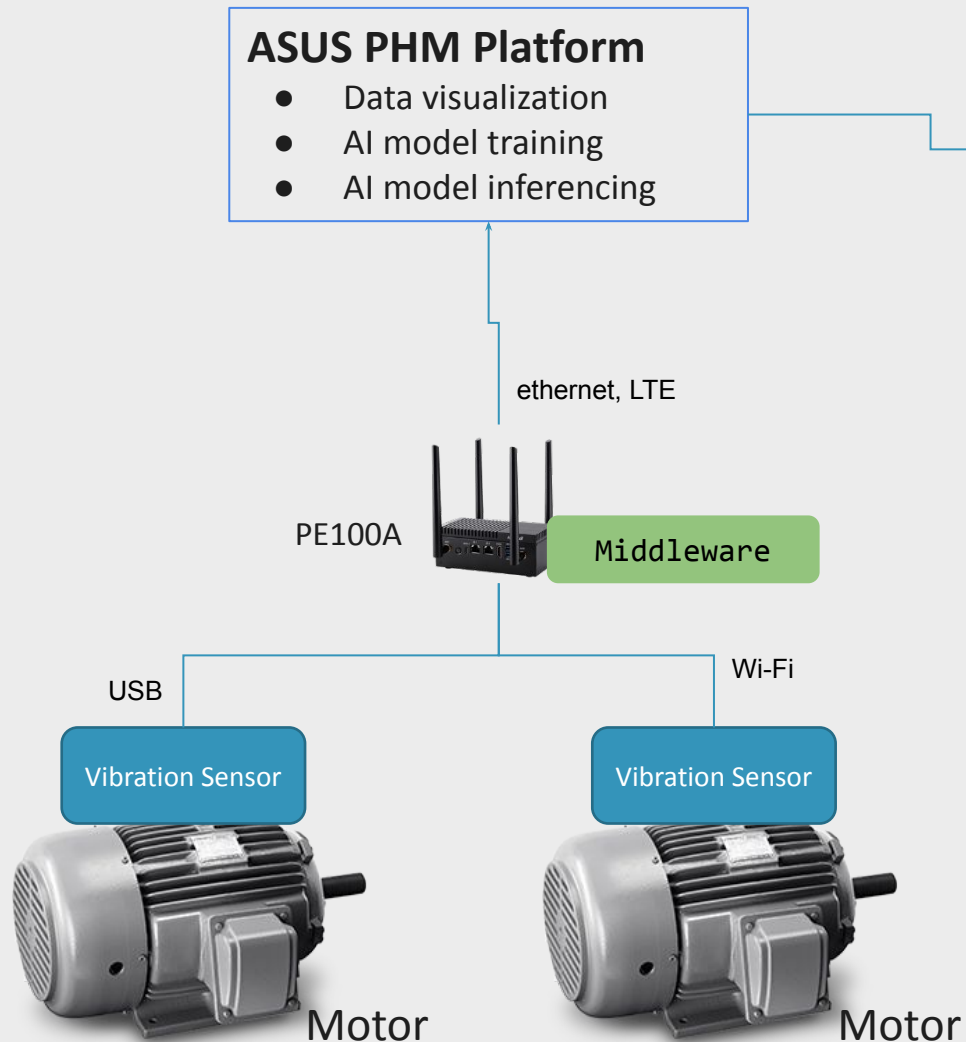
HA connection service User guide [\[LINK\]](#)





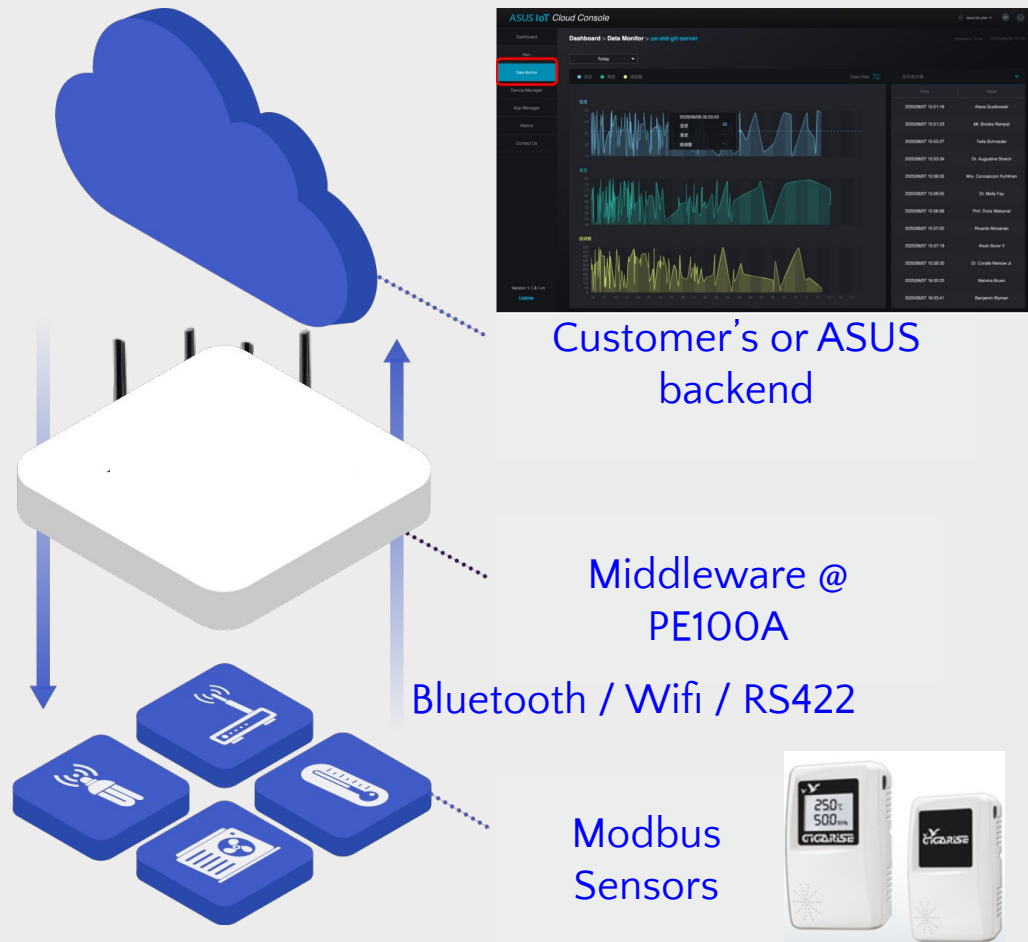
# | Case Sharing

# Case Sharing: Motor Health Prediction



	Lite	Professional	Enterprise
Max num of Sensors	10	100	500
Gateway model	PE 100A	PE 200U	PE4000D

# Case Sharing: Cold chain management



## Benefits

- Easily connect with sensors (protocols: Modbus, BACNET, MQTT...)
- Flexible backend (customer backend or ASUS AICC)
- Rule engine





# | Supported Models

# ASUS IoT Middleware Supported Models



Features	Functions	x86		TinkerBoard series		ARM IPC
		Windows	Linux	Linux	Android	Linux
System Monitor	Hardware monitor & Board Info API	V	by request	V		V
	Fan control API <sup>(3)</sup>	V	by request			
	Scheduled Power on/off API <sup>(3)</sup>	V	by request			
	Watchdog API	V	by request	V <sup>(4)</sup>		V <sup>(6)</sup>
	Buzzer API	V	by request			
	USB port reset	V	by request			
Peripheral	G sensor/ RTC/ COM/ Wakeup API					V <sup>(7)</sup>
	GPIO (DIO) API	V	by request	V <sup>(4)</sup>	V <sup>(4)</sup>	V
	I2C API	V	by request	V <sup>(4)</sup>	V <sup>(4)</sup>	
	SPI API				V <sup>(4)</sup>	
	UART API				V <sup>(4)</sup>	
	PWM API				V <sup>(4)</sup>	V <sup>(7)</sup>
Protocols & Connectivity	LTE auto recover			V <sup>(5)</sup>		V <sup>(6)</sup>
	Wi-Fi / LTE auto failover			V <sup>(5)</sup>		V <sup>(6)</sup>
	Protocols (MQTT, Modbus, BACNET)				x	V

The background is a dark teal gradient. On the left and bottom right, there are decorative elements consisting of multiple parallel, wavy lines of small, light teal dots, creating a sense of motion or data flow.

Thank you