// ZGW-20

IoT Gateway

based on Raspberry Pi CM4

ubuntu core

// Introduction

EpiSensor's IoT Gateway manages networks of wireless and wires nodes and provides users with an intuitive web interface and API to quickly and easily build complete solutions for building management and energy applications. It's designed for facilitating complex monitoring, control and automation in a wide range of built environments, running locally and/or connecting to cloud IoT platforms.

// Key Features

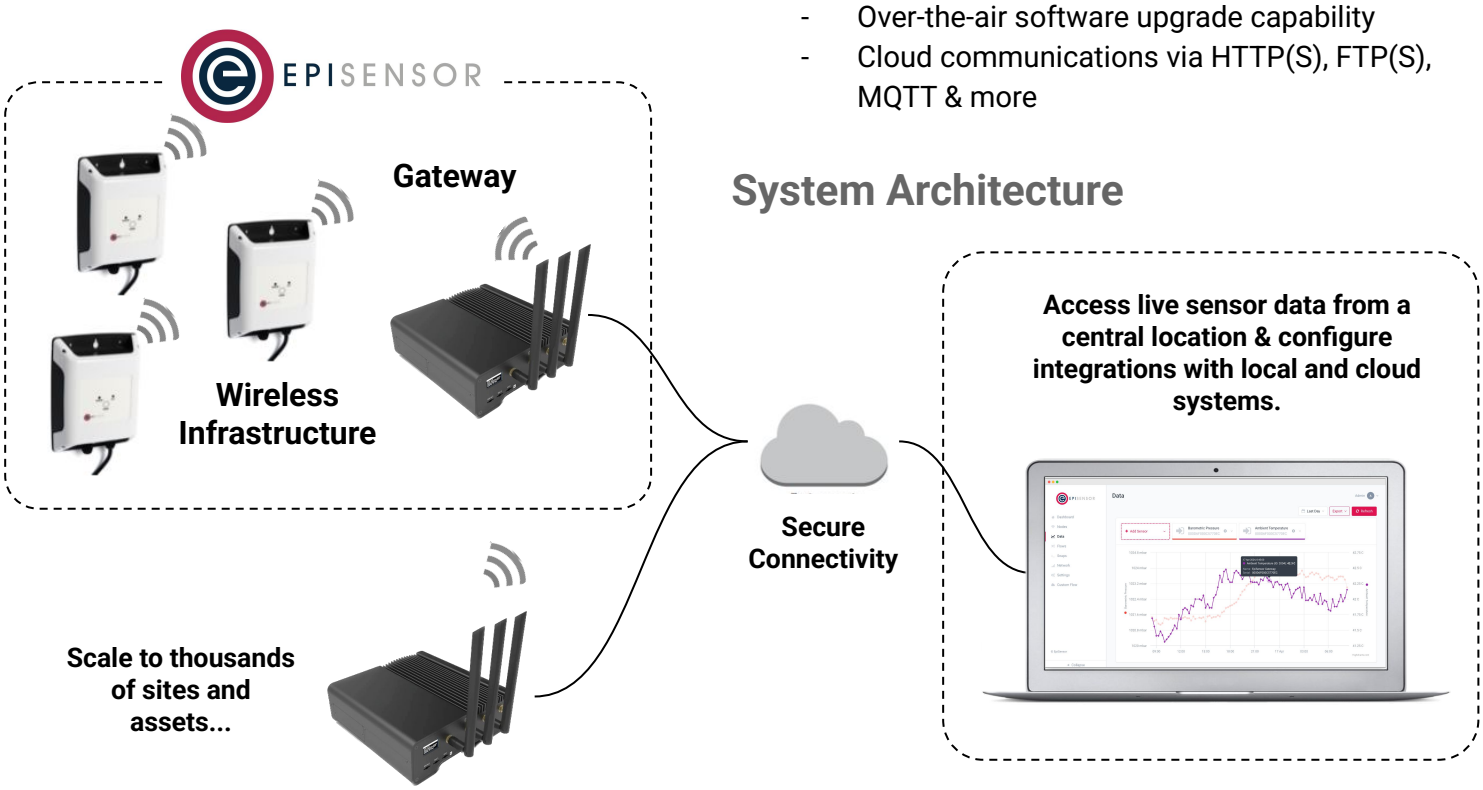
- Quad-core 1.5GHz ARM Cortex-A72 Processor
- Ubuntu Core operating system
- WAN: 1x Gigabit Ethernet, 1x 2.5Gigabit Ethernet, 3G/4G/5G Cellular, Dual Band Wi-Fi
- GPS/GNSS for location and time sync
- Zigbee, Bluetooth and LoRaWAN for sensor communications
- RS-485, Ethernet, Modbus, BACnet and CANbus for industrial communications
- HTTP API for control and management
- Connect up to 250 nodes / 1000 sensors
- Over-the-air software upgrade capability
- Cloud communications via HTTP(S), FTP(S), MQTT & more

For more information, contact:

sales@episensor.com

visit http://episensor.com or call +353 61 512 500

System Architecture



Technical Specification

// System

Category	Parameter	Value
Computer	Processor	Quad-core 1.5GHz ARM
	RAM	2 GB, LPDDR4-3200 SDRAM
	Operating System	Ubuntu Core
Data Export	Transport Protocols	HTTP(S), FTP(S), MQTT & more
	Data Formats	JSON, CSV & more
	Software Integrations	100+ (see EpiSensor website)

// Electrical

Category	Parameter	Value
Power Supply	Input Voltage Range	5V (USB-C) or 7 - 36 V DC
	Power over Ethernet	Supported (optional)
	Wake up events	Wake on LAN, RTC
	Max Power Consumption	15 watts
	Idle Power Consumption	5 watts

// Communications

Category	Parameter	Value
WAN	Ethernet	2x Ethernet (RJ-45)
	Cellular	3G / 4G / 5G (varies by country)
Wireless Sensor Network	Radio Technology	Zigbee
	Radio Frequency	2.4 GHz ISM band
	Network Topology	Mesh
	Channels	16 (802.15.4 Channels 11 to 26)
	Max Tx Power	+8dBm
	Tx modulation	O-QPSK
	Rx Sensitivity	-101dBm
	Max Data Rate	256kbit/s
	Wireless Range	up to 50m indoor / 300m outdoor

Technical Specification

// Software & Security

Category	Parameter	Value
Real Time Clock & Sync	Real Time Clock Backup	Battery (3V, 38mAh, CR1220)
	Hold-up time	3+ years
	Synchronisation	NTP time server
	Timestamp Format(s)	ISO-8601, Unix Epoch
	Timestamp Resolution	1 second
Data Logging	Storage Type	Non-volatile flash (eMMC)
	Capacity	8GB
Security	Sensor Network Encryption	AES 128-bit
	Server Communications	TLS v1.3 / various

// Operating Conditions

Category	Parameter	Value
Operating Conditions	Operating Temperature	-20°C to 70°C (-4°F to 158°F)
	Storage Temperature	−40°C to 70°C (−40°F to 158°F)
	Operating Humidity Range	10% to 95% (non-condensing)
Physical	Weight	1.56kg +/- 0.05kg
	Dimensions (W x H x D)	185x155x34mm

// Certifications

Category	Parameter	Value
Certifications	Safety	CE
	Environmental	RoHS, WEEE
	EMC/RF	IC, FCC

EpiSensor products are not suitable or specifically designed, manufactured or licensed for use in military, aviation, powerplant, medical or in other inherently dangerous or safety critical applications.

Technical Specification

// Order Codes

SKU	Description
ZGW-20-UZ-4G-WL-WU-E2-UK	On-board ZigBee, 4G cellular, Wi-Fi, Bluetooth, LoRaWAN, OLED display, black commercial enclosure, UK power supply

Contact EpiSensor for a full list of product variants or custom configurations.

Product Code Example:	ZGW -	20 -	UZ -	4G -	WB -	WU -	E2 -	EU
Product Line	**ZGW:** IoT Gateway							
Version	**10:** first generation ZGW **20:** second generation ZGW							
ZigBee	**DZ:** external (USB dongle) Zigbee Radio **UZ:** on-board (UART connected) Zigbee Radio							
Cellular / GPS	**4G:** on-board (M.2 connected) 4G modem (Simcom or Quectel) **NC:** no cellular							
Wi-Fi / Bluetooth	**WB:** on-board Wi-Fi / Bluetooth **NW:** no on-board Wi-Fi / Bluetooth **WL:** on-board Wi-Fi / Bluetooth / LoRaWAN							
Hardware UI	**WU:** hardware user interface (OLED + up/down/select) **NU:** no hardware user interface							
Enclosure	**E1:** residential version, machined aluminium, DIN rail mount, dark grey **E2:** commercial version: extruded aluminium, desktop or rack mount, black **E3:** industrial version: polycarbonate IP68 enclosure, wall mount, light grey							
Power Supply	**EU:** power adapter suitable for use in the EU (Europlug type C) **UK:** power adapter suitable for use in the UK **NA:** power adapter suitable for use in North America and Canada							

Technical Specification

Installation & Safety Notes

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

- EpiSensor equipment should be installed, operated, serviced and maintained only by qualified personnel. EpiSensor does not assume any responsibility for any consequences arising out of the use of this equipment.
- For detailed installation and safety information, consult the Install Sheet.

// Contact

For technical support, please contact **support@episensor.com** or phone +353 61 512 500

Address: EpiSensor Ltd. National Technology Park, Limerick, V94 C61W, Ireland

Manufactured in an ISO 9001 / ISO 14001 certified facility. Gateway 3002 Manufactured by Dell.

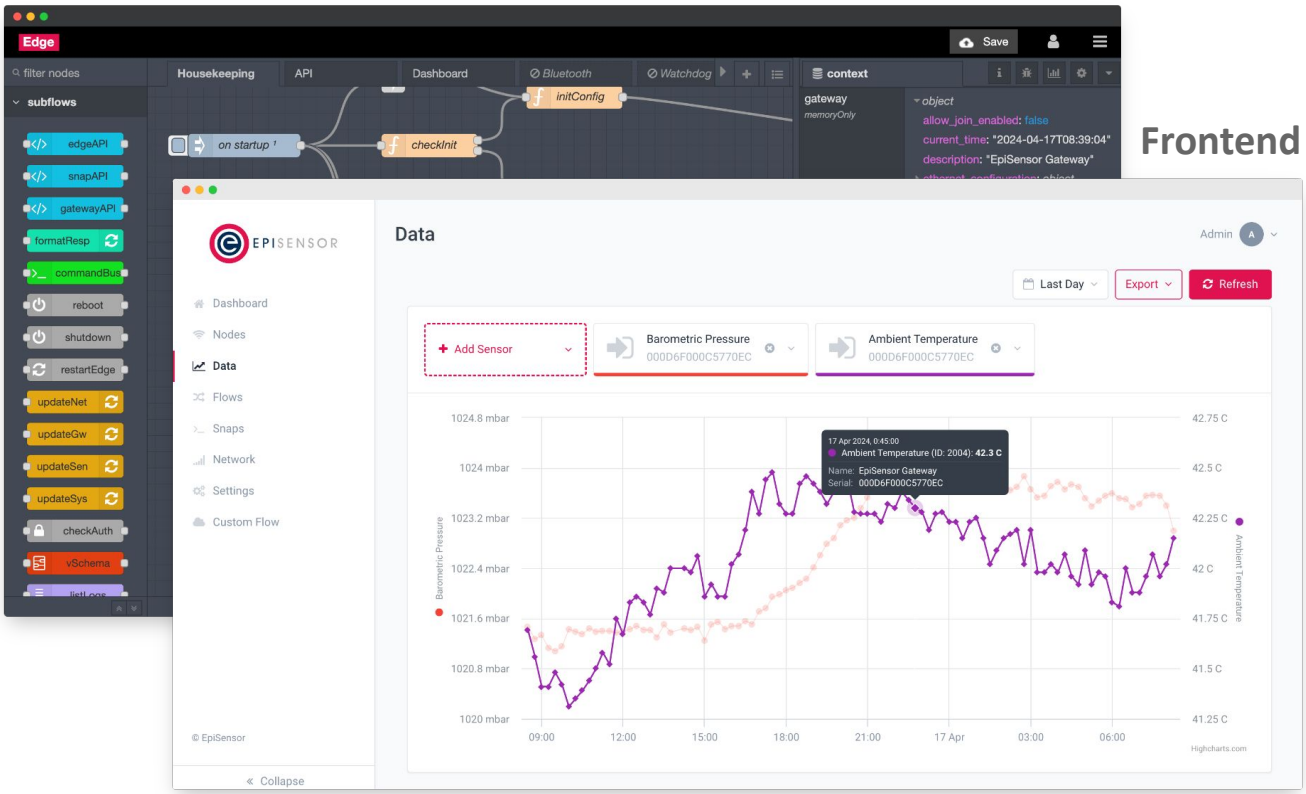
Designed and manufactured in Ireland

What Is Edge?

Edge is Easy-to-use Device Management and Automation software for IoT Gateways, developed by EpiSensor. It's also a comprehensive Visual Programming Tool for developing custom IoT integrations!

Backend

Frontend

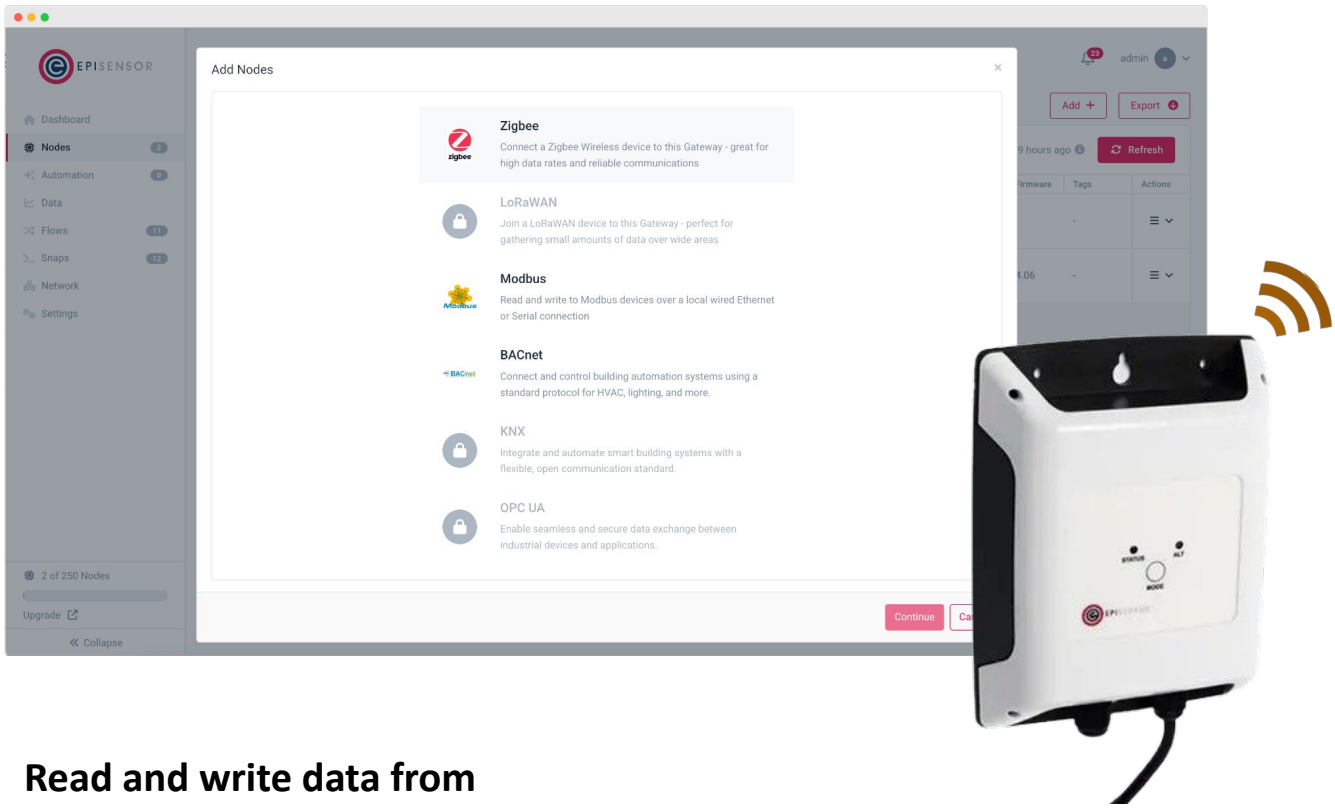


Designed to serve for <u>3 different audiences</u> at the same time, each with different needs:

1. **Software Developers**
2. **Installation Teams**
3. **Operations / Maintenance Teams**

Edge: Nodes

Connect hundreds of Wired and Wireless nodes to your EpiSensor IoT Gateway, and use Edge to unify data from a diverse range of protocols, sensors, inputs and outputs like Zigbee, Modbus, BACnet, etc.

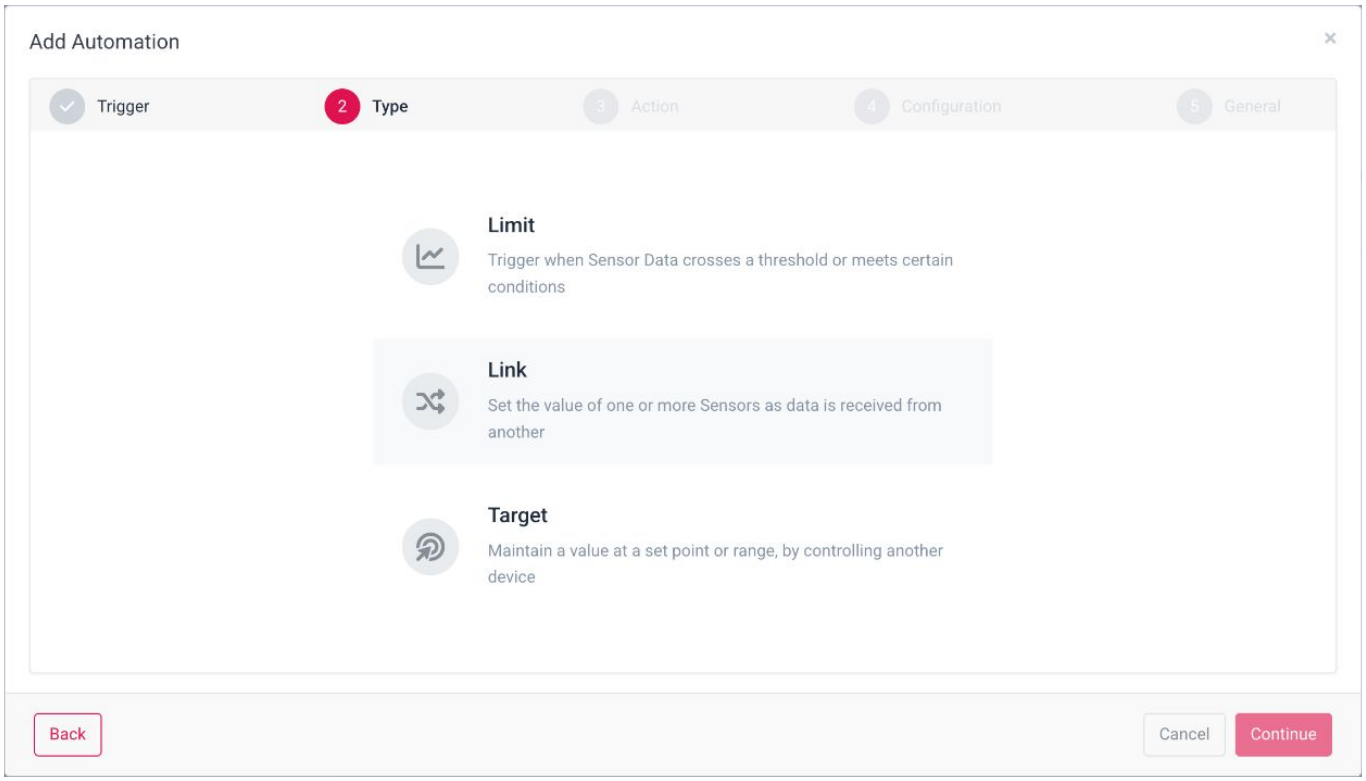


- ➔ **Read and write data from different sources**
- ➔ **Add and configure new nodes with a few clicks**
- ➔ **Intuitive UI for configuring complex industrial protocols like Modbus**
- ➔ **Backup Node config, apply the same config to other systems**
- ➔ **Support for hundreds of Nodes per Gateway**

“Edge abstracts users from the complexity of reading and writing to different data sources, presenting a common data model for all connected devices”

Edge: Automation

➔ Build complex rules that run locally for building automation, energy management, demand response, peak shaving, demand management, or just set up alerts to be informed when a threshold is exceeded or if a node status changes!

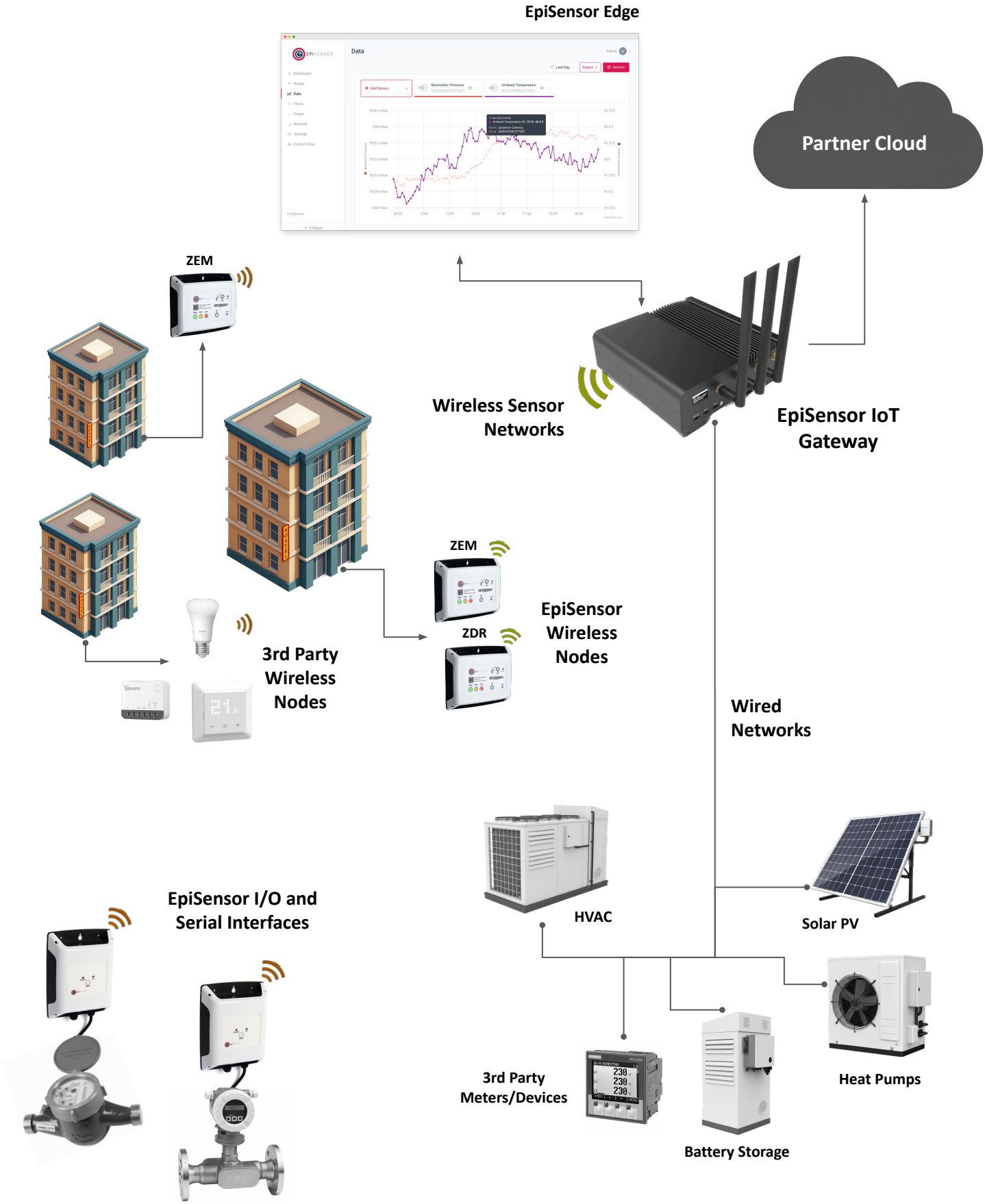


➔ **Build complex "if this then that" style rules**

➔ **Trigger them from sensor data, on a schedule, status change, cloud commands, or from an API call**

➔ **Automation executes locally on the Gateway, no reliance on external cloud services**

➔ **Implement thermostatic control, link the state of one sensor to another**

➔ **Email, Webhook and SMS alerts**

System Architecture