BACE Modbus Gateway is the perfect IoT solution that allows you to remotely access and manage your Modbus data through the Cloud. It is composed of a hardware module and a Cloud application, the **BACE IoT Connector**, that forwards the data to your platform or enterprise systems. With this solution, you are able to constantly retrieve data from your Modbus device in a reliable, easy, and secure way. BACE is a ready-to-use, quick to deploy solution that can be configured remotely through a portal to read and write exactly the Modbus registers that you choose, at the frequency you specify.

B A C E - Building A Connection Everywhere

BACE Modbus Gateway accomplishes remote Modbus management by pairing the BACE Module with a **Device Twin** in the cloud. The Device Twin is a digital replica of the BACE module that enables you to see the state of the device and the Modbus registers. If the BACE Module is connected to one or more Modbus devices, it will retrieve the data, and send it directly to the Cloud through the LTE-M or 2G network. Any adjustments made to the module are automatically synchronized with the Device Twin (and vice versa).

BACE Modbus Gateway is able to connect via a **serial** connection (RTU) as well as through a **TCP/IP** network. The data is constantly provisioned to your systems via the API of the BACE IoT Connector. The **API** follows an OAuth 2 Model for encryption, authentication and authorization, and has diverse access levels. BACE can also offer Webhooks, like event based automated messages that can be sent to your system anytime an event occurs.

BACE's installation requires little effort. It is sufficient to connect the module to the Modbus, and its power cord to a 230V or 120V power supply. All this can be done by a technician without special training. Once installed, you can remotely configure from your desk through the Twin Device using tools in the BACE operation portal.

To protect your data and information, and to secure the IoT system, BACE Modbus Gateway has a **Secure Element** and uses a state-of-the-art IoT security mechanism. This mechanism has been developed by Microsoft and Microchip, and is centered on protecting both the hardware and software of each device. This secure technology contains the individual encryption certificate of each specific module and is protected from physical break-ins. In case of a forced attempt, the element destroys itself and the certificate, preventing any subsequent access to other parts of the system.

Some additional features that BACE Modbus Gateway offers:
- OTA – over the air updating for security, operational flexibility, and to be ready for future changes.
- Location – with the built-in GPS each BACE unit will report its location
- Connection to other systems – in addition to Modbus, BACE supports wired connections for other commonly used protocols.
- Solar Panel Powered version – for use of BACE Modbus Gateway outside.

The **BACE IoT Connector** allows you to connect, manage and store your data in an efficient and secure way. It serves as a connection between the BACE Modules and your platform, dashboard or enterprise system, allowing a dynamic data flow. The BACE IoT Connector is a Cloud application composed of different elements, including the IoT Hub, Databases, the Device Twin, the API and the Management Portal. The information collected by the BACE Module is transferred to the BACE IoT Connector in the Cloud, while the data is constantly provisioned to your systems via the BACE IoT Connector API.

The BACE Modules and the BACE IoT Connector are completely integrated, and together form a ready-made gateway with superior functionalities that enable you to implement an IoT solution quickly. These include end-to-end security with unique encryption certificates for each module, a set of tools that enables you to manage the operation and scale-up of your IoT solution, and multiple data transfer options (LTE-M, 2G, WiFi and Ethernet) for the best operational reliability. It is future proof, as the Over The Air (OTA) feature enables you to update BACE Modules you already have in use, adding new functions.
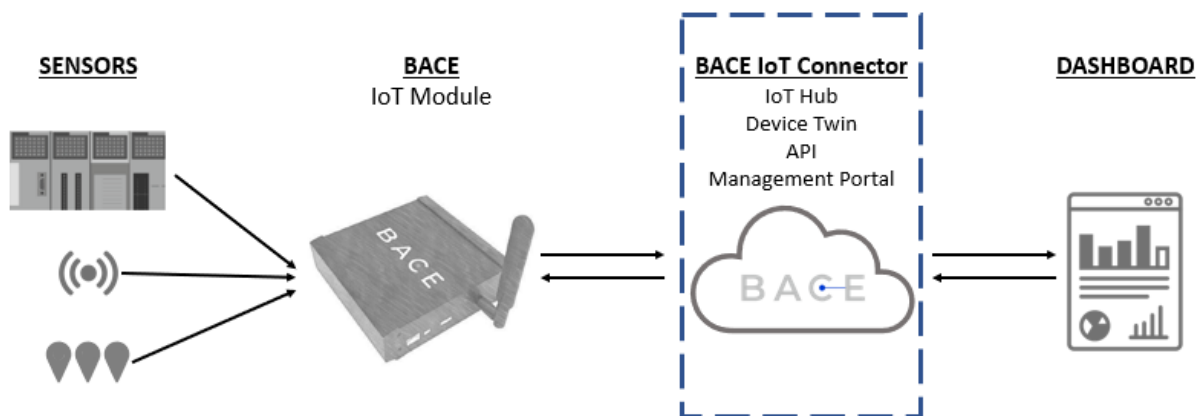
The BACE IoT Connector runs in the Microsoft Azure Cloud, and delivers top data protection and recovery options. Depending on the type of use and data access that best fits your needs, your data storage can be adjusted. BACE IoT Connector can deliver available, on-spot, ready to view data; or data from cold storage data systems used for delayed checks and referencing. The BACE IoT Connector makes automatic backups to ensure the least risk for data loss, and allows scaling services to provide high data availability.

The RESTful API implemented in the BACE IoT Connector allows you to extract data, set configurations and assign BACE Modules to users via your own enterprise systems. Integrating the BACE solution with your systems is easy for our clients, so you can operate with all portals you already work with. Alternatively, BACE offers an optional WebApp which has a number of visualization and analysis options and can be customized to fit your needs.