



BRK-2841M



Redundancy / Distributed MQTT Communication Server

BRK Series

MQTT Broker
Communication Server



- Built-in MongoDB
- Data Redundancy – Rapid Setup
- Security – Multiple Mechanisms
- MQTT Broker – Bridge and Cluster

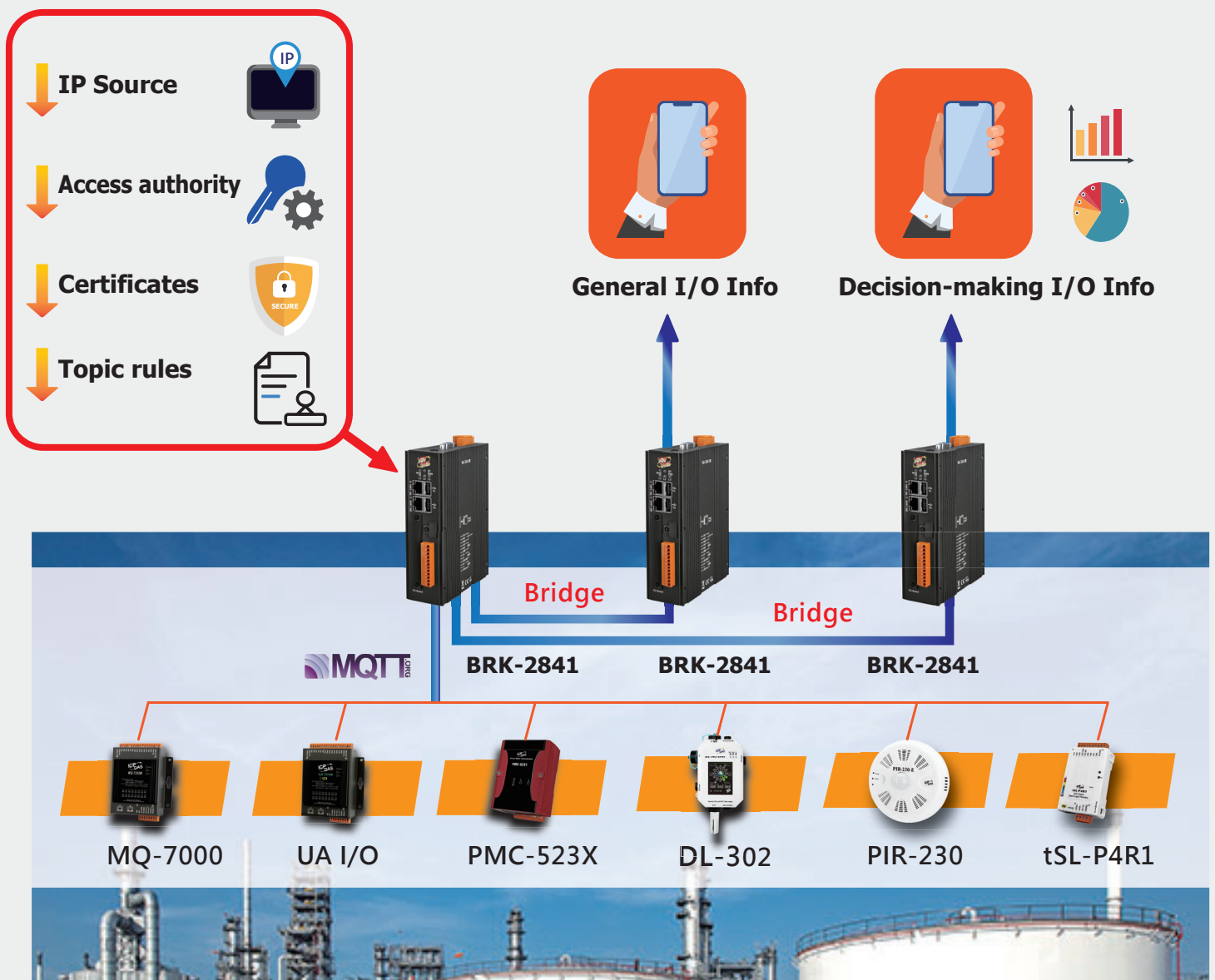
Monitoring Segmentation, enhance data security

Network Segmentation, defense in depth

In many enterprises, due to the large size of the plant, part of the area will control the access of the personnel, and spend a long time to solve the problem, so the enterprises will solve the problem by remote control system. However, remote monitoring will expose all the devices to the external network environment, if any one device in the system has a security problem, the operation of the whole system may be paralyzed.

BRK-2000 series can send the transmitted topics to the remote broker through the MQTT bridge mechanism, and the access authority can increase security. When remote monitoring is required, the plant's internal devices network environment can be segmented from the external network, so that the plant's internal system can continue to operate without being affected by the external network.

Data Security Management Applications



Plastic Injection Molding Machine Monitoring Applications

- >> Digitalization for recording
- >> Centralized message
- >> Data Graphing

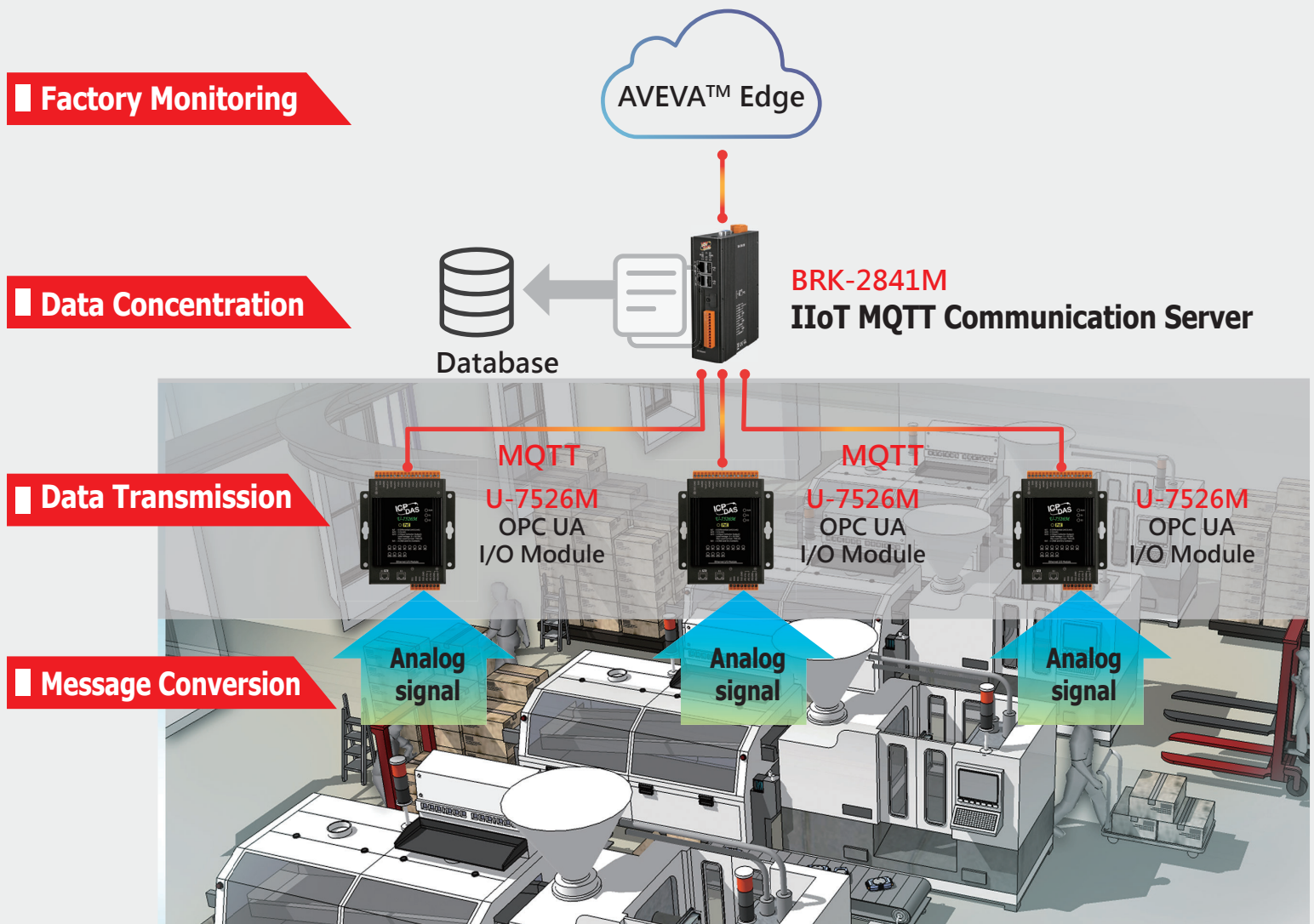
Due to labor costs increasing and manpower shortages in the manufacturing industry, how to digitize information is an important issue, companies have trouble integrating IT and OT staff because they have different perceptions, and eventually have to abandon the project. The difficulties, in this case, can be divided into the following items:

Hard to record Sensor value / Machine messages scattered / No Data Graphing

ICP DAS uses the U-7526M to convert analog signals into RESTful API / MQTT data to achieve the goal of "information digitization".

Projects	Before	After
Meter	Manual meter reading	Record in database
Machine Status	Manual inspection	Screen Monitoring
Quality	Manual adjustment	Data analysis
Management	Error-prone	Not error-prone
Communication	Difficult	Easy
KPI managing	According to experience	According to data

Architecture of ICP DAS:



Communication Redundancy Architecture

Redundancy:

- If the Main Broker fails, the Backup Broker will take over the service automatically.
- If the Main Broker goes online again, the Backup Broker will return the service.

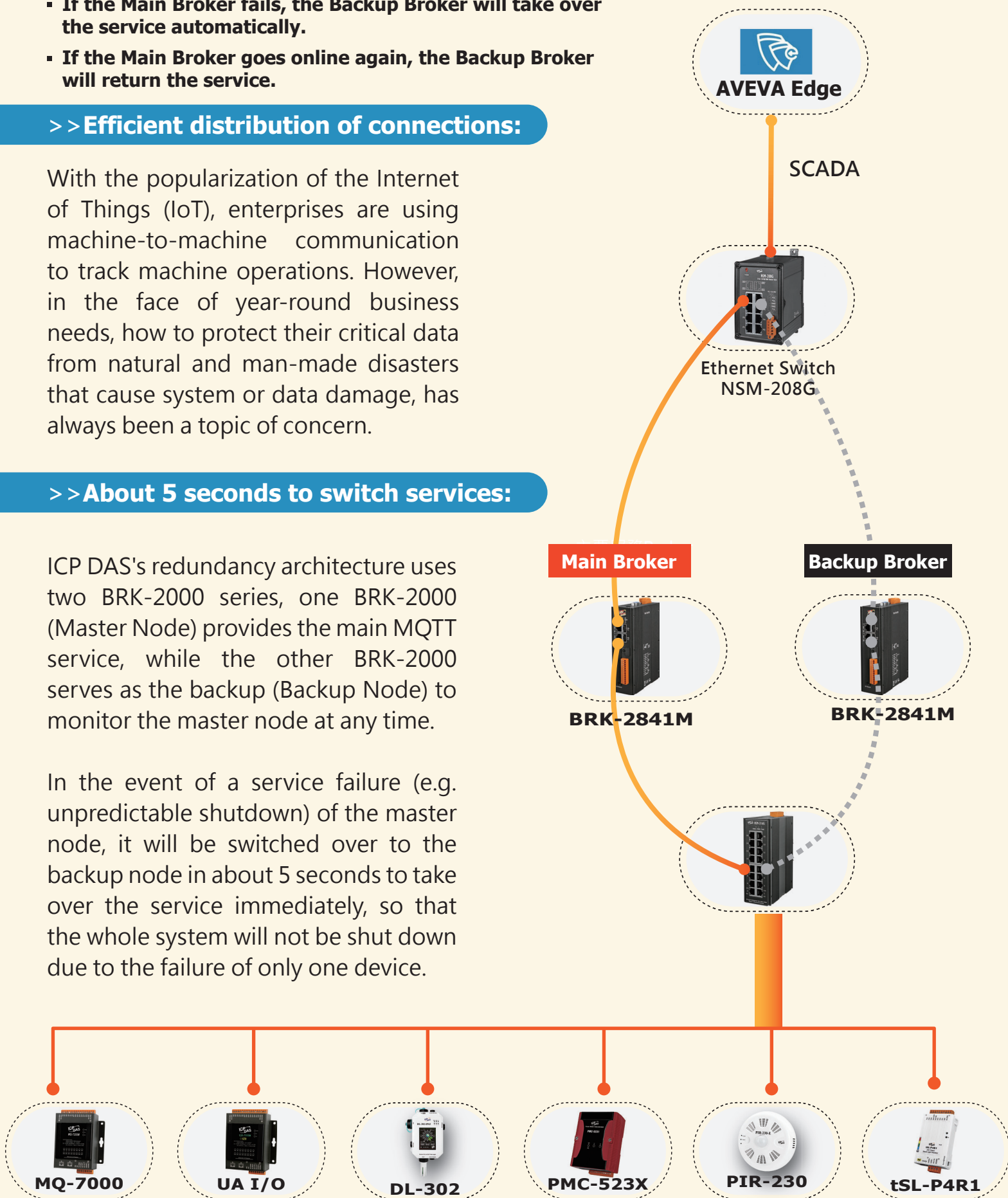
>>Efficient distribution of connections:

With the popularization of the Internet of Things (IoT), enterprises are using machine-to-machine communication to track machine operations. However, in the face of year-round business needs, how to protect their critical data from natural and man-made disasters that cause system or data damage, has always been a topic of concern.

>>About 5 seconds to switch services:

ICP DAS's redundancy architecture uses two BRK-2000 series, one BRK-2000 (Master Node) provides the main MQTT service, while the other BRK-2000 serves as the backup (Backup Node) to monitor the master node at any time.

In the event of a service failure (e.g. unpredictable shutdown) of the master node, it will be switched over to the backup node in about 5 seconds to take over the service immediately, so that the whole system will not be shut down due to the failure of only one device.

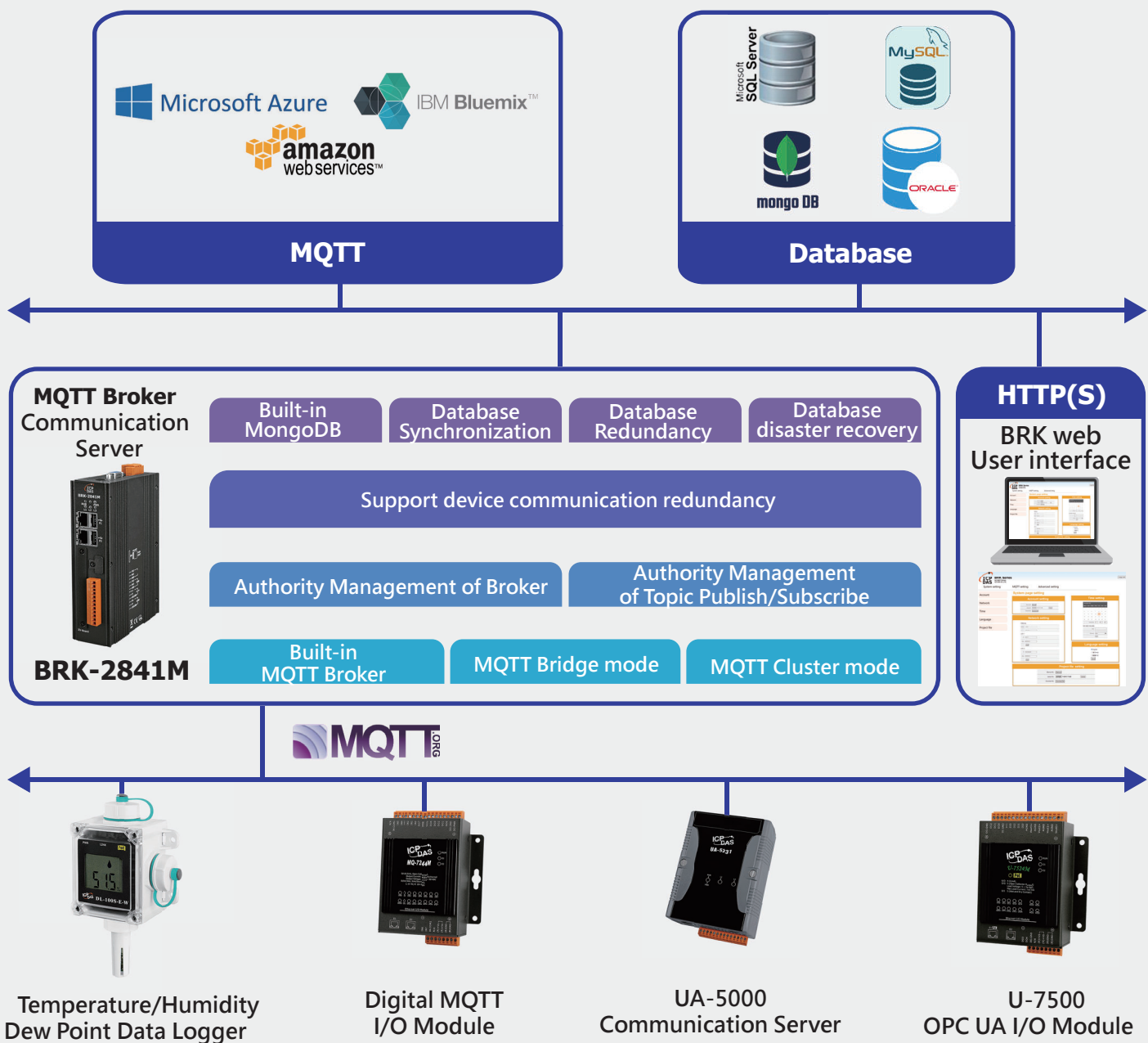


MQTT Broker Communication Server: BRK Series

BRK Series is a Communication Server that specially provides the Broker function of MQTT protocol for MQTT message distribution and concentrator in M2M and Industrial Internet of Things environments. The BRK Series is compatible with the MQTT version V3.1, V3.1.1 and V5.0 protocol. It supports many functions such as QoS message quality mechanism, retains mechanism, identity authentication, communication encryption, last message (Last Will), and bridge.

The method of Web UI settings can quickly set up BRK functions. This reduce the burden of setting up the broker by user oneself and the maintenance cost. Besides, BRK Series provides Bridge, Cluster, Load Balancer, and High Availability functions. By forming multiple BRK Series a group to a better Redundancy system can prevent field systems from stopping services due to hardware or network failures.

System Architecture



Hardware Specifications

Main Unit	CPU	Quad-core ARM CPU, 1.6 GHz/Core
	SDRAM	DDR3 SDRAM 2 GB
	Storage	eMMC 8 GB
	Non-Volatile Memory	FRAM 64 KB, MRAM 128 KB
LED Indicators	Status	1 x PWR, 1 x RUN, 3 x User Defined LED
HMI	Rotary Switch	1 x 10 Position (0~9)
Ethernet	Ports	RJ-45 x 2, 10/100/1000 Base-TX (Auto-negotiating, Auto MDI/MDI-X)
USB	Ports	2 x 2.0 host
Power	Input Range	+12 ~ +48 VDC
	Consumption	4.8 W

Software Specifications

Function		Description
Built-in Database	Support MongoDB	Data can be recorded into the built-in database, no extra database setup is required.
	Data Redundancy	Two or more BRK-2841M consist of a redundancy group in which all databases are synchronized to achieve data redundancy.
	Database Failover	Two BRK- 2841M will monitor each other and in case of failure, the other device will take over to ensure that the database recording is not interrupted.
	Writing Speed	20 times/second
Rapid Setup	Redundancy System	Two or more BRK-2841M form a redundancy group and monitor each other, when the host that mainly provides MQTT service fails, the redundant device will take over to continue providing MQTT service to achieve Broker redundancy.
Information Security Protection	HTTPS	The built-in web server supports HTTPS to ensure the communication is secure.
	Broker permissions	Allow/prohibit connection requests to the Broker from specific IP addresses, filtering from the connection to enhance the stability and security of the Broker.
	Topic Publish/Subscribe	Allow/prohibit publish/subscribe to the Topics, define the Client authority that has been filtered, and prevent important Topics from being falsified or read by others.
Built-in MQTT Broker	Max. Number of Clients	100000 connections
	Max. Number of Topics	100000 records
	Support MQTT Bridge	In Bridge mode, you can transfer data between multiple Brokers to each other, forward the data to a specified Broker to subscribe to a topic on a bridge node, and then publish the data locally or to a Broker at another location.
	Support MQTT Cluster	The continuity and availability of MQTT service is guaranteed by two BRK-2841M working together, it is very important for enterprises that cannot afford downtime.



ICP DAS CO., LTD.

+886-3-5973366 ✉ info@icpdas.com / sales@icpdas.com 🌐 www.icpdas.com

