



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

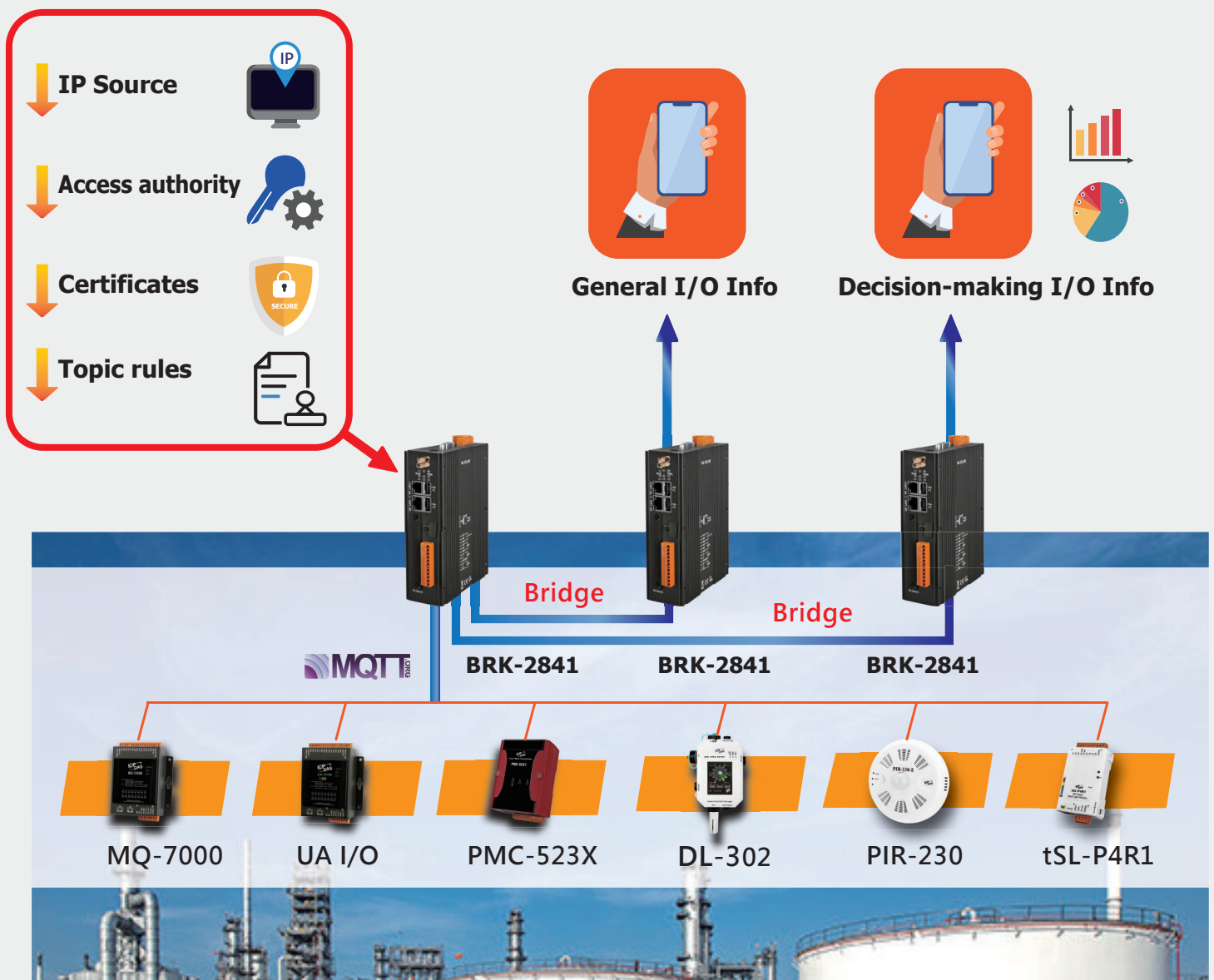
Monitoring Segmentation, enhance data security

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

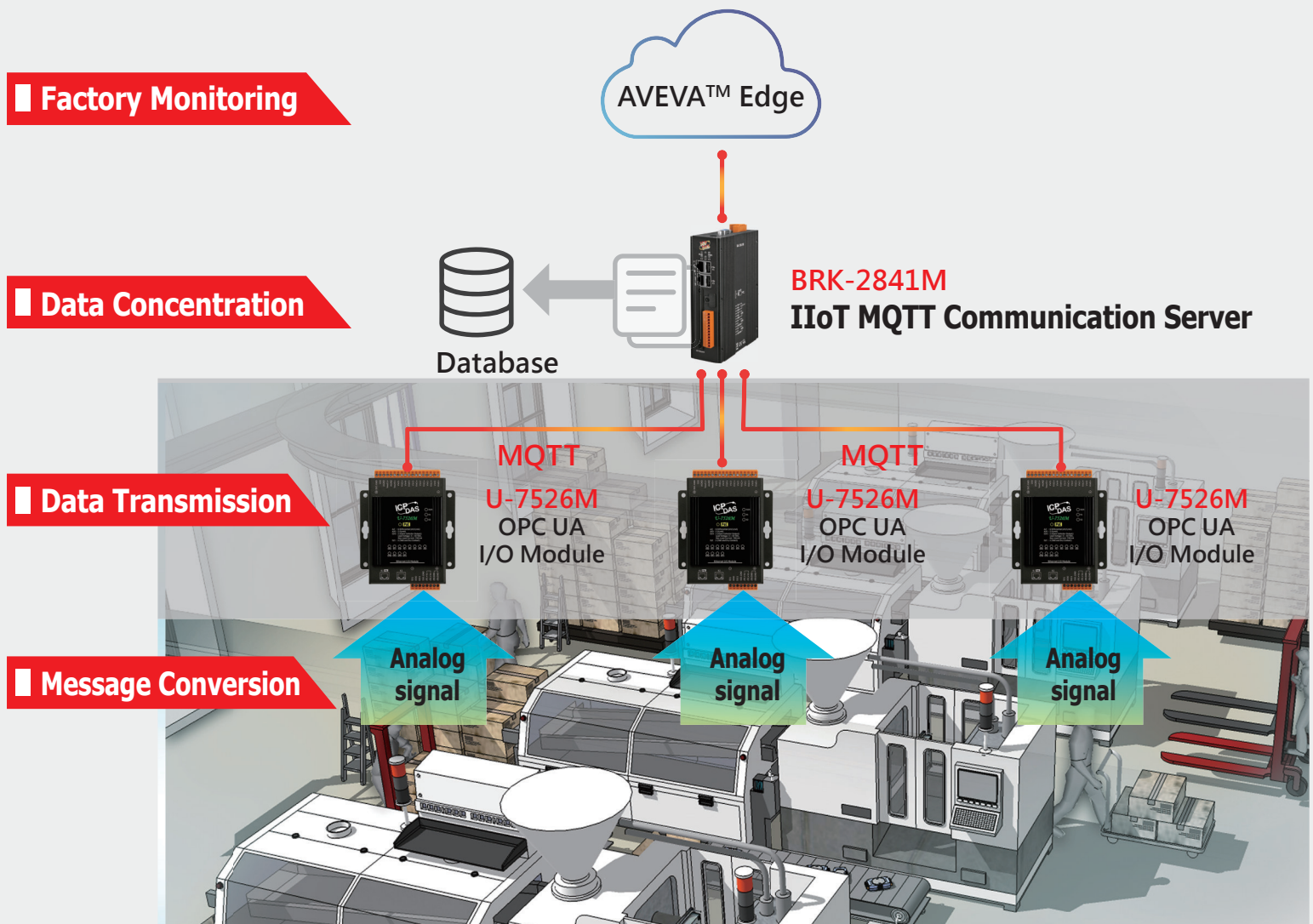
Due to labor costs increasing and manpower shortages in the manufacturing industry, how to digitize information is an important issue, companies have trouble integrating IT and OT staff because they have different perceptions, and eventually have to abandon the project. The difficulties, in this case,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

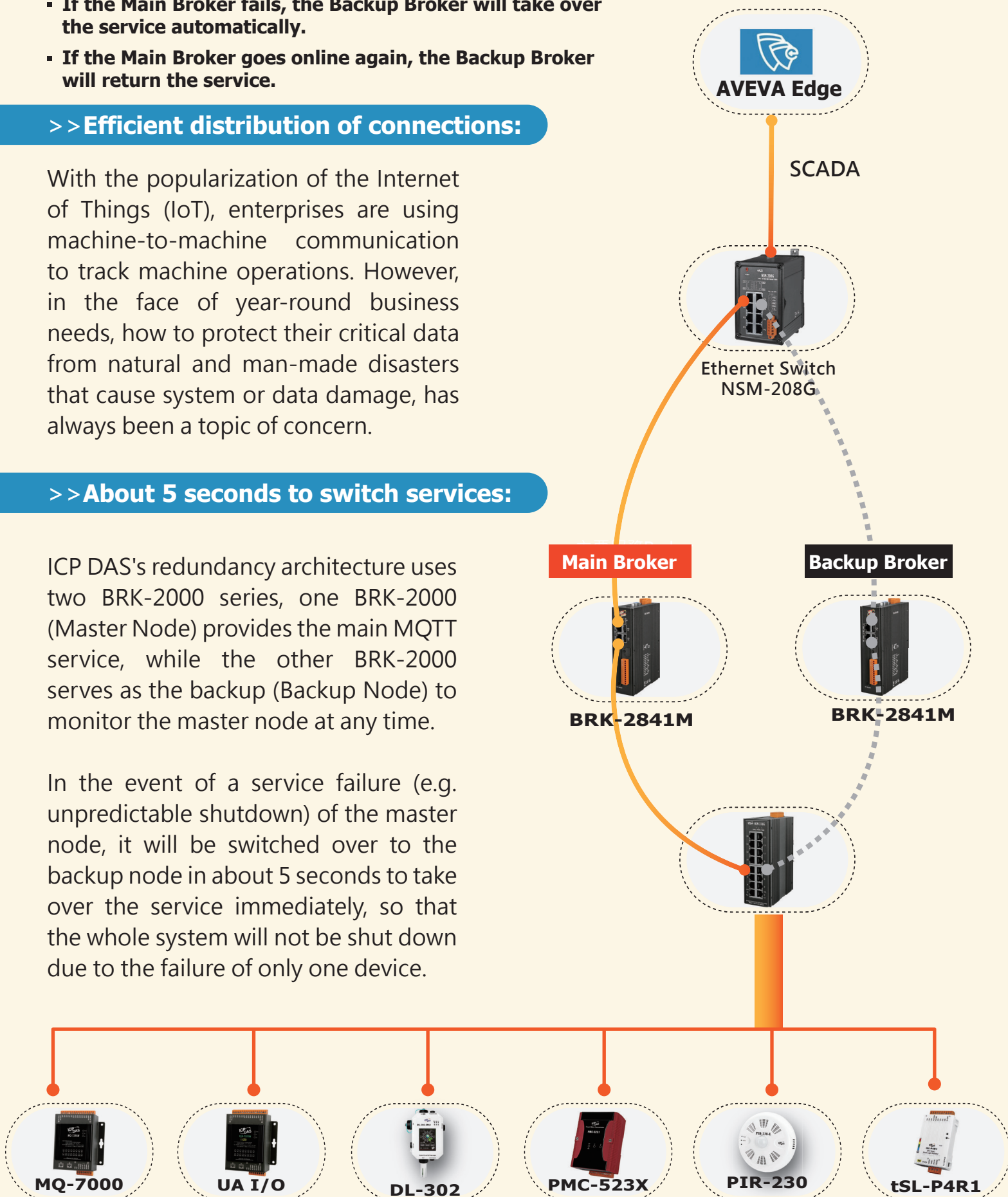
>>Efficient distribution of connections:

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.

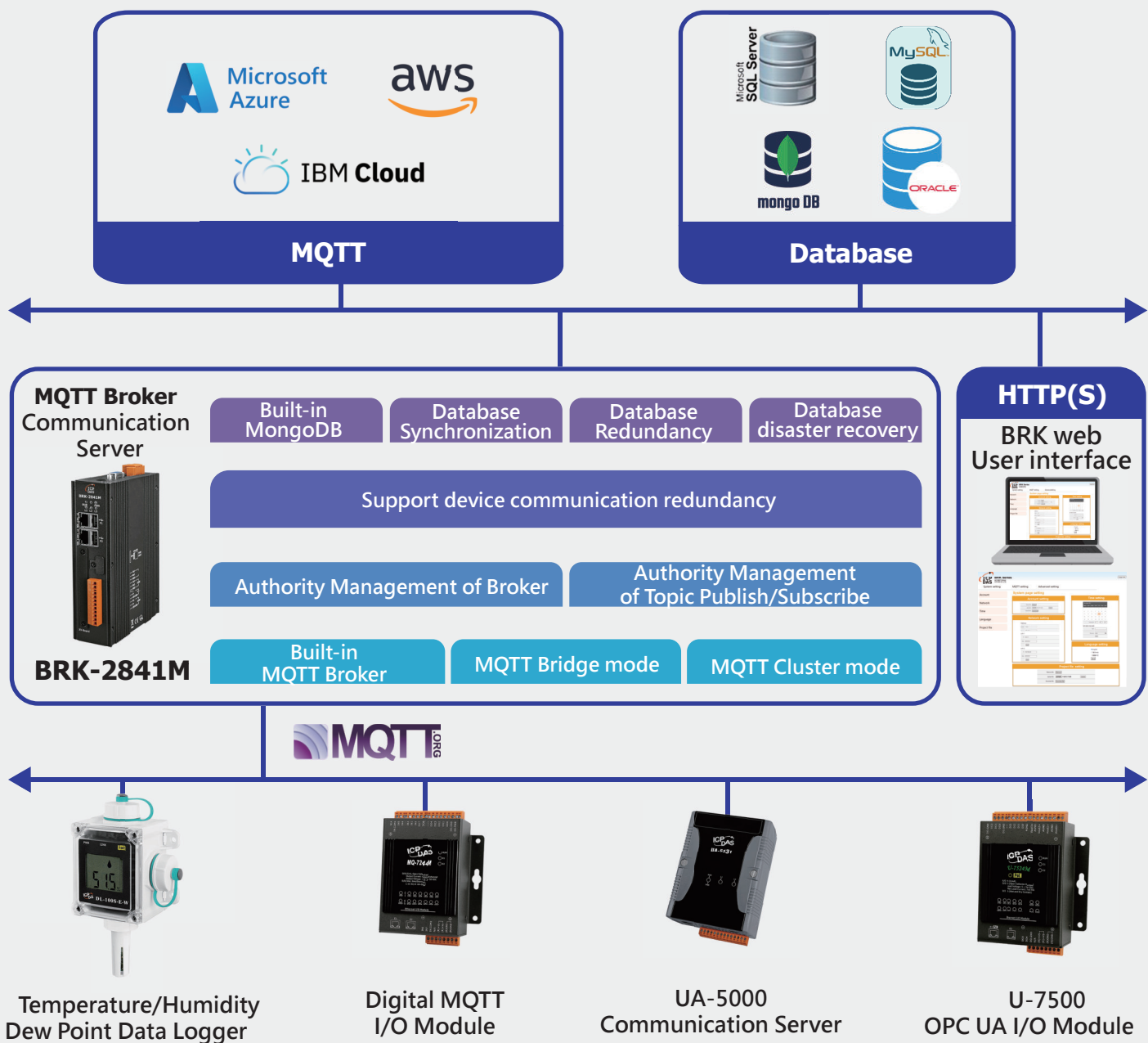


MQTT Broker Communication Server: BRK Series

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 V.3.1, V.3.1.1 and V.5.0 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	DDR4 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	10 W

Software Specifications

Function	Description
High-Performance MQTT Broker Service	Fully supports MQTT V3.1 / 3.1.1 / 5.0 protocols.
	Equipped with QoS, Retain mechanisms, and Last Will functions.
	Built-in strict user authentication and communication encryption mechanisms. Supports Bridge and Cluster technologies, facilitating the construction of large-scale IoT networks.
Automated Failover	Supports High Availability (HA) architecture and Virtual IP configuration.
	Real-time health status monitoring.
	Automatically switches to the backup server within 10 seconds upon host failure, ensuring zero downtime.
Intuitive Web UI Remote Management	Built-in graphical web interface; no additional setup software required.
	Fast access and parameter configuration via standard web browsers, significantly reducing O&M costs.
Diverse Database Integration	Supports direct MQTT data logging into remote databases.
	Fully compatible with mainstream databases including MySQL, SQL Server, and MongoDB. Effortlessly bridges OT edge devices with IT analysis platforms, enabling real-time data aggregation.
Data Retransmission & Auto-Backfill	Automatically redirects data to an internal SD card during network instability. Supports up to 14 days of buffered local data storage.
	Sequentially auto-backfills cached data into the database when the connection is restored, ensuring absolute data and chronological integrity.



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