A 3-Part Look at **Smarter Solutions**

Part 2: HMI Database Integration

Smart Monitor & Control

HMI Database Integration

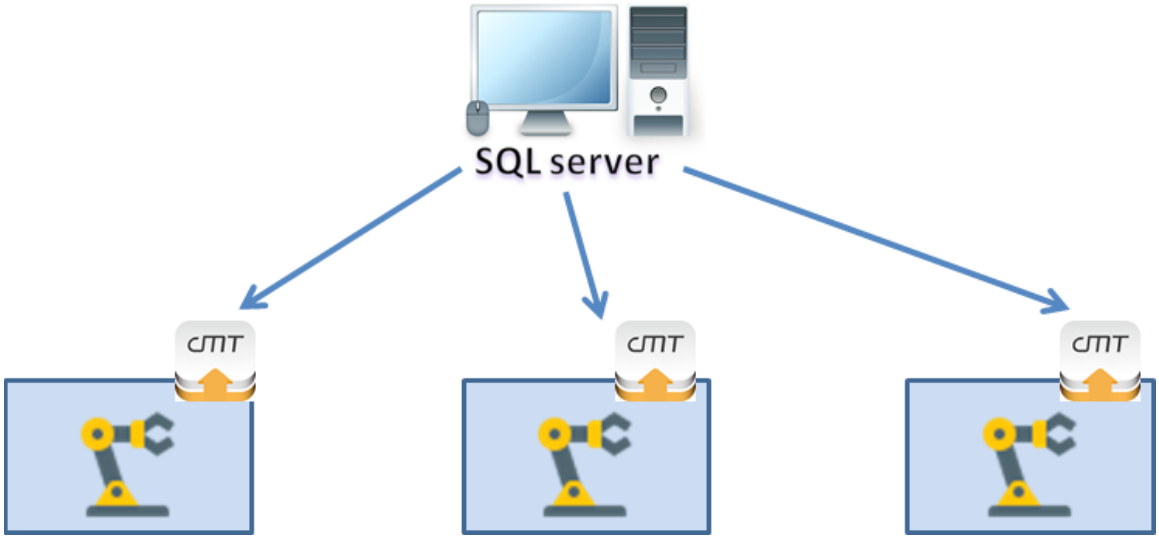
Manage your factory data quickly and easily with cMT Series HMI's built-in database connectivity.

The fourth industrial revolution is taking place right now, are you ready for it? Still trying to figure out how to make your factory work smarter and organize your control system data more efficiently? cMT Series HMIs equipped with easy-to-use database integration, can send machine metrics and production data or recipes to an SQL database system directly without any middleware system. That data can then be managed on a larger scale using batch database operations. Plus, the built-in database query viewer enables smooth operations using data on the databases. These features can simplify your processing work and save you precious time.

Collecting machine metrics is always a challenge for integrators. People use USB drives or FTP services to retrieve files from a machine, convert file formats, and then save them to separate tables or spreadsheets. This cumbersome work can become complicated when more and more files or machine metrics are added to the system. Instead, a better option could be to save machine metrics directly to a database. This has several benefits including simpler batch operations, no more file conversions, more storage options and spaces, and the ability to use well supported and documented SQL commands to customize your read/write/modify/delete operations on the database.

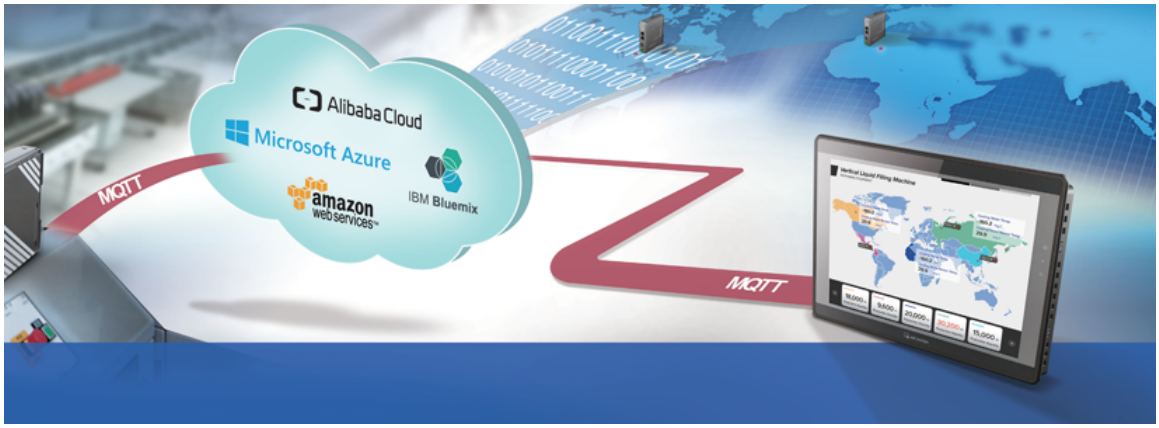
The built-in database integration in cMT HMI products can send real-time machine data, alarms, and events to databases, which can then be displayed on HMIs or cMT Viewer (PC/mobile remote-control app) capable devices. This can be done without writing any program code; an easy database solution. After saving the data into databases, IT experts can further analyze and make decisions based on the data, such as report generation, energy usage, and manufacturing record tracking.

The new SQL Query feature in cMT series HMIs provides a way to access database information from your control system. It can send and change recipes in a shared Recipe Database; batch recipe changes can be applied to all machines at once. The SQL Query object also accepts customized SQL commands for filtering and statistics, such as OEE (Overall Equipment Effectiveness) calculation, unit production rate, averages of numbers, standard deviations, etc.



With 300+ communication drivers, cMT products can help send a huge amount of machine information to databases. Other features of cMT Series HMIs include connecting to barcode readers, IP cameras, remote access from phones and tablets, and built-in IIoT connectivity. These features will not only simplify your work, but also increase the values of your product.

MQTT Cloud Data Center Support



The popular IIoT protocol MQTT can effectively upload data and realize field-to-center secure data exchange. Designed to be lightweight, open, and simple, MQTT is a subscriber/publisher messaging transport protocol that is considered a great solution for applications where small code footprint is required and/or network bandwidth is scarce. It is particularly suitable for continuous monitoring of sensory data such as temperature, pressure, water level, energy monitoring, etc.

An MQTT server (or broker) is responsible for all message exchanges, and no MQTT architecture is operational without one. However, all the tasks involved in deploying an MQTT server can make it seem like daunting job: shortlisting a suitable MQTT server, deciding on server location, installation, testing, tuning, maintenance, traffic control, and addressing security concerns. As a result, deployment of an MQTT server often poses an obstacle for the less-IT-inclined engineer.

Fortunately, things have changed now that Weintek MQTT is compatible with many of the major cloud services on the market. Fetching PLC data and pushing it to IoT hubs like Amazon Web Service (AWS), Microsoft Azure, and Alibaba Cloud has never been easier. Using cloud services to deploy a secure MQTT server not only requires little manual set up, but can also be more cost-effective than setting up from scratch. In addition, taking advantage of the analytic features from cloud providers such as advanced data analysis, cloud computing, and database storage tools can offer further insight into your data.

With more than 300 communication protocols plus IIoT support, our Advanced and cMT HMIs are able to collect data from a variety of different sensors, modules, and PLCs, and upload the data via MQTT, realizing field-to-center secure data exchange.

Our easy to use configuration software provides users maximum flexibility when it comes to MQTT configuration. Among the adjustable options are QoS, retain messages, customized username/password length, TLS/SSL support, support for V3.1.1, support for JSON and RAW data payloads, support for multi-layered topics and wildcards...etc., all of which are in place to ensure compatibility with most MQTT servers.

We are also one of the first to roll out support for the AWS IoT Device Shadow service. This innovative service, which creates a virtual representation of the actual device in the cloud, can be considered an example of a Cyber-Physical System of Industry 4.0. In practice, the virtual device in the cloud closely tracks the states of the actual device and reports its status to the HMI. The HMI is able to set the desired states of the virtual device even if the actual device is disconnected from the network, which effectively achieves remote control of the actual device, as the virtual devices' states are synchronized to the actual device as a default rule on reconnection. In this manner, AWS IoT Device Shadow service overcomes the problem with MQTT alone: the difficulty of implementing remote control.

Send your data to the cloud today with MQTT!

Maple Systems INC.

Visit www.maplesystems.com to learn more about our cMT products.