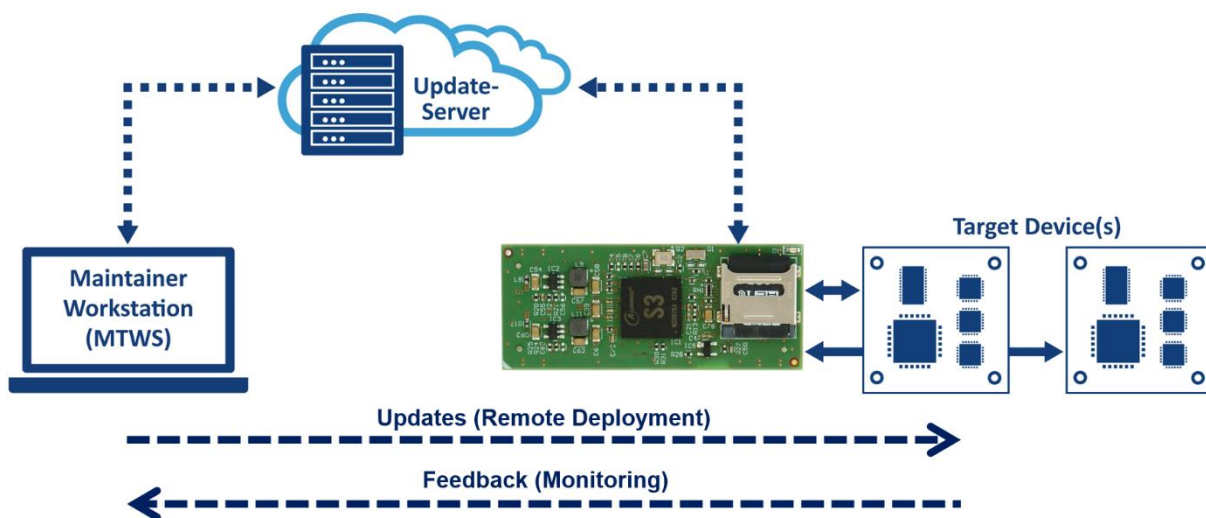


eDO/8331: Embedded DevOps Technology Kit

DevOps are a combination of people, methods, processes, technologies and tools to create high-quality software products or software-based solutions and to operate them in real-world applications. The term "DevOps" itself is made up of "Dev" (development) and "Ops" (operations) and thus refers to cooperative collaboration with the help of agile project management. Embedded DevOps differ significantly from DevOps in the IT world in terms of team constellations, testing procedures, deployment and feedback mechanism (monitoring).



With the help of the embedded gateway device DNP/8331, we created the powerful and easy-to-use eDO/8331 technology kit to master the special challenges of embedded DevOps. For your first evaluation, an ESP32 can be used as a target device, which will be connected to the DNP/8331 via USB. Overall, the eDO/8331 scope of delivery includes the following function blocks:

MWTS Tools is a software for digital signature generation to update files and it also works as a maintainer update client for uploads to the update server. The software runs on workstations with Apple, Microsoft and Linux operating systems.

Update Server is a Docker-based server software with HTTPS update interface for MTWS uploads and the DNP/8331 downloads. It requires Amd64 Docker runtime environment with a read/write volume for configuration data storage. In addition to the HTTPS update interface, the eDO/8331 update server offers an administrator management interface.

DNP/8331 is a carrier board with DNP/8331 and embedded Debain Linux operating system, eDO/8331 firmware and USB host interface. It requires an external 5 VDC power supply and USB cable link to an ESP32 evaluation board as a target device (e.g. ESP-WROOM-32).

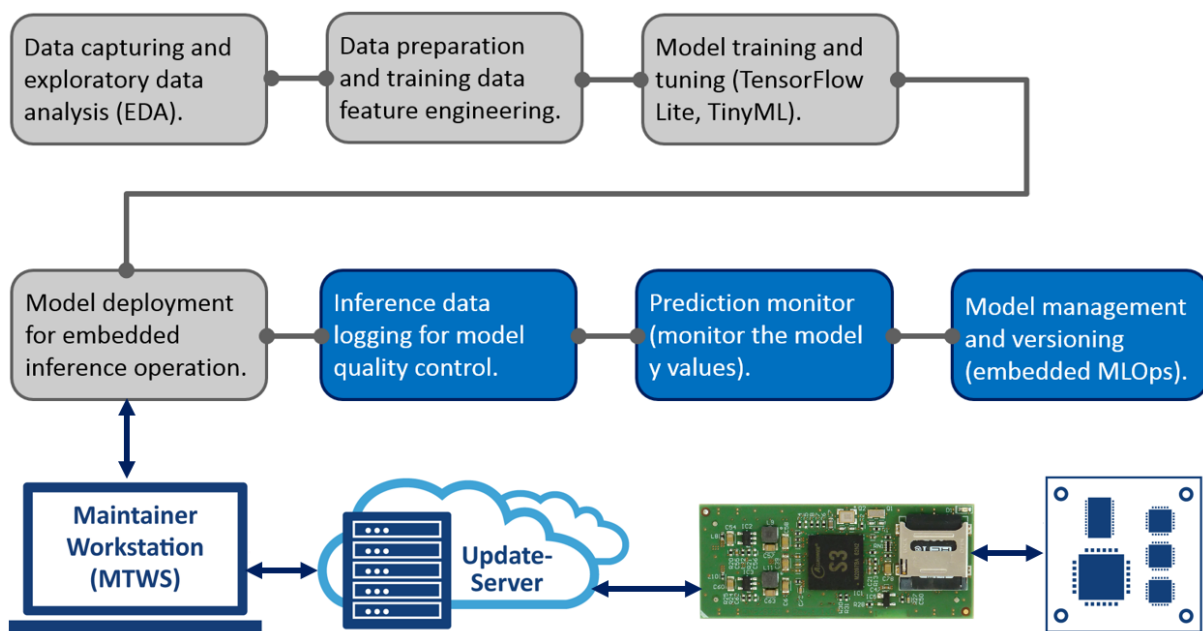
SSV Software Systems GmbH offers an online webinar with the focus on *How to use embedded DevOps for ESP32 development.*

Access Link: www.ssv-embedded.de/events/2022/webinar_iot-security/

eDO/8331 Use Case: Machine Learning Model Updates

Many sensor systems in industrial condition monitoring and predictive maintenance applications are based on machine learning (ML) algorithms and model files. These files are built within powerful cloud environments with big amounts of training data and used far from any cloud for inference applications on embedded devices (in some applications direct within industrial sensor equipment).

ML models need to be updated to remain accurate. The reason for that fact are static training data sets, from which ML models extrapolate patterns and relationships and form predictions about the future. As real-world conditions change, training data may be less accurate in its representation.



The eDO/8331 function blocks can be fully integrated into embedded DevOps for the development and maintenance of TensorFlow, TensorFlow Lite or TinyML machine learning models that are used for inference tasks in edge devices at different locations. State-of-the-art cybersecurity ensures end-to-end security for update source authentication and file integrity using digital signatures based on asymmetric cryptography.

For additional information visit our website: www.ssv-embedded.de/en/custom/embedded_devops