BOHEMIA AUTOMATION

EVA ICS v4®

Extended Industrial IoT Automation platform

DCS | SCADA | MES

High Energy · Smart Cities · Defense · Heavy Manufacturing · Smart Farming

EVA ICS Advantages

EVA ICS is an extended automation platform that offers a set of pre-engineered tools and instruments for industrial integration.
It offers modular, ready-to-deploy components that streamline the development and deployment of IIoT solutions.
This approach minimizes complexity, ensuring faster implementation and greater consistency across projects.

• Time-saving advantage:

Leveraging pre-built components, integrations, community resources, and documentation,
accelerating system development significantly, and providing a robust foundation
for constructing flexible, scalable, and efficient solutions,
delivering them 10 to 20 times faster than conventional development approaches

• Top-tier performance, reliability, and security:

EVA ICS is fully built in Rust, a high-performance, reliable programming language.
EDGE deployment enables the creation of a fully isolated cloud to host mission-critical
components on private hardware.
All communications are additionally encrypted with industrial-grade algorithms
(FIPS-140 complaint)

• Structured documentation and Support:

Comprehensive documentation and support resources for quickly finding solutions
to common challenges and troubleshooting issues. Available SDK: Rust, Python, JS/TS, C++

• Unlimited Scaling and rapid deployment:

Scalability features to expand your solution as needed without significant architectural changes.
Starting with a smaller-scale system and adding more nodes, components, and devices.
Fully compatible with Infrastructure-as-Code practices for seamless system management.

• Cutting-Edge Protocols out of the box:

MQTT, Modbus, OPC-UA, IEC 60870-5 (101,104) , OPC-UA, TwinCAT/ADS, CANbus, Ethernet/IP,
1-Wire, SNMP v1-3

Overview of EVA ICS v4

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Security

By leveraging edge deployment, EVA ICS v4 facilitates the establishment of a fully isolated cloud on your hardware, hosting all components essential for mission-critical systems.
This configuration empowers you to control data sharing with third parties.
All communications are encrypted using industrial-grade algorithms, ensuring compliance with FIPS-140 standards.

Zero Vendor Lock-In

EVA ICS v4 supports multiple fieldbus types, enabling seamless integration of new equipment into existing installations.
This flexibility allows you to select solutions that best meet your specific requirements without being confined to a single vendor.

Real-Time Control and Monitoring

Each node in EVA ICS v4 is capable of managing millions of objects and events, providing real-time equipment control, monitoring, and data collection without the complexities associated with traditional SCADA applications.

Unlimited Scaling

The platform's cloud architecture can be effortlessly expanded by adding nodes, either within the same facility or across different locations.
For nodes experiencing heavy loads, tasks can be distributed across clusters of local machines, each handling specific functions such as fieldbus control, HMI applications, database gateways, and more.

Reliability

EVA ICS v4's industrial control system is segmented into robust processes, ensuring stability and resilience for each node and streamlining operator workflows.
Inter-process communication is optimized using BUS/RT, a high-speed internal IPC bus that surpasses competitors in performance.

Flexible Management Tools

The platform offers versatile tools designed to simplify industrial control system management and automate routine tasks.
The EVA-shell console application enables efficient resource management across all nodes, while the EVA ICS Cloud Manager UI provides an intuitive desktop dashboard for comprehensive oversight.

Rapid Deployment

Adopting an Infrastructure-as-Code (IaC) approach, EVA ICS v4 streamlines configurations, allowing them to be easily replicated, exported, and deployed to new facilities, thereby reducing integration costs.

Modern HMIs

The HMI web service, coupled with the EVA JS Framework, ensures that all necessary data is automatically delivered to web browsers.
This setup facilitates the design and implementation of custom HTML templates and controls for a distinctive and engaging interface. The Interactive Dashboard Constructor (IDC) further enables the swift creation of complex HMI applications.

Alarm System

EVA ICS v4 features an ANSI/ISA 18.2-compliant alarm system with distributed alarms for monitoring and controlling remote nodes. Compatible with IaC, it supports the rapid deployment of thousands of alarms. A fully flexible API accommodates custom scenarios and integration with external monitoring applications, ensuring robust and scalable alarm management. Note that this feature is limited in the open-source version.
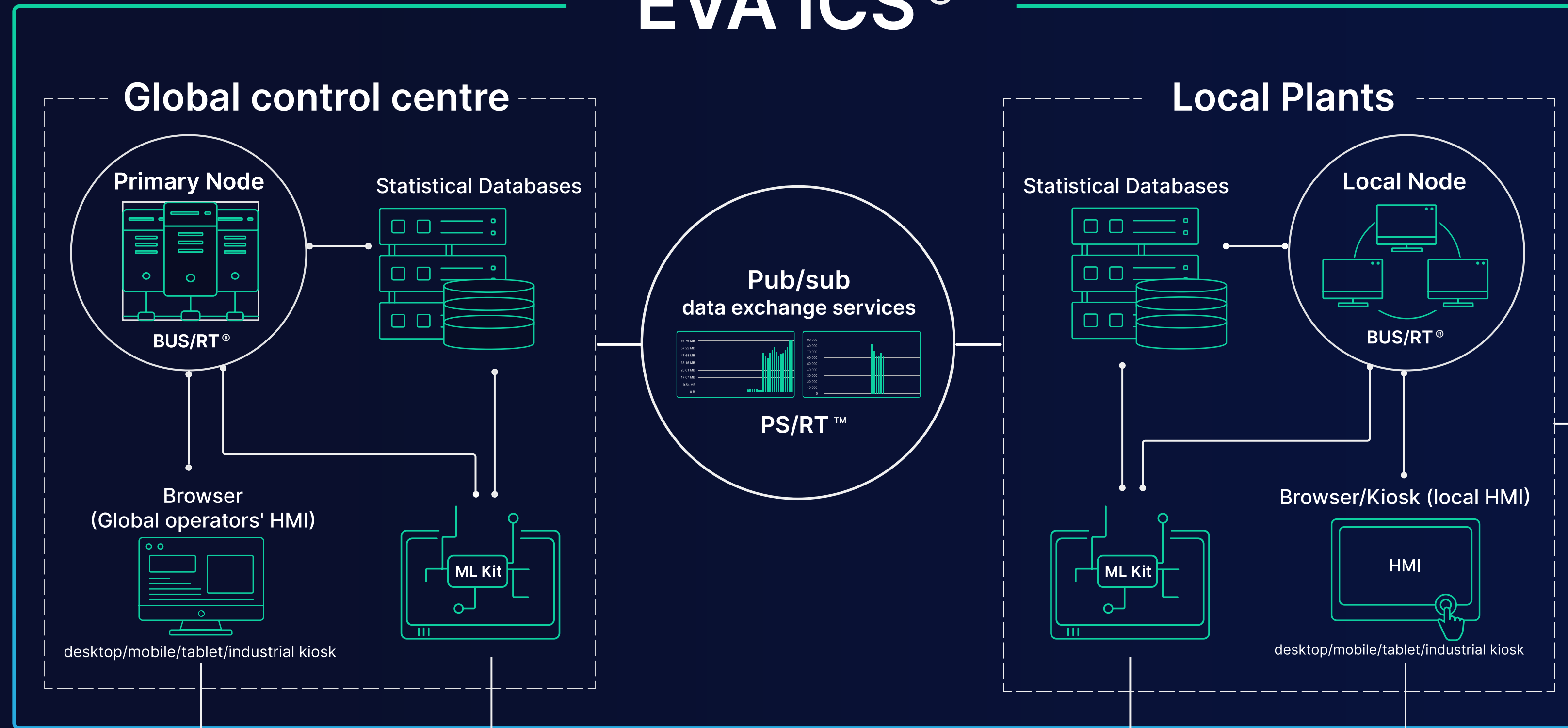
Operation Centre

The vendor-supplied UI application allows operators to create custom dashboards and perform typical monitoring and analytics tasks.
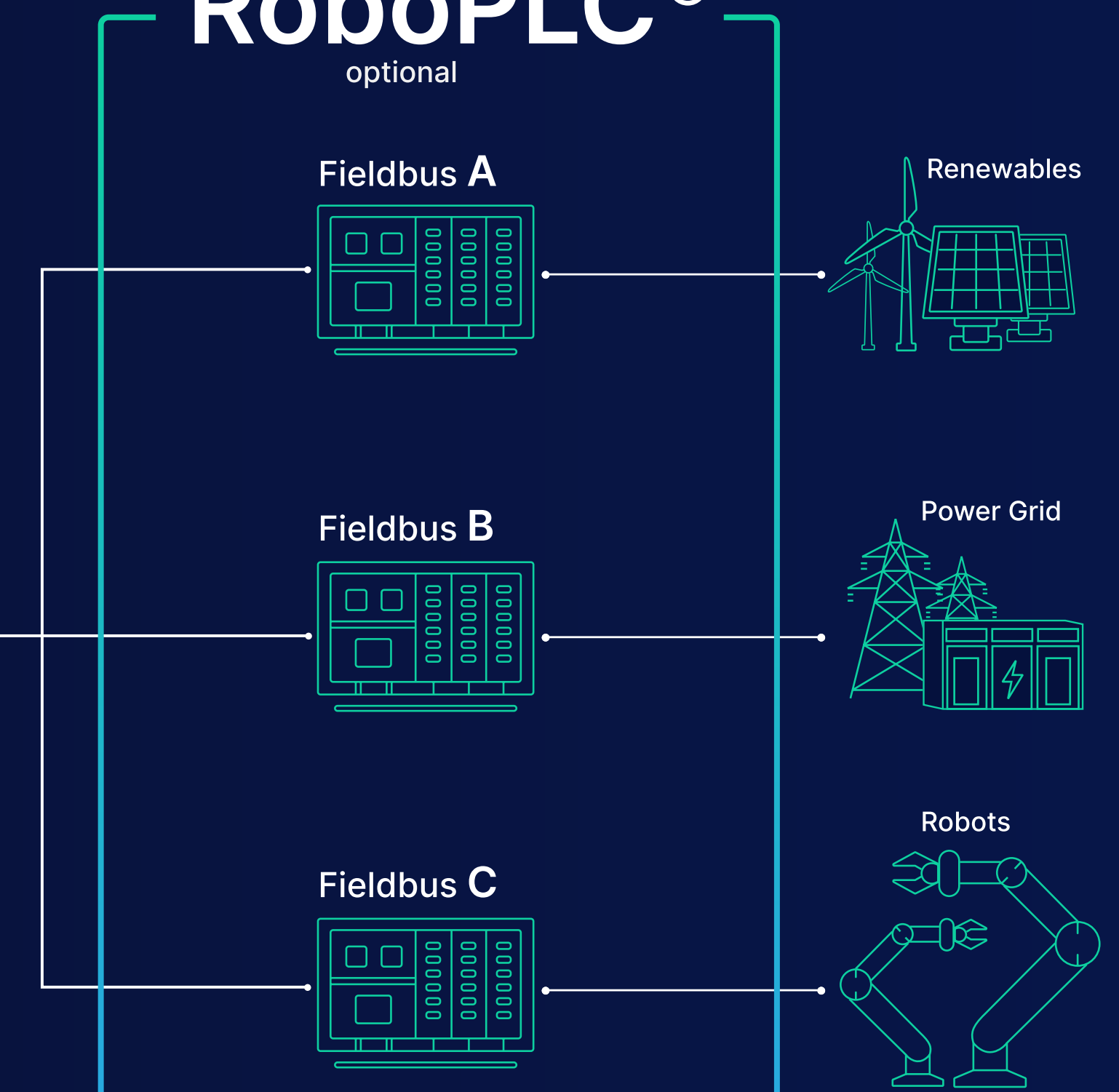
Efficient Solution Development

Comprehensive and well-structured documentation enhances the efficiency and ease of platform and solution development by providing detailed guidelines, references, and resources.
Available SDKs include Rust, Python, JS/TS, and C++.

Complete documentation https://info.bma.ai/en/actual/

Orchestration products scheme

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EVA ICS ®

Global control centre

Primary Node
BUS/RT ®

Statistical Databases

Browser
(Global operators' HMI)

desktop/mobile/tablet/industrial kiosk

ML Kit

Pub/sub
data exchange services

PS/RT ™

Local Plants

Statistical Databases

Local Node
BUS/RT ®

Browser/Kiosk (local HMI)

HMI

desktop/mobile/tablet/industrial kiosk

ML Kit

RoboPLC ®
optional

Fieldbus **A**

Fieldbus **B**

Fieldbus **C**

Renewables

Power Grid

Robots

HMI web applications

Data science / AI apps

HMI web app

Operation Center https://info.bma.ai/en/actual/

EVA ICS v4 Enterprise Pack

- ## Zero Replicationo-Failure:
  This event replication layer ensures 100% accuracy in telemetry event exchange between applications, such as cloud-SCADA nodes, addressing pub/sub-based event processing challenges.

- ## Machine Learning Kit:
  A suite of data science tools that facilitate the retrieval and formatting of data frames from EVA ICS databases. It includes pre-configured TensorFlow models for typical industrial IoT tasks like predictive maintenance, accident prevention, and auto-regressive planning. It is compatible with data analytics environments such as Jupyter Lab and Matlab.

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- ## Kiosk Manager Kit:
  This kit enables touch-panel kiosk interfaces to become a new SCADA standard for end-users, field engineers, and plant operators. It offers flexible and secure orchestration to manage numerous touch panels, enhancing security by allowing automatic authentication without the need for real login credentials.

- ## EVA JS Framework WASM Extensions:
  These extensions address web browsers' speed limitations in handling large volumes of objects and events in Web-HMI applications by offloading processing to secure, local web-assembly containers within the browser, resulting in significant performance improvements.

- ## Low-Latency Real-Time Mode
  EVA ICS v4 supports a low-latency real-time mode, enabling certain or all fieldbus tasks to be managed by EVA ICS services. This capability allows for the replacement of traditional fieldbus controllers, reducing the number of devices and associated costs while enhancing system reliability and flexibility. The platform's design ensures guaranteed low latency (less than 100 microseconds) for most real-time-critical tasks. For commercial use, EVA ICS Enterprise is required; however, non-commercial use of real-time functionality is available for free, though the real-time monitor is not included. This feature is available in EVA ICS v4.0.2 build 2024101301 or later versions.

  For non-commercial purposes, real-time functionality can be used for free. Real-time monitor is not available.

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Extended (optional) Product:

RoboPLC is a framework and suite of tools for creating both PLC (Programmable Logic Controller) and robotic real-time Linux applications in Rust. As a successor to the rPLC project, RoboPLC continues the evolution of Rust-based controller programming, providing:

- **Completely Rust-Based Design:**
  Utilises procedural macros for streamlined development.

- **Modular Architecture:**
  Framework components can be used together or separately, offering flexibility in application design.

- **User-Friendly API:**
  Ensures ease of use while maintaining powerful functionality.

Integration with EVA ICS v4

RoboPLC integrates seamlessly with EVA ICS v4, making it a powerful addition to your automation toolkit.
RoboPLC programs are Linux-exclusive, run in standard mode, and leverage the real-time capabilities of the Linux kernel.
This framework enhances the control and robotics capabilities of EVA ICS, offering unparalleled performance and reliability.

Contact Us

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