TRIAMEC

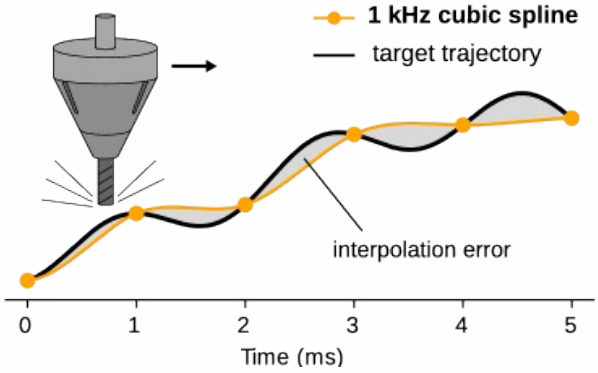
Redefining
Motion Control

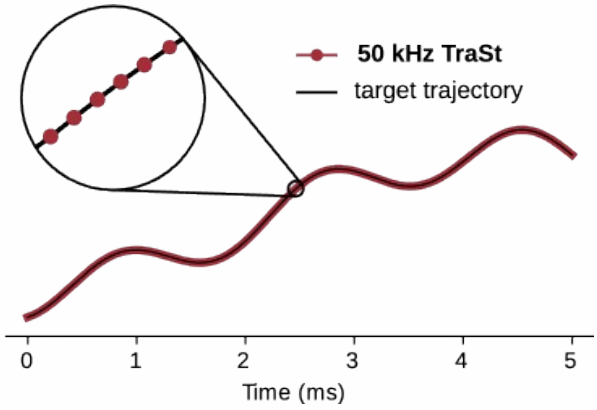
50 KHZ TRAJECTORY STREAMING
COORDINATED HIGH-SPEED MOTION

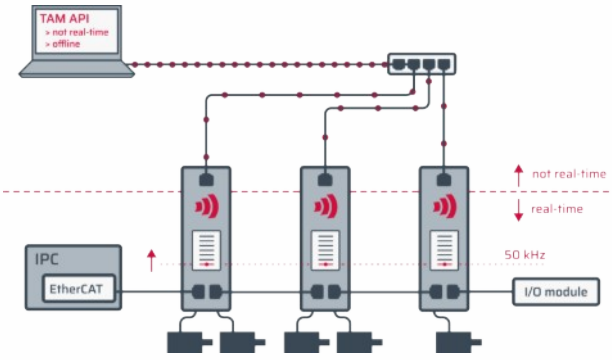
Trajectory Streaming (TraSt) lets you stream multi-axis motion paths directly to Triamec's high-speed servo drives without an additional high-level controller in between. This approach cleanly separates real-time execution from trajectory generation and solves two key challenges at once:

Ultra-high sampling rates

With real-time coordination handled entirely by the drives, TraSt can be configured with sampling rates of up to **50 kHz.** Such high sampling rates virtually **eliminate interpolation errors** and enable ultra-precise motion control. The feed rate of the trajectory points is user-adjustable and can be used as a feed override to control machine speed. The position and current controllers track the interpolated path at their usual 100 kHz update rate.







Real-time where it belongs

Position data is streamed via a standard Ethernet connection into a FIFO buffer on each drive. Once buffered, the points are processed synchronously at the drive level. This architecture decouples trajectory generation from execution. Path planning can run in **non-real-time** on a standard PC or even **offline**, while drives handle **real-time control.** This reduces host-system requirements and enables precise, coordinated multi-axis motion without a real-time PC.

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Integration in TAMA and TAM Software

TraSt is supported by Triamec's .NET environment, making setup and integration simple and flexible.

Feedforward Streaming and More

In addition to position data, custom **feedforward current profiles** can be streamed together with the trajectory. This enables the injection of advanced and fully defined, time-synchronized current profiles. Feedforward current injection can greatly improve controller performance, particularly in applications where load profiles can be calculated in advance or in systems following repeated trajectories.

Furthermore, TraSt can stream custom variables to operate connected devices – for example via the pulsing unit or analogue output modules. This allows the drive to directly control motion-dependent processes at a 50 kHz update rate, without requiring additional control hardware.

EtherCAT Integration

The TraSt feature supports integration with **EtherCAT-based systems.** The EtherCAT master ensures sub-microsecond drive synchronization across all axes. The trajectory data is streamed asynchronously via Ethernet and processed in real time.

Tria-Link Integration

TraSt also supports integration with the **Tria-Link fieldbus.** In this configuration, any Triamec drive within the ring topology can be configured as the **Tria-Link master** which ensures synchronization across all drives. The system operates fully distributed, with real-time coordination handled directly between the drives, without requiring an additional high-level controller.

TraSt is a direct successor to Triamec's **10 kHz Direct-Feed** with improved performance and drive-side buffering for distributed real-time coordination.

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