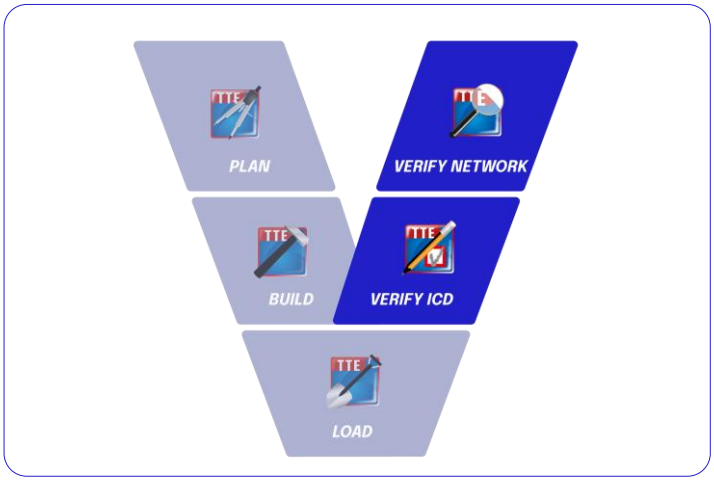
TTTECH

TTE VERIFY
TTEthernet Verification Tools

The qualified software tools for verifying TTEthernet network configurations



KEY BENEFITS

- Automated, repeatable verification of network configuration parameters against the network requirements
- Qualified tools per DO-330 allowing to automate verification steps for certification credit
- Find problems early, shorten verification time, automate iterative development cycles and achieve certification faster
- Based on open data formats used by the TTETools 5 development tool suite
- Command line interface for automation

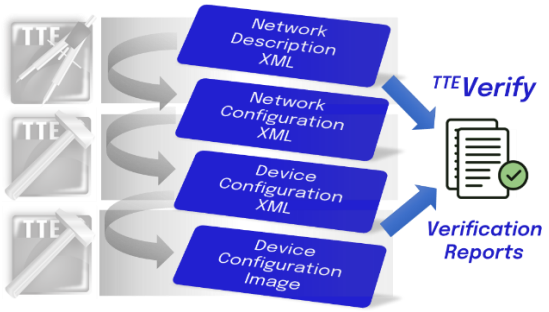
The TTEVerify product family of verification tools automates checking the validity and correctness of the network configuration data used within TTEthernet-based networks. Different inputs from the system-level communication requirements to the device-level configuration constraints are used and reports summarizing the verification results are generated. The verification process can be seamlessly integrated with the design processes of the TTETools development tool suite.

Automated Network Verification

TTEthernet switches and end systems require the loading of hardware-specific configuration data to use the devices within a network. The correctness of this configuration data, typically created by unqualified development tools, cannot be checked by the device itself. The TTEVerify verification tools automate the offline review of the configuration data against multiple levels of requirements, starting from the data format requirements of the loadable configuration data up to the user-defined network-wide communication requirements.
The main output of the verification tools are reports documenting the results of all checks performed on the configuration data. All verification tools provide a simple command line interface for batch processing. This way all TTEVerify verification tools can be seamlessly integrated into existing design and verification processes or any pre-existing tool chains.

Integrated Toolchain

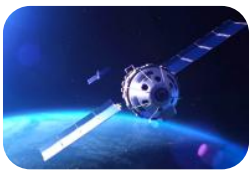
The complete set of TTEVerify tools automates the review of the transformation of the network-wide configuration specification into device-specific configuration files.
The figure below presents the data flow for verifying the configuration of a TTEthernet network.



Application Fields

- → *Aerospace*
- → *Rotorcraft*
- → *Space*





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Verification Levels

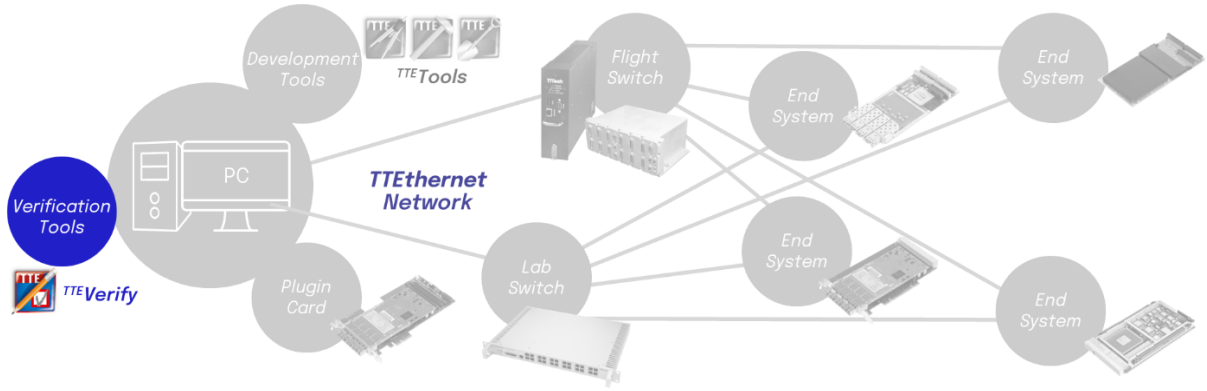
With the software tools of the TTEVerify product family, TTTech provides DO-330 qualifiable verification tools for automating the reviews of configuration implementations against their requirements at different configuration levels:

- Configuration interface – Configuration data format (binary loader format) and configuration parameter constraints (value ranges, ordering, uniqueness, dependencies, …)
- Network level – Time-triggered communication schedule, clock synchronization settings and end-to-end communication requirements (bounded latency & jitter), memory consumption

Tool Qualification Data

Tool Qualification Data Packages (TQDP) can be provided which demonstrate that all objectives applicable to the tool developer according to DO-330 Tool Qualification Level (TQL) 4 have been satisfied. The tool user can perform the remaining activities to qualify the tool for the particular project environment based on the provided Developer-QDP, which includes all needed installation instructions and test cases.

TTEVerify in the TTEthernet Network Portfolio



TTEVerify is the qualified tool to perform automated verification of the configurations for TTEthernet Switches and End Systems.

General Product Features	→ Verification of TTEthernet and AFDX® network configurations → Checking network scheduling, routing and configuration of AS6802 clock synchronization → Checking configuration data against configuration constraints of target device → Checking configuration data against requirements for loadable data format
Supported Operating Systems	→ Microsoft Windows 10 or 11 Enterprise, 64-bit → Ubuntu Linux 18.04 LTS, 64-bit → CentOS Linux 7 or 8, 64-bit
Recommended System Specification	→ 2.0 GHz or faster processor → Minimum of 4 GB physical RAM → Minimum of 2 GB available disk space
Product Variants	→ TTEVerify for TTEController Space – Switch IP, End System IP → TTEVerify for TTESwitch Controller A664 Pro – Switch IP, End System IP → TTEVerify for ES20 A664 Pro → TTEVerify Network for TTE-Controller Space → Qualification Data Packages (QDP) for the above (All order numbers on request) When using the TTETools development tool suite to generate the configuration data, a version of TTETools 5.9 or later needs to be used.
Software Maintenance Service	The optionally available Software Maintenance Service entitles customers to receive TTEVerify updates for a period of 12 months, so they can fully benefit from continuous product development and improvement. (Order number on request)