

TTETools – TTEthernet Development Tools v4.4

The Software Tools for Developing a TTEthernet Network

The TTEthernet development suite **TTETools** enables the seamless design, configuration, and data loading of TTEthernet-based networks. The set of tools is built around open, layered XML databases. The **TTETools** capture system-level communication requirements and automatically generate network and device configuration files, thus enabling the seamless integration with existing design processes. The **TTETools** development suite consists of the software tools **TTEPlan**, **TTEBuild Network Configuration**, **TTEBuild Device Configuration** and **TTELoad**. The **TTETools** come with Eclipse™-based GUI editors.

KEY FEATURES/BENEFITS

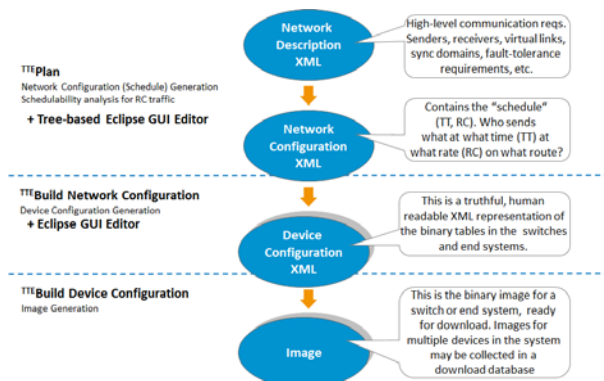
- Modeling of real-time communication requirements
- Modeling of network and topology
- Support for manual and automated design steps
- Based on open XML databases for flexible exchange with third-party tools
- Specialized editors for each design step
- Command line interface for scripting purposes

The **TTETools** development suite comprises:

- **TTEPlan** – The TTEthernet/AFDX® network design tool
- **TTEBuild Network Configuration** – The network configuration generation tool
- **TTEBuild Device Configuration** – The device configuration generation tool
- **TTELoad** – For downloading configuration files to switches

The figure below presents the data flow for configuring a network.

TTETools Data Flow Overview



The **TTETools** use the following databases. All of them are implemented using the open XML standard.

TTEPlan Network Description Database

- Describes the high-level communication requirements for the system, e.g., physical and logical topology.
- Describes the Virtual Links (VLs), including their IDs, timing requirements, and possible frame sizes.
- Describes synchronization parameters and requirements, e.g., the SAE AS 6802 clock.

TTEBuild Network Configuration Database

- Implemented as a set of XML files.
- Contains the network schedule calculated by **TTEPlan**.
- The network configuration is hardware independent. It describes all details necessary to configure a network, including schedules, port assignments, and the buffer allocation for all devices in the network.
- Parts of or the entire network configuration may be created and/or modified by third-party tools.

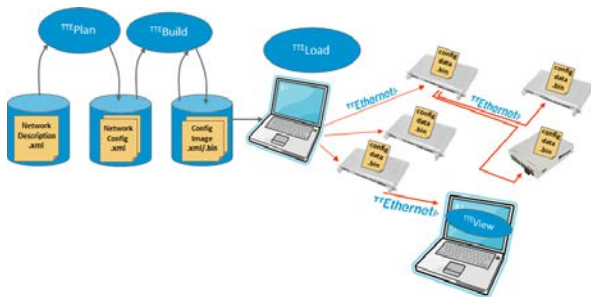
TTEBuild Device Configuration Database

- One device configuration per device (switch or end system).
- The device configuration is available in both XML (for human readability) and different image formats (for direct download to the device).
- The device configuration is device-specific and describes every configuration parameter at bit level. Fine-tuning of configuration parameters is possible at this level.

Verification Reports

- Several reports show the results of the internal checking functions of the **TTETools**.
- The reports are generated in HTML format for easy readability.

TTE-Tools – Development Suite Overview



TTEPlan

Based on input provided in a network description file, TTEPlan creates the network configuration in a user-convenient way and calculates the TTEthernet schedule for the network.

TTEBuild Network Configuration

TTEBuild Network Configuration knows the specifics of all supported TTEthernet devices. The tool extracts the data from the network configuration, calculates the parameters for the individual devices, and generates the device configuration files.

TTEBuild Device Configuration

TTEBuild Device Configuration converts the device configurations from the XML representation to a device compatible image format (HEX or BIN). The resulting configuration images can be loaded into the switches using TTELoad, or into the end systems by using the driver provided with each TTEthernet end system.

TTELoad

TTELoad configures TTEthernet switches by downloading the configuration images to them. TTELoad connects to the management interface of the switch and performs a safe unlocking procedure before reprogramming the static configuration memory. It also supports bootstrap configurations of TTEthernet switches.

Eclipse Integration

TTTech provides Eclipse plug-ins for TTEPlan and TTEBuild. With editors for all TTETools databases, as well as a schedule visualization feature, Eclipse then provides a convenient user interface for most TTETools use cases. Basic database validation and generation of validation reports is also possible from within Eclipse.

TTE-Tools Order Numbers

The TTE-Tools are available in different flavors depending on the intended network complexity.

- TTEPlan
 - 12059: TTEPlan Starter v4.4
 - 12060: TTEPlan Professional v4.4
 - 12061: TTEPlan Expert v4.4
- TTEBuild
 - 12056: TTEBuild NC Starter v4.4
 - 12057: TTEBuild NC Professional v4.4
 - 12058: TTEBuild NC Expert v4.4
 - 12055: TTEBuild Device Configuration v4.4
- TTELoad:
 - 12054: TTELoad v4.4
- TTETools (Bundle)
 - 12063: TTETools (Bundle) Starter v4.4
 - 12064: TTETools (Bundle) Professional v4.4
 - 12065: TTETools (Bundle) Expert v4.4