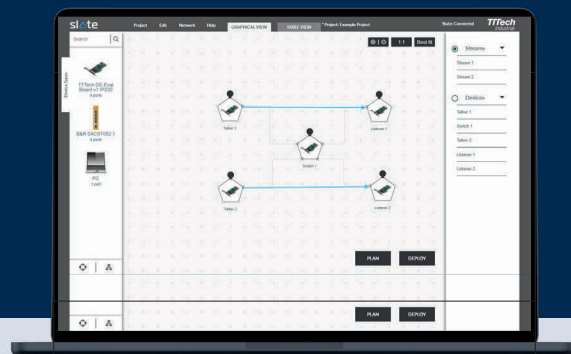


# Slate XNS

## TSN Network Planner with Browser-based Topology Modeling



- ☒ Intuitive graphical topology modeling
- ☒ Graphical modeling of data streams
- ☒ Open, standard configuration for any TSN device
- ☒ One-click planning and deployment for complex networks
- ☒ Online Network Status Viewer

Slate XNS is a browser-based, user-friendly software that makes it easy to model topologies, add streams and deploy configurations for TSN networks. Offline network configuration is made possible by the intuitive GUI which provides a topology view or table-based editor for managing network elements and data streams. Network configurations are calculated with just one click via TTTech's built-in planning engine, and network components are configured using open, standard YANG models.

### Topology and Stream Modeling

#### Graphical

The graphical view is ideal for modeling small and medium sized network topologies. New components can be added by dragging and dropping into the topology. Data streams can also be represented as logical connections between components.

#### Table-Based

The table editor is designed for modeling large network topologies and mass editing. Components, data streams and other parameters can be inputted into tables and viewed in the graphical mode.

### Network Planner

#### One-Click Configuration and Deployment

TTTech's high-performance planning engine is built-in to the Slate XNS software. After building the topology and defining the data streams, the network configuration can be created with just one click. With another click, it can be deployed to all devices of a TSN network.

### Status Monitoring

Status Viewer allows to online monitor basic status information on time synchronization and topology of a connected TSN network.

## GENERAL

|                             |                                                                                                                                                                                                                                                                    |
|-----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Supported Operating Systems | Windows 10<br>Linux, Ubuntu 18.04                                                                                                                                                                                                                                  |
| Requirements                | Installed Browser (Google Chrome, Mozilla Firefox, Microsoft Edge), Microsoft Internet Explorer 11 is not supported<br>Intel-based CPU (x86 CPU, 4 GB RAM, 2 GB disk space)<br>Local administrator privileges for installation<br>PDF viewer to access user manual |
| Delivery Package            | Installer for Windows 10 and Debian package installer<br>Installation guide<br>User Manual                                                                                                                                                                         |

## GUI

|                     |                                                                                                                                                                                                                                                                                                                 |
|---------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Topology builder    | Graphical topology builder <ul style="list-style-type: none"><li>– Drag and drop from the device type library into the topology</li></ul> Table-based topology builder <ul style="list-style-type: none"><li>– Add, edit, and delete devices and connections</li></ul> Instant ring or star topology generation |
| Stream modeling     | Graphical and table-based stream modeling <ul style="list-style-type: none"><li>– Edit data streams (publisher to single or multiple subscriber)</li><li>– Specify timing constraints</li></ul>                                                                                                                 |
| Schedule Viewer     | Graphical visualization of planned streams <ul style="list-style-type: none"><li>– Devices/Streams/Connection View</li></ul>                                                                                                                                                                                    |
| Online Status View  | Status monitoring of a connected network <ul style="list-style-type: none"><li>– show PTP-variables of devices in a project (time offset)</li><li>– LLDP remote device port information</li></ul>                                                                                                               |
| Device Type Library | Several included device types (TTTech, B&R)<br>Additional device types can be imported and deleted (using JSON device type description files)                                                                                                                                                                   |

## NETWORK PLANNING

|                    |                                                                                                                                                                                                                                                                                                                                                                                         |                       |                 |
|--------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|-----------------|
| Planning Engine    | Based on TTTech Slate CNS planning Core Library<br>Support for different user defined constraints (802.1Qcc) <ul style="list-style-type: none"><li>– End-to-end latency</li><li>– Stream protection/Isolation</li><li>– Transmit window constraint (for time aware streams)</li></ul> Support for mixed line speeds and topologies<br>Vendor independent input and configuration output |                       |                 |
| Network Deployment |                                                                                                                                                                                                                                                                                                                                                                                         |                       |                 |
| Supported Devices  | TSN switches and switched endpoints supporting Netconf/Yang configuration.                                                                                                                                                                                                                                                                                                              |                       |                 |
| Netconf            | Netconf 1.0/1.1 client                                                                                                                                                                                                                                                                                                                                                                  |                       |                 |
| Used Standards     | IEEE 802.1Qbv Time Aware Shaping<br>IEEE 802.1Qcp Bridges and Bridged Networks (VLAN support)<br>IEEE 802.1CB Frame Replication and Elimination (Available 2024)<br>IEEE 802.1Qci Filtering and Policing                                                                                                                                                                                |                       |                 |
| Used YANG models   | ieee802-dot1q-sched, ieee802-dot1q-bridge, ieee802-dot1q-types, ietf-interfaces, ieee802-types, ieee802-dot1cb-stream-identification, ieee802-dot1cb-stream-identification-types, iana-if-type, ieee802-dot1q-psfp, ieee802-dot1q-stream-filters-gates, ietf-inet-types, ietf-yang-types                                                                                                |                       |                 |
|                    |                                                                                                                                                                                                                                                                                                                                                                                         |                       |                 |
| Material name      | Material number                                                                                                                                                                                                                                                                                                                                                                         | Material name         | Material number |
| Slate XNS          | 12918                                                                                                                                                                                                                                                                                                                                                                                   | Slate XNS Unlimited   | 13193           |
| Slate XNS Plus 30  | 13191                                                                                                                                                                                                                                                                                                                                                                                   | Slate XNS Maintenance | 13194           |