

Trilinear

Multi-Stream Transport

MST TOPOLOGY MANAGEMENT SOFTWARE

The Trilinear Technologies DisplayPort Multi-Stream Transport (MST) Topology Management Software implements MST topology management for multiple monitors on a Trilinear DisplayPort Transmitter IP core. The software enables customers to shorten time to market and reduce design risk using pre-tested, ready-to-deploy software. It provides necessary discovery and compliance testing of DisplayPort sink devices, such as monitors and hubs, for streaming to multiple display devices. Compliant with the latest standards, the software is ready to be integrated into a DisplayPort source application and provides the following:

- Protocol Testing
- Interoperability Testing
- Link Configuration
- Bandwidth Allocation
- Aux Messaging

AT A GLANCE:

- DisplayPort 1.4 compliant
- Fully portable embedded C
- Auto enumeration and stream management
- High-performance source code optimized for a minimal footprint
- Clearly defined, low function count interfaces
- Source code deliverables or a compiled library
- Fully documented API
- Compliance tested
- Software upgrades
- Training and field support, assistance in all stages of the design



Software Validation Testing

Using advanced design techniques, Trilinear thoroughly tests each software component. A complete test suite is available on request. The Trilinear software verification process includes the following:

- Unit level testing—extensive functional coverage and reliability tests
- Deployment on the Trilinear FPGA development platform—each stack is tested for compliance with standards and for compatibility with existing production devices
- Deployed in safety-critical and security-critical applications
- Validated with multiple compilers including x86, MIPS, and ARM

Trilinear Software Stack for DisplayPort Architecture

The MST Topology Management software is a component of the Trilinear Software Stack for DisplayPort architecture. The architecture includes components that create a suite of fully tested, production-ready software for integration into customer systems using Trilinear DisplayPort IP cores. The architecture includes a link policy maker that is responsible for sink device discovery, link training, and link management. The link policy maker can be extended with advanced capabilities, such as HDCP, MST, MSO, eDP, audio, and DSC.

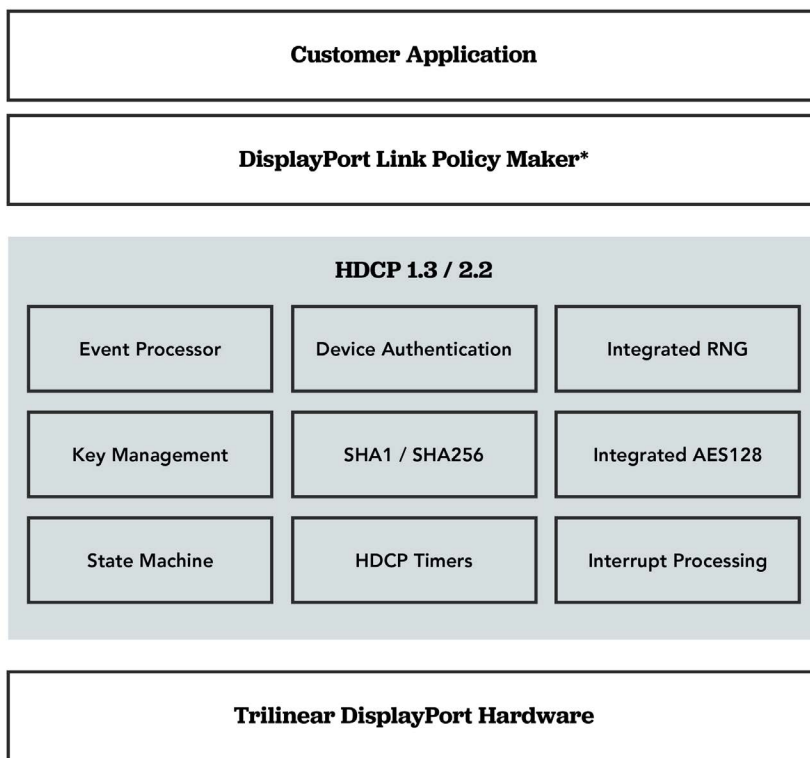


Figure 1. Trilinear DisplayPort Software Stack Architecture

State Machine	The HDCP stack is based on an event-driven state machine. Each state machine instance (RX/TX, HDCP 1.3/2.x) follows the HDCP specification exactly. Nomenclature from the HDCP standard is used extensively in the code, so it is easy to follow the state transitions.
Event Generation	The HDCP stack operates entirely on internal/external events. This module converts external events into state machine events and forwards them to the appropriate state machine.
User-provided Functions	Several user-provided functions are required. These are used to manage customer private keys and handle common memory management tasks. The user may also provide optional call-back functions that can notify the customer application of HDCP events and state.
Additional Libraries	External to the HDCP library is a support library that contains functions including trace, sha1, sha256, and other system-level operations required for HDCP but not part of HDCP specification directly.
Testing/ Tracing/ Call-Backs	The HDCP library includes an extensive test suite that runs on a desktop operating system. These tests not only verify proper HDCP stack operation but are a working example on how to use the stack. The HDCP stack also employs level-based tracing that displays extensive stack information during operation. There is also a call-back system. Each event can be selectively reported back to the system application.

READY?	The Trilinear DisplayPort MST Topology Management Software is available directly from Trilinear Technologies under several licensing models. Please contact Trilinear Technologies for pricing and additional information: trilineartech.com
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