The RT Logic Space Link Extension (SLE) protocol component enables RT Logic products to use the Consultative Committee for Space Data Systems (CCSDS) space-to-ground data constructs to move telecommand and telemetry data between various elements of satellite ground networks. In addition, an optional SLE User Dev Kit is available to assist customers when developing their own SLE User edge devices for guaranteed communications with RT Logic products acting as SLE Providers. Based on Jet Propulsion Laboratory’s SLE reference implementation, the SLE components and User Dev Kit have been updated to support the latest CCSDS Blue Book 2 recommendations.

**Application**

The CCSDS SLE protocol component allows RT Logic products to support SLE protocols. Both edge devices and end-to-end ground systems are supported. Leveraging the Telemetrix® Software Framework, it can be incorporated into any RT Logic system to provide CCSDS SLE protocol support.

The CCSDS SLE User Dev Kit complements the CCSDS SLE protocol component by allowing the customer to use their own equipment/software to interface with RT Logic products acting as SLE Providers.
Features
- Data Rates 100+ Mbps
- Proven Implementation
- AFSCN/USN Interoperability
- NASA JSC FEPR SCP for ISS Telemetry
- Available for Telemetrix Framework
- Control Center Products
- Ground Station Products
- SLE User Dev Kit
- 32-bit and 64-bit Support
- Linux and Windows OS
- Standard SLE API
- Lightweight API Wrapper
- Built-in ASN.1 Library
- TCP/IP Transport Layer
- Service Management Control and Status
- Port Maps
- Passwords
- Service Instance Types and Settings
- Status and Statistics
- Multiple Concurrent Service Modes
- FCLTU, RAF, RCF
- Online Timely, Online Complete, Offline
- Authenticate None, Bind, All
- Customized Implementations for Customer-Specific Needs
- Throw Events
- Private Annotation Fields
- Adaptation and Conversion Layers to Support Non-Native Data Services

Lightweight API Wrapper
In addition to the standard CCSDS SLE API, the SLE User Dev Kit includes a lightweight SLE API Wrapper (APIW). The APIW is built on top of the standard CCSDS SLE API and abstracts much of the interface complexity. The APIW contains entry points for the most common SLE tasks, including:
- BIND
- START
- STOP
- TRANSFER-DATA
- SCHEDULE-STATUS-REPORT
- GET-PARAMETER
- THROW-EVENT

Features of the APIW Include:
- Simplifying Customer Implementations Using the CCSDS SLE API Library
- Hiding Object Management Complexity of CCSDS SLE API
- Can be Intermingled with Standard CCSDS SLE API Calls
- Non-Blocking with User Callback Functions
- Enforcing Proper Sequence of Events
- C++ Header Files, Source Code, and Example Code Provided

Reference Specifications
CCSDS 914.0-M-0.1 – SLE API for Transfer Services – Core Specification – Draft Recommended Practice.
CCSDS 915.1-M-0.1 – SLE API for Return All Frames Service – Draft Recommended Practice.
CCSDS 915.2-M-0.1 – SLE API for Return Channel Frames Service – Draft Recommended Practice.
CCSDS 916.1-M-0.1 – SLE API for the Forward CLTU Service – Draft Recommended Practice.