



icNET-SLE | SPACE LINK EXTENSION (SLE) GATEWAYS

Ingenicomm's icNET-SLE Space Link Extension (SLE) Gateways represent the next generation of low-cost, high-performance multi-mission cross support solutions. The icNET-SLE product line combines Ingenicomm's proven Configurable Ground Systems (CGS) software framework with robust enterprise hardware platforms to provide multi-channel SLE data transport capabilities at rates of up to 1.5 Gbps per channel.

Turn-Key Interoperability

The icNET-SLE gateways provide unmatched interoperability between missions and agencies by implementing the full set of Space Link Extension (SLE) services recommended by the Consultative Committee for Space Data Systems (CCSDS). The SLE service suite allows users to seamlessly exchange spacecraft telemetry and command data across ground networks and earth terminals operated by the world's largest space agencies and commercial ground station providers, including the National Aeronautics and Space Administration (NASA), the European Space Agency (ESA), and the Universal Space Network (USN).

Integrated Data Processing

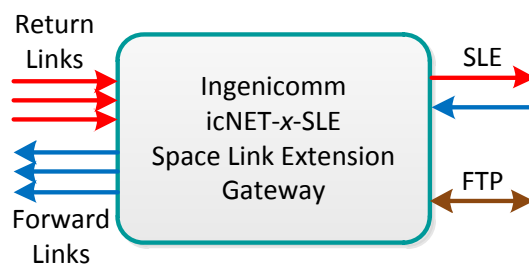
The capabilities of the icNET-SLE go beyond SLE data transport. By integrating Ingenicomm's full CGS software processing suite, the icNET-SLE enables users to take advantage of a full range of telemetry and command processing, decoding and de-encapsulation, data quality metric generation, test pattern verification, link performance analysis, and file management and distribution capabilities. When deployed in prototyping and test environments, the CGS framework allows seamless integration of user-written software components, allowing custom data processing and archive manipulation capabilities to be easily added to the standard system.

Easy Local and Remote Configuration

The icNET-SLE gateways can be controlled either locally or remotely via a highly flexible web-based graphical user interface. A full-featured command-line interface is also provided to allow easy scripting and automation, and service-oriented cluster management components are available to allow single-point control of multiple icNET-SLE systems simultaneously.

Robust Platform Architecture

The icNET-SLE product line is based on a robust enterprise-grade server architecture to provide component-level redundancy and high resiliency against failure. The gateway systems are highly scalable, and can be expanded to include additional interfaces and increased storage capacity as required.



Key Features

- Industry-leading high-performance SLE solution for service data rates up to 1.5 Gbps
- Full support for all current SLE protocols, including RAF, RCF, ROCF, FSP, and FCLTU/EFCLTU
- Automatic link status monitoring and CLCW-driven command production
- Integrated data decoding, processing, recording, and playback
- Real-time and scheduled distribution of recorded data and metadata files via FTP/SFTP or SMB
- Test pattern and user data simulation and verification
- Robust enterprise-grade hardware platform with up to 24 TB of integrated storage

Ingenicomm, Inc. is a leading provider of ground and range equipment and enterprise engineering services for civil and commercial aerospace programs, as well as the defense and intelligence communities. To learn more about Ingenicomm's service and product offerings, visit <http://www.ingenicomm.net> or contact Ingenicomm at info@ingenicomm.net or +1-703-943-7236.



System Capabilities

Input and Output Interfaces

- Gigabit Ethernet at rates up to 800 Mbps per channel
- 10-Gigabit Ethernet at rates up to 1.5 Gbps per channel

CCSDS Space Link Extension (SLE)

- Forward Communications Link Transmission Unit (FCLTU/EFCLTU)
- Forward Space Packet FSP
- Return All/Channel Frames (RAF/RCF)
- Return Operational Control Fields (ROCF)

Telemetry Processing and Simulation

- CCSDS Conventional (version 1) and AOS (version 2) Transfer Frames
- CCSDS VCA and Bitstream service
- CCSDS Space Packets
- Fully configurable VCID and APID filtering and routing

Data Archiving and Playback

- Heuristic data presence detection and automated recording
- Segmented and multi-file recording and playback
- Automatic time-tagging and aging of recorded files
- Data search and playback via session names, timestamps, or data/metadata characteristics
- Real-time and scheduled distribution of files via FTP/SFTP or SMB

Network Encapsulation

- NASCOM
- LEO-T CDH/TFDH
- SFDU/AXAF/ACE
- VRT

Encoding and Decoding

- Pseudo-randomization and de-randomization
- Reed-Solomon (255,223) or (10,6) decoding
- CRC checksum verification

Test Data Generation

- Fully configurable PRBS generation and verification
- Fixed and user-provided pattern generation and verification
- Single- and multi-bit burst error simulation
- Bit and packet error rate calculation

Monitoring and Control

- Local and remote command-line interface
- Web-accessible graphical user interface
- Fully integrated documentation and user help features
- Integrated scripting and automation
- Multi-instance and multi-system cluster management

Platform Specifications

Data Rate	1 bps – 30 Mbps	30 Mbps – 800 Mbps	800 Mbps – 1.5 Gbps
Models	icNET-30-SLE	icNET-100-SLE icNET-400-SLE icNET-800-SLE	icNET-1200-SLE icNET-1500-SLE
Chassis	3U 19" rack-mount chassis (5.2" x 17.7" x 25.5")		
Processor	Intel® Xeon® 3.1 GHz quad-core CPU	Dual Intel® Xeon® 1.8 GHz quad-core CPUs	Dual Intel® Xeon® 2.5 GHz six-core CPU
Memory	8 GB DDR3 1600 MHz ECC-registered RAM	16 GB DDR3 1600 MHz ECC-registered RAM	32 GB DDR3 1600 MHz ECC-registered RAM
Interfaces	4 Gigabit (10/100/1000) Ethernet ports	2-6 Gigabit (10/100/1000) Ethernet ports	2-6 Gigabit (10/100/1000) Ethernet ports 2 10-Gigabit Ethernet ports
Drives	250 GB hot-swap RAID-1 system drive array 1–24 TB hot-swap RAID-0/1/5/6/10 archive drive array 22x DVD-RW optical drive		
Power	760 W triple-redundant (2+1) power supplies		
Operating System	Red Hat® Enterprise Linux 6.2 or Windows® 7 Professional		
Remote Management	IPMI 2.0 remote management with dedicated NIC		

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