The Space Dynamics Laboratory’s (SDL) Data Networking Group provides cost-effective data network systems and development services to Government and military agencies. SDL’s network expertise ranges from low- to high-speed communication solutions, including technologies supporting up to 100 Gb data rates. SDL implements multiple platforms that support airborne- and ground-based data communications.

In addition to network interfaces, SDL’s systems typically include embedded processing capability for data analysis. SDL’s platforms leverage commercial off-the-shelf (COTS) components where possible and are readily adaptable to meet customer needs. A typical architecture implements a Linux OS running on multi-core central processing units (CPU) with high-speed memory, solid-state drive (SSD) storage, and FPGAs interfaced via multi-lane peripheral component interconnect express (PCIe). SDL’s networking devices exemplify years of experience in sophisticated digital design, high-speed networking, and hybrid embedded Linux/FPGA/PCIe architectures.

 SDL DELIVERS:

**FLEXIBILITY**
- Multiple network protocols supported; adaptable for custom applications
- Environmentally adaptable
- Ground-to-air
- Ground-to-ground
- Air-to-air
- Physically adaptable configurations to meet system size, weight & power requirements

**CAPABILITY**
- Variety of line rates up to 100 Gbps
- Functionality/application
- Data receiving & recording
- Network analysis
- Data simulation/troubleshooting
- Customer-driven solutions
- Updated to the latest security requirements

**HERITAGE**
- Over 60 years of sophisticated digital designs & hardware development
- Experts in embedded Linux/FPGA/PCIe architectures
- Over 200 data networking devices delivered to DoD clients
- Proven relevance
- Third-generation devices developed to meet updated mission requirements
- Systems fielded in critical intelligence, surveillance & reconnaissance (ISR) & Department of Homeland Security (DHS) operations

SDL couples deep data networking expertise with an excellent record of on-time, on-budget program execution. When needed, the group draws on the larger SDL organization for additional manpower and expertise. As a non-profit University Affiliated Research Center (UARC), all data is provided to the Government with unlimited use rights. SDL’s size enables straightforward contract communications and execution, and its ISO 9001 certification is indicative of a commitment to high-quality engineering practices.
AIRBORNE SENSOR RECEIVER, RECORDER & SIMULATOR

SDL’s family of airborne network devices receive, record, and simulate various airborne reconnaissance sensors, including common data link (CDL) and asynchronous transfer mode (ATM) platforms such as Global Hawk and U2. SDL’s systems translate these sensor protocols into a Gb Ethernet for ground station consumption, supporting up to 15 TB of memory for up to 30 days of mission storage and playback. Airborne network devices are built on a powerful and flexible Linux-based server, offering dual Intel CPUs in a 1U rack-mount configuration. Their PCIe sensor interface cards can be configured as needed to support multiple sensor types. Custom PCIe expansion cards can be implemented for full mission support.

SENSORS SUPPORTED
• ATARS (CDL)
• Global Hawk (CDL)
• ASARS (ATM)
• SYERS (ATM)

NETWORK ANALYSIS

SDL develops state-of-the-art network analysis devices with the most up-to-date technologies to protect and manage critical communication channels. These devices provide data transfer prioritization, adaptation to network link speeds, and remote client command and control, all while achieving almost complete bandwidth utilization and meeting strict data security requirements. They can examine and analyze the baseline behavior of multi-layered networks to identify and flag out-of-character data transmissions.

PACKAGING OPTIONS
• BladeCenter™ blade, 1U or 2U rack mount, or conduction-cooled chassis
• 4 GB DDR & 512 GB SSD for storage
• Client/server system

PROTOCOLS SUPPORTED
• Up to OC-1092/STM-640 SONET/SDH
• OTN, PDH
• FEC, enhanced FEC
• 100 Gb Ethernet (optical)
• 10 Gb Ethernet (optical)
• 1 Gb Ethernet (copper)

SDL’s systems translate these sensor protocols into a Gb Ethernet for ground station consumption, supporting up to 15 TB of memory for up to 30 days of mission storage and playback. Airborne network devices are built on a powerful and flexible Linux-based server, offering dual Intel CPUs in a 1U rack-mount configuration. Their PCIe sensor interface cards can be configured as needed to support multiple sensor types. Custom PCIe expansion cards can be implemented for full mission support.