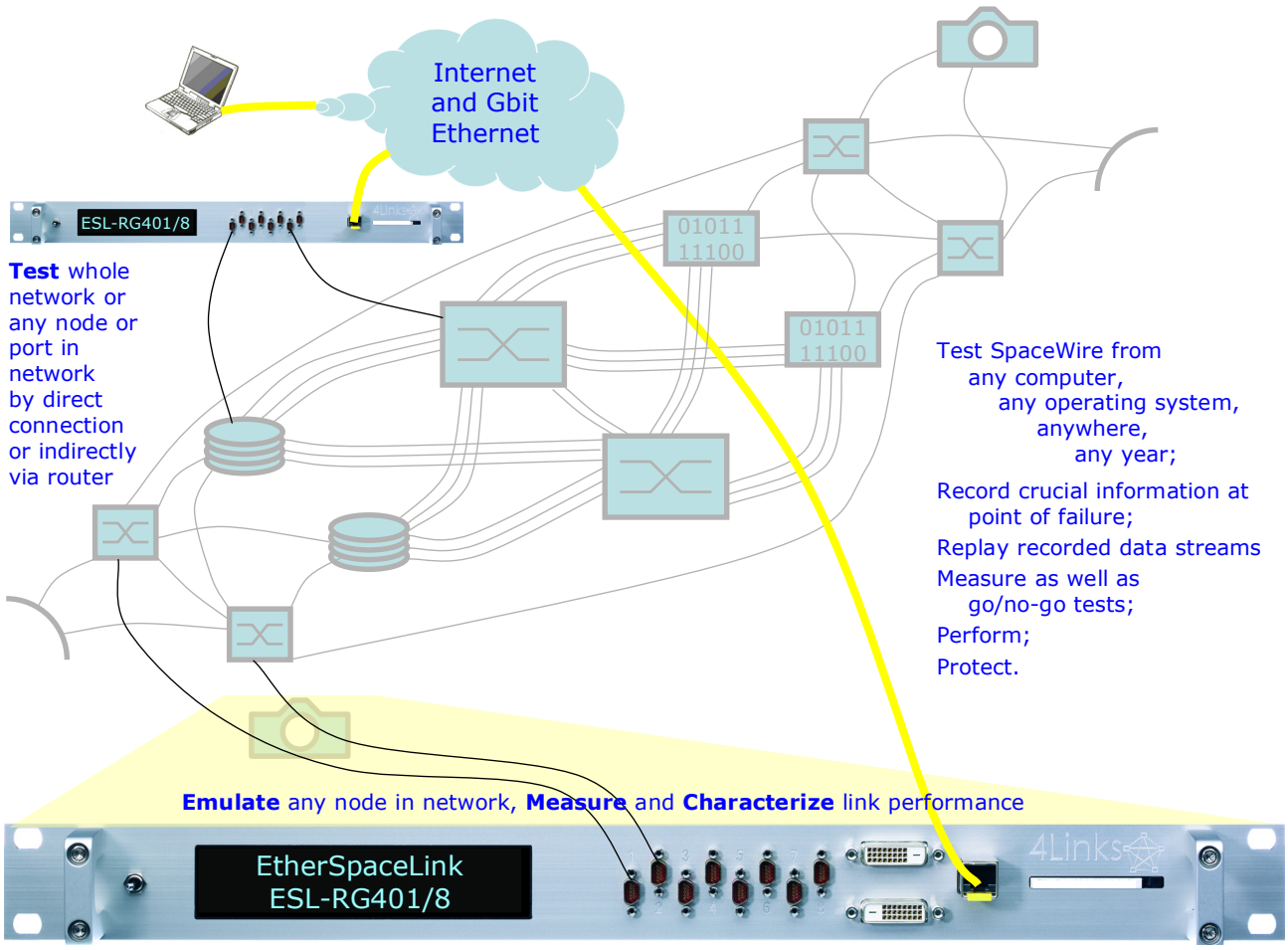
Test, control, and simulation interface to SpaceWire from Gbit Ethernet and IP

Gbit Ethernet; Eight 400Mbits/s SpaceWire Links

The 4Links EtherSpaceLink ESL-RG401/8 provides a simple, transparent, interface from software on a local or remote computer to test, monitor or control SpaceWire chips, boards, subsystems or systems. A seamlessly integrated set of diagnostic options makes the unit ideal for modelling, developing and debugging SpaceWire hardware and software at all stages of the product life cycle. The eight ports can be used to model the cold-redundancy used in many SpaceWire networks, and to provide an upgrade path to other products in the EtherSpaceLink family. Hardware is also available for synchronization and triggers to provide further upgrade capability and integration with other 4Links SpaceWire test systems.

The EtherSpaceLink products can be used for testing, monitoring, analyzing, validating, modelling and emulating any or all the chips, boards, subsystems, and instruments in a SpaceWire network.



Update, Reconfigure and Re-use the same hardware platform throughout the project life cycle

Test SpaceWire from any computer, any operating system

Because almost every computer and every operating system is able to connect to Ethernet and to the Internet Protocol, the ESL-RG401/8 can test, control and monitor SpaceWire nodes and networks from the computer and operating system of the user's choice without the need for special driver software.

anywhere,

Using the Internet Protocols allows testing of SpaceWire to be done remotely from the equipment under test. This can either be from an engineers desk (outside the clean room) or from across continent or ocean.

any year

While PCs need to be replaced every few years, projects can last a decade or more. Ethernet and IP allow the use of the test equipment throughout the project, even as the computers and OS are changed.

Record crucial information at point of failure

From a user program, the complete data stream in both directions can be recorded to a file for off-line analysis. If the Error Waveform option is purchased, detailed information from before, during and after a SpaceWire protocol error is also recorded to a file for display as a waveform file with full decode of bits and SpaceWire characters.

Replay recorded data streams

A recorded data stream can be replayed either with the transmit and receive directions as recorded or with the directions reversed. So the equipment at both ends of a SpaceWire link can be tested with the diagnostics available from the ESL-RG401/8 before the two ends are brought together.

Measure as well as go/no-go tests

The SpaceWire transmit speed can be set in small increments up to almost 500Mbits/s, so that the user can choose the speed to run at and can increment the transmit speed until the equipment under test fails, giving a measure of the operational margins rather than just a fixed speed test.

Perform

Test equipment needs to be able to perform faster than the equipment under test, and the ESL-RG401/8 offers one of the highest performance SpaceWire implementations available, at well above 400Mbits/s for both transmit and receive, and with Gbit Ethernet for the host interface.

Protect

Test and simulation equipment must protect flight equipment from any possible damage caused by the test equipment. The ESL-RG401/8 protects flight equipment with five layers of current and voltage protection.

Choose the options required

ER: Error Reporting,
EW: Error Waveforms, displaying the captured waveform with full SpaceWire protocol decode
TC: Time Codes, including the extra time codes used by NASA
TT: Time Tags, to a resolution of less than 10ns.

Update, Reconfigure and Re-use throughout the project life cycle

The ESL-RG401/8 can be configured in any of several hardware platforms, from the base RG408-l to the RG408-m with additional internal resources, or the RG408-ls and RG408-ms which are able to synchronize with other units over a system. The function of the ESL-RG401/8 is defined by a plug-in memory card, and different memory cards can be used to reconfigure the platform to the function of different products, saving the cost of new hardware when the additional functionality is needed.