iSAFT WizardLink Front-End

The iSAFT WizardLink Front-End is a WizardLink data interface with advanced asynchronous transmission and traffic generation capabilities that simulates WizardLink devices or instruments, enabling S/C integration tests before the availability of Flight Models.

It also includes a built-in recording function for received / transmitted packets (spy function), suitable for the validation of satellite/spacecraft flight devices and ground testbed devices implementing High Speed Serial Wizard-Link interfaces.

It is provided as a rackmount system with 2 - 6 WizardLink ports with advanced traffic generation and asynchronous transmission/reception capabilities. It is capable of transmitting/receiving data packets over multiple Wizard-Link links, time stamping received packets, and capturing transmitted/received traffic to a powerful Protocol Analyser. It is based on the iSAFT graphical tool chain, for the configuration/management of the simulation (locally or remotely). The iSAFT WizardLink Front-End is a powerful device for the validation of on-board data networks at early stages, minimizing costs and schedule. It can be part of EGSE Data Front Ends and implements the core functionality of an EGSE controller.

Using its built-in recording function, it is capable of capturing data packets on multiple WizardLink links and delivering them to a powerful Protocol Analyzer for further processing & analysis. Operating on a multi-Gbytes powerful HW platform, the SW environment is based on the iSAFT graphical tool chain, thus allowing the management, filtering & searching of the recordings. It is used for troubleshooting and problem solving at various development stages, minimizing the impact on cost and schedule.

Main Features & Competitive Advantages

■ Data Front End with traffic generation and asynchronous transmission capabilities

■ Form factor: 1U (2 WZ ports), 2U (4 WZ ports), 3U (6 WZ ports)

■ Electrical interface based on TI TLK2711-SP device

■ Support of SMA or AXOMACH connectors

■ Supports link rates in the range of 1.6 - 2.5 Gbps in 100Mbps increments (on-board high precision transmission clock)

■ WizardLink data / packets generation and reception with built-in monitoring and archiving functions, timestamping and statistics support

■ Flight equipment protection: (1) power-off mode (independent per port) that disables power to the TLK2711-SP IC, (2) use of AC coupling isolating capacitors on the receiving path

■ Expandable with optional I/O & Synchronization add-on board (supporting triggers, flow control implementation, etc.)

■ Synchronisation from various sources (IRIG-B, PPS), with down to 8ns accuracy / resolution

■ Optional LVDS flow control signals (in/out) per WizardLink port on Micro-D51 connector

■ Modern graphical user interface (Windows 10) for complete local operation

■ Filters, triggers, statistics utilities, Post recording analysis based on the Wireshark Protocol Analyser

■ Remote Access APIs in C++ / Python / Java (Windows, Linux)

■ Easy integration with CCS (EDEN / CCSDS C&C APIs & S2K MIB)

■ Custom protocol development / integration according to space mission specifications
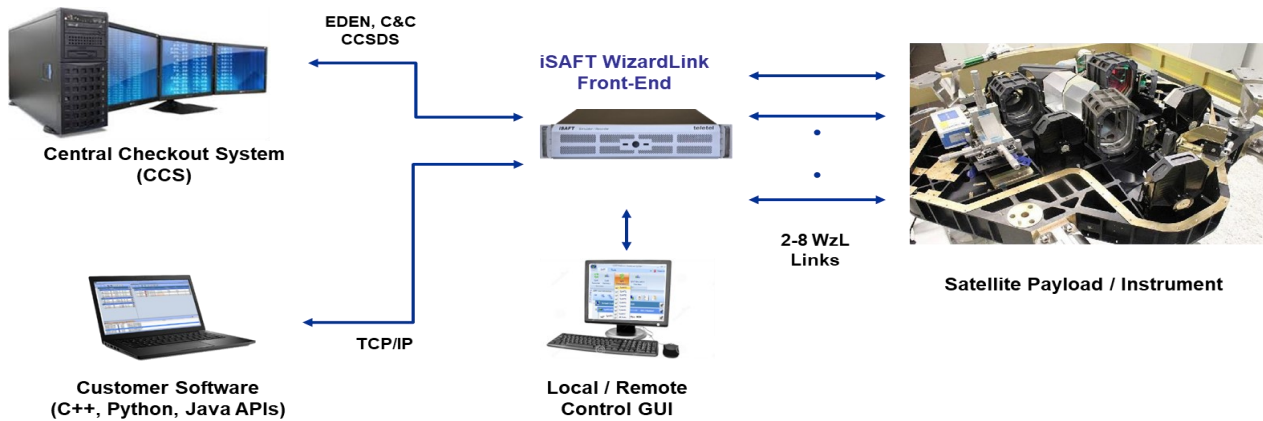
Key Benefits

■ Unique product supporting validation of WizardLink devices/instruments

■ Modern graphical user interface

■ Powerful remote access APIs supporting rich functionalities

■ 100% internal design, can be customised to customer/mission needs

■ First class support at both SW & HW level

Application Areas

■ Design & development of on-board data networks

■ Simulation / Recording / Error Injection / Traffic Generation test equipment

■ EGSE / Test Benches

■ Data Front Ends

■ Hardware in the Loop Simulation

■ Experimentation with new protocols and various protocol features

Specifications

Use Case Example - Validating WizardLink Payloads / Instruments

Central Checkout System (CCS) — EDEN, C&C CCSDS → **iSAFT WizardLink Front-End** ↔ 2-8 WzL Links ↔ **Satellite Payload / Instrument**

Customer Software (C++, Python, Java APIs) — TCP/IP

Local / Remote Control GUI

Technical Data

General	1U	2U	3U
Dimensions (W x D x H)	448x357x44.5 mm	448x370x89 mm	448x457x133 mm
Interfaces	4 x USB 3	4 x USB 3	6 x USB 3
	10 Gbps Ethernet DVI-I & HDMI 1.3 optional WiFi		
PCI slots	1 x PCIe x16	2 x PCIe x16	5 x PCIe x16
CPU	i9 intel processor (18 cores)		
Memory	64GB DDR 4		
Storage	128GB SSD drive for OS 1TB SSD raid for data 2TB SSD for Archive		
Power supply	110-230V 250W	110-230V 450W	110-230V 600W
Operating temp range	0°C to 50°C		
Storage temperature / humidity	-40°C to 85°C 10 ~ 95%		
Standards	CE, RoHS, FMEA available		

WizardLink Interface	1U	2U	3U
Number of ports	2	4	6
Connector	SMA or AxoMach Optional Micro-D51 for flow controls signals		
Link speed	From 1.6 to 2.5 Gbps per port (independently set per port)		
IP Core	TELETEL WizardLink core		
Protocols	WizardLink, customisable per mission		
Functionalities	Simulation, Recording, Error Injection, Traffic Generation, Timestamping support, Flow Control		
Electrical standards	VML signaling (galvanically isolated on Rx path)		

Software	
Supported OS	Windows 10 64bit
Main features (supported by a modern GUI)	Board management, simulation, traffic generation, recording, off-line analysis, statistics, Wireshark protocol analyzer
Remote Access APIs	C++, Python, Java (Windows, Linux)
Optional	iSAFT EDEN or CCSDS C&C Remote Control & S2K MIB - WzL

SYNC Interface	
Type	IRIG-B002/006 (DCLS) or PPS
Functionality	IRIG generator, IRIG receiver 8 ns timestamping resolution
Electrical standards	TTL / RS-422 (selectable)
Connector	Omnetics MNCP-06-WD Circular Nano connector

Order Information

- iSAFT06.CS-07-Y2X (Y indicates the form factor: 1, 2, 3 - X indicates the number of ports: 2, 4, 6)

Contact

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