

Net.Shark portable tap



Net.Shark is a handheld tap capable of filtering, capturing and forwarding any Ethernet based protocol including PTP, NTP, GOOSE, SV or MMS, which are part of IEC-61850. It is a tap with unique characteristics, ideal for field operations such as electrical substations, as it is a self-contained unit, with batteries, screen and keyboard, that can be connected to any point no matter how small, high or hidden.



ALBEDO: a global player of **telecom** appliances



ICT electronics
(1983)



Trend Comms
(2001)



ALBEDO (2009-today)



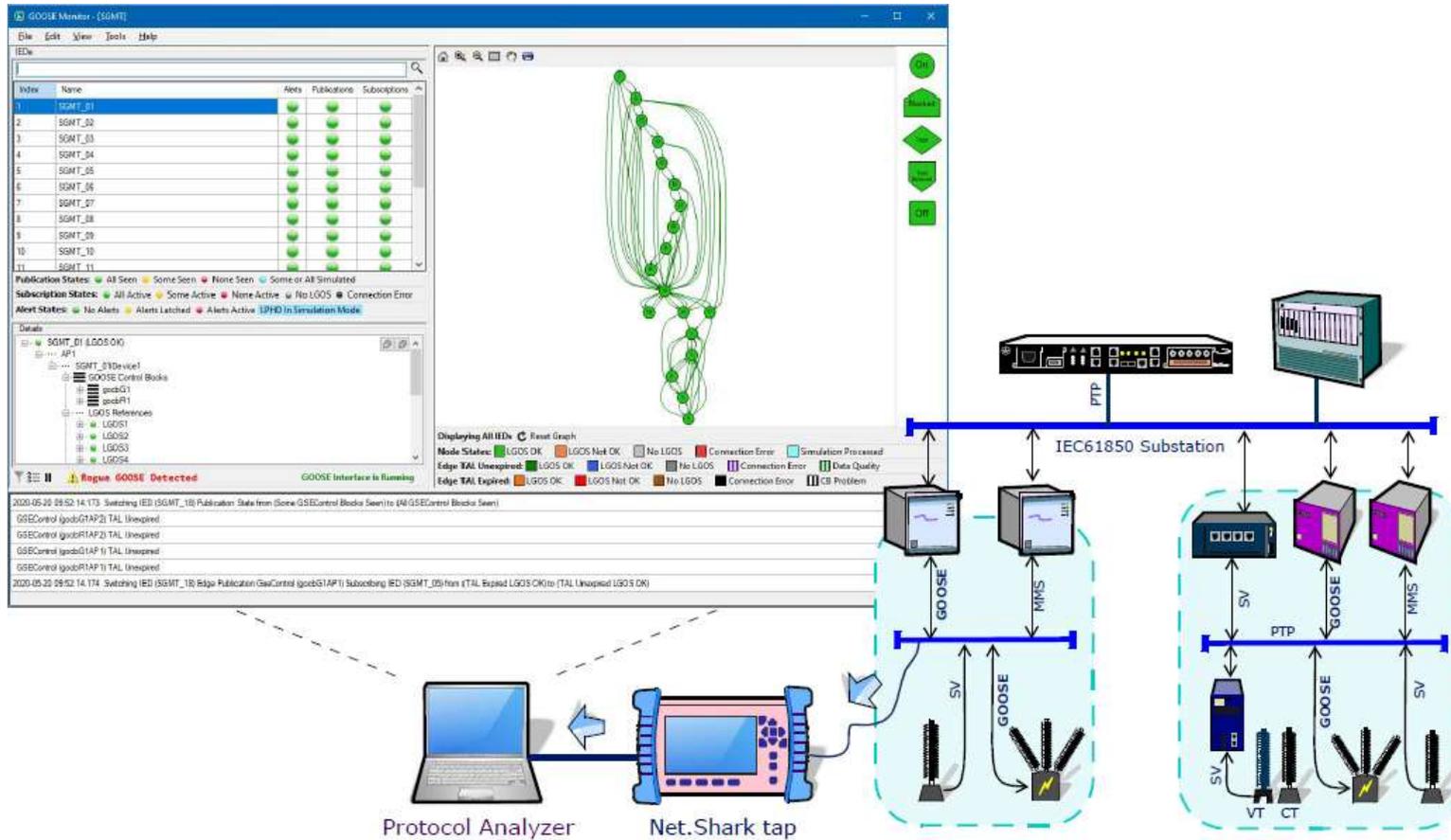
Net.Shark is a handheld tap for filtering, capturing and forwarding any Ethernet-based protocol, including **PTP, NTP, GOOSE, SV or MMS** is the solution that allows engineers to quickly **deploy, commission, monitor** and **troubleshoot** the IEC 61850 standard



The physical connections between Clocks, IEDs, Switchgear, Circuit Breakers and Bay Controllers are often located in **small, hard-to-reach** panels, **making it difficult to connect** other devices

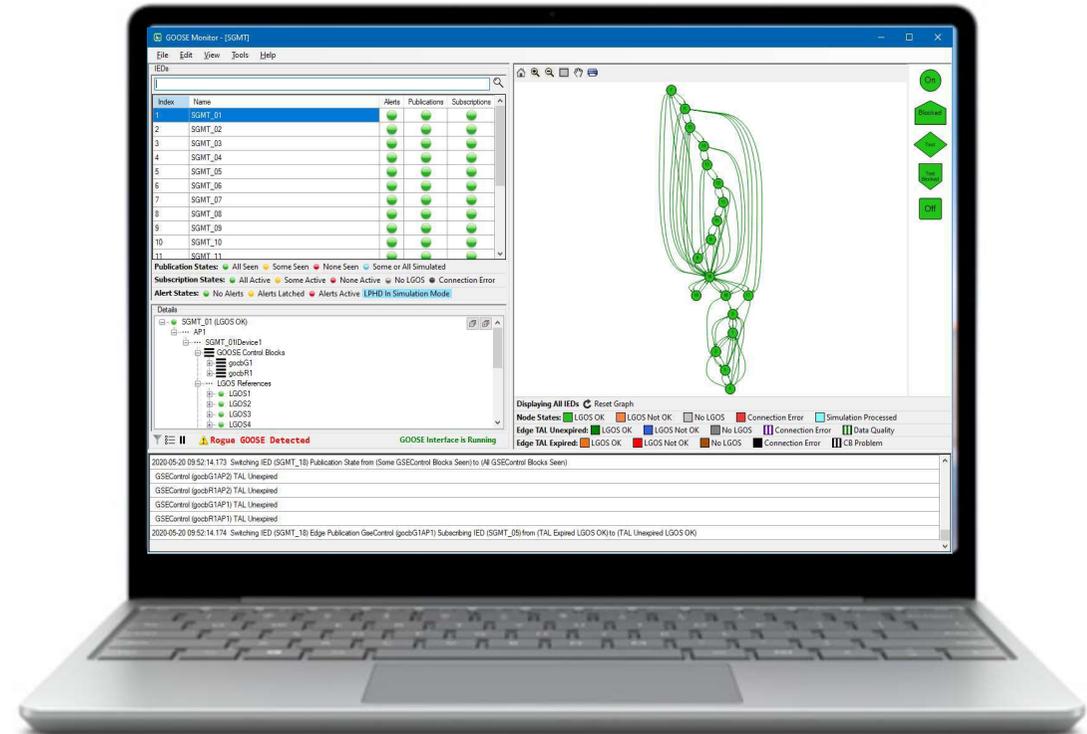
- Net.Shark can reach anywhere to capture IEC 61850 protocols.

Net.Shark in Operation



- Net.Shark is ideal to work in substations as it can be connected to a mirror point or in pass-through mode.
- The battery ensures that the 100% tap is passive and won't disrupt the network if the power is lost.
- To identify the traffic to be capture Net.Shark has 16 programmable filters in each direction.

2 x Components

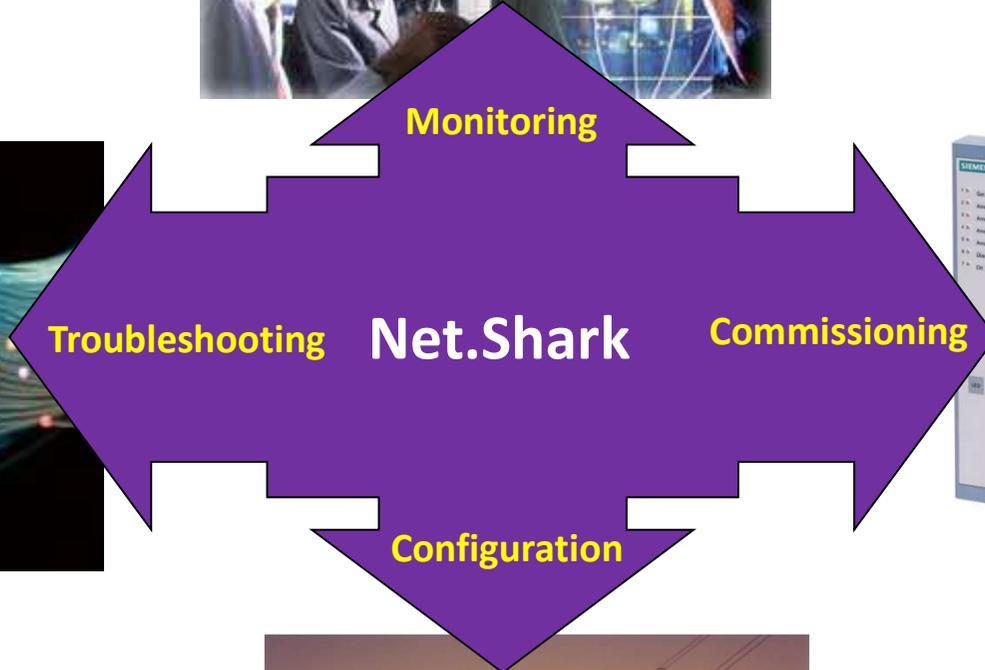
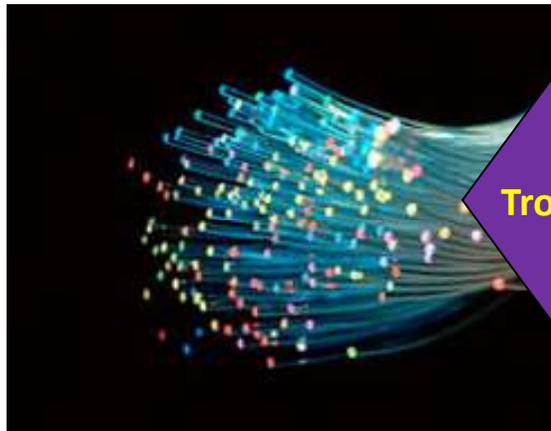


- ◆ GOOSE Auditor is made of two component, a hand-held tap and a laptop with the application:
 - The laptop executes GOOSE Monitor application that represents the GOOSE interactions in several level of details displaying, in real-time, all data structures and the device status.
 - Net.Shark is the hand-held tap designed to easy capture of GOOSE messages ensuring none will be lost nor cause impairments to the rest of the IEC-61850 traffic.

Utility Substations



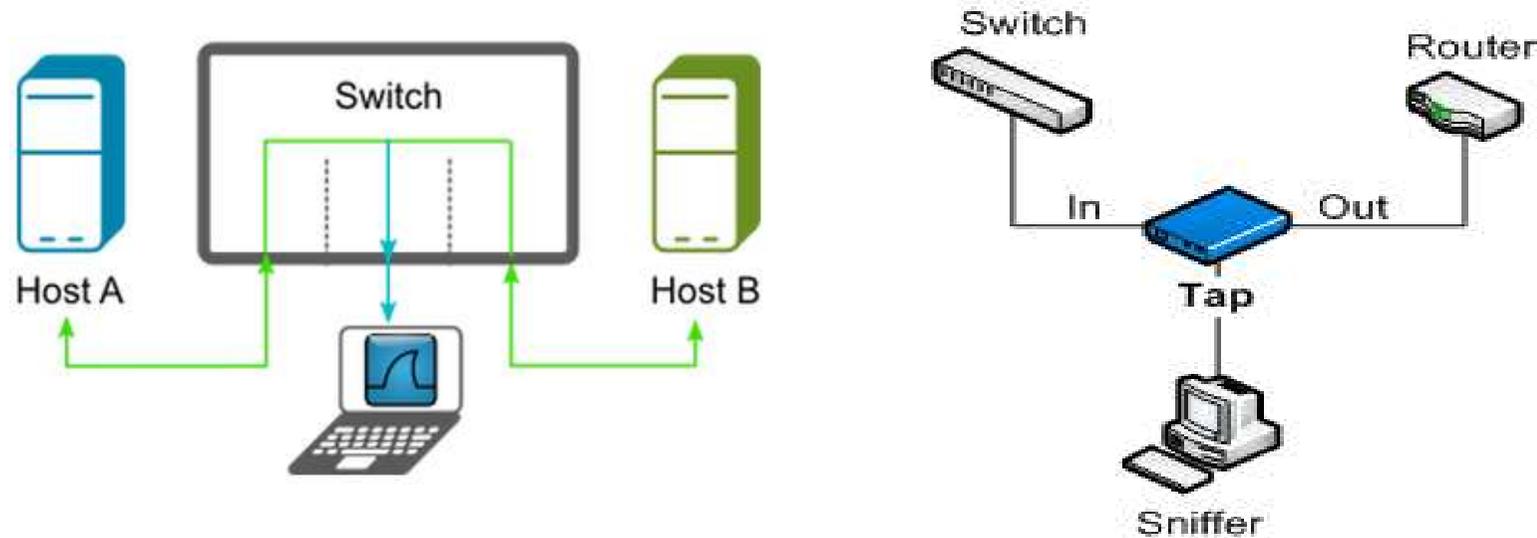
Automation + Protection



IEC-61850 deployments



IEDs & Relays

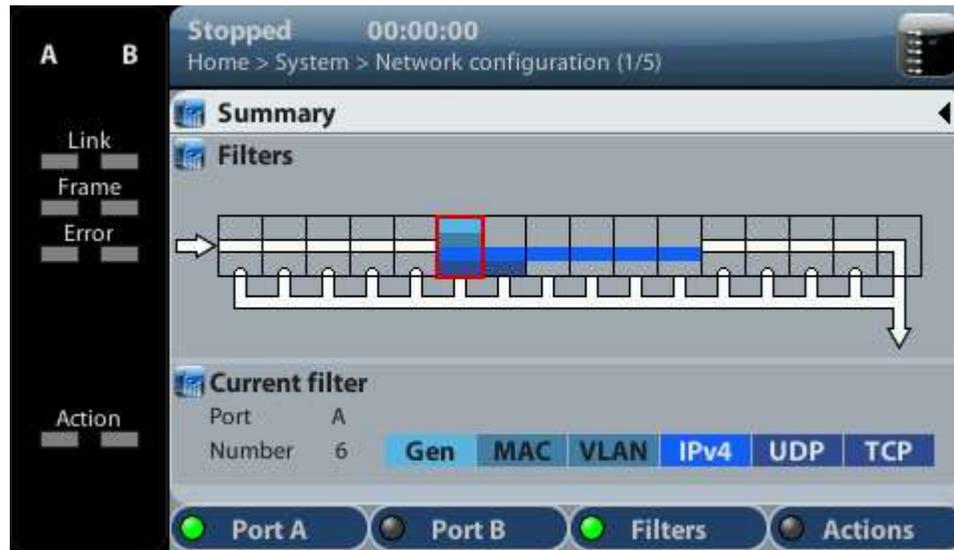


Monitor Ports (MP)

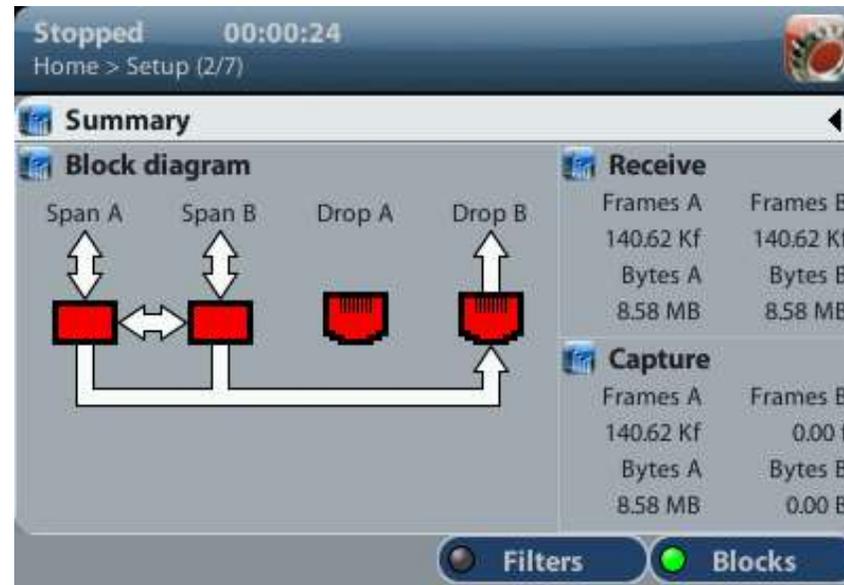
- ◆ do not pass bad / long / short frames, or VLAN tags
- ◆ change timing – you can't do any timing studies, no jitter ...
- ◆ MP / replication is low priority of a switch and thus issues

Consequently

- ◆ Monitor ports are NOT acceptable law enforcement surveillance
- ◆ Monitor ports are NOT acceptable for Compliance or Audit studies



- ◆ Equipped with 16 + 16 (Tx + Rx) programmable filters
- ◆ Full Duplex Operation
- ◆ All filters (16+16) can work simultaneously at wirespeed (1Gb/s + 1Gb/s)
- ◆ Multiplayer filters: IEC-61850. MAC, VLAN, IP, UDP, TCP, etc.



- **Mobility**, it is a true battery powered device that weighs less than 1.2kg.
- **Firmware filters** user defined to identify protocol flows.
- **FDX**, it works in both directions Tx & Rx to capture protocols.
- **Wirespeed**, zero loss and zero delay.
- **Copy & Forward**, matching packets are copied and forwarded to the mirror.
- **Copy & Save**, matching packets can be saved to the SD card in PCAP.
- **Errored Frames**, good to troubleshoot: FCS, runts, fragments are also captured.
- **Transparency**, as it is invisible to the for increased security
- **Aggregation**, matching packets of both port are aggregated to the output.
- **Regeneration**, after tapping all traffic is forwarded.
- **Remote control**, on any client with standard VNC.

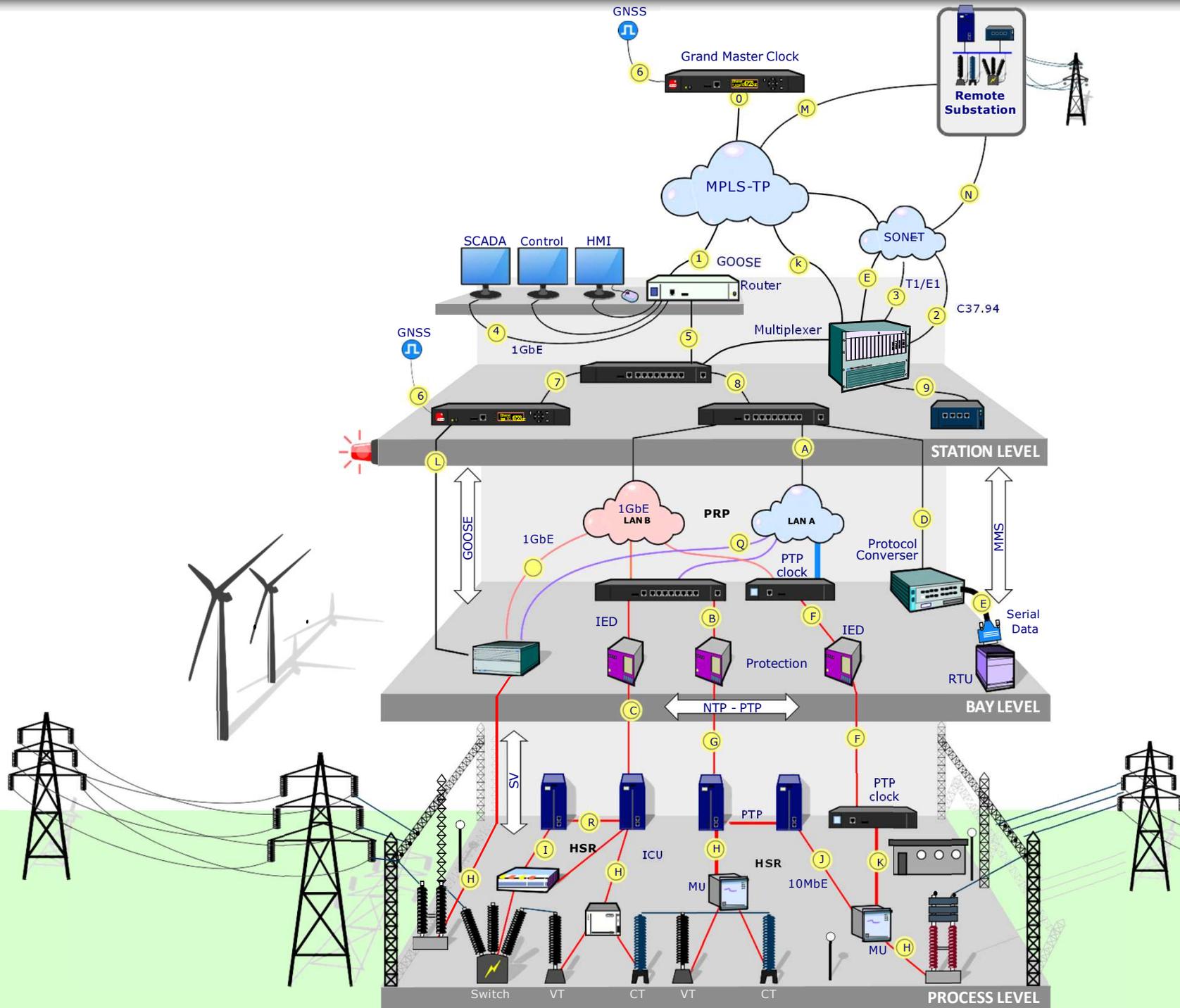


- Portable tap for field works
- Overcomes limitations of Laptop, and enrackable taps
- Troubleshoot and monitor live traffic in a risk less way
- Carrier grade fault tolerant
- Invisible when connected



Feature	Laptop	Tap	NShark	WHAT – WHY – HOW
Wirespeed	NO	✓	✓	Laptop and PCs captures are CPU driven impossible to scale up to Gbit/s
Mobility	✓	NO	✓	A field engineer should be ready to sniff at any point of the network
Full Duplex	NO	✓	✓	Engineers are forced to select a port despite protocols are full duplex
Transparent	NO	✓	✓	No MAC, no IP address then cannot be hacked
FCS frames	NO	✓	✓	Errored frames (FCS, runs, fragments) are discarded then can't reach PC
Batteries	✓	NO	✓	Fault tolerant if power goes down NS continues with batteries
Storage	✓	NO	✓	NS can capture and storage compliant traffic on the SD card
Time Stamp	✓	NO	✓	NS can storage in PCAP format without liant traffic on the SD card
Aggregation	NO	✓	✓	Copied packets from both Ports can be aggregated before to be dropped
No Disturb	NO	✓	✓	PCs generate delays, loss, and a lot of jitter when are used as taps
Screen+Keyboard	✓	NO	✓	Because NS is tap and also a proper hand held computer with Linux
Remote Control	✓	✓	✓	NS can also be managed remotely using standard VNC

Points to tap with Net.Shark



Net.Shark – Competitors



That's all



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