



ALTANOVA
A DOBLE COMPANY



Soluciones para pruebas en subestaciones bajo IEC-61850

Marcos Velázquez Lechuga
Senior Client Service Protection Engineer
Doble Engineering

ALTANOVA , una empresa de Doble Engineering, proporciona soluciones de diagnóstico a empresas de energía e industrias para mejorar el rendimiento de sus activos eléctricos a través de equipos de prueba portátiles, sistemas de monitoreo avanzado y servicios profesionales.

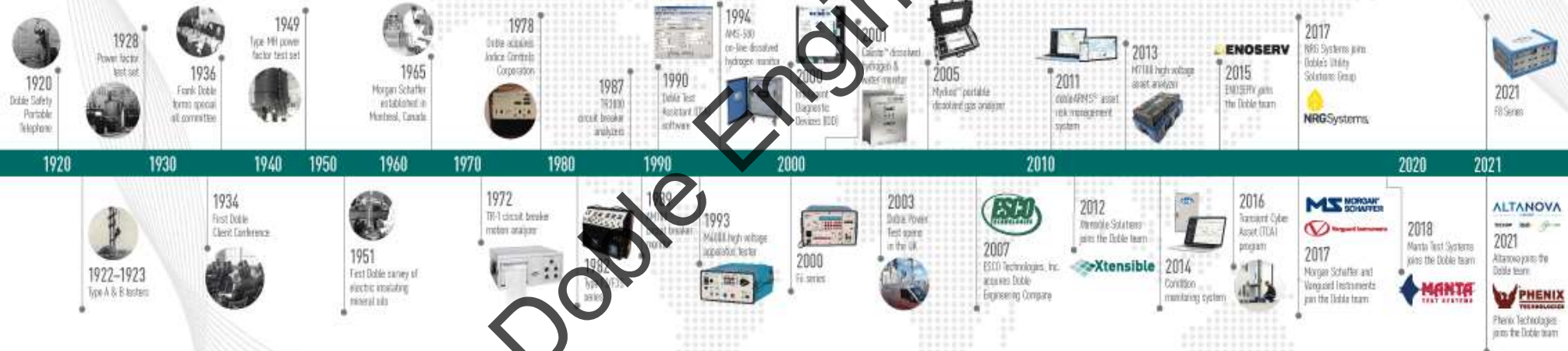
Historia de Altanova

- 1938 I.S.A. Istrumentazioni Sistemi Automatici S.r.l. se estableció en Taino ITALIA.
- 1999 TECHIMP nació indirectamente de la Universidad de Bologna ITALIA.
- 2017 I.S.A. y TECHIMP se fusionan dando origen al Grupo ALTANOVA.
- 2019 INTELLISAW se une al Grupo ALTANOVA.
- 2021 Grupo ALTANOVA pasa a formar parte de Grupo ESCO Technology Group y se une a la empresa Doble Engineering, como parte de la división USG.



Historia de Doble Engineering

100 YEARS OF SERVICE TO THE ELECTRIC UTILITY INDUSTRY



Altanova hoy!



100
PAISES



12

LOCACIONES
A NIVEL
GLOBAL



150+
EMPLEADOS



150+
SOCIOS DE VENTAS



5550+
CLIENTES A NIVEL
GLOBAL



Parte de ESCO
Technologies' Utility
Solutions Group

MARCAS DE PRODUCTOS



Nuestras Soluciones

Equipos de Pruebas Eléctricas

Imprescindible para las pruebas de mantenimiento del día a día de los activos eléctricos. Útil en fases específicas del ciclo de vida de los activos:

- Obtener.
- Operar.
- Mantener.
- Desmantelar.

Servicios Profesionales

Una oferta variada según el ciclo de vida del activo eléctrico:

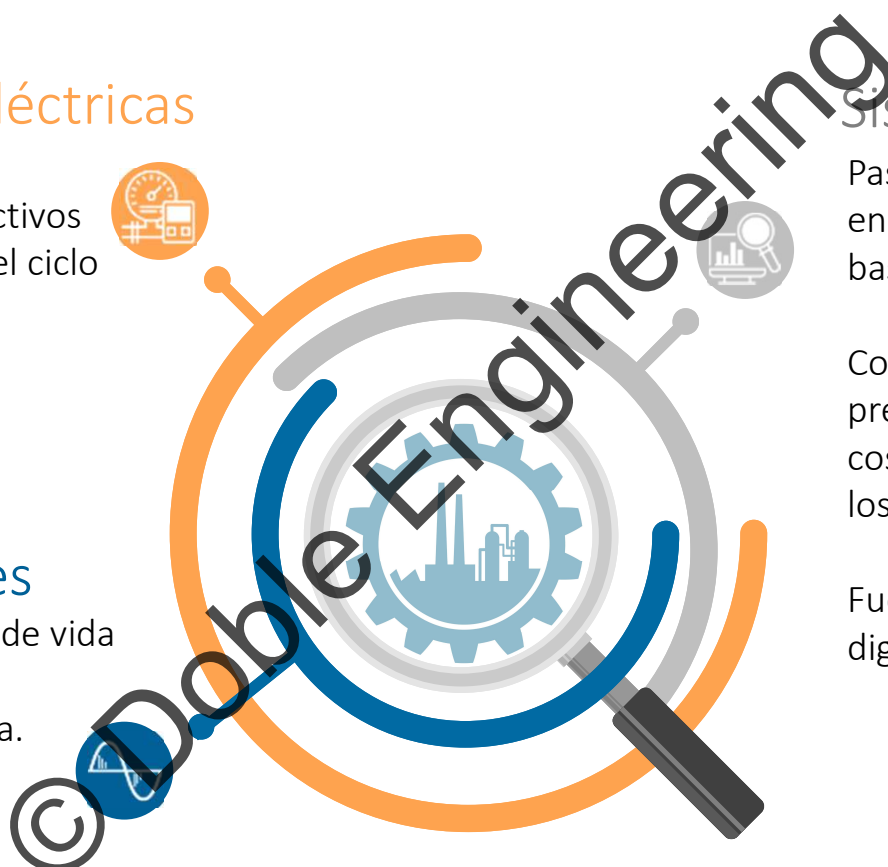
- Instalación y puesta en marcha.
- Prueba de diagnóstico.
- Análisis de los datos.
- Consultoría.
- Capacitación.

Sistemas de Monitoreo

Pase de un mantenimiento basado en el tiempo a un mantenimiento basado en la condición.

Concéntrese en el mantenimiento predictivo y cambie el enfoque del costo del valor del activo eléctrico a los costos de interrupción de la red.

Fuerte evolución de la tendencia de digitalización en la industria eléctrica.



Soluciones para Pruebas y Monitoreo:



- Transformadores de potencia.
- Interruptores.
- Celdas de HV con aislamiento de gas.
- Cables MV/HV/EHV.
- Celdas de MV/LV.
- Baterías.
- Transformadores de Corriente & Voltaje.
- Relevadores de protección.
- Medidores y transductores.
- Máquinas Rotarias.
- Variador de frecuencia.
- Catenarias.





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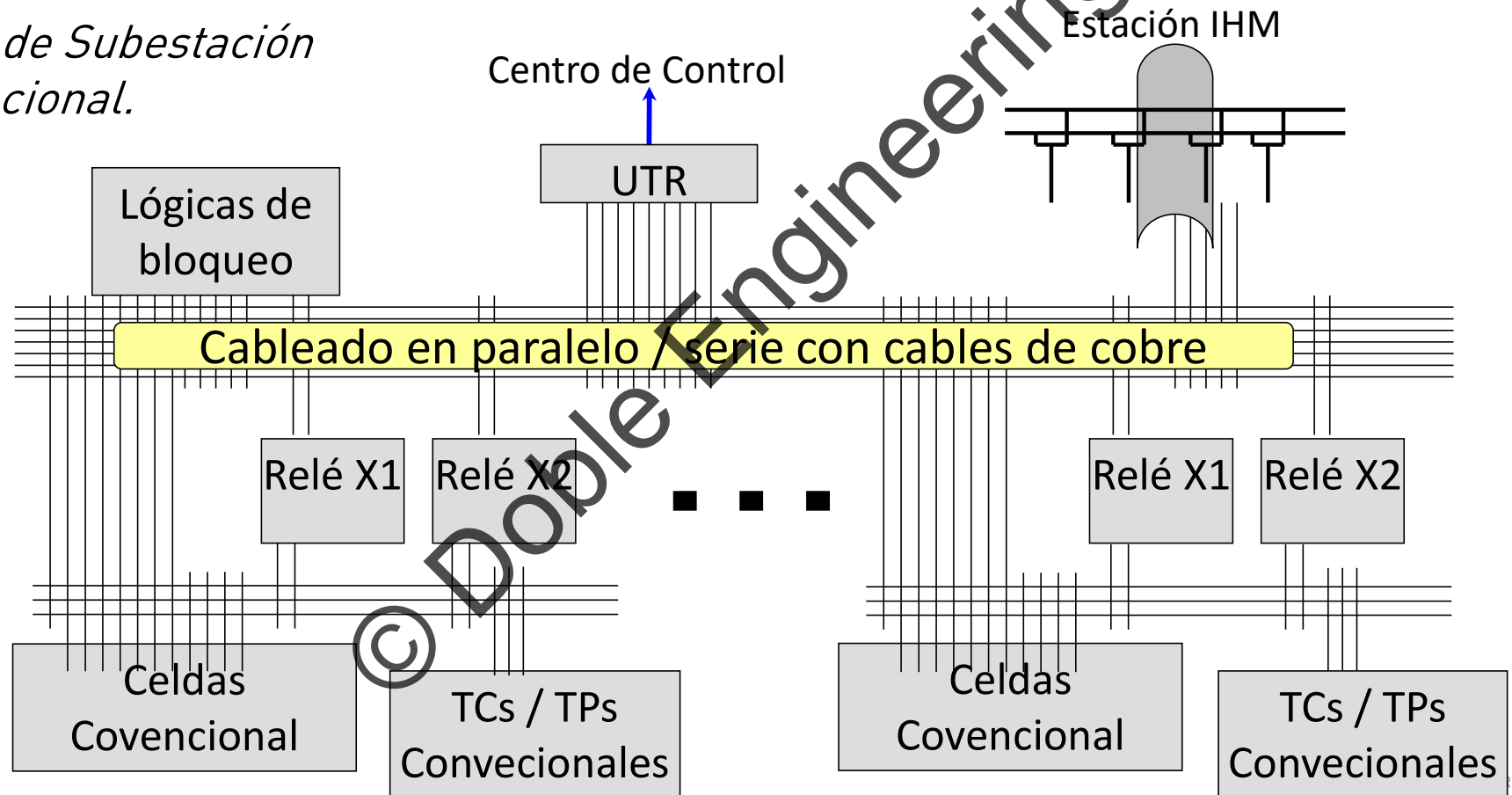


Soluciones para pruebas en subestaciones bajo IEC-61850

Marcos Velázquez Lechuga
Senior Client Service Protection Engineer
Doble Engineering

Protección, Automatización y Control de Sistemas.

Diseño de Subestación Convencional.



Evolución de Red Eléctrica

Múltiples retos a las que hacer frente.

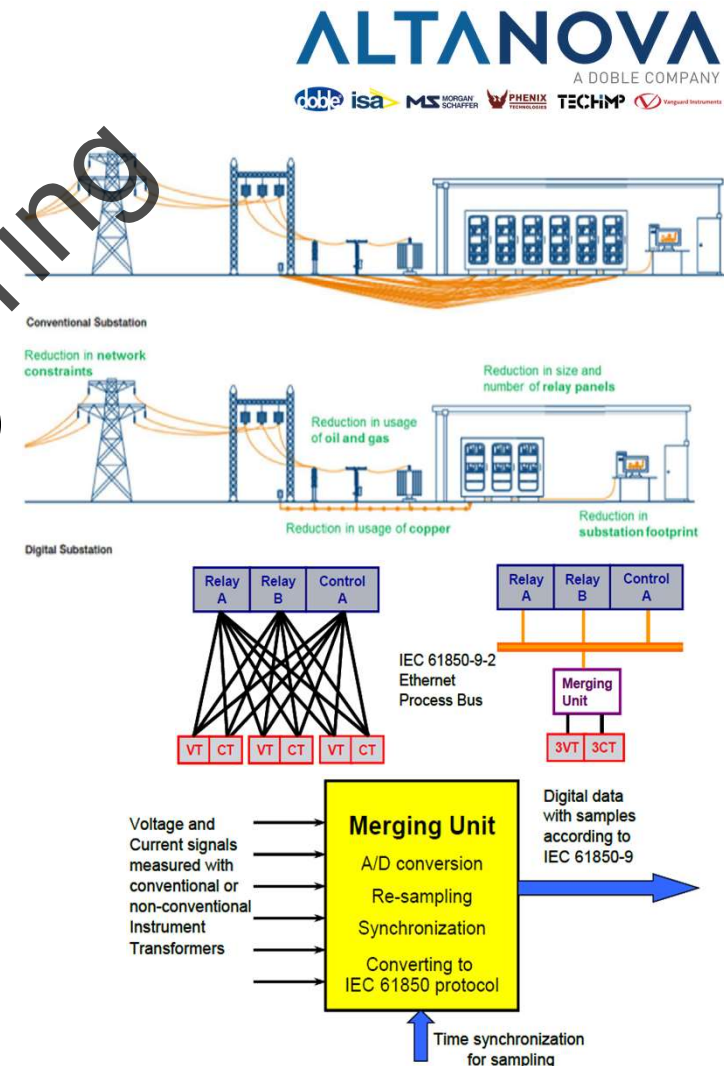
- Interconexiones, Automatización, Comunicaciones, Tamaño & Costo

« Nuevo concepto » Substation Automation System(S.A.S.)

- Intelligent Electrical Devices (I.E.D.): Relés
- IEC-61850 Bus Proceso / Bus Estación (Red Ethernet)
- SMV (Sampled Measurement Values): I & V,
- GOOSE (Alarmas, Disparos...) & MMS (Reportes...)

Desde el transformador de instrumento para medición de Voltajes y Corrientes.

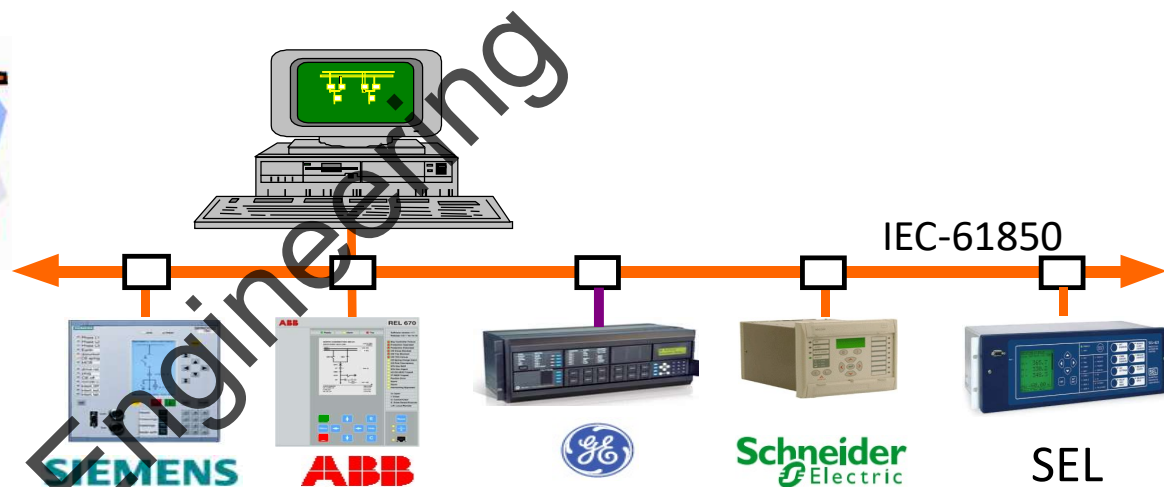
- Seguro, pequeño, ligero, adecuado: MU (Merging Units)



¿Qué es IEC-61850 ? ¿Qué logra?



Modelado
Configuración
Comunicación



Equipos de Subestaciones “Real”

Diferentes fabricantes, equipos, medidas, dispositivos de control y protección, diferentes configuraciones de funciones

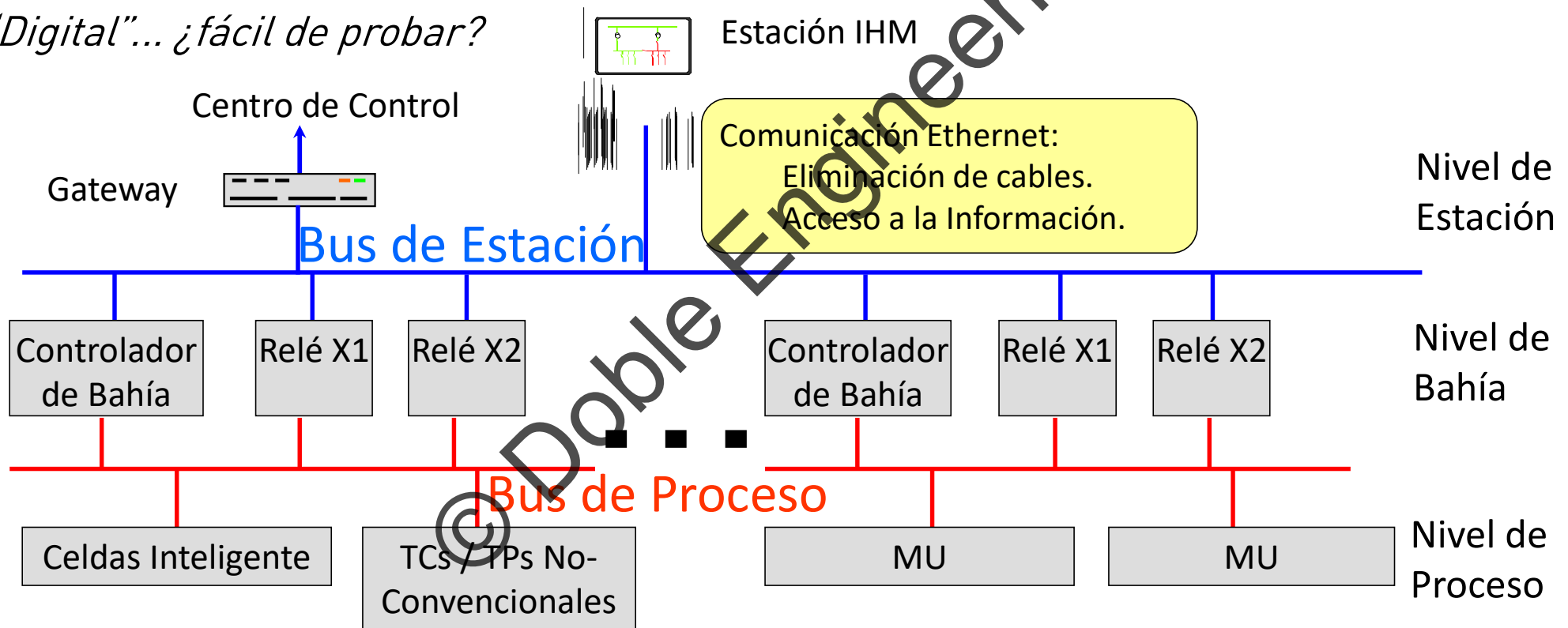
“Digital” S.A.S.

Objetivos del Estándar:

- Interoperabilidad
- Libre configuración
- Estabilidad a largo plazo

IEC-61850 Comunicación de Bus Estación / Bus de Proceso

*Diseño de nueva Subestación
"Digital"... ¿fácil de probar?*



Principio Fundamental del IEC 61850



El principio fundamental del IEC 61850 es el de la utilización de protocolos de comunicaciones que describe completamente la estructura de datos y funcionalidades del sistema de información en la subestación en una manera estandarizada

© Doble Engineering

Retos para las pruebas de protecciones.

- Nuevos equipos de protección manejan más que “solo” funciones de protección a probar (**Intelligent Electrical Devices**)
- La tecnología ha cambiado: Todo se vuelve “Digital”, por lo tanto, aumenta los intercambios de datos y contribuye a las preocupaciones de “Big Data”, incluyendo problemas de **Ciberseguridad**.
- Aún y por mucho tiempo, duplicación de equipo de protección “Convencional” & “Digital” para mantenimiento y pruebas periódicas.
- Ampliar los conocimientos esenciales del personal de protección a (**Redes, Ethernet, Conceptos, etc**), y se deben de facilitar las pruebas (más “Visual”)
- Las características de aislamiento para pruebas con IEC-61850, **no son comprendidas** por la mayoría de los que prueban dispositivos.

Retos para las pruebas de protecciones, cont.



- Existen diferentes herramientas para análisis de red tales como Wireshark, pero son difíciles de usar para la visualización de datos durante las pruebas.
- Una subestación completa y su archivo SCD podría contener 100 IED's o más, que podría ser difícil de manejar durante los diferentes escenarios de prueba sin errores.
- El proceso de configuración de una prueba es a veces un método de prueba y error.
- **No existe cabida para errores** cuando se está realizando pruebas de mantenimiento en una subestación en servicio.

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Lenguaje de Configuración de Sistema (SCL) - XML

Una idea central de IEC-61850 es un lenguaje de descripción, que describe completamente la estructura de datos y la funcionalidad de un sistema de información de subestación de manera estandarizada.

SCL es un lenguaje de descripción que describe toda la información y cómo se comunica.

El formato del archivo es XML
(eXtensible Markup Language)

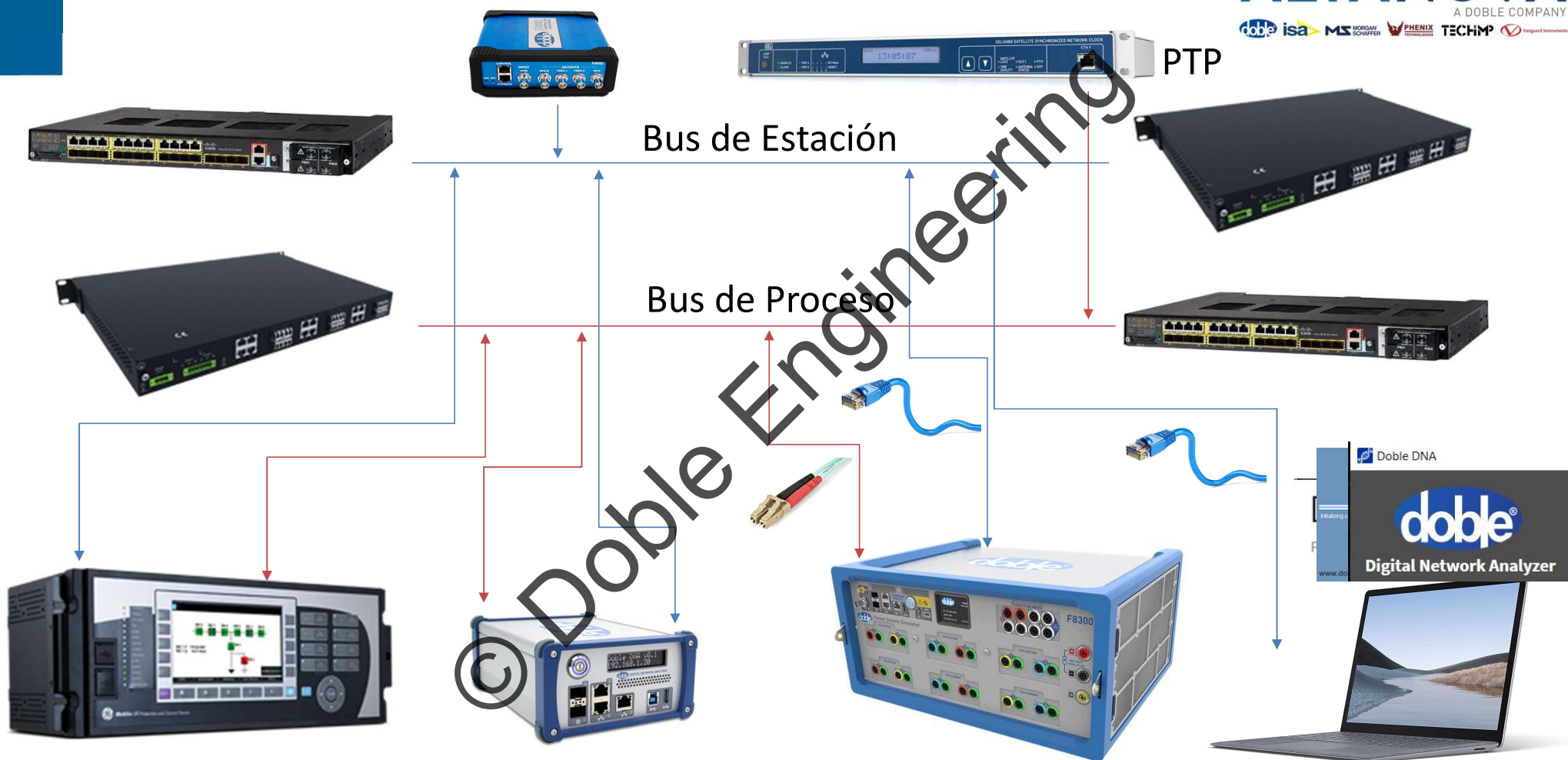
Este lenguaje estandarizado

puede ser entendido por dispositivos
y software de diferentes
fabricantes, asegurando uno
de los objetivos clave de IEC 61850.

Interoperabilidad de múltiples proveedores

⇒ *Equivalente al diagrama detallado
de alambrado.*

```
<?xml version="1.0" encoding="UTF-8"?>
<SCL xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xmlns="http://www.iec.ch/61850/2003/SCL"
xsi:schemaLocation="http://www.iec.ch/61850/2003/SCL SCL.xsd" version="2007" revision="A">
  <Header id="SCL Example T1-1" toolID="SSI-Tool" nameStructure="IEDName" />
  <Substation name="S12" desc="Baden">
    <PowerTransformer name="T1" type="PTR">
      <LNode lnInst="1" lnClass="PDIF" lnInst="F1" iedName="D1Q1BP2" />
      <LNode lnInst="1" lnClass="YLTC" lnInst="S12D1T1" iedName="None" />
      <TransformerWinding name="W1" type="PTW">
        <Terminal connectivityNode="S12/D1/Q1/L1" substationName="S12" voltageLevelName="D1" bayName="Q1"
cNodeName="L1" />
      </TransformerWinding>
      <TransformerWinding name="W2" type="PTW">
        <Terminal connectivityNode="S12/E1/Q2/L3" substationName="S12" voltageLevelName="E1" bayName="Q2"
cNodeName="L3" />
      </TransformerWinding>
    </PowerTransformer>
    <VoltageLevel name="D1">
      <Voltage multiplier="k" unit="V">220</Voltage>
      <Bay name="Q1">
        <LNode iedName="None" lnInst="S12D1Q1" lnClass="PDIS" lnInst="1" />
        <ConductingEquipment name="I1" type="CTR">
          <Terminal connectivityNode="S12/D1/Q1/L1" substationName="S12" voltageLevelName="D1" bayName="Q1"
cNodeName="L1" />
          <SubEquipment name="R" phase="A">
            <LNode iedName="D1Q1BP2" lnInst="F1" lnClass="TCTR" lnInst="1" />
          </SubEquipment>
        </ConductingEquipment>
      </Bay>
    </VoltageLevel>
  </Substation>
</SCL>
```



Soluciones en Hardware



F8300, F8200



F6150sv



F6880 (DNA)

F8 Hardware



7-módulos F8300



4-módulos F8200

GPS
1 PPS
QZSS
GLONASS
BeiDou

IRIG-B & 1 PPS
Modulado B120
No-modulado B000

2 x Puertos SFP
Cobre/Fibra
1 Gbps c/u

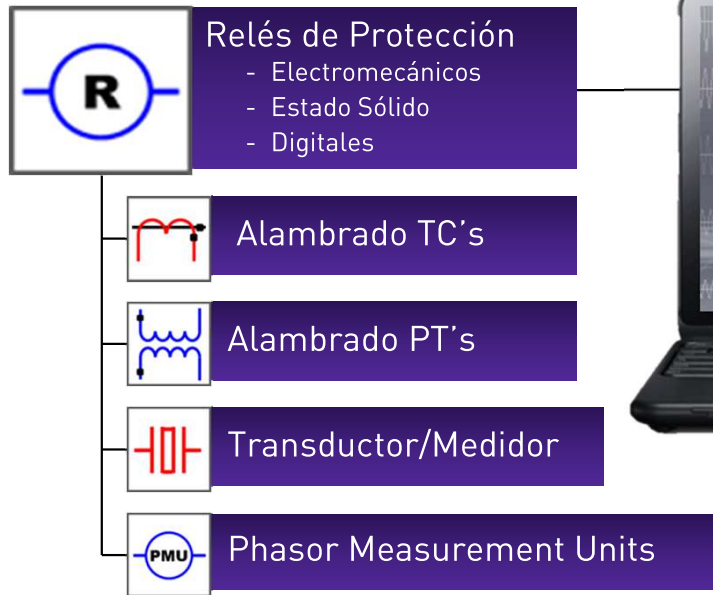
3 x Puertos Ethernet
1 x PoE (40 W / 57 V)
10/100/1000 Mbps c/u

USB 3.0 Tipo A
Seleccionable On/Off
Memoria Externa

USB 3.0 Tipo C
Comunicación &
Control con la PC

PTP IEEE 1588 v.2 (PTP v2)
IEC 61850-9-3 Power Utility Profile

Protection Suite



Trabaja con las serie Doble F2000, serie F6000 y F800.



Pruebas de Estado Estable

Pruebas de Estado Dinámico

Secuencias de Estado

Pruebas Transitorias

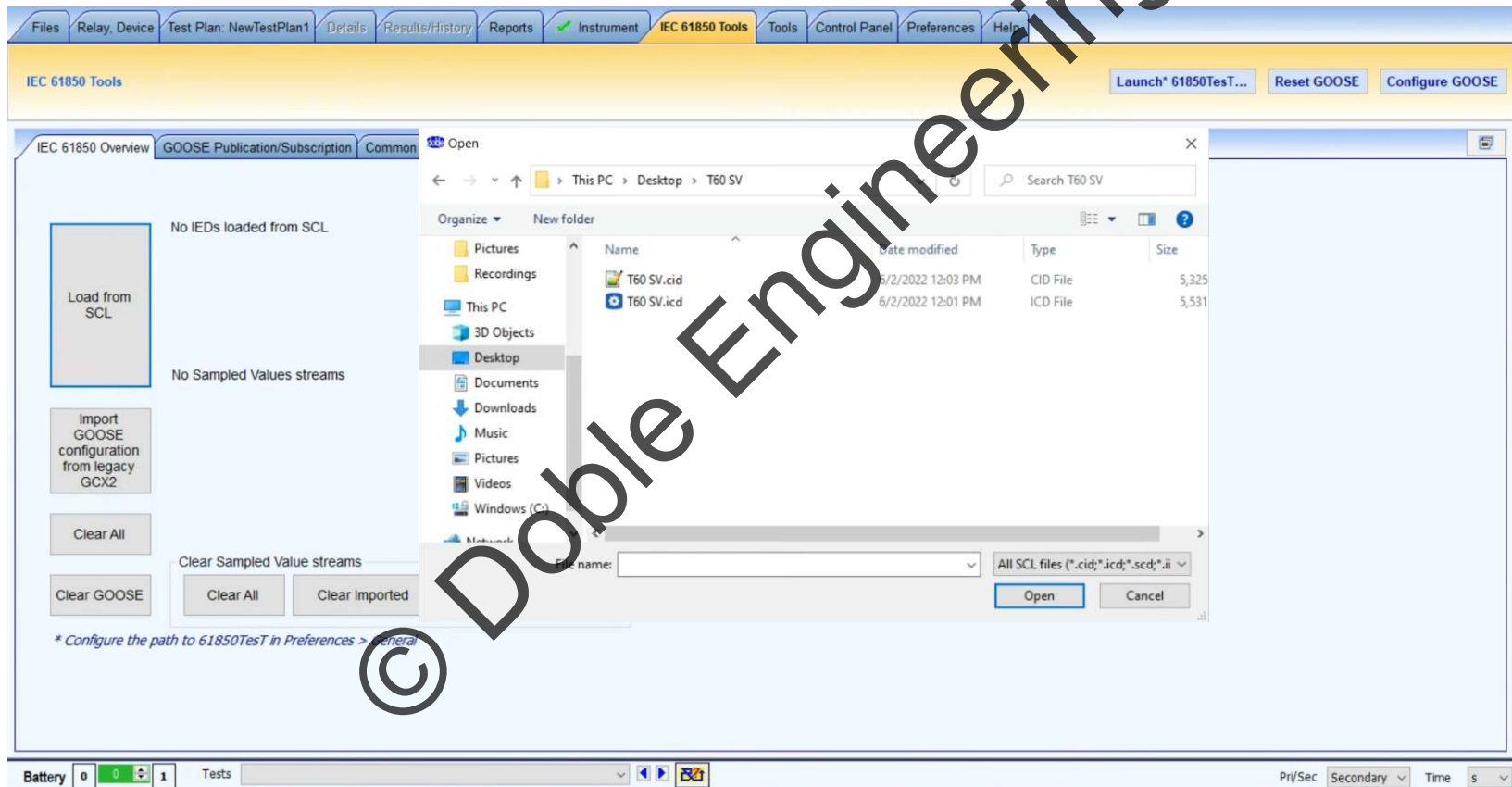
Personalización de las pruebas

Pruebas IEC 61850

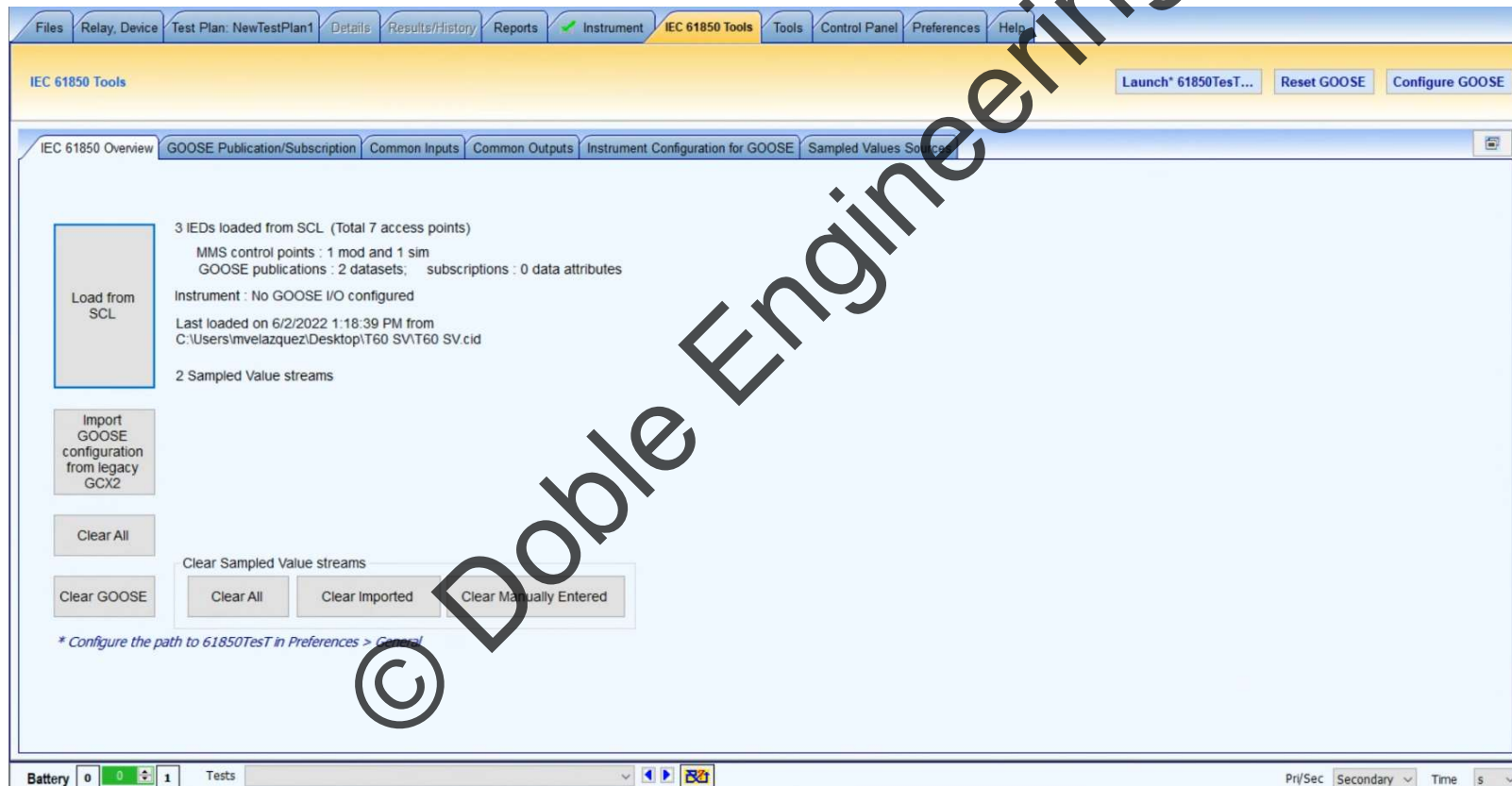
Automatización y Scripting

Documentación y reportes

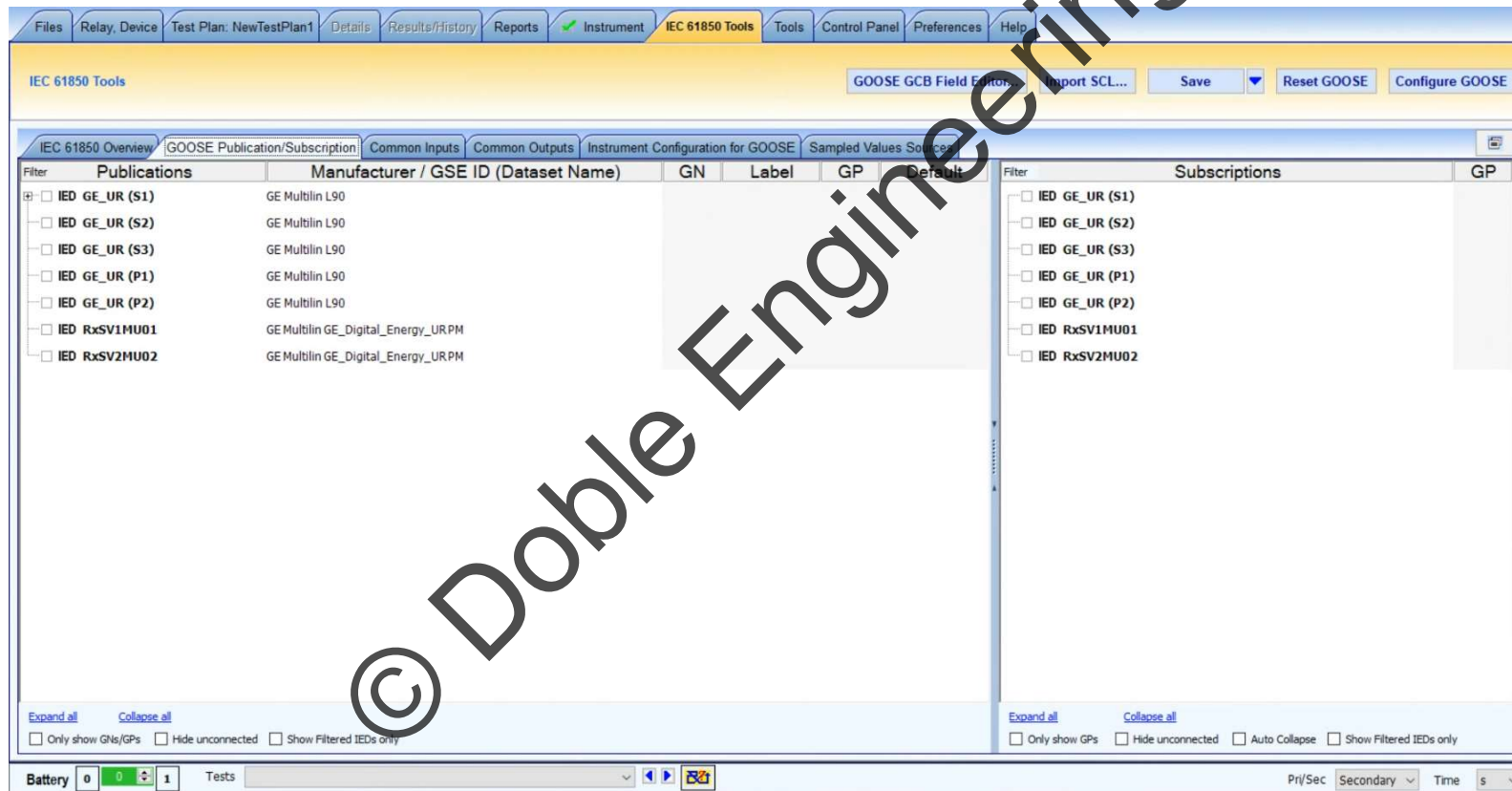
Protection Suite - IEC 61850 Tools



Protection Suite - IEC 61850 Tools, cont.



Protection Suite – IEC 61850 Tools, cont.



Protection Suite – IEC 61850 Tools, cont.

IEC 61850 Tools

GOOSE GCB Field Editor... Import SCL... Save Reset GOOSE Configure GOOSE

IEC 61850 Overview GOOSE Publication/Subscription Common Inputs Common Outputs Instrument Configuration for GOOSE Sampled Values Sources

Filter Publications Manufacturer / GSE ID (Dataset Name) GN Label GP Default

☐ IED UR_T60 (S1)	GE Multilin T60						
☒ G Master/LLN0/GoCB01	TxPIOC(TT6_PIOC)				Simulation	☒	
DA general	Prot.PhsIocPIOC1.Op.general (ST)	GN1			FALSE (0)		
DA phsA	Prot.PhsIocPIOC1.Op.phsA (ST)	GN2			FALSE (0)		
DA phsB	Prot.PhsIocPIOC1.Op.phsB (ST)	GN3			FALSE (0)		
DA phsC	Prot.PhsIocPIOC1.Op.phsC (ST)	GN4			FALSE (0)		
DA q	Prot.PhsIocPIOC1.Op.q (ST)	GN5			G-00000000-P-T0		
☒ G Master/LLN0/GoCB02	TxPTOC(TT6_PTOC)				Simulation	☒	
DA general	Prot.PhsTocPTOC1.Op.general (ST)	GN6			FALSE (0)		
DA phsA	Prot.PhsTocPTOC1.Op.phsA (ST)	GN7			FALSE (0)		
DA phsB	Prot.PhsTocPTOC1.Op.phsB (ST)	GN8			FALSE (0)		
DA phsC	Prot.PhsTocPTOC1.Op.phsC (ST)	GN9			FALSE (0)		
DA q	Prot.PhsTocPTOC1.Op.q (ST)	GN10			G-00000000-P-T0		
☐ IED UR_T60 (S2)	GE Multilin T60						
☐ IED UR_T60 (S3)	GE Multilin T60						
☐ IED UR_T60 (P1)	GE Multilin T60						
☐ IED UR_T60 (P2)	GE Multilin T60						
☐ IED RxSV1MU01	GE Multilin GE_Digital_Energy_URPM						
☐ IED RxSV2MU02	GE Multilin GE_Digital_Energy_URPM						

Expand all Collapse all

☐ Only show GNs/GPs ☐ Hide unconnected ☐ Show Filtered IEDs only

Subscriptions GP

☐ IED UR_T60 (S1)	
☐ IED UR_T60 (S2)	
☐ IED UR_T60 (S3)	
☐ IED UR_T60 (P1)	
☐ IED UR_T60 (P2)	
☐ IED RxSV1MU01	
☐ IED RxSV2MU02	

Expand all Collapse all

☐ Only show GPs ☐ Hide unconnected ☐ Auto Collapse ☐ Show Filtered IEDs only

Battery 0 0 1 Tests Pri/Sec Secondary Time s

Protection Suite – IEC 61850 Tools, cont.

IEC 61850 Tools

Reset GOOSE Configure GOOSE

IEC 61850 Overview GOOSE Publication/Subscription Common Inputs Common Outputs Instrument Configuration for GOOSE Sampled Values Sources

Default Digital Inputs

#	Label	Logic Input	Input Type	Sense Type	Input	Relay output	Connections
1		GN1	GOOSE	0->1	Prot.PhsIocP1OC1.Op.general (ST)	GE_URMaster/LLN0\$G0\$GoCB01	✗
2		GN2	GOOSE	0->1	Prot.PhsIocP1OC1.Op.phsA (ST)	GE_URMaster/LLN0\$G0\$GoCB01	✗
3		GN3	GOOSE	0->1	Prot.PhsIocP1OC1.Op.phsB (ST)	GE_URMaster/LLN0\$G0\$GoCB01	✗
4		GN4	GOOSE	0->1	Prot.PhsIocP1OC1.Op.phsC (ST)	GE_URMaster/LLN0\$G0\$GoCB01	✗
5		GN5	GOOSE	0->1	Prot.PhsIocP1OC1.Op.q (ST)	GE_URMaster/LLN0\$G0\$GoCB01	✗
6		GN6	GOOSE	0->1	Prot.PhsTocPTOC1.Op.general (ST)	GE_URMaster/LLN0\$G0\$GoCB02	✗
7		GN7	GOOSE	0->1	Prot.PhsTocPTOC1.Op.phsA (ST)	GE_URMaster/LLN0\$G0\$GoCB02	✗
8		GN8	GOOSE	0->1	Prot.PhsTocPTOC1.Op.phsB (ST)	GE_URMaster/LLN0\$G0\$GoCB02	✗
9		GN9	GOOSE	0->1	Prot.PhsTocPTOC1.Op.phsC (ST)	GE_URMaster/LLN0\$G0\$GoCB02	✗
10		GN10	GOOSE	0->1	Prot.PhsTocPTOC1.Op.q (ST)	GE_URMaster/LLN0\$G0\$GoCB02	✗

Battery 0 0 1 Tests Pri/Sec Secondary Time s

Protection Suite – IEC 61850 Tools, cont.

IEC 61850 Tools

Remove all SV streams Import SCL file Reset GOOSE

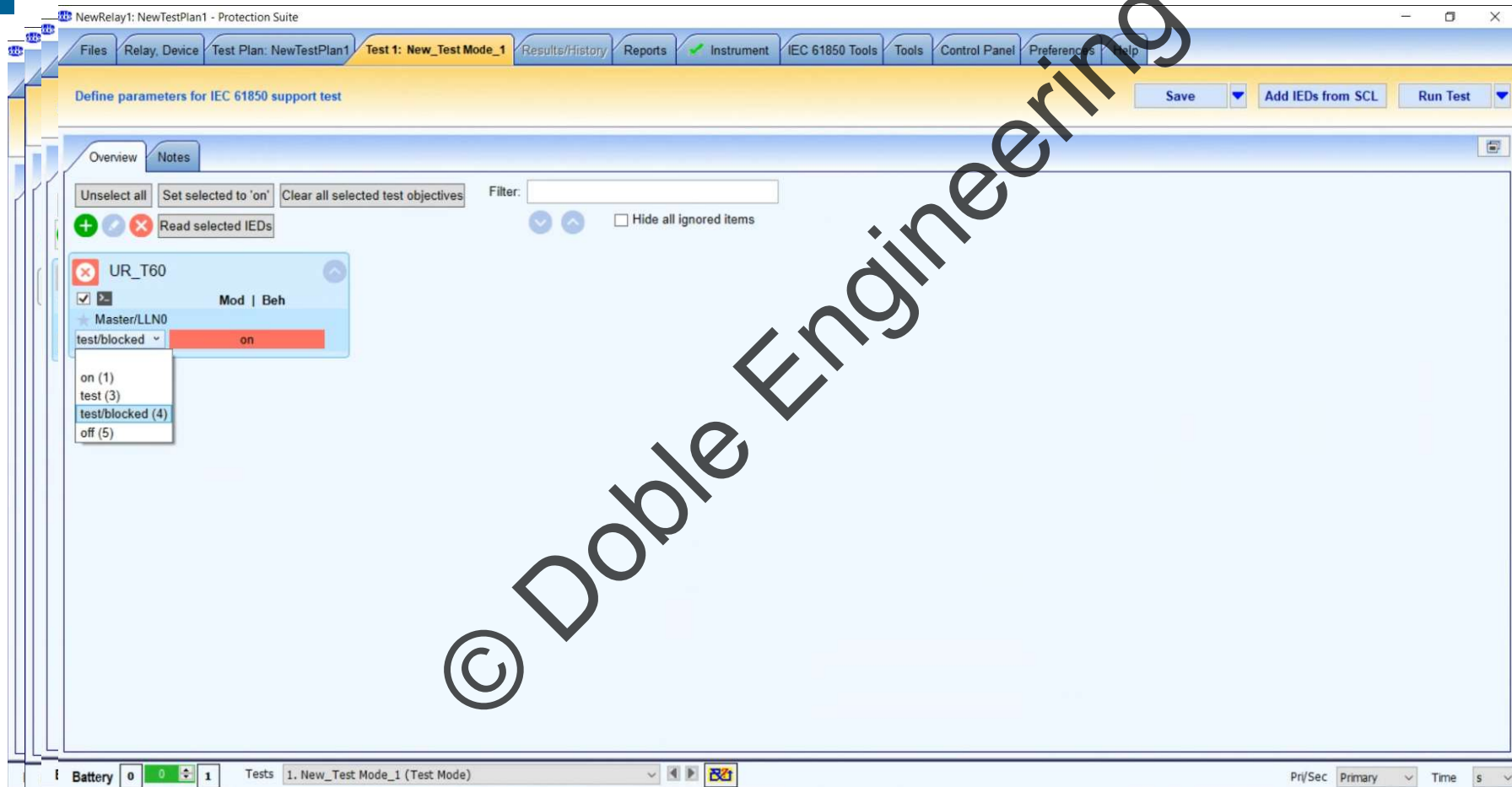
IEC 61850 Overview GOOSE Publication/Subscription Common Inputs Common Outputs Instrument Configuration for GOOSE Sampled Values Sources

Sampled Value LogicalDevice Data Sets

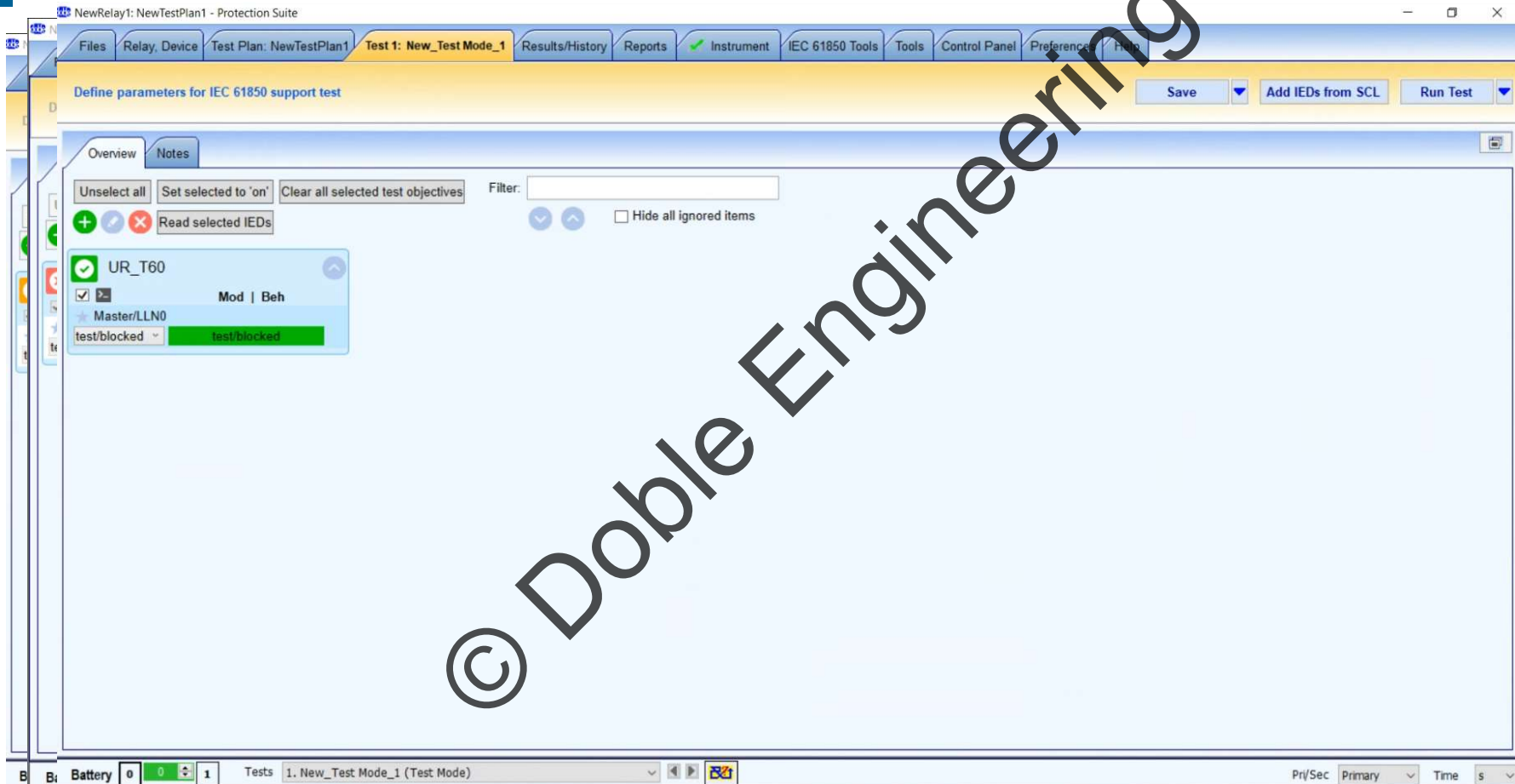
	SV set 1 of 2	SV set 2 of 2
IED name	RxSV1MU01	RxSV2MU02
LD instance name	1	1
Sampled Value ID	DOBLEMU001	DOBLEMU0201
Destination MAC Address	01:0C:CD:04:00:01	01:0C:CD:04:00:02
Application ID	Hex 4000	4000
VLAN ID	Hex 0	0
VLAN Priority	4	4
MSV control block name	MSVCB01	MSVCB03
MSV description		
Configuration revision	1	1
Variant	From SCL	From SCL
Format (PbS/Uu)	F4800S1I4U4	F4800S1I8U4
Sample rate	80 /cy	4800 /s
ASPS (samples) per packet	1	1
Dataset name	PhsMeas1	PhsMeas2
Number of current channels	4	8
Number of voltage channels	4	4
Include VLAN header	☒	☒

Battery 0 0 1 Tests Pri/Sec Secondary Time s

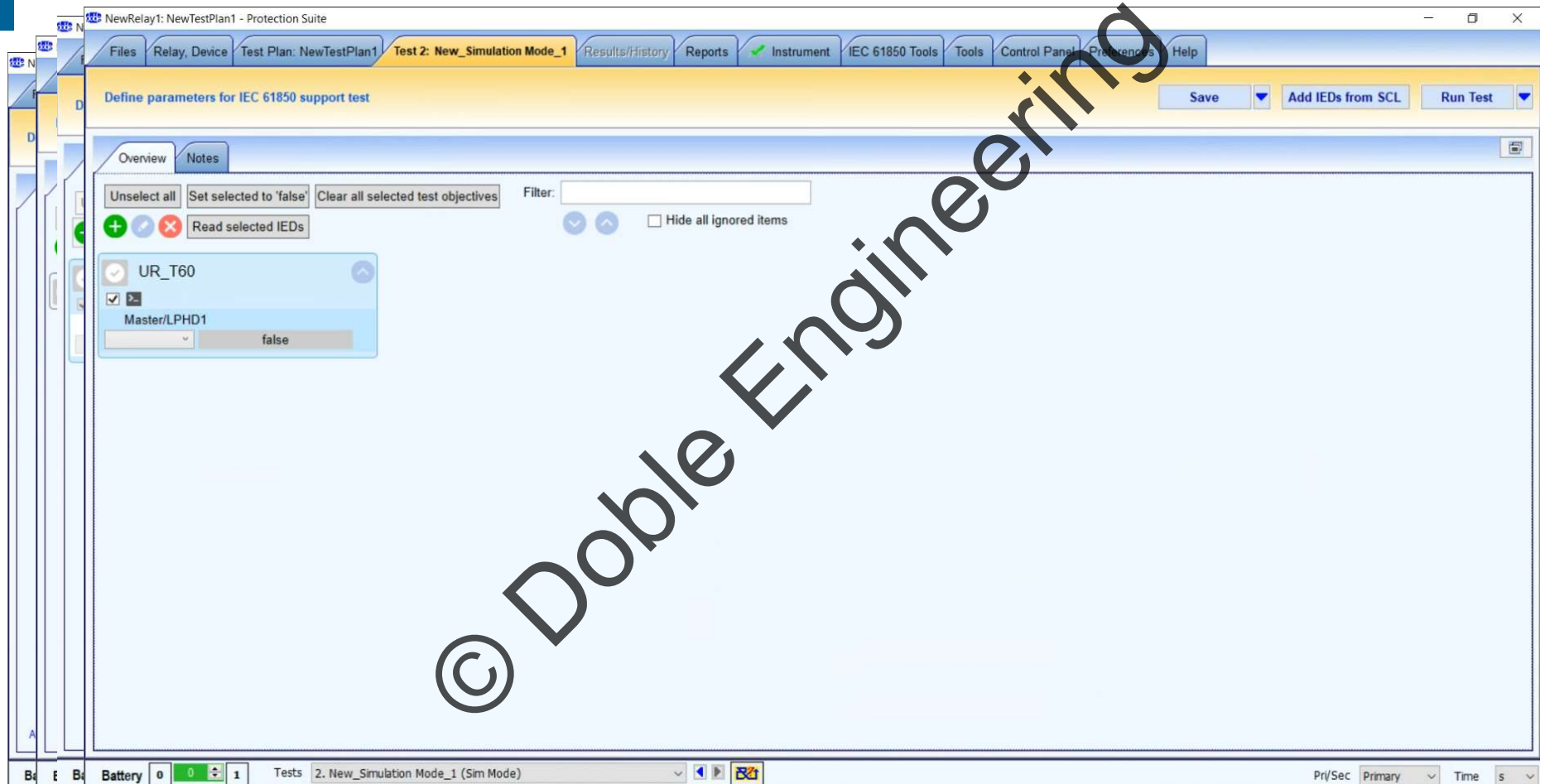
Protection Suite – Test Plan



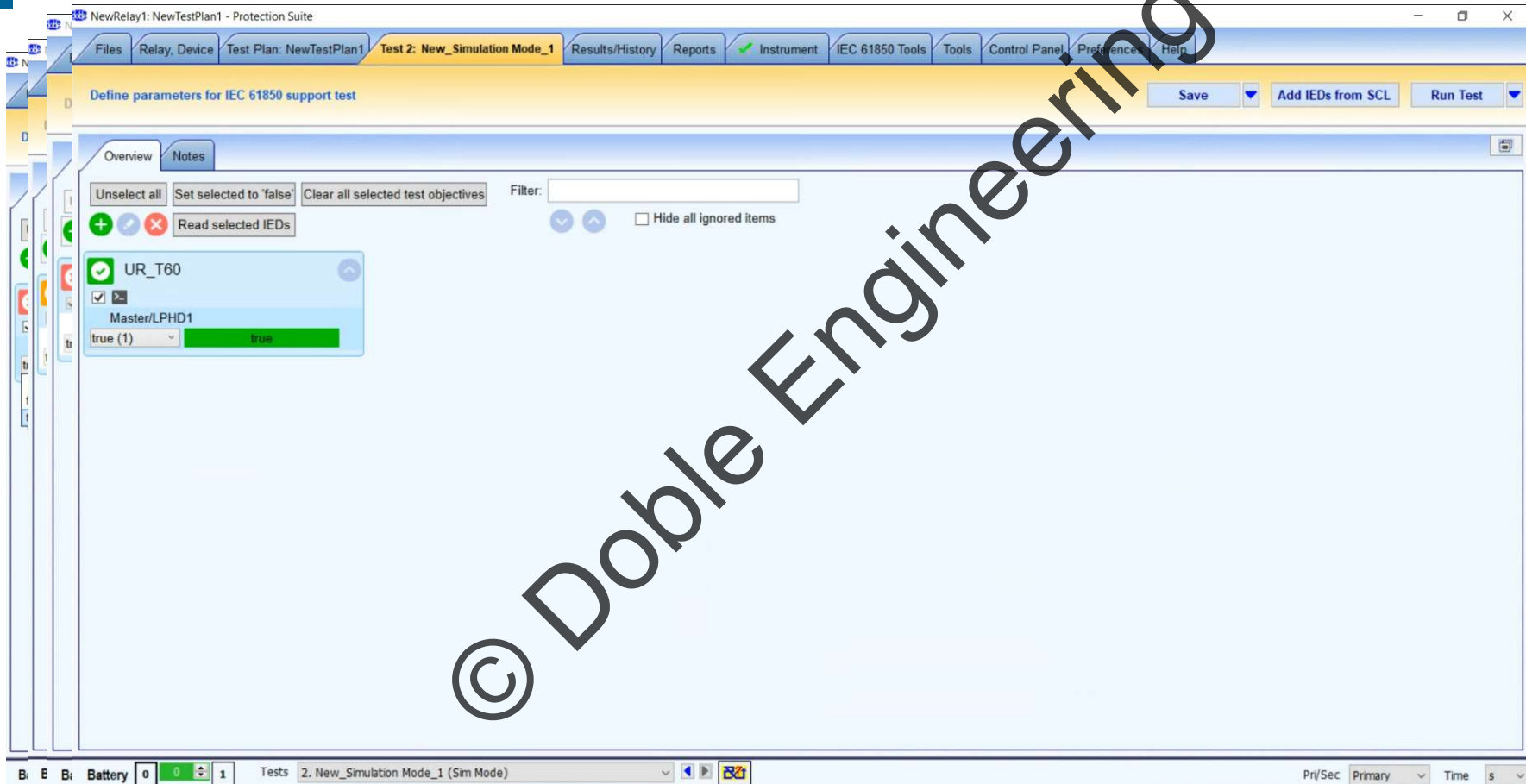
Protection Suite – Test Plan, cont.



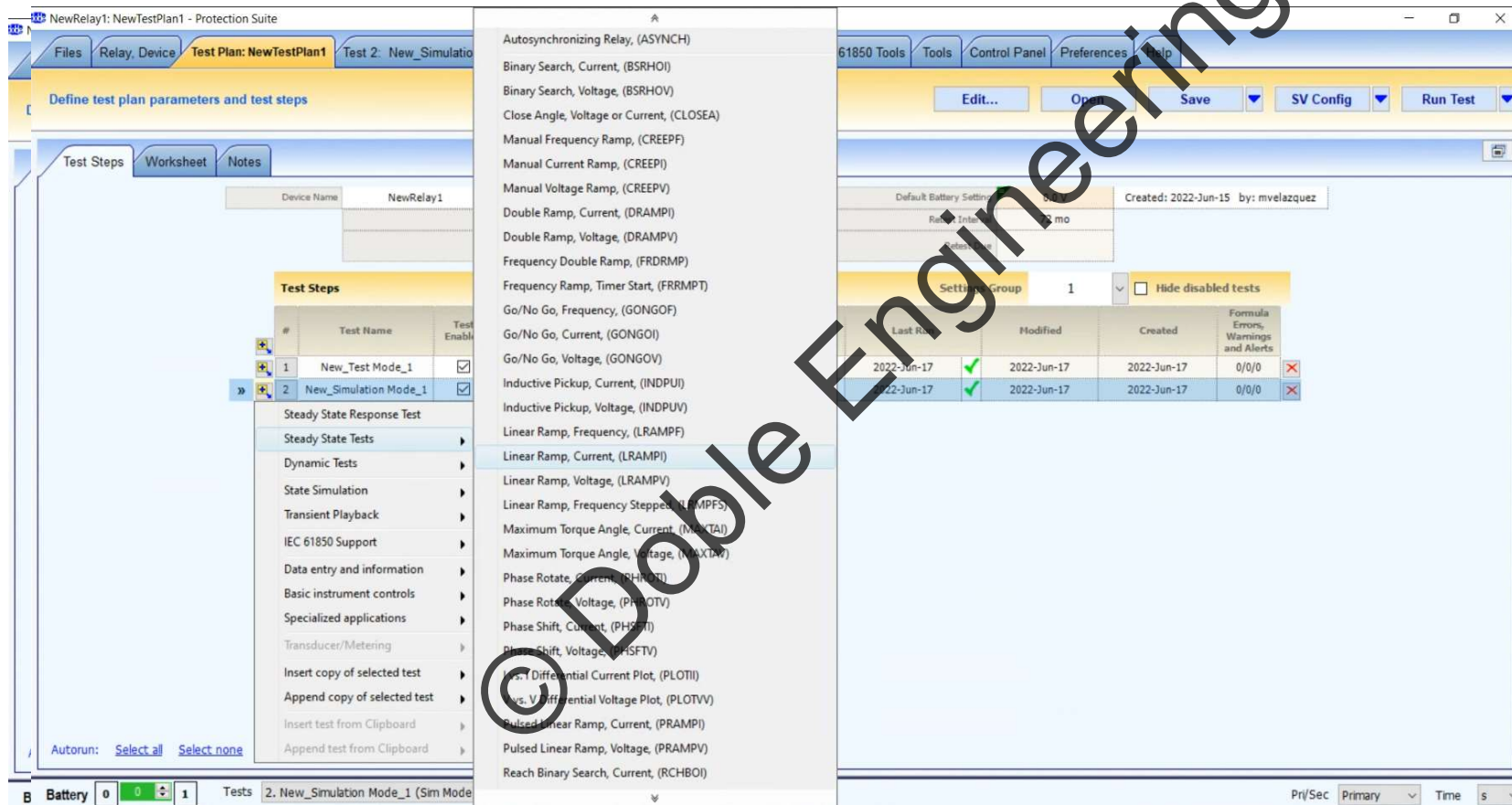
Protection Suite – Test Plan, cont.



Protection Suite – Test Plan, cont.



Protection Suite – Test Plan, cont.



NewRelay1: NewTestPlan1 - Protection Suite

Files Relay, Device Test Plan: NewTestPlan1 Test 2: New_Simulation

Define test plan parameters and test steps

Test Steps Worksheet Notes

Device Name NewRelay1

Test Steps

#	Test Name	Test Enabled
1	New_Test Mode_1	☒
2	New_Simulation Mode_1	☒

Steady State Response Test

Steady State Tests

Dynamic Tests

State Simulation

Transient Playback

IEC 61850 Support

Data entry and information

Basic instrument controls

Specialized applications

Transducer/Metering

Insert copy of selected test

Append copy of selected test

Insert test from Clipboard

Append test from Clipboard

Autosynchronizing Relay, (ASYNCH)

Binary Search, Current, (BSRHOI)

Binary Search, Voltage, (BSRHOV)

Close Angle, Voltage or Current, (CLOSEA)

Manual Frequency Ramp, (CREEPF)

Manual Current Ramp, (CREEPI)

Manual Voltage Ramp, (CREEPV)

Double Ramp, Current, (DRAMPI)

Double Ramp, Voltage, (DRAMPV)

Frequency Double Ramp, (FRDRMP)

Frequency Ramp, Timer Start, (FRRMPT)

Go/No Go, Frequency, (GONGOF)

Go/No Go, Current, (GONGOI)

Go/No Go, Voltage, (GONGOV)

Inductive Pickup, Current, (INDPUI)

Inductive Pickup, Voltage, (INDPUV)

Linear Ramp, Frequency, (LRAMPF)

Linear Ramp, Current, (LRAMPI)

Linear Ramp, Voltage, (LRAMPV)

Linear Ramp, Frequency Stepped, (LRMPFS)

Maximum Torque Angle, Current, (MAXTAI)

Maximum Torque Angle, Voltage, (MAXTAV)

Phase Rotate, Current, (PHROTI)

Phase Rotate, Voltage, (PHROTV)

Phase Shift, Current, (PHSFTI)

Phase Shift, Voltage, (PHSFTV)

Vs. I Differential Current Plot, (PLOTII)

Vs. V Differential Voltage Plot, (PLOTIV)

Pulsed Linear Ramp, Current, (PRAMPPI)

Pulsed Linear Ramp, Voltage, (PRAMPV)

Reach Binary Search, Current, (RCHBOI)

61850 Tools Tools Control Panel Preferences Help

Edit... Open Save SV Config Run Test

Default Battery Settings Created: 2022-Jun-15 by: mvelazquez

Settings Group 1 ☐ Hide disabled tests

Last Run	Modified	Created	Formula Errors, Warnings and Alerts
2022-Jun-17	2022-Jun-17	2022-Jun-17	0/0/0
2022-Jun-17	2022-Jun-17	2022-Jun-17	0/0/0

Battery 0 0 1 Tests 2. New_Simulation Mode_1 (Sim Mode)

Pri/Sec Primary Time s

Protection Suite – Test Plan, cont.

Files Files Relay Device Test Plan: NewTestPlan1 **Test 1: New_LRAMP1_1** Results/History Reports Instrument IEC 61850 Tools Tools Control Panel Preferences Help

Define Define Define test parameters, measurement ranges and triggering for generalized response tests. Save SV Config Run Test

Overview Overview States Test Points Sources Worksheet Inputs Timers Outputs Notes Recording Formula References

Active Sources Used for this Test Rename All Sources

Instrument Source		Connections		D	Enable Recording	Type	Range	
Name	Label	Hi	Lo					
DOBLEMU0101_U01ATVTR1	V1			☐	☐			X
DOBLEMU0101_U01BTVTR2	V2			☐	☐			X
DOBLEMU0101_U01CTVTR3	V3			☐	☐			X
DOBLEMU0101_U01NTVTR4	VN			☐	☐			X
DOBLEMU0101_I01ATCTR1	I1			☐	☐			X
DOBLEMU0101_I01BTCTR2				☐	☐			X
DOBLEMU0101_I01CTCTR3				☐	☐			X
DOBLEMU0101_I01NTCTR4				☐	☐			X

Battery 0 Battery

Battery 0 0 1 Tests 1. New_LRAMP1_1 (LRAMP1) Pri/Sec Secondary Time s

Protection Suite – Test Plan, cont.

Define test parameters, measurement ranges and triggering for generalized response tests. Save SV Config Run Test

Overview States Test Points Sources Worksheet Inputs Timers Outputs Notes Recording Formula References

Logic Inputs Setup

Channel Details						Recording and Scaling									
#	Logic Input	Label	Input Type	Usage	Connections	Digital		Analog		Sensor Scaling (Current Probe)		CONTRADE			
						Rec	Normal Scale	Rec	Input Range	Input	Output	Channel Info		CT/VT Ratio	
												Units	P/S	Pri	Sec
1	LN1	LN1	/	1					250 V (rms)	1 V	1 V	V	S	1	1
2	GN1	*	(5) GOOSE		GE_URMaste...										

Battery 0 0 1 Tests 1. New_LRAMP1_1 (LRAMP1) Pri/Sec Secondary Time s

GE UR Relay – Phase IOC

 Save  Restore  Default  Reset VIEW ALL <i>mode</i>					
PARAMETER	PHASE IOC1	PHASE IOC2	PHASE IOC3	PHASE IOC4	
Function	Enabled	Disabled	Disabled	Disabled	
Source	P_IOC (SRC 1)	P_IOC (SRC 1)	P_IOC (SRC 1)	P_IOC (SRC 1)	
Pickup	1.500 pu	1.000 pu	1.000 pu	1.000 pu	
Delay	0.00 s	0.00 s	0.00 s	0.00 s	
Reset Delay	0.00 s	0.00 s	0.00 s	0.00 s	
Block A	OFF	OFF	OFF	OFF	
Block B	OFF	OFF	OFF	OFF	
Block C	OFF	OFF	OFF	OFF	
Target	Latched	Self-reset	Self-reset	Self-reset	
Events	Enabled	Disabled	Disabled	Disabled	

1 pu = 5 A sec

1.5 pu = 7.5 A sec

$600 / 5 = 120 \text{ A pri}$

$120 * 7.5 = 900 \text{ A}$

Protection Suite – Test Plan, cont.

Files | Relay, Device | Test Plan: NewTestPlan1 | **Test 1: New_LRAMP1_1** | Results/History | Reports | Instrument | IEC 61850 Tools | Tools | Control Panel | Preferences | Help

Define test parameters, measurement ranges and triggering for generalized response tests. [Save] [SV Config] [Run Test]

Overview | States | Test Points | Sources | Worksheet | Inputs | Timers | Outputs | Notes | Recording | Formula References

Linear Ramp, Current [---]

Test Points

Expected	Actual
0.000 A	

View Graph

ProTest Equivalent: LRAMP1

Current vs Time graph showing a linear ramp from point A to E, with intermediate points B, C, and D. A 'Sense' point is also indicated.

Test Parameters

Name	Value
Offset Current	0.000 A
Offset Duration	0.000 s
± Delta Current	0.000 A
Delta Time	0.000 s
Current Limit	0.000 A

Fault details

Fault type	None
Voltage	0.00 V

Action State Summary

Sources		CT/VT Ratio	Connections		Amplitude	Action	Frequency
Name	DC		Hi	Lo			
DOBLEMU0101_U01ATVTR1	☐	1			0.0 V	0.00 °	60.000 Hz
DOBLEMU0101_U01BTVTR2	☐	1			0.0 V	0.00 °	60.000 Hz
DOBLEMU0101_U01CTVTR3	☐	1			0.0 V	0.00 °	60.000 Hz
DOBLEMU0101_U01INTVTR4	☐	1			0.0 V	0.00 °	60.000 Hz
DOBLEMU0101_I01ATCTR1	☐	1			0.0 A	0.00 °	60.000 Hz
DOBLEMU0101_I01BCTCR2	☐	1			0.0 A	0.00 °	60.000 Hz
DOBLEMU0101_I01CTCTR3	☐	1			0.0 A	0.00 °	60.000 Hz
DOBLEMU0101_I01NTCTR4	☐	1			0.0 A	0.00 °	60.000 Hz

Control Panel

Sense Settings

Channel ID	Label	Connections	Sense Condition
S1	*GN1	GE_URMaster/LLN0\$GO\$GoCB01	0->1

Sense Delay: 0.000 s
Sense Duration: 0.000 s
Play sound when relay operates: ☐

Jumpers

Test comments

Battery 0 0 1 Tests 1. New_LRAMP1_1 (LRAMP1) Pri/Sec Secondary Time s

Protection Suite – Test Plan, cont

Files Relay, Device Test Plan: NewTestPlan1 Test 1: New_LRAMP1_1 Results/History Reports Instrument IEC 61850 Tools Tools Control Panel Preferences Help

Define device parameters and test plans. Edit... Open Save SV Config Run Test

Nameplate Test Plans Device Parameters Protection Settings Settings History Worksheet Protection Functions Attachments Notes

Device capabilities ☒ Protection (relay) ☐ Transducer/Metering ☐ Phasor Measurement (PMU)

Device Name: NewRelay1 Location: Not closed

File Path:

Electrical Parameters

Nominal Values	Voltage (Vn)	120.0 V	Line to Line
	Current (In)	5.0 A	
	System Reference Frequency	60.00 Hz	
	Default Battery Voltage	0 V	

Phase

Naming	1	2	3
Number Current Sources	☒		
Phase Rotation	Forward (ABC)		

Test Limits

Maximum Voltage	240.0 V
Maximum Current	100.00 A

Regulatory category: Functional

VTs and CTs

	Primary	Secondary	VT Connect
Default VT	1000	1	Wye
CTs	600	5	

Battery 0 0 1 Tests 1. New_LRAMP1_1 (LRAMP1) Pri/Sec Secondary Time s

Protection Suite – Test Plan, cont

Files Relay, Device Test Plan: NewTestPlan1 **Test 1: New_LRAMP1_1** Results/History Reports Instrument IEC 61850 Tools Tools Control Panel Preferences Help

Define test parameters, measurement ranges and triggering for generalized response tests. Save SV Config Run Test

Overview States Test Points Sources Worksheet Inputs Timers Outputs Notes Recording Formula References

Linear Ramp, Current (DOBLEMU0101_I01ATCTR1, DOBLEMU0101_I01BCTR2, DOBLEMU0101_I01CTCTR3) ProTest Equivalent: LRAMP1

Test Points

Expected	Actual
900.000 A	

Test Parameters

Name	Value
Offset Current	870.000 A
Offset Duration	3.000 s
± Delta Current	10.000 A
Delta Time	1.000 s
Current Limit	910.000 A

Fault details

Fault type	Three Phase ABC
Voltage	0.00 V
Generate Sources	3V + 3I
Action angle offset	0.00 °

Action State Summary

Sources		DC	CT/VT Ratio	Connections		Amplitude	Phase	Frequency
Name				Hi	Lo			
DOBLEMU0101_U01ATVTR1		☐	1000			0.0 V	0.00 °	60.000 Hz
DOBLEMU0101_U01BTVTR2		☐	1000			0.0 V	240.00 °	60.000 Hz
DOBLEMU0101_U01CTVTR3		☐	1000			0.0 V	120.00 °	60.000 Hz
DOBLEMU0101_U01INTVTR4		☐	1000			0.0 V	0.00 °	60.000 Hz
DOBLEMU0101_I01ATCTR1		☐	120			Action	0.00 °	60.000 Hz
DOBLEMU0101_I01BCTR2		☐	120			Action	240.00 °	60.000 Hz
DOBLEMU0101_I01CTCTR3		☐	120			Action	120.00 °	60.000 Hz
DOBLEMU0101_I01INTCTR4		☐	120			0.0 A	0.00 °	60.000 Hz

Sense Settings

Channel ID	Label	Connections	Sense Condition
S1	*GN1	GE_URMaster/LLN0\$GO\$GoCB01	0->1
Sense Delay		0.000 s	
Sense Duration		0.000 s	
Play sound when relay operates		☐	

Jumpers

Test comments

Battery 0 0 1 Tests 1. New_LRAMP1_1 (LRAMP1) Pri/Sec Primary Time s

Protection Suite – Test Plan, cont

Files Relay, Device Test Plan: NewTestPlan1 **Test 1: New_LRAMP1_1** Results/History Reports Instrument IEC 61850 Tools Tools Control Panel Preferences Help

Define test parameters, measurement ranges and triggering for generalized response tests. Save SV Config Run Test

Overview States **Test Points** Sources Worksheet Inputs Timers Outputs Notes Recording Formula References

Expected		Measured Results			Tolerance		Severity	Aut Timers
Op	Current	Op	Current	Δ	Minus	Plus		
Value	900.000 A				10.00 %	10.00 %	Error	
		Absolute Minimum		0.000 A	Tolerance Type		Percent	

☐ Show Phasor...

Battery 0 0 1 Tests 1. New_LRAMP1_1 (LRAMP1) Pri/Sec Primary Time s

Protection Suite – Test Plan, cont

Files Relay, Device Test Plan: NewTestPlan1 **Test 1: New_LRAMP1_1** Results/History Reports Instrument IEC 61850 Tools Tools Control Panel Preferences Help

Define test parameters, measurement ranges and triggering for generalized response tests.

Save SV Config Run Test

Continue publishing at end of test (On)
Continue publishing at end of test (Off)

Start SV publishing (zero values)
Stop publishing
Continue publishing at end of test (OFF)
SV start delay (25)...
Configure SV for selected test...

Overview States **Test Points** Sources Worksheet Inputs Timers Outputs Notes Recording Formula References

Test Points

Expected		Measured Results		Tolerance		Aux	
Op	Current	Op	Current	Δ	Minus	Plus	Severity
Value	900,000 A				10.00 %	10.00 %	Error
Absolute Minimum		0.000 A		Tolerance type		Percent	

⏏ Show Phasor...

Battery 0 0 1 Tests 1. New_LRAMP1_1 (LRAMP1) Pri/Sec Primary Time s

Verificación del Sampled Values.

Capturing from PROCESS -Ethernet 4

File Edit View Go Capture Analyze Statistics Telephony Wireless Tools Help

Apply a display filter ... <Ctrl-/>

No.	Time	Source	Destination	Protocol	Length	smpCnt	stNum	svID	Info
32202	6.699084	DobleEng_00:a5:98	Iec-Tc57_04:00:01	IEC6...	123	1967		DOBLEMU0101	
32203	6.700056	DobleEng_00:a5:98	Iec-Tc57_04:00:01	IEC6...	123	1968		DOBLEMU0101	
32204	6.700080	DobleEng_00:a5:98	Iec-Tc57_04:00:01	IEC6...	123	1969		DOBLEMU0101	
32205	6.700085	DobleEng_00:a5:98	Iec-Tc57_04:00:01	IEC6...	123	1970		DOBLEMU0101	
32206	6.700089	DobleEng_00:a5:98	Iec-Tc57_04:00:01	IEC6...	123	1971		DOBLEMU0101	
32207	6.700988	DobleEng_00:a5:98	Iec-Tc57_04:00:01	IEC6...	123	1972		DOBLEMU0101	
32208	6.701017	DobleEng_00:a5:98	Iec-Tc57_04:00:01	IEC6...	123	1973		DOBLEMU0101	
32209	6.701022	DobleEng_00:a5:98	Iec-Tc57_04:00:01	IEC6...	123	1974		DOBLEMU0101	

> Frame 1: 123 bytes on wire (984 bits), 123 bytes captured (984 bits) on interface \Device\NPF_{F9ADB53-64D6-4D40-B9E7-F02FE96C000C}, id 0

> Ethernet II, Src: DobleEng_00:a5:98 (00:1e:d4:00:a5:98), Dst: Iec-Tc57_04:00:01 (01:0c:cd:04:00:01)

> IEC61850 Sampled Values

APPID: 0x4000

Length: 109

Reserved 1: 0x8000 (32768), Simulated

Reserved 2: 0x0000 (0)

> savPdu

noASDU: 1

> seqASDU: 1 item

> ASDU

svID: DOBLEMU0101

smpCnt: 3408

confRev: 1

0000 01 0c cd 04 00 01 00 1e d4 00 a5 98 88 ba 40 00@.

0010 00 6d 80 00 00 00 63 80 01 01 a2 5e 30 5c 80 -m...c...001

0020 0b 44 4f 42 4c 45 4d 55 30 31 30 31 82 02 0d 50 -DOBLEMU 0101...P

0030 83 04 00 00 00 01 85 01 01 87 40 00 00 00 00 00@.....

0040 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00@.....

PROCESS -Ethernet 4: <live capture in progress>

Packets: 102231 · Displayed: 102231 (100.0%)

Profile: Default

Protection Suite - Results

Define test parameters, measurement ranges and triggering for generalized response tests.

Save SV Config Run Test

Overview States Test Points Sources Worksheet Inputs Timers Outputs Notes Recording Formula References

Test Points

Expected		Measured Results			Tolerance		Severity	Aux. Timers
Op	Current	Op	Current	Δ	Minus	Plus		
Value	7.500 A				10.00%	10.00%	Error	
		Absolute Minimum	0.000 A		Tolerance Type		Percent	

⏏ Show Phasor...

Battery 0 0 1 Tests 1. New_LRAMPL_1 (LRAMPL) Pri/Sec Secondary Time s

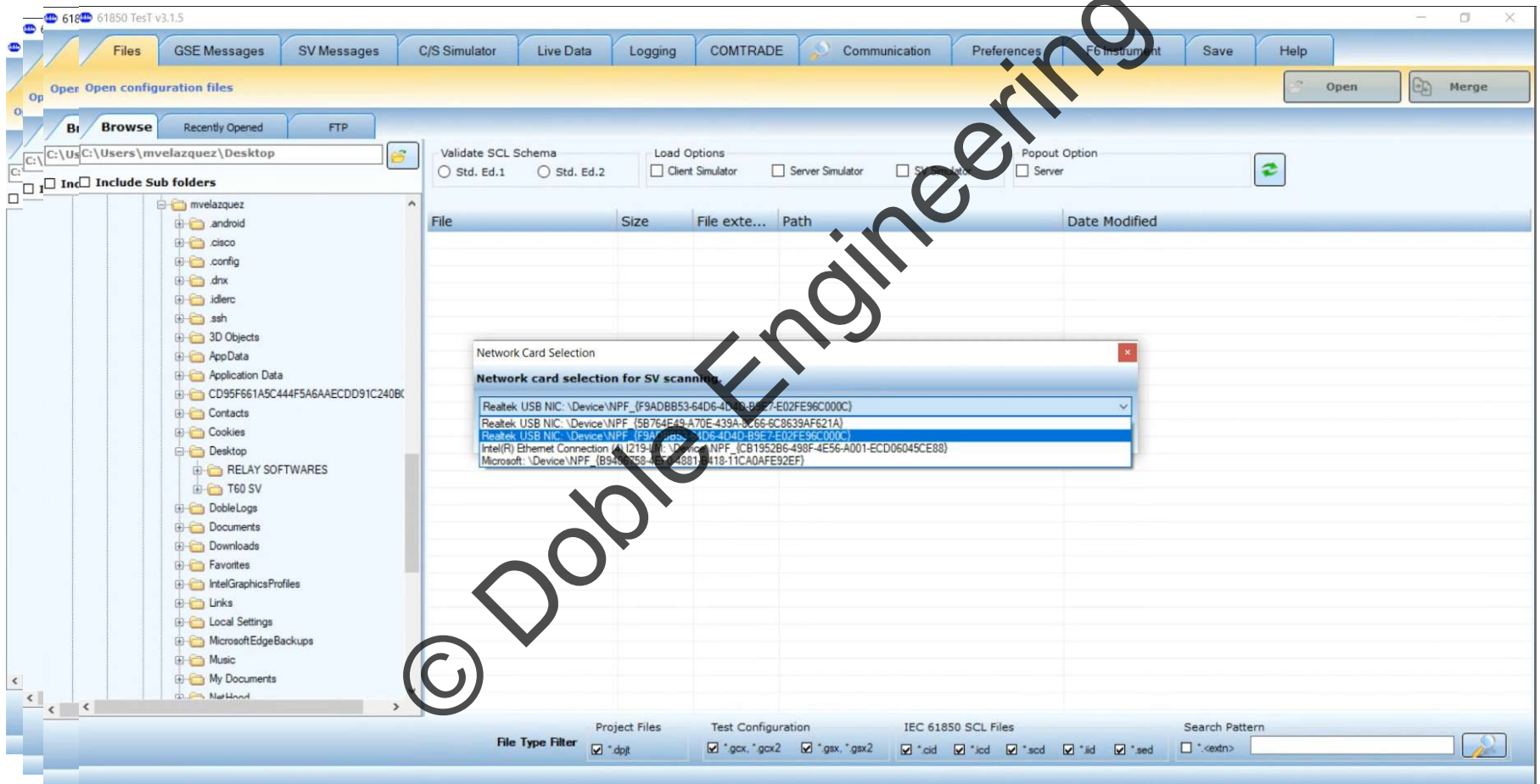
61850 TestT



- Un software para poder realizar monitoreos con equipos IEC 61850.
- Compatible con F6 y F8.
- Configuración de Entradas y Salidas al equipo de prueba.
- Anunciador en forma de panel o tabular en tiempo real.
- Visualización de las formas de onda.
- Señales capturadas en formato COMTRADE.



61850 TestT



61850 Test, cont.

61850 Test v3.1.5

Files GSE Messages **SV Messages** C/S Simulator Live Data Logging COMTRADE Communication Preferences 65 Instrument Save Help

View, discover or simulate SV messages

Substation SV Simulator

☐ Subscribe SV outside the recommended MAC Address range ☒ Allow addition of newly discovered messages

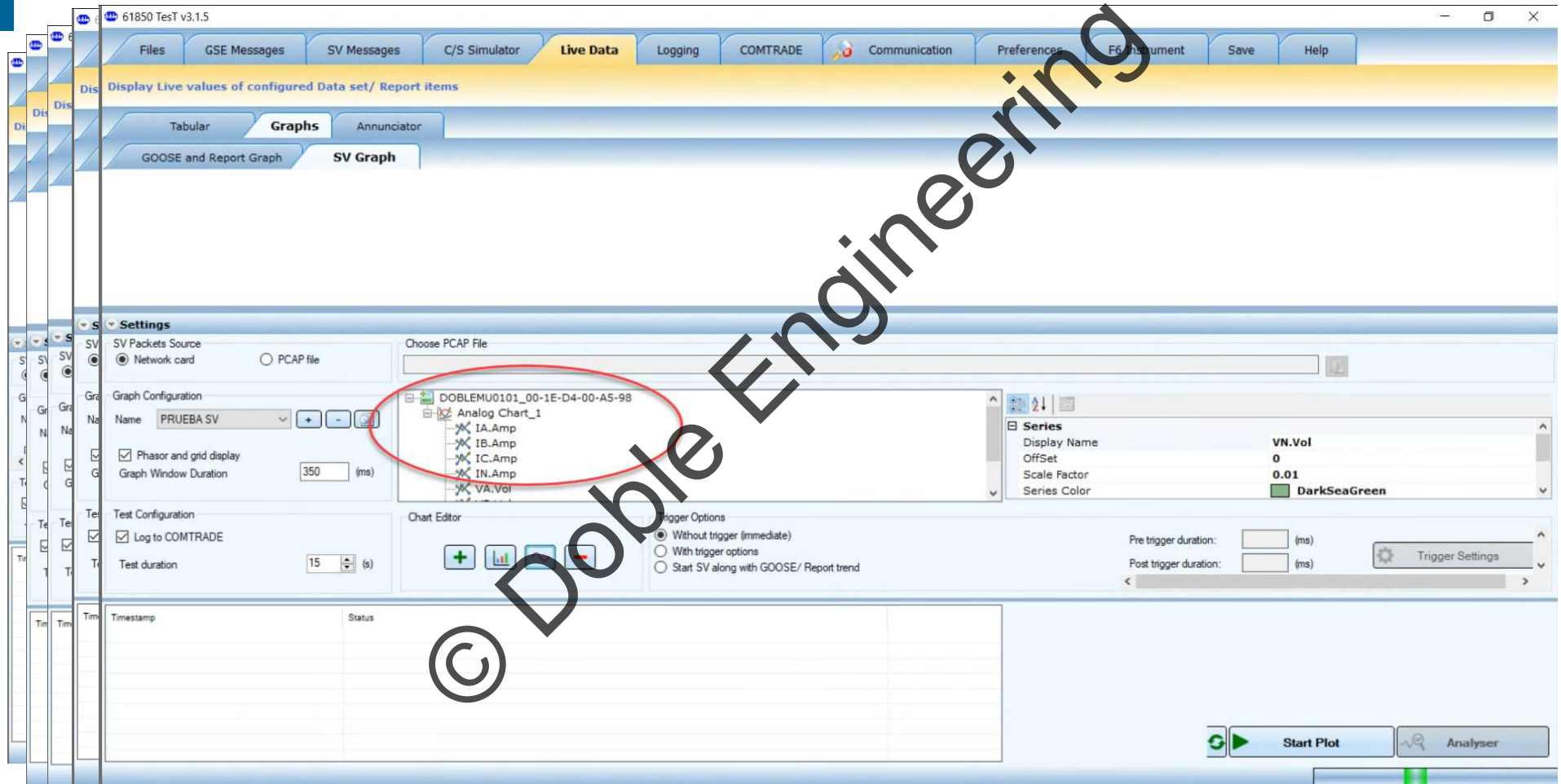
Source MAC Address	Dest MAC Address	SV ID	IED Name	LD Name	App ID	Dataset Name	VLAN		Sample Rate/s	ASDU	Sync
							ID	Priority			
DobleEng (00-1E-D4-00-A5-98)	01-0C-CD-04-00-01	DOBLEMU0101	-		4000		0	0	4800	1	Local

Dat Dataset items

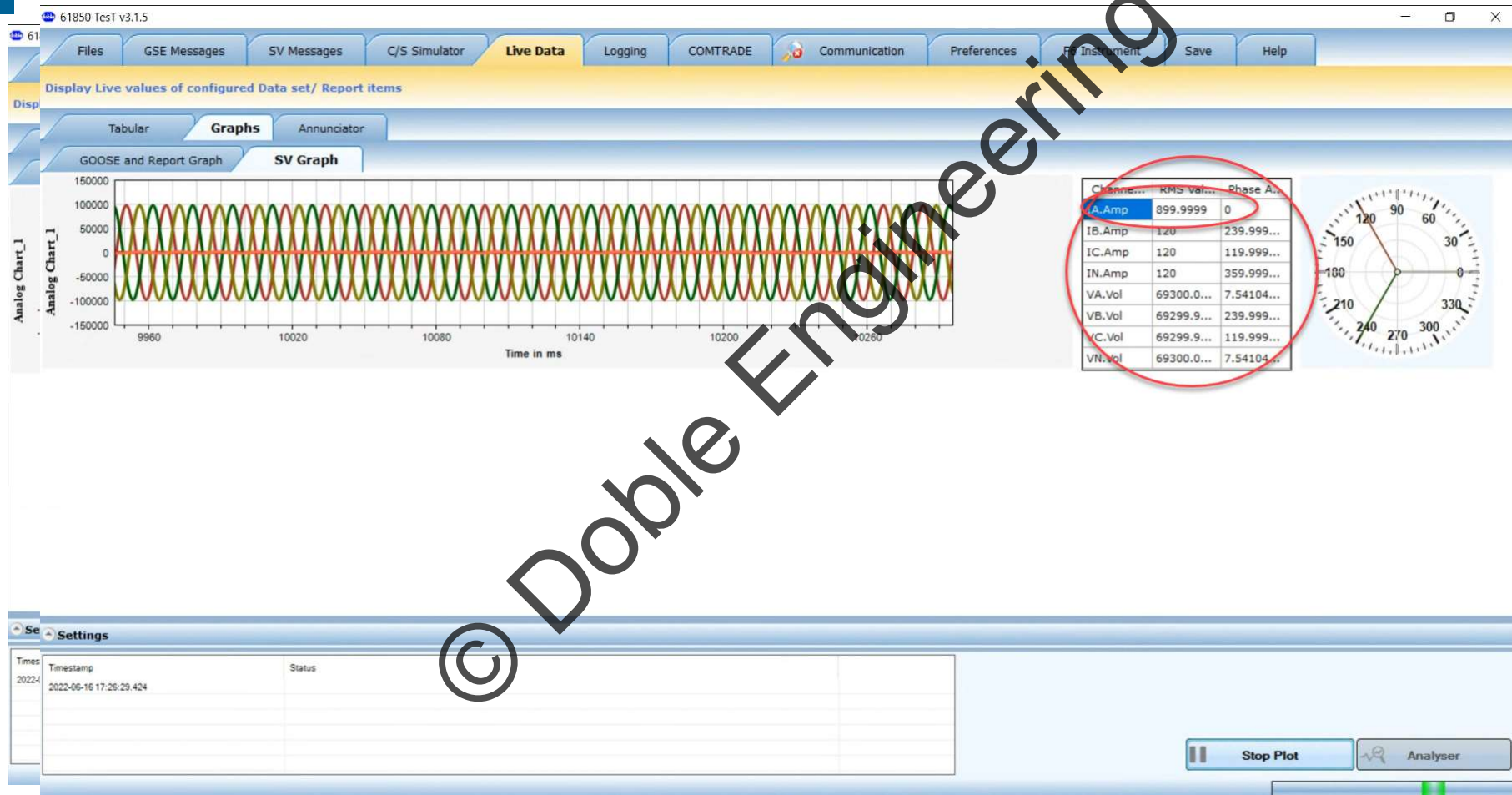
Channel ID	Custom label	Data Type	Scale Factor	Offset
------------	--------------	-----------	--------------	--------

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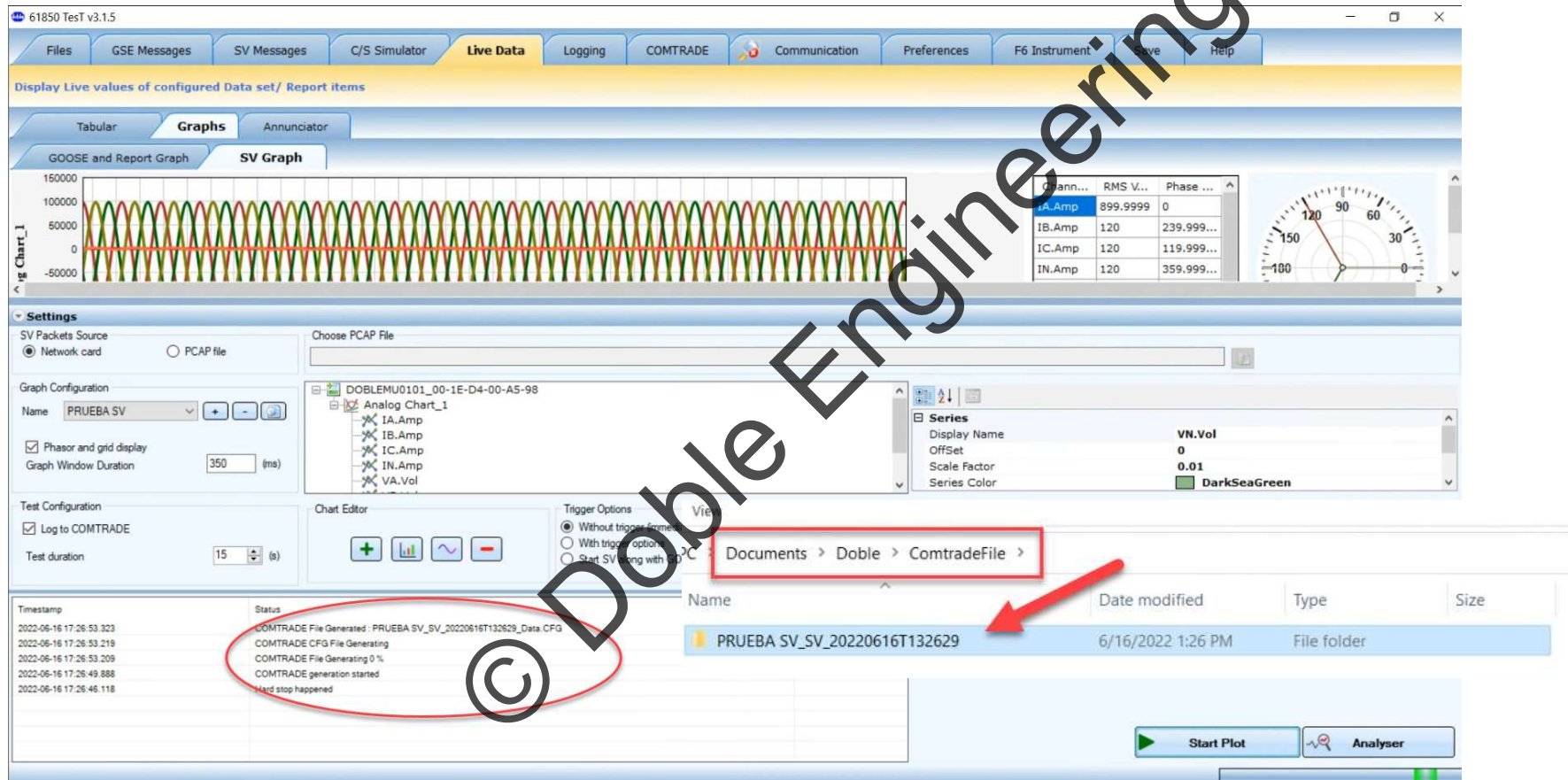
61850 TestT, cont.



61850 Test, cont.



61850 Test, cont.



Verificación del mensaje GOOSE

*STATION - Ethernet 15

File Edit View Go Capture Analyze Statistics Telephony Wireless Tools Help

goose

No.	Time	Source	Destination	Protocol	Length	smpCnt	stNum	sVID	Info
8	0.172816	LCFCHFe_99:03:13	Iec-Tc57_01:00:03	GOOSE	880	1			
9	0.172839	LCFCHFe_99:03:13	Iec-Tc57_01:00:04	GOOSE	490	1			
10	0.172845	LCFCHFe_99:03:13	Iec-Tc57_01:00:05	GOOSE	230	1			
31	0.610128	LCFCHFe_99:03:13	Iec-Tc57_01:00:03	GOOSE	150	2			
62	1.172486	LCFCHFe_99:03:13	Iec-Tc57_01:00:03	GOOSE	880	1			
63	1.172506	LCFCHFe_99:03:13	Iec-Tc57_01:00:04	GOOSE	490	1			
64	1.172511	LCFCHFe_99:03:13	Iec-Tc57_01:00:05	GOOSE	230	1			
102	1.563282	Ge_03:13:5a	Iec-Tc57_01:00:03	GOOSE	142	55			
103	1.563289	Ge_03:13:5a	Iec-Tc57_01:00:03	GOOSE	142	103			
108	1.611951	LCFCHFe_99:03:13	Iec-Tc57_01:00:03	GOOSE	150	2			
143	2.172742	LCFCHFe_99:03:13	Iec-Tc57_01:00:03	GOOSE	880	1			
144	2.172764	LCFCHFe_99:03:13	Iec-Tc57_01:00:04	GOOSE	490	1			
145	2.172770	LCFCHFe_99:03:13	Iec-Tc57_01:00:05	GOOSE	230	1			
163	2.612335	LCFCHFe_99:03:13	Iec-Tc57_01:00:03	GOOSE	150	2			
190	3.175440	LCFCHFe_99:03:13	Iec-Tc57_01:00:03	GOOSE	880	1			
191	3.175464	LCFCHFe_99:03:13	Iec-Tc57_01:00:04	GOOSE	490	1			
192	3.175470	LCFCHFe_99:03:13	Iec-Tc57_01:00:05	GOOSE	230	1			
233	3.614161	LCFCHFe_99:03:13	Iec-Tc57_01:00:03	GOOSE	150	2			
252	4.175308	LCFCHFe_99:03:13	Iec-Tc57_01:00:03	GOOSE	880	1			

> Frame 102: 142 bytes on wire (1136 bits), 142 bytes captured (1136 bits) on interface \Device\NPF_{5B764E49-A70E-439A-8C66-6C8639AF621A}, id 0

> Ethernet II, Src: Ge_03:13:5a (dc:37:52:03:13:5a), Dst: Iec-Tc57_01:00:03 (01:8c:d9:11:00:03)

> GOOSE

- APPID: 0x0001 (1)
- Length: 128
- > Reserved 1: 0x0000 (0)
- Reserved 2: 0x0000 (0)
- > goosePdu
 - gocbRef: UR_T60Master/LLN0\$G0\$GoCB01
 - timeAllowedtoLive: 20000
 - datSet: UR_T60Master/LLN0\$TT6_PIOC
 - goID: TxPIOC
 - t: Jun 10, 2022 15:38:48.806055963 UTC
 - stNum: 55

0000 01 0c cd 01 00 00 dc 37 52 03 13 5a 88 00 00 017 R:Z....

0010 00 80 00 00 00 61 76 80 1b 55 52 5f 54 86 30av..UR_T60

0020 4d 61 73 74 65 72 2f 4c 4c 4e 30 24 47 4f 44 47 ..Master/L LN0\$G0\$G

0030 6f 43 42 30 31 81 02 4e 20 82 1a 55 52 5f 54 30 ..CB01..N..UR_T6

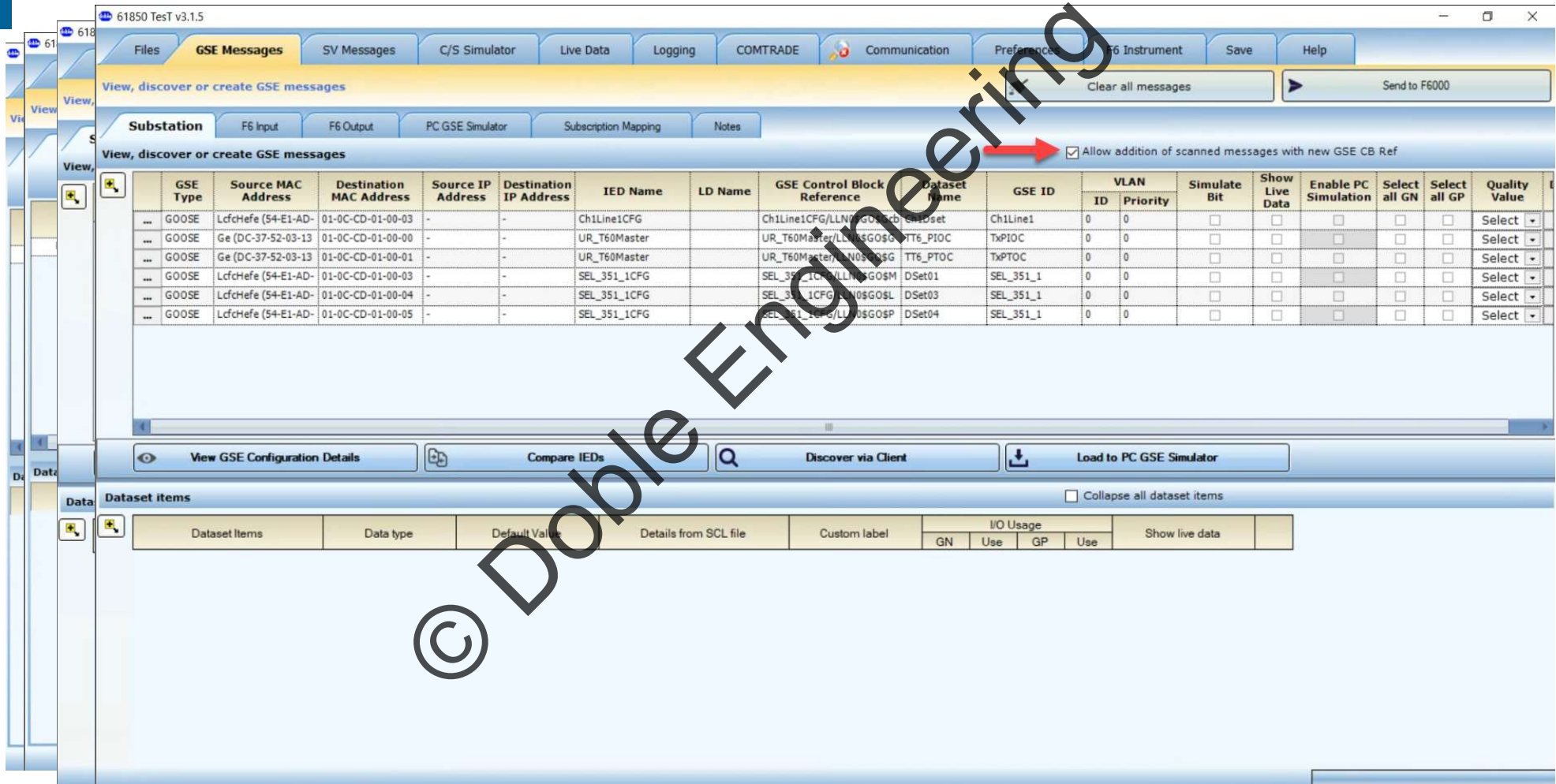
0040 30 4d 61 73 74 65 72 2f 4c 4c 4e 30 24 54 41 30 ..0Master/ LLN0\$TT6

wireshark_STATION - Ethernet 15j823n1.pcapng

Packets: 558 · Displayed: 38 (6.8%) · Dropped: 0 (0.0%)

Profile: Default

61850 TestT



61850 Test, cont.

61850 Test v3.1.5

Files GSE Messages SV Messages C/S Simulator **Live Data** Logging COMTRADE Communication Preferences Instrument Save Help

Display Live values of configured Data set/ Report items

Tabular Graphs Annunciator

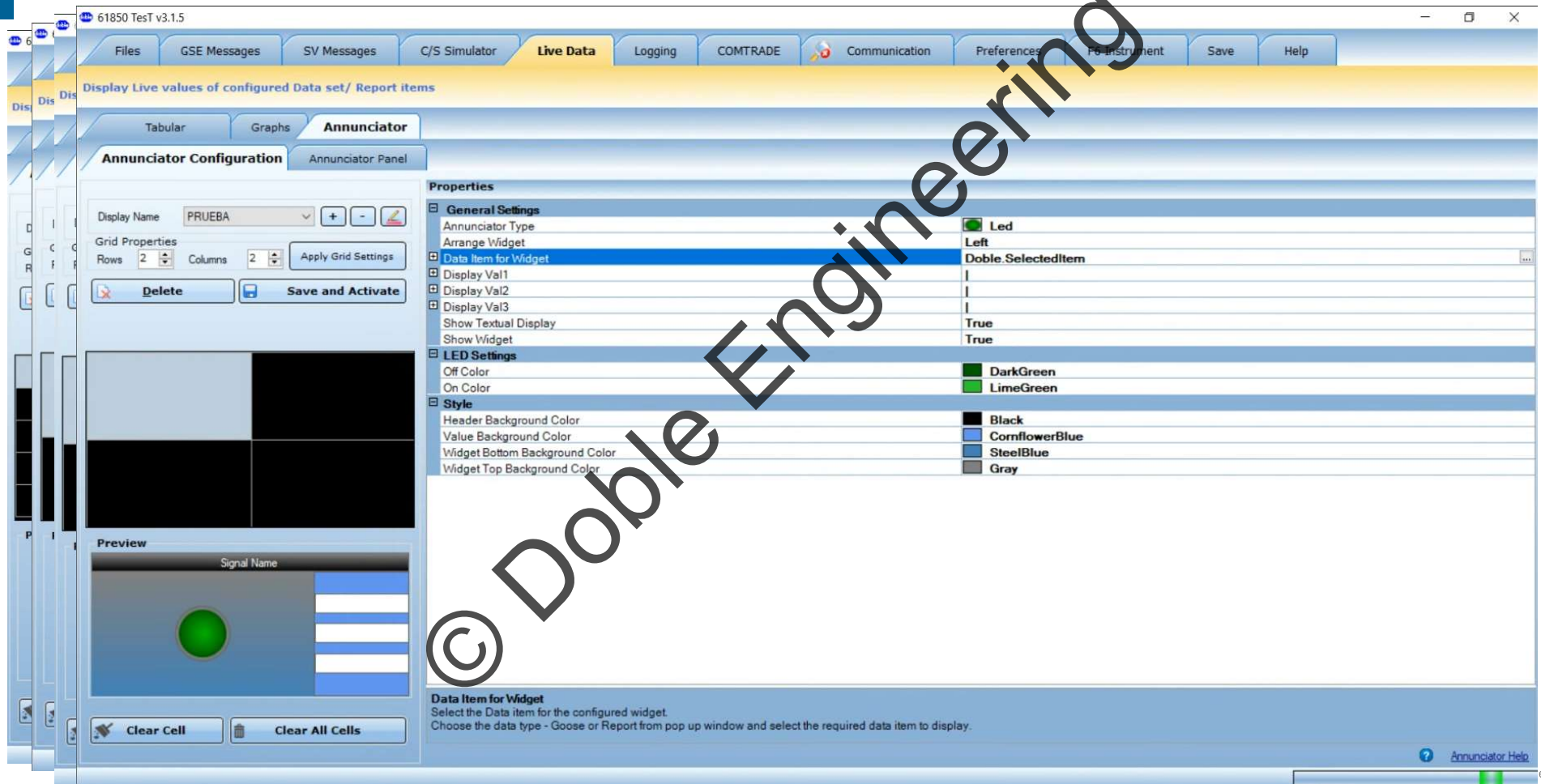
GSE Report

GSE Type	Source IP Address	Source MAC Address	Simulated	GSE control block reference	Dataset name	Item no.	GSE ID	SCL Details	Data type	Label	Value	Time of last value change	Last message state no.	Last message sequence no.	Last message arrival time
GOOSE	-	Ge (DC-37-52-03...	0	UR_T60Master/LLN...	TT6_PIOC	1	TxPIOC		Boolean		1	14:53:54.433...	56	3	14:53:54.620...
GOOSE	-	Ge (DC-37-52-03...	0	UR_T60Master/LLN...	TT6_PIOC	2	TxPIOC		Boolean		1	14:53:54.433...	56	3	14:53:54.620...
GOOSE	-	Ge (DC-37-52-03...	0	UR_T60Master/LLN...	TT6_PIOC	3	TxPIOC		Boolean		0	14:43:45.346...	56	3	14:53:54.620...
GOOSE	-	Ge (DC-37-52-03...	0	UR_T60Master/LLN...	TT6_PIOC	4	TxPIOC		Boolean		0	14:43:45.346...	56	3	14:53:54.620...

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served

61850 Test, cont.



61850 Test, cont.

61850 Test v3.1.5

Files GSE Messages SV Messages C/S Simulator **Live Data** Logging COMTRADE Communication Preferences Instrument Save Help

Display Live values of configured Data set/ Report items

Tabular Graphs **Annunciator**

Annunciator Configuration Annunciator Panel

Display Name: PRUEBA + -

Grid Properties: Rows 2 Columns 2 Apply Grid Settings

Delete Save and Activate

Preview: UR_T60Master/LLN0\$TT6_PIOC

Clear Cell Clear All Cells

Properties

- General Settings**
 - Annunciator Type: Led
 - Left: Doble.SelectedItem
 - Arrange Widget: TxPIOC
 - Data Item for Widget: UR_T60Master/LLN0\$GOSGoCB01
 - ApplicationID: Bool
 - ControlBlockRef: UR_T60Master/LLN0\$TT6_PIOC
 - DatalItemName: Boolean
 - DatasetRef: UR_T60Master/LLN0\$TT6_PIOC
 - DataType: UR_T60Master
 - DefaultLabel: UR_T60Master
 - DisplayText: UR_T60Master
 - IEDName: UR_T60Master
 - LDName: UR_T60Master
 - SCLDetails: UR_T60Master
 - SourceMAC: DC-37-52-03-13-5A
- Display Val1**: |
- Display Val2**: |
- Display Val3**: |
- Show Textual Display: True
- Show Widget: True
- LED Settings**
 - Off Color: Chartreuse
 - On Color: Red
- Style**
 - Header Background Color: Black
 - Value Background Color: CornflowerBlue
 - Widget Bottom Background Color: SteelBlue
 - Widget Top Background Color: Gray

Display Val2
Settings for Textual Display value 2

Annunciator Help

61850 Test, cont.



61850 Test, cont.

61850 Test v3.1.5 -- Untitled

Files GSE Messages SV Messages C/S Simulator Live Data Logging COMTRADE Communication Preferences Forward Instrument Save Help

View, discover or create GSE messages

Clear all messages Send to F6000

Substation F6 Input F6 Output PC GSE Simulator Subscription Mapping Notes

View, discover or create GSE messages

Allow addition of scanned messages with new GSE CB Ref

GSE Type	Source MAC Address	Destination MAC Address	Source IP Address	Destination IP Address	IED Name	LD Name	GSE Control Block Reference	Dataset Name	GSE ID	VLAN ID	Priority	Simulate Bit	Show Live Data	Enable PC Simulation	Select all GN	Select all GP	Quality Value	Delete
GOOSE	Ge (DC-37-52-03-13)	01-0C-CD-01-00-00	-	-	UR_T60	Master	UR_T60Master/LLN0\$G0\$G	TT6_PIOC	TT6_PIOC	0	4	☐	☐	☐	☐	☐	Select	X
GOOSE	Ge (DC-37-52-03-13)	01-0C-CD-01-00-01	-	-	UR_T60	Master	UR_T60Master/LLN0\$G0\$G	TT6_PIOC	TT6_PIOC	0	4	☐	☐	☐	☐	☐	Select	X
GOOSE	LdcHefe (54-E1-AD-)	01-0C-CD-01-00-03	-	-	Ch1Line1CFG		Ch1Line1CFG/LLN0\$G0\$Gcb	Ch1Line1	Ch1Line1	0	0	☐	☐	☐	☐	☐	Select	X
GOOSE	LdcHefe (54-E1-AD-)	01-0C-CD-01-00-03	-	-	SEL_351_1CF		SEL_351_1CFG/LLN0\$G0\$M	SEL_351_1	SEL_351_1	0	0	☐	☐	☐	☐	☐	Select	X
GOOSE	LdcHefe (54-E1-AD-)	01-0C-CD-01-00-04	-	-	SEL_351_1CF		SEL_351_1CFG/LLN0\$G0\$M	SEL_351_1	SEL_351_1	0	0	☐	☐	☐	☐	☐	Select	X
GOOSE	LdcHefe (54-E1-AD-)	01-0C-CD-01-00-05	-	-	SEL_351_1CF		SEL_351_1CFG/LLN0\$G0\$M	SEL_351_1	SEL_351_1	0	0	☐	☐	☐	☐	☐	Select	X

View GSE Configuration Details Compare IEDs Discover via Client Load to PC GSE Simulator

Dataset items

Collapse all dataset items

Dataset Items	Data type	Default Value	Details from SCL file	Custom label	I/O Usage				Show live data	
					GN	Use	GP	Use		
1 - general	Boolean	0	ProtPhslocPIOC1.ST.Op.general		☐	0	☐	0	☐	X
2 - phsA	Boolean	0	ProtPhslocPIOC1.ST.Op.phsA		☐	0	☐	0	☐	X
3 - phsB	Boolean	0	ProtPhslocPIOC1.ST.Op.phsB		☐	0	☐	0	☐	X
4 - phsC	Boolean	0	ProtPhslocPIOC1.ST.Op.phsC		☐	0	☐	0	☐	X
5 - q	Quality	00000000-P-00	ProtPhslocPIOC1.ST.Op.q		☐	0	☐	0	☐	X

F6880 para Subestaciones Digitales

Transmisión Digital

- Redes aisladas.
- Mensajes GOOSE y R-GOOSE.
- Puede mostrar hasta 16 Sampled Values simultaneamente (9-2LE, 61869-9)

Monitoreo y Grabación

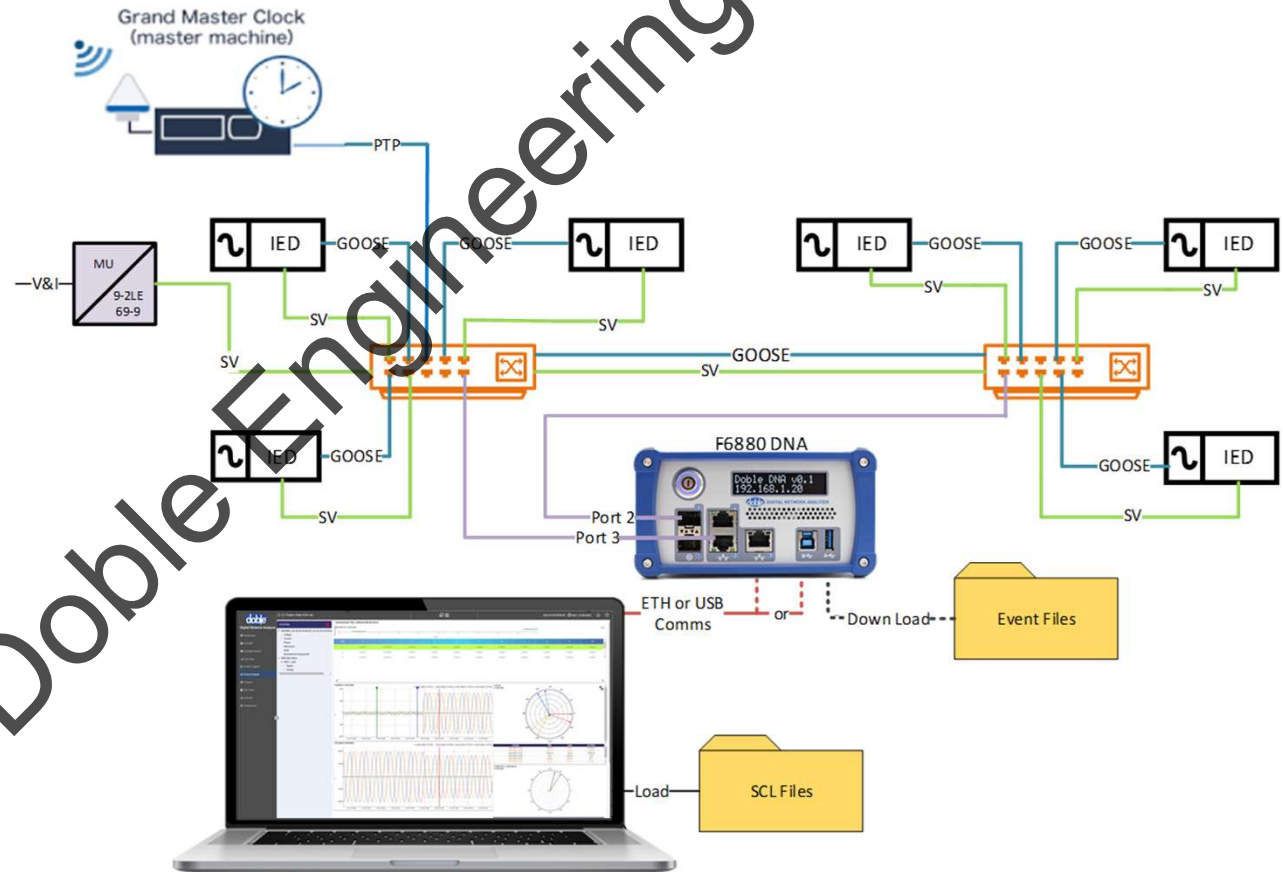
- Configuración del trigger para errores de comunicación en la red y eventos sobre el sistemas de potencia.
- Control remoto o local de la unidad DNA.
- Puede permanecer en línea durante periodos prolongados.

Análisis en Tiempo Real

- Configuración de formas de onda.
- Fasores.
- Compatible con sincronización PTP.

Guardar y Compartir Datos

- Soporta archivos PCAP y COMTRADE.
- Práctico archivo de proyecto.



DNA Hardware



2 x Puertos SFP
Cobre / Fibra, 1 Gbps cada uno

3 x Puertos RJ-45
10/100/1000 Mbps cada uno

USB 3.0 Tipo B
Control

USB 3.0 Tipo A
Futuro Uso

Pantalla
Versión de Firmware
Dirección IP

F6880 - DNA

Doble DNA

2022-06-17 13:37:22 UNSYNCHRONIZED

doble
Digital Network Analyzer

- Dashboard
- GOOSE
- Sampled Values
- Live Data
- Event Triggers
- Event Analysis
- Projects
- SCL Files
- Devices**
- Preferences

Saved Devices

	Name	Serial Number	Firmware Version	Hardware Version	PL Version	IP Address	DHCP Enabled	Device Status	Connection Status	Auto Connect	
☐		0123456790	V1.0.8.056	04X-1216-01 Revision B	3	192.168.7.21	true	Online	Connected		...

- Connect/Disconnect
- Edit
- Isolated Networks
- PTP
- Health
- Audit Events
- Delete
- Firmware Update

Available Devices

	Name	Serial Number	Firmware Version	Hardware Version	PL Version	IP Address	DHCP Enabled	Device Status	Connection Status	Auto Connect	
☐			V1.0.8.056	04X-1216-01 Revision 4	4	192.168.7.21	false	Online	Disconnected	☐	...
☐		1	V1.0.8.056	Revision	4	192.168.7.20	false	Online	Disconnected	☐	...

F6880 – DNA, cont.

Doble DNA

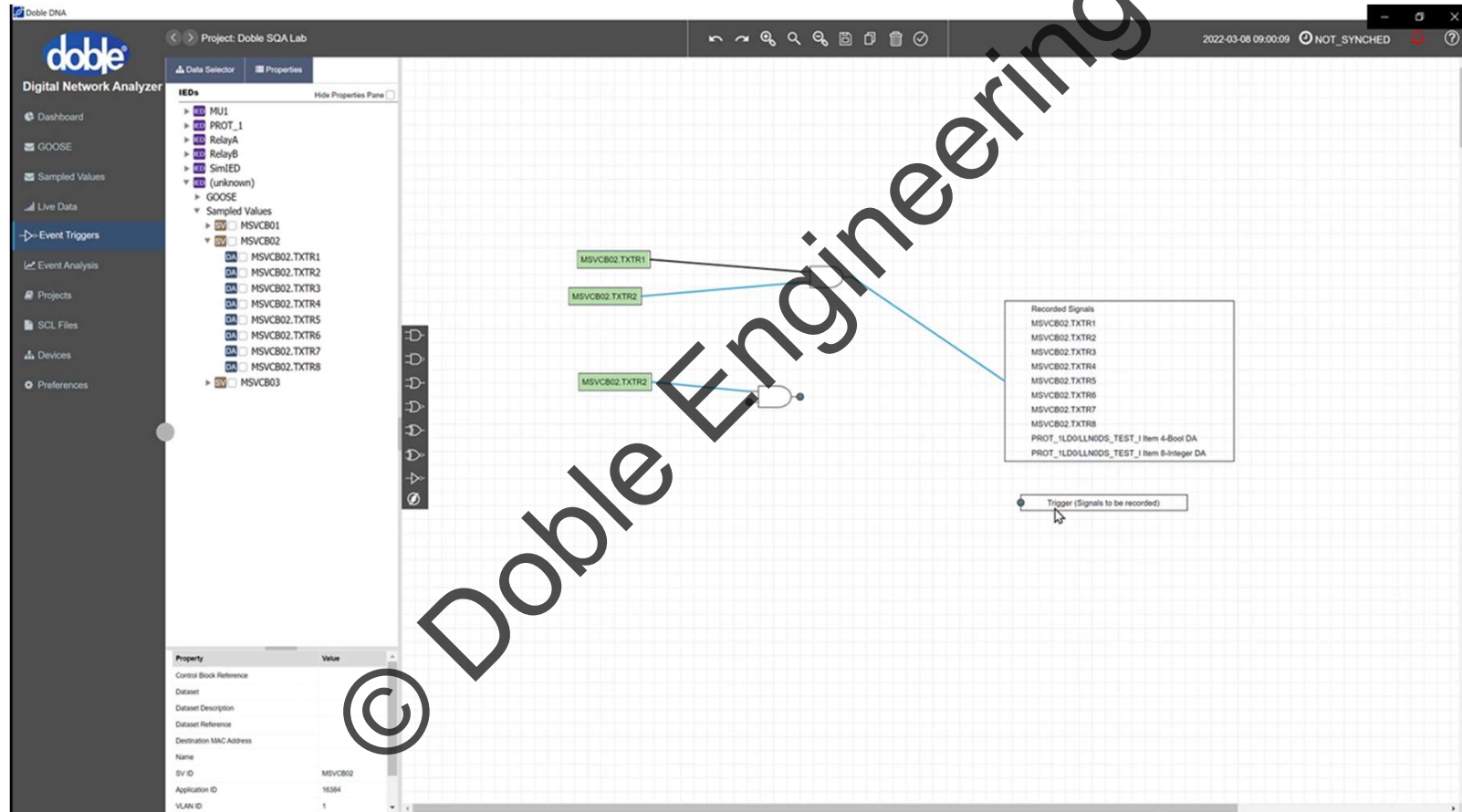
Project: Doble SOA Lab

2022-03-08 08:44:16 NOT_SYNCED

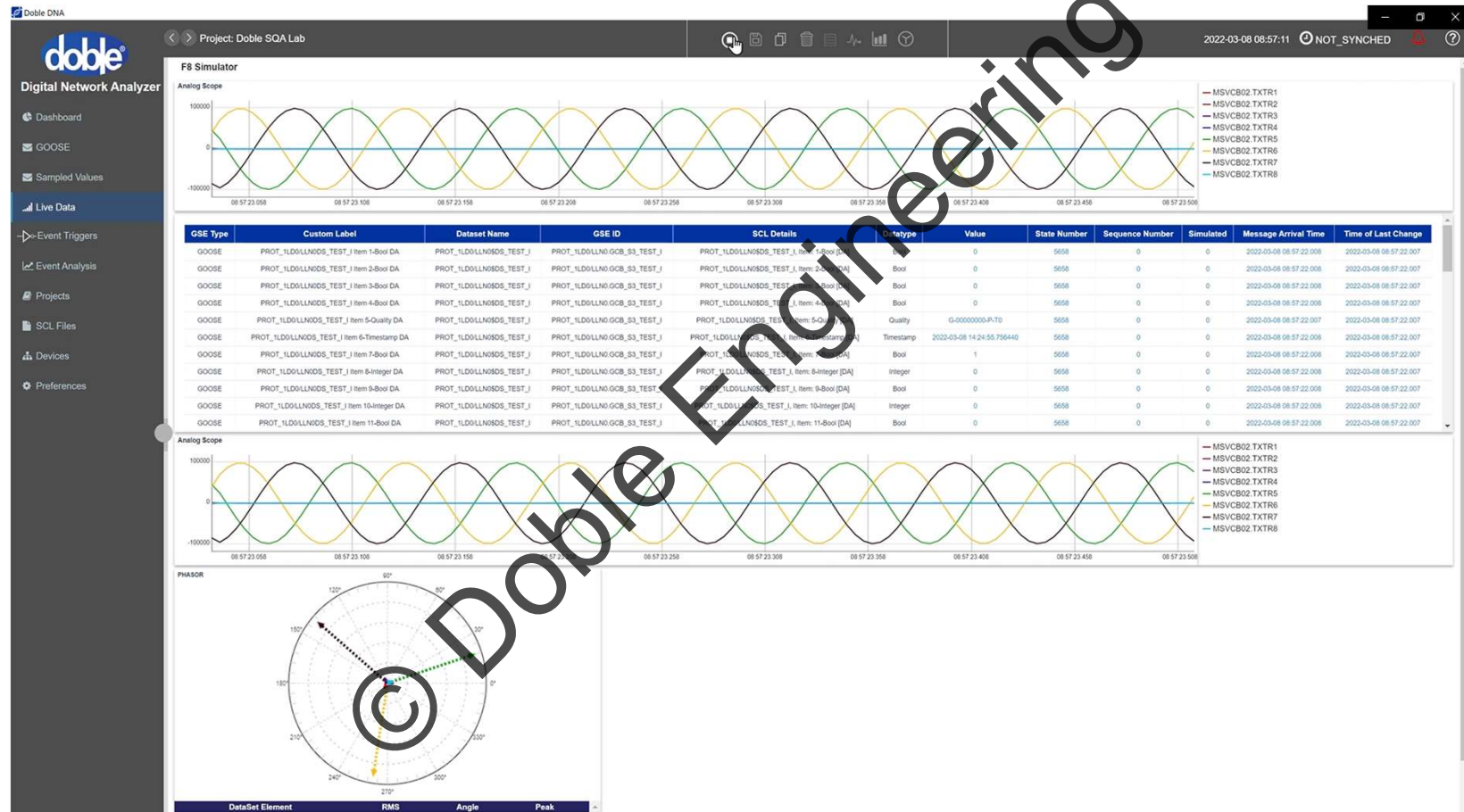
Isolated Networks

Name	Port 1	Port 2	Port 3	Port 4	Port 5	PTP	USB-B	DHCP Server
Control Bus	☒	☐	☐	☐	☐	☐	☐	☒
IP Address		Netmask		Gateway		DNS1		DNS2
192.168.3.10		255.255.255.0		X.X.X.X		X.X.X.X		X.X.X.X
Process: SV ☐ GOOSE ☒ Name: Control Bus								
Process Bus	☐	☐	☐	☐	☐	☐	☐	☐
IP Address		Netmask		Gateway		DNS1		DNS2
X.X.X.X		X.X.X.X		X.X.X.X		X.X.X.X		X.X.X.X
Process: SV ☒ GOOSE ☐ Name: Process Bus								
SV Bus	☐	☐	☐	☒	☐	☒	☐	☐
IP Address		Netmask		Gateway		DNS1		DNS2
192.168.5.10		255.255.255.0		X.X.X.X		X.X.X.X		X.X.X.X
Process: SV ☒ GOOSE ☒ Name: SV Bus								

F6880 – DNA, cont.



F6880 – DNA, cont.



F6880 – DNA, cont.



F6880 – DNA, cont.

Doble DNA

Digital Network Analyzer

Dashboard
GOOSE
Sampled Values
Live Data
Event Triggers
Event Analysis
Projects
SCL Files
Devices
Preferences

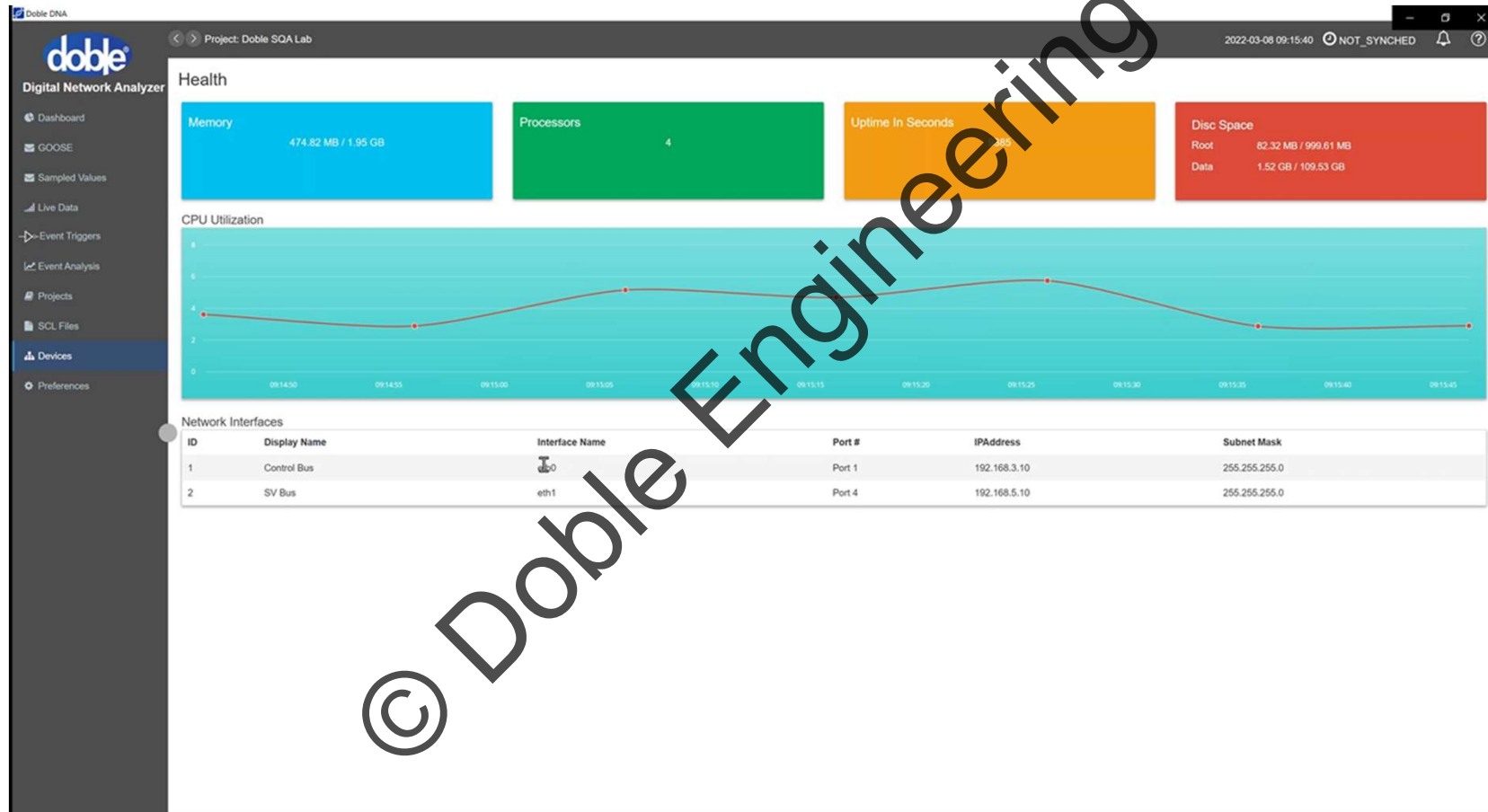
Project: Doble SQA Lab
2022-03-08 09:14:08
NOT_SYNCED

Audit Events

EXPORT TO EXCEL
Search...

	Event Time	Module	Description	Severity
☐	2022-03-08 14:45:36	Network	Isolation network changed. Prev configuration: eth0 (Control Bus): 192.168.3.10, 255.255.255.0, Ports: Port 1, DHCP, USB Filter: GSE eth1 (SV Bus): 192.168.5.10, 255.255.255.0, Ports: Port 4, PTP Filter: GSE, SV New configuration: eth0 (Control Bus): 192.168.3.10, 255.255.255.0, Ports: Port 1, DHCP, USB Filter: GSE eth1 (SV Bus): 192.168.5.10, 255.255.255.0, Ports: Port 4, PTP Filter: GSE, SV	High
☐	2022-03-08 14:45:36	System	DNA application connected to remote device - 192.168.3.10	Medium
☐	2022-03-08 14:29:13	User	DNA application initiated delete trigger	Medium
☐	2022-03-08 14:25:43	User	DNA application initiated delete live-data configuration	Medium
☐	2022-03-08 14:21:32	User	DNA application deleted device - 192.168.7.212	Medium
☐	2022-03-08 14:19:09	Network	Isolation network changed. Prev configuration: eth0 (Control Bus): 192.168.3.10, 255.255.255.0, Ports: Port 1, USB Filter: GSE eth1 (SV Bus): 192.168.5.10, 255.255.255.0, Ports: Port 4, PTP Filter: GSE, SV New configuration: eth0 (Control Bus): 192.168.3.10, 255.255.255.0, Ports: Port 1, DHCP, USB Filter: GSE eth1 (SV Bus): 192.168.5.10, 255.255.255.0, Ports: Port 4, PTP Filter: GSE, SV	High
☐	2022-03-08 14:19:09	System	DNA application connected to remote device - 192.168.3.10	Medium
☐	2022-03-08 14:14:50	User	DNA application enabled auto connect device - 192.168.3.10	Low
☒	2022-03-08 13:57:57	PTP	PTP status changed to NOT_SYNCED	High
☐	2022-03-08 13:57:09	User	DNA application disabled auto connect device - 192.168.7.212	Low
☐	2022-03-08 13:52:37	PTP	PTP status changed to SYNC_SUCCESS	High
☐	2022-03-08 13:52:19	User	DNA application enabled auto connect device - 192.168.7.212	Low
☐	2022-03-08 13:51:41	User	DNA application disabled auto connect device - 192.168.3.10	Low
☐	2022-03-08 13:50:17	PTP	PTP status changed to NOT_SYNCED	High
☐	2022-03-08 13:50:14	PTP	PTP status changed to DISABLED	High
☐	2022-03-08 13:49:45	Network	Isolation network changed. Prev configuration: eth0 (Control Bus): 192.168.3.10, 255.255.255.0, Ports: Port 1, PTP, USB Filter: GSE eth1 (SV Bus): 192.168.5.10, 255.255.255.0, Ports: Port 4 Filter: GSE, SV New configuration: eth0 (Control Bus): 192.168.3.10, 255.255.255.0, Ports: Port 1, USB Filter: GSE eth1 (SV Bus): 192.168.5.10, 255.255.255.0, Ports: Port 4, PTP Filter: GSE, SV	High
☐	2022-03-08 13:49:45	System	DNA application connected to remote device - 192.168.3.10	Medium
☐	2022-03-08 13:47:57	PTP	PTP status changed to NOT_SYNCED	High
☐	2022-03-08 13:47:56	PTP	PTP status changed to DISABLED	High
☐	2022-03-08 13:47:08	User	DNA application initiated dashboard refresh	Medium
☐	2022-03-08 13:45:00	User	DNA application initiated dashboard refresh	Medium

F6880 – DNA, cont.



Preguntas?

ALTANOVA
A DOBLE COMPANY





¡Regístrate!
XX Conferencia Doble Latinoamericana el
20, 21 y 22 de Septiembre, 2022

