DLMS TCP to DNP3 protocol conversion

Description

The article describes WCC Lite configuration steps to enable DLMS tcp protocol conversion to DNP3.

Fig 1.

First steps

Before you begin, make sure you have completed all physical installation work according to the manufacturer's installation instructions.

Set up your computer and connect Ethernet cable to WCC Lite ETH0 port. Login with default credentials and setup basic required settings (name, network, users, etc.). You can find configuration tutorials in How to articles.

To prepare configuration fill information in both - Devices and Signals sheets:

Configure devices

Add connected Gama meter with **DLMS TCP** protocol required information:

name	description	device_alias	enable	protocol	serial_number	port
From Gama Meter	Elgama Gama 300	GAMA300	1	DLMS	2393020	4059

ip	logical_address	address_size	client_address	type	mode	auth	password
192.168.1.2	1	2	32	LN	DLMS-WRAPPER	LOW	00000002

More information concerning DLMS protocol configuration is provided in DLMS/COSEM article.

Add SCADA working on **DNP3** protocol required information:

name	device_alias	enable	protocol	mode	host	bind_address
DNP3 SCADA system	DNP3_SCADA	1	dnp3 tcp slave	TCP	192.168.1.215	0.0.0.0

port	destination_address	source_address	unsol_classes
20000	10	1	1,2,3

More information concerning DNP3 protocol configuration is provided in DNP 3.0 Slave article.

Configure signals

Add connected meter measurements information.

signal_name	device_alias	signal_alias	obis_job
Voltage L3-N	GAMA300	L3_U	1.0.72.7.0.255
Frequency	GAMA300	F	1.0.14.7.0.255
Current L3	GAMA300	L3-I	1.0.71.7.0.255
Absolute active instantaneous power	GAMA300	P	1.0.15.7.0.255

obis_job - Objects are identified with the help of OBIS (Object Identification System) codes.

1. The first number of OBIS code defines the media (energy type) to which the metering is related. Nonmedia

related information is handled as abstract data. For example both obis_jobs in the table above starts with numbers 1 which stands for "Electricity related objects".
2. The second number defines the channel number, i.e. the number of the input of a metering equipment having several inputs for the measurement of energy of the same or different types (e.g. in data concentrators, registration units). Data from different sources can thus be identified. The definitions for this value group are independent from the value of the first number. In both obis_jobs from the table above second number is set to zero which means that no channel is specified.
3. The third number defines the abstract or physical data items related to the information source concerned, for example current, voltage, power, volume, temperature. The definitions depend on the value of the first number. For example in obis_jobs from the table above number 72 means voltage L3 and number 14 means frequency.
4. The forth number defines types, or the result of the processing of physical quantities identified with the numbers 1 and 3, according to various specific algorithms. The algorithms can deliver energy and demand quantities as well as other physical quantities. In both obis_jobs from the table above forth number is set to 7 which stands for "Instantaneous value".
5. The value of the fifth number defines further processing or classification of quantities identified by numbers 1 to 4. In case of the first obis_job number 0 means that all harmonics of the signal along with its fundamental frequency are going to be taken into consideration.
6. The value of the sixth number defines the storage of data, identified by numbers 1 to 5, according to different billing periods. Where this is not relevant, this value group can be used for further classification. In both obis_jobs from the table above last number is set to 255 which means that data is not used.

Add **DNP3 Slave** signals information:

signal_name	device_alias	signal_alias	source_device_alias	source_signal_alias	enable
DNP3 SCADA V	DNP3_SCADA	DNP3_SCADA_V_L3_N	GAMA300	L3_U	1
DNP3 SCADA F	DNP3_SCADA	DNP3_SCADA_Freq	GAMA300	F	1
DNP3 SCADA A	DNP3_SCADA	DNP3_SCADA_A_L3	GAMA300	L3_I	1
DNP3 SCADA KW	DNP3_SCADA	DNP3_SCADA_P	GAMA300	P	1

index	signal_type	static_variation	event_variation	class_num
1	analog	1	3	2
2	analog	1	3	2
3	analog	1	3	2
4	analog	1	3	2

For more detailed DLMS protocol communication analysis Gurux DLMS Director application can be used.

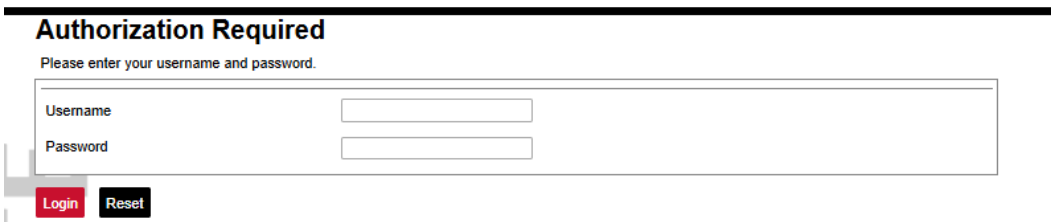
Upload configuration

After configuring all devices and signals, follow these steps to check and upload configuration using WCC Excel Utility:

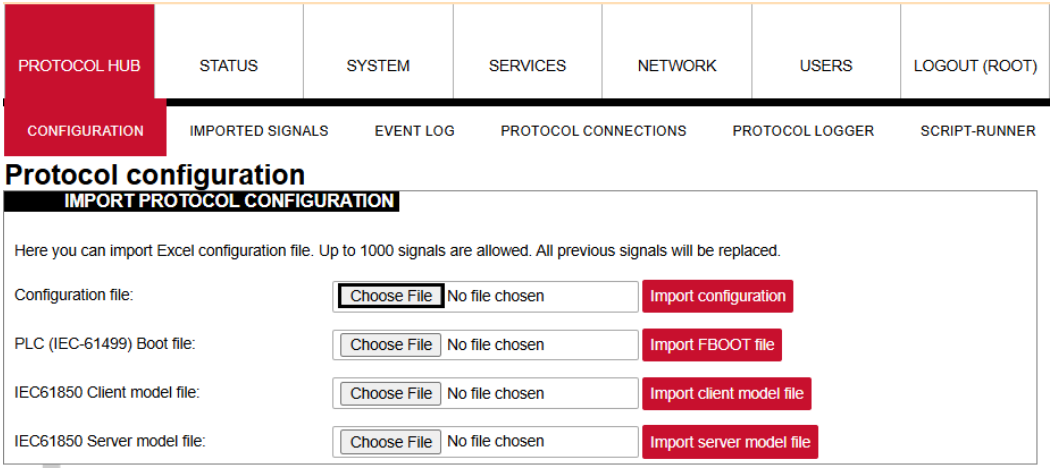
1. Download and run WCC Excel Utility;
2. Select Excel file from your computer and click*Convert*;
3. Check if no events in red color occur. If so, edit Excel file according to event text and repeat Step 2;
4. Enter Host and credentials of WCC Lite and click*Upload configuration.*

Another method to upload the configuration is via the web interface:

1. Access the WCC Lite interface via your browser:



2. Upload the Excel configuration:



3. After a successful upload, the configuration will appear under the**DOWNLOAD CONFIGURATION** tab:

4. If any errors occur during the upload, follow the error messages, fix them along Excel utility guidelines.

Files

1. WCC Excel Utility Download
2. Example of configuration file Download

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