NetControl & Zabbix v5.4

Application Note

rev. 1.2

09.02.2022

CONTENTS

Document revisions

Version	Date	A brief description of the changes introduced
1.2	09.02.2022	The document has been edited entirely for Zabbix v5.4
1.01	27.06.2018	Added information for manually adding “Value Mappings” before importing into newer versions of Zabbix.
1.00	-	Initial version

Legend:

The text contains additional and useful information that explains specific situations and features.

The text contains essential information that you must read!

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1. Introduction

NetControl has SNMP access to all its parameters, which makes it an extremely convenient device for integration into ready-made systems for measuring and graphical presentation of information.

One such tool is Zabbix (www.zabbix.com) - open source software (paid support option) for Enterprise monitoring in a very wide range of areas. Its functionality is significantly richer than that of the Cacti, but it is also more difficult to work with. The basic concept of Zabbix is to gain full access to the parameters (including databases, specific parameters through client scripts, etc.) through a daemon of the monitored machine. In addition to this concept, access via IPMI, JMX and SNMP is also supported, which we will use to access ***NetControl***.

In this document we will briefly show you how you can integrate NetControl into Zabbix. This will allow you to get graphically the values of temperature, bus (Unet) voltage, output status and alarm input. This document provides only the basic steps for setting up and visualizing data, but for other Zabbix features (such as notifications, triggers, user access, etc.) you will need to study the software in more detail.

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2. Adding NetControl to Zabbix

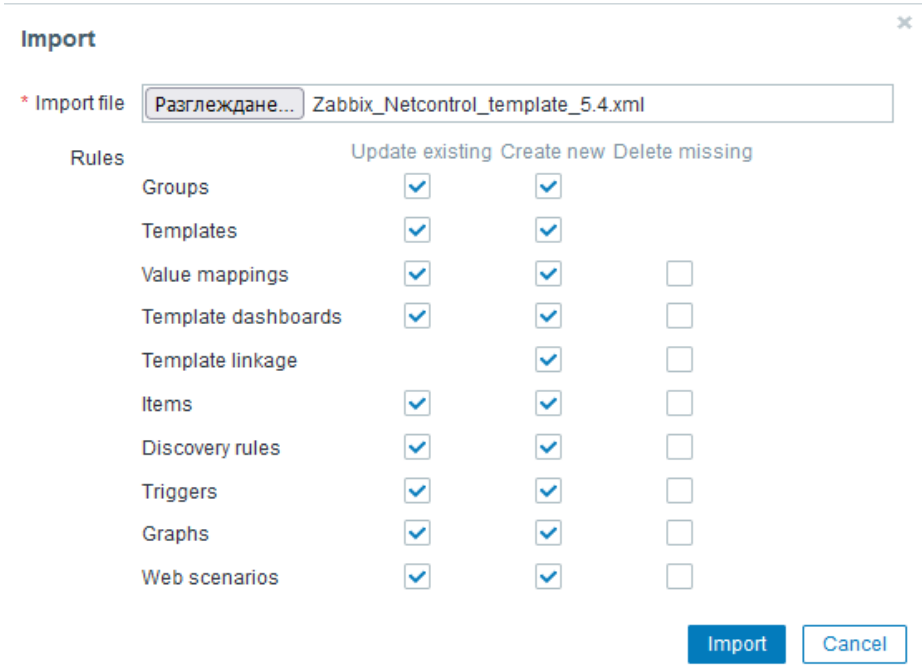
2.1. Importing the template file for *NetControl*

Zabbix has a Template system, so the first step is to load our template for NetControl, which you can download from our site.

The current template is generated under Zabbix v5.4.10:
> NetControl_HostTemplate for Zabbix v5.4 <

An old version of the template generated under Zabbix v2.4.8 is here:
> NetControl_HostTemplate for Zabbix v2.0 <

The downloaded archive needs to be unzipped to get the *.xml file. This file should be loaded into Zabbix via the menu: Configuration-> Templates and the Import button at the top right:



2.2. Adding a new device (Host)

Once the template is loaded we can add our specific NetControl (or several devices) in the menu "Configuration->Hosts" and at the top right button "Create Host". The following screen will open for you to fill in your ***NetControl*** details.

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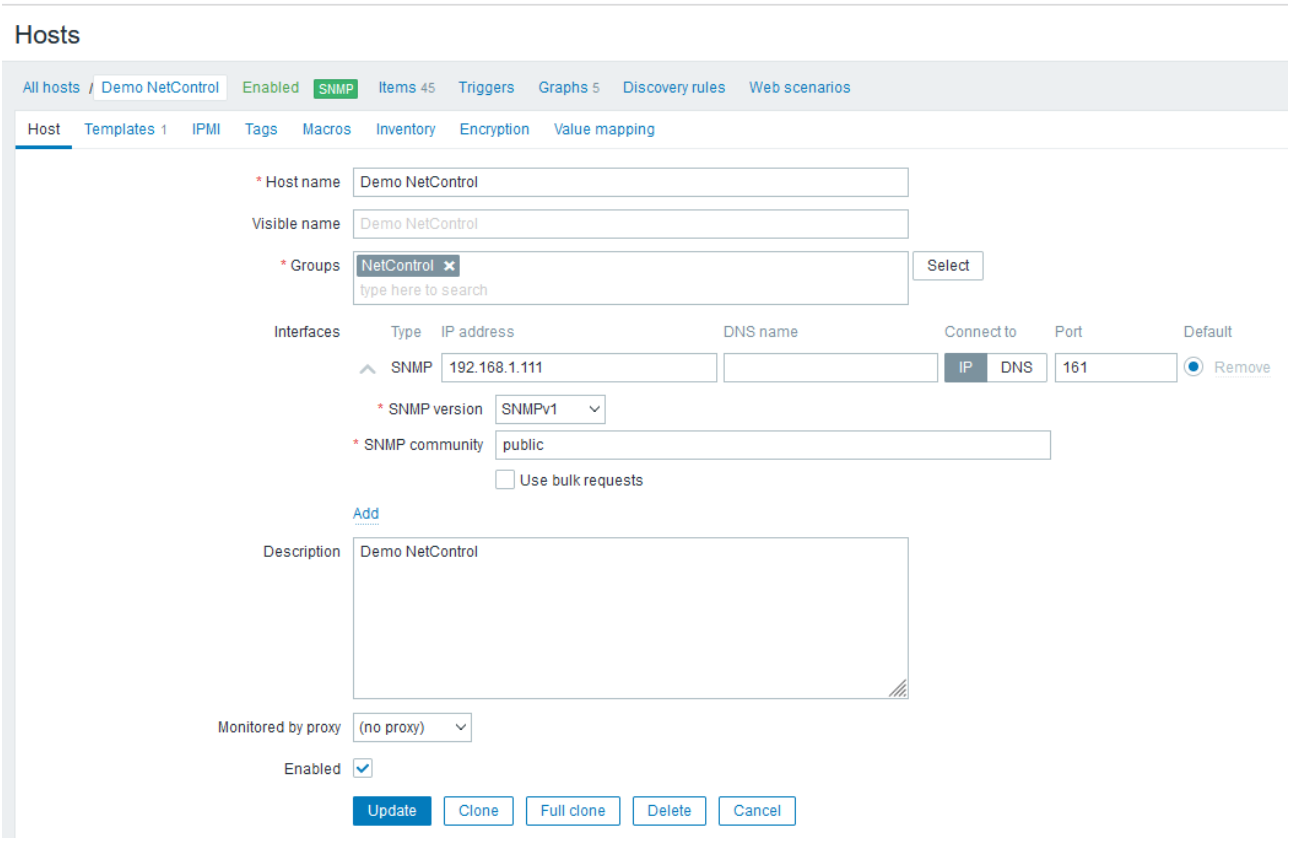
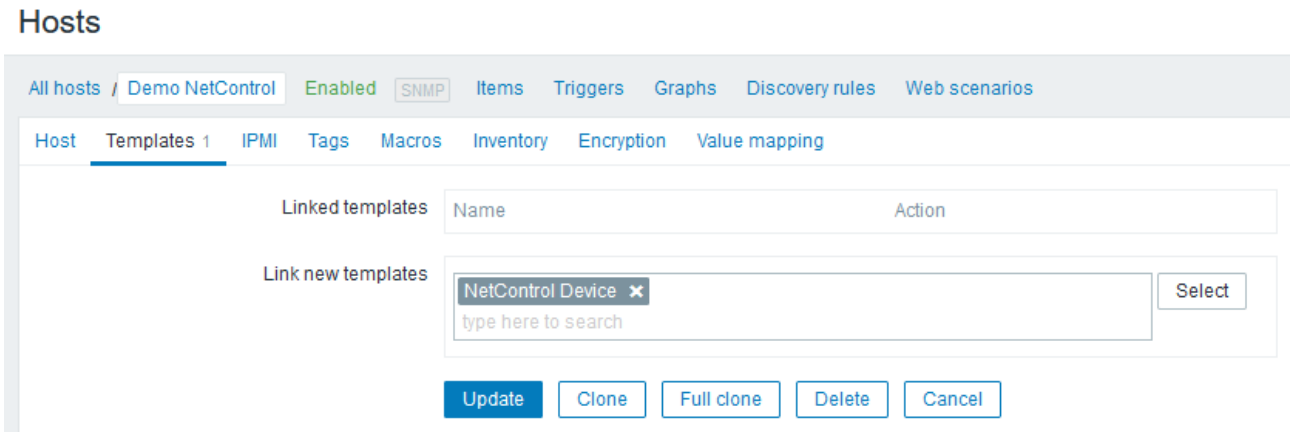


The important fields are with * - these are the name and IP address or domain of the device, the SNMP port (161 by default), the SNMP read password (the default is 'public').

Uncheck the field "Use bulk requests" (***NetControl*** devices do not support reading multiple OIDs with one request) !!!

Then you need to "hook" the template to the device, this is done from the "Templates" tab, where you need to select the "NetControl Device" template.



2.3. Activate required Items (data sources)

In the Zabbix concept, different monitoring topics/data are attached to each device (Host) - Items. Items, in turn, are grouped into Applications for easier processing.

The ***NetControl*** device you added automatically received the set of Applications and Items for SNMP access to all NetControl input and output circuits.

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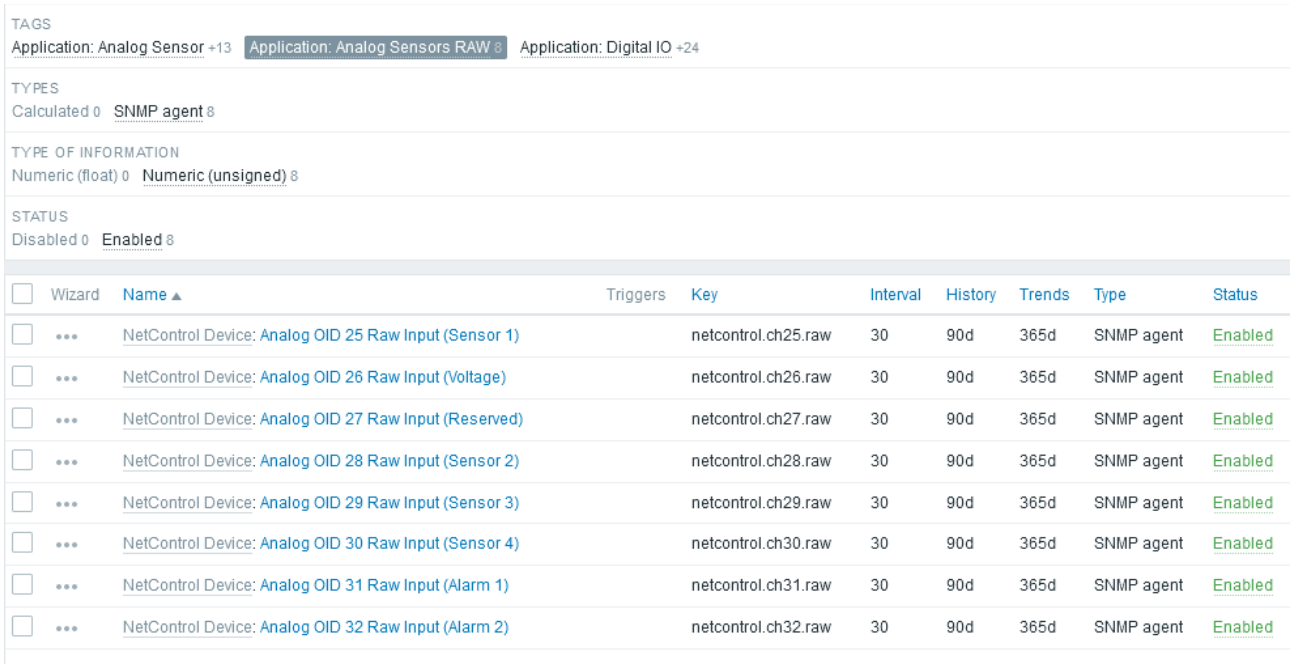
In Applications you will see the following data groups Analog Sensors, Analog Sensors RAW and Digital IO.

Because Zabbix cannot directly apply a formula to convert SNMP data (which is needed for conversion to temperature, humidity, etc.), the “RAW” group has been created, which extracts SNMP data in kind (ie the value of the analog-to-digital converter from 0 to 1023) and the other group of Analog Sensors, which is of the "Calculated" type and does not actually collect data, but converts the latest data collected by the "RAW" group.

The next screen shows all the Items in the Analog Sensors RAW group - these are actually the SNMP access objects to each of the hardware-available analog inputs in the NetControl platform. Different models use a different part of this set, and the NetControl User Guide for each model has a "Connection between channels and SNMP access objects" section. You can disable unused ones, to avoid sending unnecessary SNMP requests.



For example, for ***NetControl 4R4S1A*** you have used channel numbers 25 (Sensor 1), 28 (Sensor 2), 29 (Sensor 3), 30 (Sensor 4), 31 (Alarm) (these are the data for column [P] of the manual). The same number is also entered in the Item names, so you can easily decide which channels to activate and which not!

Once you have activated the required monitoring data channels, you can go to the "Analog Sensors" group, which looks like the following screen. We have introduced the typical sensors that ***NetControl*** works with: temperature, humidity, voltage, alarm, current. Especially for temperature and humidity, ready-made items are defined for the various channels to which the sensor can be attached. Here you can not disable topics that will not be used, as they are actually related to RAW data and do not change SNMP requests to the device.

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Wizard	Name ▲	Triggers	Key	Interval	History	Trends	Type	Status
•••	NetControl Device: Alarm 1		netcontrol.alarm1	30	90d	365d	Calculated	Enabled
•••	NetControl Device: Alarm 2		netcontrol.alarm2	30	90d	365d	Calculated	Enabled
•••	NetControl Device: Analog OID 25 Raw Input (Sensor 1)		netcontrol.ch25.raw	30	90d	365d	SNMP agent	Enabled
•••	NetControl Device: Analog OID 26 Raw Input (Voltage)		netcontrol.ch26.raw	30	90d	365d	SNMP agent	Enabled
•••	NetControl Device: Analog OID 27 Raw Input (Reserved)		netcontrol.ch27.raw	30	90d	365d	SNMP agent	Enabled
•••	NetControl Device: Analog OID 28 Raw Input (Sensor 2)		netcontrol.ch28.raw	30	90d	365d	SNMP agent	Enabled
•••	NetControl Device: Analog OID 29 Raw Input (Sensor 3)		netcontrol.ch29.raw	30	90d	365d	SNMP agent	Enabled
•••	NetControl Device: Analog OID 30 Raw Input (Sensor 4)		netcontrol.ch30.raw	30	90d	365d	SNMP agent	Enabled
•••	NetControl Device: Analog OID 31 Raw Input (Alarm 1)		netcontrol.ch31.raw	30	90d	365d	SNMP agent	Enabled
•••	NetControl Device: Analog OID 32 Raw Input (Alarm 2)		netcontrol.ch32.raw	30	90d	365d	SNMP agent	Enabled
•••	NetControl Device: Current Average		netcontrol.current	30	90d	365d	Calculated	Enabled
•••	NetControl Device: Humidity Sensor 1		netcontrol.hum.s1	30	90d	365d	Calculated	Enabled
•••	NetControl Device: Humidity Sensor 2		netcontrol.hum.s2	30	90d	365d	Calculated	Enabled
•••	NetControl Device: Humidity Sensor 3		netcontrol.hum.s3	30	90d	365d	Calculated	Enabled
•••	NetControl Device: Humidity Sensor 4		netcontrol.hum.s4	30	90d	365d	Calculated	Enabled
•••	NetControl Device: Temperature Sensor 1		netcontrol.temp.s1	30	90d	365d	Calculated	Enabled
•••	NetControl Device: Temperature Sensor 2		netcontrol.temp.s2	30	90d	365d	Calculated	Enabled
•••	NetControl Device: Temperature Sensor 3		netcontrol.temp.s3	30	90d	365d	Calculated	Enabled
•••	NetControl Device: Temperature Sensor 4		netcontrol.temp.s4	30	90d	365d	Calculated	Enabled
•••	NetControl Device: Voltage ACrms		netcontrol.voltac	30	90d	365d	Calculated	Enabled
•••	NetControl Device: Voltage [0...62VDC]		netcontrol.voltdc62	30	90d	365d	Calculated	Enabled

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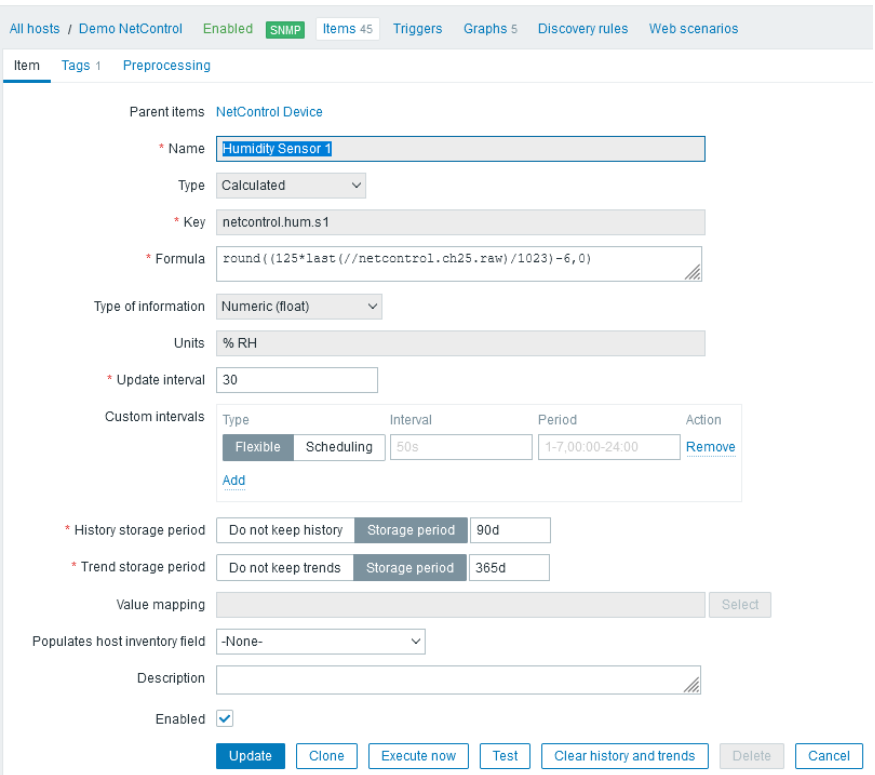
You can easily copy and modify these themes by opening them and using the Clone button. Briefly about the more important settings of each topic (Item):

Type – Calculated, SNMPv1 - determines the way the data is extracted (for the RAW group it is SNMPv1 and the corresponding OID, and for this group it is Calculated)

Key – unique name of the data being extracted. The name is further used in formulas and other data processing

Formula – valid only for Calculated objects. The example shows the formula for calculating the temperature of the respective RAW object (it is cited with its Key).

Value Mapping – we use this parameter for digital outputs and alarm inputs. At the alarm input we have defined that 1 = Open, 0 = Closed (this type of definition is set by the Hosts menu - for each Host there is a submenu “Value mapping”).



The ***NetControl*** outputs (relays) are retrieved directly (without going through RAW) and their Items are defined in the Application:DigitalIO group. There is a list of all possible outputs (24 in number), but those that your NetControl model has may be smaller. The connection between the channel available in a particular model and the Digital IO theme is again made through the user manual and the parameter [P] of the table with the connection between the channel and the SNMP object. For example, the 'Line 1' relay in most models is 'Output 9' from DigitalIO objects.

IMPORTANT !!! The 24 Digital IO objects are Disabled by default. Activate the ones you want to monitor as a status. Activation is related to downloading the site status data via SNMP!

2.4. Graphs

The template has several basic graphs defined (temperature, humidity, alarm). You are free to create new graphics by opening one of the ready ones and cloning it with the Clone button.

There is nothing specific in the graphics settings other than setting Items, ie. the data from which the graph will be drawn. Here you can choose from all Analog Sensors and Digital IO objects, you can even combine several on one graphic.

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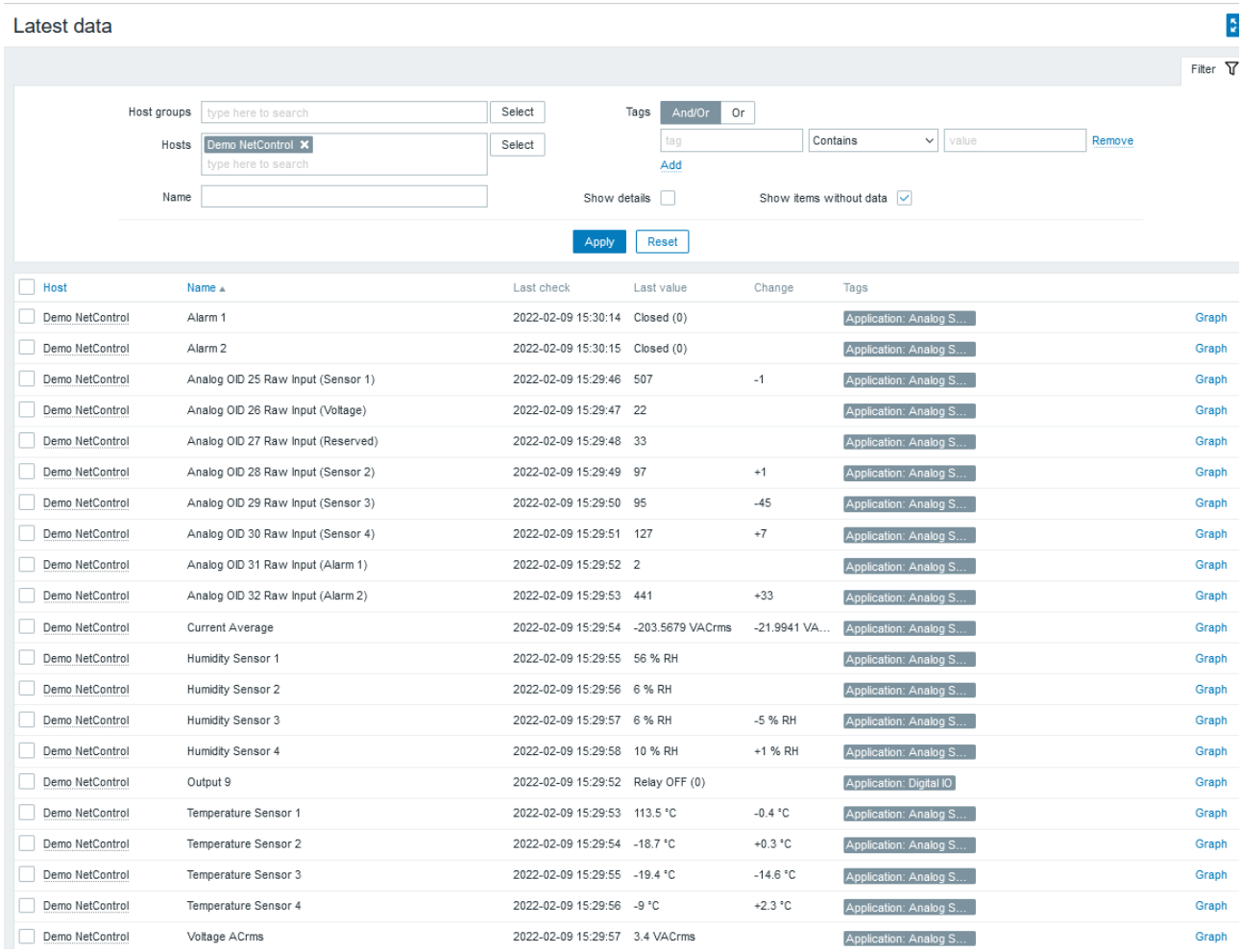
2.5. Access the device data

Once you have correctly added the Host, with the required Items activated and the required Graphs created, you can view all the data for your device from the central Monitoring menu.

"Latest Data" - provides tabular information with the latest data for all active Items (what you will see will differ depending on the activated topics)



2.6. Other possibilities

Useful functionality in Zabbix are the so-called “Trigers” - these are dependencies in the data on the input parameters that cause some action in Zabbix. The action can be just a status in the main screen, sending an e-mail, giving a command/script.

Theoretically, a trigger from one NetControl device could send an SNMP command (for example, turn on relay 1) to another or the same device. However, for this purpose there is no built-in functionality for sending SNMP as part of Action and it is necessary to create an external script (bash, perl, etc.) to send the necessary snmp-set command, and it itself to be called by Zabbix in the presence of specific conditions.

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