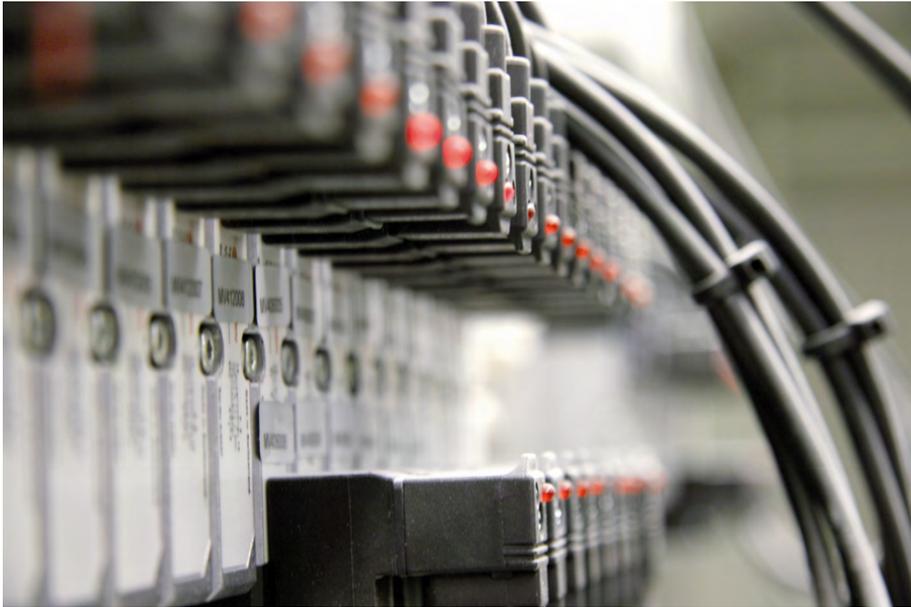
The background features a complex, abstract graphic composed of numerous overlapping circles and lines, creating a sense of depth and connectivity. The lines are thin and grey, while the circles vary in size and opacity. The overall effect is reminiscent of a network diagram or a data visualization.

The best network information

**COPA-DATA know-how:
SNMP with zenon**

The best network information COPA-DATA know-how: SNMP with zenon

A control system for Energy Automation always has many different IT devices. To manage the network efficiently, it must be possible to monitor, control and configure these remotely. In order to do this, precise information about devices, parts and programs in the network is necessary.



Is the device available? What type of fault is it? Are there alarms? If the zenon Energy Automation System is being used, it can both react directly and can itself be monitored at the same time. The Simple Network Management Protocol (SNMP) provides optimum support for this; it can report the status of devices and make interventions to control them. In this article, you will learn how SNMP works in principle and how zenon ensures the status and health of its devices with its SNMP driver.

The role of SNMP

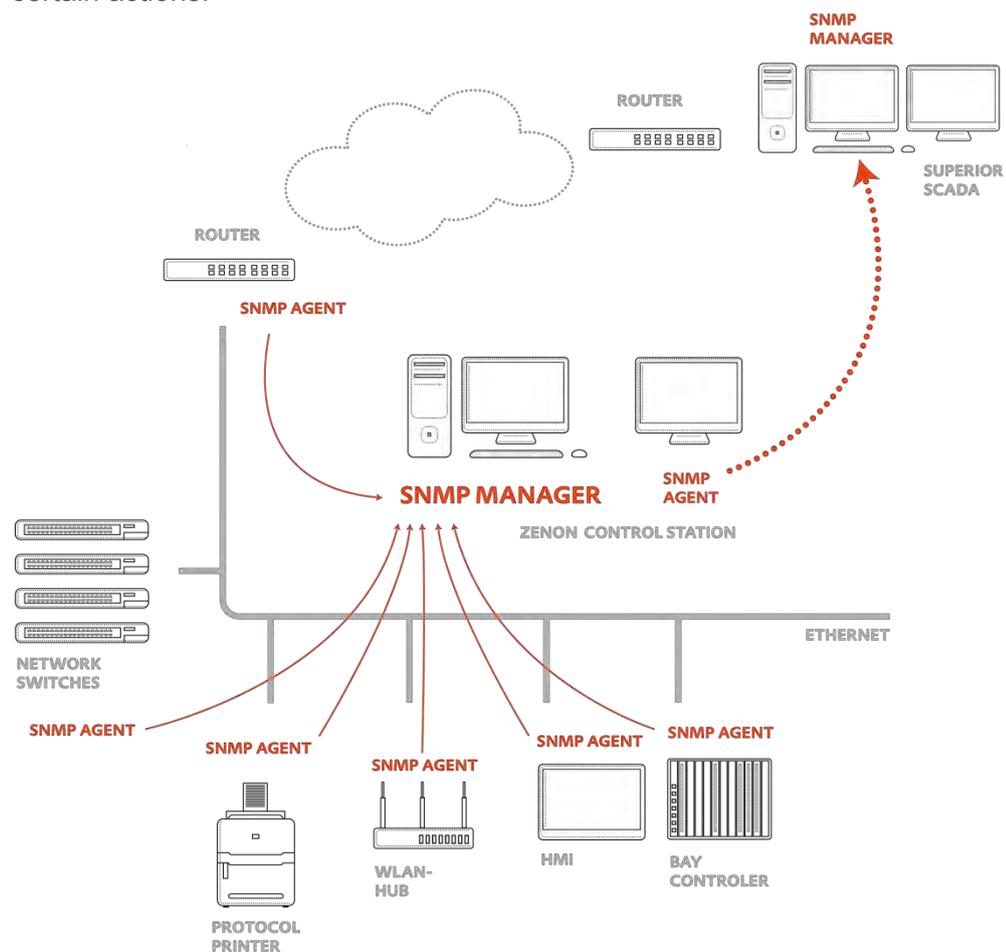
SNMP works very reliably and does not need a particularly complicated architecture; for instance, SNMP is not dependent on the IP networking protocol as a transport medium. Its simplicity, modularity and versatility have made SNMP into a standard that is supported by most management programs as well as devices.

Network management using SNMP primarily enables:

- Monitoring of network devices
- Remote control and remote configuration of network devices
- Fault recognition and notification.

How SNMP works

Agents (servers) and Managers (clients) are used for network management using SNMP. Should a device be monitored in the network, an agent is started for this device. Agents are programs that record and report the status of the devices, but can also be used for configuration or trigger certain actions.



The SNMP manager controls the agents and collects information from them. It communicates with the agents via a network. The manager can request data, amend data and also receive information that was not

specifically requested from the agents. For communication between agent and manager the UDP protocol is usually used.

The data that is typically sent by an agent to a manager is in the Management Information Base (MIB), for example:

- Name
- Type of data
- Access authorization
- Status
- Description
- OID (Object Identifier)

The data that a device provides in its MIB is dependent on the type of device. A network printer, for example, will report information on its paper tray, whereas a server would provide information on the status of its hard drive. However, even the same type of device differs from manufacturer to manufacturer in terms of the data that they provide.

zenon as an SNMP Manager



zenon has its own SNMP driver and can therefore function as an SNMP manager. Any SNMP agents can be monitored and configured as desired this way. This data is displayed in zenon as variables and can be further edited in zenon as desired. For example, they can be displayed in a process graphic, stored in an archive or evaluated with a report, but could also lead to automated reactions.

zenon as an SNMP agent

zenon is able to not only assume the role of the SNMP manager, but it is also able to act as an SNMP agent. To act as one of many agents, zenon sends its SNMP responses to the superordinated system using the zenon Process Gateway. In this way, the operational state of zenon as a station control system can be monitored by a superordinated unit, such as a load-distribution centre, by means of SNMP.

SNMP in energy applications

A control system for energy automation, for example substation automation, is always based on a variety of IT devices such as servers, routers, switches, client computers, protocol printers, gateways, time-synchronization computers and field devices with a network connection. All these devices can – provided that they can work with SNMP – be monitored. For example, the following can be monitored:

- Is the device available?
- Has the device broken down?
- Which ports of a network switch are occupied? Was a cable removed?
- What about the hard drive? Does an archive have to be stored?
- Does the protocol printer have enough paper and toner?
- What is the server CPU temperature?

The zenon Energy Automation System requests all this data in its capacity as SNMP manager, and processes them further. For example, zenon triggers an alarm if a critical temperature value is exceeded in a device. Alternatively, information is prepared graphically, such as which ports of a switch are occupied.

Should the zenon control system for energy automation be monitored itself by SNMP, then zenon's own SNMP is used as an agent. This is a perfect solution for the monitoring of unmanned substations.

The zenon SNMP server accesses all devices involved in processes, obtains their variable values and forwards these to the superordinated network control system. This can evaluate parts of the process image from the local control system, display them and react to them; if the zenon application was stopped, the SNMP manager is automatically informed. Therefore nothing can be overlooked and you can rely on the fact that everything is monitored by zenon in unmanned stations.

The SNMP driver makes zenon a comprehensive tool for the management of networks. As an SNMP manager, zenon collects information, evaluates this, displays this and reacts to this. As an SNMP agent, zenon forwards data and can itself be reliably monitored remotely.

Do you have any questions or comments in relation to zenon energy management and SNMP? Please write to energy@copadata.com.



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