

Keep Your Data Center Up And Running With PRTG

Whether in the cloud or on premises, the data center is the heart of the IT infrastructure and must be monitored 24/7.



Content

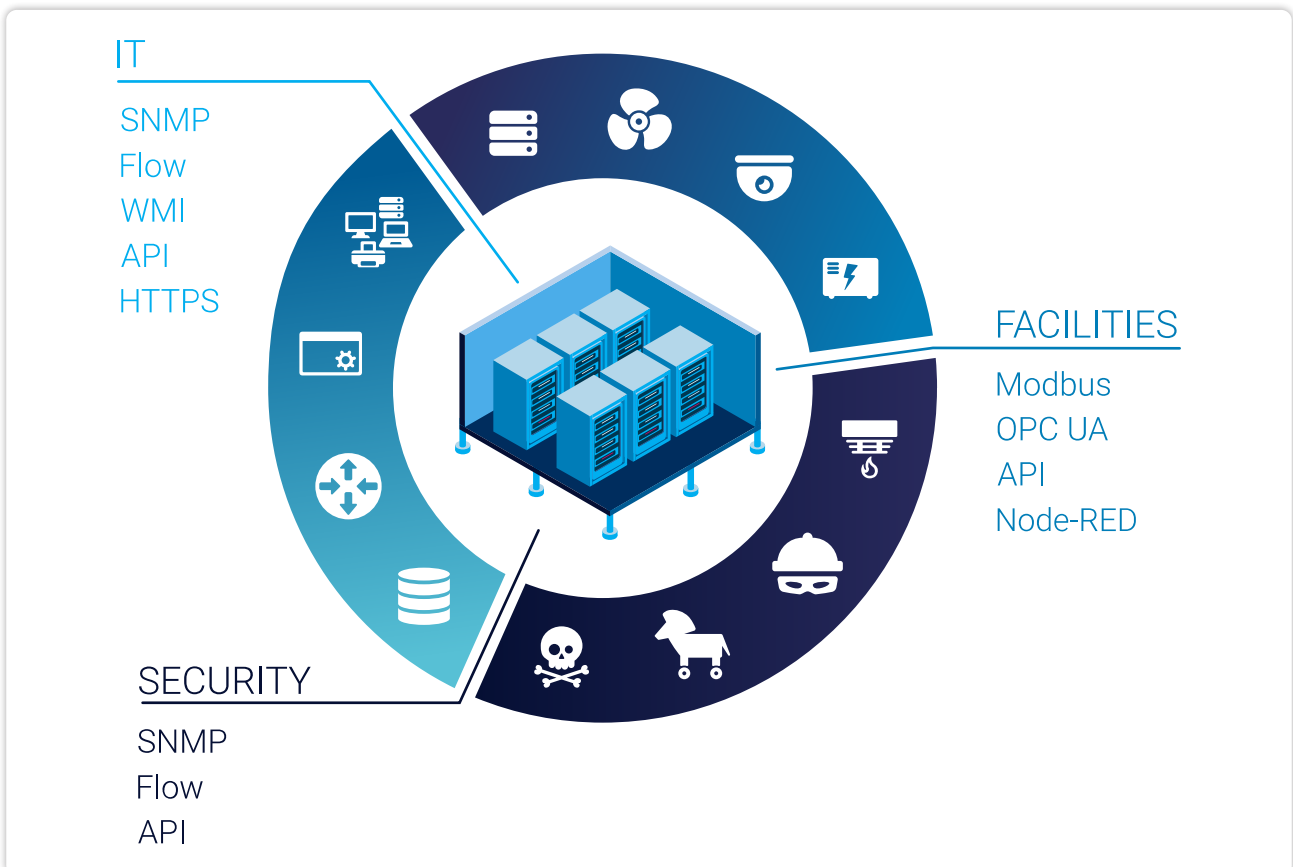
Different Teams, Different Languages	3
IT Network and Infrastructure	4
Monitoring of Data Center Security	5
Monitoring of Facilities.....	5
Power in the Data Center.....	6
Heat in the Data Center	8
Monitoring as Basis for Optimization.....	9
PRTG: One Solution for the Entire Data Center	10

Different Teams, Different Languages

When talking about monitoring a data center, there are three aspects to consider:

- 1. IT network and infrastructure**
- 2. Security**
- 3. Facilities**

We are talking about separate worlds that hardly understand each other and that are often operated and maintained by different teams. While protocols such as NetFlow, FTP, WMI, SSL or TLS are used in the IT and security world, communication in facilities is usually based on Modbus TCP or OPC UA, and sometimes even as serial communication. Only SNMP appears in both worlds, whereby the network protocol plays a much more central role in IT than in facilities.



This makes it difficult to get a comprehensive overview of the state of the entire data center, which combines IT and facilities in one dashboard. Only a centralized overview ensures that irregularities, malfunctions or failures can be detected, localized and rectified in time before they grow into serious problems.

IT Network and Infrastructure

IT infrastructure includes all the technical components required to provide and support IT services: Data centers, servers, networks, computer hardware, software, storage and other devices. This includes both physical and virtual assets, such as virtual machines and virtual servers, but also applications.

A monitoring solution should therefore provide the following functionalities:

- Monitoring of all IT components and visualizing individual aspects of a device or application.
- Support of common protocols like SNMP, WMI, HTTPS or SSL.
- Creation of customized sensors to extend the standard sensor set
- Flexible API for customization

Monitoring of Data Center Security

Security is a key aspect of IT that adds a whole new dimension to the data center: in addition to the classic IT risks already mentioned, there are the requirements of the facility and environmental aspects. Unauthorized intrusion is also a constant risk that requires extensive sensor technology. While CCTV systems can also be used to control smoke, fire or water intrusion, they are usually used to monitor rooms for unauthorized entry.

A monitoring solution must therefore be able to monitor all these sensors and systems 24/7 in terms of availability and function, and at the same time collect the monitoring data, display it in easy-to-understand dashboards and integrate it into a central alarm system.

In addition, IT security components such as firewalls, virus scanners and intrusion detection systems must be monitored for availability and function. Monitoring of unusual behavior must also be in place. In this way, viruses or Trojans can be detected and eliminated based on their activity before they can cause serious damage.

Monitoring of Facilities

50% of IT failures have physical causes. In contrast to failures caused by software errors, downtimes for physical defects are usually longer and more expensive. A continuous view of the data center not only shows its operating status; it also makes it easier for managers from IT and facility management to avoid predictable disruptions, increased energy consumption and unnecessary costs.

3 options for data collection are in focus:

- **Query via SNMP or API**

Many devices in facilities support SNMP or the possibility of queries via defined interfaces.

- **Direct data acquisition via Modbus TCP and OPC UA**

The support of industrial technologies enables the possibility to directly query numerous devices from the field of facilities and to integrate them into the central monitoring system in a simple and straightforward way.

- **Integration with communication solutions**

Clearly defined interfaces are required to enable seamless integration with gateways from well-known manufacturers and with communication servers. This allows data to be received in almost any industrial format and converted to and processed in IT formats.

In particular, the integration with third-party communication solutions offers a large potential for cost savings: Many components, especially older ones, in the facility still communicate over serial interfaces. The upgrade of these devices with parallel network interfaces is complex and expensive.

Power in the Data Center

Power supply and power consumption are among the key issues in data center operations. First and foremost, the power supply for IT and facilities must be guaranteed at all times. Power failures lead to massive outages, SLAs (Service Level Agreements) are violated, and enormous costs can be incurred.

To compensate for power outages, data centers usually have two emergency systems:

- **UPS devices**

The uninterruptible power supply (UPS) is usually provided by battery-powered devices that can bridge short local power failures or compensate for local voltage fluctuations. In case of failure of the general power supply, UPS devices cover the start-up time of the generator of an AEV system. With UPS devices, it is important to monitor the battery charge and/or the possible bridging time.

- **SPS devices**

Standby Power Systems (SPS), also known as Emergency Power Systems, often consist of generators. They take over the power supply in the event of normal power loss. Depending on the technology used, tank levels have to be monitored, but the operating temperature can also play a role if the generator is constantly kept at a certain temperature in order to be ready for operation more quickly in case of an emergency.

Monitoring of all parameters of UPS devices and SPS via SNMP, Modbus TCP, OPC UA or via API, depending on the device used, is extremely important in ensuring that power supply is guaranteed in the event of faults or failures.

Heat in the Data Center

Computers generate heat and are negatively impacted by it. The consequences are not only possible breakdowns due to overheating: even if breakdowns do not occur, increased temperatures cause increased wear on IT components in the long term. The service life is reduced and operating costs increase.

Cooling provides a remedy and is one of the most important aspects of data center operation. **There are three main factors that determine the room temperature:**

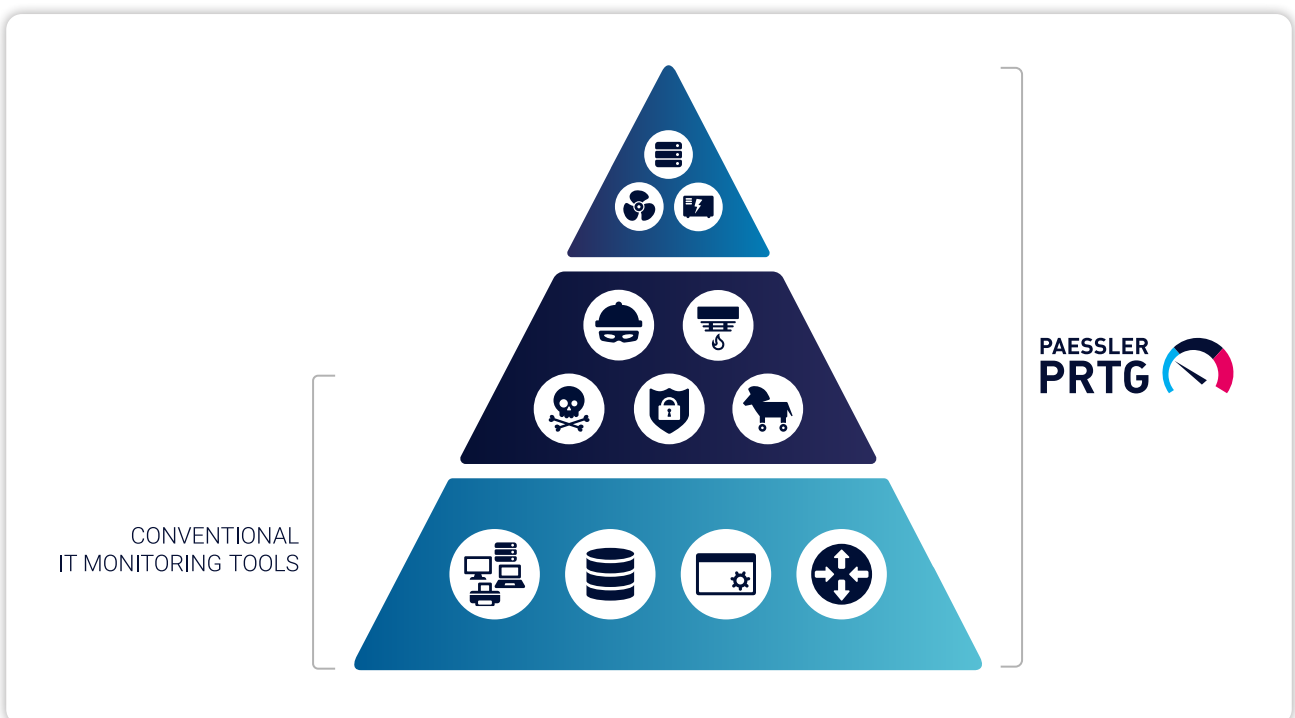
- Air conditioner inlet and outlet temperature
- The “temperature network,” i.e. the temperature at a number of strategically important measuring points
- Hot spots – places where critical temperature deviations occur

It’s not only important to detect when temperatures are too high. Cooling is resource- and cost-intensive, so cooling in the data center always means a compromise between necessary temperature reduction and reasonable effort. Temperatures that are too low can be a sign of excessive cooling and thus too much effort.

Monitoring as Basis for Optimization

Monitoring generates data on condition and availability. This can form the basis for long-term optimization and can affect many areas in the data center: From classic IT and security measures to climate management and power consumption. The monitoring data provides information on trends and consumption peaks, but also on unused resources and overcapacity.

While most monitoring solutions need to aggregate the collected data for performance reasons, PRTG can store monitoring data at the original intervals it was sent thanks to its integrated database. This provides a precise basis for long-term data analysis and optimization.



PRTG: One Solution for the Entire Data Center

Whether IT, facilities, or security systems: PRTG is able to comprehensively monitor all components of a data center. PRTG can summarize details in processes and map them for the responsible employees or teams. This way, the solution creates an overview and delivers detailed information as needed. PRTG sends alerts on all common channels if necessary, but at the same time reduces unwanted “alert noise” by sending only relevant alerts to the relevant employees. In the long run PRTG helps to optimize the data center on all levels and thus helps permanently reduce resource consumption as well as operating costs.

Find Out More:

www.paessler.com/industry/data-center-it-monitoring

About Paessler

Paessler recognizes the crucial role that monitoring plays in the efficiency and reliability of critical IT, OT and IoT systems. Since 1997, the company's flagship product, PRTG Network Monitor, has delivered the visibility organizations need to prevent downtime, reduce costs, and optimize performance across their infrastructure.

That's why more than 500,000 users in over 190 countries, including many of the world's most recognizable brands, trust Paessler to keep their networks running smoothly, allowing them to focus on building growth and maintaining their competitive advantage.

Find out more about Paessler – and how monitoring can help you – at www.paessler.com

Monitoring for Every Industry



**INDUSTRIAL
MONITORING**



**DATA CENTER
MONITORING**



**HEALTHCARE
MONITORING**



**EDUCATION
MONITORING**



**GOVERNMENT
MONITORING**