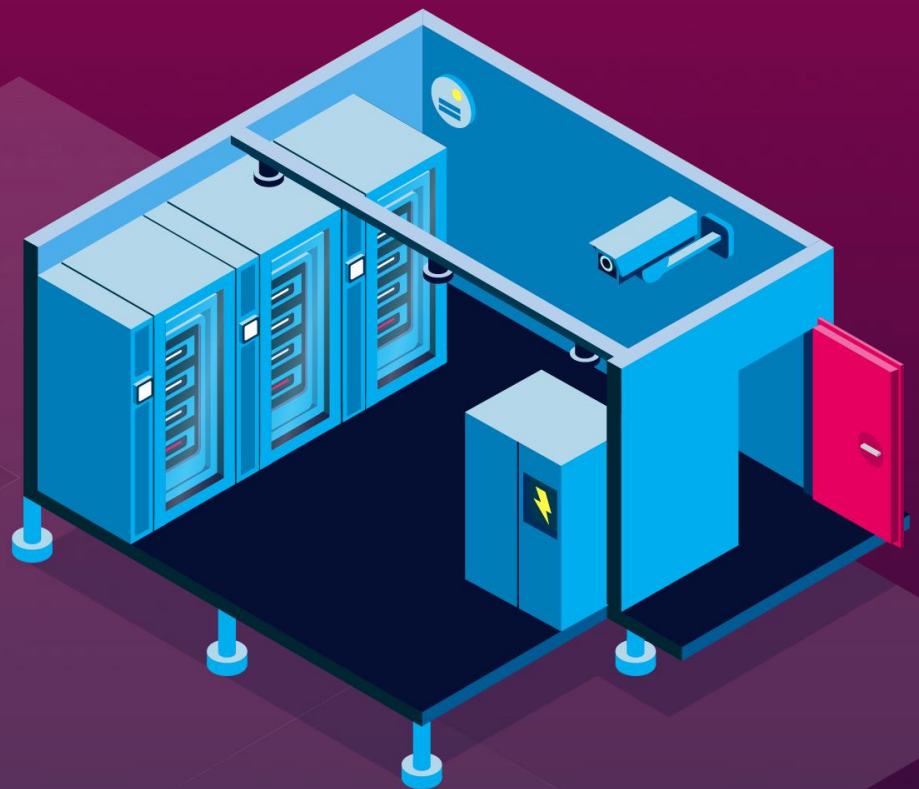**PAESSLER**
THE MONITORING EXPERTS

Data-driven decision making in the Data Center: from energy efficiency to predictive maintenance

Data center availability and energy efficiency are one of the most important aspects when downtime can also quickly have a financial impact. In order to detect problems at an early stage and thus avoid downtime, the term "predictive maintenance" becomes increasingly important. Let's analyze how these aspects can lead to full control and data center performance improvement.
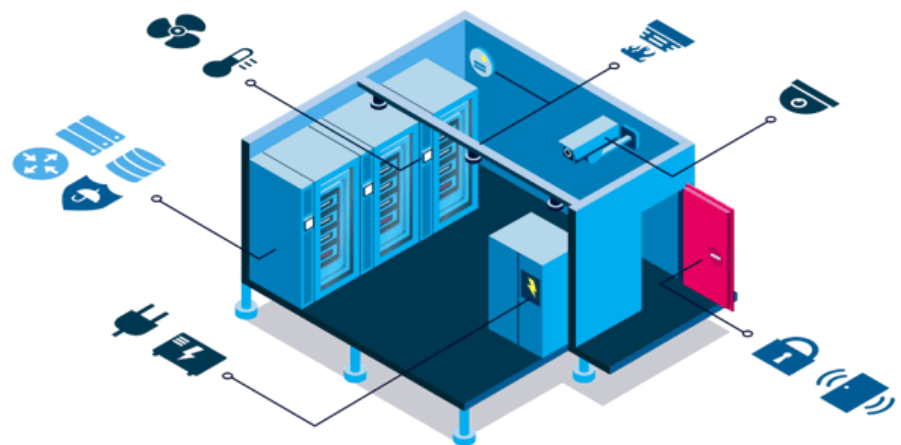
What is energy efficiency?

Basically, this means using less energy for the same task or the same result. For data centers, this implies lower power consumption with the same computing power. Improving energy efficiency in data centers can also reduce energy costs and improve environmental sustainability.

How does energy efficiency relate to data centers?

Data centers are known to require large amounts of energy. The high energy consumption is not only due to the operation of IT equipment, but also for air conditioning and all other environmental parameters that ensure stable operation. Especially in today's world, sustainability through efficiency plays an increasingly important role for many companies. Many IT professionals do not even know how much power is consumed in their data center and are looking for a solution that measures it.

A monitoring software like Paessler PRTG Enterprise Monitor paves the way to high availability and can also help to reduce energy consumption.

Optimization of energy efficiency

Power supply and power consumption efficiency are among the most important issues in data center operation, especially in larger companies. First and foremost, the power supply for IT and equipment must be always guaranteed. However, in times of rising energy prices, operating costs are also increasing and therefore represent a major part of a company's total expenses.

Nevertheless, there are also various potentials for optimizing resource consumption. The main focus here is to have a holistic view of the corresponding infrastructure of the data center(s) as well as the IT systems. PRTG Enterprise Monitor creates the necessary transparency and enables a comprehensive analysis. In this way, current IT workloads, excessive reserves, redundancies or backups that may not even be required can be identified and optimized to help to save energy.

How to ensure data center availability?

Large data centers are divided into zones to ensure that they are operating in an efficient and secure manner. Zoning within a data center is typically driven by the needs of the IT infrastructure and the physical constraints of the building. Some common zones in a data centers are:

- Network zone
- Server zone
- Cooling zone
- Power zone

When talking about availability in data centers, availability tiers cannot be ignored. The tier system is widely used in the industry to classify data centers based on availability and was developed by the Uptime Institute, a leading data center research and consulting organization.

Every IT administrator or IT responsible person has the goal of avoiding downtime at all costs. Not only does downtime mean annoyed users, it can also quickly lead to financial losses for a company. Today, the availability of business services goes hand in hand with the availability of IT services.

Especially for MSPs, customer satisfaction is critical, so there is no room for unavailable or non-functioning business environments. For this reason, any interruption of services needs to be a thing of the past!

What availability of IT services means

In the same way that an IP packet travels from the physical to the application layer, network monitoring needs to cover all aspects from the Ethernet connection to the residing service.

This means that if you want to monitor the availability of an IT service like a web shop that is hosted on a virtualization host, for example, you also need to monitor all underlying layers including the physical machine, the virtualization platform, the operating system, and the application.
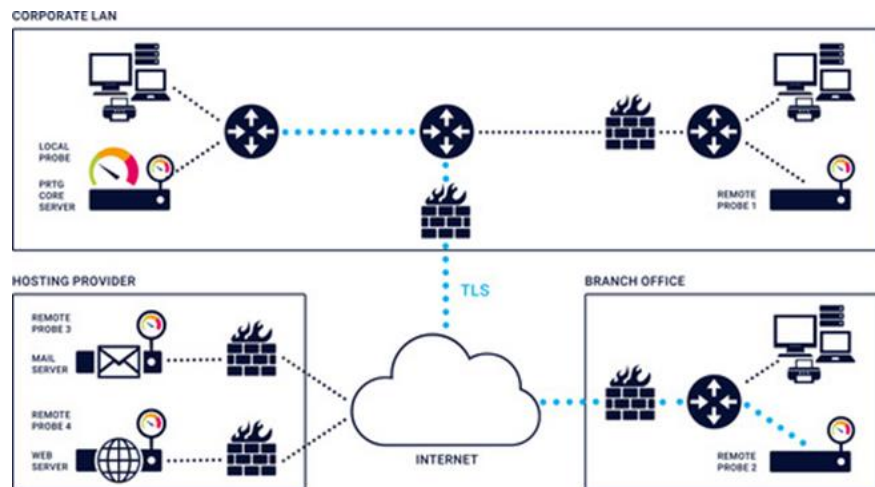
But this is just one example. The larger a company is, the larger and more complex its IT infrastructure and its data centers (which are typically distributed across a city, a country or even the world) are. Paessler PRTG Enterprise Monitor includes all the sensors you need to monitor the availability of all systems and services. These are especially:

- Email availability
- Server availability
- Bandwidth availability
- Network availability
- and much more

99% availability is not enough

99% availability means a downtime of 87.7 hours per year, which is equivalent to 3.65 days. When it comes to the availability of your website, servers, and databases, only one figure matters: 99.999%, which means downtime of just 5 minutes per year. This number is the indicator for the high availability of your data center and PRTG helps you to achieve this ambitious goal. Reduce downtime and enjoy a significantly more reliable data center.

This overview shows the various availability classes:

- Class 2: 99% = 87.7 hours of downtime per year
- Class 3: 99.9% = 8.45 hours of downtime per year
- Class 4: 99.99% = 52 minutes of downtime per year
- Class 5: 99.999% = 5 minutes of downtime per year
  (figures are rounded)

Predictive maintenance

In an ideal situation, predictive maintenance allows for the lowest possible maintenance frequency to avoid unscheduled reactive maintenance without incurring the cost of too much preventive maintenance. When talking about predictive maintenance, it is usually about improving and avoiding delays in data deployment. In the data center area, the focus is more on systems and devices such as:

- Generators
- Cables
- Batteries
- UPS (Uninterruptible Power Supply)
- Heating, Ventilation and Air Conditioning (HVAC)

After all, these components are the physical basis of every data center to ensure trouble-free operation. The larger the data center, the more of these components there are, and the more the need for regular maintenance increases. Evaluating data from these systems and devices enables predictive maintenance - and consequently new savings potential and improved availability. However, this predictive maintenance works with data that must first be obtained and analyzed.

Predictive Analytics

In order to make predictions about unknown future events, predictive analytics is needed. This is a business analytics & information management related discipline. Organizations use techniques and modeling to analyze current data and obtain case-based predictions and forecasts. This allows data scientists to use the patterns found in historical and transactional data to identify risks and opportunities for the future.

Benefits of predictive maintenance

As described above, predictive maintenance allows you to save time, energy and money, but also offers other benefits including:

- Reduces unnecessary maintenance because equipment can be shut down just before a predicted failure
- Increases equipment lifespan and reduces resource wastage
- Reduces downtime due to equipment failure
- Supports compliance with safety regulations
- Helps purchasing departments to make informed decisions about the most cost-effective hardware for specific tasks
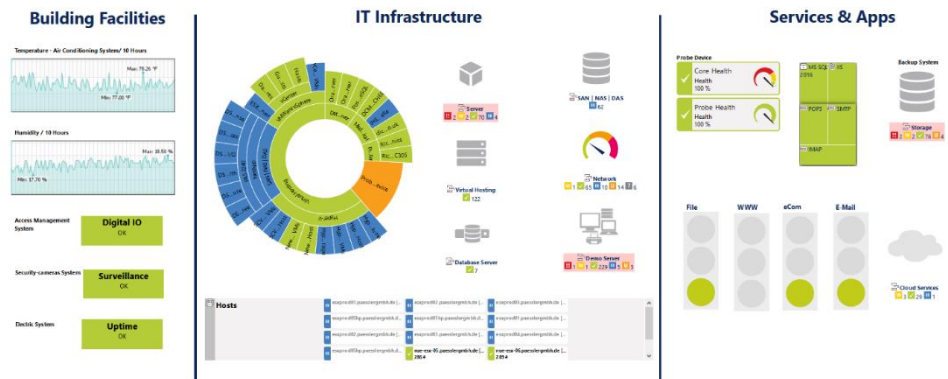
PRTG & predictive maintenance

Paessler PRTG Enterprise Monitor supports you with your predictive maintenance program. Designing and implementing a predictive maintenance solution can be time consuming, labor intensive and costly. If you are looking for a monitoring tool that supports you with your predictive maintenance program, contact the monitoring experts at Paessler to chat about your requirements.

ABOUT PAESSLER

Paessler believes monitoring plays a vital part in reducing humankind's consumption of resources. Monitoring data helps its customers save resources, from optimizing their IT, OT and IoT infrastructures to reducing energy consumption or emissions – for our future and our environment. That is why Paessler offers monitoring solutions for businesses across all industries and all sizes, from SMB to large enterprises. Paessler works with renowned partners, and together they tackle the monitoring challenges of an ever-changing world.

Since 1997, when Paessler first introduced PRTG Network Monitor, it has combined its in-depth monitoring knowledge with an innovative spirit. Today, more than 500,000 users in over 170 countries rely on Paessler solutions to monitor their complex IT, OT and IoT infrastructures. Paessler's products empower its customers to monitor everything, and thus help them optimize their resources.