

Monitoring Applications and Services with Network Monitoring



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Introduction: Avoiding Cracks in the Foundation

Company productivity in today's IT age is heavily dependent on the applications and services used within the company. For example, many companies use central (web) applications to organize internal workflows. Solutions like Microsoft SharePoint support project management or help to coordinate tasks. If a workflow service crashes, entire work processes grind to a halt. In order to use such collaboration platforms and any important company applications – without interruption, permanent monitoring of the applications is advisable. The same goes for the company website. The digital figurehead is enormously important for successful marketing. Problems with the website can frustrate clients or even prevent them from making a purchase. Email systems, data backup solutions and Windows security updates are high up on the list of important applications and services as well. If all of these applications are running smoothly, they create a well-organized, solid foundation on which a company can function. To avoid cracks in this foundation, professional monitoring software can be used to monitor company applications so that factors like availability, bandwidth and general usage of the IT infrastructure are displayed transparently at all times.

Separate Monitoring for Applications and Services

Many monitoring solution providers offer bulk monitoring of application servers and services. Large-scale network monitoring is good – like basic ping and traffic monitoring on routers or switches with customized parameters – but often companies overlook individual aspects, such as the performance of important applications. Detailed monitoring of individual applications and services is more precise and reliable. Network monitoring solutions like the PRTG Network Monitor use preconfigured sensors to maintain a detailed overview of the status of each application separately.

These special sensor types provide detailed monitoring of various application and server processes. For example: the web application SharePoint serves companies as a collaboration platform for teams. The tool is used to manage projects, define responsibilities and coordinate work processes. Even SharePoint's content management functions help to accelerate daily work. In addition, many companies use the Windows server solution IIS to put up their websites, services and applications in the Net.



RELIABLE OPERATION OF SHAREPOINT AND IIS

FIGURE: Detailed SharePoint process values

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KEEPING AN EYE ON THE WEBSITE

In order to ensure that IIS and SharePoint are always running reliably, the PRTG sensors monitor the seamless execution of various processes. The monitoring software provides the company's administrator with information regarding the number of page requests and active threads, CPU usage or the number and response time of currently executed SQL queries in SharePoint. With IIS servers, the solution logs sent and received Bytes, the speed of GET and POST requests, the number of users per second, etc. Any delays or crashes will be reported to the administrator immediately so that s/he can respond at once.

Administrators want the same kind of reaction speed for incidents concerning the company website. The website is the company's digital display window, its way of presenting itself. A company's Internet presence and web shop (if the company has one) reflect its performance in the World Wide Web. Because of this, the availability of the website is crucial. Providers can lose customers if pages load too slowly or purchases in the web shop fail due to technical errors.

In order to avoid possible losses due to annoyed customers, the network monitoring solution reports any unusual website behavior immediately. In addition to the various HTTP sensors that check the website's availability and loading speed, PRTG Network Monitor also offers a so-called HTTP Full Web Page Sensor, for example, which checks the time of complete page downloads, including images, etc., and can even create a visual history of the page. The HTTP Transaction Sensor simulates transactions in the web shop and monitors their successful completion. An HTTP Apache ModStatus Totals Sensor is available as well, which checks how often a corresponding web server is accessed and the transferred data volumes. This helps to identify peak demand times, and the administrator can decide whether additional bandwidth is necessary.

FIGURE:

There are several sensors for monitoring websites and services

Device HTTP Server ■ ★★★★★

Overview	2 days 30 days 365 days Alarms Log	≁ Settings 🕮	Notifications 🕫 🔳								
Status: OK	Sensors: 🛄 1 🔽 10 (of 11)	DNS/IP: Testdevice	Dependency: Parent	Default Interval: every 5 minutes	Las (ne	st Auto ever)					
i+ + 1 to	11 of 11 → →:					ē					
Pos 💌	Sensor	Status	Message	Graph	Priority						
≣ 1.	HTTP Advanced 2	Up	ОК	Loading time 211 msec	*****						
2.	HTTP Content 2	Down	Unexpected Format: 'GoogleAnalyticsObject'	Value 1 No data	*****						
≣ 3.	HTTP Full Web Page 2	Up	ok https gerald1/index.htm	Loading Time 827 msec	*****						
■ 4.	HTTP 6	Up	ОК	Loading time 101 msec	****						
≣ 5.	HTTP Transaction Standard- Post & Get & Keyword	Up	ОК	Sum has been added and added msec	*****						
6 .	HTTP Transaction .NET- Post & Get & Keyword check	Up	Ok	Sum 0 msec	****						
≣ 7.	7										
≣ 8.	🖌 🗹 HTTP Transaction 🖉 🎽 🖾 💷 🗃 🖓 💌 Sum Libble Lib										
■ 9 .	C Local Probe (Local Probe , 🔄 1st group , 🎟 HTTP Server										
≣ 10.	Last Message:		Sum 0 msec	*****							
≣ 11.	ОК			Sum 0 msec							
i÷ ← 1 to					XML	c,					
🕀 Add	Last Scan: Last Up: Last Down: Uptime: Do Am 1 s Am 1 s 86 d 98 9898% 10	owntime: Coverag	ge:								
	4 III 1 5 4 III 1 5 60 G 56,3636 7,	510276 3376									
RECON	Sensor Type: Dependency: Interval:	ID:									
Priority	HTTP Transaction Parent every 5 min	iutes #15920	rs Links								
There are	Max: 247 msec	المحمدحة	-								
	200 Min: 212 miec	VERVERING									
WHAT											
PRTG can	picture about the status of this device in	the future.									
		un un un un	ud a								
			ë ë ∨								



WHITE PAPER

MONITORING EMAIL SYSTEMS

In (nearly) all companies, a functioning email system is nearly as important as website performance in regards to public image. If email communication with clients and business partners crashes, or even internally between staff and departments, productivity suffers. This is why it is important for companies to keep an eye on their mail server. A professional monitoring system can monitor POP3, SMTP and IMAP mail servers with specialized sensors. Companies can thus guarantee that they are able to send and receive emails and that that this occurs without delays.

PRTG comprises standardized dedicated sensor types that are important for companies using the Windows Exchange server. These monitor mail queues, sending times and latencies and report changes in performance immediately. Sensors that show the backup status of an Exchange server, as well as information regarding the database, folders and email accounts are also available.



Two additional sensor types enable the so-called 'Email Round Trip Monitoring'. These record the time it takes for an email to be sent, received and resent to the initial server. To measure, the monitoring solution sends an email via SMTP to an external mail account. This account must be configured to forward the email directly to another email address on the company's mail server. After sending the test email, PRTG checks the corresponding inbox continuously via IMAP or POP3. As soon as the email is received, the monitoring software writes the 'round trip time' in its database. Companies are able to define limits for the round trip time. Exceeding these limits suggests slower or defective mail processes. In the worst case, this could indicate complete failure. In any case, the system notifies the administrator immediately.



FIGURE: Monitoring an exchange server,

FIGURE: Email round trip monitors the time necessary for email delivery



BACKUP MONITORING

All types of data that are generated during daily business operations should be secured regularly, not just email accounts. Data backups contribute to reliable business operations. The IMAP sensors from PRTG are perfectly suited to monitoring these backups. The sensors can also monitor data storage on virtual machines, in the operating system, on an SQL server, etc.

FIGURE: Filter settings of the IMAP sensor monitoring backup

SENSOR BEHAVIOR

Set to Error	 Never (default) 						
	O Always						
	 If subject contains 						
	If subject does not contain						
	O If mail body contains						
	 If mail body does not contain 						
Check Method	String search						
	• Regular expression						
Search Text	success						
-							
Error Message	any text w/o success: only error, not error, and partially together						
Set to Warping	O Never (default)						
Set to warning	O Always						
	If subject contains						
	O If subject doesn't contain						
	If mail body contains						
	 If mail body doesn't contain 						
Chark Mathod	O String search						
Check Method	Regular expression						
Search Text							
Search lext	(;=,^\berror\b)(;=,^\ôpartially\b).*						
Warning Message There might be a problem: error and partially together							
No Matching Mail Robavior	O Set sensor to "Down" status						
No Matching Mail benavior	O Set sensor to "Warning" status						
	• None						
Concor Decult	Discard sensor result						
Sensor Result	 Write sensor result to disk (Filename: "Result of Sensor (ID).txt") 						

There are various backup solutions available for securing data. Many of these solutions can send emails that report the status of the nightly data backups. With this method, however, the administrator has to analyze multiple emails daily, in order to make sure that all backups were completed successfully and that no problems arose. Alternatively, the IT department could set up their network monitoring software to analyze all emails in a certain account automatically using IMAP sensors. In other words, if all status emails are sent to a single email address, the administrator can use the monitoring solution to keep an overview of all data backups. The administrator receives notification immediately if backups are not completed properly.

OVERVIEW OF SERVER AND SERVICES

In addition to options for monitoring applications, various sensor types are available that have been specially designed to take care of Windows services. If errors occur here, sometimes the only way to solve the problem is to restart the service or the entire server. If, for example, the administrator uses the network monitor to monitor the Windows services, s/he will receive a text message or email notification if a service crashes; however, the service will still need to be restarted manually.

Being able to restart the server or service would be more efficient. This is possible with PRTG's notification system. The administrator creates a script that can reboot single services or the entire server. If a service or server fails for a certain period of time, the monitoring executes the script by means of a special type of notification and the restart is executed automatically. The WMI service sensor (part of the standard PRTG package) can also be configured to restart Windows services.



WHITE PAPER

DATABASE PERFORMANCE CHECKS

Database crashes in the company network are just as aggravating. In order to avoid database outages, and to make sure that all data are available for the staff at all times, the monitoring software continuously monitors the status of the database. If the performance fluctuates, the reasons for fluctuation must be determined. PRTG's WMI SQL Server sensors show, for example, the number of user connections. If the performance suffers at certain times, it may be that too many users are active at once. In this case, the administrator would be able to increase the available memory on the SQL server and solve the problem.





Visualizing Data

There are many different methods for visualizing the data gathered during monitoring. The data can be viewed directly in the PRTG device selection, for example. Here, all components monitored and sensors used are clearly displayed. Various display options are available to customize the display. Libraries in the software offer alternative customized views of the devices used. Filter options can be used to display lists of sensors that monitor dedicated applications or services collectively – independent of the device arrangement. Administrators can even select desired objects in the device selection, which are then automatically merged into a library by PRTG.

Home Devices Libraries Sensors Alarms Maps Reports Logs Tickets Setup
 Multiners Library with sensors prouped by state *

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ibrary Library with se	ensors groupe	ed by state												
Werview 🏶 Manageme	ent 🎤 Settings	(2) Notification	s @!										6	0 B
ensors: 🗹 🔢 179 🕑 🔛 4 🗹 💟 11 🔄	339 🗹 🛄 42	149 (of 7	24)		s J	earch: D Search		0 0 0	0				ID: #710	E CAR
Library with sensors grouped	by state													
Alarms	179 Sensors	4 Sensors	11 Sensors											
👸 Paused or unknown	PC Custom 1.436 Milyte (W	11 42 Sensors	7 149 Sensors											
🖉 Up and running	Core Health	Disk Free_Local	HTTP 4 261 msec PM	HTTP Transa	HTTP Transa	HTTP Transa	Pingdom	Probe Health	SNMP Trap R.	Syslog Receiv	System Health	Windows Las 235 Days	HTTP 1 191 maec	
	CPU Load 4	SQL Server 2	EXE/Script Se	EXE/Script Se	MSExchange	WMI Exchano	WMI Exchano.	MSExchangel	(007) Larry NI. 75.413 kb// II	Sensor Factory	PING 2 msec IN	PING 3	CPU Load 1	
	Free Memory 1 14,807 kb (W	(001) 1 0 kbit/s (N	(002) 2 0 kb/t/s (14)	(005) 5 0 kbit/s (%)	(006) 6 0 kbit/s 🔎	SNMP Traffic	(008) 8 0 kbit/s (14)	(009) 9 815 kbit/s	(010) 10 0 kb/s/s	(015) 15 0 kb/s/s	(016) 16 0 kb/s (14)	(017) 17 79 kbit/s	(019) 19 0 kbit/s	
	(021) 21 0 kbit/s (W	HTTP2	ICMP Messa 1 ICMP/s (N	ICMP Messa	CMP DestUn	CMP DestUn	CMP Errors L. DICMP/s (R)	CMP Errors	TCP Segmen.	TCP Segmen	SNMP Messe 9 SNMP/s IN	SNMP Messe	UDP Datage	ra
	UDP Datagra	SNMP RMO	Ping 1 1 msec (N	PING Jitter	Traceroute H	Port 1 msec (N)	HTTP 15 mpec (N)	HTTP Advanc	HTTP Full We.	HTTP SSL Cer	POP3 Email 945 Emails IN	HTTP Full We	HTTP Trans	18 10
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FIGURE:

Library showing sensors by current status





A more general and easier-to-read presentation mode is available in PRTG Maps. For example, the tool can display the live monitoring status, diagrams and tables for all application sensors. Classic reporting is available as well, which delivers regular reports – in PDF format, for example – that can be used for requirement analyses, management reports or for documentation of SLAs (Service Level Agreements).



Custom PRTG map showing VM host hardware parameters

Conclusion

A network monitoring solution like PRTG is a central information point for all applications and services in the entire network. The monitoring software continuously monitors the performance of internal applications. Inconsistencies in the email system, on the company's website, in data backups, in the database and all applications and services in the IT infrastructure are recognized and reported by the monitoring solution. In the event that a service is unavailable or a threshold is crossed, the software notifies the responsible party immediately. This enables administrators to resolve inconsistencies before an outage occurs, and all applications and services run continuously and reliably.

ABOUT PAESSLER AG

In 1997 Paessler revolutionized IT monitoring with the introduction of PRTG Network Monitor. Today over 200,000 IT administrators, in more than 170 countries, rely on PRTG to monitor their business-critical systems, devices and network infrastructures. PRTG monitors the entire IT infrastructure 24/7 and helps IT professionals to seamlessly solve problems before they impact users.

Our mission is to empower technical teams to manage their infrastructure, ensuring maximum productivity. We build lasting partnerships and integrative, holistic solutions to achieve this. Thinking beyond IT networks, Paessler is actively developing solutions to support digital transformation strategies and the Internet of Things.

Learn more about Paessler and PRTG at <u>www.paessler.com</u>.

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