# Rohde & Schwarz

In the Technology Systems Division Rohde & Schwarz designs, develops, and implements systems based on customer requirements. When it comes to monitoring, they trust in Icinga to deliver systems with high reliability, exceptional performance, and optimal efficiency.

Rohde & Schwarz is a global technology group striving for a safer and connected world. Through its Test & Measurement, Technology Systems, and Networks & Cybersecurity Divisions, it develops innovations for the future. Their products and solutions enable industrial, regulatory, and military customers to achieve technological and digital sovereignty.

With its extensive product portfolio customers worldwide rely on Rohde & Schwarz and its cutting-edge solutions. Headquartered in Munich, Germany, the company is globally present with more than 14.000 employees in over 70 countries and an annual revenue of over € 2.53 billion.

# The Challenge

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Before Icinga,
all product
extensions were
very time-consuming
and involved new
release tests.

Ralph Schmeisser
Product Owner Systems Status
Monitoring, Technology Systems
Rohde & Schwarz

As a system integrator and manufacturer of core components, Rohde & Schwarz offers turnkey solutions by both integrating its own components as well as third-party tools. In their Technology Systems Division, the company bundles technological system expertise and resources to deliver products for communications, reconnaissance and security systems for armed forces, security authorities as well as operators of critical infrastructures. These client solutions range from small-scale setups to nationwide interconnected systems.

## Monitoring Sensitive Sites

Icinga is used in the departments Critical Infrastructure and Secure Communications. Complete solutions are built according to customer requirements. Application areas include for example Naval Communication Solutions, as well as communication and signal intelligence for police and border control.

Over the last few decades, communication on navy ships has evolved into a complex matter. It goes beyond traditional voice communication between ships and shore stations.
It now encompasses tactical data transmission and onboard communication among soldiers. With a crew of 250 members, effective coordination and secure communication channels are imperative. Rohde & Schwarz is a technology leader in providing solutions to address all these requirements.

## Incorporating Icinga into Turnkey Systems

The systems consist of Rohde & Schwarz devices and software solutions, as well as solutions from other manufacturers including IT and network hardware, possibly vehicles, or even complete building infrastructure. Rohde & Schwarz provides everything as a one-stop solution, allowing the customer to get up and running quickly and easily.

To fit their specific needs, Rohde & Schwarz expands Icinga by integrating components and features and then incorporates those into their systems. The overall solution is called "RS CHM".

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## Handling software in critical infrastructure projects, such as navy ships, is always tricky. Replacing components requires a new certification and approval from the customer. Therefore, using an open-source solution gives us a significant advantage.

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## Icinga in 3 words? Flexible, extensible, reliable.

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Ralph Schmeisser, Product Owner Systems Status Monitoring, recounts how they began using Icinga1 10 years ago and switched 4 years ago from Icinga1 to Icinga2 as base for "RS CHM". Within the development team several customizations were implemented in order to fullfil the various customers' needs during that time. The same team supports deployment and maintenance phases in the customers' installations, ensuring a smooth hand-over from R&D to operation. Icinga monitoring runs at the customer's site because external access to the systems is not desired for critical infrastructure.

In such customer projects, the infrastructure is set up once and remains largely unchanged. For the subsequent operation, the customer is responsible. Typically, they enter a long-term support contract with Rohde & Schwarz for several years. A Navy ship project can range over 15 or more years, so using a closed-source application means a high risk for a vendor lock-in.

## High Flexibility and Integrability

The challenge for Rohde & Schwarz was to find a highly flexible infrastructure monitoring tool that could be integrated with various components. Ralph Schmeisser explains, "There were several products from Rohde & Schwarz and third-party components that provided system status information, but there was no solution with a single interface showing the status of all the devices and components in one interface. That was unacceptable for such complex systems."

To address this challenge, Ralph Schmeisser looked to the open-source world. The key requirements for the new monitoring tool were maximum flexibility in integration options, high scalability, and the ability to implement a distributed monitoring strategy. On top of that they wanted to avoid vendor lock-in. Ralph explains the value of an open-source solution for them: "We can build and patch the software ourselves and are not dependent on others. We highly appreciate working with the community; response times on Github are usually very quick."

# The Solution

## Developing Commercial Solutions

The product "RS CHM" is a commercial "pre-packaged" solution of Icinga built with modules and extensions. Rohde & Schwarz have their own plug-ins and configuration logic. Various proprietary check-plugins and modules are used for specialized requirements in distributed monitoring, such as overcoming filters and gateways. The goal is to achieve an extended monitoring capability without compromising on aspects such as easy installation or configurability.

Currently, the team serves approximately 50 customers in around 300 different customer projects worldwide.

## Distributed Monitoring and High Availability

There are small-scale solutions with a single Icinga instance that monitors all components, e.g. in a truck or ship. There are also very large composite systems, some of which are nationwide systems with multiple remote satellites and a 1-2 master high-availability setup. These systems have various network connections, including LAN or WiFi, satellites, radio devices, or LTE.

One essential requirement for the monitoring solution is scalability. The smallest Icinga installation monitors 2 hosts and 20 services, while the largest one consists of 20 satellites, each with 30-50 hosts, each hosting 20-30 services.

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> Icinga is our core, and we develop a lot of check-plugins for both our own and third-party components, which are also planned to be made available online – we release them under GPL.

Ralph Schmeisser
Product Owner Systems Status
Monitoring, Technology Systems
Rohde & Schwarz

# Success

## Broad Usability

Rohde & Schwarz is very content both with Icinga's performance and flexibility for their various use cases. While the Rohde & Schwarz components track a missing person's mobile phone signal in radio detection or captures foreign radio signals, Icinga comprehensively monitors RS devices and environmental conditions, Dell servers, Lancom switches, door contact sensors, temperature sensors, diesel generator fuel levels, air conditioning, UPS units, as well as various software components. This includes monitoring all databases and their fill levels, as well as all processes.

Traditional notifications are not required because the client systems are isolated from external interfaces, meaning they cannot communicate externally for security reasons. However, Rohde & Schwarz has developed a notification GUI that queries the Icinga API and shows status changes. This allows for alarms in Windows without the need to keep a web browser open. Additionally, they have implemented an aggregation logic to deliver condensed status information to combat management and other systems via SNMP.

The next topic is event handling, which they used extensively with Icinga 1, e.g. to automatically shut down a subsystem in case of a failing air-condition. Additionally there will be a icingaweb module to manually control management functions of several system components.

## Monitoring Hard- and Software Components

Ralph Schmeisser and his colleagues at Rohde & Schwarz are extremely satisfied with Icinga's functionalities that perfectly fit their needs. They receive overwhelmingly positive feedback from their clients, who can easily spot crucial status information on the Icinga Web dashboard and always rely on the monitoring. The upgrade from Icinga 1 to Icinga 2 was a major step in enhancing the "RS CHM" solution's performance, security, reliability, and usability.

# Outcomes

- ☑ Building Customized Client Solutions by Extending Icinga with Other Components

- ☑ Leveraging Icinga's High Scalability and Flexibility for Different Use Cases

- ☑ Utilizing the Concept of Distributed Monitoring and High Availability

- ☑ Assuring Stable Operation of Complex and Critical Systems

# Share your Story

Do you also have excellent experiences with Icinga and would like to share them?
We'd be happy to make your story come out big on our website!

Please get into contact with us at:

info@icinga.com

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# About Icinga

Icinga is a comprehensive open source monitoring solution that integrates easily in existing infrastructures and is unbeatable in configuration possibilities, automation and scaling. Monitor private, public, or hybrid clouds. For more information, visit icinga.com

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