



Reference Case - **Infrabel**

Keeping railway IT infrastructure on track: Infrabel's success story with Zabbix

To ensure that thousands of trains run safely and smoothly on our railways every day, a lot of work goes on behind the scenes. The Belgian railway manager Infrabel is responsible for a key part of this work. It not only manages the actual railway infrastructure but also the IT infrastructure that supports the rail network. "With a tool like Zabbix we can monitor our IT infrastructure in a flexible, automated way, so that it remains up and running 24/7."



These are the words of Benjamin Lienard and Christophe Opsommer, respectively the Unix and Linux System Administrators at Infrabel. The IT landscape that they help to manage is both complex and extensive, with about 600 Unix and 2.000 Linux (virtual) machines to look after. At least half of the Linux ones are in production. "Monitoring all those systems manually is simply not possible. For that you need a backend / technical monitoring tool," says Lienard.

Enterprise open source

In Zabbix, Infrabel found exactly the right tool. Zabbix is free open source software for monitoring IT infrastructure such as networks, servers, virtual machines, and cloud services. Infrabel embraced the open source ethos but opted for the paid enterprise version, recognizing the value of investing in premium software for critical infrastructure.

Infrabel turned to Piros to purchase the licenses. As the largest Zabbix partner in Belgium, Piros also offers comprehensive support for the software and acts as the central point of contact for any questions or issues that arise. For Piros itself, Zabbix is a logical addition to the services the company has been successfully offering as a Red Hat partner for many years.

In search of better monitoring

"Before we brought Zabbix in-house, each team worked with its own limited monitoring tool that we tried to centralize," recalls Lienard. "But the interaction between all those separate tools and our central monitoring system wasn't really optimal. We also lacked flexibility. For example, we simply couldn't monitor certain things because the metrics were missing, which meant that we ultimately failed to set up alerts for them."

"For Linux, no real monitoring was even provided at the very beginning," adds Opsommer. "There were only a few machines in use at the time, and the little monitoring we initially did was based on agents that consumed a huge number of resources. We often had to shut down those agents because otherwise they would cause problems with the applications running on the servers. The same goes for the machines running our databases – it often happened that we had to stop monitoring on the machine so that a database would function properly again."

Light agents

That was the first advantage that Zabbix offered. "When we introduced Zabbix, initially through a POC, we quickly noticed that the im-

fact of their agent was very limited. Compared to our previous monitoring tools, it consumed next to nothing." In other words, the monitoring no longer slows down Infrabel's systems. At the same time, the Zabbix agent also turned out to be easy to tailor to the specific environment in which it's being run.

After a cautious introduction, Infrabel's system administrators started investing more and more time in Zabbix, ultimately making it the most important monitoring tool for Unix, Linux, and all other *nix systems. There are several good reasons for this. For example, Opsommer mentions Zabbix's flexibility: "It allows us to do almost anything we want with it. Even if a functionality isn't included in Zabbix, there's always a way to add it, by creating scripts, templates, and even agents yourself. The same flexibility also makes the tool easy to integrate with tools in other environments."

Automation and diagnostics

Lienard praises the enormous potential for automation that Zabbix brings to the table: "The fact that we can now have certain tasks handled fully automatically in Unix has significantly simplified a large part of our work." And he's not just talking about the typical control tasks but also, for example, taking inventory of all their machines, reporting on patching, and even all kinds of preventive interventions to ensure business continuity. Seen from this perspective, Zabbix is somewhat of a Swiss army knife.

Moreover, with Zabbix Infrabel can not only detect and even prevent potential risks and problems, it can also investigate their cause.



For example, the application responsible for train schedules was running a bit slower than normal at one point. "Thanks to Zabbix we were able to quickly identify and solve the underlying problem. Without Zabbix, it would have taken a long time to discover the origin of the issue." And of course, issues like these are time-critical as they have an immediate and direct impact on the traveler.

"Without that system there would be no trains running"

Another example is the monitoring of the information screens in train stations. "That's also a particularly critical application," explains Opsommer. Zabbix will help to quickly detect and solve possible problems, even before there is an impact on the screens themselves. That will be worth its weight in gold.

And speaking of critical systems, Infrabel also intends to use Zabbix to monitor the hundreds of Linux machines running its real-time traffic management system (TMS). These systems are already monitored (hardware and operating system) which is mandatory, but the next step is to monitor the application itself by Zabbix. "Without that system, no trains would run. This critical system is essentially at the core of everything we do, and a good monitoring tool such as Zabbix can really make a difference to how it performs."



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