

# CASE STUDY

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## Achieving the Blue Angel certification for Nextcloud Server

### Creating the energy measurements with the Green Metrics Tool

#### CHALLENGE

Our client, the german software vendor Nextcloud GmbH with their flagship product *Nextcloud Server* hired us to benchmark their application for energy and carbon emissions and afterwards support them creating the needed documents to achieve the renowned Blue Angel Eco Label certification under the [software guidelines DE-UZ 215](#).

The Blue Angel award criteria require that energy measurements of the software product are done in a "representative usage scenario". We identified these scenarios for the client in a product analysis by taking in the clients feedback on the most used features as well as the default features that the application is installed with when doing the initial setup.

The whole process from first drafting the outline for the project until the final issuance of the certification took about 2 months.



Blue Angel Eco Label

#### ABOUT US

As a company for consulting, contract research and development in the field of sustainable software, Green Coding Solutions GmbH has a team of developers with many years of experience in web and performance engineering.

Through numerous conference contributions and publications on the subject of green coding, we are known as a German and European specialist with cooperation in the SDIA and Green Software Foundation as well as cooperation with renowned universities on the subject such as the Umweltcampus Birkenfeld or the HTW Berlin.

The focus is on the development of open source solutions for SMEs for energy measurement of cloud and container systems, as well as CI/CD pipelines and software lifecycle assessments, including their accounting methods in accordance with ISO 14001 and the GHG Protocol.

Green Coding Solutions is also the main organizer of the Eco Compute Conference - a green tech conference with internationally renowned speakers on the topic of sustainability in the digital economy (software / hardware / data centers)



The Blue Angel is a certificate with three main goals:

- reducing hardware obsolescence
- Increasing software energy consumption transparency
- allowing users to be autonomous through export options, no tracking, no ads and a modular application usage

So far only three applications have been certified under the Blue Angel criteria and we as Green Coding Solutions are very proud to have our own Green Metrics Tool also certified.

[www.blauer-engel.de/uz215](https://www.blauer-engel.de/uz215)

- energie- und datensparsam
- abwärtskompatibel und gesicherte Updates
- werbe- und trackingfrei

## TECHNICAL DETAILS

Nextcloud Server is a client - server application we needed to setup both devices in order to properly run energy benchmarks for it.

Under the award criteria this is typically done with two dedicated machines. However the award criteria also allow different measurement setups including virtualization.

The important part is that the energy for the whole system has to be measured still and attributed to the virtualized components.

The identified scenarios are all public on GitHub and include testing the calendar, instant messaging, video conferencing, address book as well as document sharing.

- [GitHub Scenarios](#)

- [Green Metrics Tool Energy Measurements](#)

The energy benchmarking revealed that the browser needed to access the web interface was 5x more energy consuming than the the entire Nextcloud Server including its components like the database and reverse proxy together.

This insight helps the client steer sustainability efforts for their application. It furthermore allows for stable and reproducible energy benchmarks that now subsequently allow on every Pull Request to identify if the energy consumption goes up or down to make a more sustainable software.

The technical efforts have also been awarded and presented on an official ceremony by the BMUKN and Umweltbundesamt in Berlin earning Nextcloud the label of the first client-server application ever to be certified under the Blue Angel for Software.

 **Application carbon profiling enabled**

 **Enabled customer to develop sustainably**

 **Blue Angel certification achieved**

## SUMMARY

We employed our certified Green Metrics Tool to achieve a Blue Angel Eco Label for the Nextcloud Server software application.

The output where holistic energy benchmark scenarios for Nextclouds core features.

- Guaranteed energy benchmark requirements of the Blue Angel award criteria by using the Green Metrics Tool
- Customer received git integrated energy regression tests to steer sustainable software development
- Green Metrics Tool produced direct to hand-in documents for the auditor and certification bodies with minimal customer effort.



Green Coding Solutions GmbH  
Making software sustainable