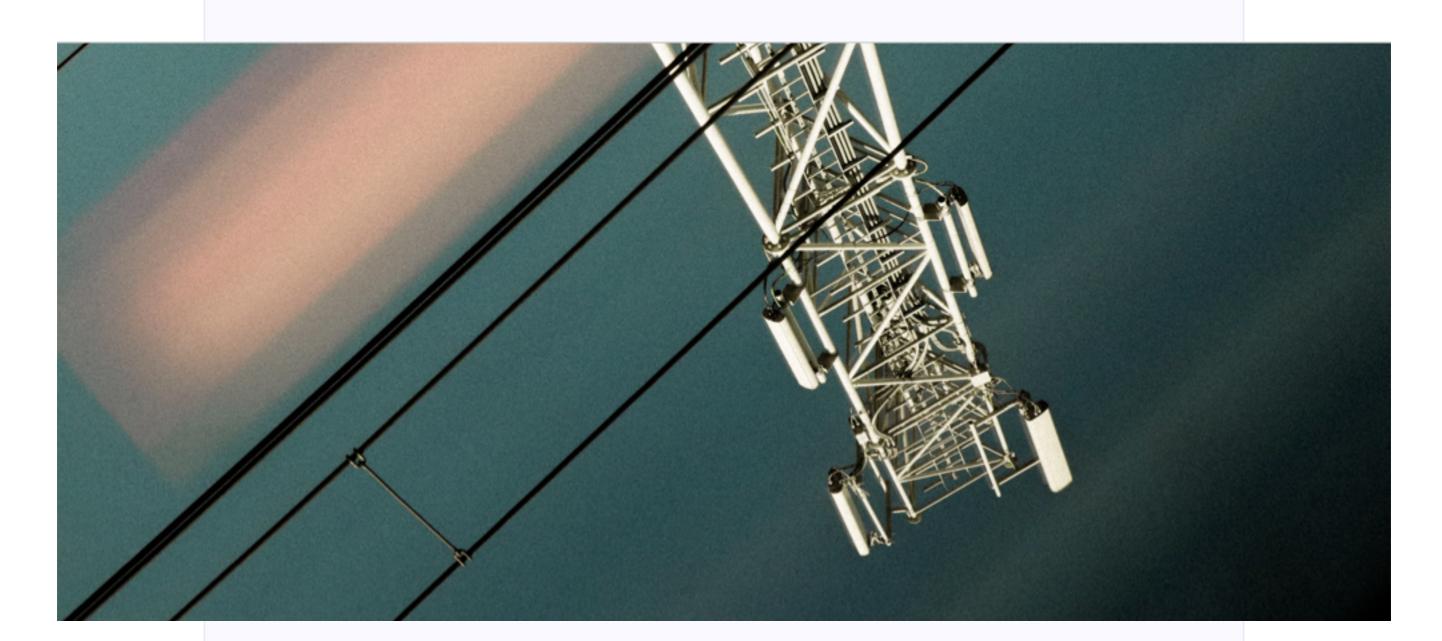# A Modern VoIP Telephony System with a Scalable and Fault-Tolerant Network Structure

A VoIP telephony system designed by HYS assisted our telecom partner in providing a contact center solution able to handle many simultaneous customer requests and empower many organizations to take their customer service to the next level.

About our partner

Our partner develops an innovative call center platform that helps organizations in Germany and the Netherlands deliver excellent customer service. The platform is a cloud solution with seamless integration options and functionality for workforce management, quality management, voice recording, performance monitoring, and customer satisfaction research.
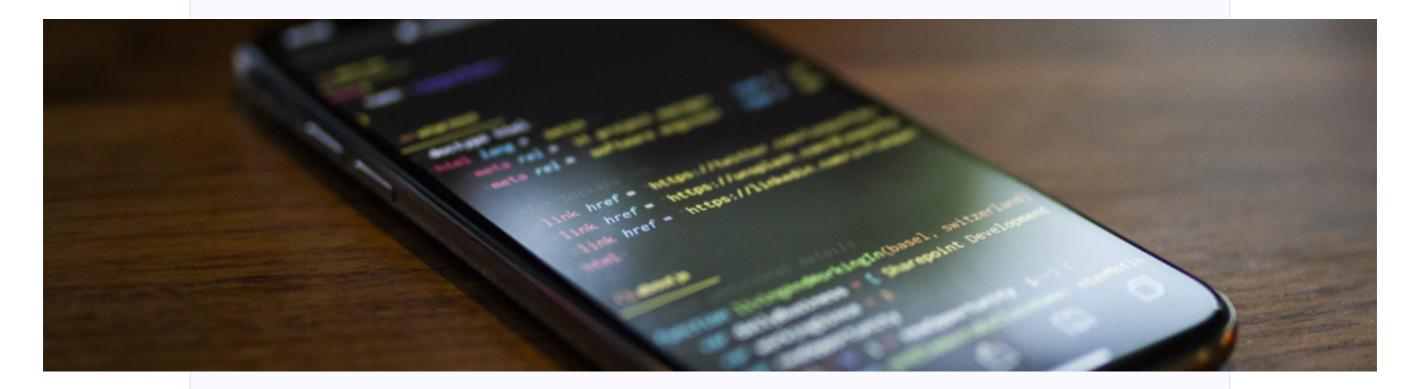
- Industry: Telecommunications

- Headquarters: Capelle aan den IJssel, the Netherlands

- Market: Germany and the Netherlands

- Size: 1,500+ employees

- Cooperation with HYS Enterprise: 8+ months

About our partner's challenges

Before addressing HYS Enterprise, our partner was experiencing a problem with horizontal scaling; their system couldn't serve a lot of clients simultaneously. Beyond a certain load, the server was unable to process incoming data.

Their second problem was the inability to control all processes on the server, which imposed limitations on extending the functionality.

What our partner needed

After a kick-off meeting, it was decided to develop a proof of concept (PoC) as the first stage of development. A PoC is a kind of pilot project to demonstrate that an idea can be turned into reality. The advantage of a PoC is that it helps to validate the feasibility of a project and prove the performance of a solution without going too far into the development process. The PoC took us two months and ended with a demo that verified the product was viable. After the successful demo, our client asked us to develop the first version of the product.

Our main task was to optimize the scalability of the system, make it more flexible, and increase the maximum load so our partner could increase their customer base.

Solutions provided

- Proof of Concept – Became the starting point for the development of a full version of the product based on technologies and solutions suggested by our team.

- Telephony, frontend, collector, processor, router, publisher, and integration test services – Enabled our developers to control all processes on the telephony server (Asterisk) and extend the functionality flexibly.

- Microservice architecture – Made the system more flexible, scalable, and easier to maintain. Since every microservice is a separate chunk of code, microservices can be written using different programming languages, databases, and software environments, allowing programmers to scale, deploy, rebuild, and manage services independently.

- Mechanism for fault tolerance system support – Allows the system to continue operating properly even if some components break down.

- Automated tests to imitate user calls for the purposes of load testing – Enabled engineers to check how the system behaves when a certain number of calls are handled simultaneously to predict and prevent possible constraints.

Methodology and technologies

Methodology: Agile management framework

Technologies: Java, Spring, Kafka, Docker, Asterisk, Nomad

Outcome and benefits delivered

The brand-new system allows our partner to offer organizations better customer support by simultaneously processing many requests.

The flexible structure of the solution provides the opportunity to extend functionality and add new features. The new system solves all performance and efficiency issues present in the previous system, enabling our telecom partner to increase their customer base and be sure that the system will be able to handle heavy traffic and work effectively even under high load.