



Telia used Varnish
Enterprise to create its
next-generation CDN

Case Study:

Telia Company
TV & Media

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Background

Telia Company is a Nordic and Baltic telecommunications company with 20,800 talented colleagues serving millions of customers every day in one of the world's most connected regions. With a strong connectivity base, Telia is the hub in the digital ecosystem, empowering people, companies and societies to stay in touch with everything that matters 24/7/365 - on their terms. Telia Company's purpose is to **reinvent better connected living**, something it's uniquely placed to take on, though the role of helping ensure that people can rely on, and trust, connectivity in their lives. As a regional pioneer, Telia has been evolving and improving the way society functions for over two centuries.

The challenge

When their existing CDN solution was close to reaching end-of-life, Telia began to think about what should replace it. Their decision also considered whether that replacement could be expanded, enhanced and customized as a long-term, future-proof solution, based on standard hardware.

Telia focused on accommodating the growth of video streaming and finding a solution with the ability to scale for the unpredictable nature of user demand, that is, predictable peak traffic during scheduled, specific events (such as sports, news, cultural programming) and unexpected traffic spikes.



Telia Company, especially given the acquisition of TV4, MTV and CMore, needed to re-evaluate the current CDN strategy and in the end we decided to build our "next-generation" CDN together with Varnish as a key partner.

- Peter Grundström,
Head of Streaming Technology,
Telia Company - TV & Media

Telia at a glance

Organization

- Telia is a multinational telecommunications company, ISP and mobile network operator with operations throughout the Nordics and Baltics.

Challenge

- Build Telia next-generation CDN for Nordic and Baltic markets
- Manage traffic in growing streaming landscape with maximum stability, scalability and performance
- Achieve high-performance content delivery based on standard hardware (COTS) to maximize output with in-core TLS

Varnish Enterprise

Varnish CDN solution

- Professional support from Varnish core developers for custom
- development of in-core TLS solution



Defining requirements

When the exploration of new solutions began, Telia conducted analysis of their existing solution with small geographically scattered nodes, confronting the assumptions that indicated that the network itself caused bottlenecks, and this required scattered smaller nodes. Based on calculations, tests and simulations they discovered that, in most cases, the network was not the bottleneck, and a more centralized CDN architecture could create improvements.

With this in mind, the team evaluated several providers during an extended RFP process, that emphasized the requirements for a pop-based architecture on top of COTS hardware. Telia specified that getting maximum performance from a single server including TLS was a key criteria; they conducted a number of lab tests prior to the RFP to explore capacity possibilities, and with the results from the lab environment, they were better able to evaluate software solutions and guide the terms of the engagement they wanted.

Looking at the bigger picture, one solution could be small nodes scattered across the geographical area we cover. At the other extreme, we could deploy a limited number of large nodes. We went with a predominantly large-node solution to generate a lot of traffic at a small number of sites. But we also retain the ability to deploy smaller nodes wherever there were capacity issues in the network.

*-Ragnar Kähre,
Solutions Architect, Telia*

The solution

Armed with the knowledge that Varnish would deliver high-performance content delivery with in-core TLS and maximize capacity and throughput, Telia was ready to move forward with Varnish Enterprise to build their next-generation CDN and video streaming solution for the Nordics and Baltics with PoPs across these regions.

High-capacity performance with in-core TLS

Serving increasing traffic volumes (particularly of video content) at high speed and boosting performance and resource efficiency came down to pushing the boundaries of each server's capacity. Telia's internal testing in a lab environment proved that Varnish would be able to handle their desired 150 Gbit/s capacity per server. Working with Telia's requirements, Varnish was able to develop in-core TLS functionality that would weave native TLS support into the core software, eliminating an extra network step, while reliably doubling the previous capacity limits achieved on a single server.

In a lab setting, we achieved performance on par with or exceeding the competitors on a single server using Varnish with in-core TLS. We wanted to know in a test setting that sustained workloads near 100 Gbit/s line-rate were achievable. We were able to funnel those learnings into the RFP to define the performance criteria we needed.

*-Tobias Nygren,
Solutions Architect, Telia*



Both generally as a product and within our implementation, Varnish changes and evolves all the time. The remarkable thing is that Varnish is astonishingly stable and almost never causes us problems. When we have contacted Varnish in any shape or form, we have received very quick responses. We've never been forced to wait. Varnish delivers and is open to dialogue with us. We have been very pleased.

*-Mattias Nordmark,
System Expert, Telia*

Problem-free and stable implementation and performance

Working together with Varnish, Telia has experienced performance enhancements with very few, if any, issues. Varnish stability has been highly valued, particularly as it is a constantly evolving product.

Partnership: More than a supplier

Telia and Varnish have worked together as partners, collaborating throughout the implementation processes

Results: Efficiency, scalability, cost savings: Varnish for more than caching

Telia experienced immediate savings from their Varnish implementation.

- With the Varnish caching solution, Telia reduced the number of on-prem servers as well as reduced the use of cloud CDN.
- Telia is in the process of replacing multiple CDN solutions with a single ubiquitous solution, which will lead to operational cost savings
- The Varnish-based solution offers scalability in a way that the previous CDN solutions did not, thus making Telia able to adapt to the ever-increasing capacity and quality requirements of OTT video streaming.

Telia relies on future-proof Varnish versatility

In addition to using Varnish Enterprise to build their new CDN solution, Telia uses Varnish in multiple applications and solutions across Telia's different business units.

In selecting Varnish, we wanted the assurance that this performance could be reached but also wanted more than just a supplier. We wanted a partner we could work together with to implement our ideas using their knowledge and experience. Varnish had the technical competence and the willingness to collaborate and develop things to meet our needs.

*-Peter Grundström, Head of Streaming
Technology, Telia Company TV&Media*



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