With Gurobi, we are able to determine optimal price points efficiently for entire product lines, even subject to complex rules and product relations.

Dr. Ansgar Thiede
Product Manager for Price Optimization at Blue Yonder GmbH

How Gurobi is Used
Time is the most critical resource. New forecasts have to be calculated overnight from the most recent data, and up-to-date price strategies have to be generated. Retail companies need the results by the next morning.

To generate the optimization models, product quantities are divided into suitable clusters. About 50,000 variables are generated for each cluster for the price decisions, and numerous rules are converted into approximately one million constraints. For specific optimization processes over the entire product lifecycle, MIP models, with more than 1.2 million variables, are created.

Depending on the uncertainties in the input data, the termination criteria of the optimization also changes. A trade-off between available time and the desired solution quality is thus defined for each customer. There is not much more than an hour available per night to complete the overall process on time. With Gurobi, a stable solution time and quality can be achieved consistently even when changing the input data.

Usability was also a point in favor of the Gurobi Optimizer. Using the Gurobi Python API, a prototype could be developed in a very short time during the solver selection process. In addition, due to the use of Gurobi Compute Server, the optimization functionality was able to be seamlessly integrated into the service infrastructure.