



## The German First Division Basketball League finds scheduling solutions in less than 20 minutes for previously unsolvable models

### The Challenge: Optimize scheduling of 18 teams for 300+ games

Before the start of each season, the German First Division Basketball League (Beko BBL) is faced with the daunting problem of scheduling a total of 306 games among 18 participating teams. In addition to the typical constraints that arise in creating a schedule, our league is faced with several special constraints. The main issue is that most of the games take place in multi-purpose arenas that are used for a variety of other events and are thus not always available for league games. This has caused numerous problems, resulting in postponed games, lost ticket sales and unbalanced standings. Other important constraints involve limiting the number of successive home and away-games, matching the most interesting games to available TV slots, minimizing total driving distances on a newly established "derby" day, as well as accommodating specific league-requested matchups.

### The Model: First ever to accommodate all key requirements

Because classical sports scheduling models were unable to accommodate all these requirements, we employed a model specifically developed for our league by Professor Stephan Westphal at the University of Göttingen. In order to solve this model, we needed a powerful commercial solver that could find the best solutions in a reasonable amount of time.

“ Gurobi gives us the best schedules in our history.”  
 ~ German First Division Basketball League

### The Results: Better schedules meeting more requirements solved in less time

By using the Gurobi Optimizer, we are now able to find solutions in less than 20 minutes. By using these solutions in consultation with Professor Westphal, the league was able to construct an optimized schedule starting with the 2011/2012 season. It is fully synchronized to the availability restrictions of our multi-purpose arenas, effectively assigns the most interesting games to available broadcasting slots, succeeds in minimizing the distances driven by the teams on derby day, produces a nearly minimal number of successive home and away games, and manages to accommodate a significant number of added special “wishes”.

We now have by far the most fan-friendly schedule in our history. We anticipate that these optimized schedules will be a key factor in increasing the league's fan base and growing revenues.

### The Deployment: Standalone application

We embed the Gurobi Optimizer in a custom, standalone scheduling application, written in Java.



### The German First Division Basketball League

(Basketball Bundesliga) is the premier basketball league in Germany with 18 teams and over 300 games each season.

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The key reasons we chose Gurobi for our optimization needs were:

- ✓ Cost – The license is less expensive and more flexible than the competition.
- ✓ Gurobi Staff Response Time – We usually receive a response from Gurobi within 4 business hours.
- ✓ Knowledge/work experience with the Gurobi staff – The Gurobi team is very professional and knowledgeable.

Overall they provide a very pleasant working experience.

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