



# NetLine Schedule Optimization

## Manage dynamic markets and elastic demands

### Advanced optimization technology for future network planning & scheduling

Passenger behavior change constantly in ways when, where and how to fly. This requires airlines to frequently adapt their networks and schedules to optimize profitability while taking care of operational requirements (e.g. maintenance, crew or slots). NetLine's schedule optimization solutions incorporate the latest Operations Research technology to support airlines to tap market opportunities and to solve complex operational challenges like crew shortages or unplanned maintenance events.

### Increase operational and commercial schedule quality through OR and AI

NetLine Schedule Optimizers resulted from years of research, development and cooperation with airlines around the world. It offers powerful optimizers for the entire planning and scheduling process covering solutions for both long-term planning and short-term tactical scheduling, such as

- Design the most profitable network and operationally feasible schedule from scratch
- Increase schedule profitability through optimal capacity and fleet assignment
- Build efficient and robust lines of flying using rotation optimization

NetLine Schedule Optimizers are integrated in Lufthansa Systems' scheduling and planning tools **NetLine/Sched** and **NetLine/Plan**. They can also integrate with third-party solutions via APIs.

### Design profitable & operational feasible schedules

Designing networks from scratch is best practice to manage dynamic markets. **NetLine/HubDesigner** is a powerful clean-sheet optimizer, which improves point-to-point and connection traffic.

NetLine/HubDesigner evaluates all combinations of routes, aircrafts, timings and frequencies, when building a network. Furthermore commercial and operational constraints (e.g. slots, curfews, aircraft constraints or route restrictions) are considered.

The solution allows to explore and solve a multitude of possible market conditions. Our most advanced optimizer supports strategic decision-making by enabling the network planners to evaluate targeted scenarios (e.g. variable market sizes, fleet changes or impact of competitor schedules).

**'In our practice, NetLine/HubDesigner increased our network profitability mainly by increasing valuable connectivity across our network despite heavy slot restrictions. NetLine/HubDesigner help you see the opportunities you overlook or encourage you to implement the changes you thought of before.'**

Senior Vice President  
Sales & Network Planning, Pegasus Airlines

## Increase schedule profitability through optimal fleet assignment

NetLine FleetAssigner improves strategic and tactical capacity allocation like fleet and compartment studies as well as optimal fleet utilization closer to day of operations.

The optimizer works with segment or O&D-based RM predictions or actual booking information. Many NetLine customers realize large profit gains by using NetLine FleetAssigner to optimize the schedule before crew handover. In addition, the optimizer solves use cases such as efficient fleet size reduction or scheduling of additional aircraft. NetLine FleetAssigner's target function can be set to reduce cost, to increase revenue, profitability or number of passengers.

NetLine FleetAssigner provides a huge tool box to flexibly define operational and commercial constraints, e.g. curfews, maintenance, aircraft and route restrictions.

'NetLine/Sched Rotation Optimizer is an essential part of our scheduling processes. The optimizer provides the best result under the given conditions and helps us to efficiently implement schedule adjustments.'

Schedule Planner, Swiss

## Implement most profitable schedule changes

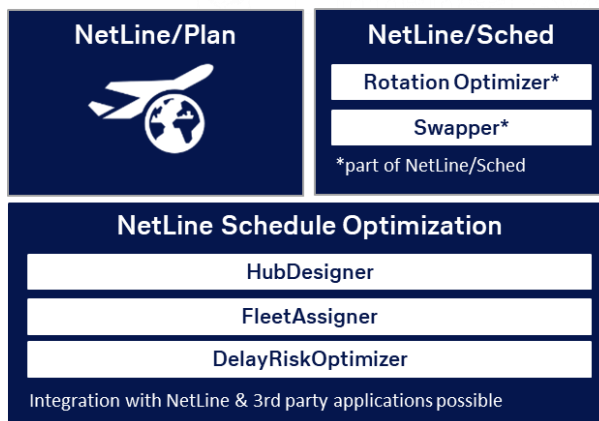
Close to the day of operations schedule adjustments often needs to be restricted to the most profitable changes to limit negative effects, especially on crew planning. The NetLine/Sched Swapper only proposes changes that are above a certain profitability threshold. In this way, the schedule profitability is increased with a few changes, while keeping negative effects on the other departments limited.

## Build efficient and robust lines of flying

NetLine/Sched Rotation Optimizer changes lines of flying to increase schedule robustness and reliability. It rearranges leg sequences to insure equal utilization of aircraft, to take care of maintenance requirements, or to improve crew efficiency. Additional flights can be automatically inserted into the rotations or aircraft capacity can be freed up.

Lufthansa Systems offers with NetLine/Sched Rotation Optimizer possibilities to synchronize aircraft and crew lines of flying. The consideration of crews in rotation planning increases the schedule robustness, enables more efficient use of crews and reduces costs.

NetLine/DelayRiskOptimizer mitigates delays by changing the flight sequence based on simulated delay predictions. By changing aircraft rotations propagation of delays is reduced, thus the operational stability and robustness of a schedule will be increased.



## Obtain best optimization results through Lufthansa Systems assistance

Lufthansa Systems experts support with optimization model configuration and prediction model training. With decades of experience in operations research and data science methodologies, Lufthansa Systems is the right partner to solve airlines optimization problems.

## Demonstrate value in proof of concepts

Lufthansa Systems demonstrates optimization benefits based on Proof of Concepts on customer data. During the PoCs, Lufthansa Systems specialists work closely together with airline experts to achieve best results. Key performance indicators like revenue increase, cost reduction or overall profit, illustrate the optimization potential.

## Use airline consulting support to apply optimization technology

Beside offering a comprehensive optimization portfolio a team of senior network planning & scheduling consultants and technology experts apply optimization technology for network planning studies, fleet strategy projects or introduction of optimization in network planning processes.

## NetLine Schedule Optimization at a glance

- Supports the complete planning & scheduling process
- Adapts to airline constraints and production rules
- Provides market leading performance and results

## Global Aviation Cloud

NetLine Schedule Optimizer are offered as end-to-end service in the cloud for simple, cost-effective and scalable use. The security measures are certified in accordance with industry standards and are regularly reviewed in audits. Lufthansa Systems is the customer's single point of contact for the entire technology and service stack.



For more information:  
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## NetLine

→ NetLine/Plan  
Network planning solution

→ SchedConnect  
Codeshare management

→ NetLine/Ops ++  
Operations control

→ NetLine/Sched  
Schedule management

→ NetLine/Crew  
Crew management

→ NetLine/Load  
Weight & balance