| NetLine/Market | NetLine/Plan | NetLine/Sched | NetLine/Ops | **NetLine/Crew** |

NetLine/Crew *Fairness xOPT*
NetLine/Crew *Preferences xOPT*
Fast, compliant and cost-efficient roster solutions

Are you looking for fast and robust roster solutions that are cost-efficient and take crew-oriented issues into consideration at the same time? Our two advanced roster optimizers will help you boost your roster generation process quickly and with less effort thanks to high-quality solutions!

Personnel expenses are one of the biggest cost drivers within an airline. This not only places a high responsibility on the crew schedulers, but also presents them with a challenging task: To support the airline's operational stability they have to create legal roster solutions that put the right crew on the right plane at the right time. Due to the highly volatile nature of the airline business and operational requirements, these solutions must be

capable of flexible adaptation where necessary. Moreover, the rosters have to be cost-efficient whilst maintaining or increasing crew satisfaction at the same time.

NetLine/Crew *Fairness xOPT* and NetLine/Crew *Preferences xOPT* will support your crew scheduling department significantly in generating fast, legal, and cost-efficient roster solutions that also take crew-oriented aspects into consideration.
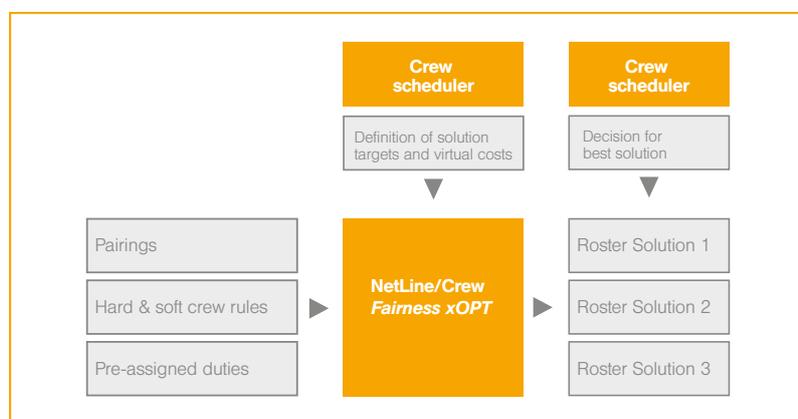
Benefits

> **Cuts crew costs through improved crew productivity**

> **Helps to evaluate the best solution through summary reports**

> **Increases crew satisfaction through fair/preference-oriented solutions**

> **Saves time and costs for roster generation through complete automation**

> **Reacts fast to market demands through flexible cost target definition**
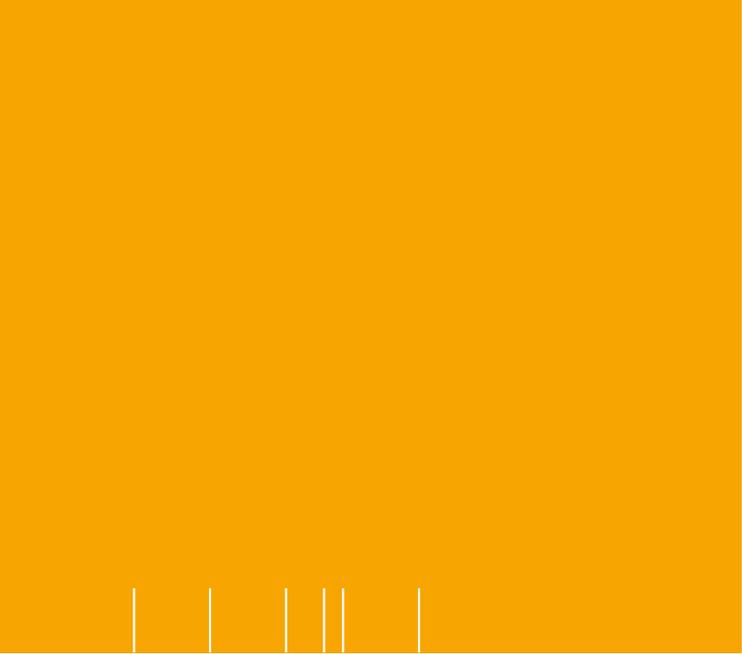
> NetLine

NetLine is one of the world's leading software solutions for the airline industry. The integrated, modular product line provides optimal support for the entire process of planning and controlling airline resources.

NetLine products:
- NetLine/Market
  The market analysis solution
- NetLine/Plan
  The network planning solution
- NetLine/Sched
  The schedule management solution
- NetLine/Ops
  The operations control solution
- **NetLine/Crew**
  The crew management solution

| Crew scheduler | Crew scheduler |
| Definition of solution targets and virtual costs | Decision for best solution |

Pairings		Roster Solution 1
Hard & soft crew rules	**NetLine/Crew Fairness xOPT**	Roster Solution 2
Pre-assigned duties		Roster Solution 3

Overview roster generation process with NetLine/Crew Fairness xOPT

Through state-of-the-art optimization tech-nology (column generation technique) both optimizers will help you boost the performance of your roster scheduling department significantly: You will reduce crew-related costs due to more efficient and fairly distributed rosters as well as fewer positioning flights, stopovers, and duty days. In addition, you will be able to react with fast and flexible roster solutions to market demands (capacity extension/ downsizing) or operational requirements (e.g. schedule changes due to booking situation). Your crew scheduler becomes a crew scheduling manager by simulating possible scenarios, evaluating them, and choosing the best roster solutions for your airline.

As airlines follow different roster genera-tion philosophies we have developed two roster optimizers within our suite: NetLine/Crew *Fairness xOPT* assigns flight hours, duty shifts, stopovers, and routings equally to all crew members. The fair distribution principle minimizes overtime costs and prevents the under-utilization of individual crew members. Fairly distributed workload (duty shifts) is also a strong argument in the interests of crews.

NetLine/Crew *Preferences xOPT* goes one step further. The preferential bidding method within this powerful tool also takes the crew members' individual preferences into consideration (e.g. destinations, early or late duties) while generating fair roster solutions. This enhanced function will sig-nificantly increase crew loyalty.
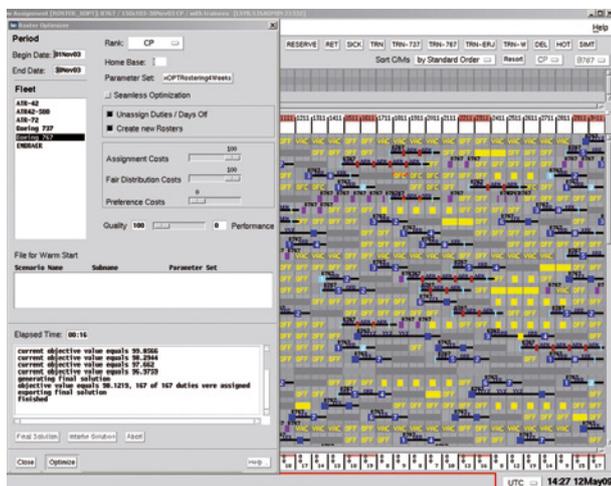
Screenshot of NetLine/Crew Preferences xOPT

Features and functions
NetLine/Crew *Fairness xOPT*

Flexible configuration

By choosing a certain property set you de-termine the optimization routine and there-fore the result. Both optimizers also allow you to adapt quickly to changes in business requirements through the flexible definition of rules (e.g. country/union rules, language requirements or crew complements for specific legs), costs (e.g. overtime, hotel, per diem, deadhead, ground transport), and settings. These rules can be defined either as hard rules which accept no violations or as soft rules which may be violated.

Costs and rules are programmed in a special rule language (ILOG), which means that your business requirements can be reflected flexibly in the optimization model. The rules apply to properties in the prop-erty set, making them easy to adjust.

Fair distribution rules

Any properties (e.g. flight duty hours, num-ber of layovers) can easily be defined as solution targets for the fair distribution of duty assignments.

Cost adjustment

The optimizer allows you to continuously adjust the cost trade-off between the pure cost-oriented roster solution vs. the (virtu-al) fair distribution-oriented roster solution, that reflects the crew interests.

Pre-assigned duties

Netline/Crew *Fairness xOPT* i processes pre-assigned duties (e.g. special flights, ground events), granted requests, and absences for the optimization runs.

Summary report

Every optimization solution creates a sce-nario including a comprehensive summary report, which allows you to analyse and evaluate the best roster solution before publication. In addition these reports can serve the internal reporting.

NetLine/Crew integration

No interfaces between optimizer and core application are required. The full integration with our crew management solution Net-Line/Crew ensures that the optimizers' data and rules are 100% consistent and have to be updated just once.

Quick warm-start option

A warm-start option provides you with the possibility to obtain a quick solution using data saved by a previous optimization run.

Interim solution

During a longer run you can generate interim solutions to have a glance at the later solution or to detect a possible too restictive constraint configuration.
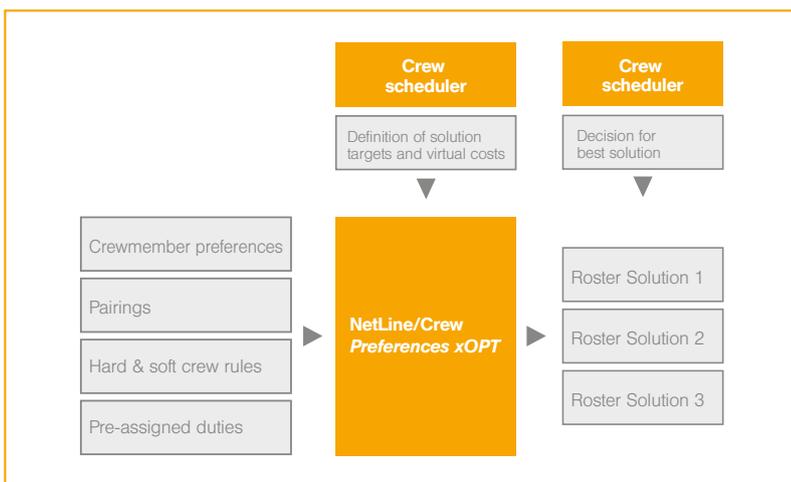
Features & functions
NetLine/Crew *Preferences xOPT*

NetLine/Crew *Preferences xOPT* contains all the above-mentioned features of NetLine/Crew *Fairness xOPT*.

In addition, the powerful tool takes the crew members' preferences (e.g. destinations, early/late tours) into consideration while generating the roster solution. Crew member seniority and/or last granted request can be defined as the basis for preference distribution in the assignment process.

System requirements
- UNIX server (LINUX, fast multi-core CPU recommended)
- Oracle Database

Overview roster generation process with NetLine/Crew Preferences xOPT