Identifying optimal departure and arrival times for flights is an essential planning function that helps maximize total network connectivity and boost revenue.
Airlines constantly refine their schedules to expand their network, add services to new destinations, and improve passenger connectivity between their own flights and with codeshare and alliance partners.

Sophisticated forecasting models such as Sabre® AirVision™ Profit Manager allow schedule planners to evaluate the commercial benefit of serving a new destination and changing frequencies to existing destinations. Because of a limited set of available aircraft, every airport pair cannot be served with direct flights. Creating preferred connection possibilities for passengers at specific airports is key to serving a wide network.

Airport constraints, such as slot/gate availability and aircraft inventory, limit the possibility of positioning flights at different times of the day to maximum connectivity. Schedule planners are tasked with a common challenge to find the best departure times for flights so all constraints are satisfied and network revenue is maximized.

Currently, schedule planners use forecasting and fleet optimization tools to identify ways to improve passenger connectivity. Planners make a set of flight-time changes to evaluate the revenue benefit and then optimize the schedule to ensure it is operationally feasible. This process is often manual and impossible to get the best schedule since all combinations of flight departure times are not evaluated simultaneously.

Sabre® AirVision™ Network Manager helps schedule planners identify the best departure times. The inputs to the system include:
- The initial schedule with direct flights,
- A definition of an airline’s bank structure,
- Other airlines’ schedules,
- A set of operational and marketing constraints that need to be honored.

Network Manager uses the same forecasting engine as Profit Manager to forecast passenger demand for all possible flight times. It then optimizes the schedule to honor all marketing and operational constraints. Network Manager uses global optimization techniques to select the best flight times to maximize overall network revenue. It uses a systematic approach to search for opportunities to improve the schedule and considers the effect of codeshare connections and connections involving alliance partners’ flights to optimize maximum revenue for the airline.

Network Manager recognizes a flight time as beneficial when:
- The local passenger demand increases because of better placement of service during the day,
- Elapsed time of the connections improves relative to competitor services, which helps attract more passengers.

The optimization is based on passenger yields (fares) in the impacted O&Ds and the operational constraints that need to be satisfied.

Network Manager does not change the equipment type assigned to flights. Rather, it maximizes demand and revenue potential for the schedule. Once times are optimized, the output schedule is optimized further in Sabre® AirVision™ Fleet Manager for better capacity allocation to realize maximum profitability.

Network Manager produces a new schedule with modified flight times and a list of reports. It has three main interfaces that:
- Help planners define the schedule and period for optimization,
- Set up operational and marketing constraints that need to be satisfied,
- View the reports that help describe the effectiveness of the optimized schedule.

Report Viewer
The Report Viewer interface contains all information regarding input data provided for optimization as well as a list of reports that help planners understand the benefits of the new schedule timings. This interface also has a set of logs in case issues arise during optimization runs.

Future Enhancements
Some of the other challenges for schedule planners are:
- Identifying the best partner flights to codeshare on,
- Identifying the optimal frequency of services to a destination to improve aircraft utilization,
- Maximizing revenue.

Upcoming enhancements to Network Manager include automation for codeshare flights selection and market/frequency optimization, which are all manual, tedious planning functions.

Analysis Editor
Analysis Editor, a component of Network Manager, helps select the schedule and period for optimization. The schedule planner also provides the schedule that contains all competitors’ flights. The tool uses the same connection-building and passenger-choice-model parameters used in the Profit Manager forecasting tool to ensure consistency between the forecasting and optimization models.

Constraint Set Editor
This interface has a list of all supported operational and marketing constraints. Planners can select the appropriate constraint that needs to be satisfied for the business problem. They can also create multiple rule sets to optimize different sets of business objectives.

Revenue Gains
A revenue improvement of 0.84 percent was achieved by an airline network with about 2,000 flights to 120 destinations using a retiming window of +/-10 minutes for all flights touching the hub.

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