

TPAC Scheduler Product Description

Overview

TPAC Scheduler is a multi-user centralised platform airline scheduling system that provides an integrated environment for development and maintenance of airline schedules.

Feature Summary

- Multi-Modes
 - Live Scheduling
 - Planning
 - What-if
- Multi-User
 - Access controls
- Data Integration
- GANTT Display
- Information Windows
- Other Carrier Schedules
- Real-Time Problem Highlighting
- Modelling & Publishing
- Schedule Creation
- Manipulating Sectors
- Managing Maintenance
- Connections Information
- Online Reports
- Slot Control
- Managing Messages
- Planning Tools

Features in Detail

Multi-Modes

TPAC Scheduler has two work modes; ad-hoc and sched-devel. The ad-hoc is for monitoring/planning/maintaining the published "live" day to day schedule. The sched-devel is for long term business planning, developing future season activities in a purely developmental environment. Both modes provide modelling "what if" scenarios. In ad-hoc mode the user can display any number of days for the published schedule. In sched-devel mode the display defaults to a seven day view period but can be expanded to view seven, twenty-one day or full season rotations.

Multi-User

TPAC Scheduler can be used concurrently by multiple users, all sharing the same "view of the world", though tailored to their own preferences. Each user operates independently though they can share information easily.

Access Controls

There are a number of levels of users, ranging from view-only to full access. Users can also be restricted in the sectors they see based on the carrier operating it and/or the fleet it is assigned to.

Data Integration

TPAC Scheduler can interface to various other systems to provide a single interface for the scheduler, including:

- Reference database that controls information about the airline, such as aircraft, ports, block times, etc.
- Processing inbound messages and generating messages in response to changes made using TPAC Scheduler.
- Passenger reservation systems for loadings.
- Maintenance systems for upcoming checks.

GANTT Display

The primary display is a high resolution GANTT display with time as the X-axis and aircraft as the Y-axis, for any date range. The GANTT can be spread across multiple screens to show as much flying as possible. The user controls which aircraft are shown in their GANTT display. In sched-devel mode the user is able to configure the GANTT so that if a schedule being developed requires more aircraft than currently allocated, additional "phantom" aircraft can be assigned for flight legs which cannot be accommodated by the original aircraft allocation.

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The GANTT display shows an aircraft's "line of flying" as a series of alternating sectors and on-ground time as "tags", which show:

- Sector Tag:
 - Flight number
 - Latest known departure and arrival times
 - Passenger numbers (ad-hoc mode only)

- Aircraft type/sub-type indicator ("normal" colour)
- Problem indicator ("error" colour)
- Codeshare indicator
- Note indicator.
- On-Ground Tag:
 - Port code
 - Status: departed, negative, unachievable, tight, normal, excessive
 - Note indicator.

Lines of flying are broken at either the "home" port or at the end of each day, depending on how the aircraft is configured. At each end of a line of flying an aircraft tag can be displayed, which shows:

- The registration or aircraft type & number (ad-hoc mode only, in sched-devel aircraft type & number only are used)
- Type/subtype indicator (colour)
- Note indicator.

The GANTT also shows planned maintenance for aircraft, overlaying flying:

- Start and end date & times
- Description.

A current time cursor is shown, and the user can also show a movable time cursor or a movable aircraft cursor.

Information Windows

Information that can't be shown on the GANTT display is shown in information windows, such as:

- Detailed sector information
- Detailed port information
- Detailed aircraft information
- Passenger information
- Messages' information
- Maintenance information.

Other Carrier Schedules

The user can import Other Carrier schedules for display and comparison with their airline's working schedules to ascertain competitor frequencies/capacity differences, using the TPAC Scheduler online reports.

Real-Time Problem Highlighting

The GANTT display highlights many problems with the aircraft flying, such as:

- Negative, unachievable, or excessive on-ground time
- Late/early arrival/departure
- Broken link
- Aircraft configuration conflicts
- Heavy or lightly loaded flight legs
- Aircraft overnight positioning
- Port mismatches

The display of problems on the GANTT is user configurable.

The database is continuously monitored and as things change and problems arise or are cleared, the GANTT display's highlighting is updated appropriately. This allows the user to operate in an "act on problems" mode and relieves them of the burden of continuously scanning for problems.

Modelling & Publishing

Users need to make changes to the aircraft as required to fix problems, but they shouldn't do so in the "live" system since they might have to make further changes or might decide to discard what they've done. TPAC Scheduler makes all changes in a "model" which is eventually discarded or "published".

In ad-hoc mode publishing results in the changes being committed to the database and appropriate messages being generated and sent to other systems. For example, publishing a retime results in a **TIM** message being distributed. In sched-devel mode changes can be saved to a "model" which is associated with the current working schedule. All publishing from the sched-devel mode is done using SSIM compliant formats.

Models are a very powerful tool - they allow users to generate large sets of changes without fear of affecting the live system (or saved schedule), these changes can be shared with other users so they can comment or update, and to do sophisticated "what if" analysis of problems or changing market conditions.

Schedule Creation

Schedules can be created from existing schedules, schedules imported into TPAC Scheduler from SSIM SDS files or from scratch. A season's schedule can be either one file to cover the complete effective date range or multiple files covering the peaks and troughs of the season which can then be combined together. TPAC Scheduler flexibility allows a user to extract specific schedule information from existing schedules to create sub-set periods that can then be expanded to cover a larger effective date range. The TPAC Scheduler user is not limited to the restrictions of the supplied reference data, as they can add:

- aircraft
- configurations
- routes

- ground times
- block times

Additions to the reference data can be saved as individual "network" files that can be quickly loaded over an existing schedule to determine the impact of say a "new" aircraft type would have on the current planned operational capacity/handling.

Manipulating Sectors

User can manipulate sectors in a variety of ways to adjust flying to suit changing conditions:

- retime
- move to another aircraft
- swap with other sector(s)
- cancel
- create new flight/sector.

Many of the actions can be made from the GANTT display, and all operations can be performed using the various editing windows provided, such as "Changes Manager", "Flight Frequency Edit", "Change by Range".

Managing Maintenance

Maintenance data can be loaded from the maintenance system and/or entered/maintained in the TPAC Scheduler database, including:

- Checks:
 - Type
 - Start & end times.
- Sectors:
 - Hours
 - Cycles.

Problems, such as a check overlapping with flying, are highlighted on the GANTT display.

Connections Information

In sched-devel mode using the provided reports TPAC Scheduler can display the inbound and outbound flight connections, including:

- Inbound/outbound flight number
- Origin/destination port
- Departure/arrival time
- Aircraft type

- On ground time for the connection

Online Reports

TPAC Scheduler provides a variety of online reports that allow the user to rapidly gather and disseminate information about the working schedule. Reports include:

- Aircraft Capacity (by both Service Type and Aircraft Type)
- Aircraft Block Hours
- Connections
- Station Movements
- Aircraft Usage
- Frequency Comparison
- Block Time Exceptions
- Curfew Exception
- Numeric Schedule
- Schedule File Comparison
- Port Activity
- Overnight Bases
- Overnight Positioning
- Aircraft Usage

Slot Control

Slot requests can be generated for specified ports in the SSIM SCR format.

Managing Messages

In the ad-hoc mode TPAC Scheduler receives and processes various external messages, such as **ASM**, **MVT**, and schedule adjustment messages. It automatically applies the necessary updates to the database, providing an up-to-date view of operations to the users.

When a message cannot be processed, say because of a problem with the message, or because the sector it refers to doesn't exist, the message is set aside in an "error queue". A user can then view, edit, and submit the message for reprocessing, or they can discard it.

Planning Tools

TPAC Scheduler provides tools for planning operations in the short term, including a "utilisation sort" function that assigns, in bulk, unallocated sectors to aircraft. This function can be configured to perform the assignment in such a way as to either minimise or maximise the on-ground time.

Technical Overview

Architecture

TPAC Scheduler works on a client-server model. The client applications, providing the application GUI, runs on individual PCs or workstations. The server and database run on one or more servers, and support server redundancy and automatic failover. This provides extremely high up-time even in the event of hardware failure.

Supported Platforms

Supported platforms for TPAC Scheduler are described below. Ports to other Unix platforms are available upon request.

TPAC Scheduler Client

Table 1. Client Supported Platforms

Type of application	Native application
Required hardware	PC or Unix workstation
Operating System	Linux (RHEL 4), Solaris 8
Memory	512MB minimum
Disk space	200MB for full installation

TPAC Scheduler Server and Database

Table 2. Server and Database Supported Platforms

Type of application	Native application
Required hardware	Server
Operating System	Linux (RHEL 4), Solaris 8
Memory	1.0GB minimum
Disk space	8.0GB minimum

Further Information

You may wish to look at the [PDF version](#) of this document.