



IDS

NORTH AMERICA

an IDS Ingegneria Dei Sistemi company

IDS ARMS USER GUIDE

May 2019

DOCUMENT CONTROL

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1 INTRODUCTION

1.1 Purpose

The ARMS User Guide is to be used by both operators, application administrators and system administrators of the ARMS system. Since the access to features is end-user customisable, all features within the web application are described in this document. More detailed information on system configuration functions are included in the system administration guide.

1.2 Related Documents

1.2.1 ARMS Related Documents

The following documents are included in the ARMS documentation set:

- ARMS System Administration Guide. IDS 2019.
- ARMS Installation Guide. IDS 2019.
- ARMS Security Guide. IDS 2019.
- ARMS Training – Operators. IDS 2019.

1.2.2 ICAO Compliance

A-RMS is compliant with the following ICAO standards:

- ICAO Document 9082 - ICAO's Policies on Charges for Airports and Air Navigation Services.
- ICAO Document 9161 - Manual on Air Navigation Services Economics
- ICAO Document 9880 - Manual On Detailed Technical Specifications For The Aeronautical Telecommunication Network (ATN) Using ISO/OSI Standards and Protocols.
- ICAO Document 4444 – Procedures for Air Navigation Services – Air Traffic Management.

1.3 Definitions and Acronyms

1.3.1 Industry Acronyms

AATIS	Advance Air Traffic Information System.
ACC	Area Control Centre. Responsible for communications with all flight handovers in an FIR, including flights entering or leaving the FIR, flights leaving or entering TMAs or flights moving between two TMAs.
ARMS	Aviation Revenue Management System.
ADAP	AeroDrome and APproach.
AFTN	Aeronautical Fixed Telecommunication Network.
AMF	Average Mass Factor. Where MTOW categories have been defined, the representative MTOW (usually the average) for the category.
AMO	Aircraft Maintenance Organisation.
AMHS	Aeronautical Message Handling System.
AIS	Aeronautical Information System.
AIP	Aeronautical Information Publication.

AIX/M	Aeronautical Information eXchange Model.
AOC	Air Operator's Certificate.
ATC	Air Traffic Control.
CoA	Certificate of Airworthiness.
CoR	Certificate of Registration.
ERP	Enterprise Resource Planning.
EUROCAT-C	Thales radar system.
FIR	Flight Information Region.
FIXM	Flight Information eXchange Model.
GAAP	Generally Accepted Accounting Principles.
IATA	International Air Transport Association.
IFRS	International Financial Reporting Standards.
MTOM	Maximum Take Off Mass, synonymous with MTOW.
MTOW	Maximum Take Off Weight.
TCA	Terminal Control Area. Synonymous with TMA.
TMA	Terminal Maneuvering Area. Synonymous with TCA.

1.3.2

Industry Definitions

Account	A customer of the ANSP, synonymous with operator, customer or carrier.
Charges	Additional Fixed Rate: A synonym for normally calculated enroute charges. This term is used in South America only.
Approach: A charged applied to the approach of an aircraft to an aerodrome. These charges only apply to aircraft which land at the aerodrome.	
Aerodrome:	A charge applied to the landing of an aircraft at an aerodrome. Synonymous with landing charges, although sometimes landing charges are construed to include both approach and aerodrome charges.
Enroute:	A charge applied to an in-flight aircraft based on the distance travelled within the region and the aircraft weight.
Late:	A surcharge applied to the arrival or departure of an aircraft outside of normal airport operations hours.
Parking:	A charge applied based on the number of hours (or 24 hour periods, or days) which an airport remains at an airport between arrival and departure. In most cases, a grace period of several hours is provided.
Passenger:	A charge applied on a per-passenger basis. Usually international passengers incur a larger charge than domestic passengers. An international flight normally consists of all international passengers. A domestic flight may contain both domestic and international passengers (in the case where an international passenger is in transit to his final destination on a domestic flight).

- Protection: A synonym for enroute charges. This term is used in South America only.
- Unified Rate: Although other areas use the same logic, this term is used in South America only.
A fixed charge applied to small (less than 5700kg) domestically registered aircraft, instead of an enroute charge.
- Tower Aerodrome tower responsible for all handling incoming (from ACC handover to landing) and outgoing flights (from takeoff to ACC handover).
- Wake Turbulence Category**
- L (Light) aircraft types of 7,000 kg or less.
 - M (Medium) aircraft types more than 7,000 kg and less than 136,000 kg;
 - H (Heavy) aircraft types more than 136,000 kg and less than 560,000kg; and
 - J (Jumbo) Airbus A380-800 with a maximum take-off mass in the order of 560,000

1.3.3 Technology Acronyms

- | | |
|-------|--|
| DDL | Data Definition Language. |
| DML | Data Manipulation Language. |
| RDBMS | Relational DataBase Management System. |
| FTP | File Transfer Protocol. |
| NFS | Network File System. |
| GIS | Geographic Information System. |
| HTTPS | Hyper Text Transfer Protocol – Secure. |
| JDBC | Java DataBase Connector. |
| NIC | Network Interface Card. |
| OGC | Open Geospatial Consortium. |
| SMS | Short Message Service. |

1.4 Standards Compliance

ARMS is compliant with the following ICAO standards:

- ICAO Document 9082 - ICAO's Policies on Charges for Airports and Air Navigation Services.
- ICAO Document 9161 - Manual on Air Navigation Services Economics
- ICAO Document 9880 - Manual On Detailed Technical Specifications For The Aeronautical Telecommunication Network (ATN) Using ISO/OSI Standards and Protocols.
- ICAO Document 4444 – Procedures for Air Navigation Services – Air Traffic Management.

2 OVERVIEW

The IDS Aviation Revenue Management System (ARMS) is designed to automate the billing operations and processes associated with the provision of both air navigation and non-air navigation services provided by Air Navigation Service Providers (ANSPs). It allows ANSPs to take greater control over their revenue streams and ensure they are being properly and promptly compensated for the services they provide.

2.1 User Interface

ARMS is deployed as a web-based application with web clients accessing a central web server. It may be accessed by any PC on the LAN using a current operating system and a current version of any of the following browsers:

- Internet Explorer;
- Firefox; or
- Chrome.

The number and location of workstations is not constrained by the system. Any workstation may be used to perform any function, the only restriction being that the user logged in on that workstation has access to functions based on their roles and privileges.

2.2 Privileges

Privilege Name	Access
account_modify	Access to accounts.
account_view	
aerodrome_category_modify	Access to aerodrome categories.
aerodrome_category_view	
aerodrome_modify	Access to aerodromes.
aerodrome_view	
aerodrome_operational_hours_modify	Access to aerodrome operational hours.
aerodrome_operational_hours_view	
aerodrome_service_outage_modify	Access to aerodrome service outages.
aerodrome_service_outage_view	
aftn_config_modify	Access to AFTN gateway configuration.
aftn_config_view	
aircraft_registration_modify	Access to aircraft registrations.
aircraft_registration_view	
aircraft_type_modify	Access to aircraft types.
aircraft_type_view	

airspace_modify airspace_view	Access to airspaces.
amhs_config_modify amhs_config_view	Access to AMHS gateway configuration.
approval_workflow_modify approval_workflow_view	Access to transaction approval workflow.
avg_mtow_factor_modify avg_mtow_factor_view	Access to average MTOW definitions.
aviation_invoice_generate aviation_invoice_preview aviation_invoice_recalculate aviation_invoice_validate	Access to aviation invoicing functions.
banking_information_modify banking_information_view	Access to bank account information.
billing_center_modify billing_center_view	Access to billing centres.
certificate_template_modify certificate_template_view	Access to certificate templates.
certificates_modify certificates_view	Access to certificates.
change_password	Access to user password changes.
charges_modify charges_view	Access to recurring non-aviation charges.
charges_schedule_modify charges_schedule_view	Access to charge schedules.
countries_modify countries_view	Access to countries.
currency_modify currency_view	Access to currencies and exchange rates.
enroute_charges_modify enroute_charges_view	Access to enroute charges.
exempt_account_modify exempt_account_view	Access to accounts exemptions.

exempt_aircraft_flights_modify exempt_aircraft_flights_view	Access to flight and aircraft exemptions.
exempt_aircraft_type_modify exempt_aircraft_type_view	Access to aircraft type exemptions.
exempt_flight_route_modify exempt_flight_route_view	Access to flight route exemptions.
exempt_flight_status_modify exempt_flight_status_view	Access to flight status exemptions.
flight_log_modify flight_log_view	Access to ATC logs, tower logs and passenger service charge returns.
flight_movement_modify flight_movement_view	Access to flight movements.
flight_reassignment_modify flight_reassignment_view	Access to flight reassignment.
flight_schedule_modify flight_schedule_view	Access to flight schedules.
group_modify group_view	Access to groups.
interest_rate_modify interest_rate_view	Access to interest rates.
invoice_template_modify invoice_template_view	Access to invoice templates.
invoices_approve invoices_publish invoices_view invoices_void	Access to invoices.
language_modify language_view	Access to language controls.
local_acreg_modify local_acreg_view	Access to local aircraft registry.
manage_cached_event_modify manage_cached_event_view	Access to cached events.

manage_plugin_modify	Access to plugins.
manage_plugin_view	
nominal_route_modify	Access to nominal routes.
nominal_route_view	
nonaviation_invoice_generate	Access to non-aviation invoicing functions.
nonaviation_invoice_preview	
passenger_revenue_reconcile	Access to passenger revenue reconciliation.
point_of_sale_access	Access to point of sale functions.
radar_summary_modify	Access to radar flight strips.
radar_summary_view	
regional_countries_modify	Access to regional countries.
regional_countries_view	
rejected_data_modify	Access to rejected data.
rejected_data_view	
report_template_modify	Access to report templates.
report_template_view	
reports_generate	Access to report generation functions.
route_cache_modify	Access to parsed route cache.
route_cache_view	
self_care_access	Access to self-care air operator functions.
self_care_admin	Access to self-care administrator functions.
service_charge_modify	Access to service charge catalogue.
service_charge_view	
session_modify	Access to user web sessions.
session_view	
statistics_generate	Access to statistics generation functions.
statistics_template_modify	Access to statistics template functions.
statistics_template_view	
sys_config_modify	Access to system configuration.
sys_config_view	
system_summary_view	Access to system summary.

transaction_adjustment_create transaction_modify transaction_view	Access to transactions.
transaction_pending_modify transaction_pending_view	Access to pending transactions.
user_event_modify user_event_view	Access to user event log.
user_modify user_view	Access to users.
utilities_schedule_modify utilities_schedule_view	Access to utility schedules.
utilities_towns_modify utilities_towns_view	Access to villages and towns linked to utilities schedules.
zzzz_aircraft_type_modify zzzz_aircraft_type_view	Access to unspecified aircraft types.
zzzz_locations_modify zzzz_locations_view	Access to unspecified locations.

2.3 Standard Units of Measurement

Measurement	Units
Aircraft MTOW	US short tons (2000 lbs) May also be displayed as kilograms (kg).
Distance units	Kilometers May also be displayed as nautical miles.
Volume units for water (utilities)	Kilolitres (kl)
Power units for electricity (utilities)	Kilowatt hours (kwhr)
Fuel volume units	Litres
Dates and times	UTC, 24-hour clock
Flight movement departure and arrival times	UTC

Where user specifications are presented in other units, they are converted to the above units for system implementation.

The system time is in UTC.

2.4

Difference Between Airlines and General Aviation

An account may be identified as being either an “airline” or “general aviation”. An air operator is considered an airline if they have an ICAO airline code. If an air operator is identified as being an airline, it must be assigned a unique ICAO code. The ICAO airline code assigned to the air operator may be used to match the ICAO code prefix to a flight identifier, removing the need for an airline to register all of its aircraft individually. For general aviation, the ICAO code cannot be used to match flights with the air operator. In this case, all aircraft must be registered individually.

2.5

Difference Between IATA and Non-IATA Members

An account may be identified as being an IATA member. If an air operator is identified as being an IATA member, it must be assigned a unique IATA code. IATA membership is used to determine if enroute charges for the account are to be included in the IATA invoice.

2.6

Data Sets

ARMS relies on the following datasets.

Radar Summaries

Radar summaries are generated by Radar systems. Raytheon and Eurocat formats are currently supported. Radar summaries contain the entry and exit time and location to and from the FIR, and may also include multiple times and locations for points as the flight crosses the FIR.

Tower Logs

Tower logs are generated by staff in the control tower. They contain information for all flights departing from or arriving at an aerodrome.

ATC Logs

ATC logs are generated by air traffic controllers. They contain information for all flights being handed over from tower controls to the FIR level and for all international flights entering or leaving the FIR.

Passenger Service Charge Returns

Passenger service charge returns are generated by the air operators. They contain information including the domestic and international passenger counts for all departures.

Flight Movement Information

Flight movement information is stored in the Spatia database. After the system is deployed, the Server process retrieves the raw flight movement information from the Spatia database, selects those that meet the criterion, resolves the account, calculates the cost, and stores the information in the Billing database. As a result, the flight movement information stored in the Billing database is a subset of the same information found in the Spatia database.

Account Information

Account information is stored in the Billing database. Accounts must be resolved before a flight movement cost can be calculated. Accounts are pre-loaded in the Billing database during installation. New accounts can be created and existing accounts can be deleted by a user after deployment.

Aircraft Types

Aircraft types are stored in the Billing database. Aircraft types must be resolved before a flight movement cost can be calculated. Aircraft types are pre-loaded in the Billing database during

installation. New aircraft types can be created and existing aircraft types can be deleted by a user after deployment.

Aircraft Registration

Aircraft registration is stored in the Billing database. Sometimes flight movement information does not contain account information but contains a registration number. In this case, the system relies on the registration number to resolve the account of a flight movement. Aircraft registration can be created after the system is deployed.

3 ARMS INTRODUCTION

3.1 Layout

The default ARMS main screen consists of four sections:

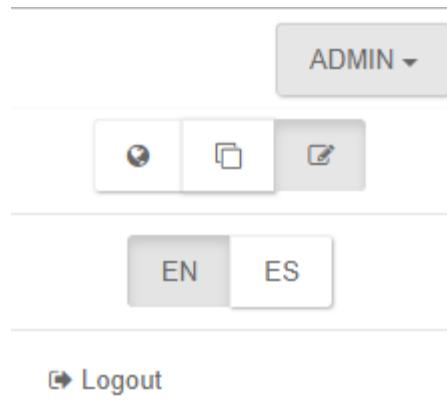
- Top: Toolbar
- Left: Sidebar menu
- Centre: Datagrid view
- Right: Form view or map view

The screenshot shows the ARMS application interface. The top section contains the IDS and CAA logos and a user dropdown. The left sidebar has a search bar and a navigation menu with items like Billing, Flight Data, ATC Movement Log, Radar Summary, and Management. The center is a datagrid titled 'Radar Summary' with columns for Flight Id, Date, Dep Time, Day of Flight, Reg Number, A/C Type, Dep Ad, Dest Ad, and E. The right section is a form titled 'Edit a Radar Summary' with fields for Flight Identifier, Date, Departure Time, Registration, Aircraft Type, etc.

Top Toolbar

The top toolbar consists of the IDS and customer logos and the **UserName** button.

This screenshot shows a simplified view of the top toolbar area, featuring the IDS and CAA logos and a user dropdown button labeled 'ADMIN'.



From the **UserName** button, the user can:

- Display only the map (click the *globe* icon);
- Display both the map and the workspace (click the *pages* icon);
- Display only the workspace/dashboard (click the *pencil* icon);
- Change the language; or
- Log out.

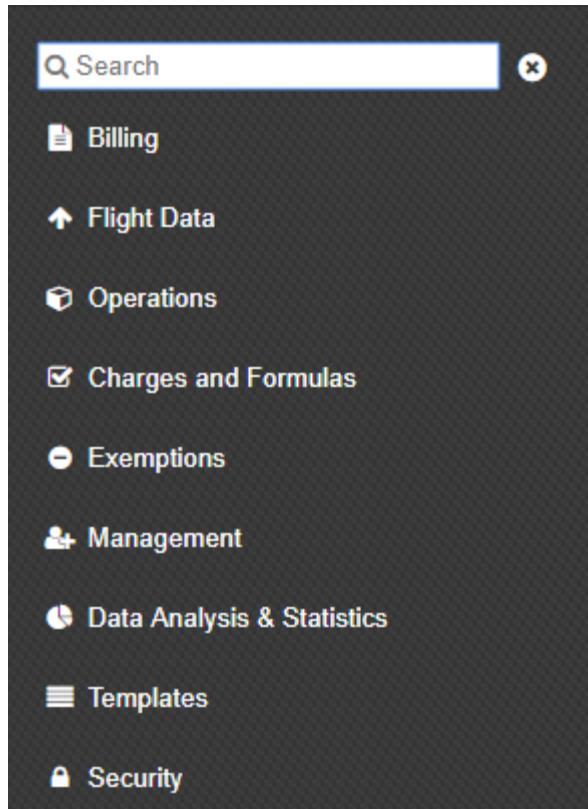
3.1.1 Workspace View

3.1.2 Sidebar Menu

The majority of ARMS functions are accessed from the sidebar menu. Clicking a menu item expands the menu list and/or displays the relevant information in the workspace.

The menu can be filtered by entering the search criteria in the **Search** text field. The displayed results are updated, showing only results that contain the text entered in the text field.

The menu is constructed dynamically based on the privileges associated with the groups the user is associated with. Users in different groups (i.e. Administrator or Billing Officer) will have access to different functions in the menu.



3.2 Form View

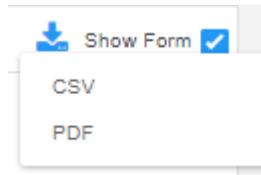
The **Show Form** checkbox in the upper right corner allows the User to switch from viewing only the DataGridView to viewing the DataGrid and the view/edit form.

Action	Day of Flight	Dep Time	Dep Ad	Dest Ad	Flight Id	Reg Number	Account Name	Status	A/C Type	WTC	MTOW (kg)	Flight Movement Type	Blacklisted	Enroute Basis	Enroute (USD)	ADAP (USD)	Dom Pax (#)
<input type="checkbox"/>	2018-05-05	1000	HKWU	HKJK	AXX003	5YFSR	African Express Airways	INCOMPLETE	A318	M	68,000	Domestic	No	Radar Summary	0.00	0.00	
<input type="checkbox"/>	2018-05-05	0730	HCMN	HKWU	AXX003	5YFSR	African Express Airways	PENDING	A318	M	68,000	International Arrival	No	Radar Summary	275.37	0.00	
<input type="checkbox"/>	2018-05-01	0400	LIRF	HKJK	ACATBT	12345	Altairia	PENDING	C130	M	70,307	International Arrival	No	Scheduled	275.37	50.00	
<input type="checkbox"/>	2018-05-19	0800	HKJK	HKMD	PAX001		Kenya Airways	PENDING	A320	M	73,500	Domestic	No	Scheduled	98.59	50.00	36.0
<input type="checkbox"/>	2018-05-13	2300	HKWU	HKJK	AXX002	5YAXG	African Express Airways	INCOMPLETE	CRJ2	M	23,133	Domestic	No	Scheduled	41.89	30.00	
<input type="checkbox"/>	2018-05-12	2200	HCMN	HKWU	AXX002	5YAXG	African Express Airways	PENDING	CRJ2	M	23,133	International Arrival	No	Scheduled	121.31	30.00	
<input type="checkbox"/>	2018-05-12	1740	HKEL	HKML	5YPMF2	000001	P Flights	INCOMPLETE	BE20	L	5,070	Domestic	No	Scheduled	30.19	10.00	
<input type="checkbox"/>	2018-05-12	1740	HKJK	HKML	5YPMF2	000000	P Flights	INCOMPLETE	AT42	M	16,900	Domestic	No	Scheduled	41.89	20.00	
<input type="checkbox"/>	2018-05-12	1730	HKJK	HKML	5YPDF1	000000	P Flights	INCOMPLETE	AT42	M	16,900	Domestic	No	Scheduled	41.89	20.00	
<input type="checkbox"/>	2018-05-12	1600	HKJK	HKJK	CRG014	5YF53	Wilderness Air	INCOMPLETE	C340	L	2,719	Domestic	No	Scheduled	11.87	8.00	
<input type="checkbox"/>	2018-05-12	1600	HKJK	HKJK	5YFS3	5YFS3	Flight School	INCOMPLETE	EC30	L	2,497	Domestic	No	Scheduled	9.72	1.21	

The screenshot shows the software's main menu on the left, which includes sections like Billing, Flight Data, Flight Movements, Operations, Management, and Help. The central area displays the 'Create a Flight Movement' form with various fields such as Flight ID, Registration Number, Date of Flight, Departure Time, Departure Aerodrome, Aircraft Type, Destination Aerodrome, Flight Type, Account, Arrival Aerodrome, Actual Arrival Time, User Crossing Distance, Item 18 Status, Item 18 Remarks, Item 18 Departure Aerodrome, Item 18 Destination Aerodrome, Item 18 Aircraft Type, Cruising Speed, Elapsed Time, Chargeable International Passengers, Chargeable Domestic Passengers, Children, TASP Charge, Flight Rule, Flight Level, Route, and buttons for CLEAR and CREATE. Below this is a 'Flight Movements' datagrid with columns for Select, Action, Day of Flight, Dep Time, Dep Ad, Dest Ad, Flight Id, Reg Number, Account Name, Status, A/C Type, WTC, MTOW (kg), Flight Movement Type, Blacklisted, Enroute Basis, Enroute (USD), ADAP (USD), and Dom PAX (k). The datagrid also includes buttons for REFRESH, RECALCULATE, GENERATE INVOICE, and FLIGHT PLAN, along with filters for Invoice Status, Account Type, and Sort Options.

The **Export** button allows the user to download the content of the datagrid.

The records can be downloaded in 2 formats: CSV and PDF.



On pages with a text filter box, results can be filtered by entering the search criteria in the text box.

Filter

The displayed results are updated, showing only results that contain the text entered in the text filter. All columns on the page are searched (e.g. Account, Aviation, Status, etc.).

3.2.1 Sorting

All the datagrids in the system can be sorted by clicking on the header.

The sorting order is indicated as follows:

Triangle pointing up = Ascending Order.

Triangle pointing down = Descending Order

Select	Action	Day of Flight▲	Dep Time▲	Dep Ad▲	Dest Ad	Flight Id	Reg Number▼	Account Name▼	Status	A/C Type
<input type="checkbox"/>		2007-00-04	1245	F744	F40R	S4A051	79974	South African Airways	PENDING	A320

First click sorts the column in Ascending order, second sorts the column in Descending order, third restores the default sort order.

3.2.2

Data Entry

ARMS provides context sensitive help at two levels. On data entry forms when a data validation error occurs, the erroneous field is highlighted with a warning or error symbol. Moving the cursor over the error symbol results in mouse-over text related to that specific field being displayed. As well, the user may click on the help icon at the bottom of the navigation panel to have the help text for that interface displayed in PDF format.

Data entry interfaces provide syntactic and semantic error checking at several levels:

- Where fields are limited to a specific character set (i.e. numeric, or alphanumeric), data entry controls prevent the entry of invalid characters.
- Where values entered must be within a specific range, this validation is done, and if the validation fails, an error symbol is displayed beside the field and mouse over text is displayed indicating the reason for the error.
- Where consistency with other data sets is required, this validation is done, and if the validation fails, an error symbol is displayed beside the field and mouse over text is displayed indicating the reason for the error.

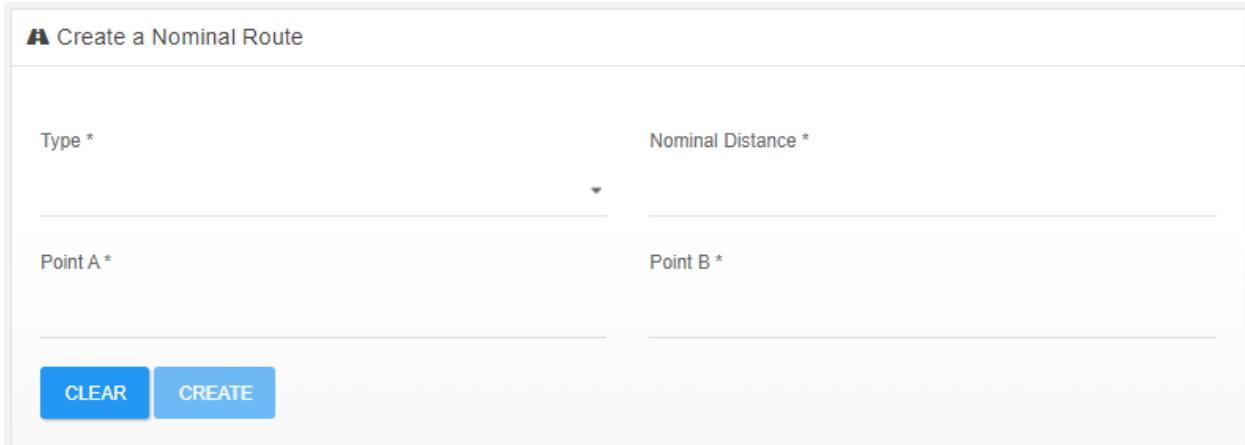
3.2.3

Creating Records

To create a new record (e.g. transaction, manifest, schedule, etc.):

1. Enter the required information in the corresponding fields.
2. Click **Create**. The record is created.

Note: Fields marked with an asterisk (*) are mandatory and must be completed before the form can be submitted.


 A screenshot of a web-based data entry form titled "Create a Nominal Route". The form has a light gray background and consists of several input fields and buttons. At the top left is a small icon of a person with a briefcase. The first row contains two input fields: "Type *" on the left and "Nominal Distance *" on the right, both with placeholder text. Below this is a horizontal line with a dropdown arrow in the center. The second row contains two input fields: "Point A *" on the left and "Point B *" on the right, also with placeholder text. Below this is another horizontal line with a dropdown arrow in the center. At the bottom left are two blue buttons: "CLEAR" and "CREATE". The "CREATE" button is larger and has a white outline, while the "CLEAR" button is smaller and solid blue.

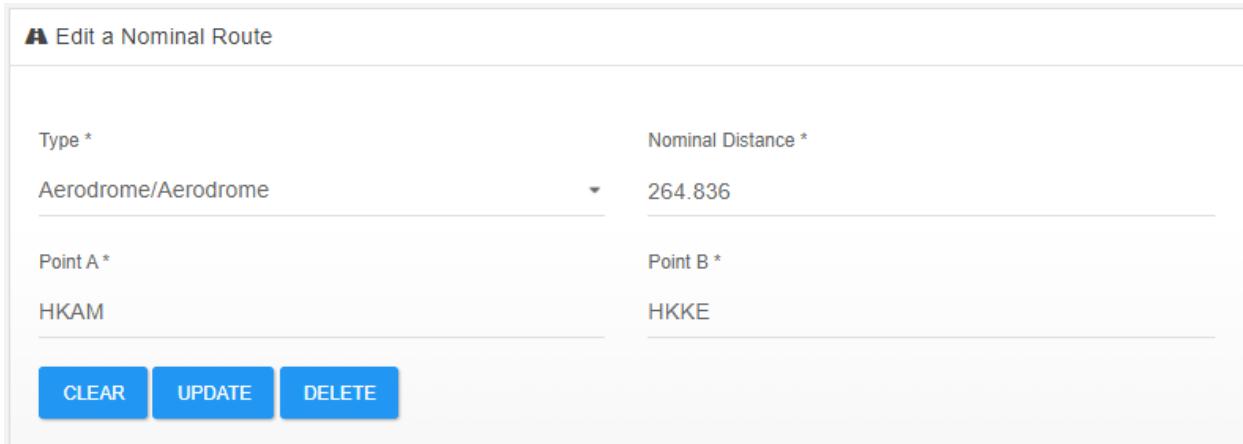
3.2.4

Editing Records

To edit a previously created data record:

1. In the search results section, select the item to be edited. Click **Show Form**. The corresponding information is displayed.
2. Edit the information, as required.

3. Click **Update**. Changes are saved.

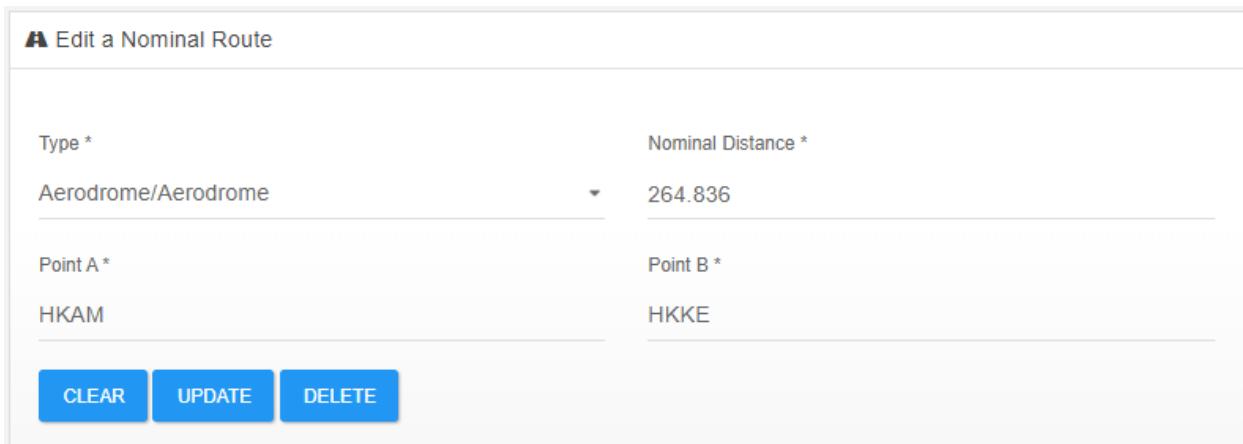


Edit a Nominal Route	
Type *	Nominal Distance *
Aerodrome/Aerodrome	264.836
Point A *	Point B *
HKAM	HKKE
<input type="button" value="CLEAR"/> <input type="button" value="UPDATE"/> <input type="button" value="DELETE"/>	

3.2.5 Deleting Records

To delete a previously created data record:

1. In the search results section, select the item to be edited. Click **Show Form**. The corresponding information is displayed.
2. To delete the item, click **Delete**.



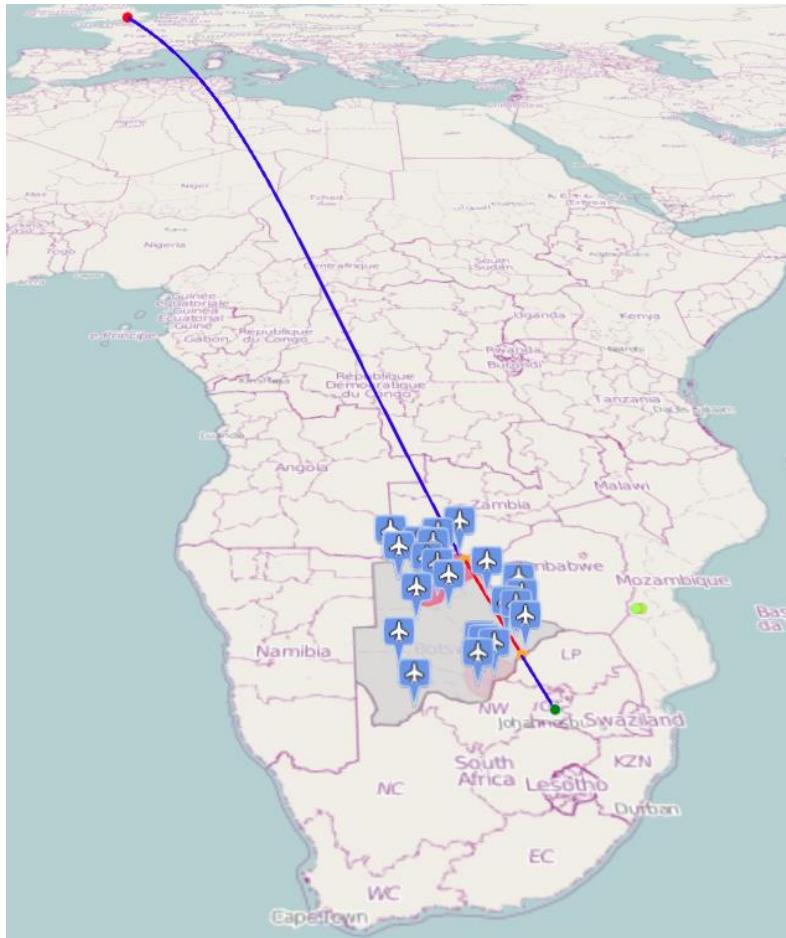
Edit a Nominal Route	
Type *	Nominal Distance *
Aerodrome/Aerodrome	264.836
Point A *	Point B *
HKAM	HKKE
<input type="button" value="CLEAR"/> <input type="button" value="UPDATE"/> <input type="button" value="DELETE"/>	

3.3 Map View

The toolbar at the top of the map consists of the following functionality:

- Search by address or landmark (*magnifying glass* icon)
- View home (*house* icon)
- Toggle between 2D and 3D views (*grid* or *globe* icon)
- Review mouse and touch functionality (*question mark* icon)
- Open the Layers and Information settings section (*gear* icon)
- Measure between points on the map (*ruler* icon)

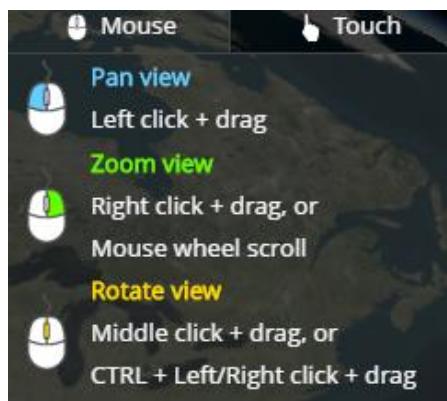




3.3.1 Mouse and Touch Functionality

The map can be manipulated using either mouse or touch functionality, depending on the user's device. To review this functionality:

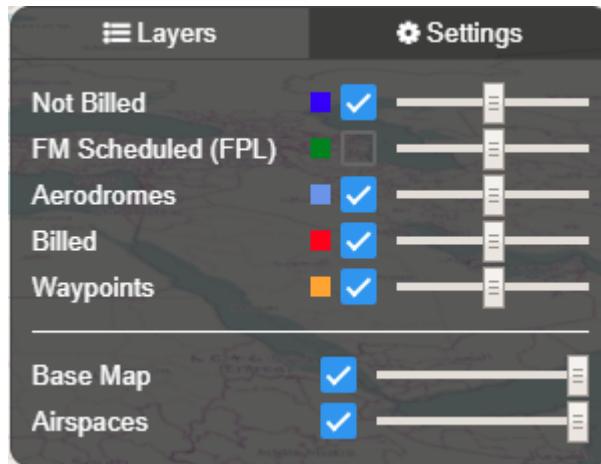
1. Click the *question mark* icon in the map toolbar.
2. Click the **Mouse** or **Touch** tabs to view the required information.



3.3.2 Layers

Multiple layers can be applied at the same time to the map. To add a layer:

1. Click the *gear* icon in the map tool bar.
2. Select the **Layers** tab.
3. Check the desired checkbox(es) to apply the layer. The layer is applied to the map.
4. Remove the layer by unchecking the checkbox(es).
5. Change the opacity of the layer using the slide bar.

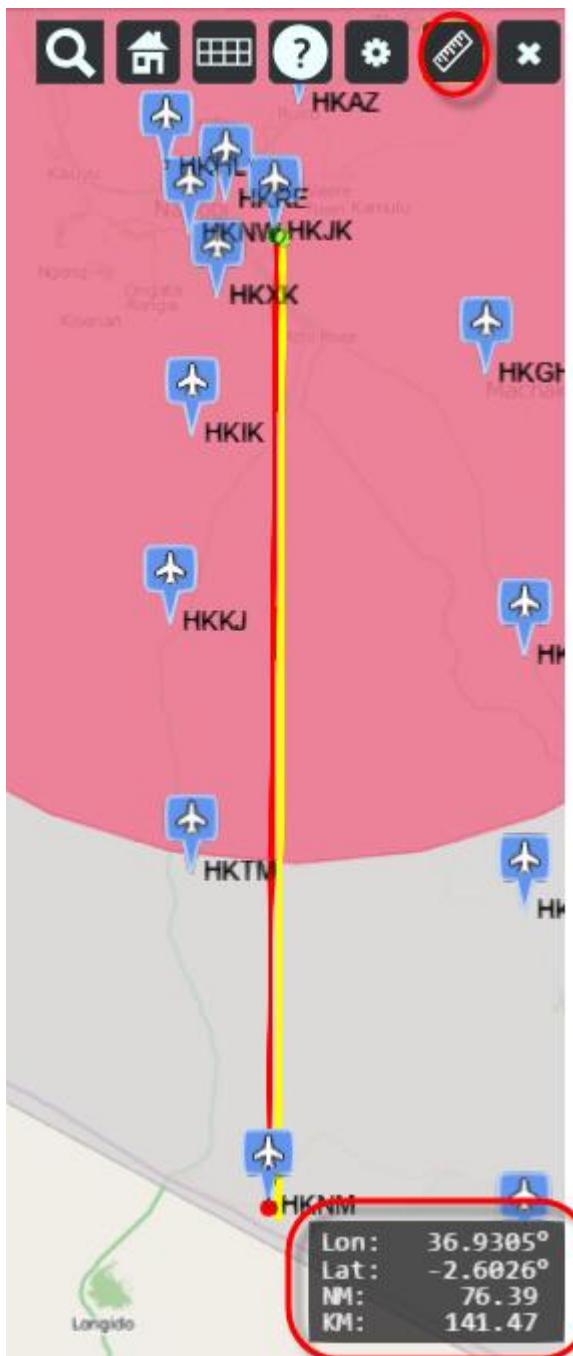


3.3.3 Measurement Tool

The measurement tool allows the user to measure a distance between two points and to display the latitude / longitude coordinates at a point.

To use the measurement tool, click on the ruler icon, then click at the start point on the map and drag to the end point and click. The measured line is drawn in yellow and the location and distance from the start point to the end point will be displayed. Multi-segment lines may be measured by clicking multiple end points.

To clear the measurement, click on the ruler icon.



3.4 Layer Information

Click on any layer feature on the map to display information specific to that feature.

FBTS	
Billing ID	5
Category	2

4 LOGIN

4.1.1 Interface

The login interface allows a user to enter his credentials, have them validated, and if validated provides access to the billing application. A user is limited to a single session (i.e. concurrent sessions for the same user are not permitted). This requires each user to have a unique login ID.

The application functions to which the user is granted access following login are determined by the groups which are assigned to the user and the privileges assigned to those groups.

The login interface provides a mechanism for a user to recover a lost password via email.

The password is hashed and salted using a SHA2 algorithm.

Following successful login, the user is given access to menu options based on the user group associated with the account.

All login attempts (failed or successful) are logged to the user event log.

The login form implements an incremental time delay for failed logins.

The login form prevents a user id from connecting multiple concurrent sessions.

If the administrator has requested that the user change his password, following validation of the user id and password, a password change interface is displayed. The user must change his password before he can navigate to the normal user interface.

If the current date is greater than or equal to the password expiry date, the user is not permitted to log in. If the current date is greater than or equal to the password expiry date minus the password expiry warning window, the user will be warned that his password will expire in X days.

If the user is inactive for longer than the specified idle time limit, he will be logged out and redirected to the login page.

4.1.2 Form

To login to the IDS ARMS application:

Open a web browser and enter the ARMS application URL.

Enter User Name and Password.

Click Sign In or press Enter on the keyboard.

The ARMS main screen is displayed. The following menu options will be displayed in the left menu area:

- Billing;
- Flight Data;
- Operations;
- Charges and Formulas;
- Exemptions;
- Management;
- Data Analysis and Statistics;
- Templates;
- Security; and

- Help.



Username

admin

Password

.....

SIGN IN

[Forgot password?](#)

5 BILLING

The billing submenu contains all the interfaces related to the generation and payment of invoices.

These interfaces include:

- Invoices;
- Transactions;
- Pending Transactions;
- Aviation Billing;
- Non-Aviation Billing;
- Point Of Sale Invoice Generation; and
- Passenger Revenue Reconciliation.

5.1 Invoice Management

5.1.1 Background

Invoices include all IATA, non-IATA and non-aviation invoices which have been generated in ARMS.

New and approved invoices are draft versions. Published invoices may be distributed to customers and may have payments applied to them.

5.1.2 Interface

The invoice management interface allows the user to query, display, and filter invoice records.

Access to the invoice management interface is controlled by the invoices_view and specific invoice modification privileges.

- invoices_approve allows the user to approve an invoice;
- invoices_publish allows the user to publish an invoice; and
- invoices_void allows the user to void an invoice.

The invoice entries are displayed in a datagrid following the conventions described under data grid display. The default sort order is invoice issue date, invoice number descending.

Account name is joined from the accounts table.

The following dataset filters are provided:

- General text;
- Temporal (start/end);
- Account; and
- Status:
 - Unapproved invoices;
 - Unpublished invoices;
 - Unpaid invoices;
 - Overdue invoices;
 - Paid invoices.

Note that the only modifications that can be made to an invoice record are:

- marking it as approved; (KCAA)
- marking it as published; and (KCAA)
- marking it as void.

A new invoice is created by one of the following:

- Aviation billing engine;
- Non-aviation billing engine; or

Point of sale invoice generation. The following dataset filters are provided:

- General text;
- Temporal (start/end); and
- Account.
- Invoices generated by point of sale invoice generation are immediately published. If the invoice is paid at the point of sale, it is marked as paid.

Credit invoice generated by either the aviation or non-aviation billing engines follow the following process, beginning with an invoice being created in one of the following states depending on system settings:

- New;
- Approved;
- Published.

State	NEW
Trigger Event	User has created a credit invoice.
Time Frame	Occurs during the first N days of the month, preceding a fixed publishing date.
Accessibility	The invoice is only visible to users who have access to the invoices_modify privilege.
Related Data Changes	Invoice line items and flight movements are associated with the invoice. Credit and debit notes included in the invoice are associated with the invoice. Automated changes to underlying data (flight movements, invoice line items) are no longer permitted.
Normal Next Step	APPROVED
Alternate Next Steps	NEW (as a result of regeneration) VOID
State	APPROVED
Trigger Event	After determining that the data presented in the invoice is complete and correct, the user marks the invoice as APPROVED. The publishing date has not been reached yet, so the invoice remains in limbo, approved, but not published.
Time Frame	Occurs during the first N days of the month, preceding a fixed publishing date.

Accessibility	The invoice is only visible to users who have access to the invoices_modify privilege.
Related Data Changes	<p>None</p> <p>Automated changes to underlying data (flight movements, invoice line items) are no longer permitted.</p>
Normal Next Step	PUBLISHED
Alternate Next Steps	<p>NEW (as a result of regeneration)</p> <p>VOID</p>
State	PUBLISHED
Trigger Event	When the publishing date is reached, the user will publish all APPROVED invoices.
Time Frame	Usually a fixed date – i.e. 5th of the month.
Accessibility	The invoice is only visible to users who have access to the invoices_view or invoices_modify privilege.
Related Data Changes	<p>A transaction record is added to record the debit to the account.</p> <p>Transaction payment records are created for credits applied to the account.</p> <p>Note that if an account with a credit balance has more than one invoice created but not published, the credits will be used in multiple invoices. Either the invoice must be regenerated at publishing time, or the credits need to be flagged temporarily as being “used”. The latter approach is preferred.</p> <p>The invoice may be posted online (accessible to both the web client or mobile application) and the user notified via SMS or email that it is available (depending on account settings).</p> <p>The invoice may be emailed to the user (depending on account settings).</p> <p>The invoice may be printed and paper mailed to the user (depending on account settings).</p> <p>Automated or manual changes to underlying data (flight movements, invoice line items) are no longer permitted.</p> <p>During the period following the invoice being published, payments may be received for that invoice. As payments are applied to the invoice, credit transaction records will be added. When the invoice balance is completely paid, the invoice will be marked as being paid.</p>
Normal Next Step	PAID
Alternate Next Steps	n/a
State	PAID
Trigger Event	As payments are applied to the invoice, credit transaction records will be added and the amount owing on the invoice will be reduced. When the amount owing reaches zero, the invoice will be marked as PAID.
Time Frame	Between the published date and the date defined by the published date plus the number of days specified in the account's payment terms.

Accessibility	The invoice is only visible to users who have access to the invoices_view or invoices_modify privilege.
Related Data Changes	A transaction record is added to record the debit to the account. Automated or manual changes to underlying data (flight movements, invoice line items) are no longer permitted. Where integration with external system requires payments recorded in ARMS to be recorded in other systems, this data is updated as well (KCAA – AATIS adhoc permits, e-AIP AIP requisitions).
Normal Next Step	n/a
Alternate Next Steps	n/a
State	VOID
Trigger Event	The user determines that the invoice is not valid and cannot be corrected through regeneration.
Time Frame	Any time prior to the invoice being published.
Accessibility	The invoice is only visible to users who have access to the invoices_modify privilege.
Related Data Changes	Any underlying data (flight movements, invoice line items) associated with the invoice is disassociated from it. Any credit or debit notes associated with the invoice are disassociated from it.
Normal Next Step	n/a
Alternate Next Steps	n/a

Invoice records cannot be deleted. Invoice records may only be added by generating an invoice.

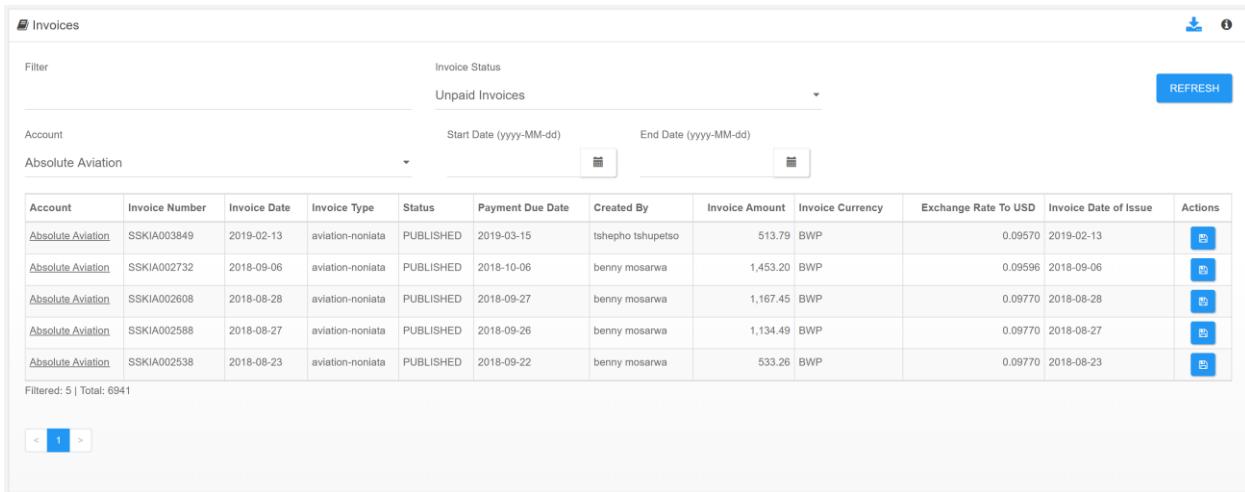
When an invoice record is selected, all payments made against that invoice are displayed and a link to the receipt for each payment is provided allowing the receipt to be displayed.

When an invoice record is selected, items included in the invoice are displayed. For aviation invoices, these are the flight movements which are included in the invoice are displayed. For non-aviation invoices, these are the invoice line items.

The invoice management interface provides pre-defined filters to allow the user to find operationally significant records easily. These filters include:

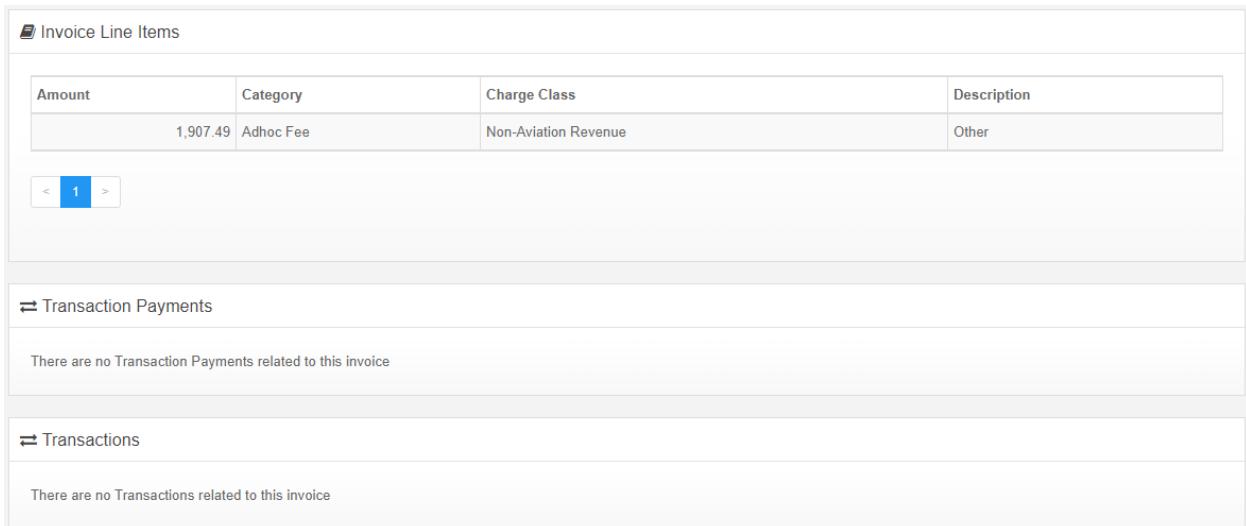
- Unapproved invoices; (KCAA)
- Unpublished invoices; (KCAA)
- Unpaid invoices;
- Overdue invoices; and
- Paid invoices.

5.1.3 Form

A screenshot of the IDS ARMS Invoices form. The top navigation bar has a magnifying glass icon and the word "Invoices". Below it is a filter section with "Filter" and "Unpaid Invoices" dropdowns, and a "REFRESH" button. The main area shows a table of invoices with columns: Account, Invoice Number, Invoice Date, Invoice Type, Status, Payment Due Date, Created By, Invoice Amount, Invoice Currency, Exchange Rate To USD, Invoice Date of Issue, and Actions. The table contains five rows of data for Absolute Aviation. At the bottom left, it says "Filtered: 5 | Total: 6941".

Item	Description
Account	The Account billed.
Invoice Number	The unique number assigned to the invoice.
Invoice Date	The billing period which the invoice is related.
Invoice Type	The type of the invoice (non-aviation, aviation-iata, aviation-noniata, etc.).
Status	<p>The invoice status. It can be:</p> <p>NEW: If the invoice approval workflow is active. It indicates that the invoice is waiting for approval. Note: The Account's balance is not updated, when the invoice status is NEW.</p> <p>APPROVED: If the invoice approval workflow is active. It indicates that the invoice has been approved and it can be published. Note: The Account's balance is not affected from the invoice.</p> <p>VOID: If the invoice approval workflow is active. It indicates that the invoice has been rejected. Note: The Account's balance is not affected.</p> <p>PUBLISHED: It indicates that the invoice has been delivered to the customer.</p> <p>PAID: It indicates that the invoice has been paid in full.</p>
Payment Due Date	The last day to receive payments related to this invoice, before generating overdue penalties.
Created By	The User that created the invoice.
Invoice Amount	Total amount of the Invoice
Invoice Currency	Currency of the Invoice Amount
Exchange Rate to USD	The Exchange rate to USD at the Invoice Date of Issue
Invoice Date of Issue	The date when the invoice has been published
Exported	Indicates if the invoice has been exported to external systems

Selecting an invoice, the system displays at the bottom of the page, all the related information.



The screenshot shows a grid of related information for an invoice. The first section, "Invoice Line Items", contains one row with the following data:

Amount	Category	Charge Class	Description
1,907.49	Adhoc Fee	Non-Aviation Revenue	Other

A navigation bar below the grid shows page 1 of 1. The next two sections, "Transaction Payments" and "Transactions", both indicate that there are no related items for this invoice.

Item	Description
Transaction Payments	Provides a map between the invoice and the transactions
Transactions	Payments and related receipts paid to the invoice
Flight Movements	Flight Movements present in the invoice

5.2 Transaction Management

5.2.1 Background

Transactions include all transactions made to account balances, including manual adjustments, invoice charges and invoice payments.

Debits applied to the account are added and increase the account balance. Credits to the account are subtracted and decrease the account balance.

5.2.2 Interface

The transaction management interface allows the user to query, display, filter and create transaction records.

Access to the transaction management interface is controlled by the `transaction_view` and `transaction_modify` privileges. In addition to these, a user may only create an adjustment transaction (credit or debit) if he has access via the `transaction_adjustment_create` privilege.

Access to the accounting export function is controlled by the `accounting_export` privilege.

The transactions are displayed in a datagrid following the conventions described under data grid display. The default sort order is transaction date / time descending.

Account name is joined from the accounts table.

The following dataset filters are provided:

- General text;
- Temporal (start/end); and
- Account.

When a debit transaction is created:

- the user selects the account the debit is to be made to;
- the user enters a debit amount and currency (either USD or the account's currency);
- the debit value is saved as the transaction amount as a positive number;
- the transaction type is 'debit';
- the payment mechanism is 'adjustment'; and
- the payment reference number is 'n/a'.

When a credit transaction is created:

- the user selects the account the payment is to be made to;
- the total of the outstanding invoices is calculated and displayed (both USD and account currency);
- the user enters a credit amount and currency (either USD or the account's currency);
- the credit value is saved as the transaction amount as a negative number;
- the payment mechanism is one of 'cash|credit|debit|cheque|wire|adjustment';
- the payment reference number is that of the credit, debit, wire or cheque, or n/a for cash or adjustments;
- if the payment amount does not total the amount of the outstanding invoices, the user is warned;
- the list of outstanding invoices is displayed and the user may select one or more invoices to be paid by the credit transaction (invoice currency must match the payment currency);
 - if an invoice amount exactly matches the amount of the payment, that invoice is automatically selected;
 - the unused amount of the payment is updated as invoices are selected;
 - the user may not select additional invoices after the unused amount of the payment reaches zero.
- the user has the option of completing or cancelling the operation;
- if the operation is to be completed, all operations below are wrapped in a single database transaction which atomically completes or fails:
 - if the invoices are for aviation charges, the flight movements associated with the invoice are updated to indicate that they have been paid for;
 - if the invoices are for non-aviation charges, the line items associated with the invoice are updated to indicate that they have been paid for;
 - the transaction payment records are created for each invoice to be paid by this transaction;
 - a receipt is generated indicating the payment details and the numbers of the invoice the payment is to be applied to, and whether the invoice is now partially or fully paid; and
 - the user has the option of printing the receipt.

The payment date is set by default to be the current date. If the system is configured to allow backdated payments, the user may modify this value within the range of the invoice generation date and the current date. The modified date is used for the invoice payment date. The current date is always used for the transaction time stamp.

If the system is configured to provide ANSP banking information support, the user must select a bank name and account number for credit payments using wire transfer or cheques.

Transactions use the exchange rate defined for the payment date, which is normally the current date.

Receipts are generated for all transactions – credit and debit as well as payments. The invoice must be clearly labelled at the top indicating a receipt for “CREDIT”, “DEBIT” or “PAYMENT”.

Under normal conditions, only invoices for the users billing centre may be paid. The user may override this, in which case all invoices for the selected account will be displayed.

The transaction management interface also allows the user to export relevant accounting information to external accounting systems. This information includes the invoices, payments and credit and debit adjustments included in the transactions data set.

Two mechanisms are provided for this. The first mechanism is a direct update to the accounting system via the external accounting system interface, which uses network database services (JDBC). This is the preferred approach in that the transfer to the external accounting system can be verified on a per-record basis, and the transferred records can be marked to indicate this in the billing database.

The second is via an exported .csv file which may be imported into the external accounting system. This mechanism does not permit the billing system to keep track of which records have been transferred to the external accounting system.

5.2.3

Form

Receipt	Number	Account	Date/Time	Description	Type	Amount	Currency	Exchange Rate To USD	Exchange Rate To ANSP	Balance	Payment Reference Number	Payment Mechanism
FT-Receipt000617		AGNES MOGWE	2019-02-26 20:10	WATER FROM APR18 TO JAN19	Credit	863.16	BWP	0.09570	1.00000	0.00	FTPOS000467	debit
FT-Receipt000618		AGNES MOGWE	2019-02-26 19:48	Prepaid Electricity FBFT	Credit	100.00	BWP	0.09570	1.00000	863.16	FTPOS000467	debit
		AGNES MOGWE	2019-02-26 19:48	FT002355	Debit	100.00	BWP	0.09570	1.00000	963.16	FT002355	invoice
SSKIA-Receipt001287		TAB Charters	2019-02-26 17:31	Aeronautical fees	Credit	3,776.78	BWP	0.09570	1.00000	5,446.93	POS 656040	credit
		TAB Charters	2019-02-26 17:31	SSKIA004094	Debit	3,776.78	BWP	0.09570	1.00000	9,223.71	SSKIA004094	invoice
SSKIA-Receipt001286		Air Botswana	2019-02-26 17:23	AIRPORT ID oDUETSE LETSHOGO	Credit	250.00	BWP	0.09570	1.00000	11,300.532.57	N/A	cash
		Air Botswana	2019-02-26 17:23	SSKIA004093	Debit	250.00	BWP	0.09570	1.00000	11,300.782.57	SSKIA004093	invoice
		FRENCH AIRFORCE	2019-02-26 17:18	SSKIA004092	Debit	4,672.85	BWP	0.09570	1.00000	4,672.85	SSKIA004092	invoice
SSKIA-Receipt001285		Kalahari F. Club	2019-02-26 17:12	Hanger-Plot 2 JAN 2019	Credit	615.00	BWP	0.09570	1.00000	50,740.00	N/A	cash
SSKIA-Receipt001284		Kalahari F. Club	2019-02-26 17:09	Prepaid Electricity	Credit	1,000.00	BWP	0.09570	1.00000	51,355.00	N/A	cash
		Kalahari F. Club	2019-02-26 17:09	SSKIA004091	Debit	1,000.00	BWP	0.09570	1.00000	52,355.00	SSKIA004091	invoice
SSKIA-Receipt001283		Kalahari F. Club	2019-02-26 17:07	FEBRUARY 2019	Credit	615.00	BWP	0.09570	1.00000	51,355.00	N/A	adjustment
SSKIA-Receipt001282		AEROMEDICAL CLINIC	2019-02-26 16:42	Prepaid Electricity	Credit	100.00	BWP	0.09570	1.00000	0.00	N/A	cash
		AEROMEDICAL CLINIC	2019-02-26 16:42	SSKIA004090	Debit	100.00	BWP	0.09570	1.00000	100.00	SSKIA004090	invoice
SSKIA-Receipt001281		Joseph Maome	2019-02-26 16:29	Prepaid electricity	Credit	300.00	BWP	0.09570	1.00000	327.70	POS 002538	debit

Item	Description
Number	Indicates Invoice/Receipt/Credit Note/Debit Note unique number
Account	Account that the record is related to
Date/Time	The date and time the record was created

Item	Description
Description	Description entered by the User creating the transaction
Type	Indicates the record type. It can be: Credit: For credit transactions Debit: For debit transactions
Amount	The amount of the transaction
Currency	The currency used for the transaction
Exchange Rate to USD	Exchange rate to USD on the date of the transaction
Balance	The Account's balance Note: Every account will have 2 balances, one in USD and one in the ANSP's currency
Payment Reference	The reference number of the transaction ((i.e. cheque number, credit card transaction number, debit card transaction number, etc.)

Civil Aviation Authority of Botswana P O Box 250 Gaborone Botswana Tel: 3688200 / 3913236, Fax: 3913121	Physical Address: Plot 61020 Fairground Office Park Gaborone Botswana												
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<u>RECEIPT</u>													
AIRPORT/STATION.....													
RECEIPT NUMBER: 18													
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	Name	Position	Signature	Date									
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Civil Aviation Authority of Botswana													

5.3 Pending Transaction Management

5.3.1 Background

Pending transactions are credit transactions which require approval before they can be inserted in the system. These only will exist if transaction workflows are enabled, otherwise transactions are immediately inserted when they are created, and they skip the pending state.

5.3.2 Interface

The pending transaction management interface allows the user to query, display, filter, approve or reject pending transaction records.

Access to the transaction management interface is controlled by the transaction_pending_view and transaction_pending_modify privileges.

The pending_transactions are displayed in a datagrid following the conventions described under data grid display. The default sort order is transaction date / time descending.

Account name is joined from the accounts table.

The following dataset filters are provided:

- General text; and
- Approval level.

If the user is in the group given access to approving or rejecting a pending transaction at a given level, he may approve or reject the transaction.

If the transaction is approved:

- If the next level for the transaction is not the final level, it will remain a pending transaction and its current level will be set to the approval level.
- If the next level for the transaction is the final level, a transaction record is created and the pending traction is deleted.

If the transaction is rejected:

- If the deletion flag is set, it will be deleted.
- If the deletion flag is not set, it will remain a pending transaction and its current level will be set to the rejection level.

5.3.3 Form

Pending Transactions

Select an approval document to attach to the transaction (.jpg, .gif, .png, .pdf)

APPROVE REJECT

Filter Approval Level Filter REFRESH

Account	Description	Date / Time	Type	Amount	Exchange Rate To USD	Payment Ref. Number	Payment Mechanism	Approval Level	Previous Action	Approval Document	Supporting Document
There are no Pending Transactions											
< 1 >											

Item	Description
Account	Account related to the transaction
Description	Description entered by the User creating the transaction
Date/Time	The date and time the record was created

Item	Description
Type	Indicates the transaction record type
Amount	The amount of the transaction
Exchange Rate to USD	Exchange rate to USD on the date of the transaction
Payment Ref. Number	The reference number of the transaction (i.e. cheque number, credit card transaction number, debit card transaction number, etc.)
Payment Mechanism	Payment method used to create the transaction
Approval Level	The approval level reached by the record
Previous Action	The previous approval level reached by the record

The interface, selecting a record, displays at the bottom of the display area the information related to the Pending Credit Transaction:

- Related Invoices: Invoices affected by the Credit Note selected.
- Charges Adjustments: Charges contained in the Credit Note selected

5.4 Certificate Management

5.4.1 Background

The certificates table contains all certificates issued by the ANSP.

5.4.2 Interface

The certificates management interface allows the user to query, display, filter, create, modify and delete certificate records.

Access to the certificate management interface is controlled by the certificates_view and certificates_modify privileges.

The certificates are displayed in a datagrid following the conventions described under data grid display. The default sort order is certificate date of issue descending.

The following dataset filters are provided:

- General text; and
- Status (active, near-expired, expired);

Near expired certificates are identified as certificates with an expiry date less than the renewal warning interval in the future for which a renewal reminder has not been sent. The user may identify these charges and automatically send an email reminder to the account's email address.

5.4.3 Form

[TBD] Not implemented.

Item	Description

Item	Description

5.5 Aviation Billing Engine

5.5.1 Interface

The aviation billing engine provides the user with the following functions:

- Resolve flight movement information (accounts, registration, and aircraft types);
- Recalculate flight movement costs (enroute, approach, aerodrome, late arrival and departure, parking, passenger);
- Validate flight movements;
- Preview IATA invoice;
- Preview non-IATA invoice;
- Generate IATA invoice; and
- Generate non-IATA invoice.

Access to the aviation billing engine interface is controlled by the `aviation_invoice_resolve`, `aviation_invoice_recalculate`, `aviation_invoice_validate`, `aviation_invoice_preview` and `aviation_invoice_generate` privileges.

System settings may affect the operation of this interface. The behaviour which may change is noted in the description with an asterisk:

- Support for IATA invoicing: when disabled, the type of invoice is set to non-IATA.
- Support for invoicing by flight movement type: when disabled, the user does not select a flight category for invoicing and flights of all categories are included on the invoice.

The user selects the type of invoice being generated (IATA or non-IATA)*. Note: if IATA is selected, selection of flight movement category is disabled and “all categories” is displayed. USD currency is always used for IATA invoices.

The user selects the billing interval (IATA is always monthly, non-IATA is monthly or weekly).

The user selects the year the operations are to be performed on (default is the year of the last day in the selected billing period).

The user selects the billing period the operations are to be performed on: month if monthly and week if weekly (default is the last month for monthly, and the last week for weekly; the select list is in reverse chronological order).

The user selects the category of flight movements to be included in the invoice.*

The user selects whether the invoice is to include all flights for all billing centres or only flights for the user’s billing center.

For preview (IATA or non-IATA) and generate (non-IATA) invoices, the user may select one or more (or all) accounts. (For final IATA invoice generation, there is a single invoice containing flights for all accounts).

The user selects the ordering of data in the IATA invoice (date, account) or (account, date) (IATA invoice).

When IATA invoices are generated, only IATA accounts are included in the invoice (or presented in the list of accounts which may be selected).

When non-IATA invoices are generated, all accounts are included in the invoice (or presented in the list of accounts which may be selected).

The billing centre for the invoice is determined by the user's profile. The billing location code is selected by the user from the list of aerodromes serviced by the billing centre. Invoice numbers may be assigned sequentially across the entire system or on a per-billing-centre basis depending on the system parameters. The invoice number is prefixed by the billing centre's prefix.

Prior to generating invoices, the system does an automatic flight movement validation. If flight movements have a status of incomplete indicating that they do not have complete information and cannot be invoiced, the invoice generation cannot be completed until the issue is addressed or the flight movement is deleted.

IATA invoices are generated in USD. Non-IATA invoices are generated in the account currency. All currency calculations are rounded to the number of digits specified for the currency.

Invoices may be generated in DOC, XLS, CSV, PDF and TXT as defined in the invoice template. The IATA invoice template is always XLS.

Resolve flight movement information:

- Executes the same logic as the flight movement builder on the selected set of flight movements.
- Is used for updating flight movements after account, aircraft type or aircraft information has been updated.

Recalculate flight movement costs:

- Executes the same logic as the flight movement builder on the selected set of flight movements.
- Is used for updating flight movement costs after account, aircraft type, aircraft, navigation billing formulas, or air navigation charges schedules have been modified.

Validate flight movements:

- Generates a list of all records in the selected set of flight movements, and for each flight movement which has a status of incomplete, identifies why it is incomplete.
- The list includes account, flight id, registration number, day of flight, departure time and reason the flight is incomplete. The list is sorted by the above fields.
- Possible causes are:
 - Unresolved aircraft type;
 - Unresolved account;
 - No parking time for departure;
 - No billable flight track;
 - Zero length billable flight track;
 - No international passenger count;
 - No domestic passenger count;
 - No parking time;

- No flight plan;
- No radar track;
- No ATC log;
- No tower log;
- No passenger service charge return; and
- Small aircraft without valid AoC (KCAA).

Preview IATA invoice:

- Generates a document (XLS) for the IATA aviation charges invoice (single document, single invoice, all or selected account).

Preview non-IATA invoice:

- Generates a document (XLS, DOC, PDF or TXT) for the enroute, passenger and other aviation charges invoice (single document, separate invoices, one per account).
- If separate passenger invoices are specified for an account, a second document (XLS, DOC, PDF or TXT) containing the passenger charges invoice is generated and they are not included in the first document (single document, separate invoices, one per account).

Generate IATA invoice:

- All operations below are wrapped in a single database transaction which atomically completes or fails;
- Generates a document (XLS) for the IATA aviation charges invoice (single document, single invoice, all accounts);
- Creates a invoice record for each invoice with a status of new, approved or published depending on the workflow settings in the systems parameters; and
- Updates the status of selected flight movements to indicate that enroute charges have been invoiced, and to link them to the generated enroute invoice.

Generate non-IATA invoice:

- All operations below are wrapped in a single database transaction which atomically completes or fails;
- Generates a document (DOC, XLS, PDF, TXT) for the enroute charges invoice (multiple documents, one per account);
- If separate passenger invoices are specified for an account, a second document (XLS, DOC, PDF or TXT) containing the passenger charges invoice is generated and they are not included in the first document (separate document, separate invoices, one per account).
- Creates an invoice record for each invoice; and
- Updates the status of selected flight movements to indicate that enroute, passenger and/or other charges have been invoiced, and to link them to the generated enroute, passenger and/or other charges invoice.

A flight movement contains six possible crossing distances – scheduled, radar, ATC, tower, nominal and user. One of radar, ATC log or tower are always given. Nominal may or may not be assigned. The billing engine can be configured to use any of these by requesting it to use:

- The smallest value (smallest);
- The largest value (largest);

- First of list (user,nominal,radar,ATC,scheduled,tower). The list may contain one to six of the keywords in any order. The order shown above would be a normal ordering.

Handling of Prepaid Flights

IATA invoices do not usually contain prepaid flight movements. Non-IATA invoices may contain them. Each flight movement is an invoice line item. The cost of the line item reflects the difference between the actual flight movement cost and amount prepaid. Typically, the invoice template shows all three amounts (flight movement cost, amount prepaid and amount owing).

Handling of Account Credits

If an account has a credit balance at the time the invoice is generated, this amount (up to the invoice total) is shown on the invoice cover page following the invoice total and is subtracted from the total to create the amount owing. The invoice amount is the invoice total prior to application of credits. A transaction payment is made against the invoice from the account credit.

Handling of Accounts Which Exceed Their Credit Limit

No special handling is implemented for accounts which exceed their credit limit.

Handling of Overdue Invoices and Penalties

If an account has an overdue invoice owing, then a penalty amount is calculated based on the monthly penalty rate associated with the account, and an invoice line item for this amount is added to the invoice. This results in this amount being added to the invoice.

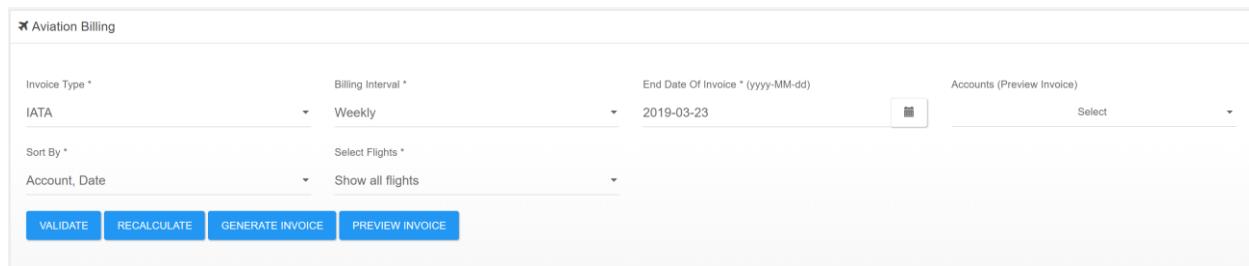
Exchange Rates Used For Invoicing

Credit invoices use the exchange rates defined for the last day of the billing period.

Display of Account Balance

For credit accounts, the account balance is displayed at the bottom of the report. The account balance is calculated as the current account balance plus the amount of the invoice. Since a period of time may pass between the generation of the invoice and the invoice being published, it is possible that the account balance may be incorrect on the invoice at publishing time.

5.5.2 Form



The screenshot shows a user interface for generating an invoice. At the top left is a logo for 'Aviation Billing'. Below it are several input fields and dropdown menus:

- Invoice Type ***: A dropdown menu set to "IATA".
- Billing Interval ***: A dropdown menu set to "Weekly".
- End Date Of Invoice * (yyyy-MM-dd)**: A date picker showing "2019-03-23".
- Accounts (Preview Invoice)**: A dropdown menu with a "Select" option.
- Sort By ***: A dropdown menu set to "Account, Date".
- Select Flights ***: A dropdown menu set to "Show all flights".
- Buttons at the bottom:**
 - VALIDATE
 - RECALCULATE
 - GENERATE INVOICE
 - PREVIEW INVOICE

Item	Description
Invoice Type	Indicates the invoice type that the user is generating. Invoice types are:

Item	Description
	IATA: generates one document, for all the IATA Member account, contains only Enroute charges. NON-IATA: generates one document per Account. Contains Landing and Other charges for the IATA Member Account, Enroute, Landing, and Other charges for Accounts non IATA Member.
Billing Interval	Indicates the interval of time for the invoice generation. It can be: Weekly: in case invoices are generated every week. Monthly: In case invoices are generated monthly.
Billing Period	The period to be invoiced Note: If the Billing Interval is “Weekly”, the User will select the last day of the week to be billed. If the Billing Interval is “Monthly”, the User will select the month to be billed. Either cases the Invoice Generation is disabled if the Billing Period selected is not over yet.
Accounts	The Account or the Accounts that will be billed
Sort By	Allows the User to select the sorting of the record in the Invoice. The Sorting can be: Account, Date: All the records will be sorted first per Account name, ascending order, and then per day of flight, ascending. Date, Account: All the records will be sorted first per day of flight Ascending, and then per Account name, ascending order.
Select Flights	Indicates if the invoice has to bill all the flights for the Billing Period, or only the flights related to the Billing Centre where the User is operating.

5.6 Non-Aviation Billing Engine

5.6.1 Interface

The non-aviation billing engine is similar to the point of sale invoice generation except that it has the accounts and line items for the invoices pre-defined. The operator need only fill in the line item specific details for each line item and then may preview or generate the invoice.

The non-aviation billing engine provides the user with the following functions:

- Prepare line items;
- Preview invoice; and
- Generate invoice.

Access to the non-aviation billing engine interface is controlled by the nonaviation_invoice_prepare, nonaviation_invoice_preview and non-aviation_invoice_generate privileges.

Invoices may be generated in DOC, XLS, CSV, PDF and TXT as defined in the invoice template.

The billing centre for the invoice is determined by the user's profile. The billing location code is the default billing location code for the billing centre. Invoice numbers may be assigned sequentially across the entire system or on a per-billing-centre basis depending on the system parameters. The invoice number is prefixed by the billing centre's prefix.

Invoices are generated in the account currency. All currency calculations are rounded to the number of digits specified for the currency.

The user selects the month of data the operations are to be performed on and may select one or more (or all) accounts. Only accounts for which there are existing line items or recurring charges scheduled may be selected.

The user selects whether the invoice is to include all line items for all billing centres or only line items for the user's billing center.

The user may upload and link multiple supporting documents to a non-aviation invoice.

Preview invoice:

- Generates the invoice documents for the selected accounts.

Generate invoice:

- All operations below are wrapped in a single database transaction which atomically completes or fails;
- Generates the invoice document for the selected account;
- Creates a invoice record for the invoice; and
- Updates the status of invoice line items to indicate they have been invoiced.

Handling of Account Credits

If an account has a credit balance at the time the invoice is generated, this amount (up to the invoice total) is shown on the invoice cover page following the invoice total and is subtracted from the total to create the amount owing. The invoice amount is the invoice total prior to application of credits. A transaction payment is made against the invoice from the account credit.

Handling of Accounts Which Exceed Their Credit Limit

No special handling is implemented for accounts which exceed their credit limit.

Handling of Overdue Invoices and Penalties

If an account has an overdue invoice owing, then a penalty amount is calculated based on the monthly penalty rate associated with the account, and an invoice line item for this amount is added to the invoice. This results in this amount being added to the invoice.

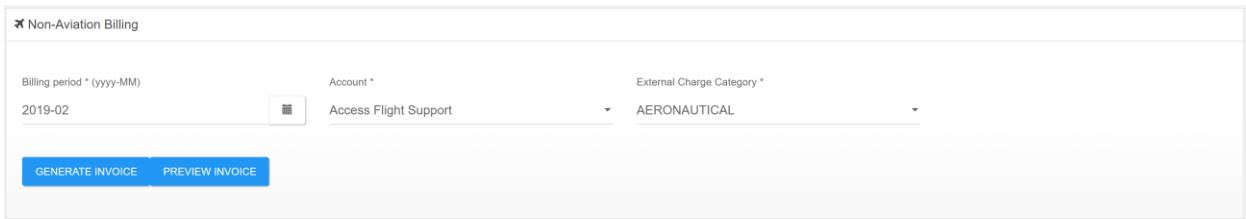
Exchange Rates Used For Invoicing

Credit invoices use the exchange rates defined for the last day of the billing period.

Display of Account Balance

For credit accounts, the account balance is displayed at the bottom of the report. The account balance is calculated as the current account balance plus the amount of the invoice. Since a period of time may pass between the generation of the invoice and the invoice being published, it is possible that the account balance may be incorrect on the invoice at publishing time.

5.6.2 Form



The screenshot shows a user interface for generating an invoice. At the top left is a checkbox labeled "Non-Aviation Billing". Below it are three input fields: "Billing period * (yyyy-MM)" containing "2019-02", "Account *" containing "Access Flight Support", and "External Charge Category *" containing "AERONAUTICAL". At the bottom of the form are two buttons: "GENERATE INVOICE" in blue and "PREVIEW INVOICE" in grey.

Item	Description
Billing Period	Indicates what month is going to be billed
Account	Indicates the Account that will be billed
External Charge Category	

5.7 Point of Sale Invoice Generation

5.7.1 Interface

The point of sale invoice generation interface allows the user to generate and print an invoice and its associated receipt.

Access to the point of sale invoice generation interface is controlled by the `point_of_sale_access` privilege.

System settings may affect the operation of this interface. The behaviour which may change is noted in the description with an asterisk:

- Support for IATA invoicing: when disabled, all accounts may be invoiced regardless of IATA membership.
- Support for invoicing by flight movement type: when disabled, the user does not select a flight category for invoicing and flights of all categories are included on the invoice.

Invoices may be generated in DOC, XLS, CSV, PDF and TXT as defined in the invoice template.

Invoice numbers may be assigned sequentially across the entire system or on a per-aerodrome basis depending on system settings. The invoice number may be prefixed with the aerodrome name or the ANSP name.

Invoices are generated in the account currency. All currency calculations are rounded to the number of digits specified for the currency.

The user selects an account. If the account does not exist, the user is able to directly access the account creation interface, and on completion of account creation return to the point of sale interface.

The user selects the type of sale (aviation or general). This determines which items may be included in the invoice, based on the invoice type in the service charge catalogue.

The user selects the category of flight movements to be included in the invoice.*

The billing centre for the invoice is determined by the user's profile. Invoice numbers may be assigned sequentially across the entire system or on a per-billing-centre basis depending on the system parameters. The invoice number is prefixed by the billing centre's prefix.

Under normal conditions, only flights for the users billing centre may be invoiced. The user may override this, in which case all flights for the selected account will be displayed.

Aviation sales:

- The billing location code is selected by the user from the list of aerodromes serviced by the billing centre.
- Only flights may be added to the invoices. Flights are added by selecting them from a list of flights for the selected account which have not been invoiced or by manually creating a flight movement. In the case of the later, the system ensures that the flight movement created belongs to the selected account. The flight movement creation and editing form is used to allow the user to enter the flight movement information.
- The user enters the flight plan information required to complete the cost calculation.
- The user may select any flight previously entered on the invoice and may modify or delete it.
- When all flights have been entered, the user may complete the sale.

Non-aviation sales:

- The billing location code is the default billing location code for the billing centre.
- Only point-of-sale items from the service charge catalogue may be added.
- The user selects one or more charges from the service charge catalogue. As each service charge is selected, the user is allowed to enter any additional information required (i.e. units) to complete the cost calculation.
- The user may select any charge previously entered on the invoice and may modify or delete it.
- The user may upload and link multiple supporting documents to a non-aviation invoice.
- When all charges have been entered, the user may complete the sale.

Sale completion operations:

- All operations below are wrapped in a single database transaction which atomically completes or fails;
- Creates the line items or flight movements for the invoice;
- Generates the invoice document for the account;
- Creates an invoice record for the invoice; and
- Updates the status of invoice line items to indicate they have been invoiced;
- Optionally for credit accounts and mandatory for cash accounts, a payment may be made. The user is able to directly access the transactions interface and complete a credit transaction. For cash accounts, the payment amount must be the amount of the invoice.
- Events for completion of the sales transaction are described under the transactions interface;
- On completion of the sales transaction, the user returns to the point of sale interface.

Handling of Account Credits

If an account has a credit balance at the time the invoice is generated, this amount (up to the invoice total) is shown on the invoice cover page following the invoice total and is subtracted from

the total to create the amount owing. The invoice amount is the invoice total prior to application of credits. A transaction payment is made against the invoice from the account credit.

Handling of Accounts Which Exceed Their Credit Limit

If a credit account's balance plus the amount of the invoice exceeds the account's credit limit, the generation of the invoice and payment of it is handled as a cash account transaction.

Handling of Overdue Invoices and Penalties

If an account has an overdue invoice owing, then a penalty amount is calculated based on the monthly penalty rate associated with the account, and an invoice line item for this amount is added to the invoice. This results in this amount being added to the invoice.

Exchange Rates Used For Invoicing

Cash invoices use the exchange rates defined for the current day.

Display of Account Balance

For credit accounts, the account balance is displayed at the bottom of the report. The account balance is calculated as the current account balance plus the amount of the invoice. Since a period of time may pass between the generation of the invoice and the invoice being published, it is possible that the account balance may be incorrect on the invoice at publishing time.

Point of Sale Workflow Setting

The system supports three point of sale workflow settings:

- Cash – all accounts use the cash account workflow (generate and pay option);
- Credit – all accounts use the credit account workflow (generate option); and
- Mixed – cash accounts use the cash account workflow (generate and pay option), credit accounts may use either the credit account workflow (generate or generate and pay options).

5.7.2 Form - Aviation

The screenshot shows a user interface for generating invoices. At the top, there's a header "Point Of Sale Invoice Generation". Below it, there are dropdown menus for "Accounts Type" (set to "Cash Accounts") and "Type Of Sale" (set to "Aviation"). To the right of these, there's a dropdown for "Select Flights" with an option "Show flights for my billing centre". Below the dropdowns are two blue buttons: "ADD A NEW ACCOUNT" and "ADD A NEW AIRCRAFT REGISTRATION". Underneath these buttons is a "CREATE FLIGHT" button. At the bottom of the form, there's a table with columns: Flight Selection, Flight ID, Date Of Flight, Departure Time, Departure Airport, Arrival Airport, Aircraft Type, Flight Type, and Status. A note below the table says "There are no existing flight movements for this account that can be billed".

Item	Description
Account Type	Indicates the type of Account to be billed: Cash Accounts (ref. Operations, Accounts) Credit Accounts (ref. Operations, Accounts)
Account	The account to be billed
Type of Sale	The type of sale that will be done. Such as: Aviation: It allow to generate aviation invoices. The system will display a list of flights for the selected Accounts.

Item	Description
	General: It allow to generate non-aviation invoices. The system will display a form to select non-aviation charges to be billed (ref. Charges and Formula, Service Charge Catalogue).
Show Flights	Indicates if the system has to display all the flights for the selected Account, or only the flights related to the Billing Centre where the User is operating.

5.7.3 Form – Non-Aviation

Point Of Sale Invoice Generation

Accounts Type	Account *	Type Of Sale *
All Accounts	51 Degrees Limited	General
ADD A NEW ACCOUNT		ADD A NEW AIRCRAFT REGISTRATION
Category	Type	Description
<input type="text"/>	<input type="text"/>	<input type="text"/>
CLEAR		
CALCULATE INVOICE	PREVIEW INVOICE	
GENERATE INVOICE	GENERATE AND PAY INVOICE	

Item	Description
Account Type	Indicates the type of Account to be billed: Cash Accounts (ref. Operations, Accounts) Credit Accounts (ref. Operations, Accounts)
Account	The account to be billed
Type of Sale	The type of sale that will be done. Such as: Aviation: It allow to generate aviation invoices. The system will display a list of flights for the selected Accounts. General: It allow to generate non-aviation invoices. The system will display a form to select non-aviation charges to be billed (ref. Charges and Formula, Service Charge Catalogue).
Show Flights	Indicates if the system has to display all the flights for the selected Account, or only the flights related to the Billing Centre where the user is operating

5.8 Passenger Revenue Reconciliation (KCAA)

5.8.1 Interface

The passenger revenue reconciliation interface provides the user with the ability to compare the amount of passenger revenue that should have been collected for international and domestic passengers with the total amount of revenue received.

Access to the passenger revenue reconciliation interface is controlled by the passenger_revenue_reconcile privilege.

The user selects the start and end date the reconciliation operation is to be performed over.

The user enters the amount of international passenger revenue and the amount of domestic passenger revenue received in the currency defined for each category.

International and domestic passenger charges which have already been calculated for each flight movement are summed and compared with the passenger revenue amounts received entered by the user. The international and domestic totals calculated are displayed for the user, along with the percentage the amount received is of these totals.

If the passenger revenue amounts received are less than 0.98 (98%) of the total calculated, the user is notified of the discrepancy.

Passenger charges for each flight movement are calculated as follows:

$\text{IntlFee} = \text{IntlPaxNbr} * \text{IntlPaxFee}$ for this aerodrome category * PctPaxFee for this account.

$\text{DomFee} = \text{DomPaxNbr} * \text{DomPaxFee}$ for this aerodrome category * PctPaxFee for this account.

5.8.2 Form

The screenshot shows a form titled "Passenger Revenue Reconciliation". It includes fields for "Start Date * (yyyy-MM)" (2019-03), "End Date * (yyyy-MM)" (2019-04), "Domestic Payment (BWP) *" (0), "International Payment (BWP) *" (1), and a "RECONCILE" button.

Item	Description
Start / End Date	Indicates the period to reconcile
Domestic Payment	The amount of revenue collected for Domestic Passengers
International Payment	The amount of revenue collected for International Passengers

6 FLIGHT DATA

The flight data submenu contains all the interfaces related to the generation and payment of invoices.

These interfaces include:

- Flight Movements;
- Flight Schedules;
- Radar Flight Strips;
- Tower Movement Logs;
- ATC Movement Logs;
- Passenger Service Charge Returns; and
- Rejected Items.

6.1 Flight Movement Management

6.1.1 General

The flight movements table contains all flight movements relevant to the ANSPs billing. It is updated by the flight movement builder with information from the flight plan database, ATM/FDPS system, radar interface, ATC movement log, tower aircraft / passenger movement log, passenger service charge return and manual flight plan entry.

A flight movement is an instance of an aircraft flight. They are categorised based on their flight scope (domestic, regional, international) their type (domestic, arrival, departure, overflight) and nationality (foreign, national). The categorisations used are ANSP specific, and are defined in the flight categories table.

The flight movement management interface allows the user to query, display, filter, create, modify and delete flight movement records.

Access to the flight movement management interface is controlled by the `flight_movement_view` and `flight_movement_modify` privileges.

ARMS allows the user to display flight movements:

- In a data grid;
- In a data entry form;
- In a GIS mapping environment; and
- In a flight plan form.

It is possible to view these simultaneously.

6.1.2 Data Grid Display Interface

The flight movements are displayed in a datagrid following the conventions described under data grid display. The default sort order is day of flight and departure time descending.

The following dataset filters are provided:

- General text;
- Temporal (start/end); and
- Flight Category:

- All types defined in the flight movement category table.
- Flight movement status:
 - Active flight movements (includes incomplete and pending);
 - Rejected flight movements (includes cancelled and deleted);
 - Invoiced flight movements (includes invoiced and paid);
 - Cancelled flight movements;
 - Deleted flight movements;
 - Incomplete flight movements;
 - Pending (complete) flight movements;
 - Invoiced flight movements; and
 - Paid flight movements.
- Incomplete flight movement reason:
 - Incomplete flight movements – all (aka flights rejection list);
 - Missing MTOW;
 - No associated account;
 - Unspecified aircraft type;
 - Zero length billable track;
 - Missing parking time;
 - Radar flight strip incomplete;
 - Flight plan incomplete;
 - ATC movement log incomplete;
 - Tower aircraft / passenger incomplete;
 - Passenger service charge return incomplete;
 - Passenger domestic information incomplete;
 - Passenger international information incomplete;
 - Unspecified departure aerodrome; and
 - Unspecified destination aerodrome.
- Invoice status:
 - Enroute pending;
 - Enroute invoiced;
 - Enroute paid;
 - Passenger pending;
 - Passenger invoiced;
 - Passenger paid;
 - Other pending;
 - Other invoiced;
 - Other paid.
- Account Type:
 - IATA; and
 - Non-IATA.

Operationally significant data (as described above) is identified visibly (by row background colour) when records are displayed.

The data displayed may be sorted in ascending or descending order by clicking on any column header. In addition to this, two canned sort options are available:

- Date - day of flight, departure time, operator, registration number; and
- Aircraft - registration number, day of flight, departure time.

The departure/destination locations displayed in the data grid may be toggled between those described in the flight plan in item 13 and 18, or those specified in item 18.

The flight movement management interface also provides a utility for displaying suspected duplicate or missing flight plans. This displays the flights ordered by registration number, day of flight and departure time and identifies suspected duplicate or missing flights.

Detection of possible duplicate flights is based on adjacent flights having:

- The same registration number, departure and destination.
- Difference between day-of-flight/departure time less than X times the EET.

Detection of possible missing flights is based on adjacent flights having:

- Subsequent flight has a departure different from the preceding flight's destination.
- Flight is not flagged as being a possible duplicate.

The duplicated flights and first flight following a suspected missing flight are highlighted using different colours for duplicated and missing flights.

The flight movement management interface can be accessed directly from the account management interface where all flight movements associated with the account are displayed, and also through the invoice interface where all flight movements associated with an invoice are displayed.

The flight movement management interface provides direct access to the registration number, aircraft type and account management interfaces by clicking on that data element. The record corresponding to the data value clicked is displayed. If the data record does not exist (for registration number or aircraft type), the data entry form is displayed and the value for the field clicked is auto-filled as the key.

6.1.3

Data Grid Display Form

Select	Action	Day of Flight	Dep Time	Dep Ad	Desi Ad	Flight Id	Reg Number	Account Name	Status	A/C Type	WTC	MTOW (kg)	Flight Movement Type	Blacklisted	Enroute Basis	Enroute (USD)	Terminal Control (BWP)	Aerodrome (BWP)	Dom PAX (BWP)	Intl PAX (BWP)
<input type="checkbox"/>		2019-03-25	1200	FBOR	FLHN	A2AGO	A2AGO	Debswana	INCOMPLETE	BE20	L	5,670	International Departure	Yes	Scheduled	18.77	0.00	0.00		
<input type="checkbox"/>		2019-03-01	0800	FALA	FVRG	ZSNLF	ZSNLF		INCOMPLETE	BE20	L	5,670	Other	No			0.00	0.00		
<input type="checkbox"/>		2019-02-28	2100	EDDF	FAOR	DLH572	DABYH	Lufthansa	PENDING	B748	H	441,799	International Overflight	Yes	ATC Log	386.40	0.00	0.00		
<input type="checkbox"/>		2019-02-28	1900	FNLU	FAOR	DTA575	D2TBJ	TAAG Angolan Airlines	PENDING	B737	M	69,191	International Overflight	Yes	ATC Log	161.99	0.00	0.00		
<input type="checkbox"/>		2019-02-28	1850	FNLU	FQMA	DTA583	D2TBK	TAAG Angolan Airlines	PENDING	B737	M	69,191	International Overflight	Yes	ATC Log	160.25	0.00	0.00		
<input type="checkbox"/>		2019-02-28	1845	FAOR	FZAA	SAA058	ZSSZB	South African Airways	PENDING	A320	M	77,619	International Overflight	Yes	ATC Log	168.25	0.00	0.00		
<input type="checkbox"/>		2019-02-28	1840	FAOR	LEMD	IBE0058	ECMNL	Iberia	PENDING	A332	H	232,566	International Overflight	Yes	ATC Log	291.23	0.00	0.00		
<input type="checkbox"/>		2019-02-28	1800	FAOR	FBSK	BOT202	A2ABL	Air Botswana	PENDING	AT78	M	22,997	International Arrival	Yes		0.00	0.00	0.00		
<input type="checkbox"/>		2019-02-28	1755	FLKK	FAOR	SFR542	ZSJRC	Safair	PENDING	B734	M	62,659	International Overflight	Yes	ATC Log	19.60	0.00	0.00		
<input type="checkbox"/>		2019-02-28	1730	FYWE	FAOR	WAA901	VSASB	Westair Aviation	PENDING	F408	L	4,227	International Overflight	Yes	ATC Log	18.77	0.00	0.00		
<input type="checkbox"/>		2019-02-28	1730	FAOR	FYWH	SAA078	ZSSPH	South African Airways	PENDING	A319	M	69,935	International Overflight	Yes	ATC Log	121.09	0.00	0.00		

Item	Description
Day of Flight	Indicates when the flight takes off
Dep Time	Departure time
Dep Ad	Departure Aerodrome
Dest Ad	Destination Aerodrome
Flight ID	The Flight Id (ACID, or Callsign), as inserted via UI, FPL, Radar Summary, ATC log, or Tower Log.
Registration Number	Aircraft Registration number as inserted via UI, FPL, Radar Summary, ATC log, or Tower Log. It is used to identify the correct MTOW
Account Name	<p>Account that operated the Flight. The system has several ways to detect the Account Name:</p> <p>Using the ICAO/IATA identifier from the Flight ID, if present. The system compares the Flight ID prefix to the ICAO and IATA prefixes set in the Account records, to detect the correct flight operator.</p> <p>Using the Item18 OPR/ identifier, if present. The system parses the Item18 OPR/ identifier and compares it to the OPR Identifier set in the Account records, to detect the correct flight operator.</p> <p>Using the Aircraft Registration records, if present. The system parses the Item18 REG/ and search for it in the Aircraft Registration Datagrid. If a match is found, the Account registered with that Aircraft Registration number is set as Flight operator.</p> <p>Via UI. The User set the Account from a predefined list present in the view/edit form (the records present in the Accounts Datagrid).</p>
Status	<p>Identifies the status of the Flight Movement. Statuses can be:</p> <p>INCOMPLETE = Some information are missing.</p> <p>PENDING = Flight ready to be billed.</p> <p>INVOICED = All the invoice related to this flight have been issued (Enroute, Landing/Parking, Passengers, etc.).</p> <p>PAID = the related invoice has been completely paid.</p> <p>CANCELED = When the FPL receive a cancellation message.</p>
A/C Type	Type of aircraft used for the flight
WTC	The Wake Turbulence Category for the aircraft used
MTOW	Indicates the MTOW for the aircraft. If the registration number is stored into the system, the system will display, and use, the MTOW of the aircraft registration record
Flight Movement Type	<p>Indicates the Flight type, it can be:</p> <p>Domestic = Departure and Destination aerodromes within the ANSP's FIR.</p> <p>Regional Overflight = Departure and Destination aerodromes within the Regional Countries FIR, and the route cross the ANSP's FIR.</p>

Item	Description
	<p>Regional Arrival = Departure aerodrome within the Regional Countries FIR, and the Destination aerodrome within the ANSP's FIR.</p> <p>Regional Departure = Departure aerodrome within the ANSP's FIR, and the Destination aerodrome within the Regional Countries FIR.</p> <p>International Overflight = Departure and Destination aerodromes outside the Regional Countries FIR and the ANSP's FIR.</p> <p>International Arrival = Departure aerodrome outside the ANSP's FIR and the Regional Countries FIR, and the Destination aerodrome within the ANSP's FIR.</p> <p>International Departure = Departure aerodrome within the ANSP's FIR, and the Destination aerodrome outside the ANSP's FIR and Regional Countries FIR</p>

Billing Information

Item	Description
Blacklisted	Indicates if the account has overdue invoices
Enroute Basis	Indicates what crossing distance has been taken into account to bill the enroute charge
Aerodrome	Indicates the aerodrome charges as described in the related Air Navigation Charges record (ref. Charges and Formula, Air Navigation Charges Schedule, Aerodrome and Approach). Note: If aerodrome and approach charges are merged as ADAP, this column will not be visible. There will be an ADAP column with the sum of Aerodrome and Approach charges.
Approach	Indicates the approach charges as described in the related Air Navigation Charges record (ref. Charges and Formula, Air Navigation Charges Schedule, Aerodrome and Approach). Note: If aerodrome and approach charges are merged as ADAP, this column will not be visible. There will be an ADAP column with the sum of Aerodrome and Approach charges.
Dom PAX	Indicates total cost of domestic passengers according to the cost per person defined the related aerodrome category record (ref. Management, Billing Centres)
Intl PAX	Indicates total cost of International passengers according to the cost per person defined the related aerodrome category record (ref. Management, Billing Centres).
Late Arrival	Indicates the late arrival charge as described in the related Air Navigation Charges record (ref. Charges and Formula, Air Navigation Charges Schedule, Late Arrival). Note: If late arrival charge is disabled by system configuration the column will be hidden.
Late Departure	Indicates the late arrival charge as described in the related Air Navigation Charges record (ref. Charges and Formula, Air Navigation Charges Schedule, Late Arrival). Note: If late departure

Item	Description
	charge is disabled by system configuration the column will be hidden.
Parking	Indicates the total cost of the parking time, according to the related Air Navigation Charges record (ref. Charges and Formula, Air Navigation Charges Schedule, Parking). Note: If parking charge is disabled by system configuration the column will be hidden

Crossing Distances

Item	Description
Sched Dist	Indicates the distance calculated using the route inserted in the FPL
Radar Dist	Indicates the distance calculated using the waypoint reported in the Radar Summary.
Nominal Dist	Indicates the distance defined in the Nominal Distances, with no further calculations.
ATC Dist	Indicates the distance calculated using the waypoint reported in the ATC Movement log.
Tower Dist	Indicates the distance calculated using the waypoint reported in the Tower Movement log.
User Dist	Indicates the distance inserted manually by the User.
Resolution Errors	Indicates all the missing information that are preventing the Flight Movement to change Status, from INCOMPLETE (information missing) to PENDING (ready to be billed).

6.1.4 Data Grid Functions

The following functions may be performed on the selected set of flight movements:

- Generate invoice;
- Recalculate charges;
- Create flight movement; and
- Edit flight movement.

Generate Invoice:

The following criteria must be met for invoice generation:

- All selected flights must have a status of pending; and
- All selected flights must belong to the same account.

The invoice will be generated following the logic described in the aviation billing engine for non-IATA invoices.

Recalculate Charges:

The recalculate charges function recalculates the following flight movement charges following the same logic as the flight movement builder:

- Enroute;
- Approach;
- Aerodrome;
- Late arrival;
- Late departure;
- Parking; and
- Passenger.

If errors are encountered they are displayed for the user together as a list which identifies the flight (flight id, day of flight, departure time) and the cause of the error.

It also performs the following reconciliation operations:

- Radar summary
- ATC movement log
- Tower movement log
- Passenger service charge return
- Flight schedules

Discrepancies are displayed for the user together as a list which identifies the flight (flight id, day of flight, departure time) and the type of discrepancy.

Radar summary reconciliation compares the selected flight movements with radar summaries over the same time period. Possible discrepancies include:

- Radar summary does not have a corresponding flight movement;
- Flight movement does not have a corresponding radar summary; and
- Flight movement and radar summary have different departure or destination aerodromes; and
- Flight movement and radar summary have different aircraft types.

Note that some flights do not have radar summaries so the reconciliation process flags this as an informational, not a warning:

- Low level flights as defined by flight plan altitude and system defined parameter for radar floor;
- Flights to / from the delta locations

ATC log reconciliation compares the selected flight movements with ATC logs over the same time period. Possible discrepancies include:

- ATC log does not have a corresponding flight movement;
- Flight movement does not have a corresponding ATC log; and
- Flight movement and ATC log have different departure or destination aerodromes; and
- Flight movement and ATC log have different aircraft types.

Note that some flights do not have ATC logs so the reconciliation process flags this as an informational, not a warning. Specifically, flights that do not communicate with ATC, which include:

- Flights which are completed in a single TMA (circular flights, delta flights).

Tower log reconciliation compares the selected flight movements with tower logs over the same time period. Possible discrepancies include:

- Tower log does not have a corresponding flight movement;
- Flight movement does not have a corresponding tower log;
- Flight movement and tower log have different departure or destination aerodromes; and
- Flight movement and tower log have different aircraft types.

This function does not apply to overflights as they are not expected to communicate with an airport tower.

Passenger service charge return reconciliation compares the selected flight movements with passenger service charge return over the same time period. Possible discrepancies include:

- Passenger service charge return does not have a corresponding flight movement; and
- Flight movement does not have a passenger service charge.

This function only applies to domestic and international departures. Flight schedule reconciliation compares the selected flight movements with the flight schedules over the same time period. Possible discrepancies include:

- Flight schedule entry does not have a corresponding scheduled flight movement;
- Scheduled flight movement does not have a flight schedule entry.

Note: This function only applies to scheduled flights.

6.1.5 Data Entry Form

Edit a Flight Movement

Flight ID *	Registration Number	Date of Flight (yyyy-MM-dd) *	Departure Time (HHmm) *	Departure Aerodrome *	Aircraft Type *
A2AGO	A2AGO	2019-03-25	1200	FBOR	BE20
Destination Aerodrome *	Flight Type *	Account *	Arrival Aerodrome	Actual Arrival Time	User Crossing Distance (km)
FLHN	N	Debswana	FLHN	1300	
Item 18 Status	Item 18 Remarks	Item 18 Departure Aerodrome	Item 18 Destination Aerodrome	Item 18 Aircraft Type	Cruising Speed (Kmnn/Nnnn/Mnn)
Elapsed Time (Hhmm)	Parking Time (hours)	Chargeable International Passengers	Chargeable Domestic Passengers	Children	TASP Charge
669.73					
Flight Rule	Flight Level (Frrnn)				
Route *					
DCT KSV DCT LIV DCT					
Radar Route					
Flight Notes					
24HR OPERATIONS: .					
Deletion Reason					
<input type="button" value="CLEAR"/> <input type="button" value="UPDATE"/> <input type="button" value="DELETE"/>					

Flight Plan Data

Item	Description
Flight ID	Indicates the Flight Id (ACID, or Callsign), as inserted via UI, FPL, Radar Summary, ATC log, or Tower Log.
Registration Number	Aircraft Registration number as inserted via UI, FPL, Radar Summary, ATC log, or Tower Log. It is used to identify the correct MTOW.
Date of Flight	Indicates when the flight takes off.
Departure Time	Indicates the Departure Time.
Departure Aerodrome	Indicates the Departure Aerodrome.
A/C Type	The aircraft used for the flight
Dest Ad	Indicates the Destination Aerodrome
Flight Type	Indicates the Flight Type as defined in the FPL (S, N, G, M, X)
Account Name	The account that operated the Flight
Arrival Aerodrome	Indicates the Actual Arrival Aerodrome. It's automatically inserted by the system, using the Destination Aerodrome, or via FPL ARR update message, or it can be inserted manually by the User.
Actual Arrival Time	Indicates the Actual arrival time. It's automatically inserted by the system, using the Departure Time + EET, or via FPL ARR update message, or it can be inserted manually by the User.
User Crossing Distance	Indicates, if inserted, the crossing distance inserted by the User.
Item 18 Status	The status present in the FPL's Item 18 STS/
Item 18 Remark	The remarks present in the FPL's Item 18 RMK/

Item	Description
Item 18 Departure Aerodrome	Departure Aerodrome present in the FPL's Item 18 DEP/. It can be inserted/modified if the Departure Aerodrome is ZZZZ.
Item 18 Destination Aerodrome	Destination Aerodrome present in the FPL's Item 18 DEST/. It can be inserted/modified if the Destination Aerodrome is ZZZZ.
Item 18 Aircraft Type	Aircraft Type present in the FPL's Item 18 TYP/. It can be inserted/modified if the Aircraft Type is ZZZZ.
Cruising Speed	Indicates the speed of the flight in the ANSP's FIR.
Elapsed Time	Indicates the EET of the flight
Chargeable International Passengers	The number of the international passengers present on the flight
Chargeable Domestic Passengers	The number of the domestic passengers present on the flight.
Children	The number of infants present on the flight
Flight Rule	Indicates the flight rule as described in the ICAO Doc. 4444. (I, V, Z, Y)
Flight Level	Indicates the altitude of the flight as described in the ICAO Doc. 4444
Route	Indicates the set of waypoints and airways followed by the aircraft from the Departure Aerodrome to the Arrival Aerodrome.

Not all fields of the form can be modified from the User.

If a Flight Movement is created from the ARMS' UI, the User can modify all the fields in the form. If the Flight Movement is created via FPL processor, Radar Summary, ATC Movement Log, or Tower Log the following fields cannot be modified:

- Flight ID;
- Registration Number;
- Date of Flight;
- Departure Time; and
- Departure Aerodrome.

This set of information make the Flight Movement Unique Key and are used, together with other information, by the Matching Algorithm (ref. Flight Data, Flight Movements, Match with Surveillance logs).

6.1.6 GIS Mapping Form

ARMS allows the user to view a flight movement in a GIS mapping environment. The following features may be displayed:

- Country boundaries;
- Selected FIR/TMA boundaries
- AIX/M Aerodromes;
- AIX/M waypoints and navaids;
- Flight plan track (with labelled waypoints);
- Radar track (with labelled waypoints);

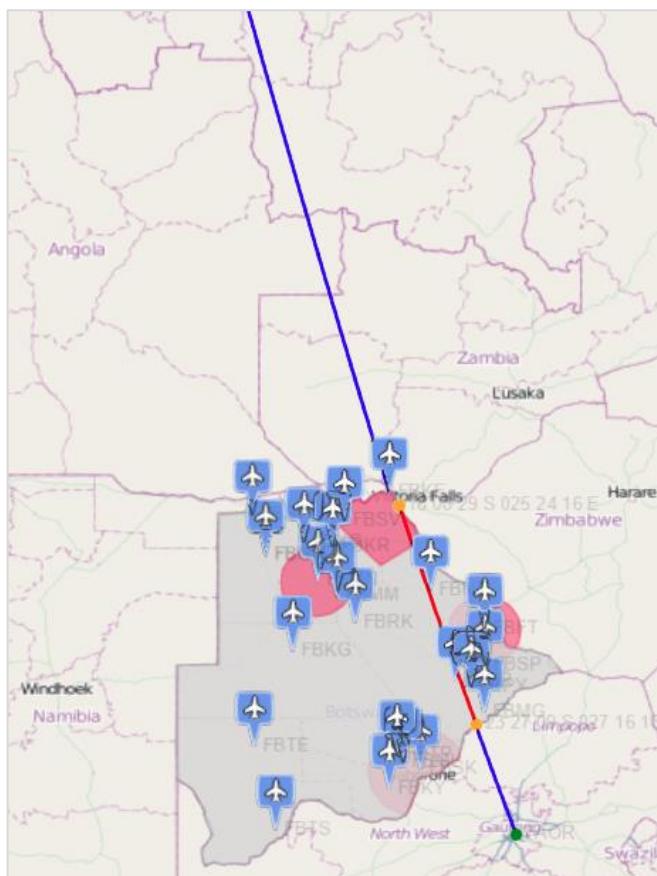
- ATC log track (with labelled waypoints); and
- Tower log track (with labelled waypoints).

Each feature class is represented with a different colour.

The following display tools are provided:

- Zoom in/out;
- Pan;
- Measurement tool (km,nm); and
- Print.

A sample graphic is shown below with the scheduled flight track drawn in brown and the radar flight strip across the billing region drawn in blue.



6.1.7 Flight Plan Display Form

Flight Plan									
3 MESSAGE TYPE <=(FPL		7 REGISTRATION NUMBER - [E T A 1 2]		8 FLIGHT RULES - [I]		TYPE OF FLIGHT - [S]		<=	
9 NUMBER		TYPE OF AIRCRAFT [B 7 3 8]		WAKE TURBULENCE CAT. / [H]				<=	
13 DEPARTURE AERODROME [F Z Q A]		TIME [1 2 5 5]						<=	
15 CRUISING SPEED - []		LEVEL []		ROUTE HELEN AKUMU PEMIK KIV USERO KIMET KAMAS RUDOL DAVLT				<=	
16 DESTINATION AERODROME [H A A B]								<=	
18 OTHER INFORMATION []									
From To Distance (km) * AKUMU PEMIK 64.24 PEMIK KIV 63.35 KIV USERO 105.94 USERO KIMET 56.24 KIMET KAMAS 65.01 KAMAS HAAB 315.24 Total distance (km) 670.02 Total distance to pay (km) 670.02 Total to pay for Flight (USD) 0.00									

ARMS provides the user with the ability to view the flight movement on a flight plan form. The flight plan attributes are displayed along with the flight segments. The flight segments shown are based on the crossing distance measurement method on which billing for that flight plan is based (radar, scheduled, ATC log, tower log, nominal, user). In the case of nominal or user, a single segment is shown. The start, end and length of each segment are shown. The billable segments are highlighted. The total flight distance, billable distance and flight cost are also shown.

6.2 Flight Schedule Management

6.2.1 Background

The flight schedules table contains flight schedules for all operators. Flight schedules are used to determine when scheduled flights are expected to occur.

Flight schedules are used by ARMS to determine if a scheduled flight is missing or if a flight which is identified as a scheduled flight appears unexpectedly.

6.2.2 Interface

The flight schedule management interface allows the user to query, display, filter, create, modify and delete flight schedule records.

Access to the aircraft management interface is controlled by the `flight_schedule_view` and `flight_schedule_modify` privileges.

Flight schedules are only displayed for one account at a time. The user selects the account from a list of accounts having flight schedules defined and the flight schedules are displayed in a datagrid following the conventions described under data grid display. The default sort order is account name, flight service number ascending.

- General text; and
 - Account.

The user may also upload and download flight schedules from / to .csv files so that they can be modified outside the system in excel.

6.2.3 Form

Create a Flight Schedule

Account *	Flight Service Number *
<input type="text"/>	
Departure Aerodrome *	Destination Aerodrome *
<input type="text"/>	
Departure Time *	Destination Time *
<input type="text"/>	
Daily Schedule *	Active *
Select	<input type="text"/>
Start Date (yyyy-MM-dd) *	End Date (yyyy-MM-dd)
<input type="text"/>	<input type="text"/>
Created by Self-Care	
False	
CLEAR	CREATE

Item	Description
Account	The Account which operates the flight schedule
Flight Service Number	The Flight ID used to identify the schedule
Departure Aerodrome	Departure aerodrome for the selected record
Destination Aerodrome	Destination aerodrome for the selected record
Departure Time	Departure time for the selected record
Destination Time	Destination time for the selected record
Daily Schedule	The day of week when the schedule is expected to happen
Active	Indicates if the Flight Schedule record is still active or not
Start Date	Indicates the beginning of the schedule
End Date	Read-only field. Set when the "Active" flag is set to false, or via bulk upload

Item	Description
Created by Self-Care	Read only field. Indicates if the record has been created via the Self-care portal

6.3 ATC Movement Log Management

6.3.1 Background

The ATC movement log table contains information on flights by aircraft which have communicated with area control. This information provided by the area control centre. Not all airports have an area control centre. In small countries, there is typically one area control centre based at the largest airport.

ATC movement log information is used to verify that all flights reported by the area control centre and towers are invoiced.

Normally all flights which communicate with the ATC center and are recorded in the ATC movement log would include flight departure and destination aerodromes as well as FIR entry/exit points. However, flights which do not intersect the FIR may not have this information.

6.3.2 Interface

The ATC movement log management interface allows the user to query, display, filter, create, modify and delete ATC movement log records.

Access to the ATC movement log management interface is controlled by the `flight_log_view` and `flight_log_modify` privileges.

The ATC movement logs are displayed in a datagrid following the conventions described under data grid display. The default sort order is day of flight, departure time descending.

Operationally significant data (as described above) is identified visibly (by row background colour) when all records are displayed.

The following dataset filters are provided:

- General text; and
- Temporal (start/end).

The ATC movement log management interface also allows the user to perform bulk loads from .csv files.

When an ATC movement log is created manually, when the day of flight and flight id are entered, the remaining information (except for route and entry/exit information) is automatically populated.

For each ATC movement log created (either manually or via a .csv file upload):

- The related flight movement is identified;
- If an existing related flight movement cannot be found, one is created and its source is set to 'atc'.
- The flight movement atc log track is calculated;
- The flight movement atc log track cost is calculated; and
- The flight movement cost is re-calculated.

ATC log data may be rejected for the following reasons:

- The related flight movement exists, but has been cancelled: rejected with a status of “flight movement has been cancelled”;
- Flight movement key information is incomplete: “xxx”

6.3.3

Form

Edit an ATC Movement Log

Day of Flight (yyyy-MM-dd)	2019-02-27	Departure Time (HHmm)	2100
Date of Contact (yyyy-MM-dd) *	2019-02-28	Flight Identifier *	KQA785
Registration	5YCYB	Operator Identifier	KQA
Aircraft Type *	B738	Flight Type *	Normal
Departure Aerodrome *	FACT	Destination Aerodrome *	HKJK
FIR Entry Point	UDLUM	FIR Entry Time (HHmm)	2229
FIR Mid Point		FIR Mid Time (HHmm)	
FIR Exit Point	BONAL	FIR Exit Time (HHmm)	2322
Flight Level (Fnnn)	F390	Wake Turbulence	M
Route *	UT916	Flight Category *	Scheduled
<input type="button" value="CLEAR"/> <input type="button" value="UPDATE"/> <input type="button" value="DELETE"/>			

Item	Description
Day of Flight	Indicates when the aircraft took off
Dep Time	Indicates the departure time
Date of Contact	Indicates when the aircraft contacted the ATC. Note: Some flights take off in a different time zone, so for long flights or flights that occur over midnight, the date of contact is different from the date of flight

Item	Description
Flight Identifier	The callsign used to identify the flight while it is under ATC control
Registration	Aircraft Registration Number
Operator ICAO Code	The ICAO prefix used for the Flight ID (ref. Operations, Account, ICAO Identifier)
Aircraft Type	The aircraft type which operated the flight
Flight Type	Indicates if it is a normal flight, or a flight going to an unmanned area
Departure Aerodrome	Indicates the departure aerodrome
Destination Aerodrome	Indicates the destination aerodrome
FIR Entry Point	The first point where the Flight intersected the FIR
FIR Entry Time	The time when the Flight intersected the FIR
FIR Mid Point	The middle point of the route within the FIR
FIR Mid Time	The time of the FIR mid point
FIR Exit Point	The last point where the Flight intersected the FIR
FIR Exit Time	The time of the FIR exit point
Flight Level	The altitude of the flight
Wake Turbulence	The Wake Turbulence Category of the aircraft used for this flight
Route	Indicates the set of waypoints followed by the flight
Flight Category	The category of the flight (Scheduled, Non-Scheduled)

6.4 Tower Movement Log Management

6.4.1 Background

The tower movement log table contains information on flights which have communicated with the tower. This would normally be flights which are arriving and departing. This information is provided by the towers at each airport.

Tower aircraft / passenger movement log information is used to verify that all flights reported by the towers are invoiced.

6.4.2 Interface

The tower movement log management interface allows the user to query, display, filter, create, modify and delete tower movement log records.

Access to the tower movement log management interface is controlled by the `flight_log_view` and `flight_log_modify` privileges.

The tower movement logs are displayed in a datagrid following the conventions described under data grid display. The default sort order is day of flight, departure time descending.

Operationally significant data (as described above) is identified visibly (by row background colour) when all records are displayed.

The following dataset filters are provided:

- General text; and

- Temporal (start/end).

The tower movement log management interface also allows the user to perform bulk loads from .csv files.

When a tower movement log is created manually, when the day of flight and flight id are entered, the remaining information (except for route and entry/exit information) is automatically populated.

For each tower movement log created (either manually or via a .csv file upload):

- The related flight movement is identified;
- If an existing related flight movement cannot be found, one is created and its source is set to ‘tower’.
- The flight movement tower log track is calculated;
- The flight movement tower log track cost is calculated;
- The flight movement cost is re-calculated.

Tower log data may be rejected for the following reasons:

- The related flight movement exists, but has been cancelled: rejected with a status of “flight movement has been cancelled”;
- Flight movement key information is incomplete: “xxx”

6.4.3 Form

Create a Tower Movement Log

Day of Flight (yyyy-MM-dd)	Departure Time (HHmm)
<input type="text"/>	<input type="text"/>
Date of Contact (yyyy-MM-dd)*	Flight Identifier *
<input type="text"/>	<input type="text"/>
Registration	Aircraft Type *
<input type="text"/>	<input type="text"/>
Operator Identifier	Departure Aerodrome *
<input type="text"/>	<input type="text"/>
Departure Contact Time (HHmm)	Destination Aerodrome *
<input type="text"/>	<input type="text"/>
Destination Contact Time (HHmm)	Route
<input type="text"/>	<input type="text"/>
Flight Level (Fnnn)	Flight Crew *
<input type="text"/>	<input type="text"/>
Passengers *	Flight Category *
<input type="text"/>	<input type="text"/>
<input type="button" value="CLEAR"/> <input type="button" value="CREATE"/>	

Item	Description
Date of Contact	Indicates when the aircraft has been in contact with the tower. Note: Some flights take off in a different time zone, so especially for long flight it can happen that the Date is different from the Day of Flight. Or the flight is happening over midnight.
Flight Identifier	The callsign captured by the Radar System.
Registration	Indicates the Aircraft Registration Number.
Aircraft Type	Indicates the aircraft type which operated the flight.
Operator ICAO Code	Indicates the ICAO prefix used for the Flight ID (ref. Operations, Account, ICAO Code).
Departure Aerodrome	Indicates departure aerodrome.
Departure Contact Time	Indicates the time when the tower allowed the flight to take off.
Destination Aerodrome	Indicates destination aerodrome.

Item	Description
Destination Contact Time	Indicates the contact time with the destination aerodrome's tower.
Route	Indicates the set of the waypoints followed by the flight.
Flight Level	Indicates the altitude of the flight.
Flight Crew	Indicates the number of the Account's staff present on the Flight.
Passengers	Indicates the total number of the passengers (domestic, international and infants).
Flight Category	Indicates the flight category (Scheduled, Non-Scheduled).
Day of Flight	Indicates the day of the flight.
Departure Time:	Indicate the scheduled departure time.

6.5 Radar Flight Strip Management

6.5.1 Background

Radar flight strips are generated by systems such as the EUROCAT-C or Raytheon. The radar flight strips contain the FIR entry and exit points and times for each flight.

Radar flight strip information is used by ARMS to calculate enroute navigation charges.

6.5.2 Interface

The radar flight strip management interface allows the user to query, display, filter, create, modify and delete radar flight strip records.

Access to the radar flight strip management interface is controlled by the radar_summary_view and radar_summary_modify privileges.

The radar summaries are displayed in a datagrid following the conventions described under data grid display. The default sort order is day of flight descending, flight identifier ascending.

Operationally significant data (as described above) is identified visibly (by row background colour) when all records are displayed.

The following dataset filters are provided:

- General text; and
- Temporal (start/end).

The radar flight strip management interface also allows the user to perform bulk loads from .csv files.

For each radar flight strip created (either manually or via a .csv file upload):

- The related flight movement is identified;
- If an existing related flight movement cannot be found, one is created and its source is set to 'radar'.
- The flight movement radar track is calculated;
- The flight movement radar track cost is calculated; and
- The flight movement cost is re-calculated.

Radar flight strip data may be rejected for the following reasons:

- The related flight movement exists, but has been cancelled: rejected with a status of “flight movement has been cancelled”;
- Flight movement key information is incomplete: “xxx”

Radar flight strip data is parsed based on the format specified in the system configuration:

- RAYTHEON-A (Raytheon format - CAAB);
- EUROCAT-A (Eurocat format – KCAA); or
- INDRA-REC (Indra record format – EANA).

For uploads from file, when an existing radar flight strip is being updated, the waypoints for the new flight strip is merged with the existing waypoints, with duplicates being removed.

For manual updates to radar flight strips, the user is allowed to specify whether waypoints for the manually entered radar flight strips are to be merged with or overwrite the waypoints for the existing radar flight strip. This is done by means of a check box on the editing form.

6.5.3

Form

Edit a Radar Summary	
Flight Identifier *	Date (yyyy-MM-dd) *
A2BBJ	2019-02-24
Departure Time (HHmm) *	Day of Flight (yyyy-MM-dd) *
0508	2019-02-24
Registration	Aircraft Type *
	HUSK
Departure Aerodrome *	Destination Aerodrome *
FBSK	FBSK
FIR Entry Time (HHmm)	FIR Entry Point
0511	GBV
FIR Exit Time (HHmm)	FIR Exit Point
0539	GBE
Flight Rule *	Flight Category
	DOMESTIC
Route *	
GBV SWTA GBE	
<input type="button" value="CLEAR"/> <input type="button" value="UPDATE"/> <input type="button" value="DELETE"/>	

Item	Description
Flight Identifier	The callsign captured by the Radar System
Date	Indicates when the aircraft has been spotted by the Radar System. Note: Some flights take off in a different time zone, so especially for long flight it can happen that the Date is different from the Day of Flight. Or the flight is happening over midnight
Departure Time	Indicates the Departure Time
Day of Flight	Indicates when the aircraft took off
Registration	Indicates the Aircraft Registration Number
Aircraft Type	Indicates the aircraft type which operated the flight
Departure Aerodrome	Indicates departure aerodrome
Destination Aerodrome	Indicates destination aerodrome
FIR Entry Time	Indicates the time when Flight intersected the FIR
FIR Entry Point	Indicates the first point where the Flight intersected the FIR
FIR Exit Time	Indicates the time for the FIR Exit Point.
FIR Exit Point	Indicates the last point where the Flight intersected the FIR.
Flight Rule	Indicates if the Flight is IFR or VFR.
Flight Category	Indicates the flight type (Overflight, Domestic, Arrival, or Departure).
Route	Indicates the set of the waypoints followed by the flight

The interface also allows the User to bulk upload .csv files with the Radar Summary records.

6.6 Passenger Service Charge Return Management

6.6.1 Background

The passenger service charge return table contains passenger information used to reconcile the number of passengers coming from the airline with the numbers reported by the tower. This information is used for charging passenger fees for both international and domestic trips.

Passenger service charge returns and passenger manifests are received on a daily basis from airlines when flights depart and arrive.

The passenger counts in the passenger service charge return should exactly match the passenger counts given in flight manifests.

There are two possible workflows for the passenger service charge return.

In the first workflow, the passenger service charge return is prepared by the airline as an excel spread sheet and provided to the ANSP along with hard copies of the passenger manifests. The user uploads the passenger service charge return (one record per flight manifest) into the system.

Finally the user manually verifies the hard copy manifests against the service charge returns which were loaded and corrects any discrepancies.

In the second workflow, the ANSP receives only the hard copy manifests. Each passenger service charge return is entered manually based on the information on the manifest.

In either workflow, the user may also upload a scanned copy of the manifest.

Passenger service charge returns and passenger manifest information is used to verify that all flights for which a manifest has been received are invoiced.

6.6.2 Interface

6.6.3 Form

Edit a Passenger Service Charge Return

Flight Identifier *	Children
BOT051	0
Day of Flight (yyyy-MM-dd) *	Departure Time (HHmm)
2018-05-31	0930
Joining Passengers	Transit Passengers
31	2
Chargeable International Passengers	Chargeable Domestic Passengers
	31
Image File (*.jpg, *.gif, *.png, *.pdf)	
<input type="button" value="CLEAR"/> <input type="button" value="UPDATE"/> <input type="button" value="DELETE"/>	

Item	Description
Flight Identifier	The callsign captured by the Radar System
Children	Indicates the number of infants on board
Day of Flight	Indicates the day of the Flight
Departure Time	Indicate the scheduled departure time
Joining Passengers	Indicates the total number of passengers on board
Transit Passengers	Indicates the number of transit passengers on board
Chargeable International Passengers	Indicates the number of international passengers on board
Chargeable Domestic Passengers	Indicates the number of domestic passengers on board

Item	Description
*PAX Domestic Arrival	
*PAX Domestic Landing	
*PAX Domestic Transfer	
*PAX Domestic Departing	
*PAX Domestic Child Arrival	
*PAX Domestic Child Landing	
*PAX Domestic Child Transfer	
*PAX Domestic Child Departing	
*Exempt PAX Domestic Arrival	
*Exempt PAX Domestic Landing	
*Exempt PAX Domestic Transfer	
*Exempt PAX Domestic Departing	
Exempt PAX Domesc	
**Loaded Cargo	Loaded cargo (tons).
**Discharged Cargo	Unloaded cargo (tons).
**Loaded Mail	Loaded mail (tons).
**Discharged Mail	Unloaded mail (tons).

Items identified with * are only implemented when support for extended passenger information is enabled in the system configuration.

Items identified with ** are only implemented when support for extended cargo information is enabled in the system configuration.

6.7 Rejected Item Management

6.7.1 Background

Flight data sets including flight plans, radar summaries, ATC movement logs and tower movement logs which cannot be processed are stored in the rejected items table. A description of the processing error encountered is included along with the item.

These data sets include the following:

- Flight movements;
- ATS messages;
- ATC movement logs;
- Tower aircraft / passenger movement logs;
- Passenger service charge returns; and
- Radar summaries.

6.7.2

Interface

The rejected data management interface allows the user to query, display, filter, modify and delete rejected data records of all types. These types include:

- Flight movements;
- ATS messages;
- ATC movement logs;
- Tower aircraft / passenger movement logs;
- Passenger service charge returns; and
- Radar summaries.

Access to the rejected data management interface is controlled by the rejected_data_view and rejected_data_modify privileges.

The rejected data records are displayed in a datagrid following the conventions described under data grid display. The default sort order is rejection date/time descending.

The following dataset filters are provided:

- General text; and
- Temporal (start/end).
- Record type;
- Rejected date;
- Status;
- Originator; and
- File name.

Operationally significant data (as described above) is identified visibly (by row background colour) when all records are displayed.

The rejected data management interface also allows the user to correct and resubmit the rejected data.

6.7.3

Form

Rejected Items						
Text Filter		Filter by				
Record Type	Rejection Date / Time	Rejection Reason	Error Message	Status	Originator	File Name
Radar Summary	2017-08-30 / 1636	The data are missing or not valid	Flight movement status is invoiced or canceled	uncorrected		radar_mar_01_09 (3).csv
Radar Summary	2017-08-30 / 1636	The data are missing or not valid	Flight movement status is invoiced or canceled	uncorrected		radar_mar_01_09 (3).csv
Radar Summary	2017-08-30 / 1636	The data are missing or not valid	Flight movement status is invoiced or canceled	uncorrected		radar_mar_01_09 (3).csv
Radar Summary	2017-08-30 / 1635	The data are missing or not valid	Flight movement status is invoiced or canceled	uncorrected		radar_mar_01_09 (3).csv
Radar Summary	2017-08-30 / 1635	The data are missing or not valid	Flight movement status is invoiced or canceled	uncorrected		radar_mar_01_09 (3).csv
Radar Summary	2017-08-30 / 1635	The data are missing or not valid	Aerodrome not valid FAMK	uncorrected		radar_mar_01_09 (3).csv
Radar Summary	2017-08-30 / 1635	The data are missing or not valid	Aerodrome not valid FAMK	uncorrected		radar_mar_01_09 (3).csv
Radar Summary	2017-08-30 / 1635	The data are missing or not valid	Aerodrome not valid FAMK	uncorrected		radar_mar_01_09 (3).csv
Radar Summary	2017-08-30 / 1634	The data are missing or not valid	Flight movement status is invoiced or canceled	uncorrected		radar_mar_01_09 (3).csv
Radar Summary	2017-08-30 / 1634	The data are missing or not valid	Flight movement status is invoiced or canceled	uncorrected		radar_mar_01_09 (3).csv
Radar Summary	2017-08-30 / 1634	The data are missing or not valid	Aerodrome not valid FAMK	uncorrected		radar_mar_01_09 (3).csv

Item	Description
Record Type	Indicates which kind of record has been rejected
Rejection Date/Time	The date and time the record has been rejected
Rejection Reason	Indicates the problem encountered persisting the record
Error Message	Provides further detail about the Rejection Reason
Status	Indicates if the record is “uncorrected” or “corrected” Note: Status determines the record color – uncorrected records are red and corrected records are grey
Originator	The source of the rejected record
File Name	In case of bulk upload, indicates the filename which contained the rejected record

6.8 Uploaded File Management

6.8.1 Background

Whenever a data file is uploaded (either automatically or manually), the file is stored in the uploaded files table. Data files include the following:

- ATC movement logs;
- Tower aircraft / passenger movement logs;
- Passenger service charge returns; and
- Radar summaries.

6.8.2 Interface

The uploaded file management interface allows the user to query, display, filter, delete and download previously uploaded files. These types include:

- ATC movement logs;
- Tower aircraft / passenger movement logs;

- Passenger service charge returns; and
- Radar summaries.

Access to the uploaded file management interface is controlled by the uploaded_files_view and uploaded_files_modify privileges.

The uploaded files are displayed in a datagrid following the conventions described under data grid display. The default sort order is upload date/time descending.

The following dataset filters are provided:

- General text;
- Temporal (start/end); and
- Record type.

6.8.3

Form

[TBD] Not implemented.

Item	Description
File Type	Type of file (Radar,ATC,Tower)
Upload Date/Time	Date and time of upload.
File Name	Name of file which was uploaded.
Number of Records	Number of records in the file.
Flight Movements Created	Number of records which resulted in a flight movement creation.
Flight Movements Updated	Number of records which resulted in a flight movement update.
Records with no Create/Update	Number of records accepted which did not result in a flight movement creation or update.
Records Rejected	Number of records rejected.

7 OPERATIONS

The operations data submenu contains the interfaces related to the general operation of the system.

These interfaces include:

- Accounts;
- Aircraft registrations;
- Aircraft types;
- Currencies;
- Nominal routes;
- Unspecified aircraft types; and
- Unspecified locations.

7.1 Account Management

7.1.1 Background

Accounts are individuals or organizations that use services provided by the ANSP and are invoiced for those services. These accounts (or customers) include:

- Airlines;
- Small air operators;
- Tenants of ANSP owned property;
- Aerodrome operators within ANSP's area;
- Individuals responsible for obstacles within the ANSP's region;
- Pilots (or others requiring licensing by the ANSP); and
- Operators of businesses within ANSP controlled aerodromes who lease space, use utilities or use services provided by the ANSP.

7.1.2 Interface

The account management interface allows the user to query, display, filter, create, modify and delete account records.

Access to the account management interface is controlled by the account_view and account_modify privileges.

The accounts are displayed in a datagrid following the conventions described under data grid display. The default sort order is account name ascending.

The following dataset filters are provided:

- General text;
- Active or inactive accounts (default active);
- Cash, credit or all accounts (default all); and
- Current, overdue, over limit or all accounts (default all).

The data grid contains only the following columns:

- Account name;

- ICAO code;
- IATA code; and
- Contact name.

When account details are displayed, a consolidated view of all data associated with the account are also be displayed, including:

- Invoices;
- Payments;
- Adjustments;
- Flight movements (aviation);
- Aircraft (aviation);
- Recurring charges (non-aviation);
- Flight schedules; and
- Certifications.

The user is allowed to perform operations on those data sets as permitted by the interface's functionality and the user's profile and privileges (create, update, delete).

These data sets may be modified directly allowing the user to perform operations on those data sets as permitted by the interface's functionality and the user's profile and privileges (create, update, delete).

Account currency cannot be changed if there are any transactions posted to the account.

Accounts cannot be deleted if there are any transactions posted to the account, invoices associated with the account, or aircraft registered to the account.

An accounts blacklisting setting is determined by the generation and payment of invoices and application of debits and credits. When an account has overdue bills, it is determined to be delinquent. If the user has not overridden blacklisting, the account is automatically blacklisted. All aircraft registered to the account are blacklisted, and all flight movements the account is associated with are blacklisted. Once the overdue invoices have been paid, the blacklisting of the account, aircraft and flight movements are cleared.

The account management interface provides pre-defined filters to allow the user to find operationally significant records easily. These filters include:

- Outstanding invoices;
- Overdue invoices; and
- Credit facilities.

When editing accounts, the user may select one or more web portal users depending on the system configuration setting for this. As well, a web portal user may be assigned to multiple operator accounts depending the system configuration for this. The many-to-many relationship between operator accounts and web port users is maintained in the account user map table.

7.1.3 Form

 Edit an Account

Account Name *	Account Alias
Abalengani Aviation	ABALENGANI
Aviation Billing Contact Person Name	Aviation Billing Phone Number
	+27-498421336
Aviation Billing Mailing Address	Aviation Billing Email Address
106-108 4th Street Parkmoore, Gauteng, 2196 South Africa	
Aviation Billing SMS Number	
USE AVIATION BILLING CONTACT FOR NON-AVIATION	
Non-Aviation Billing Contact Person Name	Non-Aviation Billing Phone Number
	+27-498421336
Non-Aviation Billing Mailing Address	Non-Aviation Billing Email Address
106-108 4th Street Parkmoore, Gauteng, 2196 South Africa	
Non-Aviation Billing SMS Number	
Self-Care Account *	Approved Flight School *
False	False
IATA Code	ICAO Code
OPR Identifier	Payment Terms (days) *
ABALENGANI AVIATION	30

Account Type *	Percentage of Passenger Fee Payable
General Aviation	100
Invoice Delivery Format *	Invoice Delivery Method *
pdf	Paper
Invoice Currency *	Monthly Overdue Penalty Rate (%) *
Botswanan Pula (BWP)	0
Blacklisted Indicator	Blacklisted Override *
False	False
Cash Account	Credit Limit (BWP) *
False	150000
Aircraft Parking Exemption *	
0	
IATA Member *	Separate PAX Invoice *
False	False
Active *	Self Care Account Users
True	Select
List of events account is to be notified	
Invoice publication	Select
Invoice overdue	Select
Expired certificate warning	Select
Expired certificate	Select
Notes	

Item	Description
Account Name	The name that will be displayed in the system and on the invoices and receipts.
Account Alias	The alias, if there is one, for the Account.
Aviation Billing Contact Person Name	The contact person for Aviation Billing. This information is printed on the Invoice and Receipts.
Aviation Billing Phone Number	The Phone number to contact for Aviation Billing. This information is printed on the Invoice and Receipts.
Aviation Billing Mailing Address	The physical address for the Account, to receive Aviation Billing info.
Aviation Billing Email Address	The Email address to contact the Aviation Billing contact person.
Aviation Billing SMS Number	The SMS number to contact the Aviation Billing contact person.

Item	Description
Non-Aviation Billing Contact Person Name	The contact person for Non-Aviation Billing. This information is printed on the Invoice and Receipts.
Non-Aviation Billing Phone Number	The Phone number to contact for Non-Aviation Billing. This information is printed on the Invoice and Receipts.
Non-Aviation Billing Mailing Address	The physical address for the Account, to receive Non-Aviation Billing info.
Non-Aviation Billing Email Address	The Email address to contact the Non-Aviation Billing contact person.
Non-Aviation Billing SMS Number	The SMS number to contact the Non-Aviation Billing contact person.
Self-Care Account *	This flag to determine if the Account is a Self-Care account or not.
Self-Care User	The Self-Care User assigned to this Account, if present.
IATA Code	The IATA code for this Account, if present.
ICAO Code	The ICAO code for this Account, if present.
OPR Identifier	The Item18 OPR/ identifier for this account, if present.
Payment Terms (days) *	The payment terms from the invoice issuing to the invoice expiry date, expressed in days.
Account Type *	To identify the Account type. It can be: Airline (British Airways, Air France, KLM, etc.), General Aviation (Smaller companies), NonAviation (not related to aviation incomes), Tenant, Commercial (a commercial airline), Other, Charter (if it's a Charter flight company).
Percentage of Passenger Fee Payable	The percentage of passenger fee payable to the ANSP.
Invoice Delivery Format *	The format to use when generating the invoice (.docx, .pdf, .xlsx).
Invoice Delivery Method *	The method to deliver the invoice to the Account (Paper = printed and hand given, or email = pdf generated and sent via email).
Invoice Currency *	The currency used to bill the account.
Monthly Overdue Penalty Rate (%) *	Penalty rate to apply in case of overdue invoices.
Blacklisted Indicator	Indicates if the Account is blacklisted (Overdue invoice) or not.
Blacklisted Override *	This is used to override the blacklisted Indicator automation, so that the account will be blacklisted only via User action.
Cash Account	To determine if the Account is a Cash account (payment terms = 0. The invoices have to be payed at the moment of the generation), or a Credit account (the account have credit facilities and can pay invoices within the payment terms).
Credit Limit (KES) *	The credit limit for the account if is a Credit Account.
Approved Flight School *	This flag is used to identify if the Account is an ANSP's approved flight school
IATA Member *	This flag is used to determine if the Account is a IATA member, and require the IATA invoicing.

Item	Description
Separate PAX Invoice *	This flag is used in case the Account require separate invoice for passengers.
Active *	To identify if the Account is active or not.
List of events account is to be notified	A list of the Event that can be notified to the Avian Billing contact and the Non-Aviation billing contact person.
Notes	A free text field that can be edited to insert info about the Account.

7.2 Aircraft Registration Management

7.2.1 Background

The aircraft and registrations tables contain all aircraft known to the billing application as identified by aircraft registration number. Users may add additional aircraft and registrations. An aircraft may be registered to multiple accounts (operators) as long as the registrations cover non-overlapping time periods.

An aircraft is the physical instance of an aircraft, represented uniquely by its registration number (also known as its tail number).

In addition to the aircraft registration number, the aircraft registration has a type which links it to a unique aircraft type.

An aircraft may be assigned to one or more accounts. In the event that it is assigned to more than one account, each assignment must have a non-overlapping validity period (start and end date). This allows flight movements for a particular aircraft to be billed to different accounts based on the date a flight occurred. This functionality is required in the event of an aircraft being sold or leased.

For a given registration number, registration start date and registration expiry date must not overlap.

7.2.2 Interface

The aircraft registration management interface allows the user to query, display, filter, create, modify and delete aircraft registration records.

Access to the aircraft registration management interface is controlled by the aircraft_registration_view and aircraft_registration_modify privileges.

The aircraft registrations are displayed in a datagrid following the conventions described under data grid display. The default sort order is registration number, start date ascending.

The following dataset filters are provided:

- General text; and
- Account.

When a registration number is entered, the aircraft type code and default MTOW override are auto-filled with the flight movement's aircraft type and MTOW if a flight movement which matches the registration number being added exists.

When an aircraft type code is selected the MTOW override is auto-filled aircraft types MTOW.

Aircraft MTOW are displayed and entered in either tons or kg, depending on the system configuration.

When an aircraft registration is entered, the registration number prefix is used to select the aircraft's country of registration. If the aircraft registration number prefix cannot be found in the countries table, the registration number is considered invalid.

The user may also upload registrations from .csv file. Errors such as conflicting registration number, unspecified aircraft type and unspecified account are reported to the user.

When viewing an aircraft registration, ARMS provides a consolidated view of all data associated with the aircraft registration including:

- Invoices; and
- Flight movements.

These data sets may be modified directly allowing the user to perform operations on those data sets as permitted by the interface's functionality and the user's profile and privileges (create, update, delete).

7.2.3

Form

► Aircraft Registrations

Show Form

Filter

REFRESH

Registration Number	Start Date	Expiry Date	Account	Aircraft Type	MTOW Override (kg)	Created By Self-Care
3CLGE	2017-10-01	2025-12-31	Sama Jet International	FA50	18,498	false
3CLLX	2017-10-01	2025-12-31	Sama Jet International	GLF5	41,132	false
5YFFB	2017-01-01	2025-12-31	Kenya Airways	E190	51,846	false
5YFFC	2017-01-01	2025-12-31	Kenya Airways	E190	51,846	false
5YFFD	2017-01-01	2025-12-31	Kenya Airways	E190	51,846	false
5YFFE	2017-01-01	2025-12-31	Kenya Airways	E190	51,846	false
5YFFF	2017-01-01	2025-12-31	Kenya Airways	E190	51,846	false
5YFFJ	2017-01-01	2025-12-31	Kenya Airways	E190	51,846	false
5YFFK	2017-01-01	2025-12-31	Kenya Airways	E190	51,846	false
5KYQ	2017-01-01	2025-12-31	Kenya Airways	E190	51,846	false
5KYT	2017-01-01	2025-12-31	Kenya Airways	E190	51,846	false
9GAFB	2010-01-01	2022-01-01	Africa Charter Airline	E145	22,471	false
9HVJH	2017-01-01	2025-12-31	VistaJet Limited	GLEX	44,497	false
9HVTI	2017-01-01	2025-12-31	VistaJet Limited	GLEX	44,497	false
9JBOS	2017-01-01	2025-12-31	United Air Charter	C208	3,629	false
9JCSI	2017-01-01	2025-12-31	Ngwazi Air Charters	E110	5,897	false
9JONE	2017-10-01	2018-12-31	Execujet Aviation	CL60	19,550	false

Filtered: 776 | Total: 776

► Edit an Aircraft

Registration Number *	Account *
3CLGE	Sama Jet International
Start Date * (yyyy-MM-dd)	Expiry Date * (yyyy-MM-dd)
2017-10-01	2025-12-31
Aircraft Type *	MTOW Override (kg) *
FA50	18498
Country of Registration *	Override Country of Registration
Equatorial Guinea	False
<input type="button" value="CLEAR"/> <input type="button" value="UPDATE"/> <input type="button" value="DELETE"/>	

Item	Description
Registration Number	It's an alphanumeric string, indicating its country of registration and its unique serial number. This code must also appear in its Certificate of Registration, issued by the relevant National Aviation Authority (NAA). An aircraft can only have one registration, in one jurisdiction.
Account	The Account that owns the aircraft, and the one that will be billed for this aircraft's movements.
Start/End date	The period of validity of the ownership for this aircraft. If this aircraft performs some movements, after the expiry date, the Account linked to the "expired" record will NOT be linked to the movement.
Aircraft type	Describes what Aircraft is linked to this registration number.
MTOW Override	The most specific weight for the aircraft. It will override the one determined for the aircraft type specified.
Country of Registration	That's the country where the Aircraft is registered. The system automatically detect what country has to be inserted here by parsing the registration number prefix and checking it against the Countries table.
Override Country of Registration	This flag is used in case the registration number prefix is not used, like for military aircrafts, it allows the User to manually set the Country of Registration, so the system will not assign a wrong country to that aircraft.

7.3 Aircraft Type Management

7.3.1 Background

Aircraft types contains all aircraft types known to the billing application. Aircraft types comes pre-loaded with the aircraft types identified in ICAO Doc 8643, augmented by data supplied by the aircraft manufacturers. Users may enter additional aircraft types.

Aircraft type information is used by the aviation billing engine to determine what MTOW is to be used for a flight movement when no override is specified via a registration.

Aircraft type information is also used as reference data by flight plan data entry and aircraft registration management.

7.3.2 Interface

The aircraft type management interface allows the user to query, display, filter, create, modify and delete aircraft type records.

Aircraft types contains all aircraft types known to the billing application. Aircraft types comes pre-loaded with the aircraft types identified in ICAO Doc 8643, augmented by data supplied by the aircraft manufacturers. Users may enter additional aircraft types.

Aircraft type information is used by the aviation billing engine to determine what MTOW is to be used for a flight movement when no override is specified via a registration.

Aircraft type information is also used as reference data by aircraft management.

7.3.3 Form

➤ Edit an Aircraft Type

Aircraft Type *	Aircraft Name *
3A12	CESSNA 172 Skyhawk
Aircraft Manufacturer *	Wake Turbulence *
CESSNA	L
MTOW (kg) *	
980	
<input type="button" value="CLEAR"/> <input type="button" value="UPDATE"/> <input type="button" value="DELETE"/>	

Item	Description
Aircraft Type	Type of aircraft (ICAO 8643)
Aircraft Name	Plain text aircraft name.
Aircraft Manufacturer	Name of aircraft manufacturer.
Wake Turbulence	Wake turbulence category (L,M,H,J) L (Light) aircraft types of 7,000 kg or less.

Item	Description
	M (Medium) aircraft types more than 7,000 kg and less than 136,000 kg; H (Heavy) aircraft types more than 136,000 kg and less than 560,000kg; and J (Jumbo) Airbus A380-800 with a maximum take-off mass in the order of 560,000 kg.
MTOW	Maximum takeoff weight in kg or tons, depending on system configuration.

7.4 Currency and Exchange Rate Management

7.4.1 Background

Currency contains all currencies known to the billing application.

Currency exchange rates contains all the exchange rates defined for the currencies in use in the billing application, along with the period the rate is valid for.

When entering exchange rate information, the user does not select the target currency. The target currency currently assigned to the currency for which the exchange rate is being set is used.

Currency information is used any time a transaction is made on an account using a currency which is different from the currency specified for the account. In this case the transaction value is converted to the account currency.

If the currency is not active or the exchange rate is not valid for the current date, the user must be notified and the transaction cannot be completed.

Currency code, exchange rate valid from date and exchange rate valid to date uniquely identify and exchange rate. Overlapping validity periods are not permitted for a given currency exchange rate.

Currency exchange rates for a given currency may exist for multiple time frames. (i.e. the system must support a different exchange rate for a give exchange rate for different months). (i.e. an exchange rate for PULA to USD for February 2017, and different rate for PULA to USD for March 2017 must exist at the same time). For example, on March 3, the March 2017 need to be used for cash invoices, but the February 2017 rate must be used for February credit invoices. The date of the end of the invoicing period is used to determine the exchange rate to be used.

7.4.2 Interface

The currency and exchange rate management interface allows the user to query, display, filter, create, modify and delete currency and currency exchange rate records.

Access to the currency and exchange management interface is controlled by the currency_view and currency_modify privileges.

The currencies are displayed in a datagrid following the conventions described under data grid display. The default sort order is currency name ascending.

Country name is also displayed in the data grid, joined from the countries table.

The following dataset filters are provided:

- General text.

Predefined filters for all and active currencies are provided. Active currencies are displayed by default.

In addition to the functions described above, the user may also update all currency values from the web for the current date.

The user may select a currency and display all exchange rates defined for that currency. The currencies exchange rates are displayed in a datagrid following the conventions described under data grid display. The default sort order is valid start date ascending.

The interface must ensure that validity periods for exchange rate for a specific currency do not overlap.

A currency that is in use (account or ANSP currency) may not be set as inactive.

7.4.3

Form

\$ Edit a Currency

Currency Code *	Currency Name *
BWP	Botswanan Pula
Country Code *	<input checked="" type="checkbox"/> Allow Update From Web
BWA	
Decimal Places *	Symbol *
2	P
Active *	*ANSP Currency
True	Used by the following accounts: <ul style="list-style-type: none"> • Abalengani Aviation • Absolute Aviation • Absolute Flight Service • Access Flight Support • ... and 499 more
External Accounting System Identifier *	
<input type="button" value="CLEAR"/> <input type="button" value="UPDATE"/> <input type="button" value="DELETE"/>	

Item	Description
Currency Code	Indicates the currency international code (EUR, USD, etc.).
Currency Name	Indicates currency extended name (Euro, United States Dollars, British Pound, etc.).
Country Code	Indicates the international code for the country that uses that currency.

Item	Description
Decimal Places	Indicates how many decimal places that currency has, and indicates it's used by the system to use the right decimal precision when invoicing.
Symbol	Indicates the currency's symbol.
Active	Indicates if the currency is in use, or not. If true the currency is in use, if false it is not.
Exchange rate to the USD	indicates the exchange rate TO the USD.
Start/End Date	Indicates the period in which this exchange rate is valid.

7.5 Nominal Route Management

7.5.1 Background

Nominal routes are route location identifier pairs and a manually assigned nominal distance in kilometres between them. These nominal values may be used instead of the calculated scheduled or radar crossing distance when calculating the air navigation charges for a flight movement.

When the system is configured to use nominal routes, when the nominal route for a flight movement does not exist, the flight movement builder calculates the distance based on the flight movement route and will adds it to the known nominal routes with a status of calculated. The user may change the calculated distance to a known accepted nominal value. When the user updates the nominal route distance, the status is changed to manual.

Nominal route distances are one of the three crossing distances (scheduled and radar are the other two) which the flight movement builder uses in calculating flight movement costs.

When locating a nominal route, the following search precedence should be used:

- FIR boundary – FIR boundary
- FIR boundary – Aerodrome
- Aerodrome - Aerodrome

The nominal route management interface allows the user to query, display, filter, create, modify and delete nominal route records.

7.5.2 Interface

The nominal route management interface allows the user to query, display, filter, create, modify and delete nominal route records.

Access to the nominal route management interface is controlled by the nominal_route_view and nominal_route_modify privileges.

The nominal routes are displayed in a datagrid following the conventions described under data grid display. The default sort order is point a, point b ascending.

The following dataset filters are provided:

- General text.

7.5.3 Form

A Edit a Nominal Route

Type *	Nominal Distance *
Aerodrome/Aerodrome	792.9953125
Point A *	Point B *
DATM	FQMA
<input type="button" value="CLEAR"/> <input type="button" value="UPDATE"/> <input type="button" value="DELETE"/>	

Item	Description
Type	Defines the type of the Nominal Route, it can be: Aerodrome/Aerodrome: defining the distance between 2 Aerodromes. FIR Entry/Exit to Aerodrome: defining the distance between the FIR Border and an Aerodrome. FIR/FIR: defining the distance between the FIR Entry and Exit point.
Nominal Distance	The distance assigned to the route.
Point A	Start point of the route.
Point B	End point of the route.

7.6 Unspecified Aircraft Type Management

7.6.1 Interface

Unspecified aircraft types are identified in flight plans with the identifier ZZZZ being used for the aircraft type (item 9). A description of the aircraft is included in item 18 (other info) using the TYP/ identifier.

When a flight plan is processed which contains unspecified aircraft type, the system first attempts to resolve this using the aircraft registrations table. If the aircraft registration number is found in the aircraft registrations table, the aircraft type and MTOW for the registration are used. If they are not found, the unspecified aircraft types table is searched for the TYP/ identifier. If the identifier can be found, its aircraft type and MTOW are used. If it cannot be found, the TYP/ identifier is added to the unspecified aircraft types table.

7.6.2 Interface

The unspecified aircraft_types management interface allows the user to query, display, filter, create, modify and delete unspecified aircraft types records.

Access to the unspecified aircraft types management interface is controlled by the zzzz_aircraft_types_view and zzzz_aircraft_types_modify privileges.

The unspecified aircraft types are displayed in a datagrid following the conventions described under data grid display. The default sort order is identifier ascending.

The following dataset filters are provided:

- General text.

When the user enters an aircraft identifier, the corresponding MTOW from the aircraft types table should be auto-populated if the aircraft identifier exists in the aircraft types table.

Aircraft MTOW is displayed and entered in either tons or kg, depending on the system configuration.

7.6.3

Form

Edit Unspecified Aircraft Type	
Text Identifier *	Name *
9SHGF	FOREST GROUP
Aircraft Type	MTOW (kg) *
B222	3560
<input type="button" value="CLEAR"/> <input type="button" value="UPDATE"/> <input type="button" value="DELETE"/>	

Item	Description
Text Identifier	The text parsed from the Item 18.
Name	Common name for this aircraft type.
Aircraft Type	Aircraft identifier.
MTOW	Specific weight for the aircraft. Will override the one determined for the aircraft type specified.

7.7 Unspecified Departure and Destination Location Management

7.7.1 Background

Unspecified departure and destination locations are identified in flight plans with the identifier ZZZZ being used for the departure or destination aerodrome. A description of the location (which may include the latitude/longitude coordinates) is included in item 18 (other info) using the DEP/ and DEST/ identifiers.

Unspecified departure and destination location attributes include the following:

- Text identifier
- Name (user defined);
- Maintained (indicates the location is a maintained aerodrome, used to identify Botswana delta airstrips)
- Aerodrome identifier (ICAO aerodrome identifier, if specified, must be a foreign key to either the aerodromes table or the ICAO aerodromes table). This would be used in the case where a pilot has specified ZZZZ as a departure or destination for a known aerodrome and then identified it in item 18, either by call sign, common name or location (i.e. "FAOR", "JOBURG", "O.R.TAMBO", "26.1367S 28.2411E")
- Location latitude (double, if a value could not be parsed, null)
- Location longitude (double, if a value could not be parsed, null)
- Status (system generated or manual)

When a flight plan is processed which contains unspecified departure or destination locations, the system attempts to find the identifier in the unspecified departure and destination location table. If the identifier can be found, its location is used. If it cannot be found, the identifier is added to the unspecified departure and destination location table and the location is parsed (if possible) from the identifier.

When the user updates the unspecified departure and destination location, the status is changed to manual.

Automated ZZZZ locations parsing also handles the formats below:

- 1345S02907E (ddmmYdddmmX);
- 134500S0290702E (ddmmhhYddmmhhX);
- KASABE1345S02907E (qqqqddmmYdddmmX);
- KASABE134500S0290702E (qqqqddmmhhYddmmhhX).

Where:

- qqqq is the location name;
- ddmmhhY is the latitude;
- dddmmhhY is the longitude;
- dd/ddd are degrees;
- mm is minutes;
- hh is hundredths of minutes (the live indicates hundredths of minutes is used, not seconds);
- Y is latitude direction indicator (N,S);

- X is longitude direction indicator (E,W).

Automated ZZZZ location parsing also handles the following cases:

- Spaces or special characters are embedded in the qqqq field;
- Space delimiters are used between the qqqq and location fields;
- Space delimiters are used between the latitude and longitude subfields; and
- Y (N,E) and(W,E) values precede the location.

When a known aerodrome is specified via item 18, the system determines the aerodrome identifier from the unspecified locations information and uses that identifier as though it were specified directly as the departure or destination.

7.7.2 Interface

The unspecified departure and destination location management interface allows the user to query, display, filter, create, modify and delete unspecified departure and destination location records.

Access to the unspecified departure and destination location management interface is controlled by the zzzz_locations_view and zzzz_locations_modify privileges.

The unspecified departures and destinations are displayed in a datagrid following the conventions described under data grid display. The default sort order is identifier ascending.

The following dataset filters are provided:

- General text.

Unspecified location is displayed as one of DDD.dddd, DDD MM SSX or DDDMMSS.SSX depending on the system setting for aerodrome location display. The user may enter the aerodrome location in either format (DDD.dddd, DDD MM SSX or DDDMMSS.SSX) regardless of what the display format setting is set to.

7.7.3 Form

Edit Unspecified Aircraft Type	
Text Identifier *	Name *
9SHGF	FOREST GROUP
Aircraft Type	MTOW (kg) *
B222	3560
<input type="button" value="CLEAR"/> <input type="button" value="UPDATE"/> <input type="button" value="DELETE"/>	

Item	Description
Text Identifier	It's the text parsed from the Item18.
Name	It's the common name for this location.
Maintained	A flag to identify if it's a manned or unmanned airstrip.

Item	Description
Aerodrome Identifier	If the location needs to be linked to some aerodrome.
Status	System Generated or Manual. It indicates if the record has been created/modified by the User (Manual).
Latitude	The latitude coordinate of the location.
Longitude	The longitude coordinate of the location.

8 CHARGES AND FORMULAS

The charges and formulas submenu contains the interfaces related to the configuration of charges and formulas.

These interfaces include:

- Air navigation charge schedules;
- Average MTOW factors;
- Enroute air navigation charges;
- Service charge catalogue;
- Utilities schedules;
- Utilities towns and villages; and
- Flight reassessments.

8.1 Air Navigation Charges Schedule Management

8.1.1 Background

Air navigation charges schedules are maintained in a tabular format and are stored as excel spreadsheets.

A separate approach, aerodrome, late arrival, late departure, extended hours and parking schedule may be maintained for each class of aerodrome.

Approach charges are used to calculate the approach charges for a flight.

Aerodrome charges are used to calculate the aerodrome charges for a flight.

Late arrival charges are used to calculate the late arrival charges for a flight.

Late departure charges are used to calculate the late departure charges for a flight.

Extended hours charges are used as an alternative method of calculating the late arrival and departure charges for a flight.

Parking charges are used to calculate the parking charges for a flight between its prior arrival and its departure.

Approach, aerodrome, late arrival, late departure and extended hours fee schedules all follow the same format.

The first three lines are not used by ARMS. They may be used by the operator for storing descriptive information about the schedule.

The fourth line, beginning in column two, contains the time of day intervals. These are specified as hhmm. The last value should be 2359, the end of the day. There are three sets of these, one for international charges, one for domestic charges and one for regional charges. The number of columns may vary depending on the number of time of day categories defined.

Column one, beginning on line five, identifies the upper limit of the MTOW weight for each line. A single line may represent more than one MTOW. The number of rows may vary depending on how many MTOW categories are defined. The last value in column one should be 700, the maximum MTOW supported by ARMS.

MTOW upper limits are displayed and entered in either tons or kg, depending on the system configuration.

Aerodrome Fees									
	International			Domestic			Regional		
	00	06	22	00	06	22	00	06	22
	00	00	00	00	00	00	00	00	00
	to	to	to	to	to	to	to	to	to
MTO	06	22	23	06	22	23	06	22	23
W	00	00	59	00	00	59	00	00	59
10									
20									
50									
100									
250									
500									

Parking fee schedules have a simpler format.

The first three lines are not used by ARMS. They may be used by the operator for storing descriptive information about the schedule.

The fourth line specifies for each schedule type, the number of hours of free parking before charges are applied.

The fifth line, beginning in column two, contains the basis for charging for parking, which is one of:

- HOUR (amount charged per hour or part thereof);
- DAY (amount charged per day or part thereof); or
- 24HR (amount charged per 24 hour period or part thereof).

There are three sets of charges, one for international charges, one for domestic charges and one for regional charges.

Column one, beginning on line six, identifies the upper limit of the MTOW weight for each line. A single line may represent more than one MTOW. The number of rows may vary depending on how many MTOW categories are defined. The last value in column one should be the maximum MTOW supported by ARMS.

Parking Fees			
	International	Domestic	Regional
Free	4	4	4
MTOW	24HR	24HR	24HR
10			
20			

50			
100			
250			
500			

8.1.2

Interface

The air navigation charges schedules interface allows the user to query, display, filter and modify the approach, aerodrome, late arrivals, late departures, extended hours and parking schedules for a selected aerodrome category.

Access to the air navigation charges schedules management interface is controlled by the charges_schedule_view and charges_schedule_modify privileges.

The air navigation charges schedules are displayed in a datagrid following the conventions described under data grid display. The default sort order is charge type, aerodrome class descending.

The following dataset filters are provided:

- General text.

The user must select an aerodrome category and the type of charges (approach, aerodrome, late arrivals, late departures, extended hours, parking) to be displayed. The charges are displayed with one row per MTOW, with the columns containing time-of-day values.

Approach, aerodrome, late arrivals, late departures, extended hours and parking schedules may also be downloaded as .xlsx files, modified and uploaded back to the server. The upload process must validate the format and content of the .xlsx file and report errors to the user.

MTOW upper limits are displayed and entered in either tons or kg, depending on the system configuration.

8.1.3

Form

 Upload an Air Navigation Charge File

<p>Schedule *</p> <input style="width: 100%;" type="text" value="Aerodrome"/>	<p>Aerodrome Category *</p> <input style="width: 100%;" type="text" value="Class I"/>
<p>Template Document *</p> <div style="border: 1px solid #ccc; padding: 5px; width: 100%;"> Class_I_AerodromeCharges_LongTon_original (1).xlsx  </div>	
<input style="background-color: #0072bc; color: white; padding: 5px; margin-right: 10px; border-radius: 5px; font-weight: bold; border: none; width: 100px; height: 30px;" type="button" value="CLEAR"/> <input style="background-color: #0072bc; color: white; padding: 5px; border-radius: 5px; font-weight: bold; border: none; width: 100px; height: 30px;" type="button" value="UPDATE"/> <input style="background-color: #0072bc; color: white; padding: 5px; border-radius: 5px; font-weight: bold; border: none; width: 100px; height: 30px;" type="button" value="DELETE"/>	

Item	Description
Schedule	Indicates what Schedule the record is about. Schedules are: Approach, Aerodrome, Parking, Late Arrival, and Late Departure.
Aerodrome Category	Indicates the aerodrome category that will be affected by the schedule.

8.2 Average MTOW Factor Management

8.2.1 Background

The average MTOW factor table contains a list of average MTOW factors to be used in enroute billing formulas. These allow enroute billing to be done on using an MTOW that is representative of an entire category of aircraft, rather than the exact MTOW of each aircraft. Separate MTOW categories may be defined for domestic, regional or international flights.

The average MTOW factor management interface allows the user to query, display, filter, create, modify and delete average MTOW factor records.

The average MTOW factor is used in enroute billing formulas. These allow enroute billing to be done using an MTOW that is representative of an entire category of aircraft, rather than the exact MTOW of each aircraft. MTOW category attributes include the following:

- Upper limit of the MTOW category (tons)
- Average MTOW factor

8.2.2 Interface

The average MTOW factor management interface allows the user to query, display, filter, create, modify and delete average MTOW factor records.

Access to the average MTOW factor management interface is controlled by the avg_mtow_factor_view and avg_mtow_factor_modify privileges.

There are three classes of MTOW factors (domestic, regional and international). An MTOW factor class must always be selected (default is domestic). The average MTOW factors for the selected class are displayed in a datagrid following the conventions described under data grid display. The default sort order is category upper limit ascending.

MTOW upper limit is displayed and entered in either tons or kg, depending on the system configuration.

The following dataset filters are provided:

- General text.

8.2.3 Form

 Edit an MTOW Factor

Upper Limit *	Average MTOW Factor *	
2.75	2.5	
CLEAR	UPDATE	DELETE

Item	Description
Upper Limit	Upper limit of the MTOW category (Kg or Tons – based on system configuration).
Average MTOW Factor	MTOW factor to be used for this category.
Factor Class	Indicates the category that follows that schedule. It can be: Domestic, Regional, and International.

8.3 Enroute Air Navigation Charge Management

8.3.1 Background

The enroute air navigation charges table contains the MTOW category to be used for calculating enroute air navigation charges.

The formula text may contain:

- [MTOW] (based on aircraft type or registration number in tons);
- [MTOW_Kg] (based on aircraft type or registration number in kg);
- [AvgMassFactor] (AMF, based on MTOW category and flight type (domestic, regional, international));
- [CrossDist] (FIR crossing distance in km);
- [CrossDist_Nm] (FIR crossing distance in Nm);
- [ApproachFee] (Calculated approach fee – must be converted to target enroute currency);
- [AerodromeFee] (Calculated aerodrome fee – must be converted to target enroute currency);
- [WFactor] (Weight factor);
- [DFactor] (Distance factor);
- [AccountDiscount] (based on account);
- [EntriesNumber] (number of flight entries into FIR, based on radar or flight plan); and
- [FirEntryFee] (cost per FIR entry based on account).

These parameters can be built into the formula using the following:

- Algebraic operators (brackets, +, -, /, *); and
- Math functions (sqr, sqrt, abs, round, truncate, pow, min, max, ceiling, floor).

Enroute air navigation formulas typically have a P factor which is multiplied by the distance and the square root of MTOW/50 (or similar). The P factor is normally hardcoded in the air navigation formula and normally differs between domestic, regional and international flights.

The enroute air navigation should always contain a row for MTOW 999, the maximum MTOW supported by ARMS.

For each enroute air navigation charge category, there must be one enroute air navigation formula defined for each flight movement category defined

8.3.2 Interface

The enroute air navigation charges management interface allows the user to query, display, filter, create, modify and delete enroute air navigation charges records.

Access to the air navigation charges management interface is controlled by the enroute_charges_view and enroute_charges_modify privileges.

The enroute air navigation charges are displayed in a datagrid following the conventions described under data grid display. The default sort order is MTOW category upper limit ascending.

The following dataset filters are provided:

- General text.

The interface for modifying formulas allows the user to select function names and parameter names to be used in the formula by selecting them from a list. The user may validate the air navigation charges formulas at any time during editing.

The modified air navigation charges formulas must be validated prior to being saved. Invalid formulas must not be saved.

MTOW upper limits are displayed and entered in either tons or kg, depending on the system configuration.

8.3.3 Form

The screenshot shows a software interface titled "Edit Formulas". It has tabs for "Parameters", "Operators", and "Math Functions". Under "Parameters", there are fields for "MTOW Upper Limit (kg)" (set to 2500) and "W Factor Formula" (set to $\sqrt{([MTOW] * 907.185) / 20000}$). Other parameters listed include Domestic, Regional Departure, Regional Arrival, Regional Overflight, International Departure, International Arrival, and International Overflight formulas, each with their respective formula definitions. At the bottom are buttons for "CLEAR", "UPDATE", "DELETE", and "VALIDATE". A note at the top says "PLEASE DO NOT USE COMMAS FOR THOUSAND SEPARATORS e.g. 1000000.00".

Item	Description
MTOW Upper Limit	Indicates the maximum aircrafts weight to use this formula.
Domestic Formula	The formula used to calculate the Enroute Charges for Domestic Flights.
Regional Departure Formula	The formula used to calculate the Enroute Charges for Regional Departure Flights.
Regional Arrival Formula	The formula used to calculate the Enroute Charges for Regional Arrival Flights.
Regional Overflight Formula	The formula used to calculate the Enroute Charges for Regional Overflight Flights.
International Departure Formula	The formula used to calculate the Enroute Charges for International Departure Flights.
International Arrival Formula	The formula used to calculate the Enroute Charges for International Arrival Flights.
International Overflight Formula	The formula used to calculate the Enroute Charges for International Overflight Flights.
W Factor Formula	The formula used to calculate, if used, Weight Factor.
Domestic D Factor Formula	The formula used to calculate, if used, Domestic Distance Factor.
Regional Departure D Formula	The formula used to calculate, if used, Regional Departure Distance Factor.
Regional Arrival D Formula	The formula used to calculate, if used, Regional Arrival Distance Factor.
Regional Overflight D Formula	The formula used to calculate, if used, Regional Overflight Distance Factor.

Item	Description
International Departure D Formula	The formula used to calculate, if used, International Departure Distance Factor.
International Arrival D Formula	The formula used to calculate, if used, International Arrival Distance Factor.
International Overflight D Formula	The formula used to calculate, if used, International Overflight Distance Factor.

Parameters

[MTOW]	Maximum Take Off Weight
[AVGMASSFACTOR]	Average Mass Factor
[CROSSDIST]	FIR crossing distance
[ACCOUNTDISCOUNT]	Discount percentage for the account
[ENTRIESNUMBER]	Number of entry points into FIR
[FIRENTRYFEE]	Cost per FIR entry based on account
[WFACTOR]	W Factor Formula
[DFACTOR]	D Factor Formula

Math Functions

Name	Usage	Result	Description
SQR	sqr(2)	4	Returns a specified number raised to the power of 2
SQRT	sqrt(4)	2	Returns the square root of a number
ABS	abs(-7.25)	7.25	Returns the absolute value of a number
ROUND	round(3.222,2)	3.22	Rounds a value to the nearest integer or specified number of decimal places
TRUNCATE	truncate(1.7)	1	Calculates the integral part of a number
POW	pow(3, 2)	9	Returns a specified number raised to the specified power
MIN	min(1, 2)	1	Returns the smaller of two numbers
MAX	max(1, 2)	2	Returns the larger of two numbers
CEILING	ceiling(1.5)	2	Returns the smaller integer greater than or equal to the specified number
FLOOR	floor(1.5)	1	Returns the largest integer less than or equal to the specified number

8.4 Recurring Charge Management

8.4.1 Background

A recurring charge is a charge that is invoiced to an account on a recurring basis (monthly, quarterly, yearly). The recurring charges table maps accounts to service charge catalogue items over a given time period. A recurring charge has attributes which include the following:

- Service charge catalogue id (M,FK to service charge catalogue);
- Associated account (M,FK to accounts);

- Aerodrome (M,FK to aerodromes);
- Basis (monthly, quarterly, yearly);
- Start date (M,date);
- End date (M,date);
- Last modified user id (M,string); and
- Last modified date/time (M,date/time).

Recurring charges information is used by ARMS to generate non-aviation invoices.

8.4.2

Interface

The recurring charges interface allows the user to query, display, filter, create, modify and delete recurring charges records.

Access to the recurring charges management interface is controlled by the charges_view and charges_modify privileges.

The recurring charges are displayed in a datagrid following the conventions described under data grid display. The default sort order is account name (joined from accounts), class, category, type, subtype, description ascending.

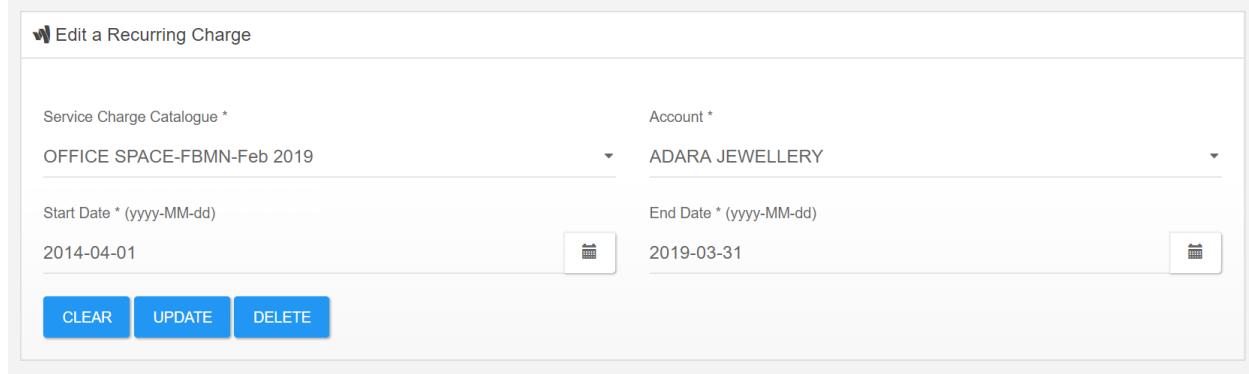
The following dataset filters are provided:

- General text;
- Account; and
- Charge status:
 - Near end date (within 30 days of end date) charges; and
 - Out of date (beyond expected end date) charges.

The user may add recurring charges to an account from the service charge catalogue for charges with an invoice category of non-avi, utility, lease, or concession.

8.4.3

Form



Edit a Recurring Charge

Service Charge Catalogue *	Account *	
OFFICE SPACE-FBMN-Feb 2019	ADARA JEWELLERY	
Start Date * (yyyy-MM-dd)	End Date * (yyyy-MM-dd)	
2014-04-01	2019-03-31	
CLEAR	UPDATE	DELETE

Item	Description
Service Charge Catalogue	Indicates which Service Charge record has to be billed recurrently.
Account	The account to bill for that charge.

Item	Description
Start Date	Start date of the period of validity of the recurring charges.
Start/End Date	End date of the period of validity of the recurring charges.

8.5 Service Charge Catalogue Management

8.5.1 Background

The service charge catalogue contains a hierarchical catalogue of all items which may be included in invoices, and the charge associated with each item. Users may add items to the non-aviation branch of the catalogue. The aviation charges are defined separately.

The service charge catalogue is used:

- To allow the user to specify recurring charges to be billed to an account;
- To allow the user to select charges which may be applied to a point of sale invoice; and
- To allow the user to apply a discount to an invoice.

Basis for charge:

- fixed price
- price per unit (user to enter units)
- percentage (user to enter amount of which a percentage is invoiced)
- user entered price (user to enter amount)
- electricity meter (user to enter city and meter readings)
- water meter (user to enter city and meter readings)
- discount (user to enter amount or percentage of invoice total)

Amount is used differently based on the basis for the service charge:

- Fixed – the line item cost is the amount specified
- Percentage – the line item cost is the amount multiplied by the user entered value (used for concessions)
- Unit – the line item cost is the amount multiplied by the user entered number of units;
- User, water, electric and discount – amount is not used.

The service charge catalogue contains two discount type service charges – one to apply a set amount discount to an invoice and the second to apply a percentage discount to an invoice.

8.5.2 Interface

The service charge catalogue management interface allows the user to query, display, filter, create, modify and delete service charge catalogue records.

Access to the service charge catalogue management interface is controlled by the service_charge_view and service_charge_modify privileges.

The service charges are displayed in a datagrid following the conventions described under data grid display. The default sort order is category, class, subtype, type, description ascending.

The following dataset filters are provided:

- General text.

8.5.3 Form

Edit Service Charge Catalogue

Charge Class *	Category *
NON AVIATION REVENUE	Approved Maintenance Organisations
Type *	Subtype *
Application & issuance of AMO	Application & issuance of amo FBMN
Description *	Minimum Amount *
Application & issuance of AMO	1
Maximum Amount *	Actual Amount
15000
Basis For Charge *	Invoice Category *
user entered price	point of sale
External Accounting System Identifier *	External Charge Category *
	AERONAUTICAL
<input type="button" value="CLEAR"/> <input type="button" value="UPDATE"/> <input type="button" value="DELETE"/>	

Item	Description
Charge Class	Indicates the Class to identify the charge (i.e. Non-Aviation).
Category	Indicates the Category to identify the charge (i.e. Licensing And Certificates, Rents and Leases, etc.).
Type	Indicates the Type to identify the charge (i.e. Rents, Pilot Certificate).
Sub-Type	Indicates the Sub-Type to identify the charge (i.e., Rents for Hangar, Commercial Pilot, etc.).
Description	Indicates the Description to identify the charge (i.e. 1000 sqm Hangar, Commercial Pilot License for A/C < 130000 Kg, etc.).
Minimum Amount	Indicates the minimum amount that can be applied to this charge (i.e. ANSP state that rents for conference rooms can't be lower than 250\$ per sqm).
Maximum Amount	Indicates the Maximum amount that can be applied to this charge (i.e. ANSP state that maximum cost for Pilot License can't be higher than 5000\$).
Actual Amount	Indicates the Actual amount of the charge, if specified.
Basis for Charge	Indicates how the charge amount will be calculated. Among the others, the common bases are: <u>Fixed:</u> it takes the Actual Amount as is.

Item	Description
	<p><u>Price per Unit</u>: it multiplies the number entered by the User for the Actual Amount. Until the minimum or maximum amount are reached, if so it applies the minimum or the maximum.</p> <p><u>Percentage</u>: It apply the percentage entered by the User to the Actual Amount. Until the minimum or maximum amount are reached, if so it applies the minimum or the maximum.</p> <p><u>User Entered Price</u>: It apply the amount entered by the User.</p>
Invoice Category	Indicates the invoice, and the billing engine to use to bill the charge. (i.e. non-avi indicates the Non-Aviation Billing, point of sale indicates the Point of Sale, etc.).

8.6 Utilities Schedule Management

8.6.1 Background

The utilities schedule management interface allows the user to query, display, filter, create, modify and delete utility schedule records.

Schedules are always filtered by type – either water or electric.

When a schedule is selected and displayed:

- a list of all towns using that schedule are displayed in alphabetical order;
- a list of all utility schedule ranges associated with that schedule are displayed from lowest to highest.
- the user may select, create, modify or delete a bracket range.
- Modifications made to a schedule range include:
 - upper limit; and
 - unit price.

The utilities schedule range contains the price per unit of a utility (water or electricity) for a specified range.

The utilities range bracket attributes include:

- Schedule id
- Range top end
- Unit price

There is only a single type of water schedule.

There are two types of electric schedules: residential and commercial.

8.6.2 Interface

The utilities schedule management interface allows the user to query, display, filter, create, modify and delete utility schedule records.

Access to the utilities schedule management interface is controlled by the utilities_schedule_view and utilities_schedule_modify privileges.

The utilities schedules are displayed in a datagrid following the conventions described under data grid display. The default sort order is by schedule number ascending.

The following dataset filters are provided:

- General text; and
- Schedule type.

Schedules are always filtered by type – either water or electric.

When a schedule is selected and displayed:

- a list of all towns using that schedule are displayed in alphabetical order;
- a list of all utility schedule ranges associated with that schedule are displayed from lowest to highest.
- the user may select, create, modify or delete a bracket range.
- modifications made to a schedule range include:
 - upper limit; and
 - unit price.

8.6.3 Form

⚡ Edit Utilities Schedule

Schedule Identifier
13

Schedule Type * Minimum Charge *

Residential Electrical 500

CLEAR **UPDATE** **DELETE**

⚡

Top Range * Unit Price *

CLEAR **CREATE**

Item	Description
Schedule Type	Type of schedule (water,electricity).
Minimum Charge	The minimum amount that is charged monthly for this utility.

8.7 Utilities Town and Village Management

8.7.1 Background

The utilities towns and villages management interface allows the user to query, display, filter, create, modify and delete utility towns and village schedule records.

The modifications which can be made to a town or village are:

- Change the name;
- Change the water schedule;
- Change the electric-residential schedule; and
- Change the electric-commercial schedule;

A town or village must always be associated with a water and electric schedule.

The towns and villages table contains a list of the towns and villages within the FIR. Each town or village is associated with a price schedule for water and electricity.

Utilities town and village attributes include the following:

- Town or village name
- Water utility schedule
- Electricity utility schedule

8.7.2 Interface

The utilities towns and villages management interface allows the user to query, display, filter, create, modify and delete utility towns and village schedule records.

Access to the utilities schedule management interface is controlled by the utilities_towns_view and utilities_towns_modify privileges.

The utilities towns and villages are displayed in a datagrid following the conventions described under data grid display. The default sort order is by town or village name ascending.

The following dataset filters are provided:

- General text.

The modifications which can be made to a town or village are:

- Change the name;
- Change the water schedule;
- Change the electric-residential schedule; and
- Change the electric-commercial schedule;

A town or village must always be associated with a water and electric schedule.

8.7.3 Form

Add Town or Village Utilities Schedules

Town or Village Name *	Water Schedule *
Commercial Electricity Schedule *	Residential Electricity Schedule *
<input type="button" value="CLEAR"/> <input type="button" value="CREATE"/>	

Item	Description
Town or Village Name	Name of the town or village to which the schedules are to be applied.
Water Schedule	Name of the water schedule to be used.
Commercial Electricity Schedule	Electricity schedule to be used for commercial users.
Residential Electricity Schedule	Electricity schedule to be used for residential users.

8.8 Flight Reassignment Management

8.8.1 Background

The flight reassignment table contains mappings to support the billing of flights owned and operated by one air operator to another air operator. This is used to support the lease agreements where the lease is for flight services provided, not for a specific aircraft.

The following workflow rules have been identified:

- A lessee (user) company may have leasing contracts with one or more lessor (owner) companies.
- A lessor (owner) company may have leasing contracts with one or more lessee (user) companies.
- Lessee (user) companies may be either national or foreign.
- Lessor (owner) companies may be either national or foreign.
- Flight reassignment may be established via either flight id (ICAO code) or registration number.
- Leasing agreements may be defined uniquely to any type, scope and nationality of flight.
- For a given aerodrome, two different lessee (user) companies may be assigned ownership of different type, scope or nationality of flights for a given lessor (owner) company.
- Costs of reassigned flights are applied based on the nationality of the lessee (user) account.

Flight ownership specification via flight reassignment supersedes flight ownership assignment via registration number or flight identifier.

For a given identification type and identification text, the reassignment start date and reassignment end date and the flight attributes must not overlap.

Reassignment checks should be performed with the following order of precedence:

- Registration;
- Flight Id; and
- ICAO code.

8.8.2 Interface

The flight reassignment management interface allows the user to query, display, filter, create, modify and delete flight reassignment records.

Access to the flight reassignment management interface is controlled by the flight_reassignment_view and flight_reassignment_modify privileges.

The flight reassigned are displayed in a datagrid following the conventions described under data grid display. The default sort order is account name, identifier type, identifier, ascending.

The following dataset filters are provided:

- General text; and
- Account.

8.8.3 Form

Create a Flight Reassignment

Reassigned Company *	Identifier Type *
<input type="text"/>	<input type="text"/>
Aerodromes *	Identifier Text *
Select <input type="button" value="..."/>	<input type="text"/>
Start Date *	End Date *
<input type="button" value="..."/>	<input type="button" value="..."/>
Flight Type	Flight Scope
<input type="checkbox"/> Arrival <input type="checkbox"/> Departure <input type="checkbox"/> Domestic <input type="checkbox"/> Overflight	<input type="checkbox"/> Domestic <input type="checkbox"/> Regional <input type="checkbox"/> International
Aircraft Nationality	
<input type="checkbox"/> National <input type="checkbox"/> Foreign	
<input type="button" value="CLEAR"/> <input type="button" value="CREATE"/>	

Item	Description
Reassigned Company	The air operator which should be charged for the flight
Identifier Type	Method to be used to identify flights (ICAO code, flight identifier or registration number).
Aerodromes	Aerodromes where the flight reassignment is applicable (none means all flights).
Identifier Text	The value to be checked for based on the identifier type
Start Date	Start date of flight reassignment.

Item	Description
End Date	End date of flight reassignment.
Flight Type	Types of flights to be reassigned.
Flight Scope	Scope of flights to be reassigned.
Aircraft Nationality	Nationality of aircraft used in flights to be reassigned.

9 EXEMPTIONS

The exemptions submenu contains the interfaces related to exemption of charges.

These interfaces include:

- Exempt accounts;
- Exempt aircraft types;
- Exempt flight routes;
- Exempt flight status;
- Exempt aircraft and flights;
- Repositioning aerodrome clusters; and
- Service outages.

9.1 Exempt Account Management

9.1.1 Background

The exempt accounts are list of accounts which may have specific charges waived. No aviation invoices are generated for these accounts if all charges are waived.

9.1.2 Interface

The exempt account management interface allows the user to query, display, filter, create, modify and delete exempt account records.

Access to the exempt accounts management interface is controlled by the exempt_account_view and exempt_account_modify privileges.

The exempt accounts are displayed in a datagrid following the conventions described under data grid display. The default sort order is account name ascending.

Account name is joined from the accounts table.

The following dataset filters are provided:

- General text.

9.1.3 Form

 Edit an Exempt Account

Account *	Absolute Aviation		
Enroute Fees Exempt *	False	Approach Fees Exempt *	False
Aerodrome Fees Exempt *	False	Late Arrival Fees Exempt *	True
Late Departure Fees Exempt *	True	Parking Fees Exempt *	False
International PAX Fees Exempt *	False	Domestic PAX Fees Exempt *	False
Flight Notes *	24		

CLEAR **UPDATE** **DELETE**

Item	Description
Account	Indicates the account to be exempt.
Enroute Fees Exempt	Indicates if the enroute fees are exempt or not.
Approach Fees Exempt	Indicates if the approach fees are exempt or not.
Aerodrome Fees Exempt	Indicates if the aerodrome fees are exempt or not.
Late Arrival Fees Exempt	Indicates if the late arrival fees are exempt or not.
Late Departure Fees Exempt	Indicates if the late departure fees are exempt or not.
Parking Fees Exempt	Indicates if the parking fees are exempt or not.
International PAX Fees Exempt	Indicates if the international PAX fees are exempt or not.
Domestic Pax Fees Exempt	Indicates if the domestic PAX fees are exempt or not.
Flight Notes	Flight notes indicating which fees are exempt and why.

9.2 Exempt Aircraft Type Management

9.2.1 Background

The exempt aircraft types table contains a list of aircraft types for which specific charges may be waived.

9.2.2 Interface

The exempt aircraft type management interface allows the user to query, display, filter, create, modify and delete exempt aircraft type records.

Access to the exempt aircraft type management interface is controlled by the `exempt_aircraft_type_view` and `exempt_aircraft_type_modify` privileges.

The exempt aircraft types are displayed in a datagrid following the conventions described under data grid display. The default sort order is aircraft type ascending.

The following dataset filters are provided:

- General text.

Aircraft types may be either selected from the aircraft types table, the unspecified aircraft types table or may be manually entered by the user.

9.2.3 Form

► Edit an Exempt Aircraft Type

Aircraft Type *	BE20		
Enroute Fees Exempt *	False	Approach Fees Exempt *	False
Aerodrome Fees Exempt *	False	Late Arrival Fees Exempt *	True
Late Departure Fees Exempt *	True	Parking Fees Exempt *	False
International PAX Fees Exempt *	False	Domestic PAX Fees Exempt *	False
Flight Notes *	24HR OPERATIONS		
<input type="button" value="CLEAR"/> <input type="button" value="UPDATE"/> <input type="button" value="DELETE"/>			

Item	Description
Aircraft Type	Indicates the aircraft type to be exempt.
Enroute Fees Exempt	Indicates if the enroute fees are exempt or not.
Approach Fees Exempt	Indicates if the approach fees are exempt or not.
Aerodrome Fees Exempt	Indicates if the aerodrome fees are exempt or not.
Late Arrival Fees Exempt	Indicates if the late arrival fees are exempt or not.
Late Departure Fees Exempt	Indicates if the late departure fees are exempt or not.
Parking Fees Exempt	Indicates if the parking fees are exempt or not.

Item	Description
International PAX Fees Exempt	Indicates if the international PAX fees are exempt or not.
Domestic Pax Fees Exempt	Indicates if the domestic PAX fees are exempt or not.
Flight Notes	Flight notes indicating which fees are exempt and why.

9.3 Exempt Flight Route Management

9.3.1 Background

The exempt flight routes table contains pairs of aerodromes between which specific charges may be waived.

Note that departure and destination aerodrome IDs may also be a departure or destination specified in item 18 via DEP/ or DEST/.

9.3.2 Interface

The exempt flight route management interface allows the user to query, display, filter, create, modify and delete exempt flight route records.

Access to the exempt flight route management interface is controlled by the exempt_flight_route_view and exempt_flight_route_modify privileges.

The exempt flight routes are displayed in a datagrid following the conventions described under data grid display. The default sort order is departure aerodrome, destination aerodrome ascending.

The following dataset filters are provided:

- General text.

9.3.3 Form

Edit an Exempt Flight Route

Departure Aerodrome *	Destination Aerodrome *	
HKMO	HKUK	
Enroute Fees Exempt *	Approach Fees Exempt *	
True	False	
Aerodrome Fees Exempt *		
False		
International PAX Fees Exempt *	Domestic PAX Fees Exempt *	
False	False	
Bidirectional Fees Exempt *		
False		
Flight Notes *		
Exempt enroute HKMO-HKUK		
CLEAR	UPDATE	DELETE

Item	Description
Departure Aerodrome	Indicates the start point of the route.
Destination Aerodrome	Indicates the end point of the route.
Bi-directional Route	Indicates that the route is exempt in either direction.
Enroute Fees Exempt	Indicates if the enroute fees are exempt or not.
Approach Fees Exempt	Indicates if the approach fees are exempt or not.
Aerodrome Fees Exempt	Indicates if the aerodrome fees are exempt or not.

Item	Description
Late Arrival Fees Exempt	Indicates if the late arrival fees are exempt or not.
Late Departure Fees Exempt	Indicates if the late departure fees are exempt or not.
Parking Fees Exempt	Indicates if the parking fees are exempt or not.
International PAX Fees Exempt	Indicates if the international PAX fees are exempt or not.
Domestic Pax Fees Exempt	Indicates if the domestic PAX fees are exempt or not.
Flight Notes	Flight notes indicating which fees are exempt and why.

9.4 Exempt Flight Status Management

9.4.1 Background

The exempt status table contains flight plan status for which specific charges may be waived.

9.4.2 Interface

The exempt flight status management interface allows the user to query, display, filter, create, modify and delete exempt flight status records.

Access to the exempt flight status management interface is controlled by the `exempt_flight_status_view` and `exempt_status_route_modify` privileges.

The exempt flight statuses are displayed in a datagrid following the conventions described under data grid display. The default sort order is exempt status type, exempt status value ascending.

The following dataset filters are provided:

- General text.

9.4.3 Form

Edit an Exempt Flight Status

Flight Item Type *	Flight Item Value *
ITEM18-RMK	TRAINING
Enroute Fees Exempt *	Approach Fees Exempt *
True	False
Aerodrome Fees Exempt *	Late Arrival Fees Exempt *
False	False
Late Departure Fees Exempt *	Parking Fees Exempt *
False	False
International PAX Fees Exempt *	Domestic PAX Fees Exempt *
False	False
Flight Notes *	
Training flights	
<input type="button" value="CLEAR"/> <input type="button" value="UPDATE"/> <input type="button" value="DELETE"/>	

Item	Description
Flight Item Type	Indicates the type of status (item 8 type, item 18 status or item 18 remark)
Flight Item Value	The value of the flight item type which is exempt. These are listed in the table below.
Destination Aerodrome	Indicates the end point of the route.
Bi-directional Fees Exempt	Indicates that the route is exempt in either direction.
Enroute Fees Exempt	Indicates if the enroute fees are exempt or not.
Approach Fees Exempt	Indicates if the approach fees are exempt or not.
Aerodrome Fees Exempt	Indicates if the aerodrome fees are exempt or not.
Late Arrival Fees Exempt	Indicates if the late arrival fees are exempt or not.
Late Departure Fees Exempt	Indicates if the late departure fees are exempt or not.
Parking Fees Exempt	Indicates if the parking fees are exempt or not.
International PAX Fees Exempt	Indicates if the international PAX fees are exempt or not.
Domestic Pax Fees Exempt	Indicates if the domestic PAX fees are exempt or not.
Flight Notes	Flight notes indicating which fees are exempt and why.

Values for ITEM18-STS are those shown in the table below.

Values for ITEM18-RMK are free format text.

Values for ITEM8-TYPE are those shown in the table below.

Special purpose flight plans may be identified by STS/ reason for special handling by ATS as described in the table below. Other reasons for special handling by ATS shall be denoted under the designator RMK/.

Item 8 Type Codes	
Code	Description
S	Scheduled air service.
N	Non-scheduled air transport service.
G	General aviation.
M	Military.
X	Other than the above.
Item 18 STS/ Codes	
Code	Description
ALTRV	Altitude reservation.
ATFMX	Exemption from ATFM measures by the appropriate ATS authority.
FFR	Fire fighting.
FLTCK	Flight check for calibration of navaids.
HAZMAT	Hazardous material.
HEAD	Head of state.
HOSP	Medical flight declared by medical authorities.
HUM	Humanitarian mission.
MARSA	Military entity assumes responsibility for separation of military aircraft.
MEDEVAC	Life critical medical emergency evacuation.
NONRVSM	Non-RVSM capable flight intending to operate in RVSM airspace.
SAR	Search and rescue mission.
STATE	Military, customs or police services.
Item 18 RMK/ Codes	
Code	Description
TRAINING	Training flight.

9.5 Exempt Aircraft and Flights Management

9.5.1 Background

The exempt aircraft and flights table contains a list of aircraft registration numbers and flight identifiers which may have specific charges waived.

9.5.2 Interface

The exempt aircraft and flights management interface allows the user to query, display, filter, create, modify and delete exempt aircraft and flights records.

Access to the exempt aircraft and flights management interface is controlled by the exempt_aircraft_flights_view and exempt_aircraft_flights_modify privileges.

The exempt aircraft and flights are displayed in a datagrid following the conventions described under data grid display. The default sort order is flight id ascending, aircraft registration number ascending.

The following dataset filters are provided:

- General text.

9.5.3 Form

Create an Exempt Aircraft and Flights

Exempt Aircraft Registration *	Exempt Flight ID *
Enroute Fees Exempt *	Approach Fees Exempt *
False	False
Aerodrome Fees Exempt *	Parking Fees Exempt *
False	False
Late Arrival Fees Exempt *	Late Departure Fees Exempt *
False	False
International PAX Fees Exempt *	Domestic PAX Fees Exempt *
False	True
Flight Notes *	
Start Date * (yyyy-MM-dd)	End Date * (yyyy-MM-dd)
<input type="button" value="CLEAR"/> <input type="button" value="CREATE"/>	

Item	Description
Flight Item Type	Indicates the type of status (item 8 type, item 18 status or item 18 remark)
Flight Item Value	The value of the flight item type which is exempt. These are listed in the table below.
Destination Aerodrome	Indicates the end point of the route.
Bi-directional Fees Exempt	Indicates that the route is exempt in either direction.
Enroute Fees Exempt	Indicates if the enroute fees are exempt or not.

Item	Description
Approach Fees Exempt	Indicates if the approach fees are exempt or not.
Aerodrome Fees Exempt	Indicates if the aerodrome fees are exempt or not.
Late Arrival Fees Exempt	Indicates if the late arrival fees are exempt or not.
Late Departure Fees Exempt	Indicates if the late departure fees are exempt or not.
Parking Fees Exempt	Indicates if the parking fees are exempt or not.
International PAX Fees Exempt	Indicates if the international PAX fees are exempt or not.
Domestic Pax Fees Exempt	Indicates if the domestic PAX fees are exempt or not.
Flight Notes	Flight notes indicating which fees are exempt and why.

9.6 Repositioning Aerodrome Cluster Management

9.6.1 Background

The repositioning aerodrome clusters contain information for the repositioning aerodrome clusters which have been defined and a mapping of each aerodrome within the configured airspaces to zero, one or more of these clusters.

Flight movement costs for repositioning flights are dependent on the location of departure and destination aerodromes. If both aerodromes are in the same cluster, specific charges may be waived. The repositioning aerodrome cluster management interface allows the user to define clusters of aerodromes and assign aerodromes to those clusters.

Assignment of an aerodrome to a repositioning aerodrome cluster is optional.

9.6.2 Interface

The repositioning aerodrome cluster management interface allows the user to query, display, filter, create, modify and delete repositioning aerodrome cluster records.

Access to the repositioning aerodrome cluster management interface is controlled by the aerodrome_category_view and aerodrome_category_modify privileges.

The repositioning aerodrome clusters are displayed in a datagrid following the conventions described under data grid display. The default sort order is cluster name ascending.

The following dataset filters are provided:

- General text.

Assignment of an aerodrome to a repositioning aerodrome cluster is optional.

Repositioning aerodrome identifiers may be either selected from the aerodromes table, the unspecified departure and destination locations table or may be manually entered by the user.

9.6.3 Form

Create a Repositioning Aerodrome Cluster

Cluster Name *

Select Aerodromes Select Unknown Aerodromes

Select Select

Assign Aerodromes

Enroute Fees Exempt * Approach Fees Exempt *

False False

Aerodrome Fees Exempt * Late Arrival Fees Exempt *

False False

Late Departure Fees Exempt * Parking Fees Exempt *

False False

International PAX Fees Exempt * Domestic PAX Fees Exempt *

False False

Flight Notes *

CLEAR CREATE

Aerodrome identifier type will usually be defined in the aerodromes table, but may also be an unknown location.

Item	Description
Cluster Name	Indicates name assigned by the User to the Cluster.
Aerodromes	Allows the User to select one (or more) aerodrome(s) that will benefit of the Exemption.
Unknown Aerodromes	Allows the User to select one (or more) Unknown Location(s) that will benefit of the Exemption.
Assign Aerodromes	Indicates the aerodromes assigned to the Cluster (Free text, Optional).
Enroute Fees Exempt	Indicates if the Enroute Fees are exempt or not.
Approach Fees Exempt	Indicates if the Approach Fees are exempt or not.
Aerodrome Fees Exempt	Indicates if the Aerodrome Fees are exempt or not.
Late Arrival Fees Exempt	Indicates if the Late Arrival Fees are exempt or not. (If enabled)

Item	Description
Late Departure Fees Exempt	Indicates if the Late Departure Fees are exempt or not. (If enabled)
Parking Fees Exempt	Indicates if the Parking Fees are exempt or not.
International PAX Fees Exempt	Indicates if the International PAX Fees are exempt or not.
Domestic Pax Fees Exempt	Indicates if the Domestic PAX Fees are exempt or not.
Flight Notes	Flight notes indicating which fees are exempt and why.

9.7 Aerodrome Service Outage Management

9.7.1 Background

The aerodrome service outages table contains a list of the service outages which have occurred at each aerodrome.

9.7.2 Interface

The aerodrome service outage management interface allows the user to query, display, filter, create, modify and delete aerodrome service outage records.

Access to the exempt aerodrome management interface is controlled by the aerodrome_service_outage_view and aerodrome_service_outage_modify privileges.

The aerodrome services are displayed in a datagrid following the conventions described under data grid display. The default sort order is aerodrome name, service name ascending.

The following dataset filters are provided:

- Service type (all or any from aerodrome service types);
- Aerodrome status (all with services, all with service outages);
- Aerodrome name;
- Start date/time and end date/time; and
- General text.

When the user selects an aerodrome service record, a list of the aerodrome service outages for that aerodrome and service are displayed. The user may modify or delete the aerodrome service outage record or may create a new record.

Outages for a specific aerodrome and service must have non-overlapping start and end date/times.

9.7.3 Form

Create an Aerodrome Service Outage

Aerodrome *	Aerodrome Service Type *
<input type="text"/>	<input type="text"/>
Start Date * (yyyy-MMM-dd)	Start Time (HHmm) *
<input type="text"/>	<input type="text"/>
End Date * (yyyy-MMM-dd)	End Time (HHmm) *
<input type="text"/>	<input type="text"/>
Approach Discount Type *	Approach Discount Amount *
<input type="text"/>	<input type="text"/>
Aerodrome Discount Type *	Aerodrome Discount Amount *
<input type="text"/>	<input type="text"/>
Flight Notes *	
<input type="text"/>	

Item	Description
Aerodrome	Indicates the aerodrome where the service outage occurred.
Aerodrome Service Type	Indicates the type of service outage which occurred.
Start Date and Start Time	Indicates the start date/time of the outage.
End Date and Start Time	Indicates the end date/time of the outage.
Approach Discount Type	Type of approach fee discount (fixed, percentage).
Approach Discount Amount	Amount of approach fee discount.

Item	Description
Aerodrome Discount Type	Type of aerodrome fee discount (fixed, percentage).
Aerodrome Discount Amount	Amount of aerodrome fee discount.
Flight Notes	Flight notes indicating which fees are discounted and why.

9.8 Discounted Aerodrome Charges Management

9.8.1 Background

The discounted aerodrome charges table contains a list of accounts, the aerodrome at which charges are to be discounted, and the percentage of each charge which is discounted.

9.8.2 Interface

The discounted aerodromes management interface allows the user to query, display, filter, create, modify and delete discounted aerodrome charges records.

Access to the exempt aerodrome management interface is controlled by the discounted_aerodrome_view and discounted_aerodrome_modify privileges.

The discounted aerodrome charges are displayed in a datagrid following the conventions described under data grid display. The default sort order is account name, aerodrome name ascending.

Account name is joined from the accounts table.

The following dataset filters are provided:

- General text.

Applicable end date is displayed for the user as a read-only field. It is set automatically by the system based on the start date of the current record and the start date of other records. The end date of any record is set to the start date minus one of the record with the next latest start date. The record with the latest start date should always have a null end date.

9.8.3 Form

[TBD] Not implemented.

10 MANAGEMENT

The management submenu contains the interfaces related to management of the system.

These interfaces are:

- Aerodrome categories;
- Aerodromes;
- Airspaces;
- Application management;
- Bank accounts;
- Interest rates;
- Billing centres;
- Countries;
- Regional countries;
- System configuration;
- Cached events;
- Plugins; and
- Transaction workflow.

10.1 Aerodrome Category Management

10.1.1 Background

The aerodrome categories table contains the aerodrome categories which have been defined and a mapping of each aerodrome within the configured airspaces to one of these categories.

Approach, aerodrome, late arrival, late departure, parking and passenger fees are based on the category of aerodrome. The aerodrome category management interface allows the user to define categories of aerodromes and assign aerodromes to those categories. All aerodromes must be assigned to a category.

10.1.2 Interface

The aerodrome category management interface allows the user to query, display, filter, create, modify and delete aerodrome category records.

Access to the aerodrome category management interface is controlled by the aerodrome_category_view and aerodrome_category_modify privileges.

The aerodrome categories are displayed in a datagrid following the conventions described under data grid display. The default sort order is category name ascending.

The following dataset filters are provided:

- General text.

All aerodromes within the billing area must be assigned to an aerodrome category.

10.1.3 Form

 Edit an Aerodrome Category

Aerodrome Category Name *		
Class I		
Domestic Passenger Fee - Adult *	69	International Passenger Fee - Adult *
		115
Domestic Passenger Fee - Child *	0	International Passenger Fee - Child *
	0	
<input type="button" value="CLEAR"/> <input type="button" value="UPDATE"/> <input type="button" value="DELETE"/>		

Item	Description
Aerodrome Category Name	Indicates category name.
Domestic Passenger Fee – Adult	Indicates the cost per Domestic Adult passenger for this aerodrome category.
Domestic Passenger Fee – Child	Indicates the cost per Domestic Child passenger for this aerodrome category.
International Passenger Fee – Adult	Indicates the cost per International Adult passenger for this aerodrome category.
International Passenger Fee – Child	Indicates the cost per International Child passenger for this aerodrome category.

10.2 Aerodrome Management

10.2.1 Background

The aerodromes table contains a list of the aerodromes in the billing area, as well as aerodromes outside the billing area which are not defined in AIX/M.

This list is used to maintain data integrity for other tables which require a column to contain a known aerodrome.

This list is also used by the flight movement builder to determine the location of aerodromes specified as departure or destination aerodromes in a flight plan which do not exist in AIX/M.

Each domestic aerodrome is associated with a billing centre and the revenue for that aerodrome is allocated to that billing centre.

Each aerodrome must be assigned to a billing centre.

Each aerodrome must be assigned to an aerodrome category.

10.2.2 Interface

The aerodrome management interface allows the user to query, display, filter, add, modify and delete aerodrome records.

Access to the aerodrome management interface is controlled by the aerodrome_view and aerodrome_modify privileges.

The aerodromes are displayed in a datagrid following the conventions described under data grid display. The default sort order is aerodrome name ascending.

The following dataset filters are provided:

- General text.

The aerodromes list may be automatically updated with all AIX/M aerodromes which fall within the defined billing airspace. The user is notified of AIX/M aerodromes which do not fall within the defined billing airspace, but they are not automatically deleted.

Aerodrome location is displayed as one of DDD.dddd, DDD MM SSX or DDDMMSS.SSX depending on the system setting for aerodrome location display. The user may enter the aerodrome location in either format (DDD.dddd, DDD MM SSX or DDDMMSS.SSX) regardless of what the display format setting is set to.

If aerodrome services have been defined, the user may assign one or more aerodrome services to the aerodrome.

10.2.3 Form

Edit an Aerodrome	
Aerodrome Name *	ICAO Identifier *
Camp Okavango	FBCO
Defined in AIX/M	Aerodrome Category *
True	Uncategorized
Latitude *	Longitude *
19.2225	23.1716
Billing Centre *	Default for Billing Centre *
Maun	True
External Accounting System Identifier	
<input type="button" value="CLEAR"/> <input type="button" value="UPDATE"/> <input type="button" value="DELETE"/>	

Item	Description
Aerodrome Name	The aerodrome real name
ICAO Identifier	Indicates ICAO code for the airdrome

Item	Description
Defined in the AIX/M	Indicates if the aerodrome is present in the AIX/M database
Aerodrome Category	Indicates the category which the aerodrome belongs to
Latitude/Longitude	Indicates the aerodrome's position, used to have a high precision calculation of the crossing distances
Billing Centre	Indicates the billing centre which the aerodrome belongs to
Default for Billing Centre	Indicates if the aerodrome is the default aerodrome for the billing centre selected

10.3 Airspace Management

10.3.1 Background

Airspaces are an AIX/M dataset used to allow the user to select the region over which aviation billing is to be performed. The user may select the airspace either from a list or geographically from a map. The user may select one or more airspaces, but at least one must always be selected. Selected airspaces are highlighted in the geographic display.

Airspaces are used by the aviation billing engine to only calculate enroute charges for the portion of the flight overlaps the selected airspaces.

The airspaces selected from AIX/M are copied to the billing airspaces table and are used from this table throughout the billing application.

10.3.2 Interface

The airspace management interface allows the user to query, display, filter and delete airspace records.

Access to the airspace management interface is controlled by the `airspace_view` and `airspace_modify` privileges.

The AMHS line parameters are displayed in a datagrid following the conventions described under data grid display. The default sort order is airspace name ascending.

The user may select one or more FIR or TMA boundaries from the data grid. At least one FIR/TMA must always be selected.

The user is able to display and select airspaces from a geographical display as well.

Selections made in the data grid and the geographical display are synchronised.

The following dataset filters are provided:

- General text.

The AIX/M airspace table is used as the complete reference set. The selected airspaces are stored in the billing airspace table.

10.3.3 Form

Select an Airspace
 Show Form

Filter			
Identifier	Name	Type	Action
FBFT	FRANCISTOWN TMA	TMA	
FBGR	GABORONE FIR	FIR	
FBKE	KASANE TMA	TMA	
FBMN	MAUN TMA	TMA	
FBSK	GABORONE TMA	TMA	
NAMIBIA EAST	NAMIBIA EAST	FIR	

CLEAR REMOVE

Item	Description
Identifier	The Airspace ICAO code
Name	The real name of the Airspace (HKNA = Nairobi FIR, CZEG = Canadian FIR, etc.)
Type	Indicates what kind of Airspace is selected/inserted, if FIR (Flight Information Region) and/or TMA (Terminal Management Area).
Action Button	The Action button enables the combined view, and displays the Airspace on the GIS map

10.4 Banking Account Management

10.4.1 Background

The bank account management interface allows the user to query, display, filter, create, modify and delete bank account records.

10.4.2 Interface

The bank account information management interface allows the user to query, display, filter, create, modify and delete bank account records.

Access to the bank account management interface is controlled by the banking_information_view and banking_information_modify privileges.

The banking information is displayed in a datagrid following the conventions described under data grid display. The default sort order is bank name, bank account number ascending.

The following dataset filters are provided:

- General text.

10.4.3 Form

 Add a Bank Account

Name *	Number *
<input type="text"/>	<input type="text"/>
Currency *	External Accounting System Identifier
<input type="text"/>	<input type="text"/>
CLEAR	CREATE

Item	Description
Bank Name	Bank name.
Account Number	Bank account number.
Currency	Bank account currency number
External Accounting System Identifier	External accounting system reference to this bank account.

10.5 Interest Rates Management

10.5.1 Background

The interest rates table contains the interest rates used to calculate charges to be applied to overdue invoices.

Interest rate start and end periods must be contiguous and non-overlapping periods. A null end date indicates that the interest rate is still in effect. Logically, only the interest rate record with the latest start date can have a null end date. The user does not enter the end date. It is determined by the system based on the interest rates start date and the start dates of other existing records.

Grace period is the number of interest free days allowed following the due date. A grace period of 0 indicates interest charges are to be applied beginning on the day after the due date.

Interest payments are calculated based on interest rates defined in the interest rates table. This table defines multiple interest rates to be applied at different times following the invoice due date.

Interest rates are defined as a percentage over a period of time (yearly, monthly, daily). This is strictly for the convenience of the user. Regardless of how it is defined, it is converted to the appropriate interval based on how it is applied.

The table below shows yearly, monthly and daily rates.

Yearly	Monthly (yearly/12)	Daily (yearly/365)
5.00000	0.41667	0.00114
10.00000	0.83333	0.00228
15.00000	1.25000	0.00342
20.00000	1.66667	0.00457
25.00000	2.08333	0.00571

Interest rates may be applied on one of the following basis:

- daily (daily interest rate X number of days overdue);
- monthly (monthly interest rate X number of months or part thereof overdue. Months are determined by 28, 30 or 31 day periods following the invoice due date, not calendar months).

The table below shows some example interest rate definitions:

Type	Percentage	Specified As	Applied As	Grace Days	Start	End
Default 2% monthly applied daily (CAAB)						
Default	2%	Monthly	Daily	0	2018-01-01	2018-12-31
Default 2% monthly applied monthly (KCAA)						
Default	2%	Monthly	Monthly	0	2018-01-01	2018-12-31
Default 38.35% yearly applied daily; Punitive 0.50% monthly applied daily (ENAC)						
Default	38.35%	Yearly	Daily	0	2018-01-01	2018-12-31
Punitive	0.5%	Monthly	Daily	31	2018-01-01	2018-12-31

10.5.2 Interface

The interest rate management interface allows the user to query, display, filter, create, modify and delete interest rate records.

Access to the interest rate management interface is controlled by the `interest_rate_view` and `interest_rate_modify` privileges.

The interest rates are displayed in a datagrid following the conventions described under data grid display. The default sort order is interest rate type, start date.

The following dataset filters are provided:

- General text.

Applicable end date is displayed for the user as a read-only field. It is set automatically by the system based on the start date of the current record and the start date of other records. The end date of any record is set to the start date minus one of the record with the next latest start date. The record with the latest start date should always have an null end date.

10.5.3

Form

% Edit an Interest Rate

Default Interest Specification *	Default Interest Application *	
Yearly	Daily	
Default Foreign Interest Percentage *	Default National Interest Percentage *	
38.35	38.35	
Default Interest Grace Period *	Punitive Interest Grace Period *	
0	30	
Punitive Interest Specification *	Punitive Interest Application *	
Monthly	Daily	
Punitive Interest Percentage *		
0.5		
Start Date * (yyyy-MM-dd)	End Date * (yyyy-MM-dd)	
2019-01-01		
CLEAR	UPDATE	DELETE

Item	Description
Default Interest Specification	Method of defining default interest (yearly, monthly,daily)
Default Interest Application	Method of apply default interest (monthly,daily)

Item	Description
Default Foreign Interest Rate	Default interest rate for foreign accounts.
Default National Interest Rate	Default interest rate for national accounts.
Default Interest Grace Period	Number of days overdue before default interest is charged.
Punitive Interest Grace Period	Number of days overdue before punitive interest is charged.
Punitive Interest Specification	Method of defining punitive interest (yearly, monthly,daily).
Punitive Interest Application	Method of apply punitive interest (monthly,daily).
Punitive Interest Rate	Punitive interest rate for all accounts.
Start Date	Start date of the interest rate specification.
End Date	End date of the interest rate specification.

10.6 Billing Centre Management

10.6.1 Background

The billing centres table contains a list of the billing centres, which are usually the ANSP headquarters and the major airports. A billing centre is associated with each user (normally his location of work) and all invoices generated by that user are associated with that billing centre.

Applications which generate invoices locks the billing centre table row prior to incrementing the invoice sequence number.

The aerodromes table contains a list of aerodromes all aerodromes within the FIR. Each aerodrome must be associated with a billing centre.

Normally, at least one aerodrome must be assigned to each billing centre which is the billing centre's default aerodrome. An exception to this is an HQ billing centre, if one is defined, which may or may not be associated with aerodromes.

Only one billing centre may be identified as headquarters.

For non-aviation invoices, the aerodrome marked as the default for the billing centre is always assigned as the aerodrome for the invoice.

For aviation invoices, the user must select one of the aerodromes assigned to the billing centre. The default aerodrome should be the selection default.

10.6.2 Interface

The billing centre management interface allows the user to query, display, filter, create, modify and delete billing centre records.

Access to the billing centre management interface is controlled by the `billing_centre_view` and `billing_centre_modify` privileges.

The aerodromes are displayed in a datagrid following the conventions described under data grid display. The default sort order is billing centre name ascending.

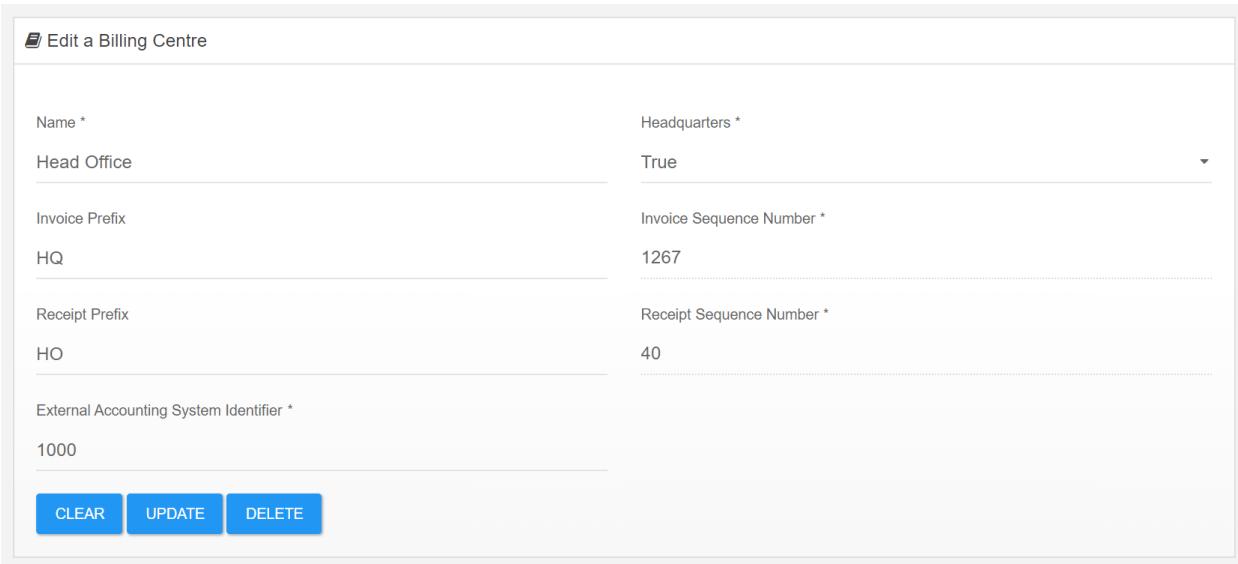
The following dataset filters are provided:

- General text.

If a user attempts to create or modify a second billing centre designated as headquarters, the user is notified that the billing centre headquarters designation is being changed and asked to confirm the operation.

If the user attempts to create or modify a billing centre which is not designated as headquarters, the user will be notified that no headquarters billing centre is defined and will be asked to confirm the operation.

10.6.3 Form



Edit a Billing Centre	
Name *	Headquarters *
Head Office	True
Invoice Prefix	Invoice Sequence Number *
HQ	1267
Receipt Prefix	Receipt Sequence Number *
HO	40
External Accounting System Identifier *	
1000	
<input type="button" value="CLEAR"/> <input type="button" value="UPDATE"/> <input type="button" value="DELETE"/>	

Item	Description
Name	The billing centre name
Headquarters	Indicates if the billing centre is Headquarters or not
Invoice Prefix	The prefix for invoices generated by this billing centre
Invoice Sequence Number	The sequence number that invoices have to follow
Receipt Prefix	The prefix for receipts generated by this billing centre
Receipt Sequence Number	The sequence number that receipts must follow

10.7 Country Management

10.7.1 Background

The countries table contains all the countries known to the system and maps the aircraft registration prefix and aerodrome prefixes assigned to that country.

The aircraft registration prefixes table contains a list of all known aircraft registration prefixes and maps them to the country they belong to.

The aerodrome prefixes table contains a list of all known aerodrome prefixes and maps them to the country they belong to.

10.7.2 Interface

The countries management interface allows the user to query, display, filter, create, modify and delete country records.

Access to the countries management interface is controlled by the countries_view and countries_modify privileges.

The countries are displayed in a datagrid following the conventions described under data grid display. The default sort order is country name ascending.

The following dataset filters are provided:

- General text.

The user may also associate one or more aircraft registration prefixes with a country. At least one aircraft registration must be associated with a country. Additional prefixes, usually identified as colonial allocations, must be added if they are defined.

The user may also associate one or more aerodrome prefixes with a country.

10.7.3 Form

Edit a Country	
Country Code *	AUS
Country Name (EN) *	Australia
Aircraft Registration Prefixes *	VH
Aerodrome Prefixes *	YA, YB, YC, YD, YE, YF, YG, YH, YI, YJ, YK, YL, YM, YN, YO, YP, YQ,
<input type="button" value="CLEAR"/> <input type="button" value="UPDATE"/> <input type="button" value="DELETE"/>	

Make sure to include aerodrome prefix and aircraft registration prefix information.

Item	Description
Country Code	The international code assigned to the country
Country Name	The normal name of the country
Aircraft Registration Prefixes	The aircraft registration prefix used for aircraft registered in the selected country
Aerodrome Prefixes	The prefix used by the aerodromes of that country

10.8 Regional Country Management

10.8.1 Background

The regional countries table contains a list of countries which are identified to be within the ANSPs region.

ARMS provides support for regional flights which are flights for aircraft registered in countries identified in the regional countries table as regional countries. Flight movement costs for regional flights are less than those for international flights.

10.8.2 Interface

The regional countries management interface allows the user to query, display, filter, create and delete regional country records.

Access to the regional countries management interface is controlled by the regional_countries_view and regional_countries_modify privileges.

The regional countries are displayed in a datagrid following the conventions described under data grid display. The default sort order is country name ascending. Country names are joined from the countries table.

The following dataset filters are provided:

- General text.

10.8.3 Form

 Regional Countries Show Form 

Filter REFRESH

Country Name	Country Code
Burundi	BDI
Kenya	KEN
Rwanda	RWA
South Sudan	SSD
Tanzania	TZA
Uganda	UGA

< 1 >

This page displays a list of regional countries. You can click on a country name to view its details or edit it. You can also create a new regional country record by clicking the 'Show Form' button.

 Add a Country

Country Name

Burundi, Kenya, Rwanda, South ▾
Sudan, Tanzania, ...

UPDATE

Item	Description
Country Name	List of countries to be included as regional countries.

10.9 Transaction Workflow Management

10.9.1 Background

The transaction approval workflow table defines the approval steps to be performed when the credit note approval workflow is enabled. For each step in the workflow, the table defines which group can make the approval, and what the resulting step is after that approval based on the amount of the credit note and the threshold for approval.

10.9.2 Interface

The transaction approval workflow interface allows the user to display, create, modify and delete transaction approval workflow records.

Access to the transaction approval workflow interface is controlled by the approval_workflow_view and approval_workflow_modify privileges.

The countries are displayed in an editabledatagrid. The sort order is level ascending and is not modifiable.

The user may change the number of approval steps which will add rows to or remove rows from thedatagrid.

For each approval step, the user may specify the following:

- The approval step name;
- The group which may make that approval;
- An approval threshold amount (optional);
- An approval threshold amount currency (required if a threshold has been set);
- The next step in the approval process if the transaction amount is below the threshold;
- The next step in the approval process if the transaction amount is above the threshold (required if threshold has been set); and

- The next step if the transaction is rejected.

After modifications have been made, they may be saved.

10.9.3

Form

Transaction Approval Workflow Steps

Number of Steps	CREATE
7	

Edit Existing Transaction Approval Workflow Steps

ADD LEVEL	REMOVE LEVEL	RELOAD LEVELS	Require Approval Document	Level 5

Item	Description
Rejected Approval	The level that the transaction has to go in the case that it is rejected
Delete Rejected	Indicates if a rejected transaction has to be deleted in case of rejection at the level

10.10 Application Management

10.10.1 Background

The route cache table contains the parsed flight routes. This is used only to improve system performance. Once a route has been parsed it has been stored in the cache. Routes for subsequent flights with the same departure aerodrome, destination aerodrome and route text will not be parsed. Instead, they will use the already parsed route from the route cache.

10.10.2 Interface

The application management interface allows the user to execute application management functions. Access to each application management function is controlled by a separate privilege.

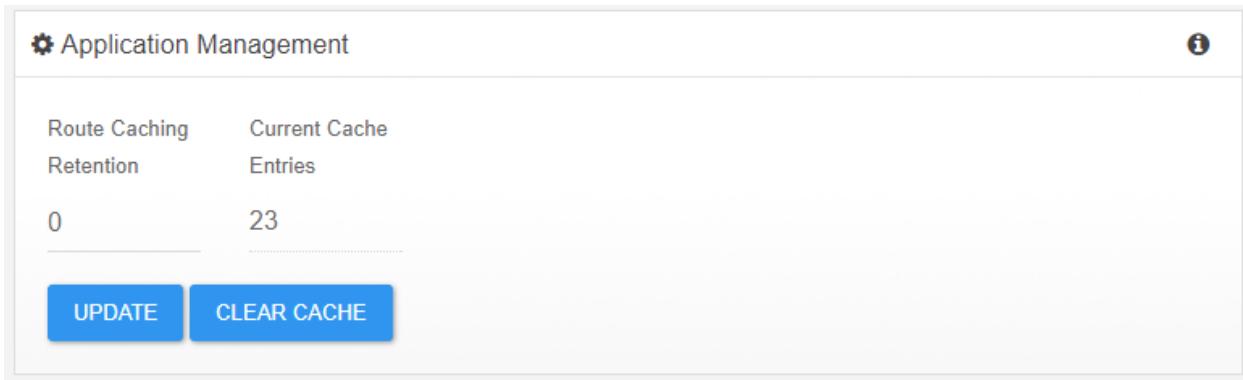
Delete Route Cache

Access to the delete route cache function is controlled by the manage_route_cache privilege.

When this function is invoked, the user is asked to confirm the operation, and if the operation is confirmed, all records in the route cache are deleted.

10.10.3 Form

The application management interface allows the user to specify the number of route caching retention and displays the number of current cache entries. The cache can be updated or cleared.



Route Caching Retention	Current Cache Entries
0	23

UPDATE **CLEAR CACHE**

Item	Description
Route Caching Retention	Number of days parsed routes are to be retained.
Current Cache Entries	Number of parsed routes stored.

10.11 System Configuration Management

10.11.1 Background

10.11.2 Interface

The system configuration interface allows the user to display and modify system configuration records.

Access to the system configuration interface is controlled by the sys_config_view and sys_config_modify privileges.

The system configuration display displays all system configuration parameters grouped by type, and in alphabetical order within type. Where units and range are provided, this information is displayed as well.

The following dataset filters are provided:

- General text.

Where range information has been provided, this information is used in the validation of the user data.

The only modification a user is allowed to make to a system configuration record is to modify the current value.

10.11.3 Form

System Configuration

Filter

UPDATE RECORD

ANSP

Air navigation charges currency

USD

ANSP currency

Kenyan Shilling (KES)

Banking information

Contact information

Country code

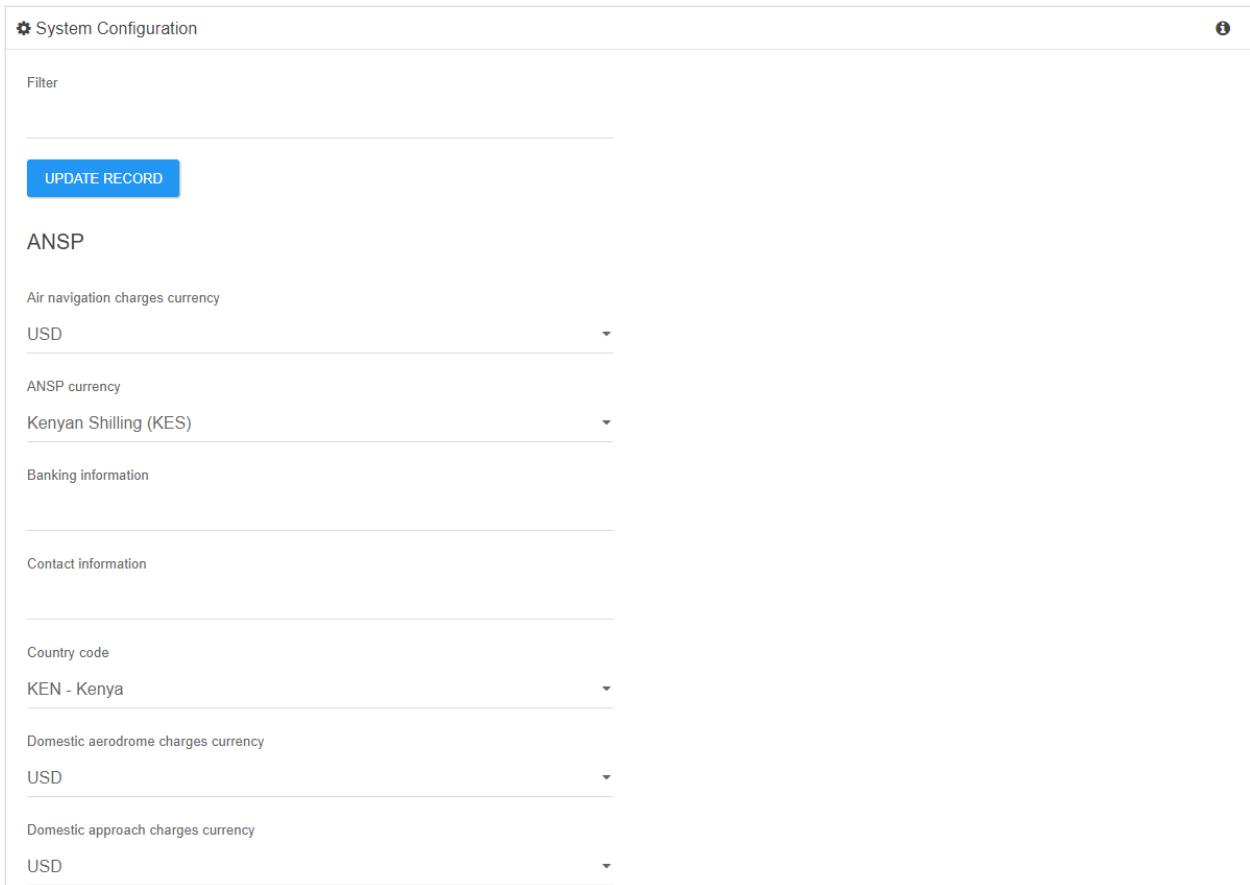
KEN - Kenya

Domestic aerodrome charges currency

USD

Domestic approach charges currency

USD



10.12 Cached Event Management

10.12.1 Background

The cached events table contains SQL transactions which are to be applied to remote databases in the case where ARMS attempts to access a remote database but the remote database is not accessible. There are two types of cached events: read and write.

In the case of cached reads, read events are executed by a scheduler on a timed basis. If the event is successful, the event result is stored. If a subsequent read during normal system operation fails the previous read result is used.

In the case of cached writes, write events are executed by plugins during normal system operations. If the event is successful no further action is required. If the event fails, the event will be retried on a timed basis until it succeeds or is cancelled by the user. Each failed event results in a cached event result being created.

10.12.2 Interface

The cached events management interface allows the user to query, display, filter, delete and re-execute cached events.

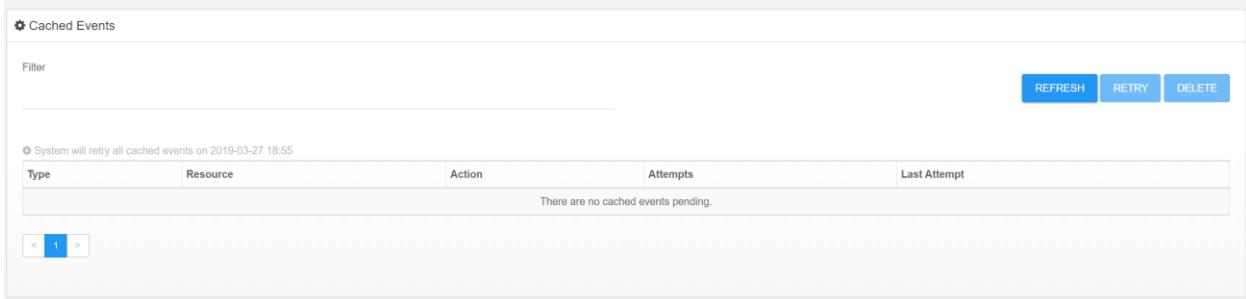
Access to the cached events management interface is controlled by the `cached_events_view` and `cached_events_modify` privileges.

The cached events are displayed in a datagrid following the conventions described under data grid display. The default sort order is date / time of cached event creation ascending.

The following dataset filters are provided:

- General text; and
- Temporal (start/end).

10.12.3 Form



The screenshot shows a user interface for managing cached events. At the top, there is a header bar with the title 'Cached Events'. Below this is a search/filter section with a 'Filter' input field and three buttons: 'REFRESH', 'RETRY', and 'DELETE'. A note below the filter says 'System will retry all cached events on 2019-03-27 18:55'. The main area is a datagrid with columns: Type, Resource, Action, Attempts, and Last Attempt. A message at the bottom of the grid states 'There are no cached events pending.' Navigation arrows are at the bottom left of the grid.

Item	Description
Type	The type of event cached
Resource	The resource that performed the action
Action	The action attempted
Attempts	The number of attempts done from the system repeating this action
Last Attempt	Indicates the date and time of the latest attempt

10.13 Plugin Management

10.13.1 Background

Plugins are customised parts of the system which may not be in use at all sites. The most common use of plugins is for integration of ARMS with other site-specific systems.

10.13.2 Interface

The plugin management interface allows the user to query, display, filter, modify, activate and deactivate plugins.

Access to the plugins management interface is controlled by the `plugins_view` and `plugins_modify` privileges.

The cached events are displayed in a datagrid following the conventions described under data grid display. The default sort order is date / time of cached event creation ascending.

The following dataset filters are provided:

- General text.

10.13.3 Form

 Plugins Show Form

Filter REFRESH

Name	Description	Enabled
Cronos 1	Flight plan importer using the Cronos 1 connector	false
Cronos 2	Flight plan importer using the Cronos 2 connector	false
KCAA AATIS Integration	Integrate adhoc fees from AATIS (TASP fees) based on permit numbers.	false
KCAA eAIP Integration	Integrate requisition fees from eAIP based on req numbers.	false
KCAA ERP Integration	Integrate invoices, credit notes, debit notes, and aircraft registration payments with KCAA ERP account system.	false

< 1 >

The information which is displayed and which may be configured varies by plugin. The simplest plugins have only an enable/disable checkbox. More complex plugins may have several configurable attributes.

Plugins

Show Form

Filter REFRESH

Name	Description	Enabled
Cronos 1	Flight plan importer using the Cronos 1 connector	false
Cronos 2	Flight plan importer using the Cronos 2 connector	false
KCAA AATIS Integration	Integrate adhoc fees from AATIS (TASP fees) based on permit numbers.	false
KCAA eAIP Integration	Integrate requisition fees from eAIP based on req numbers.	false
KCAA ERP Integration	Integrate invoices, credit notes, debit notes, and aircraft registration payments with KCAA ERP account system.	false

< **1** >

000000001D9A2B99

Enable Plugin

CLEAR **UPDATE**

11 DATA ANALYSIS AND STATISTICS

The data analysis and statistics submenu contains the reporting and statistics interfaces provided by the system.

These interfaces are:

- System summary;
- Analysis and statistics – air traffic;
- Analysis and statistics – revenue; and
- Report generation.

11.1 System Summary

11.1.1 Interface

The system summary form provides a quick summary of the system including counts and percentages of flight movements received and resolved. It also reports summaries of account and billing and account status information.

Access to the system summary interface is controlled by the `system_summary_view` privilege.

11.1.2 Form

System Summary				
REFRESH				
Flight Movements				
International Arrivals	1604	Resolved	1090	Percent Resolved
International Departures	1966	Resolved	0	Percent Resolved
Domestic	3458	Resolved	1	Percent Resolved
Overflights	7609	Resolved	6956	Percent Resolved
Total	14638	Resolved	8047	Percent Resolved
All Flights	18896			
Outside Billing Area	4258	Percent of All Flights	22.53%	
Movements with Parking Time				
International Arrivals	1605	Parking	0	Percent Parking
Domestic	3458	Parking	457	Percent Parking
Total	5063	Parking	457	Percent Parking
Aircraft Types Resolved				
All Flights	18896	Resolved	8047	Percent Resolved
				42.59%

11.2 Analysis and Statistics – Air Traffic

11.2.1 Interface

ARMS provides data analysis and statistics to analyze trends in air traffic volume.

Access to the data analysis and statistics interface is controlled by the `statistics_generate` privilege.

The user selects the data selection criteria:

- Time frame (start date, end date) for data analysis;
- Billing centre (all, one or multiple);
- Account (all, one or multiple);
- Flight type (departure, arrivals, overflights);
- Flight scope (domestic, regional, international);
- Flight schedule type (scheduled, non-scheduled);
- Flight rule ('IFR|VFR');
- Flight level (KCAA);
- Aerodrome (all, one or multiple);
- Route (departure-destination pair);
- Aircraft type;
- Aircraft MTOW category (if defined); or
- Any combination of the above.

The user selects the air traffic categorisation criteria:

- Temporal grouping (year, quarterly, monthly, weekly) based on flight date and time;
- Billing centre;
- Account;
- Flight type;
- Flight scope;
- Flight schedule type;
- Flight rule;
- Flight level (KCAA);
- Aerodrome;
- Route (departure-destination pair);
- Aircraft type;
- Aircraft MTOW category (if defined); or
- Any combination of the above.

If temporal grouping by year or quarter is selected, the user will also be allowed to select between calendar year and fiscal year, with the fiscal year start month and date specified in the system parameters.

Once the categorisation criteria has been selected, the sort order of the categories is specified with the selected categorisation criteria being ordered from first to last.

The values displayed may be based on any of the following:

- Numbers of flights;
- Total revenue generated by flights;
- Number of passengers on the flights (departures only);
- Revenue by category (enroute, aerodrome, approach, late arrival/departure, parking, domestic/international passenger fees).

The user may select additional options:

- Type of chart (bar, line, pie);

- Whether counts of occurrences or values are to be displayed; and
- Whether categories with no data at any time interval are to be displayed.

Statistics data is displayed graphically as pie charts, line charts (frequency polygon) or bar charts (histogram).

Statistics data is written to a .pdf report.

Statistics data may also be saved in .csv format which may be imported into Microsoft Excel for further analysis.

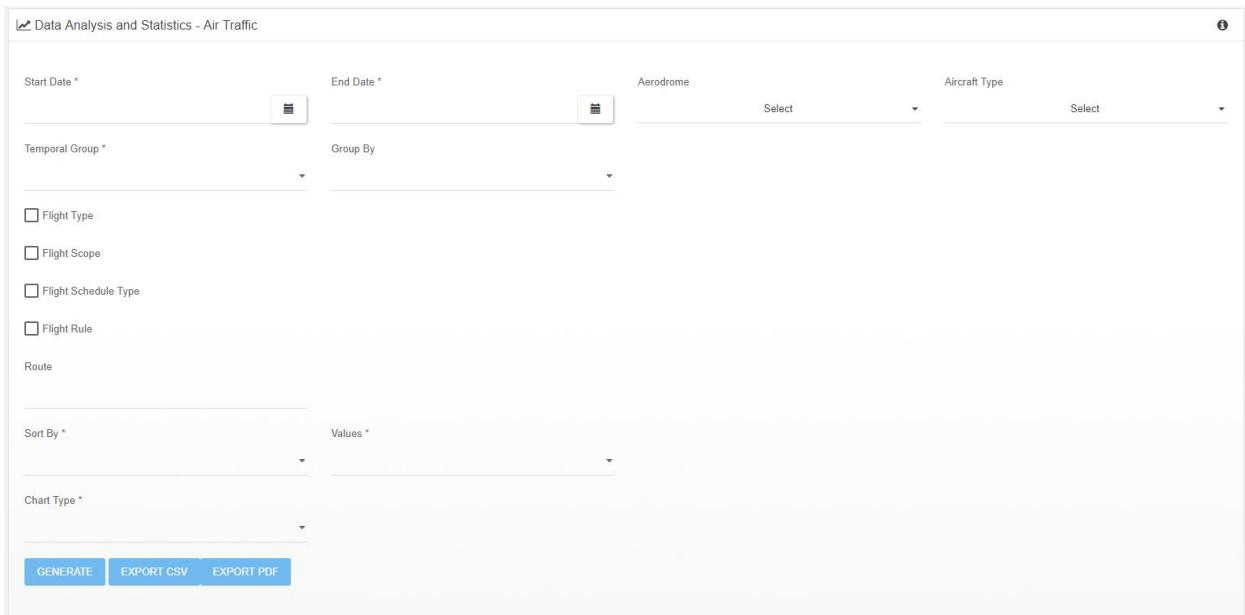
Aircraft MTOW is displayed and entered in either tons or kg, depending on the system configuration.

ARMS comes preconfigured to generate the following air traffic statistics:

- Flights per aerodrome;
- Passengers per aerodrome; and
- Flight revenue per aerodrome.

ARMS also allows the user to define customized statistics by saving and recalling the current statistics settings. After recalling the settings, the user may set modify them (particularly the time frame) before generating the statistics.

11.2.2 Form



The screenshot shows a web-based form titled "Data Analysis and Statistics - Air Traffic". The form includes the following fields and controls:

- Start Date *:** A date input field with a calendar icon.
- End Date *:** A date input field with a calendar icon.
- Aerodrome:** A dropdown menu labeled "Select".
- Aircraft Type:** A dropdown menu labeled "Select".
- Temporal Group *:** A dropdown menu.
- Group By:** A dropdown menu.
- Filter Options:** A section containing several checkboxes:
 - Flight Type
 - Flight Scope
 - Flight Schedule Type
 - Flight Rule
- Route:** A text input field.
- Sort By *:** A dropdown menu.
- Values *:** A dropdown menu.
- Chart Type *:** A dropdown menu.
- Action Buttons:** At the bottom left are three buttons: "GENERATE" (highlighted in blue), "EXPORT CSV", and "EXPORT PDF".

11.2.3 Output

11.3 Analysis and Statistics – Revenue

11.3.1 Interface

ARMS provides data analysis and statistics to analyze trends in revenue streams.

Access to the data analysis and statistics interface is controlled by the statistics_generate privilege.

The user selects the data selection criteria:

- Time frame (start date, end date) for data analysis;
- Whether the data analysis is to be done for payments or for invoice amounts;
- Billing centre (all, one or multiple);
- Account (all, one or multiple);
- Aerodrome (or all aerodromes);
- Class/category/type of revenue stream;
- Payment mode (cash, credit); (KCAA)
- Temporal grouping (year, quarterly, monthly, weekly) based on invoice date and time; or
- Any combination of the above.

The user selects the revenue stream categorisation criteria:

- Temporal grouping (year, quarterly, monthly, weekly) based on invoice date and time;
- Billing centre;
- Account;
- Aerodrome;
- Class/category/type of revenue stream;
- Payment mode (cash, credit); or
- Any combination of the above.

If temporal grouping by year or quarter is selected, the user will also be allowed to select between calendar year and fiscal year, with the fiscal year start month and date specified in the system parameters.

Once the categorisation criteria has been selected, the sort order of the categories is specified with the selected categorisation criteria being ordered from first to last.

The user may select additional options:

- Type of chart (bar, line, pie);
- Whether counts of occurrences or values are to be displayed; and
- Whether categories with no data at any time interval are to be displayed.

Statistics may be generated based on revenue value or numbers of occurrences of an invoiced item.

Statistics data is displayed graphically in as pie, line (frequency polygon) or bar (histogram) charts.

Statistics data is written to a .pdf report.

Statistics data may also be saved in .csv format which may be imported into Microsoft Excel for further analysis.

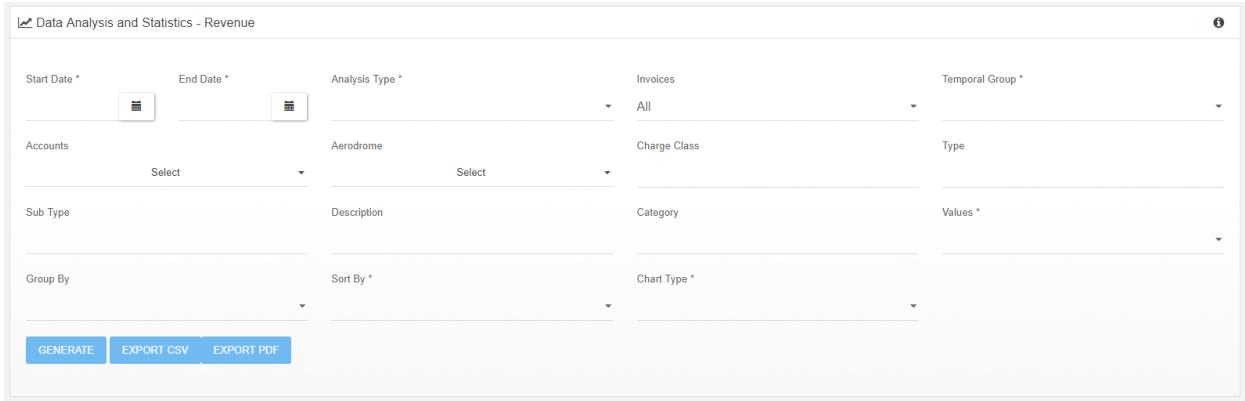
ARMS comes preconfigured to generate the following revenue statistics:

- Revenue per aerodrome (all accounts, all streams);
- Revenue per account (all aerodromes, all streams);
- Revenue per stream (all accounts, all aerodromes);

- Payments per aerodrome (all accounts, all streams);
- Payments per account (all aerodromes, all streams); and
- Payments per stream (all accounts, all aerodromes).

ARMS also allows the user to define customized statistics by saving and recalling the current statistics settings. After recalling the settings, the user may set modify them (particularly the time frame) before generating the statistics.

11.3.2 Form



The screenshot shows a web-based form titled "Data Analysis and Statistics - Revenue". The form has several sections with dropdown menus and input fields:

- Top Row:** Start Date, End Date, Analysis Type (set to "Invoices"), Invoices (set to "All"), Temporal Group.
- Second Row:** Accounts (dropdown menu showing "Select"), Aerodrome (dropdown menu showing "Select"), Charge Class, Type.
- Third Row:** Sub Type, Description, Category, Values *.
- Fourth Row:** Group By, Sort By *, Chart Type *.
- Bottom Row:** Three buttons: GENERATE (highlighted in blue), EXPORT CSV, and EXPORT PDF.

11.3.3 Output

11.4 Aviation Volume and Trend Analysis

11.4.1 Interface

ARMS allows the user to generate an analysis of trends in flight volume and analysis. Two sets of data are selected each based on a date window and a list of aerodromes. MTOW categories may be also be specified with the analysis being done separately on each MTOW category.

The analysis is based on aircraft flight type, MTOW category, flight length, and passenger count. The analysis would have to examine the trend of flight volume and revenue between the two data sets and attribute it to variances in flight type, MTOW category, flight length and passenger counts. The analysis result is available as both a report and a chart.

For each data set (and MTOW category within each dataset if specified):

- For each flight movement type and total:
 - Number of flights, km flown, km-tons flown, domestic passengers, international passengers, revenue and percentage of total revenue;
 - Revenue and percentage of total revenue from approach, aerodrome, late arrival/departure, parking, domestic and international passenger revenue.

For the comparison of data sets (and MTOW category within each dataset if specified):

- For each flight movement type and total:

- Change in number of flights and % change, km flown and % change, km-ton flown and % change, revenue and % change, domestic passengers and % change, international passengers and % change, percentage of total revenue and % change;
- Revenue and % change, percentage of total revenue and % change for approach, aerodrome, late arrival/departure, parking, domestic and international passenger revenue.

The comparison data (percentages) is shown as a bar chart. One chart is generated for the entire data set and one for each MTOW category.

Aircraft MTOW is displayed and entered in either tons or kg, depending on the system configuration.

11.4.2 Form

[TBD] Not implemented.

11.4.3 Output

[TBD] Not implemented.

11.5 Flight Frequency Analysis

11.5.1 Interface

ARMS allows the user to generate an analysis of flight frequency at an aerodrome. The analysis is based on an aerodrome and a type of flight (departure, arrival, all) and an analysis period (start date and end date) selected by the users. The flights are grouped per hour of day (00-23).

11.5.2 Form

[TBD] Not implemented.

11.5.3 Output

[TBD] Not implemented.

11.6 Revenue Projection

11.6.1 Interface

ARMS allows the user to project charges revenue based on changes to the charges applied, to air traffic volume or both.

Revenue projections may be based on the following changes to the charges applied:

- Changes to the enroute formula;
- Changes to passenger fees (domestic, regional, international) (+/- %);
- Changes to approach fees (domestic, regional, international) (+/- %);
- Changes to aerodrome fees (domestic, regional, international) (+/- %);
- Changes to late arrival fees (domestic, regional, international) (+/- %); and
- Changes to late departure fees (domestic, regional, international) (+/- %).

Revenue projections may be based on the following changes to air traffic volume:

- Changes to number of flights (domestic, regional, international) (+/- %); and
- Changes to number of passengers (domestic, regional, international) (+/- %).

The user selects the parameters above and a baseline time frame (decade, year, quarter, month). The flights within the baseline time frame are used as the basis for which the projections are applied.

The user may also select a flag indicating only modified parameters are to be included in the output report.

The system provides a comparison between the revenue obtained with the current formulas and the revenue as projected based on the hypothetical changes to the charges applied and to air traffic volumes.

11.6.2 Form

[TBD] Not implemented.

11.6.3 Output

[TBD] Not implemented.

11.7 Report Generation

11.7.1 Interface

ARMS allows the user to generate on demand reports which can be printed or exported in DOCX, XLS, CSV, PDF, RTF and TXT formats. These reports may be displayed, printed or saved to local or external media.

Access to the report generation interface is controlled by the reports_generate privilege.

ARMS also allows the user to define customized reports in terms of content and format. Nearly all database features and attributes are selectable by the user for inclusion in a report with querying and filtering capabilities, with parameters being specified at report runtime.

If temporal grouping by year is selected, the user will also be allowed to select between calendar year and fiscal year, with the fiscal year start month and date specified in the system parameters.

Report templates are pre-configured for the following types of reports:

- Account statement report (customer statements);
- Debtor report;
- Outstanding invoices report;
- Account status report;
- Credit and debit notes report;
- Revenue lost to exemptions report;
- Summarised invoice totals report;
- Aircraft types report;
- Aircraft registration report;
- Kenyan aircraft registration report;
- Missing billing information flight strip report;
- Aircraft registration tracking report; and
- Passenger reports.

Additional reports are provided via the Data Analysis and Statistics function:

- Revenue report (invoices generated);

- Payment report (payments received);
- Flight movement report; and
- Passenger traffic report;

Additional report templates may be created by the user to provide support for additional adhoc reports. Once the template has been saved, it may be recalled by other users to regenerate the report.

11.7.2

Form

Report Generation

Report *	Account type *
Account status report	All
<input type="button" value="CLEAR"/> <input type="button" value="GENERATE"/> <input type="button" value="PREVIEW"/>	

11.7.3

Output – Debtor Report

Report Generation

Report *	Number of Days Overdue *	Invoices *
Debtor report	0-30	Overdue
Report Download Format Adobe PDF		
<input type="button" value="CLEAR"/> <input type="button" value="GENERATE"/> <input type="button" value="PREVIEW"/>		

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DEBTOR REPORT

Account	Issue Date	Due Date	Days Overdue	Invoice Amount	Amount Paid	Overdue Range: 0-30 days	Amount Owing

11.7.4 Output – Account Statement Report

Report * Accounts * Start Date * (yyyy-MMM-dd) End Date * (yyyy-MMM-dd)

Account statement report Kenya Airways Limited 2019-Apr-01 2019-May-31

Report Download Format Adobe PDF

CLEAR GENERATE PREVIEW



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ACCOUNT STATEMENT

Generated: 2019-05-01
 From: 2019-04-01
 To: 2019-05-31

11.7.5 Output – Credit and Debit Notes Report

Report * Accounts * Start Date * (yyyy-MMM-dd) End Date * (yyyy-MMM-dd)

Credit and Debit Notes Report 51 Degrees Limited 2019-Apr-01 2019-May-31

Credit notes Group by account
 Debit notes Begin each statement on new page

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CREDIT AND DEBIT NOTES

Generated: 2019-05-01 15:52
 From: 2019-04-01
 To: 2019-05-31

Account Name	Transaction Date and Time	Transaction Type	Description	Amount
51 Degrees Limited	Apr 29, 2019, 4:56 PM	debit	TEST02	15.00
	Apr 29, 2019, 4:48 PM	debit	HQ18/19-000143	15.00
			Total Credit:	0.00
			Total Debit:	30.00

11.7.6 Output – Aircraft Registration Report

Report * Start Date * (yyyy-MMM-dd) End Date * (yyyy-MMM-dd)

Aircraft Registration Report 2019-Apr-01 2019-May-31

All used and defined
 All used but undefined

Group by account
 Begin each statement on new page

Report Download Format

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AIRCRAFT REGISTRATION

Aircraft Registration	Number of Flight Movements	Defined in Aircraft Registration table
51 Degrees Limited 5YYYY	11	Yes
748 Air Services (K) Limited 5YIHO 5Y-IHO	15 1	Yes No

Generated: 2019-05-01 16:02
From: 2019-04-01
To: 2019-05-31
Selected: All

11.7.7 Output – Local Aircraft Registry Report

Report *

Local Aircraft Registry Report

Group by owner Under 2,500 kg
 Begin each statement on new page Valid CoA

Report Download Format

Adobe PDF

CLEAR **GENERATE** **PREVIEW**

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LOCAL AIRCRAFT REGISTRY

Aircraft Registration	Owner	Type	MTOW (Kg)	CoA Renewal	CoA Expiry	Status	Days of Validity
5Y AFL	TORBEN PETER RUNE	M20	1243	Nov 6, 2007	Nov 5, 2008	Invalid	365
5Y AFM	NICOLAS HENDRICK CLAASEN KARL WEHNER CLAASEN	NAV4	1507	Jun 16, 2009	Jun 15, 2010	Invalid	364

Wed May 01 2019 16:04:06 GMT-0000 (UTC)
 Small Aircraft: false
 Valid CoA: false
 Group by owner: false

11.7.8 Output – Missing Billing Information Report

Report * Accounts * Start Date * (yyyy-MMM-dd) End Date * (yyyy-MMM-dd)

Missing Billing Information Report ▾ 51 Degrees Limited, 720 Investment ▾ 2019-Apr-01 2019-Apr-30

Limited, 748 Air Services (K) Limited,
99 Flying Club, Abakan Air, ...

Start Date * (yyyy-MMM-dd) End Date * (yyyy-MMM-dd)

Types of Errors * Group by account 2019-Apr-01 2019-Apr-30

Unresolved aircraft type Include missing accounts

Report Download Format Adobe PDF

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MISSING BILLING INFORMATION REPORT

Generated: 2019-05-01 16:05
From: 2019-04-01
To: 2019-04-30
Group by account: true

Flight Id	Reg Number	Day of Flight	Dep Time	Flight A/C Level	MTOW Type	Source	Basis	Cross Dist	Error
CHARIOT	CHARIOT	2019-04-13	1205	ZZZZ	DOMESTIC	radar-summary			MISSING_MTOW, NO_ASSOCIATED_ACCOUNT, UNKNOWN_AIRCRAFT_TYPE, ZERO_LENGTH_BILLABLE_TRACK
ROLEX762	KAF1802	2019-04-13	0728	ZZZZ	DOMESTIC	radar-summary	nominal-	100	MISSING MTOW.

11.7.9 Output – Aircraft Registration Tracking Report

Report Generation

Report *	Accounts *	Start Date * (yyyy-MMM-dd)	End Date * (yyyy-MMM-dd)
Aircraft Registration Tracking Repo ▾	Select	2019-Apr-01	2019-Apr-30
Aircraft Registrations *	<input checked="" type="checkbox"/> Group by account		
Select			
Report Download Format	Adobe PDF		
<input type="button" value="CLEAR"/> <input type="button" value="GENERATE"/> <input type="button" value="PREVIEW"/>			

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AIRCRAFT REGISTRATION TRACKING

Generated: 2019-05-01 16:07
 From: 2019-04-01
 To: 2019-04-30

Flight Id <u>51 Degrees Limited</u>	Registration Number	Day of Flight	Departure Time	Departure Aerodrome	Destination Aerodrome
5YYYY	5YYYY	2019-04-25	1234	HKJK	FAOR
5YYYG	5YYYY	2019-04-25	1234	HKJK	FAOR
5YYYG	5YYYY	2019-04-25	2326	HKJK	ZZZZ
5YYYY	5YYYY	2019-04-26	0330	HKJK	7777

11.7.10 Output – Aircraft Types Report

Report * Start Date * (yyyy-MMM-dd) End Date * (yyyy-MMM-dd)

Aircraft types report 2019-Apr-01 2019-May-31 All used and defined
 All used but undefined

Report Download Format

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CLEAR GENERATE PREVIEW

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AIRCRAFT TYPES

Aircraft Type	Number of Flight Movements	Defined in Aircraft Type table
A119	2	Yes
A124	1	Yes
A139	8	Yes
A148	9	Yes
A21N	1	No
A22	1	Yes
A30B	4	Yes
A318	4	Yes
...

Generated: 2019-05-01 16:08
From: 2019-04-01
To: 2019-05-31
Selected:All

11.7.11 Output – Passenger Report

Report * Accounts Start Date * (yyyy-MMM-dd) End Date * (yyyy-MMM-dd)

Passenger Report Select 2019-Apr-01 2019-Apr-30

Aerodromes Group by account Group by aerodrome

Select

Report Download Format Adobe PDF

CLEAR GENERATE PREVIEW

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PASSENGER

Departure Aerodrome	Flight Id	Registration Number	Day of Flight	Departure Time	Domestic	International
51 Degrees Limited						
HKJK	5YYYY	5YYYY	2019-04-18	2315		
HKJK	5YYYG	5YYYY	2019-04-25	1234		
HKJK	5YYYY	5YYYY	2019-04-25	1234		
HKJK	5YYYG	5YYYY	2019-04-25	2326		

12 TEMPLATES

The templates submenu contains the interfaces required to maintain the templates used by the system.

These interfaces are:

- Invoice templates; and
- Report templates.

12.1 Invoice Templates

12.1.1 Background

The invoice template management interface allows the user to query, display, filter, create, modify and delete invoice templates.

The template document may be downloaded to a local machine, modified using desk top tools (MS-Word, MS-Excel, notepad) and uploaded back to the server. Modifications permitted include formatting, content and ANSP contact information.

Invoice templates are used by the invoice generation process as the template for creating an invoice. Invoice templates may be of the format DOC, XLS, CSV, PDF and TXT.

Invoice templates are used for the following invoice generation operations:

- IATA aviation
- Non-IATA aviation
- Non-aviation
- Point of sale

Invoice templates are pre-configured for the following types of invoices, as supplied by customer:

- IATA invoice
- Non-IATA aeronautical cash invoice
- Non-IATA aeronautical credit invoice
- General non-aeronautical invoice (point of sale)
- Lease invoice
- Receipt

Note: The receipt template is not used for invoicing. It is used for generating receipts for payments.

12.1.2 Interface

The invoice template management interface allows the user to query, display, filter, create, modify and delete invoice templates.

Access to the invoice template management interface is controlled by the invoice_template_view and invoice_template_modify privileges.

The invoice templates are displayed in a datagrid following the conventions described under data grid display. The default sort order is by invoice template name ascending.

The following dataset filters are provided:

- General text.

The template document may be downloaded to a local machine, modified using desk top tools (MS-Word, MS-Excel, notepad) and uploaded back to the server. Modifications permitted include formatting, content and ANSP contact information.

The initial release of the system will only support BIRT templates (not MS-Word, Ms-Excel and notepad as described above).

12.1.3

Form

 Upload an Invoice Template

Invoice Name *	Invoice Category
Aviation invoice	AVIATION_INVOICE
Template Document (.rptdesign) *	
<input style="background-color: #0072bc; color: white; border: none; padding: 5px 10px; margin-right: 10px; border-radius: 5px; font-weight: bold; font-size: 10px; width: 150px; height: 30px; vertical-align: middle;" type="button" value="CLEAR"/> <input style="background-color: #0072bc; color: white; border: none; padding: 5px 10px; border-radius: 5px; font-weight: bold; font-size: 10px; width: 150px; height: 30px; vertical-align: middle;" type="button" value="UPLOAD"/>	
<input style="background-color: #0072bc; color: white; border: none; padding: 5px 10px; border-radius: 5px; font-weight: bold; font-size: 10px; width: 150px; height: 30px; vertical-align: middle;" type="button" value="RESET TEMPLATE"/>	

Item	Description
Invoice Name	Name of invoice template.
Invoice Category	Category of invoice template.
Template Document	The template document to be uploaded.

12.2

Report Templates

12.2.1

Background

Report templates are used by report generation processes as the template for creating a report. Report templates support CSV, DOC and PDF formats.

Report templates are provided for the reports described under report generation. Additional report templates may be created by the user to provide support for additional adhoc reports. Once the template has been saved, it may be recalled by other users to regenerate the report.

12.2.2

Interface

The report template management interface allows the user to query, display, filter, create, modify and delete report templates.

Access to the report template management interface is controlled by the report_template_view and report_template_modify privileges.

The report templates are displayed in a datagrid following the conventions described under data grid display. The default sort order is by report template name ascending.

The following dataset filters are provided:

- General text.

The user is allowed to download a template from the server to his local workstation, modify the template using desktop tools (MS-Word, MS-Excel, notepad, or BIRT) and upload it back to the server.

The data selection SQL provided by the user is verified for correct syntax.

The user is allowed to generate reports from both pre-defined and user created report templates.

The initial release of the system will only support BIRT templates (not MS-Word, Ms-Excel and notepad as described above).

Additional report templates may be created by the user to provide support for additional adhoc reports. Once the template has been saved, it may be recalled by other users to regenerate the report.

12.2.3

Form

 Upload a Report Template

Report Name *	SQL Query *
<hr/>	
Parameters *	Template Document (.csv) *
<input style="width: 100%; height: 100px; vertical-align: middle; margin-bottom: 10px;" type="file"/> ↑	
<input style="background-color: #0072bc; color: white; padding: 5px; margin-right: 10px;" type="button" value="CLEAR"/> <input style="background-color: #0072bc; color: white; padding: 5px;" type="button" value="CREATE"/>	

Item	Description
Report Name	Name of report.
SQL Query	Query used to generate the report.
Parameters	Parameters used as input to the query.
Template Document	The template document to be uploaded.

13 SECURITY

The security submenu contains the interfaces needed to control and monitor access to the system.

These interfaces are:

- Password Change
- Groups;
- Users;
- User Event Log; and
- Sessions.

13.1 Password Change

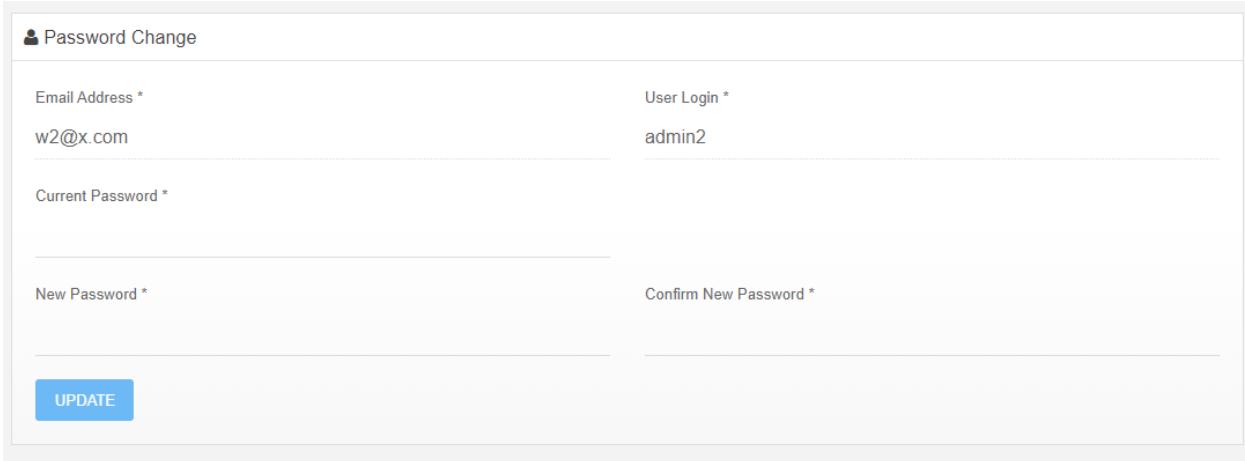
13.1.1 Interface

The password change interface allows the user modify his password.

Access to the user management interface is not protected.

The users login information is displayed on a data entry form and the user is allowed to change his password. He must enter his existing password to authorise the password change.

13.1.2 Form



The screenshot shows a 'Password Change' form. It includes fields for Email Address (w2@x.com), User Login (admin2), Current Password, New Password, and Confirm New Password. A blue 'UPDATE' button is at the bottom left.

Item	Description
Email Address	The user's email address.
User Login	The user's unique login identifier (read only).
Current Password	The user's current password.
New Password and Confirm New Password	The user's new password.

13.2 Groups

13.2.1 Background

The groups table contains a list of all the groups defined within the system, as well as the privileges and users assigned to each group.

Groups are collective sets of privileges assigned to a user which would allow the user to complete a task.

13.2.2 Interface

The group management interface allows the user to query, display, filter, create, modify and delete group records.

Access to the group management interface is controlled by the group_view and group_modify privileges.

The groups are displayed in a datagrid following the conventions described under data grid display. The default sort order is group name ascending.

The following dataset filters are provided:

- General text.

The user is provided with a list of known privileges and is able to add or remove these privileges from groups.

A user can only add, update or delete groups which he has access to based on his own group.

13.2.3 Form

Groups

Show Form

Filter

REFRESH

Group Name
Administrator
Administrator2
Billing Officer
Billing Supervisor
Board of Directors
Briefing Officer
Director General
Director of Corporate Svc
Finance Manager
General Manager
General User
Internal Audit
KRA
Planning
Self-care Operators

<
1
>

Edit a Group

Group Name *	Permissions *
Administrator	account_modify, account_view, aerodrome_category_modify, aerodrome_category_view, aerodrome_modify, ...
Maximum Credit Note Amount Approval Limit *	Maximum Debit Note Amount Approval Limit *
0	0
Roles May Modify Select <input type="button" value="CLEAR"/> <input type="button" value="UPDATE"/> <input type="button" value="DELETE"/>	

Item	Description
Group Name	The identifier of a group, such as “Administrator”, “Billing Officer”, etc.
Permissions	The list of permission that the group has, in order to allow view and/or edit privileges to the Users that belong to that Group. i.e. “Viewer” group, will have all and only the [privilege]_view permission, so it accesses all the interfaces, but only in view mode, so it will not be able to modify any of the records. A group with “invoice_modify” and “invoice_view” privileges will see and have access only to the invoice interface.
Maximum Credit Note Amount Approval Limit	(If the Transaction approval workflow is switched off) this value indicates the maximum amount that a User, belonging to this group, can issue with a Credit Note.
Maximum Debit Note Amount Approval Limit	(If the Invoice approval workflow is switched off) this value indicates the maximum amount that a User, belonging to this group, can issue with a Debit Note.

Item	Description
Roles May Modify	This field indicates the group that can be modified from a User belonging to the group displayed. i.e. Billing Supervisors group, under the “Roles may modify”, will have the “Billing Officers”;
Idle Session Timeout	The number of minutes a session for a member of the group can be idle before it times out.

13.3 Users

13.3.1 Background

Users are the users of the billing client application.

13.3.2 Interface

The user management interface allows the user to query, display, filter, create, modify and delete user records.

Access to the user management interface is controlled by the `user_profile_view` and `user_profile_modify` privileges.

The users are displayed in a datagrid following the conventions described under data grid display. The default sort order is user id ascending.

Group names (joined from groups) associated with the user are also displayed in the datagrid.

The following dataset filters are provided:

- General text.
- User state:
 - Active users (default);
 - Inactive users; and
 - All users.
- Web portal:
 - Internal users (default);
 - Web portal users; and
 - All users.

The user may enter the password in the form in two separate fields which do not support cut/paste operations.

The password is verified for conformation with the configured password policy, particularly:

- Minimum length;
- Uppercase required;
- Lowercase required;
- Numeric required;
- Special character required; and

- Passwords from password history prohibited.

The password is hashed and salted using a SHA2 algorithm.

The user is provided with a list of known groups and is able to add or remove these groups from the user.

Self-care operator users may not be removed from the self-care operators group, nor may they be added to any other group.

13.3.3 Form

Edit a User

Email Address *	User Login *
aratladi@caab.co.bw	aratladi
User Name *	
andrew ratladi	
Password *	Repeat Password *
SET PASSWORD TO ZERO LENGTH PASSWORD	
Contact Information *	SMS Number *
3688200	
Groups	Billing Centre *
Credit Account Cashier	Head Office
Job Title	
Account Officer35	
Self-Care User *	Force Password Change
False	False
<input type="button" value="CLEAR"/> <input type="button" value="UPDATE"/> <input type="button" value="DELETE"/>	

The Users interface is used to create and manage internal and external Users (like System Administrators, Billing Officers and Supervisors, SelfCare Portal's Users, etc.)

Item	Description
Email Address	The user's unique email address. This will be used by the system for lost password recovery and to notify the user of events if the user has selected email notification.
User Login	The user's unique login identifier.

Item	Description
User Name	The user's full name. This will be displayed on invoices and receipts generated by the user.
Password	Enter a password
Repeat Password	Re-enter the password entered above
Force Password Change	This flag allows the administrator to force the user to change his password after he has logged in.
Contact Information	The user's contact information.
SMS Number	The user's SMS number.
Groups	The groups which the user belongs to. These will determine which privileges the user has.
Billing Centre	The billing centre with which the user is associated. All revenue for invoices created by the user will be associated with that billing centre.
Job Title	The user's job title. This will be displayed on invoices and receipts generated by the user.
Selfcare User	A read-only field indicating that the user is an internal or external (selfcare portal) user.

13.4 User Event Log

13.4.1 Background

The user event log contains a record of all significant user events:

- login and logout;
- database modifications (add,update,delete); and
- financial transactions (invoice creation/approval, debit note creation/approval, and credit note creation/approval and payment registration).

User event log information is used for system access auditing.

13.4.2 Interface

The user event log management interface allows the user to query, display, and filter user event log records.

Access to the user event log management interface is controlled by the `user_event_view` and `user_event_modify` privileges.

The user event log entries are displayed in a datagrid following the conventions described under data grid display. The default sort order is event date/time descending.

The following dataset filters are provided:

- General text; and
- Temporal (start/end).

13.4.3 Form

 Edit a User Event Log

User	Date / Time ()
admin	2019-May-01 16:21
IP Address	Event Type
10.128.6.6	Login
Record Primary Key	Unique Record Id
	login

Item	Description
User	Unique login id of user that generated the event.
Date / Time	Date/time of event.
IP Address	IP address which user logged in from.
Event Type	Type of event (Login, Create, Update, Delete, Generate).
Record Primary Key	Primary key of the record affected by the event.
Unique Record Id	Unique record id from user's perspective (table, and columns which logically define a unique record)

13.5 Sessions

13.5.1 Background

When users connect to the web API, a session is created on the web server which tracks the user's originating IP address and activity on the web server. This information may also be used to terminate the user's session.

13.5.2 Interface

The session management interface allows the user to query, display, and filter session information.

Access to the session management interface is controlled by the session_view and session_modify privileges.

The session entries are displayed in a datagrid following the conventions described under data grid display. The columns displayed are those related to the session:

- Login id;
- User name;
- Session id;
- Session start time; and
- IP address.

The default sort order is user name descending.

The following dataset filters are provided:

- General text.

If the user has the session_modify privilege, he may select and terminate a session.

13.5.3

Form

[TBD] Not implemented.

Item	Description
Login Id	The id the session used to connect to the system.
User Name	The user name associated with the session login id.
Session Id	The web server session id.
Session Start Time	Start date and time of the session.
IP Address	The IP address that the session originated from.

14 HELP

The help facility at the bottom of the left menu allows the user to access the build and installation information shown below.

</> About	
Key	Value
API_HOST	/abms
AUTH_TOKEN	YWJtc193ZWI6YWJtc193ZWI=
YANDEX_API	trnsi.1.1.20180119T153832Z.d6797901d248188c.e6d0d0a27ae0b3b7bebfa0ca92f6d30cca64c81b
BOUNDING_BOX	20.000,-28.517,29.350,-24.583
BASE_PROVIDER	OSM
BASE_LOCAL_URL	/abms/basemap/
SCENE_MODE	SCENE2D
CESIUM_KEY	ApskkoQn7i-Q1dvMbpxNhiG3opQex5G1xLwQHczAwrF8cnNsbj8L5zBqjp1cwJ
GEOSERVER_NAVDB	/abms/geoserver/NAVDB/ows?service=WFS&version=1.0.0&request=GetFeature&outputFormat=application%2Fjson&srs=EPSG:4326&srsName=EPSG:4326&typeName=NAVDB
GEOSERVER_ABMSDB	/abms/geoserver/ABMSDB/ows?service=WFS&version=1.0.0&request=GetFeature&outputFormat=application%2Fjson&srs=EPSG:4326&srsName=EPSG:4326&typeName=ABMSDB
GEOSERVER_BASE_PT1	/abms/geoserver/
RECAP_PUBLIC_KEY	6LdUIUcAAAAABiTgMuEuZePSm3anx3QOABMBm5H
BUILD_DATE	2019-04-30T13:48:49.738Z
BUILD_VERSION	1.4.8

As well, the user may access the release notes of the current or any previous release.

Version 1.4.8
Change Request
<ul style="list-style-type: none"> • 101127 - Extended Hours of Service Surcharge
Bugs
<ul style="list-style-type: none"> • 101240 - Zero total amount flight movements' status is always PENDING • 101433 - Provide support for rounding flight leg and flight total to a specified number of decimal places • 102146 - Currencies - For defining interest rates target currency should not be user-settable - it is that for the selected currency • 102656 - RouteParser - projection errors • 103235 - Enroute charges interface - MTOW is always interpreted as TONS on input
Version 1.4.7
Version 1.4.6
Version 1.4.5
Version 1.4.4
Version 1.4.3
Version 1.4.2

15 TROUBLESHOOTING – USER ISSUES

This section is also included in the ARMS System Administration Guide.

15.1 Passenger Charges Missing From Aviation Invoices

If passenger charges are missing from aviation invoices there are two setting which may be incorrect.

The first setting is a system configuration setting “Provide passenger fees support”. This should be set to true.

The second is an account setting “Separate PAX Invoice”. This should be set to false. It can be set through the account management interface or via the pgadmin command:

```
update accounts set separate_pax_invoice = false;
```

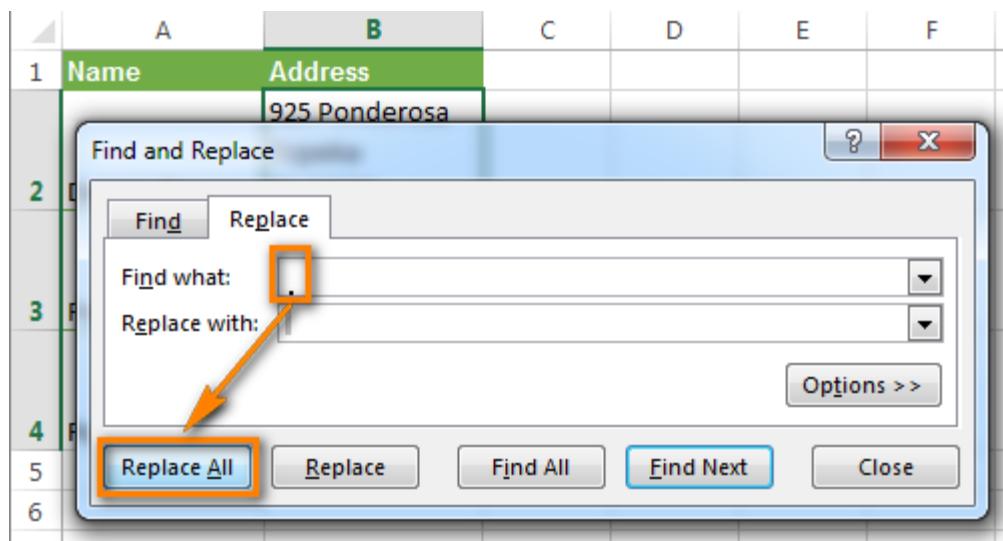
15.2 Cannot Upload Local Aircraft Registry From CSV

The aircraft registry file is maintained as a spreadsheet which is periodically converted to CSV and uploaded onto the system. As the maintainers of this document manually edit it, there are often problems with the format of this document. To provide a clean file to upload into ARMS:

- Remove all sheets from the document except the sheet containing the local aircraft registrations.
- Disable automatic calculation by clicking Formulas / Calculation Options / Manual.
- Remove all carriage returns from data cells.
- Select all cells where you want to remove or replace carriage returns.

	A	B
1	Name	Address
2	Dennis Boone	925 Ponderosa Topeka TX 66606
3	Frank Scherer	122 S Road North Newton KS 67117
4	Roger Williams	272 SW 72nd Kansas City MO 66103

- Press **Ctrl+H** to open the Find & Replace dialog box.
- In the Find What field enter **Ctrl+J**. It will look empty, but you will see a tiny dot.
- In the Replace With field, enter any value to replace carriage returns. Usually, it is space to avoid 2 words join accidentally. If all you need is deleting the line breaks, leave the "Replace With" field empty.



Remove all carriage returns from data cells, by repeating the operation above using two spaces in the Find what box and one space in the Replace with box. Click Replace All repeatedly until no more occurrences are found.

Set the format of all registration dates (four columns to the right) to be in dd-MM-yyyy format.

- Select the four columns by clicking on the column headers.
- Press **Ctrl+1** to open the Format Cells dialog box.
- Select date and the dd-MM-YYYY format.
- Click Okay.

16 DATA FILE FORMATS

16.1 EUROCAT Radar

EUROCAT radar summaries may be loaded into ARMS in text files with columns delimited by the “|” character. The columns in this file are shown in the table below.

Nbr	Name	Description
1	FLIGHT_ID	Flight identifier. This is either an ICAO code flight number pair (i.e. AC123) or the aircraft registration number.
2	REG_MARK	Aircraft registration number.
3	AC_TYPE	ICAO aircraft type. Format is 2 to 4 characters, numeric or uppercase.
3	ADEP	Departure aerodrome.
4	ADES	Destination aerodrome.
5	ETD	Estimated departure time. Format hhmm. Leading zeros are not required. ***This column contains two times***
7	ENTRY_POINT	Entry point (waypoint/hhmm)
8	EXIT_POINT	Exit point (waypoint/hhmm)
9	DATE	Date of contact (dd/mm/yyyy).
10	DISTANCE	Flight type (S N G M X).
11	FLIGHT_RULE	Flight rule (I V Y Z)
12	FLIGHT_TYPE	Flight type (S N G M X).
13	FLIGHT_CATEGORY	Flight category (ARR DEP OVF INT). INT indicates domestic.
14	MOVEMENT_CATEGORY	Movement category (INTERNATIONAL REGIONAL DOMESTIC).
15	FIR_POINT	FIR point in the format name/flight level.
...	Repetitions of item 15.	

16.2 Raytheon Radar

Raytheon radar summaries may be loaded into ARMS in either CSV or XLSX format. The columns in this file are shown in the table below.

Nbr	Name	Description
1	FLIGHT_TRAVEL_CATEGORY	Inbound, outbound or overflight (INB OUTB OVR).
2	FLIGHT_IDENTIFIER	Flight identifier. This is either an ICAO code flight number pair (i.e. AC123) or the aircraft registration number.

3	DATE	Date of radar contact with ATC. Format is YYMMDD.
4	REGISTRATION	Aircraft registration number.
5	FLIGHT_TYPE	Flight type (S N G M X).
6	FLIGHT_RULE	Flight rule (I V Y Z)
7	AIRCRAFT_TYPE	ICAO aircraft type. Format is 2 to 4 characters, numeric or uppercase.
8	WAKE_TURBULENCE_CATEGORY	Wake turbulence category (L M H J). Not used.
9	---	Not used.
10	AIRCRAFT_TYPE	ICAO aircraft type. Format is 2 to 4 characters, numeric or uppercase.
11	DEST_AD	Destination aerodrome.
12	DEST_TIME	Destination time. Format hhmm. Leader zeros are not required.
13	DEP_AD	Departure aerodrome.
14	DEP_TIME	Departure time. Format hhmm. Leader zeros are not required.
15	---	Not used.
16	FIR_POINT n	FIR entry point.
17	FIR_TIME n	FIR entry time.
...	FIR_POINT n	Multiple repetitions of items 12 and 13 to represent the points in the path across the FIR.
...	FIR_TIME n	

16.3 Indra Radar

EANAs airspace includes five FIRs and as a flight crosses these FIRs, it is recorded on a separate radar system for each FIR. Each radar system submits its radar flight strips to the billing system, so multiple occurrences of the flight will occur in the radar flight strips collected. EANA uses Indra radar systems in all FIRs, but there are different versions of the system in use, providing radar flight strips in different formats.

SACF	FIR	Cordoba ACC	Argentina
SACU	FIR	Cordoba UIR	Argentina
SAEF	FIR	Ezeiza ACC	Argentina
SAEU	FIR	Ezeiza UIR	Argentina
SAMF	FIR	Mendoza ACC	Argentina
SAMV	FIR	Mendoza UIR	Argentina
SARR	FIR	Resistencia ACC	Argentina
SAVF	FIR	Comodoro Rivadavia ACC	Argentina
SAVU	FIR	Comodoro Rivadavia UIR	Argentina

Each line in the .csv file is delimited by start and stop characters. If these characters are missing, the line is ignored. The start character is ASCII (2) ctrl/B and the stop character is ASCII (3), ctrl/C.

There are two formats for this data, described in the following tables. Mandatory columns are marked with an asterisk.

Old Format			
Column Name	Sample	Used	Notes
Message Id	503		Internal number, not to be used.
Flight Id	TPU966	Y (*)	More trustworthy than registration number.
Registration Number	N568TA	Y	
Flight Type	S	Y	
Departure Aerodrome	SAEZ	Y (*)	
SID	ATOVO2A		Departure procedure. SID=Standard Instrument Departure
Aircraft Type	A321	Y	
Speed	467	Y (*)	Speed in knots.
Destination Aerodrome	SPJC	Y	
STAR	ASADA6A		Arrival procedure. STAR=Standard Terminal Arrival
Destination Time	0046	Y	HHmm format
Flight Level	300	Y	
Contact Date and Time	14-10-18	Y (*)	dd-mm-yy hh:mm:ss
Notes			
SSR Code	435		
Flight Duration Across FIR	0043		hhmm format Not to be trusted / used.
Flight Distance Across FIR	289		Not to be trusted / used.
Wake Turbulence Category	M	Y	
Navigation Equipment	SWDE2FGHIR		
Operator	TACA PERU		
Fix Points (1 to 15)			
Fix Point	EZ126	Y (*)	
Fix Flight Level	39	Y (*)	
Fix Time	2118	Y (*)	hhmm format

New Format			
Column Name	Sample	Used	Notes
System Number	01		Internal number, not to be used.

Sequence Number	781		Internal number, not to be used.
Flight Id	TPU966	Y (*)	More trustworthy than registration number.
Activation Date	2018-10-14 22:15		
Activation Reason			
Termination Date	2018-10-15 10:10		
Termination Reason			
Flight Rules	V		
Aircraft Type	SIRA	Y (*)	
Aircraft Number	1		
Wake Turbulence Category	M	Y	
I/D	I		
Flight Type	S	Y	
Navigation Equipment	SWDE2FGHIR		
Surveillance Equipment	C		
Departure Aerodrome	SAEZ	Y (*)	
Departure Time (OBT)	21:50	Y (*)	hh:mm format.
Undefined blank column			
Destination Aerodrome	SAMR	Y (*)	
Arrival Time	22:50	Y	
Speed	N0100	Y	
Flight Level	F110	Y	
FIR Route	3748S06812W DCT SRA DCT		
Flight Duration	01:38		
Entry Point Name	372434S06813 29W		
Exit Point Name	372434S06813 29W	Y	
Entry Point Time	21:11:57	Y	hh:mm:ss format.
Exit Point Time	21:22:35	Y	hh:mm:ss format.
Entry Point Flight Level	110	Y	
Exit Point Flight Level	110	Y	

Alternate Destinations	SACO SUMU		
Field 4			
AFTN Originator	SAOUYFYX		
GHO Original Message	2018-10-14 22:33		
Addressees	SAMEZPZX SAMEZRZX		
SSR Mode	A		
SSR Code	1775		
SID	MEBRA1		Departure procedure. SID=Standard Instrument Departure
Departure Runway	1		
STAR	ESITO1Q		Arrival procedure. STAR=Standard Terminal Arrival
Arrival Runway	1		
First Fix	SRA		
Last Fix	SRA		
Field 5	Y	Y/N	
Field 6	Y	Y/N	
Takeoff Flat	Y	Y/N	
Operator	DACOSTA		
Day of Flight	2018-10-14	Y (*)	yyyy-mm-dd
Registration Number	N568TA	Y (*)	
Distance	170		
Field 7			
SelCal			
Field 8			
Field 9			
Aircraft Performance Data			
Field 10			
DAT			
NAV	B4 B5 O3 O4 D4 S2		

Field 11			
Field 12			
RALT			
RALT2			
Mode S Code			
RMK	TCAS EQUIPPED		
Field 13	181014		
Field 14			
AFTN Originator	SAOUYFYX		
PBN	B2B3O2O3S1 S2T1T2		
Required Surveillance Performance			
Field 15			
Field 16			
Field 17			
Field 18			
Field 19			
Field 20			
Field 21			
Field 22			
Sectors Crossed	2		
SECTOR_1	SAEZ		***Note that in the future, the number of SECTOR_X fields may change. Skip past all the SECTOR_X columns to get to the waypoints.
SECTOR_2	SAME		
SECTOR_3			
SECTOR_4			
SECTOR_5			
SECTOR_6			
Fix Points (1 to 15)			
Fix Point	3748S06812 W	Y	
Fix Flight Level	110	Y	
Fix Time	2255	Y	HHmm format

The old format data set does not provide day-of-flight and departure-time information. This information is critical to the system and will have to be calculated based on the information which is available. This is described below.

The new format data set does not provide contact-date-time. This may be determined from the day-of-flight, departure-time and waypoint-1-time.

The complete path of a radar track across the ANSPs billing area may include portions across each of several FIRs. These must be merged together to form a complete track. When a radar record is being added, instead of overwriting the existing waypoints, it must be merged with the existing waypoints, with any duplicates being removed.

16.4 ATC Flight Log

ATC flight logs may be loaded into ARMS in either CSV or XLSX format. The first row in the file is a header row, which is ignored. The columns in this file are shown in the table below.

Nbr	Name	Description
1	DATE	Date of contact with ATC. This is also the day of flight if departure time is less than the entry time, or the day after the day of flight if the departure time is later than the entry time. Format is dd-Mon-yy.
2	REG	Aircraft registration number.
3	TIME	Flight departure time. Format is h:mm.
4	OPERATOR	Flight operator.
5	CALLSIGN	Flight identifier. This is either an ICAO code flight number pair (i.e. AC123) or the aircraft registration number.
6	ICAO DESIGNATOR	ICAO airline designator for airlines. Not specified for general aviation. Format is 2 or 3 letters, uppercase.
7	TYPE	ICAO aircraft type. Format is 2 to 4 characters, numeric or uppercase.
8	AC/CATEGORY	Wake turbulence category (L M H J).
9	D/ID/I	Domestic or international identification (D ID I)
10	DEPT	Departure aerodrome. Either a 4 character departure aerodrome code or a known location.
11	DEST	Departure aerodrome. Either a 4 character departure aerodrome code or a known location.
12	ROUTE	Route from AIX/M database. (i.e. UM731). If more than one route is followed, they are separated by forward slashes.
13	ENTRY POINT	Entry point name from AIX/M database. (i.e. RUDAS).
14	TIME	Entry point time. Format is h:mm.
15	FL	Entry point flight level. Format is nnn.
16	MID POINT	Mid point name from AIX/M database. (i.e. RUDAS).
17	TIME	Mid point time. Format is h:mm.
18	FL	Mid point flight level. Format is nnn.
19	EXIT POINT	Exit point name from AIX/M database. (i.e. RUDAS).
20	TIME	Exit point time. Format is h:mm.
21	FL	Exit point flight level. Format is nnn.
22	SCH/NSCH	Scheduled / non-scheduled indicator (SCH NSCH)

16.5 Tower Flight Log

Tower flight logs may be loaded into ARMS in either CSV or XLSX format. The first five rows in the file are headers row, which are ignored. The columns in this file are shown in the table below.

Nbr	Name	Description
1	DATE	Date of contact with ATC. This is also the day of flight if departure time is less than the entry time, or the day after the day of flight if the departure time is later than the entry time. Format is dd-Mon-yy.
2	CALL-SIGN	Flight identifier. This is either an ICAO code flight number pair (i.e. AC123) or the aircraft registration number.
3	REGISTRATION	Aircraft registration number.
4	TYPE	ICAO aircraft type. Format is 2 to 4 characters, numeric or uppercase.
5	OPERATOR	Flight operator.
6	DEP-POINT	Departure aerodrome. Either a 4 character departure aerodrome code or a known location.
7	TIME	Flight departure time. Format is hh:mm.
8	ROUTE	Route from AIX/M database. (i.e. UM731). If more than one route is followed, they are separated by forward slashes.
9	DESTINATION	Departure aerodrome. Either a 4 character departure aerodrome code or a known location.
10	TIME	Entry point time. Format is hh:mm.
11	FLIGHT-LEVEL	<ul style="list-style-type: none"> - Flight level, expressed as F followed by 3 figures (e.g. F085; F330) - Standard metric level in tens of metres, expressed as S followed by 4 figures (e.g. S1130) - Altitude in hundreds of feet, expressed as A followed by 3 figures (e.g. A045; A100) - Altitude in tens of metres, expressed as M followed by 4 figures (e.g. M0840) - For uncontrolled VFR flights, the letters VFR.
12	CREW	Number of crew members.
13	PASSENGERS	Number of passengers.
14	SCHEDULE	Scheduled flight indicator.
15	NON-SCHEDULE	Non-scheduled flight indicator.
16	PRIVATE	Private flight indicator.
17	COMMERCIAL	Commercial flight indicator.
18	LOCAL	
19	DEP-TIME	

20	LANDING	Landing time
21	NO OF MOVTS	Number of movements.

16.6 Aircraft Registration File

Aircraft registrations may be loaded into ARMS in CSV format. The first row in the file is a header row, which is ignored. The columns in this file are shown in the table below.

Nbr	Name	Description
1	Reg Num	Registration number (tail number).
2	Account	Name of ARMS account.
3	Start Date	Registration start date yyyy-mm-dd.
4	Expiry Date	Registration expiry date yyyy-mm-dd.
5	A/C Type	ICAO aircraft type
6	MTOW Override	Maximum takeoff weight in either tons or kilograms depending on the system setting for aircraft weight.

17 OPERATIONAL SCENARIOS

17.1 Login

17.1.1 How To Log In and Out

Navigate to the web application url <domain>/ abms/web/#/login.

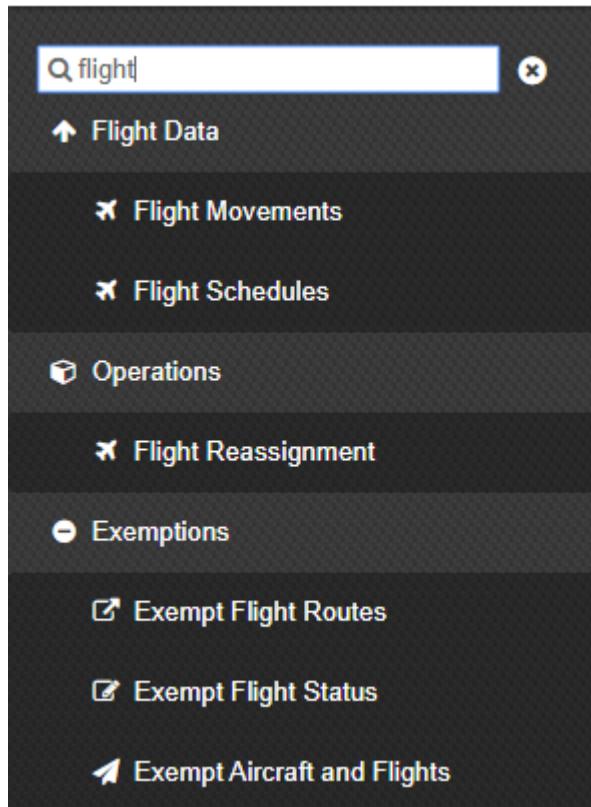
Fill in the user name and password and click sign in.

If you have forgotten your password, click on the Forgot password link, enter your email address and your password will be emailed to you.

The screenshot shows a login form for the EANA (Aeronáutica Argentina) system. At the top, there is a logo for 'IDS ARMS' with the subtext 'INGENIERÍA DE SISTEMAS'. To the right of the logo is a 'Languages' dropdown menu set to 'English'. Below the logo, the text 'EANA | NAVEGACIÓN AÉREA ARGENTINA' is displayed. The main form area has two input fields: 'Username' containing 'admin' and 'Password' containing '*****'. A blue 'SIGN IN' button is positioned below the password field. At the bottom left of the form, there is a link 'Forgot password?'. The background of the page is white.

17.1.2 How To Modify the Left Menu Options

To locate entries in the left menu, enter search text into the search text box. The menu will be filtered so that only menu entries match the search text are displayed. If the menu entry is hidden in a collapsed top level item, the top level item will be expanded to show the menu entry.



17.2 Billing

17.2.1 How To Generate a Credit Aviation Invoice

Credit account aviation invoices are generated via the aviation billing engine. It is a good practice to recalculate the flight movements and then validate them prior to generating an invoice.

Select the following:

- Type of invoice: IATA or NON-IATA.
- Billing interval: (weekly or monthly);
- Billing period: The week/month to be billed.
- Accounts: one or more accounts.
- Sort by: ordering for flights (either date,account or account,date)
- Select flights: flight selection (either all or only those for the user's billing centre).

At this point, the user may recalculate the flights, validate them, preview the invoice or proceed with generating the invoice.

If the user selects validate, a list of the incomplete flights in the set of flights selected will be displayed along with the related resolution error message. Normally these should all be corrected before generating an invoice.

The screenshot shows the 'Aviation Billing' interface. At the top, there are filters for 'Invoice Type' (NON-IATA), 'Billing Interval' (Monthly), 'Billing period' (2018-04), 'Accounts' (African Express Airways, Afriqiyah Airways, Air Botswana, Air Cargo Global, Air France, ...), and 'Sort by' (Account, Date). Below these are buttons for 'VALIDATE', 'RECALCULATE', 'GENERATE INVOICE', and 'PREVIEW INVOICE'. A message box indicates '1525 INCOMPLETE FLIGHT MOVEMENTS X'. The main area displays a table of flight movements with columns: Operator, Flight Id, Registration Number, Day of Flight, Departure Time, Status, and Issues. The table lists entries from various operators like SafariLink, Air France, British Airways, Brussels Airlines, etc., each with a unique flight ID and specific status codes such as INCOMPLETE, ZERO_LENGTH_BILLABLE_TRACK, or RADAR_SUMMARY_MISSING.

If the user selects recalculate, the flight movement recalculation process will be started.

The screenshot shows the 'Aviation Billing' interface with the same filter settings as the previous screenshot. The 'RECALCULATE' button is highlighted. A message box at the bottom left displays the recalculation progress: 'Recalculation Period: 04/01/2018 - 04/30/2018 Started: May 18, 2018 2:53:57 PM Status: STARTED Processed: 6798 Updated: 14'.

If the user selects preview invoice, a preview of the invoice will be generated and displayed.

Aviation Billing

Invoice Type *	Billing Interval *	Billing period * (YYYY-MM)	Accounts	Sort by *																																																																		
NON-IATA	Monthly	2018-01	African Express Airways, Afriqiyah Airways, Air Botswana, Air ... Cargo Global, Air France, ...	Account, Date																																																																		
Select Flights * Show all flights																																																																						
<input type="button" value="VALIDATE"/> <input type="button" value="RECALCULATE"/> <input type="button" value="GENERATE INVOICE"/> <input type="button" value="PREVIEW INVOICE"/>																																																																						
 KENYA CIVIL AVIATION AUTHORITY Aviation Sector, State Enterprise P.O. Box 30000 - 00100 Nairobi, Kenya Tel: +254 20 970 5000 / 5001 Fax: +254 20 970 5002 Mobile: +254 728 608 570																																																																						
INVOICE TO: African Express Airways AIRPORT / STATION: Head Office INVOICE NUMBER: PREVIEW DATE: 2018-05-18																																																																						
The following amounts are due in respect of your flight operation: <table border="1"> <thead> <tr> <th>Date</th> <th>Flight Details</th> <th>Route</th> <th>Dep</th> <th>Arr</th> <th>PAK</th> <th colspan="2">Charges (KES)</th> </tr> <tr> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th>Excess</th> <th>Landing</th> </tr> </thead> <tbody> <tr> <td>In 2018-01-19 Out 2018-01-19</td> <td>Reg: 5VAXL Type: MD82 MTOW (kg): 17000</td> <td>EAST: KISIMON EAST: HKK DIA: 1000 (km)</td> <td>18:00M</td> <td>08:30</td> <td>08:50</td> <td>Dip</td> <td>Transit Initial</td> <td>265.00</td> <td>1,144.00</td> </tr> <tr> <td>In 2018-01-20 Out 2018-01-20</td> <td>Reg: 5VAXO Type: CRJ2 MTOW (kg): 21523</td> <td>EAST: ALEXON EAST: HKK DIA: 149.55 (km)</td> <td>08:00N</td> <td>13:30</td> <td>08:20</td> <td>Dip</td> <td>Transit Initial</td> <td>77.00</td> <td>3,087.00</td> </tr> <tr> <td>In 2018-01-22 Out 2018-01-22</td> <td>Reg: 5VAXL Type: MD82 MTOW (kg): 17012</td> <td>EAST: KISIMON EAST: HKK DIA: 1000 (km)</td> <td>18:00M</td> <td>08:00</td> <td>08:20</td> <td>Dip</td> <td>Transit Initial</td> <td>265.00</td> <td>1,144.00</td> </tr> <tr> <td>In 2018-01-22 Out 2018-01-22</td> <td>Reg: 5VAXO Type: CRJ2 MTOW (kg): 21523</td> <td>EAST: ALEXON EAST: HKK DIA: 149.55 (km)</td> <td>08:00N</td> <td>13:30</td> <td>08:20</td> <td>Dip</td> <td>Transit Initial</td> <td>77.00</td> <td>3,087.00</td> </tr> <tr> <td>In 2018-01-25 Out 2018-01-25</td> <td>Reg: 5VAXO Type: CRJ2 MTOW (kg): 17002</td> <td>EAST: 501 (14.8 N) 041 (8.9 E) EAST: HKK DIA: 1000 (km)</td> <td>18:00M</td> <td>11:00</td> <td>08:20</td> <td>Dip</td> <td>Transit Initial</td> <td>129.00</td> <td>2,058.00</td> </tr> </tbody> </table>					Date	Flight Details	Route	Dep	Arr	PAK	Charges (KES)								Excess	Landing	In 2018-01-19 Out 2018-01-19	Reg: 5VAXL Type: MD82 MTOW (kg): 17000	EAST: KISIMON EAST: HKK DIA: 1000 (km)	18:00M	08:30	08:50	Dip	Transit Initial	265.00	1,144.00	In 2018-01-20 Out 2018-01-20	Reg: 5VAXO Type: CRJ2 MTOW (kg): 21523	EAST: ALEXON EAST: HKK DIA: 149.55 (km)	08:00N	13:30	08:20	Dip	Transit Initial	77.00	3,087.00	In 2018-01-22 Out 2018-01-22	Reg: 5VAXL Type: MD82 MTOW (kg): 17012	EAST: KISIMON EAST: HKK DIA: 1000 (km)	18:00M	08:00	08:20	Dip	Transit Initial	265.00	1,144.00	In 2018-01-22 Out 2018-01-22	Reg: 5VAXO Type: CRJ2 MTOW (kg): 21523	EAST: ALEXON EAST: HKK DIA: 149.55 (km)	08:00N	13:30	08:20	Dip	Transit Initial	77.00	3,087.00	In 2018-01-25 Out 2018-01-25	Reg: 5VAXO Type: CRJ2 MTOW (kg): 17002	EAST: 501 (14.8 N) 041 (8.9 E) EAST: HKK DIA: 1000 (km)	18:00M	11:00	08:20	Dip	Transit Initial	129.00	2,058.00
Date	Flight Details	Route	Dep	Arr	PAK	Charges (KES)																																																																
						Excess	Landing																																																															
In 2018-01-19 Out 2018-01-19	Reg: 5VAXL Type: MD82 MTOW (kg): 17000	EAST: KISIMON EAST: HKK DIA: 1000 (km)	18:00M	08:30	08:50	Dip	Transit Initial	265.00	1,144.00																																																													
In 2018-01-20 Out 2018-01-20	Reg: 5VAXO Type: CRJ2 MTOW (kg): 21523	EAST: ALEXON EAST: HKK DIA: 149.55 (km)	08:00N	13:30	08:20	Dip	Transit Initial	77.00	3,087.00																																																													
In 2018-01-22 Out 2018-01-22	Reg: 5VAXL Type: MD82 MTOW (kg): 17012	EAST: KISIMON EAST: HKK DIA: 1000 (km)	18:00M	08:00	08:20	Dip	Transit Initial	265.00	1,144.00																																																													
In 2018-01-22 Out 2018-01-22	Reg: 5VAXO Type: CRJ2 MTOW (kg): 21523	EAST: ALEXON EAST: HKK DIA: 149.55 (km)	08:00N	13:30	08:20	Dip	Transit Initial	77.00	3,087.00																																																													
In 2018-01-25 Out 2018-01-25	Reg: 5VAXO Type: CRJ2 MTOW (kg): 17002	EAST: 501 (14.8 N) 041 (8.9 E) EAST: HKK DIA: 1000 (km)	18:00M	11:00	08:20	Dip	Transit Initial	129.00	2,058.00																																																													

If the user selects generate invoice, the invoice generation process is started. At it's completion the message "Successfully Generated Invoice" is displayed.

Aviation Billing

Invoice Type *	Billing Interval *	Billing period * (YYYY-MM)	Accounts	Sort by *
NON-IATA	Monthly	2018-04	Abalengani Aviation, Absolute Aviation, Absolute Flight Service, ... ACCESS WORLD SA, Aero4M, ...	Account, Date
Select Flights * Show all flights				
Successfully created invoice <input type="button" value="X"/>				

17.2.2 How To Generate a Credit Non-Aviation Invoice

Credit account non-aviation invoices are generated via the non-aviation billing engine. This function is used to generate invoices for accounts set up to be billed for recurring charges.

Prior to generating a non-aviation invoice, recurring charges must be assigned to the account. These are typically set up to cover the period of time for a contract (i.e. a one year rental contract to be invoiced monthly).

Recurring Charges

Show Form □

REFRESH

Filter	Account	Operational Status	
		All	Expected End Date
Service Charge Catalogue			
Renewal CoA 0-2300 Kgs	Air France	2017-12-01	2018-02-08
Issue instrument rating	British Airways	2018-01-01	2018-12-31
Conversion of ATC Licence	Kenya Airways	2017-01-01	2018-12-31
Ground Instruction License Renewal	Staravia	2018-01-01	2018-05-20
Renewal CoA 0-2300 Kgs	Wilderness Air	2017-01-01	2018-12-21

Once one or more recurring charges have been established for the account, the non-aviation invoice can be generated.

Non-Aviation Billing

Billing period * (YYYY-MM)

2018-04

Account *

GENERATE INVOICE PREVIEW INVOICE

Select the following:

- Billing period: The week/month to be billed.
- Account: one account.

The screenshot shows a software interface titled "Non-Aviation Billing". At the top, there are fields for "Billing period * (YYYY-MM)" (set to "2018-04") and "Account *" (set to "British Airways"). Below these are two tabs: "NON-AVIATION CHARGES" (selected) and "AVIATION CHARGES". A table displays recurring charges for the month of April 2018:

Start Date	End Date	Charge Description	Select any aerodrome	Aerodrome	Price Per Unit	Amount
2018-01-01	2018-12-31	Issue instrument rating	<input type="checkbox"/>		2.000.00	

At the bottom, there are two buttons: "GENERATE INVOICE" and "PREVIEW INVOICE".

The system displays the recurring charges active for the month and the account selected. The user must complete the lineitems, and then either preview or generate the invoice.

At invoice generation completion, the message “Successfully Generated Invoice” is displayed.

17.2.3 How To Generate a Point of Sale Aviation Invoice

The point of sale invoice generation interface allows the user to perform one-time aviation and non-aviation invoice creation.

PICK UP FROM HERE.

The User have to select the Account type to bill, **Cash** or **Credit** to Filter the **Account** list, **All** to display all the accounts together. After that an Account can be selected from the Account combo box.

Aviation Billing.

To issue an Aviation Invoice (Cash/Credit Accounts), **Aviation** have to be selected as **Type of Sale**.

Finally, if the flight that must be billed is **NOT within the User's Billing Centre** control, **Show all Flights** have to be selected from the **Select Flights** combo box.

The system displays all the flights for the Account selected.

Point Of Sale Invoice Generation

Accounts Type	Account *	Type Of Sale *	Select Flights *					
Cash Accounts	P Flights	Aviation	Show all flights					
<input type="button" value="ADD A NEW ACCOUNT"/> <input type="button" value="ADD A NEW AIRCRAFT REGISTRATION"/>								
<input type="button" value="CREATE FLIGHT"/>								
Flight Selection	Flight ID	Date Of Flight	Departure Time	Departure Airport	Arrival Airport	Aircraft Type	Flight Type	Status
<input type="checkbox"/>	TST0132	2018-05-12	1210	HKJK	HKMO	ZZZZ	S	INCOMPLETE
<input type="checkbox"/>	TST013	2018-05-12	1200	HKJK	HKMO	ZZZZ	S	INCOMPLETE
<input type="checkbox"/>	LVP002	2018-05-12	0800	FQPB	HKMO	BE20	N	PENDING
<input type="checkbox"/>	LVP001	2018-05-12	0800	HKJK	HKJK	C130	N	INCOMPLETE
<input type="checkbox"/>	EXHPRES	2018-05-12	0800	HKJK	HKML	BE20	G	PENDING
<input type="checkbox"/>	5YSK3	2018-05-12	1000	HKJK	HKMO	EC30	S	INCOMPLETE
<input type="checkbox"/>	5YSK2	2018-05-12	1000	HKJK	HKMO	BN2	S	PENDING
<input type="checkbox"/>	5YSK1	2018-05-12	0800	HKJK	HKMO	EC30	S	PENDING
<input type="checkbox"/>	5YPMF2	2018-05-12	1740	HKEL	HKML	BE20	N	PENDING
<input type="checkbox"/>	5YPMF1	2018-05-12	0830	HKEL	HKML	BE20	N	INCOMPLETE
<input type="checkbox"/>	TST000	2018-05-08	1000	HKJK	HKMO	A318	G	PENDING
<input type="checkbox"/>	UAC001	2018-05-03	0800	HKJK	HKMO	ZZZZ	G	INCOMPLETE
<input type="checkbox"/>	5YUAT	2018-05-02	0900	HKEL	HKMO	ZZZZ	N	INCOMPLETE
<input type="checkbox"/>	5YTFP	2018-04-23	0930	HKJK	HKNI	C340	G	INCOMPLETE
<input type="checkbox"/>	EXHPAST	2017-11-02	0800	HKJK	HKML	BE20	G	PENDING

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Note: All Flights are displayed, but only PENDING flights will can be billed.

After selecting the flight to bill, the User can **Calculate** the total amount, and **Preview** the invoice.

<input type="checkbox"/>	LVP002	2018-05-12	0800	FQPB	HKMO	BE20	N	PENDING
<input type="checkbox"/>	LVP001	2018-05-12	0800	HKJK	HKJK	C130	N	INCOMPLETE
<input type="checkbox"/>	EXHPRES	2018-05-12	0800	HKJK	HKML	BE20	G	PENDING
<input type="checkbox"/>	5YSK3	2018-05-12	1000	HKJK	HKMO	EC30	S	INCOMPLETE
<input type="checkbox"/>	5YSK2	2018-05-12	1000	HKJK	HKMO	BN2	S	PENDING
<input type="checkbox"/>	5YSK1	2018-05-12	0800	HKJK	HKMO	EC30	S	PENDING
<input type="checkbox"/>	5YPMF2	2018-05-12	1740	HKEL	HKML	BE20	N	PENDING
<input type="checkbox"/>	5YPMF1	2018-05-12	0830	HKEL	HKML	BE20	N	INCOMPLETE
<input type="checkbox"/>	TST000	2018-05-08	1000	HKJK	HKMO	A318	G	PENDING
<input type="checkbox"/>	UAC001	2018-05-03	0800	HKJK	HKMO	ZZZZ	G	INCOMPLETE
<input type="checkbox"/>	5YUAT	2018-05-02	0900	HKEL	HKMO	ZZZZ	N	INCOMPLETE
<input type="checkbox"/>	5YTFP	2018-04-23	0930	HKJK	HKNI	C340	G	INCOMPLETE
<input checked="" type="checkbox"/>	5YGMG	2018-03-22	0300	HKJK	ZZZZ	F27	G	PENDING
<input checked="" type="checkbox"/>	EXHPAST	2017-11-02	0800	HKJK	HKML	BE20	G	PENDING

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Date	Flight Details	Route	TASP Details	Dep	Arr	PAX	Charges				
							Enroute	TASP	Landing	Parking	Passenger
In: Reg: EXHPRES Out: Type: BE20 MTOW: Dist: 300	Entry: HKJK Exit: HKML			08:00	09:00	Arr: Dep: 2 Transit: Infant:					
In: Reg: 5YGMG Out: Type: F27 MTOW: Dist: 300	Entry: 011907S0365533E Exit: KESOM Dist: 300			03:00	05:20	Arr: Dep: Transit: Infant:	42.00	0.00	3,087.00	0.00	
						Totals:	42.00	0.00	3,087.00	0.00	0.00

<input type="checkbox"/>	SYPMF1	2018-05-12	0830	HKEL	HKML	BE20	N	INCOMPLETE
<input type="checkbox"/>	TST000	2018-05-08	1000	HKJK	HKMO	A318	G	PENDING
<input type="checkbox"/>	UAC001	2018-05-03	0800	HKJK	HKMO	ZZZZ	G	INCOMPLETE
<input type="checkbox"/>	SYUAT	2018-05-02	0900	HKEL	HKMO	ZZZZ	N	INCOMPLETE
<input type="checkbox"/>	SYTFP	2018-04-23	0930	HKJK	HKNI	C340	G	INCOMPLETE
<input checked="" type="checkbox"/>	SYGMD	2018-03-22	0300	HKJK	ZZZZ	F27	G	PENDING
<input checked="" type="checkbox"/>	EXHPAST	2017-11-02	0800	HKJK	HKML	BE20	G	PENDING

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[CALCULATE INVOICE](#) [PREVIEW INVOICE](#)

KCAA Kenya Civil Aviation Authority
Kenya Civil Aviation Authority
International Airport Services
Aeroportes Internationaux du Kenya
Mombasa - 254 728 466 376

INVOICE

TO: # Flights AIRPORT / STATION: Head Office
INVOICE NUMBER: PREVIEW
DATE: 2018-05-21

The following amounts are due in respect of your flight operation:

Date	Flight Details	Route	Dep	Arr	Charges (KES)	
					Enroute	Landing
In 2018-05-02		Entry: HKEL	0830	0830	0.00	0.00
Out 2018-05-02	Type: BE20 MTOW (kg): 3670	Exit: HKML	1000	1000	0.00	0.00
In 2018-03-22		Entry: HKJK	0300	0300	0.00	0.00
Out 2018-03-22	Reg: F27 Type: 20412 MTOW (kg): 3000	Exit: HKNI	0930	0930	42.00	3,087.00
					Total:	42.00
						3,087.00

Service total: 3,129.00

Payment Terms:

- Please issue a commercial cheque drawn in favour of Kenya Civil Aviation Authority
- Please pay within 30 days of the invoice date
- Failure to do so beyond the due date shall attract penalty interest rate of 2% for each month of delay.

Total Amount Payable for All Services (KES)	3,129.00
---	----------

For Credit Accounts the invoice can be issued by pressing the **Generate Invoice** button.

Cash Accounts, That have 0 credit facilities, have to pay immediately the invoice.

The ARMS to help the User, will not enable the **Generate Invoice** button, but will enable the **Generate and Pay Invoice** button after the Transaction form is filled.

<input type="checkbox"/>	SYPMF1	2018-05-12	0830	HKEL	HKML	BE20	N	INCOMPLETE
<input type="checkbox"/>	TST000	2018-05-08	1000	HKJK	HKMO	A318	G	PENDING
<input type="checkbox"/>	UAC001	2018-05-03	0800	HKJK	HKMO	ZZZZ	G	INCOMPLETE
<input type="checkbox"/>	SYUAT	2018-05-02	0900	HKEL	HKMO	ZZZZ	N	INCOMPLETE
<input type="checkbox"/>	SYTFP	2018-04-23	0930	HKJK	HKNI	C340	G	INCOMPLETE
<input checked="" type="checkbox"/>	SYGMD	2018-03-22	0300	HKJK	ZZZZ	F27	G	PENDING
<input checked="" type="checkbox"/>	EXHPAST	2017-11-02	0800	HKJK	HKML	BE20	G	PENDING

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[CALCULATE INVOICE](#) [PREVIEW INVOICE](#)

Date	Flight Details	Route	TASP Details	Dep	Arr	PAX	Charges				
							Enroute	TASP	Landing	Parking	Passenger
In: Reg: EXHPRES Out: Type: BE20 MTOW:	Entry: HKJK Exit: HKML Dist: 300			08:00	09:00		Arr: Dep: 2 Transit: Infant:				
In: Reg: SYGMD Out: Type: F27 MTOW:	Entry: 01190750385533E Exit: KESOM Dist: 300			03:00	05:20		Arr: Dep: Transit: Infant:	42.00	0.00	3,087.00	0.00
							Totals:	42.00	0.00	3,087.00	0.00

Late departure/arrival charges: 0.00
Invoice Total: 3,129.00

Description *	Payment Currency *	Payment Amount *	Local Currency *
Exchange Rate	Local Amount	Payment Mechanism *	Payment Reference Number *

[GENERATE INVOICE](#) [GENERATE AND PAY INVOICE](#)

Completing the Transaction Form at the bottom of the Interface, will enable the **Generate and Pay Invoice** button.

<input type="checkbox"/>	5YPMF1	2018-05-12	0830	HKEL	HKML	BE20	N	INCOMPLETE
<input type="checkbox"/>	TST000	2018-05-08	1000	HKJK	HKMO	A318	G	PENDING
<input type="checkbox"/>	UAC001	2018-05-03	0800	HKJK	HKMO	ZZZZ	G	INCOMPLETE
<input type="checkbox"/>	5YUAT	2018-05-02	0900	HKEL	HKMO	ZZZZ	N	INCOMPLETE
<input type="checkbox"/>	5YTTFP	2018-04-23	0930	HKJK	HKNI	C340	G	INCOMPLETE
<input checked="" type="checkbox"/>	5YGMD	2018-03-22	0300	HKJK	ZZZZ	F27	G	PENDING
<input checked="" type="checkbox"/>	EXHPAST	2017-11-02	0800	HKJK	HKML	BE20	G	PENDING

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[CALCULATE INVOICE](#) [PREVIEW INVOICE](#)

Date	Flight Details	Route	TASP Details	Dep	Arr	PAX	Charges					
							Enroute	TASP	Landing	Parking	Passenger	
In: Reg: EXHPRES Out: Type: BE20 MTOW:	Entry: HKJK Exit: HKML Dist: 300			08:00	09:00	Arr: Dep: 2 Transit: Infant:						
In: Reg: 5YGMD Out: Type: F27 MTOW:	Entry: 011907S0385533E Exit: KESOM Dist: 300			03:00	05:20	Arr: Dep: Transit: Infant:	42.00	0.00	3,087.00	0.00		
							Totals:	42.00	0.00	3,087.00	0.00	0.00

Late departure/arrival charges: 0.00
Invoice Total: 3,129.00

Description *	Payment Currency *	Payment Amount *	Local Currency *
CashAccount May2018 #1	US Dollar (USD)	30.41	Kenyan Shilling (KES)
Exchange Rate	Local Amount	Payment Mechanism *	Payment Reference Number *
102.88066	3129	cash	N/A

[GENERATE INVOICE](#) [GENERATE AND PAY INVOICE](#)

Note: The system allows the User to collect payments also in different currencies.

Pressing the **Generate and Pay Invoice** button the system generates the Invoice, and the related Receipt.

17.2.4 How To Generate a Credit Note

If an invoice is generated with a higher expected total, a credit note is generated to “correct” the invoice.

The invoice #HQ001489 has been generated with an overcharge of 230 BWP.

Invoices

Text Filter Filter CLEAR REFRESH

Account	Invoice Number	Invoice Date	Invoice Type	Status	Payment Due Date	Created By	Invoice Amount	Invoice Currency	Exchange to USD	Invoice Date of Issue	Exported	Actions
Palocci	HQ001489	2018-02-09	aviation-nonista	published	2018-02-09	Luca Vincenzo Palocci	2,230.00	BWP	0.10130	2018-02-09	false	
Palocci	HQ001488	2018-02-09	aviation-nonista	published	2018-02-09	Luca Vincenzo Palocci	578.94	BWP	0.10130	2018-02-09	false	
President OK1	HQ001487	2018-02-08	debit-note	published	2018-03-10	Luca Vincenzo Palocci	100.00	BWP	0.10130	2018-02-08	false	
Wilderness Air	HQ001488	2018-02-08	aviation-nonista	published	2018-02-08	admin name	600.00	BWP	0.10130	2018-02-08	false	
Wilderness Air	HQ001485	2018-02-08	aviation-nonista	published	2018-02-08	admin name	1,967.59	BWP	0.10130	2018-02-08	false	
President OK1	HQ001484	2018-02-08	aviation-nonista	published	2018-03-08	Luca Vincenzo Palocci	600.00	BWP	0.10130	2018-02-08	false	
South African Express	HQ001483	2018-02-08	aviation-nonista	published	2018-03-08	Luca Vincenzo Palocci	1,793.01	USD	1.00000	2018-02-08	false	
South African Express	HQ001482	2018-02-08	aviation-nonista	published	2018-03-08	Luca Vincenzo Palocci	5,153.48	USD	1.00000	2018-02-08	false	
SRE Unknown	HQ001481	2018-02-08	aviation-nonista	paid	2018-03-08	Luca Vincenzo Palocci	0.00	USD	1.00000	2018-02-08	false	
SRE Unknown	HQ001480	2018-02-08	aviation-nonista	published	2018-03-08	Luca Vincenzo Palocci	18.32	USD	1.00000	2018-02-08	false	
SAAirlink	HQ001479	2018-02-08	aviation-nonista	published	2018-03-08	Luca Vincenzo Palocci	3,173.75	USD	1.00000	2018-02-08	false	
OWENAIR	HQ001478	2018-02-08	aviation-nonista	published	2018-03-08	Luca Vincenzo Palocci	178.41	USD	1.00000	2018-02-08	false	
Moremi Air	HQ001477	2018-02-08	aviation-nonista	published	2018-03-08	Luca Vincenzo Palocci	9,745.13	BWP	0.10130	2018-02-08	false	
Mack Air	HQ001476	2018-02-08	aviation-nonista	paid	2018-03-08	Luca Vincenzo Palocci	0.00	BWP	0.10130	2018-02-08	false	
Mack Air	HQ001475	2018-02-08	aviation-nonista	published	2018-03-08	Luca Vincenzo Palocci	210.83	BWP	0.10130	2018-02-08	false	

1. Log in as Administrator;

2. Navigate to **Billing -> Transactions** and check the **Show Form** box;

Receipt	Number	Account	Date/Time	Description	Type	Amount	Currency	Exchange Rate to USD	Exchange Rate to ANSP	Balance	Payment Reference Number	Payment Mechanism	Exported
		Palocci	2018-02-09 07:35	HQ001489	Debit	2,230.00	BWP	0.10130	1.00000	3,827.14	HQ001489	invoice	false
		Palocci	2018-02-09 07:31	HQ001488	Debit	578.94	BWP	0.10130	1.00000	1,597.14	HQ001488	invoice	false
HQ000183		President OK1	2018-02-08 13:37	sRkbvJ	Debit	100.00	BWP	0.10130	1.00000	700.00	N/A	adjustment	false
		Wilderness Air	2018-02-08 08:29	HQ001488	Debit	600.00	BWP	0.10130	1.00000	53,550.72	HQ001488	invoice	false
		Wilderness Air	2018-02-08 08:29	HQ001485	Debit	1,987.59	BWP	0.10130	1.00000	52,950.72	HQ001485	invoice	false
		President OK1	2018-02-08 16:38	HQ001484	Debit	600.00	BWP	0.10130	1.00000	900.00	HQ001484	invoice	false
		South African Express	2018-02-08 13:34	HQ001483	Debit	1,793.01	USD	1.00000	0.87197	187,543.89	HQ001483	invoice	false
		South African Express	2018-02-08 13:34	HQ001482	Debit	5,153.48	USD	1.00000	0.87197	185,750.88	HQ001482	invoice	false
		SRE Unknown	2018-02-08 13:34	HQ001480	Debit	16.32	USD	1.00000	0.87197	1,081.88	HQ001480	invoice	false
		SA Airlink	2018-02-08 13:34	HQ001479	Debit	3,173.75	USD	1.00000	0.87197	170,068.13	HQ001479	invoice	false

3. Insert the **Account** that has been overcharged, a **Description**, **Credit** as Transaction Type, as Local Currency the **Invoice Currency**, and **Adjustment** as Payment Mechanism;

Receipt	Number	Account	Date/Time	Description	Type	Amount	Currency	Exchange Rate to USD	Exchange Rate to ANSP	Balance	Payment Reference Number	Payment Mechanism	Exported
		Palocci	2018-02-09 07:35	HQ001489	Debit	2,230.00	BWP	0.10130	1.00000	3,827.14	HQ001489	invoice	false
		Palocci	2018-02-09 07:31	HQ001488	Debit	578.94	BWP	0.10130	1.00000	1,597.14	HQ001488	invoice	false
HQ000183		President OK1	2018-02-08 13:37	sRkbvJ	Debit	100.00	BWP	0.10130	1.00000	700.00	N/A	adjustment	false
		Wilderness Air	2018-02-08 08:29	HQ001488	Debit	600.00	BWP	0.10130	1.00000	53,550.72	HQ001488	invoice	false
		Wilderness Air	2018-02-08 08:29	HQ001485	Debit	1,987.59	BWP	0.10130	1.00000	52,950.72	HQ001485	invoice	false
		President OK1	2018-02-08 16:38	HQ001484	Debit	600.00	BWP	0.10130	1.00000	900.00	HQ001484	invoice	false
		South African Express	2018-02-08 13:34	HQ001483	Debit	1,793.01	USD	1.00000	0.87197	187,543.89	HQ001483	invoice	false
		South African Express	2018-02-08 13:34	HQ001482	Debit	5,153.48	USD	1.00000	0.87197	185,750.88	HQ001482	invoice	false
		SRE Unknown	2018-02-08 13:34	HQ001480	Debit	16.32	USD	1.00000	0.87197	1,081.88	HQ001480	invoice	false
		SA Airlink	2018-02-08 13:34	HQ001479	Debit	3,173.75	USD	1.00000	0.87197	170,068.13	HQ001479	invoice	false

4. Pressing the **Create** button, the system displays a list of invoices to **adjust**;

Create a Transaction

Select an invoice to adjust
Account: Paloozi
Total Outstanding: 3,827.14

Select	Invoice Date	Invoice Type	Status	Due Date	Invoice Amount	Amount Owed
<input type="checkbox"/>	2018-02-09	Aviation-Noniata	Published	2018-02-09	2230	2230
<input type="checkbox"/>	2018-02-09	Aviation-Noniata	Published	2018-02-09	578.04	578.04
<input type="checkbox"/>	2018-01-18	Non-Aviation	Paid	2018-01-18	10000000	0
<input type="checkbox"/>	2018-01-18	Aviation-Noniata	Paid	2018-01-18	4120.39	0
<input type="checkbox"/>	2017-12-20	Aviation-Noniata	Published	2017-12-20	1018.2	1018.2
<input type="checkbox"/>	2017-12-11	Aviation-Noniata	Paid	2017-12-11	545.71	0
<input type="checkbox"/>	2017-11-24	Non-Aviation	Paid	2017-11-24	10000	0
<input type="checkbox"/>	2017-11-17	Aviation-Noniata	Paid	2017-11-17	1440	0
<input type="checkbox"/>	2017-11-17	Aviation-Noniata	Paid	2017-11-17	1380	0
<input type="checkbox"/>	2017-11-17	Aviation-Noniata	Paid	2017-11-17	100	0

Previous **1** Next

CONTINUE **CANCEL**

5. Select the invoice to adjust, and press **Continue**;

Create a Transaction

Select an invoice to adjust
Account: Paloozi
Total Outstanding: 3,827.14

Select	Invoice Date	Invoice Type	Status	Due Date	Invoice Amount	Amount Owed
<input checked="" type="checkbox"/>	2018-02-09	Aviation-Noniata	Published	2018-02-09	2230	2230
<input type="checkbox"/>	2018-02-09	Aviation-Noniata	Published	2018-02-09	578.04	578.04
<input type="checkbox"/>	2018-01-18	Non-Aviation	Paid	2018-01-18	10000000	0
<input type="checkbox"/>	2018-01-18	Aviation-Noniata	Paid	2018-01-18	4120.39	0
<input type="checkbox"/>	2017-12-20	Aviation-Noniata	Published	2017-12-20	1018.2	1018.2
<input type="checkbox"/>	2017-12-11	Aviation-Noniata	Paid	2017-12-11	545.71	0
<input type="checkbox"/>	2017-11-24	Non-Aviation	Paid	2017-11-24	10000	0
<input type="checkbox"/>	2017-11-17	Aviation-Noniata	Paid	2017-11-17	1440	0
<input type="checkbox"/>	2017-11-17	Aviation-Noniata	Paid	2017-11-17	1380	0
<input type="checkbox"/>	2017-11-17	Aviation-Noniata	Paid	2017-11-17	100	0

Previous **1** Next

CONTINUE **CANCEL**

6. The system will display the interface to identify the details of the credit note, Like Flight ID, or Service charge catalogue, amount of the Credit Note, etc.;

>Create a Transaction

Invoice #: HQ001489
Amount Owed: 2230
Operator: Palocci
Adjustment Type: Credit
Adjustment Amount: 0.00

Flight Id	Description	Charges BWP
		Total: 0.00

Flight Id * Charge Type *

Charge Amount (BWP) *

CLEAR CREATE UPDATE DELETE

COMPLETE CANCEL

7. Complete the line items as necessary, and press the **Create** button (bottom left);

>Create a Transaction

Invoice #: HQ001489
Amount Owed: 2230
Operator: Palocci
Adjustment Type: Credit
Adjustment Amount: 0.00

Flight Id	Description	Charges BWP
TST000	Other charges	Total: 0.00

Flight Id * Charge Type *

Charge Amount (BWP) *

230 Description for Other Charges * "How to" Credit Note

CLEAR CREATE UPDATE DELETE

COMPLETE CANCEL

8. Once all the line items are added, press the **Complete** button (upper right), the Credit Note is generated, and a receipt can be downloaded from the **Transactions** interface.;

Create a Transaction

Account *	Description *	Transaction Type *	Payment Currency *
Payment Amount *	Local Currency *	Exchange Rate	Local Amount
Payment Mechanism *	Payment Reference Number *		
CLEAR CREATE			

Transactions

Receipt	Number	Account	Date/Time	Description	Type	Amount	Currency	Exchange Rate to USD	Exchange Rate to ANSP	Balance	Payment Reference Number	Payment Mechanism	Exported
HQ000184	Palocci		2018-02-15 13:49	Credit Note "How to"	Credit	230.00	BWP	0.10130	1.00000	3,597.14	N/A	adjustment	false
	Palocci		2018-02-09 07:35	HQ001489	Debit	2,230.00	BWP	0.10130	1.00000	3,827.14	HQ001489	invoice	false
	Palocci		2018-02-09 07:31	HQ001488	Debit	578.94	BWP	0.10130	1.00000	1,597.14	HQ001488	invoice	false
HQ000183	President OK1		2018-02-06 13:37	sfbvjl	Debit	100.00	BWP	0.10130	1.00000	700.00	N/A	adjustment	false
	Wilderness Air		2018-02-08 08:29	HQ001486	Debit	600.00	BWP	0.10130	1.00000	53,550.72	HQ001486	invoice	false
	Wilderness Air		2018-02-08 08:29	HQ001485	Debit	1,987.59	BWP	0.10130	1.00000	52,950.72	HQ001485	invoice	false
	President OK1		2018-02-06 16:38	HQ001484	Debit	600.00	BWP	0.10130	1.00000	600.00	HQ001484	invoice	false
	South African Express		2018-02-06 13:34	HQ001483	Debit	1,793.01	USD	1.00000	9.87167	187,543.89	HQ001483	invoice	false
	South African Express		2018-02-06 13:34	HQ001482	Debit	5,153.48	USD	1.00000	9.87167	185,750.88	HQ001482	invoice	false
	SRE Unknown		2018-02-06 13:34	HQ001480	Debit	16.32	USD	1.00000	9.87167	1,081.68	HQ001480	invoice	false



Civil Aviation Authority of Botswana

P.O. Box 250
Gaborone Botswana
Tel: 3688200 / 3913236, Fax: 3913121

Physical Address: Plot 61920
Fairground Office Park
Gaborone Botswana

CREDIT NOTE

TO:	Palocci	AIRPORT / STATION:	Head Office
TRANSACTION NUMBER:	HQ000184	INVOICE REF. NUMBER:	HQ001489
TRANSACTION DATE:	2018-02-15	INVOICE REF. DATE:	2018-02-09

Date	Flight ID	Description	Charges (BWP)
2018-02-15	TST000	"How to" Credit Note	230.00

Total credit amount: **230.00**
Affected invoice HQ001489 **-230.00**

Total Amount (BWP)	0.00
--------------------	-------------

	Name	Position	Signature	Date	Billing name	Billing Address	Billing Contact Tel.
CAAB:	Luca Vincenzo Palocci	QA		2018-02-09			
CUSTOMER:				2018-02-09	Palocci	TRS Roma	123456

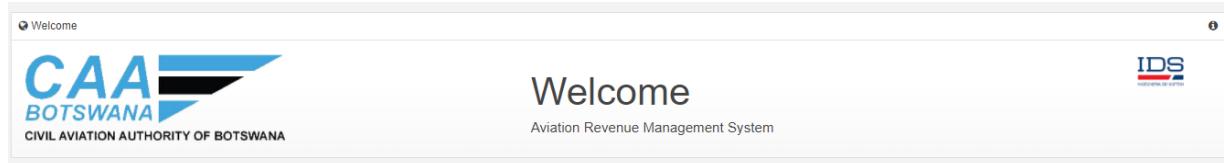
17.2.5 How To Generate a Debit Note

If an invoice is generated with a lower expected total, a debit note is generated to “correct” the invoice.

The invoice #HQ001486 has been generated with an undercharge of 200 BWP.

Invoices												
Text Filter CLEAR REFRESH												
Account	Invoice Number	Invoice Date	Invoice Type	Status	Payment Due Date	Created By	Invoice Amount	Invoice Currency	Exchange to USD	Invoice Date of Issue	Exported	Actions
Palocci	HQ001489	2018-02-09	aviation-nonlata	published	2018-02-09	Luca Vincenzo Palocci	2,230.00	BWP	0.10130	2018-02-09	false	E
Palocci	HQ001488	2018-02-09	aviation-nonlata	published	2018-02-09	Luca Vincenzo Palocci	578.94	BWP	0.10130	2018-02-09	false	E
President OK1	HQ001487	2018-02-08	debit-note	published	2018-03-10	Luca Vincenzo Palocci	100.00	BWP	0.10130	2018-02-08	false	E
Wilderness Air	HQ001486	2018-02-08	aviation-nonlata	published	2018-02-08	admin name	600.00	BWP	0.10130	2018-02-08	false	E
Wilderness Air	HQ001485	2018-02-08	aviation-nonlata	published	2018-02-08	admin name	1,987.59	BWP	0.10130	2018-02-08	false	E
President OK1	HQ001484	2018-02-08	aviation-nonlata	published	2018-03-08	Luca Vincenzo Palocci	600.00	BWP	0.10130	2018-02-08	false	E
South African Express	HQ001483	2018-02-08	aviation-nonlata	published	2018-03-08	Luca Vincenzo Palocci	1,793.01	USD	1.00000	2018-02-08	false	E
South African Express	HQ001482	2018-02-08	aviation-nonlata	published	2018-03-08	Luca Vincenzo Palocci	5,151.48	USD	1.00000	2018-02-08	false	E
SRE Unknown	HQ001481	2018-02-08	aviation-nonlata	paid	2018-03-08	Luca Vincenzo Palocci	0.00	USD	1.00000	2018-02-08	false	E
SRE Unknown	HQ001480	2018-02-08	aviation-nonlata	published	2018-03-08	Luca Vincenzo Palocci	18.32	USD	1.00000	2018-02-08	false	E
SA Airlink	HQ001479	2018-02-08	aviation-nonlata	published	2018-03-08	Luca Vincenzo Palocci	3,173.75	USD	1.00000	2018-02-08	false	E
QWENAIR	HQ001478	2018-02-08	aviation-nonlata	published	2018-03-08	Luca Vincenzo Palocci	178.41	USD	1.00000	2018-02-08	false	E
Moroni Air	HQ001477	2018-02-08	aviation-nonlata	published	2018-03-08	Luca Vincenzo Palocci	9,746.13	BWP	0.10130	2018-02-08	false	E
Mack Air	HQ001476	2018-02-08	aviation-nonlata	paid	2018-03-08	Luca Vincenzo Palocci	0.00	BWP	0.10130	2018-02-08	false	E
Mack Air	HQ001475	2018-02-08	aviation-nonlata	published	2018-03-08	Luca Vincenzo Palocci	210.83	BWP	0.10130	2018-02-08	false	E

1. Log in as Administrator;



2. Navigate to **Billing -> Transactions** and check the **Show Form** box;

The top part shows the 'Create a Transaction' form with fields for Account, Description, Transaction Type, Payment Currency, Payment Amount, Local Currency, Exchange Rate, and Local Amount. Buttons for 'CLEAR' and 'CREATE' are at the bottom. The bottom part shows the 'Transactions' list view with a table of transaction history, including columns for Receipt, Number, Account, Date/Time, Description, Type, Amount, Currency, Exchange Rate to USD, Exchange Rate to ANSP, Balance, Payment Reference Number, Payment Mechanism, and Exported.

Receipt	Number	Account	Date/Time	Description	Type	Amount	Currency	Exchange Rate to USD	Exchange Rate to ANSP	Balance	Payment Reference Number	Payment Mechanism	Exported
5	HQ000184	Palocci	2018-02-15 13:49	Credit Note "How to"	Credit	230.00	BWP	0.10130	1.00000	3,597.14	N/A	adjustment	false
		Palocci	2018-02-09 07:35	HQ001489	Debit	2,230.00	BWP	0.10130	1.00000	3,827.14	HQ001489	invoice	false
		Palocci	2018-02-09 07:31	HQ001488	Debit	578.84	BWP	0.10130	1.00000	1,597.14	HQ001488	invoice	false
HO000183	President OK1		2018-02-08 13:37	sfkvj	Debit	100.00	BWP	0.10130	1.00000	700.00	N/A	adjustment	false
		Wilderness Air	2018-02-08 08:29	HQ001488	Debit	600.00	BWP	0.10130	1.00000	53,650.72	HQ001488	invoice	false
		Wilderness Air	2018-02-08 08:29	HQ001485	Debit	1,967.59	BWP	0.10130	1.00000	52,950.72	HQ001485	invoice	false
		President OK1	2018-02-08 16:38	HQ001484	Debit	600.00	BWP	0.10130	1.00000	600.00	HQ001484	invoice	false
		South African Express	2018-02-06 13:34	HQ001483	Debit	1,793.01	USD	1.00000	9.87167	187,543.89	HQ001483	invoice	false
		South African Express	2018-02-06 13:34	HQ001482	Debit	5,153.48	USD	1.00000	9.87167	185,750.88	HQ001482	invoice	false
		SRE Unknown	2018-02-06 13:34	HQ001480	Debit	16.32	USD	1.00000	9.87167	1,081.68	HQ001480	invoice	false

3. Insert the **Account** that has been undercharged, a **Description**, **Debit** as Transaction Type, as Local Currency the **Invoice Currency**, and **Adjustment** as Payment Mechanism;

Create a Transaction

Account *	Description *	Transaction Type *	Payment Currency *
Wilderness Air	"Hoe to" Debit Note	Debit	
Payment Amount *	Local Currency *	Exchange Rate	Local Amount
	Botswanan Pula (BWP)		
Payment Mechanism *	Payment Reference Number *		
Adjustment	N/A		
CLEAR		CREATE	

Transactions

Show Form

Text Filter

REFRESH

Receipt	Number	Account	Date/Time	Description	Type	Amount	Currency	Exchange Rate to USD	Exchange Rate to ANSP	Balance	Payment Reference Number	Payment Mechanism	Exported	
<input checked="" type="checkbox"/>	HQ000184	Palocci	2018-02-15 13:49	Credit Note "How to"	Credit	230.00	BWP	0.10130	1.00000	3,597.14	N/A	adjustment	false	
		Palocci	2018-02-09 07:35	HQ001489	Debit	2,230.00	BWP	0.10130	1.00000	3,827.14	HQ001489	invoice	false	
		Palocci	2018-02-09 07:31	HQ001488	Debit	578.84	BWP	0.10130	1.00000	1,597.14	HQ001488	invoice	false	
		HO000183	President OK1	2018-02-08 13:37	sRkvj	Debit	100.00	BWP	0.10130	1.00000	700.00	N/A	adjustment	false
		Wilderness Air	2018-02-08 08:29	HQ001488	Debit	600.00	BWP	0.10130	1.00000	53,550.72	HQ001488	invoice	false	
		Wilderness Air	2018-02-08 08:29	HQ001485	Debit	1,987.50	BWP	0.10130	1.00000	52,950.72	HQ001485	invoice	false	
		President OK1	2018-02-06 16:29	HQ001484	Debit	600.00	BWP	0.10130	1.00000	500.00	HQ001484	invoice	false	
		South African Express	2018-02-06 13:34	HQ001483	Debit	1,793.01	USD	1.00000	0.87167	187,543.89	HQ001483	invoice	false	
		South African Express	2018-02-06 13:34	HQ001482	Debit	5,151.48	USD	1.00000	0.87167	185,750.88	HQ001482	invoice	false	
		SRE Unknown	2018-02-08 13:34	HQ001480	Debit	16.32	USD	1.00000	0.87167	1,081.68	HQ001480	invoice	false	

4. Pressing the **Create** button, the system displays a list of invoices to **adjust**;

Create a Transaction

CONTINUE CANCEL

Select an invoice to adjust
Account: Wilderness Air
Total Outstanding: 53,650.72

Select	Invoice Date	Invoice Type	Status	Due Date	Invoice Amount	Amount Owed
<input type="checkbox"/>	2018-02-08	Aviation-Noniata	Published	2018-02-08	600	600
<input type="checkbox"/>	2018-02-08	Aviation-Noniata	Published	2018-02-08	1987.59	1987.59
<input type="checkbox"/>	2018-02-08	Aviation-Noniata	Published	2018-02-08	2400	2400
<input type="checkbox"/>	2018-02-06	Aviation-Noniata	Published	2018-02-06	1068.82	1068.82
<input type="checkbox"/>	2018-02-05	Aviation-Noniata	Published	2018-02-05	3366.38	3366.38
<input type="checkbox"/>	2018-02-05	Aviation-Noniata	Published	2018-02-05	3464.15	3464.15
<input type="checkbox"/>	2018-01-12	Debit-Note	Published	2018-01-12	2000	2000
<input type="checkbox"/>	2018-01-09	Non-Aviation	Published	2018-01-09	1513.68	1513.68
<input type="checkbox"/>	2018-01-08	Non-Aviation	Published	2018-01-08	100	100
<input type="checkbox"/>	2018-01-08	Non-Aviation	Published	2018-01-08	100	100
<input type="checkbox"/>	2018-01-08	Non-Aviation	Published	2018-01-08	18000	18000
<input type="checkbox"/>	2018-01-08	Non-Aviation	Published	2018-01-08	15000	15000
<input type="checkbox"/>	2018-01-08	Non-Aviation	Published	2018-01-08	1045.08	1045.08
<input type="checkbox"/>	2017-11-17	Aviation-Noniata	Published	2017-12-17	3827.87	3005.04
<input type="checkbox"/>	2017-11-07	Aviation-Noniata	Paid	2017-12-07	12177.17	0
<input type="checkbox"/>	2017-11-06	Aviation-Noniata	Paid	2017-12-06	21555.19	0
<input type="checkbox"/>	2017-10-30	Aviation-Noniata	Paid	2017-11-29	1882.81	0
<input type="checkbox"/>	2017-10-30	Aviation-Noniata	Paid	2017-11-29	1882.81	0

5. Select the invoice to adjust, and press **Continue**;

>Create a Transaction

Select an invoice to adjust
Account: Wilderness Air
Total Outstanding: 63,650.72

Select	Invoice Date	Invoice Type	Status	Due Date	Invoice Amount	Amount Owed
<input checked="" type="checkbox"/>	2018-02-08	Aviation-Noniata	Published	2018-02-08	600	600
<input type="checkbox"/>	2018-02-08	Aviation-Noniata	Published	2018-02-08	1987.59	1987.59
<input type="checkbox"/>	2018-02-08	Aviation-Noniata	Published	2018-02-08	2400	2400
<input type="checkbox"/>	2018-02-08	Aviation-Noniata	Published	2018-02-08	1068.82	1068.82
<input type="checkbox"/>	2018-02-05	Aviation-Noniata	Published	2018-02-05	3366.36	3366.36
<input type="checkbox"/>	2018-02-05	Aviation-Noniata	Published	2018-02-05	3464.15	3464.15
<input type="checkbox"/>	2018-01-12	Debit-Note	Published	2018-01-12	2000	2000
<input type="checkbox"/>	2018-01-09	Non-Aviation	Published	2018-01-09	1513.68	1513.68
<input type="checkbox"/>	2018-01-08	Non-Aviation	Published	2018-01-08	100	100
<input type="checkbox"/>	2018-01-08	Non-Aviation	Published	2018-01-08	100	100
<input type="checkbox"/>	2018-01-08	Non-Aviation	Published	2018-01-08	18000	18000
<input type="checkbox"/>	2018-01-08	Non-Aviation	Published	2018-01-08	15000	15000
<input type="checkbox"/>	2018-01-08	Non-Aviation	Published	2018-01-08	1045.08	1045.08
<input type="checkbox"/>	2017-11-17	Aviation-Noniata	Published	2017-12-17	3827.87	3005.04
<input type="checkbox"/>	2017-11-07	Aviation-Noniata	Paid	2017-12-07	12177.17	0
<input type="checkbox"/>	2017-11-06	Aviation-Noniata	Paid	2017-12-06	21555.19	0
<input type="checkbox"/>	2017-10-30	Aviation-Noniata	Paid	2017-11-29	1862.81	0
<input type="checkbox"/>	2017-10-30	Aviation-Noniata	Paid	2017-11-29	1862.81	0

CONTINUE **CANCEL**

6. The system will display the interface to identify the details of the credit note, Like Flight ID, or Service charge catalogue, amount of the Credit Note, etc....;

Create a Transaction

Invoice #: HQ001486
Amount Owed: 600
Operator: Wilderness Air
Adjustment Type: Debit
Adjustment Amount: 0.00

Flight Id	Description	Charges BWP
TST000		Total: 0.00

Flight Id *
TST000

Charge Type *
Other charges

Charge Amount (BWP) *
200

Description for Other Charges *
"How to" Debit Note

CLEAR **CREATE** **UPDATE** **DELETE**

7. Complete the line items as necessary, and press the **Create** button (bottom left);

Create a Transaction

Invoice #: HQ001486
 Amount Owed: 600
 Operator: Wilderness Air
 Adjustment Type: Debit
 Adjustment Amount: 0.00

Flight Id	Description	Charges BWP
		Total: 0.00

Flight Id *: TST000
 Charge Type *: Other charges
 Description for Other Charges *: "How to" Debit Note

CLEAR **CREATE** **UPDATE** **DELETE** **COMPLETE** **CANCEL**

8. Once all the line items are added, press the **Complete** button (upper right), the Debit Note is generated, and a receipt can be downloaded from the **Invoice** interface

Invoices

Text Filter **Filter** **CLEAR** **REFRESH**

Account	Invoice Number	Invoice Date	Invoice Type	Status	Payment Due Date	Created By	Invoice Amount	Invoice Currency	Exchange to USD	Invoice Date of Issue	Exported	Actions
Wilderness_Air	HQ001490	2018-02-15	debit-note	published	2018-02-15	Luca Vincenzo Palocci	200.00	BWP	0.10130	2018-02-15	false	
Palocci	HQ001489	2018-02-09	aviation-nonlata	published	2018-02-09	Luca Vincenzo Palocci	2,230.00	BWP	0.10130	2018-02-09	false	
Palocci	HQ001488	2018-02-09	aviation-nonlata	published	2018-02-09	Luca Vincenzo Palocci	578.94	BWP	0.10130	2018-02-09	false	
President.OK1	HQ001487	2018-02-08	debit-note	published	2018-03-10	Luca Vincenzo Palocci	100.00	BWP	0.10130	2018-02-08	false	
Wilderness_Air	HQ001486	2018-02-08	aviation-nonlata	published	2018-02-08	admin name	600.00	BWP	0.10130	2018-02-08	false	
Wilderness_Air	HQ001485	2018-02-08	aviation-nonlata	published	2018-02-08	admin name	1,987.59	BWP	0.10130	2018-02-08	false	
President.OK1	HQ001484	2018-02-06	aviation-nonlata	published	2018-03-08	Luca Vincenzo Palocci	600.00	BWP	0.10130	2018-02-06	false	
South African Express	HQ001483	2018-02-06	aviation-nonlata	published	2018-03-08	Luca Vincenzo Palocci	1,793.01	USD	1.00000	2018-02-06	false	
South African Express	HQ001482	2018-02-06	aviation-nonlata	published	2018-03-08	Luca Vincenzo Palocci	5,153.48	USD	1.00000	2018-02-06	false	
SRE Unknown	HQ001481	2018-02-06	aviation-nonlata	paid	2018-03-08	Luca Vincenzo Palocci	0.00	USD	1.00000	2018-02-06	false	
SRE Unknown	HQ001480	2018-02-06	aviation-nonlata	published	2018-03-08	Luca Vincenzo Palocci	16.32	USD	1.00000	2018-02-06	false	
SA Airlink	HQ001479	2018-02-06	aviation-nonlata	published	2018-03-08	Luca Vincenzo Palocci	3,173.75	USD	1.00000	2018-02-06	false	
OWENAIR	HQ001478	2018-02-06	aviation-nonlata	published	2018-03-08	Luca Vincenzo Palocci	178.41	USD	1.00000	2018-02-06	false	
Moremi Air	HQ001477	2018-02-06	aviation-nonlata	published	2018-03-08	Luca Vincenzo Palocci	9,745.13	BWP	0.10130	2018-02-06	false	
Mack Air	HQ001476	2018-02-06	aviation-nonlata	paid	2018-03-08	Luca Vincenzo Palocci	0.00	BWP	0.10130	2018-02-06	false	

Previous **1** **2** **3** **4** **5** **6** **7** **8** **9** **10** **11** **12** **13** **14** **15** **16** **17** **18** **19** **20** **21** Next



Civil Aviation Authority of Botswana
 P.O. Box 250
 Gaborone Botswana
 Tel: 3688200 / 3913236, Fax: 3913121

Physical Address: Plot 61920
 Fairground Office Park
 Gaborone Botswana

DEBIT NOTE

TO:	Wilderness Air	AIRPORT / STATION:	Head Office
DEBIT NOTE NUMBER:	HQ001490	INVOICE REF. NUMBER:	HQ001486
TRANSACTION DATE:	2018-02-15	INVOICE REF. DATE:	2018-02-08

Date	Flight ID	Description	Charges (BWP)
2018-02-15	TST000	"How to" Debit Note	200.00

Payment Terms:

- Please issue a crossed cheque drawn in favour of Civil Aviation Authority of Botswana
- Please pay within 30 days of the transaction date
- Payment delayed beyond the due date shall attract penalty interest rate of 1.5% for each month of delay

Total Amount (BWP)

200.00

CAAB:	Name	Position	Signature	Date	Billing name	Billing Address	Billing Contact Tel.
CAAB:	Luca Vincenzo Palocci	QA		2018-02-08			
CUSTOMER:				2018-02-08	Neil Lumsden	Maun, Botswana	85296

17.2.6 How To Pay an Invoice

To pay an Invoice, the User have to create a transaction against it, via the Transaction Interface.

Transactions are fundamental to correctly update the Account's balance.

Create a Transaction			
Account *	Description *	Transaction Type *	Payment Currency *
Payment Amount *	Local Currency *	Exchange Rate	Local Amount
Payment Mechanism *	Payment Reference Number *		
<input type="button" value="CLEAR"/> <input type="button" value="CREATE"/>			

Account: The Account which is performing the payment.

Description: Insert a description (i.e. payment invoice June 2018).

Transaction Type: Credit.

Payment Currency: The currency the Customer is using to pay.

Local Currency: Invoices currency as Local Currency.

Payment Amount: will be calculated by the system if the Local Amount is inserted.

Local Amount: will be calculated by the system if the Payment Amount is inserted.

Payment Mechanism: Indicates how the Customer is paying for the invoice (Cash, Credit, Debit, Cheque, Wire).

Payment Reference Number: Indicates the reference number for the Payment Mechanism selected (i.e. Credit Card transaction #XXXXXX, or Wire Transfer #YYYYYY, etc.). Note: Payment Mechanism "Cash" has "Payment Reference Number "N/A".

Pressing the Create button the system will display a list of UNPAID invoices for the Account selected, which the user can select, to indicate which invoice(s) the payment is going to benefit.

If the Transaction Amount is equal to an Invoice Amount, the system automatically selects that Invoice.

Select	Invoice Date	Invoice Type	Status	Due Date	Invoice Amount	Amount Owed	Amount to Apply
<input type="checkbox"/>	2018-05-17	Non-Aviation	PUBLISHED	2018-06-16	97.2	87.2	
<input type="checkbox"/>	2018-05-12	Non-Aviation	PUBLISHED	2018-06-11	48.6	48.6	

Furthermore, the system displays:

Account: The Account which is performing the payment.

Transaction Amount: The transaction Amount, in "Local Currency"

Total Outstanding: The Total Outstanding Amount for the selected Account.

Messages for the User: This area displays messages for the User, like the one displayed.

The User now can select one (or more) Invoice(s), until the Transaction Amount is available.

Note: The system will allow multiple invoice selection, if the Transaction Amount, is higher than 1, or more, invoice outstanding. It will not allow the multiple selection if the Transaction Amount is lower than 1 invoice outstanding amount.

The screenshot shows the 'Create a Transaction' interface. At the top, it displays account information: Afriqiyah Airways, Transaction Amount: 58.74, and Total Outstanding: 135.80. A note below states: 'The payment amount of 58.74 does not total the amount of outstanding invoices'. Below this is a table listing two invoices:

Select	Invoice Date	Invoice Type	Status	Due Date	Invoice Amount	Amount Owed	Amount to Apply
<input checked="" type="checkbox"/>	2018-05-17	Non-Aviation	PUBLISHED	2018-06-16	97.2	87.2	10.14
<input checked="" type="checkbox"/>	2018-05-12	Non-Aviation	PUBLISHED	2018-06-11	48.6	48.6	48.60

At the bottom left, there are navigation buttons (< 1 >) and at the top right are 'COMPLETE' and 'CANCEL' buttons.

The User can now press the **Complete** button, to complete the transaction.

The system will automatically redirect the User to the Transaction Interface, where the User can download and print the receipt of the payment.

The screenshot shows the 'Transactions' interface. At the top, there are input fields for Account, Description, Transaction Type, and Payment Currency. Below these are fields for Payment Amount, Local Currency, Exchange Rate, and Local Amount. Further down are fields for Payment Mechanism and Payment Reference Number, with 'CLEAR' and 'CREATE' buttons. The main area is titled 'Transactions' and contains a table of transaction history. One specific row in the table is highlighted with a red box. The table columns include Receipt, Number, Account, Date/Time, Description, Type, Amount, Currency, Exchange Rate to USD, Exchange Rate to ANSP, Balance, Payment Reference Number, Payment Mechanism, and Exported.

Receipt	Number	Account	Date/Time	Description	Type	Amount	Currency	Exchange Rate to USD	Exchange Rate to ANSP	Balance	Payment Reference Number	Payment Mechanism	Exported
	ANS17/18-000002	Afriqiyah Airways	2018-05-21 10:24	Partial payment	Credit	58.74	USD	1.00000	102.88068	77.08	#WPS008465	wire	false
	ANS17/18-000001	P Flights	2018-05-21 09:33	CashAccount May2018 #1	Credit	3.128.00	KES	0.00972	1.00000	10.369.06	N/A	cash	false

17.2.7 How To Enter a Payment in a Currency Other than the Invoice Currency

ARMS allows the user to collect cash payments in different currencies.

It can be done from the Transaction forms (Billing -> Transactions; Billing -> Point of Sale).

The screenshot shows a transaction entry screen. At the top right, it displays "Late departure/arrival charges: 0.00" and "Invoice Total: 3,129.00". The main fields include:

- Description ***: CashAccount May2018 #1
- Payment Currency ***: US Dollar (USD)
- Payment Amount ***: 30.41
- Local Currency ***: Kenyan Shilling (KES)
- Exchange Rate**: 102.88066
- Local Amount**: 3129
- Payment Mechanism ***: cash
- Payment Reference Number ***: N/A

At the bottom left are two buttons: "GENERATE INVOICE" and "GENERATE AND PAY INVOICE".

The User have to select the **Payment Currency** (indicates the currency that the customer wants to pay with) and the **Local Amount**. The system will take care of the conversion, and the amount the Customer have to pay, will be displayed on the **Payment Amount** field.

17.2.8 How To Enable and Configure the Credit Transaction Approval Workflow

The Credit Transaction Approval Workflow allows the system to control the publishing of credit notes.

To enable it:

Navigate to Management -> System Configuration, and type in the TextFilter “credit transaction” and flag the Checkbox; Press the **Update Record** button.

The screenshot shows the System Configuration page with a filter set to "credit transaction". Below the filter, there is a checkbox labeled "Require credit transaction manual approval" which is checked. At the bottom left is a blue "UPDATE RECORD" button.

Once the workflow is enabled, to configure it, the User has to navigate to Management -> Transaction Workflow.

The screenshot shows the Transaction Approval Workflow Steps page. It has a header "Transaction Approval Workflow Steps" and a sub-header "Number of Steps". A "CREATE" button is visible at the bottom left. The main area is currently empty, showing a single row with a small icon and a delete button.

The first thing to do it to select the **Number of Steps** indicating the max number of approval steps needed, pressing the **Create** button the system provides the “empty structure of the workflow.

Transaction Approval Workflow Steps

Number of Steps: 7 CREATE

Create New Transaction Approval Workflow Steps											
ADD LEVEL REMOVE LEVEL											
Level	Status Type	Approval Name	Approval Group	Threshold Amount	Threshold Currency	Approval Under	Approval Over	Rejected Approval	Delete	Rejected	
0	INITIAL	Level 0							<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
1	INTERMEDIATE	Level 1							<input type="checkbox"/>	<input type="checkbox"/>	
2	INTERMEDIATE	Level 2							<input type="checkbox"/>	<input type="checkbox"/>	
3	INTERMEDIATE	Level 3							<input type="checkbox"/>	<input type="checkbox"/>	
4	INTERMEDIATE	Level 4							<input type="checkbox"/>	<input type="checkbox"/>	
5	INTERMEDIATE	Level 5							<input type="checkbox"/>	<input type="checkbox"/>	
6	FINAL	Level 6							<input type="checkbox"/>	<input type="checkbox"/>	

SAVE

Edit Existing Transaction Approval Workflow Steps

ADD LEVEL REMOVE LEVEL

Level	Status Type	Approval Name	Approval Group	Threshold Amount	Threshold Currency	Approval Under	Approval Over	Rejected Approval	Delete	Rejected
0	INITIAL	Level 0	Billing Officer			Level 1	Level 1		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
1	INTERMEDIATE	Level 1	Billing Supervisor			Level 2	Level 2	Level 0	<input type="checkbox"/>	<input type="checkbox"/>
2	INTERMEDIATE	Level 2	Finance Manager			Level 3	Level 3	Level 1	<input type="checkbox"/>	<input type="checkbox"/>
3	INTERMEDIATE	Level 3	Director	500000	Kenyan Shilling (KES)	Level 6	Level 4	Level 2	<input type="checkbox"/>	<input type="checkbox"/>
4	INTERMEDIATE	Level 4	General Manager	5000000	Kenyan Shilling (KES)	Level 6	Level 5	Level 3	<input type="checkbox"/>	<input type="checkbox"/>
5	INTERMEDIATE	Level 5	BoD			Level 6	Level 6	Level 4	<input type="checkbox"/>	<input type="checkbox"/>
6	FINAL	Level 6							<input type="checkbox"/>	<input type="checkbox"/>

SAVE

Item	Description
Level	Level number (read-only)
Status Type	Level status (read-only). One of initial, intermediate or final.
Approval Name	User entered level name.
Approval Group	The name of the group which may make this approval.
Threshold Amount	The maximum amount the group named can approve at this level.
Threshold Currency	The currency of the threshold amount.
Approval Under	The next level for the transaction if the transaction amount is under the threshold amount (usually the final level).
Approval Over	The next level for the transaction if the transaction amount is over the threshold amount.

Item	Description
Rejected Approval	The next level for the transaction if the transaction is rejected.
Delete Rejected	A flag indicating the transaction should be deleted in the event that it is rejected.

In the given example at level 3, Invoices under the 500,000.00 Kes, goes directly to level 6 (Final level), over the Threshold amount, higher approval is needed.

At level 4, Invoices under the 5,000,000.00 Kes, goes directly to level 6 (Final level), over the Threshold amount, higher approval is needed.

At level 6, Invoices, if approved, goes directly to level 6 (Final level) whit no higher level needed.

Rejection will “send” the Transaction to the previous level, unless is the generation level (Level 0), in that case, the Transaction is deleted.

17.3 Flight Data

17.3.1 How To Create a Flight Movement

Flight Movements are one of the core part of the ARMS, so it's important, when creating one, to insert the correct information.

☒ Edit a Flight Movement

Flight ID *	Registration Number	Date of Flight (yyyy-MM-dd) *	Departure Time (HHmm) *	Departure Aerodrome *	Aircraft Type *
UAE9753	A6EFG	2018-04-18	0815	OMDW	B77L
Destination Aerodrome *	Flight Type *	Account *	Arrival Aerodrome	Actual Arrival Time	User Crossing Distance (km)
HKEL	S	Emirates	HKEL	1254	
Item 18 Status	Item 18 Remarks	Item 18 Departure Aerodrome	Item 18 Destination Aerodrome	Item 18 Aircraft Type	Cruising Speed (Knnn/Nnnn/Mnnn)
	NRP HAR TCAS ADSB				N0490
Elapsed Time (HHmm)	Chargeable International Passengers	Chargeable Domestic Passengers	Children	Flight Rule	
0439					
Flight Level (Fnnn)					
F350					
Route *	DCT ANVIX L223 LAKLU/N0489F360 R402 HAI B400 IMKAD/N0487F360 B400 RIGAM B404 PURKA/N0487F360 B404 DEMGO/N0486F360 UB404G HARGA UM216 RUDOL UN554 KIMET KMET12				
<input type="button" value="CLEAR"/> <input type="button" value="UPDATE"/> <input type="button" value="DELETE"/>					

The information marked with “*” are mandatory, and are really important for the system to perform billing and non-billing operations such as: Invoice generation, match with surveillance log, statistic reports, etc.

The system allows also to see the see the information related to the Flight Movements also in an FPL format.

☒ Edit a Flight Movement

Flight ID *	Registration Number	Date of Flight (yyyy-MM-dd) *	Departure Time (HHmm) *	Departure Aerodrome *	Aircraft Type *
UAE9753	A6EFG	2018-04-18	0815	OMDW	B77L
Destination Aerodrome *	Flight Type *	Account *	Arrival Aerodrome	Actual Arrival Time	User Crossing Distance (km)
HKEL	S	Emirates	HKEL	1254	
Item 18 Status	Item 18 Remarks	Item 18 Departure Aerodrome	Item 18 Destination Aerodrome	Item 18 Aircraft Type	Cruising Speed (Knnn/Nnnn/Mnnn)
	NRP HAR TCAS ADSB				N0490
Elapsed Time (HHmm)	Chargeable International Passengers	Chargeable Domestic Passengers	Children	Flight Rule	
0439					
Flight Level (Fnnn)					
F350					
Route *	DCT ANVIX L223 LAKLU/N0489F360 R402 HAI B400 IMKAD/N0487F360 B400 RIGAM B404 PURKA/N0487F360 B404 DEMGO/N0486F360 UB404G HARGA UM216 RUDOL UN554 KIMET KMET12				
<input type="button" value="CLEAR"/> <input type="button" value="UPDATE"/> <input type="button" value="DELETE"/>					

Flight Plan

3 MESSAGE TYPE =>(FPL	7 REGISTRATION NUMBER - A 6 E F G	8 FLIGHT RULES - I	TYPE OF FLIGHT - S	<=	From	To	Distance (km) *
9 NUMBER	TYPE OF AIRCRAFT	WAKE TURBULENCE CAT.		<=	RUDOL	KAMAS	315.24
B 7 7 L		H		<=	KAMAS	KMET	65.01
13 DEPARTURE AERODROME O H D W	TIME 0 8 1 5			<=	KMET	HKEL	86.65
15 CRUISING SPEED - N 0 4 9 0	LEVEL F 3 5 0	ROUTE DCT ANVIX L223 LAKLU/N0489F360 R402 HAI B400 IMKAD/N0487F360 B400 RIGAM B404 PURKA/N0487F360 B404 DEMGO/N0486F360 UB404G HARGA UM216 RUDOL UN554 KIMET KMET12	Total distance (km) Total distance to pay (km) Total to pay for Flight (USD) 0.00	<=			400.00 400.00 0.00
16 DESTINATION AERODROME H K E L				<=			
18 OTHER INFORMATION NRP HAR TCAS ADSB				<=			

17.3.2 How To Find Flights For An Air Operator

Clear the flight movement filters.

Set the start and end dates.

Enter the operator's ICAO code in the text filter (airline) OR enter the operator's name in the text filter (airline or general aviation).

The screenshot shows the 'Flight Movements' search interface. At the top, there is a text input field labeled 'Filter' containing 'KLM', which is circled in red. Below the filter are several dropdown menus for 'Invoice Status', 'Account Type', 'Flight Movement Category', and 'Flight Movement Status'. A red box highlights the 'Sort Options' section and the date range filters. The 'Start Date (yyyy-MMM-dd)' is set to '2019-Jan-01' and the 'End Date (yyyy-MMM-dd)' is set to '2019-Jan-06'. At the bottom of the interface is a table listing flight movements, with the first few rows shown below:

Select	Action	Day of Flight	Dep Time	Dep Ad	Dest Ad	Flight Id	Reg Number	Account Name	Status	A/C Type	WTC	MTOW (kg)	Type	Nationality	Scope	Category Name	B
<input type="checkbox"/>		2019-Jan-06	2205	HTDA	EHAM	KLM569	PHBQP	Royal Dutch Airlines	INCOMPLETE	B772	H	287,800	OT	FO	IN	Other	
<input type="checkbox"/>		2019-Jan-06	2059	HKJK	EHAM	KLM174	PHBFH	Royal Dutch Airlines	PENDING	B744	H	395,000	DE	FO	IN	International Departure	
<input type="checkbox"/>		2019-Jan-06	1630	EHAM	FIMP	KLM501	PHBHM	Royal Dutch Airlines	INCOMPLETE	B789	H	245,003	OT	FO	IN	Other	
<input type="checkbox"/>		2019-Jan-06	1100	EHAM	HKJK	KLM565	PHBFG	Royal Dutch Airlines	PENDING	B744	H	395,000	AR	FO	IN	International Arrival	
<input type="checkbox"/>		2019-Jan-06	0930	EHAM	HTKJ	KLM567	PHBQP	Royal Dutch Airlines	PENDING	B772	H	287,800	OV	FO	IN	International Overflight	
<input type="checkbox"/>		2019-Jan-06	0915	EHAM	HTKJ	KLM567	PHBQP	Royal Dutch Airlines	CANCELED	B772	H	287,800				Other	
<input type="checkbox"/>		2019-Jan-06	0700	EHAM	HTKJ	KLM567	PHBQP	Royal Dutch Airlines	PENDING	B772	H	287,800	OV	FO	IN	International Overflight	
<input type="checkbox"/>		2019-Jan-06	0550	FIMP	EHAM	KLM502	PHBHM	Royal Dutch Airlines	PENDING	B789	H	245,003	OV	FO	IN	International Overflight	
<input type="checkbox"/>		2019-Jan-05	2100	HTDA	EHAM	KLM569	PHBQP	Royal Dutch Airlines	PENDING	B772	H	287,800	OV	FO	IN	International Overflight	
<input type="checkbox"/>		2019-Jan-05	2059	HKJK	EHAM	KLM174	PHBFG	Royal Dutch Airlines	PENDING	B744	H	395,000	DE	FO	IN	International Departure	
<input type="checkbox"/>		2019-Jan-05	1630	EHAM	FIMP	KLM501	PHBHM	Royal Dutch Airlines	PENDING	B789	H	245,003	OV	FO	IN	International Overflight	

17.3.3 How To Display Flight Details

Click on the show form checkbox.

Click on a flight movement record.

Scroll to the top of the form.

Flight Movements

Show Form

Filter

Invoice Status	Account Type	Flight Movement Category	Flight Movement Status																																																																																																																																																																																																																																										
Incomplete Flight Reason	Sort Options	Start Date (yyyy-MMM-dd)	End Date (yyyy-MMM-dd)																																																																																																																																																																																																																																										
		2019-Jan-01	2019-Jan-06																																																																																																																																																																																																																																										
<input type="checkbox"/> Select all flights <input type="checkbox"/> Locate duplicate/missing flights <input type="checkbox"/> Show actual departure/destination																																																																																																																																																																																																																																													
<table border="1"> <thead> <tr> <th>Select</th> <th>Action</th> <th>Day of Flight</th> <th>Dep Time</th> <th>Dep Ad</th> <th>Dest Ad</th> <th>Flight Id</th> <th>Reg Number</th> <th>Account Name</th> <th>Status</th> <th>A/C Type</th> <th>WTC</th> <th>MTOW (kg)</th> <th>Type</th> <th>Nationality</th> <th>Scope</th> <th>Category Name</th> <th>B</th> </tr> </thead> <tbody> <tr> <td><input type="checkbox"/></td> <td></td> <td>2019-Jan-06</td> <td>2205</td> <td>HTDA</td> <td>EHAM</td> <td>KLM569</td> <td>PHBQP</td> <td>Royal Dutch Airlines</td> <td>INCOMPLETE</td> <td>B772</td> <td>H</td> <td>287,800</td> <td>OT</td> <td>FO</td> <td>IN</td> <td>Other</td> <td></td> </tr> <tr> <td><input checked="" type="checkbox"/></td> <td></td> <td>2019-Jan-06</td> <td>2059</td> <td>HKJK</td> <td>EHAM</td> <td>KLM174</td> <td>PHBFH</td> <td>Royal Dutch Airlines</td> <td>PENDING</td> <td>B744</td> <td>H</td> <td>395,000</td> <td>DE</td> <td>FO</td> <td>IN</td> <td>International Departure</td> <td></td> </tr> <tr> <td><input type="checkbox"/></td> <td></td> <td>2019-Jan-06</td> <td>1630</td> <td>EHAM</td> <td>FIMP</td> <td>KLM501</td> <td>PHBHM</td> <td>Royal Dutch Airlines</td> <td>INCOMPLETE</td> <td>B789</td> <td>H</td> <td>245,003</td> <td>OT</td> <td>FO</td> <td>IN</td> <td>Other</td> <td></td> </tr> <tr> <td><input type="checkbox"/></td> <td></td> <td>2019-Jan-06</td> <td>1100</td> <td>EHAM</td> <td>HKJK</td> <td>KLM565</td> <td>PHBFG</td> <td>Royal Dutch Airlines</td> <td>PENDING</td> <td>B744</td> <td>H</td> <td>395,000</td> <td>AR</td> <td>FO</td> <td>IN</td> <td>International Arrival</td> <td></td> </tr> <tr> <td><input type="checkbox"/></td> <td></td> <td>2019-Jan-06</td> <td>0930</td> <td>EHAM</td> <td>HTKJ</td> <td>KLM567</td> <td>PHBQP</td> <td>Royal Dutch Airlines</td> <td>PENDING</td> <td>B772</td> <td>H</td> <td>287,800</td> <td>OV</td> <td>FO</td> <td>IN</td> <td>International Overflight</td> <td></td> </tr> <tr> <td><input type="checkbox"/></td> <td></td> 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Airlines</td> <td>PENDING</td> <td>B772</td> <td>H</td> <td>200,000</td> <td>OT</td> <td>FO</td> <td>IN</td> <td>International Overflight</td> <td></td> </tr> </tbody> </table>				Select	Action	Day of Flight	Dep Time	Dep Ad	Dest Ad	Flight Id	Reg Number	Account Name	Status	A/C Type	WTC	MTOW (kg)	Type	Nationality	Scope	Category Name	B	<input type="checkbox"/>		2019-Jan-06	2205	HTDA	EHAM	KLM569	PHBQP	Royal Dutch Airlines	INCOMPLETE	B772	H	287,800	OT	FO	IN	Other		<input checked="" type="checkbox"/>		2019-Jan-06	2059	HKJK	EHAM	KLM174	PHBFH	Royal Dutch Airlines	PENDING	B744	H	395,000	DE	FO	IN	International Departure		<input type="checkbox"/>		2019-Jan-06	1630	EHAM	FIMP	KLM501	PHBHM	Royal Dutch Airlines	INCOMPLETE	B789	H	245,003	OT	FO	IN	Other		<input type="checkbox"/>		2019-Jan-06	1100	EHAM	HKJK	KLM565	PHBFG	Royal Dutch Airlines	PENDING	B744	H	395,000	AR	FO	IN	International Arrival		<input type="checkbox"/>		2019-Jan-06	0930	EHAM	HTKJ	KLM567	PHBQP	Royal Dutch Airlines	PENDING	B772	H	287,800	OV	FO	IN	International Overflight		<input type="checkbox"/>		2019-Jan-06	0915	EHAM	HTKJ	KLM567	PHBQP	Royal Dutch Airlines	CANCELED	B772	H	287,800				Other		<input type="checkbox"/>		2019-Jan-06	0700	EHAM	HTKJ	KLM567	PHBQP	Royal Dutch Airlines	PENDING	B772	H	287,800	OV	FO	IN	International Overflight		<input type="checkbox"/>		2019-Jan-06	0550	FIMP	EHAM	KLM502	PHBHM	Royal Dutch Airlines	PENDING	B789	H	245,003	OV	FO	IN	International Overflight		<input type="checkbox"/>		2019-Jan-05	2100	HTDA	EHAM	KLM569	PHBQP	Royal Dutch Airlines	PENDING	B772	H	287,800	OV	FO	IN	International Overflight		<input type="checkbox"/>		2019-Jan-05	2059	HKJK	EHAM	KLM174	PHBFG	Royal Dutch Airlines	PENDING	B744	H	395,000	DE	FO	IN	International Departure		<input type="checkbox"/>		2019-Jan-05	1630	EHAM	FIMP	KLM501	PHBHM	Royal Dutch Airlines	PENDING	B789	H	245,003	OV	FO	IN	International Overflight		<input type="checkbox"/>		2019-Jan-05	1400	HTDA	EHAM	KLM565	PHBQP	Royal Dutch Airlines	PENDING	B772	H	200,000	OT	FO	IN	International Overflight	
Select	Action	Day of Flight	Dep Time	Dep Ad	Dest Ad	Flight Id	Reg Number	Account Name	Status	A/C Type	WTC	MTOW (kg)	Type	Nationality	Scope	Category Name	B																																																																																																																																																																																																																												
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Edit a Flight Movement

Flight ID *	Registration Number	Date of Flight (yyyy-MMM-dd) *	Departure Time (HHmm) *	Departure Aerodrome *	Aircraft Type *
KLM174	PHBFH	2019-Jan-06	2059	HKJK	B744
Destination Aerodrome *	Flight Type *	Account *	Arrival Aerodrome	Actual Arrival Time	User Crossing Distance (km)
EHAM	S	Royal Dutch Airlines	EHAM	0445	
Item 18 Status	Item 18 Remarks	Item 18 Departure Aerodrome	Item 18 Destination Aerodrome	Item 18 Aircraft Type	Cruising Speed (Kn/mn/Nnnn/Mnnn)
	TCAS				N0519
Elapsed Time (HHmm)	Chargeable International Passengers	Chargeable Domestic Passengers	Children	Flight Rule	Flight Level (Fnnn)
0746				I	F280
Route *	KAMAS1Y KAMAS UA727 ANTAX/N0521F300 UA727 AVONO UP309 SOGAD/N0512F320 UP309 NUBAR A727 SML L321 LUGAV/N0501F360 L321 KUNKI/N0496F380 L321 KATAI				
Radar Route	NAVEX LANET KAMAS LOV ANTAX				
Flight Notes					
Distance > Max Int Distance:					
Deletion Reason					

17.3.4 How To Display a Flight on a Map

Click on the map display action icon at the left side of the flight movement record.

To close the map, click on the X in the upper right corner.

17.3.5 How To Resolve an Unknown Account Error

Locate the flight movements which do not have accounts associated with them by selecting “No Associated Account” as the incomplete flight reason.

There are four ways of associating a flight with an account:

- Via the flight identifier ICAO code (airlines only).
 - Via the aircraft registration number specified in item 18 (either airline or general aviation).
 - Via the flight OPR code specified in item 18 (either airline or general aviation).
 - Manually selecting an account (either airline or general aviation).

The most common method of associating a flight movement with an airline accounts is via the ICAO code in the flight identifier. This type of flight is the AUxxxx flight shown in the example. The account must be an airline with an ICAO code. Identify the account to which these flights belong and ensure that it's ICAO code is set correctly.

A second method is through aircraft registrations which directly link an aircraft registration number to an account. This is the most common method used for general aviation, but may also be used for airlines. This type of flight is the T7AVD flight shown in the example. If they are following ICAO standards, these flights will use the registration number as the flight identifier. Identify the account which these flights belong to and add an aircraft registration to associate the registration number with the account.

A third method is to associate an account via the OPR code. This could be used for either airlines or general aviation, but is not frequently used. It does have one specific use, where an aircraft is leased and operated by multiple general aviation carriers concurrently. In this case, each operator may specify his operator code in item 18 via the OPR code. Identify the account to which these flights belong and ensure that it's OPR code is set correctly.

The fourth method is to display the flight movement and manually select the account with which the flight movement is associated. This method is not frequently used as it must be done on each flight movement whereas the previous methods, once set up, are automatically applied to all flight movements.

Flight Movements															Show Form				
Filter															REFRESH	RECALCULATE	GENERATE INVOICE	FLIGHT PLAN	RESET
Invoice Status				Account Type				Flight Movement Category				Flight Movement Status							
Incomplete Flight Reason				Sort Options				Start Date (yyyy-MMM-dd)				End Date (yyyy-MMM-dd)							
No Associated Account				Date				2019-Jan-01				2019-Jan-06							
<input type="checkbox"/> Select all flights	<input type="checkbox"/> Locate duplicate/missing flights	<input type="checkbox"/> Show actual departure/destination																	
<input type="checkbox"/>		2019-Jan-01	1100	ZZZZ	HKJK	RA25486	RA25486					INCOMPLETE	MI8	L	12,000	DO	FO	DO	Domestic
<input type="checkbox"/>		2019-Jan-02	2200	UUWW	HTKJ	T7AVD	T7AVD					INCOMPLETE	GLEX	M	48,000	OV	FO	IN	International Overflig
<input type="checkbox"/>		2019-Jan-06	0300	OMDB	HTKJ	UAF311	311					INCOMPLETE	C130	M	110,850	OV	FO	IN	International Overflig
<input type="checkbox"/>		2019-Jan-03	2030	OMDB	FVRG	SME252	SUSMM					INCOMPLETE	GLF4	M	33,838	OV	FO	IN	International Overflig
<input type="checkbox"/>		2019-Jan-01	0530	OMDB	HTKJ	VJT570	9HVFE					INCOMPLETE	CL60	M	21,591	OV	FO	IN	International Overflig
<input type="checkbox"/>		2019-Jan-03	0500	OMAA	HTKJ	UAF1225	00403A					INCOMPLETE	C17	H	292,000	OV	FO	IN	International Overflig
<input type="checkbox"/>		2019-Jan-04	0600	OMAA	FNLU	ROJ007	A6RJU					INCOMPLETE	B737	M	60,330	OV	FO	IN	International Overflig
<input type="checkbox"/>		2019-Jan-03	1147	OLBA	HKJK	NJE523A	CSGLH					INCOMPLETE	GLEX	M	48,000	AR	FO	IN	International Arrival
<input type="checkbox"/>		2019-Jan-02	2005	LOWW	FSIA	AUA21	OELAZ					INCOMPLETE	B763	H	184,158	OV	FO	IN	International Overflig
<input type="checkbox"/>		2019-Jan-03	1640	LOWW	FIMP	AUA17	OELPD					INCOMPLETE	B772	H	287,800	OV	FO	IN	International Overflig
<input type="checkbox"/>		2019-Jan-05	1640	LOWW	FIMP	AUA17	OELPB					INCOMPLETE	B772	H	287,800	OV	FO	IN	International Overflig
<input type="checkbox"/>		2019-Jan-06	1855	LFPO	FMEE	FBU700	FPHUJ					INCOMPLETE	A333	H	233,000	OV	FO	IN	International Overflig

17.3.6 How To Resolve an Unknown Aircraft Type

Locate the flight movements which do not have an aircraft type associated with them by selecting "Unknown Aircraft Type" as the incomplete flight reason.

There are four ways of associating a flight movement with an aircraft type:

- Directly via aircraft type.
- Via the aircraft registration number specified in item 18.
- Via a ZZZZ aircraft type and a TYP code specified in item 18.
- Manually selecting an aircraft type.

The most common method of associating an aircraft type with a flight movement is via the aircraft type field. If the aircraft type is specified, but is not recognized, search if it is a valid aircraft type (in ICAO doc 8643 or on the internet).

- If it is a valid type, add it to the aircraft types table.
- If it is not a valid type, but it is a subtype of a valid type (i.e. H130 in the example below is part of the EC30 series, and should be referenced as EC30), add it to the aircraft types table with the same information as EC30, but specify in the aircraft type that it is the H130 variant.
- If it is not a valid type, check if there is a typo, but reasonable close to another type. Frequent mistakes are substituting I for 1, O for 0, Z for 2, etc. In the example below, L41O uses an O instead of a 0, where the valid type is L410. In this case, manually correct the aircraft type for the specific flight plan.

If the aircraft type is specified as ZZZZ, then it must be specified in item 18 with the TYP code. If the item 18 code is not specified, there are two options:

- Add an item 18 TYP code and then add the unknown aircraft reference.
- Change the ZZZZ identifier to the actual aircraft type.

Note: If you are trying to determine the actual aircraft type where ZZZZ was specified, search for other flights having the same registration number. It is likely that there is a flight for that aircraft with a properly specified aircraft type. In the example below, it is identified as type ASTR in other flights. It is safe to assume this is correct for the flight where it is specified as ZZZZ.

Select	Action	Day of Flight ▲	Dep Time ▲	Dep Ad	Dest Ad	Flight Id	Reg Number	Account Name	Status	A/C Type	WTC	MTOW (kg)
<input type="checkbox"/>		2019-Jan-29	1120	HESN	HTZA	TYW431	OEGBD		CANCELED	ASTR	M	11,180
<input type="checkbox"/>		2019-Jan-29	1300	HESN	HTZA	TYW431	OEGBD		INCOMPLETE	ASTR	M	11,180
<input type="checkbox"/>		2019-Jan-30	1000	HTZA	HESN	TYW432	OEGBD		INCOMPLETE	ZZZZ		

If an item 18 ZZZZ code is used, that code must be added to the unknown aircraft types table.

Unspecified Aircraft Types

Filter REFRESH

Text Identifier	Name	Aircraft Type	MTOW (kg)	Status
ASTR	Gulfstream G100	ASTR	11,180	MANUAL

Filtered: 1 | Total: 1

< 1 >

Edit Unspecified Aircraft Type

Text Identifier *	Name *
ASTR	Gulfstream G100
Aircraft Type	MTOW (kg) *
ASTR	11180

CLEAR UPDATE DELETE

Flight Movements

Show Form

Filter

REFRESH RECALCULATE GENERATE INVOICE FLIGHT PLAN RESET

Invoice Status	Account Type	Flight Movement Category	Flight Movement Status																																																																																																																																																																								
Incomplete Flight Reason	Sort Options	Start Date (yyyy-MMM-dd)	End Date (yyyy-MMM-dd)																																																																																																																																																																								
Unknown Aircraft Type	Date	2019-Jan-01	2019-Jan-31																																																																																																																																																																								
<input type="checkbox"/> Select all flights <input type="checkbox"/> Locate duplicate/missing flights <input type="checkbox"/> Show actual departure/destination																																																																																																																																																																											
<table border="1"> <tr><td><input type="checkbox"/></td><td>2019-Jan-30</td><td>1000</td><td>HTZA</td><td>HESN</td><td>TYW432</td><td>OEGBD</td><td></td><td>INCOMPLETE</td><td>ZZZZ</td><td>OV</td><td>FO</td><td>IN</td><td>International Overflight</td></tr> <tr><td><input type="checkbox"/></td><td>2019-Jan-30</td><td>1220</td><td>FYWH</td><td>HAAB</td><td>ETH834</td><td>ETAVM</td><td>Ethiopian Airlines</td><td>INCOMPLETE</td><td>ZZZZ</td><td>OV</td><td>FO</td><td>IN</td><td>International Overflight</td></tr> <tr><td><input type="checkbox"/></td><td>2019-Jan-31</td><td>0500</td><td>HDAM</td><td>HKWJ</td><td>RIPIT32</td><td>N50EB</td><td></td><td>INCOMPLETE</td><td>ZZZZ</td><td>AR</td><td>FO</td><td>IN</td><td>International Arrival</td></tr> <tr><td><input type="checkbox"/></td><td>2019-Jan-31</td><td>0600</td><td>HKML</td><td>HKGE</td><td>5YCIY</td><td>5YCIY</td><td></td><td>INCOMPLETE</td><td>L410</td><td>DO</td><td>NA</td><td>DO</td><td>Domestic</td></tr> <tr><td><input type="checkbox"/></td><td>2019-Jan-31</td><td>0626</td><td>HKNY</td><td>HKRE</td><td>RIDER514</td><td>KAF1507</td><td></td><td>INCOMPLETE</td><td>ZZZZ</td><td>DO</td><td>FO</td><td>DO</td><td>Domestic</td></tr> <tr><td><input type="checkbox"/></td><td>2019-Jan-31</td><td>0626</td><td>HKNY</td><td>HKRE</td><td>RIDER510</td><td>KAF1500</td><td></td><td>INCOMPLETE</td><td>ZZZZ</td><td>DO</td><td>FO</td><td>DO</td><td>Domestic</td></tr> <tr><td><input type="checkbox"/></td><td>2019-Jan-31</td><td>0626</td><td>HKNY</td><td>HKRE</td><td>RIDER520</td><td>KAF1505</td><td></td><td>INCOMPLETE</td><td>ZZZZ</td><td>DO</td><td>FO</td><td>DO</td><td>Domestic</td></tr> <tr><td><input type="checkbox"/></td><td>2019-Jan-31</td><td>0626</td><td>HKNY</td><td>HKNY</td><td>ALFA23</td><td>KAF820</td><td></td><td>INCOMPLETE</td><td>ZZZZ</td><td>DO</td><td>FO</td><td>DO</td><td>Domestic</td></tr> <tr><td><input type="checkbox"/></td><td>2019-Jan-31</td><td>0626</td><td>HKNY</td><td>HKRE</td><td>RIDER5124</td><td>KAF1507</td><td></td><td>INCOMPLETE</td><td>ZZZZ</td><td>DO</td><td>FO</td><td>DO</td><td>Domestic</td></tr> <tr><td><input type="checkbox"/></td><td>2019-Jan-31</td><td>0633</td><td>HKJK</td><td>ZZZZ</td><td>R</td><td></td><td></td><td>INCOMPLETE</td><td>ZZZZ</td><td>DO</td><td>FO</td><td>DO</td><td>Domestic</td></tr> <tr><td><input type="checkbox"/></td><td>2019-Jan-31</td><td>0710</td><td>HKWJ</td><td>HKLU</td><td>RIPIT20</td><td>N64TR</td><td></td><td>INCOMPLETE</td><td>ZZZZ</td><td>DO</td><td>FO</td><td>DO</td><td>Domestic</td></tr> <tr><td><input type="checkbox"/></td><td>2019-Jan-31</td><td>0925</td><td>HKML</td><td>ZZZZ</td><td>5YCIJ</td><td>5YCIJ</td><td></td><td>INCOMPLETE</td><td>H130</td><td>DO</td><td>NA</td><td>DO</td><td>Domestic</td></tr> </table>				<input type="checkbox"/>	2019-Jan-30	1000	HTZA	HESN	TYW432	OEGBD		INCOMPLETE	ZZZZ	OV	FO	IN	International Overflight	<input type="checkbox"/>	2019-Jan-30	1220	FYWH	HAAB	ETH834	ETAVM	Ethiopian Airlines	INCOMPLETE	ZZZZ	OV	FO	IN	International Overflight	<input type="checkbox"/>	2019-Jan-31	0500	HDAM	HKWJ	RIPIT32	N50EB		INCOMPLETE	ZZZZ	AR	FO	IN	International Arrival	<input type="checkbox"/>	2019-Jan-31	0600	HKML	HKGE	5YCIY	5YCIY		INCOMPLETE	L410	DO	NA	DO	Domestic	<input type="checkbox"/>	2019-Jan-31	0626	HKNY	HKRE	RIDER514	KAF1507		INCOMPLETE	ZZZZ	DO	FO	DO	Domestic	<input type="checkbox"/>	2019-Jan-31	0626	HKNY	HKRE	RIDER510	KAF1500		INCOMPLETE	ZZZZ	DO	FO	DO	Domestic	<input type="checkbox"/>	2019-Jan-31	0626	HKNY	HKRE	RIDER520	KAF1505		INCOMPLETE	ZZZZ	DO	FO	DO	Domestic	<input type="checkbox"/>	2019-Jan-31	0626	HKNY	HKNY	ALFA23	KAF820		INCOMPLETE	ZZZZ	DO	FO	DO	Domestic	<input type="checkbox"/>	2019-Jan-31	0626	HKNY	HKRE	RIDER5124	KAF1507		INCOMPLETE	ZZZZ	DO	FO	DO	Domestic	<input type="checkbox"/>	2019-Jan-31	0633	HKJK	ZZZZ	R			INCOMPLETE	ZZZZ	DO	FO	DO	Domestic	<input type="checkbox"/>	2019-Jan-31	0710	HKWJ	HKLU	RIPIT20	N64TR		INCOMPLETE	ZZZZ	DO	FO	DO	Domestic	<input type="checkbox"/>	2019-Jan-31	0925	HKML	ZZZZ	5YCIJ	5YCIJ		INCOMPLETE	H130	DO	NA	DO	Domestic
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<input type="checkbox"/>	2019-Jan-31	0626	HKNY	HKRE	RIDER520	KAF1505		INCOMPLETE	ZZZZ	DO	FO	DO	Domestic																																																																																																																																																														
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Selected: 0 | Filtered: 138 | Total: 220898

17.3.7 How To Resolve a Zero Length Flight – Unknown Departure Aerodrome

Locate the flight movements which do not have a known departure aerodrome by selecting “Unknown Departure Aerodrome” as the incomplete flight reason.

Sort the flights by departure aerodrome so the list is easier to work through.

For each departure aerodrome (excluding ZZZZ specified), check if the locator is valid (ICAO doc 9710).

- If it is valid and is a local aerodrome, it can be added directly to the aerodromes table.
- If it is valid and is not a local aerodrome, it must be added to the navdb database. Contact the vendor to get an updated navdb database.
- If it is not valid, check for typos and identify the correct location.

If the departure aerodrome is specified as ZZZZ, then it must be specified in item 18 with the DEP code. If the item 18 code is not specified, there are two options:

- Add an item 18 DEP code and then add the unknown location reference.
- Change the ZZZZ identifier to the actual departure aerodrome if you can determine it.

Unspecified Departure and Destination Locations

KILGORIS BOYS HIGH SCHOOL S	KILGORIS BOYS HIGH SCHOOLS	false		KEN	SYSTEM GENERATED	
KIMANCHU N	KIMANCHU N	false		KEN	SYSTEM GENERATED	
KITENGELA S	KITENGELA S	false		KEN	SYSTEM GENERATED	
KITHAYUS S	KITHAYUS S	false		KEN	SYSTEM GENERATED	
KITUI S	KITUI S	false		KEN	SYSTEM GENERATED	
KNI	KNI	false	HKNI	KEN	MANUAL	00°22'00"S 03
KOMAROK SHRINE	KOMAROK SHRINE	false		KEN	SYSTEM GENERATED	
KOTULO N	KOTULO N	false		KEN	SYSTEM GENERATED	
KULALU	KULALU	false		KEN	SYSTEM GENERATED	
KWS TRAINING INSTITUTE S	KWS TRAINING INSTITUTE S	false		KEN	SYSTEM GENERATED	
LAASANOOD	LAASANOOD	false		KEN	SYSTEM GENERATED	
LELELA FARM	LELELA FARM	false		KEN	SYSTEM GENERATED	

Filtered: 118 | Total: 118

Edit an Unspecified Departure or Destination

Text Identifier *	Name *
KNI	KNI
Aerodrome Identifier	Country Code
HKNI	KEN
Maintained *	Status
False	MANUAL
Latitude *	Longitude *
00°22'00"S	036°58'00"E

CLEAR UPDATE DELETE

Flight Movements

Filter	Show Form	REFRESH	RECALCULATE	GENERATE INVOICE	FLIGHT PLAN	RESET											
Invoice Status	Account Type	Flight Movement Category	Flight Movement Status														
Incomplete Flight Reason	Sort Options	Start Date (yyyy-MMM-dd)	End Date (yyyy-MMM-dd)														
Unknown Departure Aerodrome		2019-Jan-01	2019-Feb-08														
<input type="checkbox"/> Select all flights	<input type="checkbox"/> Locate duplicate/missing flights	<input type="checkbox"/> Show actual departure/destination															
Day of Flight	Dep Time	Dep Ad	Dest Ad	Flight Id	Reg Number	Account Name	Status	A/C Type	WTC	MTOW (kg)	Type	Nationality	Scope	Category Name	Blacklisted	Enroute Basis	Enr
2019-Jan-12	0200	PKMP	HKMO	EXZ542	5YCAR	East African Safari Air Express	INCOMPLETE	CRJ2	M	24,000	DO	NA	DO	Domestic	No		
2019-Jan-22	0000	HCBD	HKWJ	5YJUU	5YJUU		INCOMPLETE	F27	M	20,500	DO	NA	DO	Domestic	No		
2019-Feb-08	0700	HCBN	HKWJ	5YVVU	5YVVU		INCOMPLETE	DH8D	M	28,998	DO	NA	DO	Domestic	No		
2019-Jan-03	0600	HCCB	HKWJ	5YMAJ	5YMAJ		INCOMPLETE	DHC8	M	28,694	DO	NA	DO	Domestic	No		
2019-Jan-28	0900	HCDB	HKWJ	UNO407H	5YDAH	UNQ	INCOMPLETE	C208	L	3,977	DO	NA	DO	Domestic	No		
2019-Jan-27	0900	HCDB	HKWJ	UNO407H	5YDAH		INCOMPLETE	C208	L	3,977	DO	NA	DO	Domestic	No		
2019-Feb-04	0000	HCGW	HKWJ	5YVVX	5YVVX		INCOMPLETE	DH8D	M	28,998	DO	NA	DO	Domestic	No		
2019-Jan-03	0500	HCHJ	HKWJ	5YJWG	5YJWG		INCOMPLETE	F50	M	20,820	DO	NA	DO	Domestic	No		
2019-Jan-01	0700	HCHJ	HKWJ	5YJWB	5YJWB		INCOMPLETE	F50	M	20,820	DO	NA	DO	Domestic	No		
2019-Jan-07	0600	HCZZ	HKWJ	5YJWG	5YJWG		INCOMPLETE	F50	M	20,820	DO	NA	DO	Domestic	No		
2019-Jan-03	0525	HEJN	HKJK	DHX403	A9CDHJ	DHL International	INCOMPLETE	B762	H	179,169	DO	FO	DO	Domestic	No		

Selected: 0 | Filtered: 19 | Total: 220912

17.3.8 How To Resolve a Zero Length Flight – Unknown Destination Aerodrome

The procedure for resolving zero length flights due to unknown destination aerodromes is similar to that for unknown departure aerodromes except:

- Select the “Unknown Destination Aerodrome” filter.
- Sort on and verify locators in the destination aerodrome column.
- The item 18 destination code is DEST.

17.3.9 How To Resolve a Zero Length Flight – Circular Flights

Zero length circular flights occur when the departure and destination aerodrome are the same and a valid route is not specified. In this case no distance can be calculated.

There is a system setting to allow the distance to be travelled based on the speed and estimated elapsed time provided in the flight plan. Verify that the following setting is checked.

Calculate circular flight distance based on speed and duration

Select the flight plan and set the speed and estimated elapsed time correctly.

17.3.10 How To Resolve Expired or Missing CoA For Small Aircraft

Locate the flight movements which do not have a known departure aerodrome by selecting “Expired or Missing CoA for Small Aircraft” as the incomplete flight reason.

Sort the flights by registration number so the list is easier to work through.

Note that each flight should have a local registration number and have an MTOW less than or equal to that configured as the maximum for a small aircraft.

Prior to trying to resolve expired or missing CoA errors for Small Aircraft, verify that the latest local aircraft registry has been loaded. After this is done, recalculate all flights which have the expired or missing CoA for small aircraft error.

For each aircraft registration (not for each flight), check the local aircraft registry. If the aircraft registration is missing or has expired, follow up with a supervisor to determine the course of action. While it is possible to manually add a registration or update a registration expiry date, this is inadvisable as an external organisation is responsible for collecting CoA fees and maintaining the list of active and expired registrations.

Flight Movements Show Form □

Filter REFRESH RECALCULATE GENERATE INVOICE FLIGHT PLAN RESET

Invoice Status	Account Type	Flight Movement Category	Flight Movement Status																																																																																																																																																																																																																								
Incomplete Flight Reason	Sort Options	Start Date (yyyy-MMM-dd)	End Date (yyyy-MMM-dd)																																																																																																																																																																																																																								
Expired Or Missing CoA For Small Aircraft		2019-Jan-01	2019-Jan-31																																																																																																																																																																																																																								
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<table border="1"> <thead> <tr> <th></th> <th>2019-Jan-22</th> <th>0530</th> <th>HKNW</th> <th>HKNW</th> <th>5YAFJ</th> <th>5YAFJ</th> <th></th> <th>INCOMPLETE</th> <th>C206</th> <th>L</th> <th>1,633</th> <th>DO</th> <th>NA</th> <th>DO</th> <th>Domestic</th> <th>No</th> <th>Scheduled</th> </tr> </thead> <tbody> <tr> <td><input type="checkbox"/></td> <td>2019-Jan-30</td> <td>0900</td> <td>HKNW</td> <td>HKNW</td> <td>5YAFJ</td> <td>5YAFJ</td> <td></td> <td>INCOMPLETE</td> <td>C206</td> <td>L</td> <td>1,633</td> <td>DO</td> <td>NA</td> <td>DO</td> <td>Domestic</td> <td>No</td> <td>Scheduled</td> </tr> <tr> <td><input type="checkbox"/></td> <td>2019-Jan-21</td> <td>0610</td> <td>HKNW</td> <td>HKNW</td> <td>5YAFJ</td> <td>5YAFJ</td> <td></td> <td>INCOMPLETE</td> <td>C206</td> <td>L</td> <td>1,633</td> <td>DO</td> <td>NA</td> <td>DO</td> <td>Domestic</td> <td>No</td> <td></td> </tr> <tr> <td><input type="checkbox"/></td> <td>2019-Jan-25</td> <td>0630</td> <td>HKNW</td> <td>HKNW</td> <td>5YAFJ</td> <td>5YAFJ</td> <td></td> <td>INCOMPLETE</td> <td>C206</td> <td>L</td> <td>1,633</td> <td>DO</td> <td>NA</td> <td>DO</td> <td>Domestic</td> <td>No</td> <td>Scheduled</td> </tr> <tr> <td><input type="checkbox"/></td> <td>2019-Jan-23</td> <td>0630</td> <td>HKNW</td> <td>HKNW</td> <td>5YAFJ</td> <td>5YAFJ</td> <td></td> <td>INCOMPLETE</td> <td>C206</td> <td>L</td> <td>1,633</td> <td>DO</td> <td>NA</td> <td>DO</td> <td>Domestic</td> <td>No</td> <td>Scheduled</td> </tr> <tr> <td><input type="checkbox"/></td> <td>2019-Jan-21</td> <td>0700</td> <td>HKNW</td> <td>HKNW</td> <td>5YAFJ</td> <td>5YAFJ</td> <td></td> <td>INCOMPLETE</td> <td>C206</td> <td>L</td> <td>1,633</td> <td>DO</td> <td>NA</td> <td>DO</td> <td>Domestic</td> <td>No</td> <td></td> </tr> <tr> <td><input type="checkbox"/></td> <td>2019-Jan-08</td> <td>0900</td> <td>HKNW</td> <td>HKIK</td> <td>5YAFJ</td> <td>5YAFJ</td> <td></td> <td>INCOMPLETE</td> <td>C206</td> <td>L</td> <td>1,633</td> <td>DO</td> <td>NA</td> <td>DO</td> <td>Domestic</td> <td>No</td> <td>Nominal Route</td> </tr> <tr> <td><input type="checkbox"/></td> <td>2019-Jan-27</td> <td>0630</td> <td>HKNW</td> <td>HKNW</td> <td>5YAFJ</td> <td>5YAFJ</td> <td></td> <td>INCOMPLETE</td> <td>C206</td> <td>L</td> <td>1,633</td> <td>DO</td> <td>NA</td> <td>DO</td> <td>Domestic</td> <td>No</td> <td>Scheduled</td> </tr> <tr> <td><input type="checkbox"/></td> <td>2019-Jan-04</td> <td>1300</td> <td>HKNW</td> <td>HKBD</td> <td>5YAHM</td> <td>5YAHM</td> <td></td> <td>INCOMPLETE</td> <td>C180</td> <td>L</td> <td>1,270</td> <td>DO</td> <td>NA</td> <td>DO</td> <td>Domestic</td> <td>No</td> <td>Nominal Route</td> </tr> <tr> <td><input type="checkbox"/></td> <td>2019-Jan-03</td> <td>1045</td> <td>HKIK</td> <td>HKNW</td> <td>5YAHJ</td> <td>5YAHJ</td> <td></td> <td>INCOMPLETE</td> <td>C182</td> <td>L</td> <td>1,338</td> <td>DO</td> <td>NA</td> <td>DO</td> <td>Domestic</td> <td>No</td> <td>Nominal Route</td> </tr> <tr> <td><input type="checkbox"/></td> <td>2019-Jan-18</td> <td>0830</td> <td>HKNW</td> <td>HKSF</td> <td>5YAHZ</td> <td>5YAHZ</td> <td></td> <td>INCOMPLETE</td> <td>C206</td> <td>L</td> <td>1,633</td> <td>DO</td> <td>NA</td> <td>DO</td> <td>Domestic</td> <td>No</td> <td>Radar Summary</td> </tr> <tr> <td><input type="checkbox"/></td> <td>2019-Jan-22</td> <td>0745</td> <td>HKVG</td> <td>HKNW</td> <td>5YAHZ</td> <td>5YAHZ</td> <td></td> <td>INCOMPLETE</td> <td>C206</td> <td>L</td> <td>1,633</td> <td>DO</td> <td>NA</td> <td>DO</td> <td>Domestic</td> <td>No</td> <td>Nominal Route</td> </tr> </tbody> </table>					2019-Jan-22	0530	HKNW	HKNW	5YAFJ	5YAFJ		INCOMPLETE	C206	L	1,633	DO	NA	DO	Domestic	No	Scheduled	<input type="checkbox"/>	2019-Jan-30	0900	HKNW	HKNW	5YAFJ	5YAFJ		INCOMPLETE	C206	L	1,633	DO	NA	DO	Domestic	No	Scheduled	<input type="checkbox"/>	2019-Jan-21	0610	HKNW	HKNW	5YAFJ	5YAFJ		INCOMPLETE	C206	L	1,633	DO	NA	DO	Domestic	No		<input type="checkbox"/>	2019-Jan-25	0630	HKNW	HKNW	5YAFJ	5YAFJ		INCOMPLETE	C206	L	1,633	DO	NA	DO	Domestic	No	Scheduled	<input type="checkbox"/>	2019-Jan-23	0630	HKNW	HKNW	5YAFJ	5YAFJ		INCOMPLETE	C206	L	1,633	DO	NA	DO	Domestic	No	Scheduled	<input type="checkbox"/>	2019-Jan-21	0700	HKNW	HKNW	5YAFJ	5YAFJ		INCOMPLETE	C206	L	1,633	DO	NA	DO	Domestic	No		<input type="checkbox"/>	2019-Jan-08	0900	HKNW	HKIK	5YAFJ	5YAFJ		INCOMPLETE	C206	L	1,633	DO	NA	DO	Domestic	No	Nominal Route	<input type="checkbox"/>	2019-Jan-27	0630	HKNW	HKNW	5YAFJ	5YAFJ		INCOMPLETE	C206	L	1,633	DO	NA	DO	Domestic	No	Scheduled	<input type="checkbox"/>	2019-Jan-04	1300	HKNW	HKBD	5YAHM	5YAHM		INCOMPLETE	C180	L	1,270	DO	NA	DO	Domestic	No	Nominal Route	<input type="checkbox"/>	2019-Jan-03	1045	HKIK	HKNW	5YAHJ	5YAHJ		INCOMPLETE	C182	L	1,338	DO	NA	DO	Domestic	No	Nominal Route	<input type="checkbox"/>	2019-Jan-18	0830	HKNW	HKSF	5YAHZ	5YAHZ		INCOMPLETE	C206	L	1,633	DO	NA	DO	Domestic	No	Radar Summary	<input type="checkbox"/>	2019-Jan-22	0745	HKVG	HKNW	5YAHZ	5YAHZ		INCOMPLETE	C206	L	1,633	DO	NA	DO	Domestic	No	Nominal Route
	2019-Jan-22	0530	HKNW	HKNW	5YAFJ	5YAFJ		INCOMPLETE	C206	L	1,633	DO	NA	DO	Domestic	No	Scheduled																																																																																																																																																																																																										
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<input type="checkbox"/>	2019-Jan-25	0630	HKNW	HKNW	5YAFJ	5YAFJ		INCOMPLETE	C206	L	1,633	DO	NA	DO	Domestic	No	Scheduled																																																																																																																																																																																																										
<input type="checkbox"/>	2019-Jan-23	0630	HKNW	HKNW	5YAFJ	5YAFJ		INCOMPLETE	C206	L	1,633	DO	NA	DO	Domestic	No	Scheduled																																																																																																																																																																																																										
<input type="checkbox"/>	2019-Jan-21	0700	HKNW	HKNW	5YAFJ	5YAFJ		INCOMPLETE	C206	L	1,633	DO	NA	DO	Domestic	No																																																																																																																																																																																																											
<input type="checkbox"/>	2019-Jan-08	0900	HKNW	HKIK	5YAFJ	5YAFJ		INCOMPLETE	C206	L	1,633	DO	NA	DO	Domestic	No	Nominal Route																																																																																																																																																																																																										
<input type="checkbox"/>	2019-Jan-27	0630	HKNW	HKNW	5YAFJ	5YAFJ		INCOMPLETE	C206	L	1,633	DO	NA	DO	Domestic	No	Scheduled																																																																																																																																																																																																										
<input type="checkbox"/>	2019-Jan-04	1300	HKNW	HKBD	5YAHM	5YAHM		INCOMPLETE	C180	L	1,270	DO	NA	DO	Domestic	No	Nominal Route																																																																																																																																																																																																										
<input type="checkbox"/>	2019-Jan-03	1045	HKIK	HKNW	5YAHJ	5YAHJ		INCOMPLETE	C182	L	1,338	DO	NA	DO	Domestic	No	Nominal Route																																																																																																																																																																																																										
<input type="checkbox"/>	2019-Jan-18	0830	HKNW	HKSF	5YAHZ	5YAHZ		INCOMPLETE	C206	L	1,633	DO	NA	DO	Domestic	No	Radar Summary																																																																																																																																																																																																										
<input type="checkbox"/>	2019-Jan-22	0745	HKVG	HKNW	5YAHZ	5YAHZ		INCOMPLETE	C206	L	1,633	DO	NA	DO	Domestic	No	Nominal Route																																																																																																																																																																																																										
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>																																																																																																																																																																																																																											

Selected: 0 | Filtered: 756 | Total: 220955

17.3.11 How To Identify Duplicate and Missing Flight Movements

A final step in the flight data QA process is to locate and remove duplicate flights and to identify and add missing flights. A specialised function is provided for this in the flight movement manage system which is based on tracking flights by registration number and locating mismatched arrivals and departures.

Because of the large volume of flights, this function is usually only used on the flights for one operator at a time.

- To identify possible duplicates and missing flights, the system sorts the flights in ascending order by:
- Registration number;
- Day of flight; and
- Departure time.

To identify possible duplicates the system looks at the departure aerodrome, destination aerodrome registration number, date of flight, departure time and estimated elapsed time. Using these and two system settings:

- Minimum window to detect duplicate flights (minutes); and
- Percentage of EET to detect duplicate flights.

When flights are found where the flight time windows overlap, the flights are highlighted in orange to indicate a problem.

To identify possible missing flights, the system looks at the departure aerodrome, destination aerodrome and registration number. For a given registration number, if the preceding flight's

destination aerodrome is not the same as the current flight's departure destination, the flight is highlighted in pink to indicate a problem.

Note that sometimes false “possible missing flights” are identified when the aircraft leaves the FIR and returns from an aerodrome other than the one it original flew to. In this case, the incoming flight is flagged as possibly missing since the aircrafts last destination is not the current flight's departure.

In the example below, we can see a duplicate flight XLK642 and XLK643 – using the same aircraft and departing from the same aerodrome 15 minutes apart.

In the example below we can see a possible missing flight. The aircraft arrives at HKSG at 1145, and then departs from HKMF at 1240, which is not possible since it is still at HKSG.

Flight Movements																		Show Form				
Filter																		REFRESH	RECALCULATE	GENERATE INVOICE	FLIGHT PLAN	RESET
Invoice Status				Account Type				Flight Movement Category				Flight Movement Status										
Incomplete Flight Reason				Sort Options				Start Date (yyyy-MMM-dd)				End Date (yyyy-MMM-dd)										
				Aircraft				2019-Jan-01				2019-Feb-08										
<input type="checkbox"/> Select all flights	<input checked="" type="checkbox"/> Locate duplicate/missing flights	<input type="checkbox"/> Show actual departure/destination																				
<input type="checkbox"/>		2019-Jan-10	0720	HKNW	HKNL	5YSLJ	5YSLJ	Safarilink Aviation	PENDING	C208	L	3,977	DO	NA	DO	Domestic	No	Scheduled				
<input type="checkbox"/>		2019-Jan-10	1015	HKNW	HTKJ	XLK441	5YSLJ	Safarilink Aviation	CANCELED	C208	L	3,977				Other	No	Nominal Route				
<input type="checkbox"/>		2019-Jan-10	1130	HTKJ	HKNW	XLK422	5YSLJ	Safarilink Aviation	PENDING	C208	L	3,977	AR	NA	RE	Regional Arrival	No	Nominal Route				
<input type="checkbox"/>		2019-Jan-10	1145	HKNW	HKSJ	5YSLJ	5YSLJ	Safarilink Aviation	PENDING	C208	L	3,977	DO	NA	DO	Domestic	No	Scheduled				
<input type="checkbox"/>		2019-Jan-10	1240	HKMF	HKNW	5YSLJ	5YSLJ	Safarilink Aviation	PENDING	C208	L	3,977	DO	NA	DO	Domestic	No	Nominal Route				
<input type="checkbox"/>		2019-Jan-11	1015	HKNW	HTKJ	XLK543	5YSLJ	Safarilink Aviation	PENDING	C208	L	3,977	DE	NA	RE	Regional Departure	No	Nominal Route				
<input type="checkbox"/>		2019-Jan-11	1140	HTKJ	HKNW	XLK544	5YSLJ	Safarilink Aviation	PENDING	C208	L	3,977	AR	NA	RE	Regional Arrival	No	Nominal Route				
<input type="checkbox"/>		2019-Jan-12	0700	HKNW	HKMS	5YSLJ	5YSLJ	Safarilink Aviation	PENDING	C208	L	3,977	DO	NA	DO	Domestic	No	Scheduled				
<input type="checkbox"/>		2019-Jan-12	1015	HKNW	HTKJ	XLK643	5YSLJ	Safarilink Aviation	PENDING	C208	L	3,977	DE	NA	RE	Regional Departure	No	Nominal Route				
<input type="checkbox"/>		2019-Jan-12	1100	HTKJ	HKNW	XLK643	5YSLJ	Safarilink Aviation	INCOMPLETE	C208	L	3,977	AR	NA	RE	Regional Arrival	No					
<input type="checkbox"/>		2019-Jan-12	1115	HTKJ	HKNW	XLK642	5YSLJ	Safarilink Aviation	PENDING	C208	L	3,977	AR	NA	RE	Regional Arrival	No	Nominal Route				
<input type="checkbox"/>		2019-Jan-13	0700	HKNW	ZZZZ	5YSLJ	5YSLJ	Safarilink Aviation	PENDING	C208	L	3,977	DO	NA	DO	Domestic	No	Scheduled				

17.3.12 How To Show the Actual Departure and Destinations of ZZZZ Flights

Click on the “Show actual departure/destination” checkbox. The departure/destination specified in item 18 via DEP/DEST is displayed instead of the ZZZZ locator.

Flight Movements [Show Form](#)

Filter: safarilink REFRESH RECALCULATE GENERATE INVOICE FLIGHT PLAN RESET

Invoice Status	Account Type	Flight Movement Category	Flight Movement Status																																																																																																																																																																																																																																
Incomplete Flight Reason	Sort Options	Start Date (yyyy-MMM-dd)	End Date (yyyy-MMM-dd)																																																																																																																																																																																																																																
		2019-Jan-01	2019-Feb-08																																																																																																																																																																																																																																
<input type="checkbox"/> Select all flights <input type="checkbox"/> Locate duplicate/missing flights <input checked="" type="checkbox"/> Show actual departure/destination																																																																																																																																																																																																																																			
<table border="1"> <tbody> <tr><td><input type="checkbox"/></td><td></td><td>2019-Feb-02 0700</td><td>HKNW</td><td>HKKE</td><td>5YSLD</td><td>5YSLD</td><td>Safarilink Aviation</td><td>INCOMPLETE</td><td>DH8A</td><td>M</td><td>16,500</td><td>DO</td><td>NA</td><td>DO</td><td>Domestic</td><td>No</td><td>Nominal Route</td></tr> <tr><td><input type="checkbox"/></td><td></td><td>2019-Feb-02 0540</td><td>HKKI</td><td>HKNW</td><td>5YSLK</td><td>5YSLK</td><td>Safarilink Aviation</td><td>INCOMPLETE</td><td>DHC8</td><td>M</td><td>28,694</td><td>DO</td><td>NA</td><td>DO</td><td>Domestic</td><td>No</td><td>Nominal Route</td></tr> <tr><td><input type="checkbox"/></td><td></td><td>2019-Feb-02 0500</td><td>HKNW</td><td>HKAK</td><td>5YSLE</td><td>5YSLE</td><td>Safarilink Aviation</td><td>INCOMPLETE</td><td>C208</td><td>L</td><td>3,977</td><td>DO</td><td>NA</td><td>DO</td><td>Domestic</td><td>No</td><td>Scheduled</td></tr> <tr><td><input type="checkbox"/></td><td></td><td>2019-Feb-02 0500</td><td>HKNW</td><td>KALAMA</td><td>5YSLG</td><td>5YSLG</td><td>Safarilink Aviation</td><td>INCOMPLETE</td><td>C208</td><td>L</td><td>3,977</td><td>DO</td><td>NA</td><td>DO</td><td>Domestic</td><td>No</td><td></td></tr> <tr><td><input type="checkbox"/></td><td></td><td>2019-Feb-02 0430</td><td>HKNW</td><td>OLDONYO WUAS</td><td>5YSLA</td><td>5YSLA</td><td>Safarilink Aviation</td><td>INCOMPLETE</td><td>C208</td><td>L</td><td>3,977</td><td>DO</td><td>NA</td><td>DO</td><td>Domestic</td><td>No</td><td>Scheduled</td></tr> <tr><td><input type="checkbox"/></td><td></td><td>2019-Feb-02 0430</td><td>HKNW</td><td>HKKI</td><td>5YSLK</td><td>5YSLK</td><td>Safarilink Aviation</td><td>INCOMPLETE</td><td>DHC8</td><td>M</td><td>28,694</td><td>DO</td><td>NA</td><td>DO</td><td>Domestic</td><td>No</td><td>Nominal Route</td></tr> <tr><td><input type="checkbox"/></td><td></td><td>2019-Feb-02 0415</td><td>HKNW</td><td>HKKT</td><td>5YSLD</td><td>5YSLD</td><td>Safarilink Aviation</td><td>INCOMPLETE</td><td>DH8A</td><td>M</td><td>16,500</td><td>DO</td><td>NA</td><td>DO</td><td>Domestic</td><td>No</td><td>Nominal Route</td></tr> <tr><td><input type="checkbox"/></td><td></td><td>2019-Feb-01 1600</td><td>HKKI</td><td>HKNW</td><td>5YSLK</td><td>5YSLK</td><td>Safarilink Aviation</td><td>INCOMPLETE</td><td>DHC8</td><td>M</td><td>28,694</td><td>DO</td><td>NA</td><td>DO</td><td>Domestic</td><td>No</td><td>Nominal Route</td></tr> <tr><td><input type="checkbox"/></td><td></td><td>2019-Feb-01 1445</td><td>HKNW</td><td>HKKI</td><td>5YSLK</td><td>5YSLK</td><td>Safarilink Aviation</td><td>CANCELED</td><td>DHC8</td><td>M</td><td>1,202</td><td></td><td></td><td></td><td>Other</td><td>No</td><td>Nominal Route</td></tr> <tr><td><input type="checkbox"/></td><td></td><td>2019-Feb-01 1230</td><td>HKUK</td><td>HKVR</td><td>5YSLK</td><td>5YSLK</td><td>Safarilink Aviation</td><td>INCOMPLETE</td><td>DHC8</td><td>M</td><td>1,202</td><td>DO</td><td>NA</td><td>DO</td><td>Domestic</td><td>No</td><td>Scheduled</td></tr> <tr><td><input type="checkbox"/></td><td></td><td>2019-Feb-01 1145</td><td>HKNW</td><td>HKMF</td><td>5YSLA</td><td>5YSLA</td><td>Safarilink Aviation</td><td>INCOMPLETE</td><td>C208</td><td>L</td><td>3,977</td><td>DO</td><td>NA</td><td>DO</td><td>Domestic</td><td>No</td><td>Scheduled</td></tr> <tr><td><input type="checkbox"/></td><td></td><td>2019-Feb-01 1145</td><td>HKNW</td><td>HKOK</td><td>5YLED</td><td>5YLED</td><td>Safarilink Aviation</td><td>INCOMPLETE</td><td>C208</td><td>I</td><td>3,977</td><td>DO</td><td>NA</td><td>DO</td><td>Domestic</td><td>No</td><td>Nominal Route</td></tr> </tbody> </table>												<input type="checkbox"/>		2019-Feb-02 0700	HKNW	HKKE	5YSLD	5YSLD	Safarilink Aviation	INCOMPLETE	DH8A	M	16,500	DO	NA	DO	Domestic	No	Nominal Route	<input type="checkbox"/>		2019-Feb-02 0540	HKKI	HKNW	5YSLK	5YSLK	Safarilink Aviation	INCOMPLETE	DHC8	M	28,694	DO	NA	DO	Domestic	No	Nominal Route	<input type="checkbox"/>		2019-Feb-02 0500	HKNW	HKAK	5YSLE	5YSLE	Safarilink Aviation	INCOMPLETE	C208	L	3,977	DO	NA	DO	Domestic	No	Scheduled	<input type="checkbox"/>		2019-Feb-02 0500	HKNW	KALAMA	5YSLG	5YSLG	Safarilink Aviation	INCOMPLETE	C208	L	3,977	DO	NA	DO	Domestic	No		<input type="checkbox"/>		2019-Feb-02 0430	HKNW	OLDONYO WUAS	5YSLA	5YSLA	Safarilink Aviation	INCOMPLETE	C208	L	3,977	DO	NA	DO	Domestic	No	Scheduled	<input type="checkbox"/>		2019-Feb-02 0430	HKNW	HKKI	5YSLK	5YSLK	Safarilink Aviation	INCOMPLETE	DHC8	M	28,694	DO	NA	DO	Domestic	No	Nominal Route	<input type="checkbox"/>		2019-Feb-02 0415	HKNW	HKKT	5YSLD	5YSLD	Safarilink Aviation	INCOMPLETE	DH8A	M	16,500	DO	NA	DO	Domestic	No	Nominal Route	<input type="checkbox"/>		2019-Feb-01 1600	HKKI	HKNW	5YSLK	5YSLK	Safarilink Aviation	INCOMPLETE	DHC8	M	28,694	DO	NA	DO	Domestic	No	Nominal Route	<input type="checkbox"/>		2019-Feb-01 1445	HKNW	HKKI	5YSLK	5YSLK	Safarilink Aviation	CANCELED	DHC8	M	1,202				Other	No	Nominal Route	<input type="checkbox"/>		2019-Feb-01 1230	HKUK	HKVR	5YSLK	5YSLK	Safarilink Aviation	INCOMPLETE	DHC8	M	1,202	DO	NA	DO	Domestic	No	Scheduled	<input type="checkbox"/>		2019-Feb-01 1145	HKNW	HKMF	5YSLA	5YSLA	Safarilink Aviation	INCOMPLETE	C208	L	3,977	DO	NA	DO	Domestic	No	Scheduled	<input type="checkbox"/>		2019-Feb-01 1145	HKNW	HKOK	5YLED	5YLED	Safarilink Aviation	INCOMPLETE	C208	I	3,977	DO	NA	DO	Domestic	No	Nominal Route
<input type="checkbox"/>		2019-Feb-02 0700	HKNW	HKKE	5YSLD	5YSLD	Safarilink Aviation	INCOMPLETE	DH8A	M	16,500	DO	NA	DO	Domestic	No	Nominal Route																																																																																																																																																																																																																		
<input type="checkbox"/>		2019-Feb-02 0540	HKKI	HKNW	5YSLK	5YSLK	Safarilink Aviation	INCOMPLETE	DHC8	M	28,694	DO	NA	DO	Domestic	No	Nominal Route																																																																																																																																																																																																																		
<input type="checkbox"/>		2019-Feb-02 0500	HKNW	HKAK	5YSLE	5YSLE	Safarilink Aviation	INCOMPLETE	C208	L	3,977	DO	NA	DO	Domestic	No	Scheduled																																																																																																																																																																																																																		
<input type="checkbox"/>		2019-Feb-02 0500	HKNW	KALAMA	5YSLG	5YSLG	Safarilink Aviation	INCOMPLETE	C208	L	3,977	DO	NA	DO	Domestic	No																																																																																																																																																																																																																			
<input type="checkbox"/>		2019-Feb-02 0430	HKNW	OLDONYO WUAS	5YSLA	5YSLA	Safarilink Aviation	INCOMPLETE	C208	L	3,977	DO	NA	DO	Domestic	No	Scheduled																																																																																																																																																																																																																		
<input type="checkbox"/>		2019-Feb-02 0430	HKNW	HKKI	5YSLK	5YSLK	Safarilink Aviation	INCOMPLETE	DHC8	M	28,694	DO	NA	DO	Domestic	No	Nominal Route																																																																																																																																																																																																																		
<input type="checkbox"/>		2019-Feb-02 0415	HKNW	HKKT	5YSLD	5YSLD	Safarilink Aviation	INCOMPLETE	DH8A	M	16,500	DO	NA	DO	Domestic	No	Nominal Route																																																																																																																																																																																																																		
<input type="checkbox"/>		2019-Feb-01 1600	HKKI	HKNW	5YSLK	5YSLK	Safarilink Aviation	INCOMPLETE	DHC8	M	28,694	DO	NA	DO	Domestic	No	Nominal Route																																																																																																																																																																																																																		
<input type="checkbox"/>		2019-Feb-01 1445	HKNW	HKKI	5YSLK	5YSLK	Safarilink Aviation	CANCELED	DHC8	M	1,202				Other	No	Nominal Route																																																																																																																																																																																																																		
<input type="checkbox"/>		2019-Feb-01 1230	HKUK	HKVR	5YSLK	5YSLK	Safarilink Aviation	INCOMPLETE	DHC8	M	1,202	DO	NA	DO	Domestic	No	Scheduled																																																																																																																																																																																																																		
<input type="checkbox"/>		2019-Feb-01 1145	HKNW	HKMF	5YSLA	5YSLA	Safarilink Aviation	INCOMPLETE	C208	L	3,977	DO	NA	DO	Domestic	No	Scheduled																																																																																																																																																																																																																		
<input type="checkbox"/>		2019-Feb-01 1145	HKNW	HKOK	5YLED	5YLED	Safarilink Aviation	INCOMPLETE	C208	I	3,977	DO	NA	DO	Domestic	No	Nominal Route																																																																																																																																																																																																																		

17.3.13 How To Modify the Departure Time Window for Matching Flights

The ARMS match Flight Movements with surveillance logs (Radar/ATC/Tower logs) for the following reasons:

Have more detailed and precise information about the flight track, to perform more accurate Enroute costs calculation.

Have the “proof of flight” in case Customers will dispute an invoice.

The matching Algorithm uses 2 parameters: Minimum range for flight match and Percentage of EET to be used for flight match (ref. Management, System Configuration, DEFAULT).

Following a description on how the algorithm works:

For flights earlier than the current flight (X) we calculate a window based on each earlier flight (X-n)and compare it to flight X:

- Calculate the window for flight X-n as the maximum of (absolute number of minutes parameter and EET of flight X-n times EET factor).
- If flight X-n day-of-flight/departure time plus the window size overlaps flight X, then they match.

For flights at the same time or later than the current flight (X) we calculate a window based on flight X and compare it to the later flights (X+n).

- Calculate the window for flight X as the maximum of (absolute number of minutes parameter and EET of flight X times EET factor).
- If flight X day-of-flight/departure time plus the window size overlaps flight X+n, then they match.

When a match is found, information for the later flight should be used.

If a match couldn't be found, the system creates a NEW flight movement with the information received.

This mechanism works also with flight plans imported from the FPL processor and AFTN/AMHS lines.

17.3.14 How to Recalculate Flight Movement Charges

Flight movement length and associated charges are calculated automatically when a flight movement is received by ARMS. However, the user may also want to recalculate the charges because some of the information on the system may have changed. These changes may be any of the following:

- Accounts added or account information modified (particularly ICAO code or OPR code);
- Aircraft registrations added or modified;
- Aircraft types added or modified;
- Air navigation charge schedules modified;
- Enroute air navigation formulas modified;
- Exemptions added or modified;
- Flight reassessments added or modified; and
- System parameters modified (maximum/minimum distances; many others);

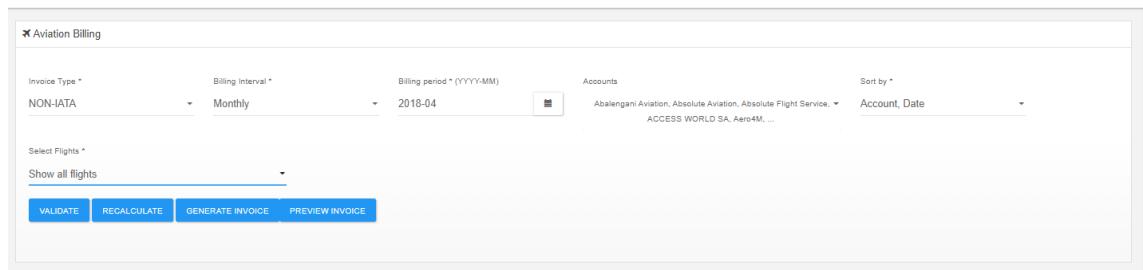
Flight movement recalculation affects the all aspects of a flight:

- Account assignment;
- MTOW assignment;
- Flight movement categorisation;
- Flight length calculation; and
- All calculations related to billing the flight.

Flight movement recalculation can be performed through two mechanisms:

- Aviation billing engine (bulk calculations based on a billing interval and one or more accounts); and
- Flight movements (select calculations based on manually selected flights).

To perform bulk flight movement recalculations, use the aviation billing engine as follows:


 A screenshot of a web-based application titled 'Aviation Billing'. The interface includes several input fields: 'Invoice Type *' set to 'NON-IATA', 'Billing Interval *' set to 'Monthly', and 'Billing period * (YYYY-MM)' set to '2018-04'. To the right, there are dropdown menus for 'Accounts' (listing 'Abalengani Aviation, Absolute Aviation, Absolute Flight Service, ...' and 'ACCESS WORLD SA, Aero4M, ...') and 'Sort by *' (set to 'Account, Date'). Below these, a section titled 'Select Flights *' has a dropdown menu set to 'Show all flights'. At the bottom of the form are four buttons: 'VALIDATE', 'RECALCULATE' (highlighted in blue), 'GENERATE INVOICE', and 'PREVIEW INVOICE'.

Select the sub set the system has to recalculate.

In detail:

- What kind of Invoice is needed: IATA or NON-IATA.
- The Billing Interval: Weekly to recalculate a week, Monthly to recalculate a month.
- Billing Period: The week/month to be recalculated.
- Accounts: none, one, more than one, all the Accounts present in billing system.
- Note: to recalculate ALL flights, even those WITHOUT an Account set, select NO Account.
- Sort by: Not Important for this function.
- Select Flights: Show all flights if all the flights, regardless the Billing Centre of reference, or Show flights for billing centre if only the flights related to the User's billing centre.

Then press the **Recalculate** button. The system will recalculate all the flights according to the selection made by the User.

The screenshot shows the 'Aviation Billing' interface. At the top, there are dropdowns for 'Invoice Type' (NON-IATA), 'Billing Interval' (Monthly), 'Billing period * (YYYY-MM)' (2018-04), and 'Accounts' (Abalengani Aviation, Absolute Aviation, Absolute Flight Service, ACCESS WORLD SA, Aero4M, ...). A 'Sort by' dropdown is set to 'Account, Date'. Below these, a section titled 'Select Flights *' has a dropdown set to 'Show all flights'. At the bottom of this section are buttons for 'VALIDATE', 'CANCEL RECALCULATE', 'GENERATE INVOICE', and 'PREVIEW INVOICE'. A modal window titled 'Recalculation' displays the following information: Period: 04/01/2018 - 04/30/2018, Started: May 22, 2018 12:05:42 PM, Status: STARTED, Processed: 3531, Updated: 0. The main area below the form is currently empty.

To perform selective flight movement recalculations, use the flight movements interface as follows:

The screenshot shows the 'Flight Movements' interface. At the top, there are buttons for 'REFRESH', 'RECALCULATE', 'GENERATE INVOICE', and 'FLIGHT PLAN'. Below these are dropdowns for 'Invoice Status', 'Account Type', and 'Filter'. There are also filters for 'Flight Movement Type', 'Flight Movement Status', 'Incomplete Flight Reason', 'Sort Options', 'Start Date', and 'End Date'. Two checkboxes at the top of the list are 'Locate duplicate/missing flights' and 'Show actual departure/destination'. The main area is a table with columns: Date, Time, Flight Number, Tail Number, Airline, Destination, Origin, Reason, Status, Duration, and Cost. The table lists several flight movements from April 12, 2018, to April 14, 2018, including entries for South African Airways, Delta Air, Comair, Federal Air, and South African Express. A 'RECALCULATE' button is located at the bottom left of the table area.

Select the Flight Movement(s) which need a recalculation, and press the **Recalculate** button.

Flight Movements

REFRESH RECALCULATE GENERATE INVOICE FLIGHT PLAN Invoice Status Account Type Filter

Flight Movement Type Flight Movement Status Incomplete Flight Reason Sort Options Start Date End Date

Locate duplicate/missing flights Show actual departure/destination

Flight ID	Date	Time	Flight Number	Airline	Flight Status	Reason	Incomplete	Origin	Dest	Distance	Domestic	Yes	Required	Total	Fee	
ZU100412	2018-04-12	0900	FAOR	SBGR	SAA222	ZSSXK	South African Airways	INCOMPLETE	A333	H	358.081	Other	Yes			
ZU100412	2018-04-12	0900	FYWE	FYWB	ZSTEG	ZSTEG		INCOMPLETE	BE20	L	5,670	Other	No			
ZU100412	2018-04-12	0900	FBKE	FBSV	A2AIW	A2AIW	DELTA AIR	INCOMPLETE	C210	L	1,823	Domestic	Yes	Scheduled	12.24	0.00
ZU100412	2018-04-12	0900	FAOR	FLHN	CAW201	ZSOAR	Comair	PENDING	B734	M	62,659	International Overflight	Yes	Scheduled	67.88	
ZU100412	2018-04-12	0900	FAMK	FAOR	FDR305	ZSLBD	Federal Air	INCOMPLETE	C208	L	3,629	Other	No			
ZU100412	2018-04-12	0955	FACT	FYWB	EXY721	ZSNME	South African Express	INCOMPLETE	CRJ2	M	21,528	Other	Yes			
ZU100412	2018-04-12	0955	FVBU	FAPP	ZSALW	ZSALW		INCOMPLETE	R44	L	1,098	Other	No			
ZU100412	2018-04-12	0955	FBMN	ZZZZ	A2FOX	A2FOX	Wilderness Air	INCOMPLETE	C206	L	1,651	Domestic	Yes	Scheduled	12.24	0.00
ZU100412	2018-04-12	0850	FAOR	FVFA	SAA040	ZSSXW	South African Airways	PENDING	A332	H	232,566	International Overflight	Yes	Scheduled	124.68	
ZU100412	2018-04-12	0845	FAOR	FVHA	SAA022	ZSSZJ	South African Airways	INCOMPLETE	A320	M	77,619	Other	Yes			
ZU100412	2018-04-12	0845	FBKE	ZZZZ	A2WLD	A2WLD	Wilderness Air	INCOMPLETE	C208	L	4,110	Domestic	Yes	Scheduled	16.32	0.00

Once the recalculation is done, it's necessary to press the Refresh button to update the Datagrid.

Flight Movements

REFRESH RECALCULATE GENERATE INVOICE FLIGHT PLAN Invoice Status Account Type Filter

Recalculation Flight ID: 199907_200212_200312 Started: May 22, 2018 12:08:07 PM Status: COMPLETED Processed: 3 Updated: 2

Flight Movement Type Flight Movement Status Incomplete Flight Reason Sort Options Start Date End Date

Locate duplicate/missing flights Show actual departure/destination

Flight ID	Date	Time	Flight Number	Airline	Flight Status	Reason	Incomplete	Origin	Dest	Distance	Domestic	Yes	Required	Total	Fee	
ZU100412	2018-04-12	0900	FAOR	SBGR	SAA222	ZSSXK	South African Airways	INCOMPLETE	A333	H	358.081	Other	Yes			
ZU100412	2018-04-12	0900	FYWE	FYWB	ZSTEG	ZSTEG		INCOMPLETE	BE20	L	5,670	Other	No			
ZU100412	2018-04-12	0900	FBKE	FBSV	A2AIW	A2AIW	DELTA AIR	INCOMPLETE	C210	L	1,823	Domestic	Yes	Scheduled	12.24	0.00
ZU100412	2018-04-12	0900	FAOR	FLHN	CAW201	ZSOAR	Comair	PENDING	B734	M	62,659	International Overflight	Yes	Scheduled	67.88	
ZU100412	2018-04-12	0900	FAMK	FAOR	FDR305	ZSLBD	Federal Air	INCOMPLETE	C208	L	3,629	Other	No			
ZU100412	2018-04-12	0955	FACT	FYWB	EXY721	ZSNME	South African Express	INCOMPLETE	CRJ2	M	21,528	Other	Yes			
ZU100412	2018-04-12	0955	FVBU	FAPP	ZSALW	ZSALW		INCOMPLETE	R44	L	1,098	Other	No			
ZU100412	2018-04-12	0955	FBMN	ZZZZ	A2FOX	A2FOX	Wilderness Air	INCOMPLETE	C206	L	1,651	Domestic	Yes	Scheduled	12.24	0.00
ZU100412	2018-04-12	0850	FAOR	FVFA	SAA040	ZSSXW	South African Airways	PENDING	A332	H	232,566	International Overflight	Yes	Scheduled	124.68	
ZU100412	2018-04-12	0845	FAOR	FVHA	SAA022	ZSSZJ	South African Airways	INCOMPLETE	A320	M	77,619	Other	Yes			
ZU100412	2018-04-12	0845	FBKE	ZZZZ	A2WLD	A2WLD	Wilderness Air	INCOMPLETE	C208	L	4,110	Domestic	Yes	Scheduled	16.32	0.00

17.4 Operations**17.5 Charges and Formulas****17.6 Exemptions****17.6.1 How To Set Up An Exemption for an Account**

[TBD]

17.6.2 How To Set Up An Exemption for an Aircraft Type

[TBD]

17.6.3 How To Set Up An Exemption for a Flight Status, Flight Type or Remark

[TBD]

17.6.4 How To Set Up An Exemption for an Aerodrome Pair

[TBD]

17.6.5 How To Set Up An Exemption for Repositioning Clusters

[TBD]

17.7 Management**17.7.1 How To Change the Airspace Used For Billing Operations**

[TBD]

17.7.2 How To Add a New Aircraft Type

[TBD]

17.7.3 How To Create A Regional Billing Category

[TBD]

17.7.4 How To Change Regional Flight Classification

[TBD]

17.8 Data Analysis and Statistics**17.8.1 How To Generate Per Year Volume or Revenue Statistics**

[TBD]

17.8.2 How To Compare Operator vs Operator Volumes or Revenue

[TBD]

17.8.3 How To Compare Year Over Year Volumes or Revenue

[TBD]

17.9 Templates**17.9.1 How to Edit Any Template**

[TBD]

17.9.2 How to Modify a Report Template

[TBD]

17.9.3 How to Modify an Invoice Template

[TBD]

17.9.4 How to Modify a Statistics Template

[TBD]

17.10 Security

17.10.1 How To Check Who Is Logged In

[TBD]

17.10.2 How To Terminate a User's Session

[TBD]

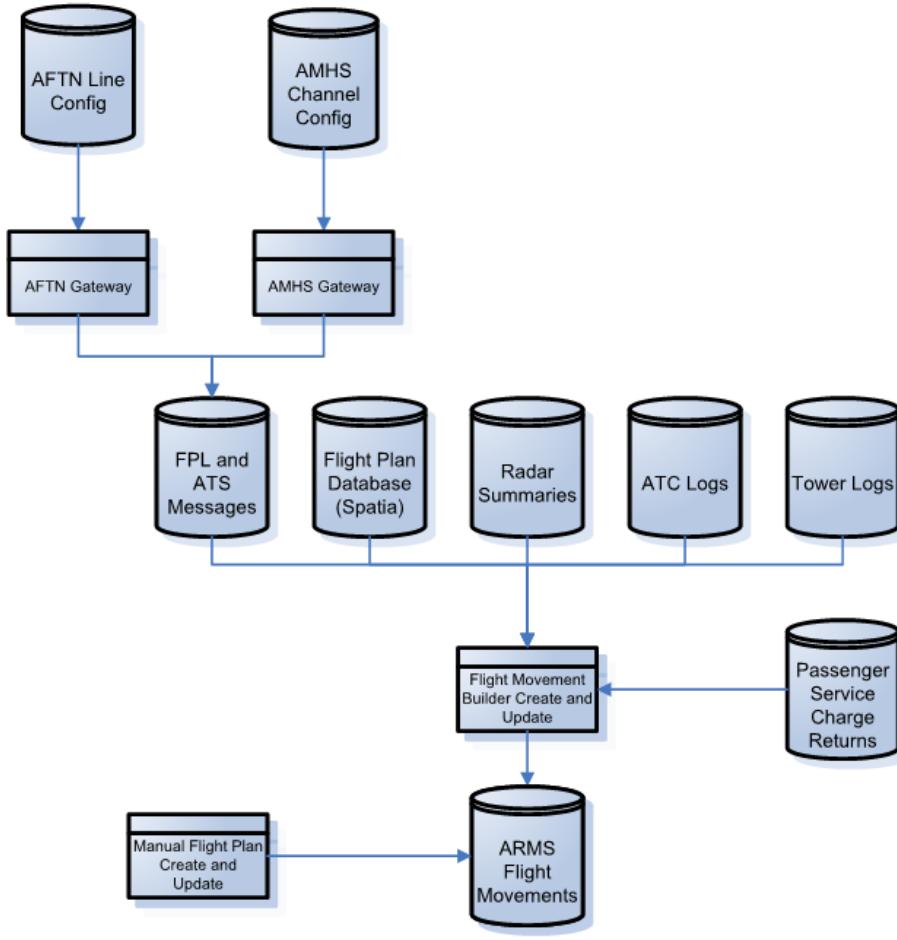
17.10.3 How To Track User Access to the System

[TBD]

APPENDIX A WORK FLOW DIAGRAMS

The following flowcharts show how the different datasets and systems associated with ARMS are connected and interdependent.

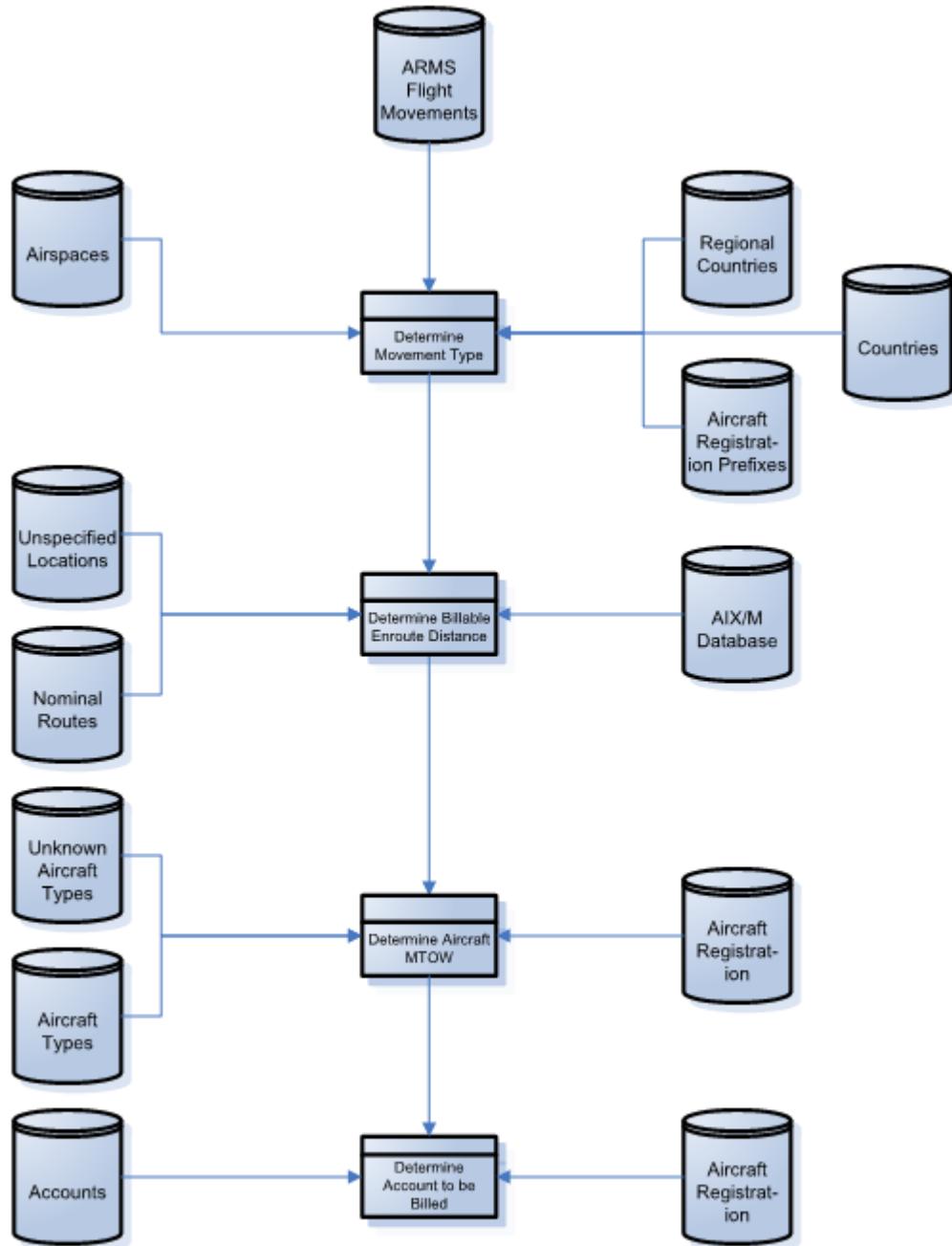
Flight Movement Creation and Update



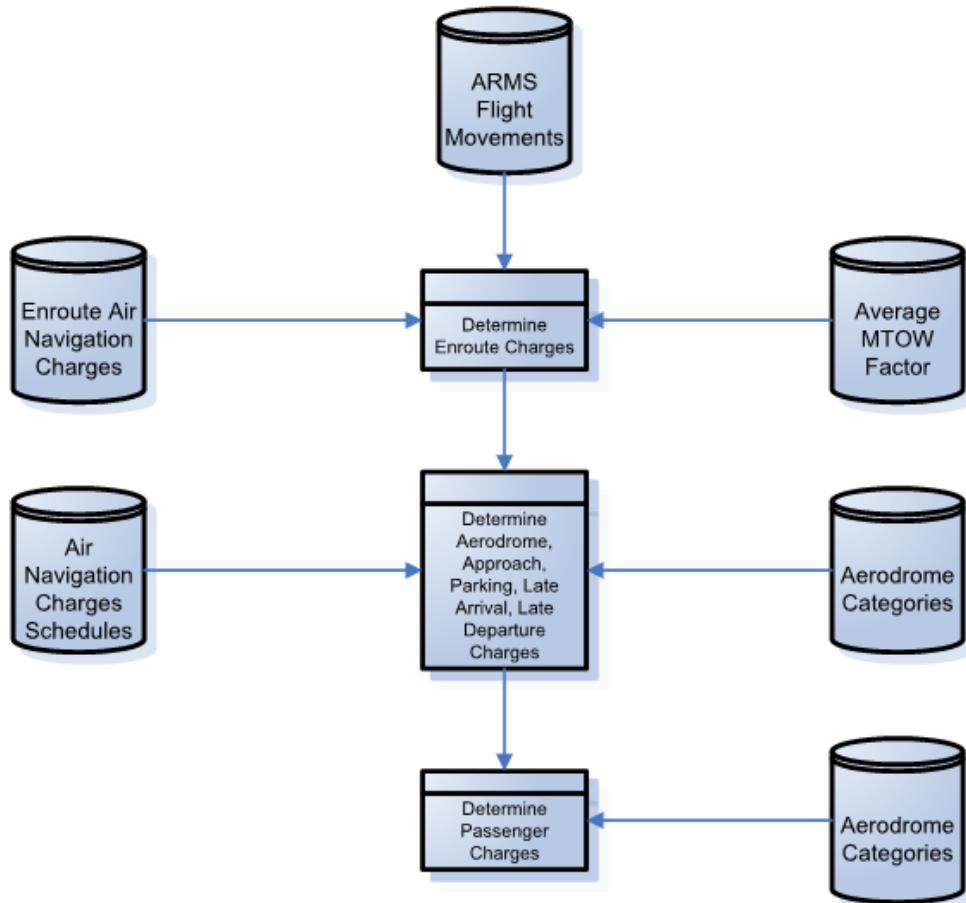
A-RMS Flight Movement Creation and Update

Flight Movement Charges Calculation

Part 1

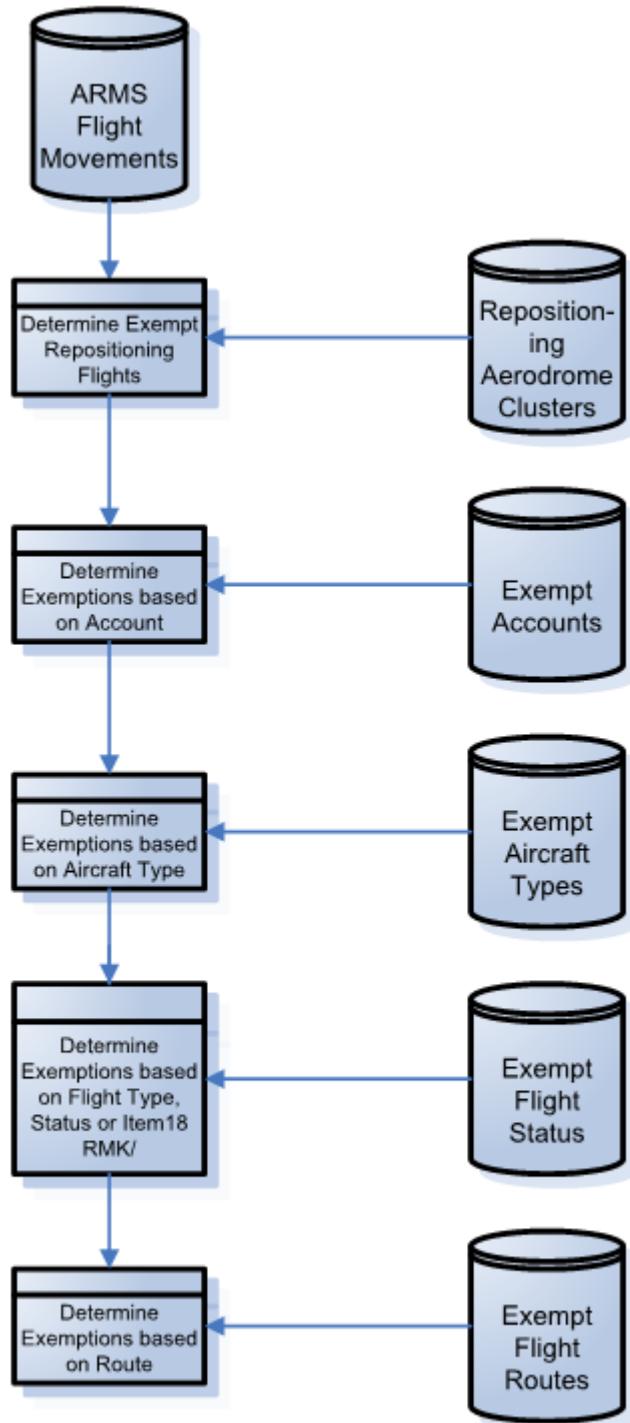


A-RMS Flight Movement Charges Calculation – Part I

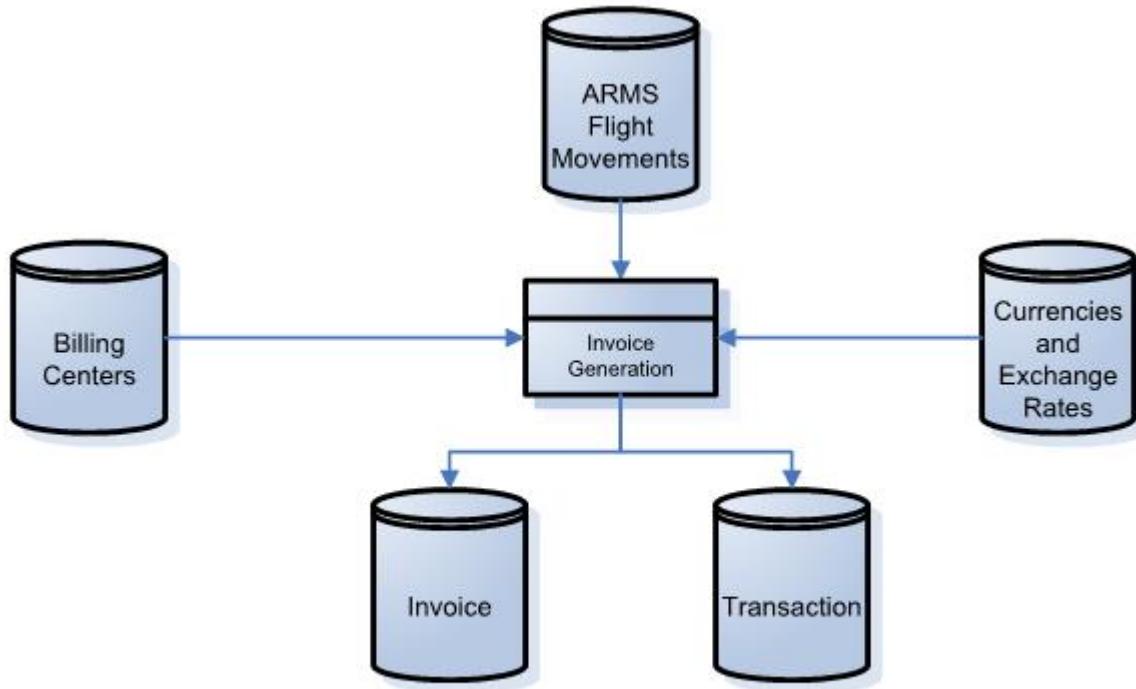
Part 2

A-RMS Flight Movement Charges Calculation – Part II

Flight Movement Charges Exemptions

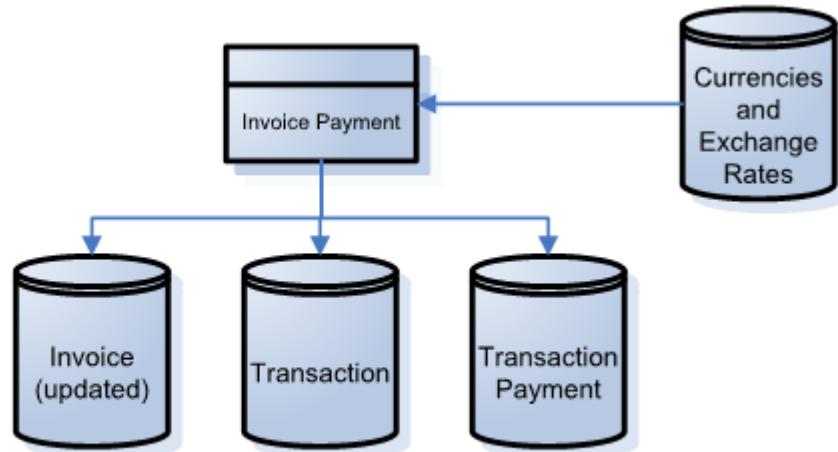


Invoice Generation



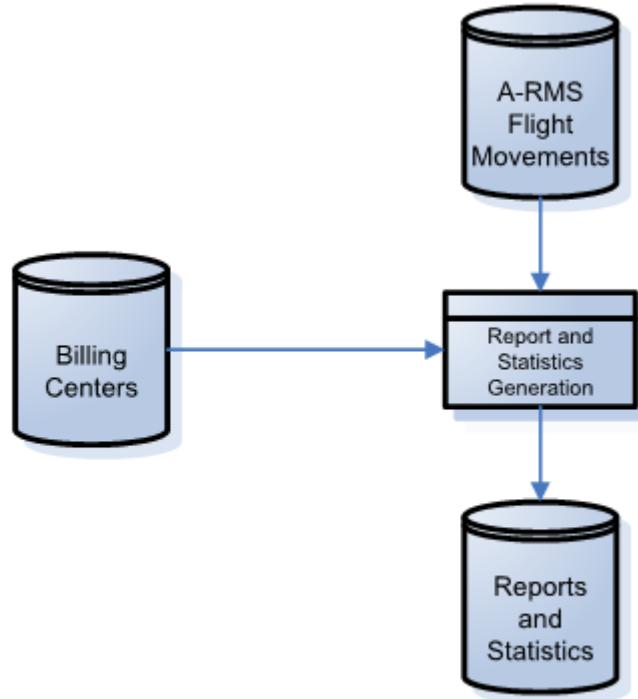
A-RMS Aviation Invoice Generation

Invoice Payment



A-RMS Aviation Invoice Payment

Reports and Statistics



A-RMS Aviation Reports and Statistics