

Introduction

nsWAFS is the **NetSys** SADIS FTP/WIFS HTTPS data processing offering. It provides a turnkey solution for reception, decoding, storage and presentation of meteorological and other data relevant to commercial and general civil aviation operations. As a bare minimum, it complies with the basic requirements of such a system as dictated by **ICAO**. Through innovation and feedback from our customers over the years, we have transcended these boundaries in all directions to provide a complete system for the most demanding meteorological offices. Flexible licensing schemes allow prospective customers to mix-and- match options to suit budget and specific needs.

Whether your requirements are basic or you need a sophisticated solution, please join us in perusing the following brief sections for an introduction to this system that is proven to provide cost effective operational solutions.

Industry Standards

The system is fully compliant to the **WMO** Manuals on the GTS 386 and Codes 306 as well as **ICAO** Annex 3 and remains up to date as Amendments are made (currently supports

up to Amendment 77). NetSys is listed on the UKMO SADIS portal as a verified supplier.



NetSys elects to use Commercially Off The Shelf hardware only, with a preference for Dell and HP

server and workstation equipment providing hot swappable components running the Linux operating system.



Standard Features

The basic ICAO requirements are supported:

- display of OPMET data
- GRIB decoder and display package
- · BUFR decoder and display package
- display and ability to notify users of the arrival of chart ammendments
- display and ability to notify users of the arrival of administrative messages
- display of tropical cyclone advisory statements
- display of volcanic ash advisory statements
- · display of volcanic ash trajectory dispersion charts
- display bulletin contents from the WMO header
- display of special AIREPs
- ability to receive SIGWX charts in PNG format
- ability to receive SADIS products via FTP and WIFS via HTTPS

There are however numerous extra features to satisfy the needs of a modern aviation meteorological office as can be seen from the following section.

Communications Standards

When the user falls within the footprint of the SADIS service, the system downloads data from the secure SADIS FTP service and verifies downloaded data against its digital signatures. When within the traditional ISCS footprint, data is downloaded from the WIFS HTTP service. The downloaders keeps track of downloaded data to accommodate breaks in connectivity.

We also have numerous deployed examples of input from various other sources supplementing SADIS/ISCS data in the event of sparse regional representation in the WAFS data catalog. To accomplish this the system can be fed from the **AFTN**, **AMHS X400**, **WMO GTS** and other industry standards such as FTP, HTTP, SCP, RCP, E-Mail and directories with files. The communications sub-system is configured and monitored through a user friendly state-of-the-art Rich Internet Architecture user interface. **NetSys** often provides custom integration with non-standard feeds at little or no extra cost to the customer.



biol = projection biory biol <u>biological</u> bio solido solido por de biory <u>biological</u> bior paramete Biorgente solido antiprojectival antiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantiantianti-

HA Cluster

Single server configurations are supported of course, but for sites requiring mission critical service levels a **High Availability Cluster** is the preferred choice. Such a system advertises the servers in the cluster to the outside world by a single IP address and transparently handles assignment of the address to the elected live Ethernet interface by means of a HA **heartbeat** process. This makes configuration and interaction of any 3rd parties with the cluster much simpler and less error prone. All transactions happening on the live server are replicated to the standby server to ensure both are in step at all times should a live server breakdown warrant a hot-standby swap.



Chart Generation

Apart from the standard ICAO regions, custom projections can be created through a region builder wizard supporting a large number of map projection types and different colour map background options. In addition to the normal Wind/Temp charts from GRIB and SIGWX charts from BUFR, overlays of other data types can be depicted by ISO contours and shaded reliefs. A powerful chart group composer makes it easy to define and manage sets of charts across different flight levels, regions and data types through a single entry screen. These groups can be scheduled based on time or events such as a complete GRIB or BUFR set received.







Data Retrieval

The various types of data downloaded from SADIS and WIFS can be retrieved in a number of ways depending on the context of the search. Standard ICAO area aviation charts can be selected from a map responsive to mouse interaction and depitcing the chart regions. Alphanumeric data can be retrieved by WMO abbreviated header query with templates for those types often used. The user may also click on an aerodrome to retrieve METAR and TAF and on a FIR to retrieve SIGMETs.



OPMET Graphics

Various graphical depictions of OPMET messages can be displayed on an interactive map area. A time slide bar allows the user to see into the future while the software automatically switches between the relevant validity periods in observations and forecasts. FIR related data such as SIGMET colors its area of influence during validity. Aviation Meteograms are also available per station by single mouse click.



GRIB Laboratory

A powerful GRIB Laboratory allows the user to interact freely with GRIB data. The data source is not limited to WAFS GRIB only but can originate from any WMO GRIB 1 or 2 compliant source. Visualization can be done by smooth shading, ISO contours and ISO region colouring as well as wind barbs and arrows. Streamline analysis can be performed on any U/V component data. Custom colour palettes can be designed to best suit the data type and range under inspection. Column cuts can be done through all flight levels above a region and ISO contours for a cross-section along a route can be created. Filtering of data from below or above is possible to focus on a specific range. A formula editor allows

meteorologists to combine different GRIB elements mathematically to create new types such as voritcity and heat indices.

GRIB data can be displayed in multiple colour bands to highlight areas of concern. Temporal animations of GRIB can be done at the click of a button. This allows the officer to observe the movement direction and speed of, for instance, fronts, storms and cloud volumes over the next couple of hours as forecasted.

Route Briefings

Given the departure and destination aerodromes, the system can generate a projection of a map region optimally depicting the route between the two aerodromes on the fly or alternatively choose the most appropriate **ICAO** standard map. It can be configured to automatically include a succinct set of relevant METAR, TAF and SIGMET information given the departure time and flight duration. A cross section along the route for all flight levels can be generated depicting wind attack and temperature, the zero and minus ten degrees contours plus terrain profile. All these products can be included in a single flight briefing folder along with take-off data and locally produced products. The folder has personalized headings and is presented in high quality **Adobe® PDF** or other suitable formats. Flight definitions can be saved for one-click future production.



Scheduling of Briefings

The system can be configured to run in a lights-out mode by pre-scheduling route briefings to be produced close to regular scheduled or ad-hoc flight departures with the latest available data. Scheduling can be done based on time of day on weekdays or specific dates and also based upon events such as the entire GRIB set received. Briefings can be delivered in any of a number of ways, such as **print**, **fax**, **FTP**, **e-mail** and **Web** to name but a few. We like to refer to this as 0-click briefing.

CARL DE TE . ANI		Avala Tills
. Det	e.) (Departury disetmentani 1722 1979 9794 1979
NUM SHANG	the second second	Ewode
I I I I I I I	4 3 4 4 7	
Labor 8240 4548 A	100 61.65	Abertulary
2 10 10 10 10 10 10 10 10 10 10 10 10 10	19.52	
8 18-00 #		Address
a 13 00 12 00 12 00 1	100 1218 1218	Fart, 0y50 ruse r50m (30)s
		F85
		jant street street street in the fact
		(Aph Lowers
		1,300
		WINDOWS CLASS
- 44	June .	14.0
and S Reality	REAL PROPERTY.	tas Biblit Ourto
		104
A READ TO A		I make the set
NAME OF TAXABLE		
h Allbe		100000 10000 100000 1000000 10000000000
the second		1.00

SIGMET Authoring

Create perfectly coded SIGMET and AIRMET. Management of sequence numbers are done automatically. A full audit trail of issued messages are available. Overlay EUMETSat and NWP formulas to delineate the phenomena boundaries with high accuracy using the mouse.



Radar and Satellite

Situational awareness is further enhanced by the option to integrate RADAR and Satellite imagery into the user interface and perform a playback to visually assess the local weather trend.



User-friendly Interface

A client-server implementation implies that the user interface can be used from the local machine or a remote location. It boasts a modern and aesthetically pleasing look to make it a pleasure to work with on a day-to-day basis. Its well designed dialogs makes achieving objectives easy and quick through simplicity and a purpose driven approach. The interactive component of the system allows briefing offices to gain access to numerous innovative products and decoded data values relevant to aviation situational awareness. The world map can be zoomed and rotated in real-time at will to observe weather phenomena from the most appropriate angle.

Consistent use of graphical symbols make the user interface easy to master. Interactive help in the form of a standard 'Whatls?' function elaborates on the purpose of an element on the spot.





Positioned for Growth

The system foundation is currently geared to handle IWXXM 2.0 input and positioned to grow with the new direction of industry standards. Delivery of generated products over AMHS X400 P3 is possible putting this product at the fore-front of technology.

The same user interface also supports non-WAFS data handling through activation of optional plug-ins. These support SYNOP, Upper Air, EUMETSat and RADAR. This allows your organisation a cost-effective upgrade path without incurring additional foundation costs to incorporate these data types into work flows.

Web Briefing

NetSys is at the forefront of industry developments by being able to supply a web briefing add-on facility with which users can register and then log onto an access controlled web interface to setup new or load previously configured route definitions and then download a briefing folder containing the latest relevant data for the flight. This system is already operational and serves hundreds of users on a daily basis. The system is easy and slick to use so as to mitigate the effects of slow Internet access. It eliminates the labour intensive tasks normally associated with flight setup by providing a facility to automatically calculate the relevant information for inclusion in the bulletin and at the same time keeping it to the minimum to prevent bloated briefing folders. The briefing can be viewed directly in the web browser but also downloaded in high quality **Adobe® PDF** format for local printing to take onto the aircraft.

Adobe: PDF

For more information please see the nsWEBPIB brochure.

Monitoring

The GUI contains a module for monitoring and reporting on reception status of the SADIS and WIFS channels with the option to raise an alarm in the event of inactivity for a set period of time.

System vital signs such as CPU, storage, connectivity and processes are all monitored around the clock.



Training

NetSys provides extensive training on all aspects of the system to ensure personnel are properly equipped to answer to the needs of all their users. Training can be presented on-site or in sunny South Africa where trainees are usually treated to local customs and stunning scenery.

Pricing

The **NetSys** pricing structure is very flexible with the ability to quote for a system serving the basic needs of an aviation meteorological office or compose a solution to serve the needs of institutions with extended responsibilities. The e-mail address sales@netsys.co.za is the first point of contact.

Conclusion

The nsWAFS solution is a complete, powerful and user-friendly product with innovative features made possible by modern technology. It addresses the growing demands of operational briefing offices around the world and deserves consideration in terms of functionality, affordability, performance and flexibility. This flexibility stems from the team at NetSys who is willing and able to customize the product to integrate into any environment seamlessly which in the end is sure to reduce the total cost of ownership through stability and effectiveness.



 Tel:
 + 27 12 349 2056
 Fax:
 + 27 12 349 2757
 Web:
 www.netsys.aero

 IL Villaggio,
 5 De Havilland,
 South Crescent,
 Persequor Technopark,
 Pretoria 0020,
 South Africa