Ubimex

Aeronautical Message Handling System (AMHS)

Ushering in the future of aeronautical communications

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The future of ATS messaging is AMHS and many CAA/ANSPs are already transitioning their communications infrastructure to AMHS using the Ubimex aeronautical message handling system.

The Ubimex deploys exclusive X.400 technology to provide a messaging solution that meets or exceeds the most demanding of customer requirements:

- Native X.400 based architecture
- Compliance to both ICAO SARPs, Generic ECG-Based System Requirements & the European AMHS Manual
- Fully integrated AMHS, AFTN, CIDIN, SITA & NADIN IP messaging
- High-performance message throughput
- Standards based security
- Unrivalled reliability & availability

All this from Ubitech, the most experienced provider of AMHS systems with over 20 years of experience providing aeronautical messaging systems in 20+ countries and an additional 50+ deployments of X.400 based telecommunication switches.

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Ubimex Overview

The Ubimex AMHS system is the 6th generation of Ubitech's field-tested and proven ATS messaging systems. While AMHS is a new technology for the aeronautical industry, Ubitech has been continuously developing and incorporating it into the Ubimex software releases for years.

The Ubimex comprises of all the standard components of an X.400 based messaging system:

- Message Transfer Agent (UbiMTA)
- Message Store (UbiMS)
- Access Unit (UbiAU)
- User Agent (UbiUA)
- X.500 Directory Server (UbiDS)

Message Switching

The heart of the Ubimex is the UbiMTA (Message Transfer Agent) which provides the core communications and message switching functions of the system. It is also where the Ubimex differentiates itself from competing AMHS systems:

- Designed for performance, it delivers high message throughput and low latency with advanced queue technology
- Reliability and stability through years of field testing and continuous development
- Simplified management through parameterization and GUI based configuration & monitoring utilities (integrated into the user agent)
- Security implementation for both X.400 P1 & P3
- Compliance to all relevant standards from ICAO, ITU, ISO, Eurocontrol, etc.

Functionally, the UbiMTA is a powerful message switch packed with features. The highlights include:

- X.400 P1 for communications with other MTAs
- X.400 P3 for connections to the message store
- Message validation and authentication
- Supports binary message attachments
- Security using X.509 PKI (Public Key Infrastructure)
- Priority-based scheduling for message routing
- Multiple message channels that are configurable by message type, priority, addressing, etc.
- Detailed transaction and event logging
- Centralized GUI based management utility
- Directory-based configuration
- Support for AIDC, ADEXP, and OLDI messages
- API for connecting 3rd-party systems to the AMHS network (FDPS, RDPS, MET Systems, etc.)

Message Storage

UbiMS (Message Store) is a robust message database that is suitable for both short and long-term message storage. It provides high-performance services for message searching, listing, and retrieval. UbiMS performs the following functions:

- Messages storage on behalf of local users for retrieval (Inbox)
- Messages submission from local users to UbiMTA (Outbox)
- Support for X.400 P3 & P7
- Indexed archive capable of years of online message storage on iSCSI, SAN, etc.

Directory Services

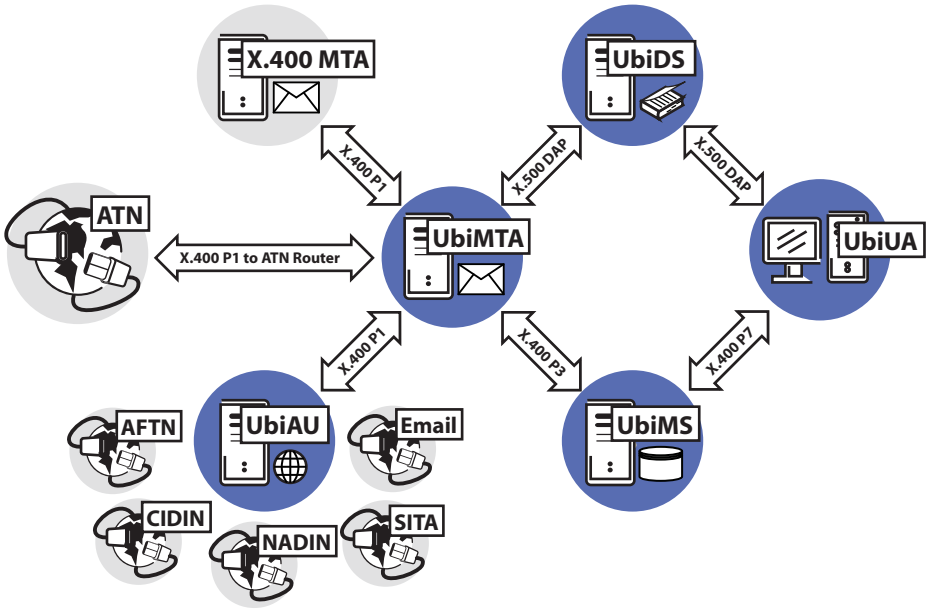
The UbiDS (X.500 directory) is an essential component of the Ubimex and enables the Extended ATS Message Service. The UbiDS provides:

- Validation of Recipients prior to and upon message submission
- Access to the end user X.509 certificate
- A directory listing containing information about recipients
- Information about adjacent AMHS systems
- Address mapping between X.400 & AFTN addresses
- Access via DAP & LDAP

Ubiquitous Compatibility

The Ubimex is inherently X.400 and therefore all internal messages are normalized to X.400 formats. Compatibility to non-X.400 circuits and periphery systems is maintained through the UbiAU (Access Unit) which provides seamless bidirectional message/protocol conversion services between X.400 and the following:

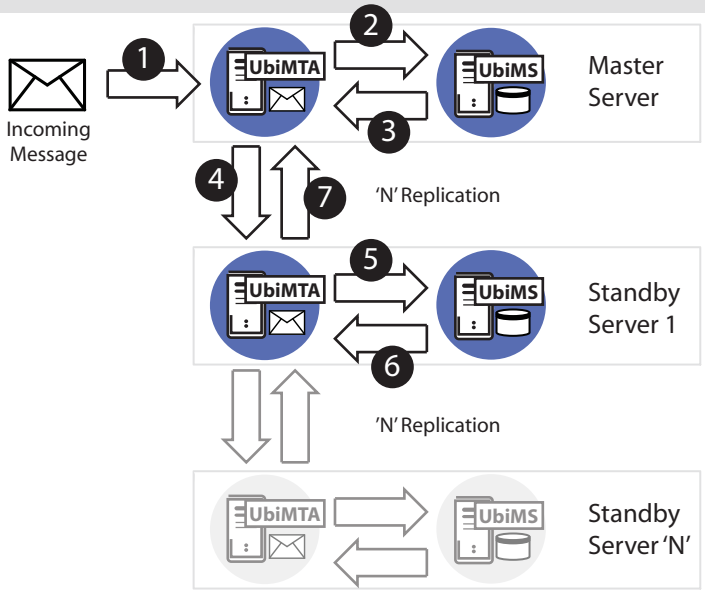
- AFTN
- NADIN (II & IP)
- Email
- CIDIN
- SITA
- Fax



Fault Tolerance

The Ubimex is built for 24/7 operation with exclusive redundancy technology built into both the software and hardware. Through the following techniques the Ubimex achieves an availability rating of 99.9998% and has No-Single-Point-of-Failure.

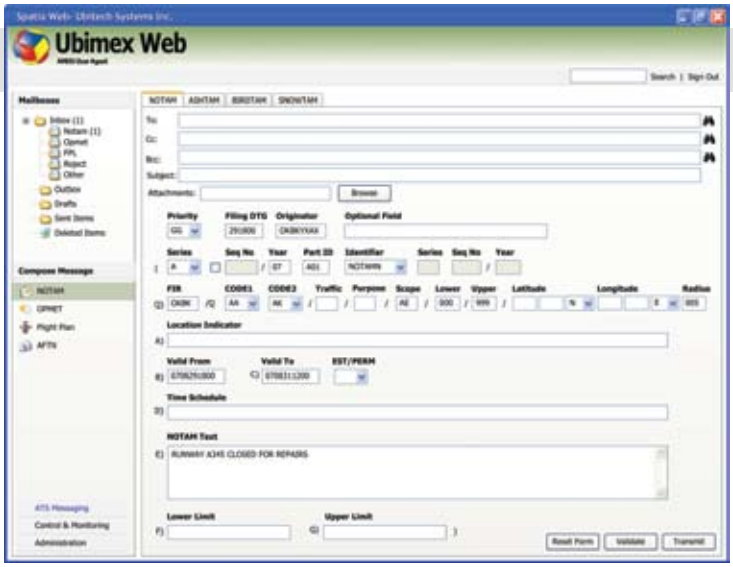
- 'N' replication uses Master/Standby server architecture to seamlessly duplicate data from the master server to multiple standby servers
- Standby servers can be co-located with the master or seperated geographically at disaster recovery sites
- Standby servers can be configured in Hot-Standby or Load Sharing modes
- Replication follows a defined process of confirmations before it is reported as successful
- Software process auto-recovery monitors all system processes to detect abnormalities and automatically initiate a process restart
- Dual-LANs ensure the connectivity of all system servers and user agents



Powerful Tools for Users

The UbiUA (User Agent) is a web-based GUI that offers users powerful tools for performing messaging activities:

- User authentication and profile-based authorization restricts the accessibility of UbiUA functionality to the appropriate authorities
- A single interface that provides both the operator messaging functionality and system configuration & maintenance capabilities for all Ubimex components
- Integrated approach to AMHS/AFTN/CIDIN/SITA/Email messaging that makes the differences transparent to the user
- Pre-defined message templates for all types of messages: Notam, Opmet, Flight Plan, Free Form, etc.
- Support for binary message attachments
- Validation of all operator data entries prior to and upon submission
- Autocompletion of common operator entries
- Alias & designated addressing, distribution lists, and address lookup via the X.500 directory (UbiDS)
- Audible and visual event alarms
- Application of SSL and X.509 PKI security



UbiUA employs innovative web technologies as a platform for the GUI. Through the use of ASP.NET AJAX, UbiUA delivers a rich, responsive GUI, featurepacked web application, and robust server communications. All this with the reliability of a server running Linux RedHat Enterprise v4 and the internet's defacto web-server Apache.

Users can access UbiUA through the use of a common web-browser and a standard COTS PC running any operating system. There is no need to download or install any software locally on the machine, and the UbiUA can be made available to users on an organization's intranet or even public on the internet.

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Hardware Requirements

The Ubimex software is designed to run on the latest industrial quality COTS hardware from well-known name brands such as Intel, HP, Dell, Cisco, etc.

The benefits of choosing a COTS platform are many:

- Local warranty support
- Long-term availability of spares and/or replacements
- Low cost of hardware upgrades
- Scalable and flexible architecture
- Guaranteed compatibility with other systems or existing network topologies
- Minimal requirement for hardware technician re-training
- System availability rating of 99.9998%

Why the Ubimex?

The Ubimex can make the transition to AMHS seamless for any organization. Here's why:

Compliance to both international standards and customer needs
- ICAO SARPs
- Generic ECG-Based System Specifications
- European AMHS Manual
- Modular design allows for flexible system configurations
- Scalable for both standard and enterprise level deployments
- Unique redundancy technology ensures no single point of failure while data can be duplicated to an infinite number of geographically separated standby systems that are ready to assume operations in case of disaster

No reliance on 3rd-party AMHS software
- Applications are 100% designed by Ubitech
- No technical support delays, Ubitech directly supports all Ubimex software without 3rd-party involvement
- Ubimex software is designed specifically for the aeronautical industry resulting in a streamlined application with low-overhead

6th Generation of Ubitech's ATS Messaging Technology
- Over 20 years and 6 generations of continuous development and deployment give the Ubimex a reliable foundation
- Software Refactoring allows Ubitech to apply much of the field-tested software of previous Ubimex generations to the latest switch technology
- Customer involvement in the Ubimex development process has ensured that the most demanding of customer requirements are met

It's a Ubitech product
- FOCUS: Specialization in aeronautical communications systems
- COMMITMENT: Ensuring customer satisfaction through ontime delivery of products & services that exceed expectations
- DETERMINATION: Advanced products that not only meet today's requirements but those of the future.

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