



ICAO Regional Workshop on ATS Message Handling System Dakar, 28th and 29th May 2013

AviSuite Integrated AFTN/AMHS Message Handling System

Avitech GmbH

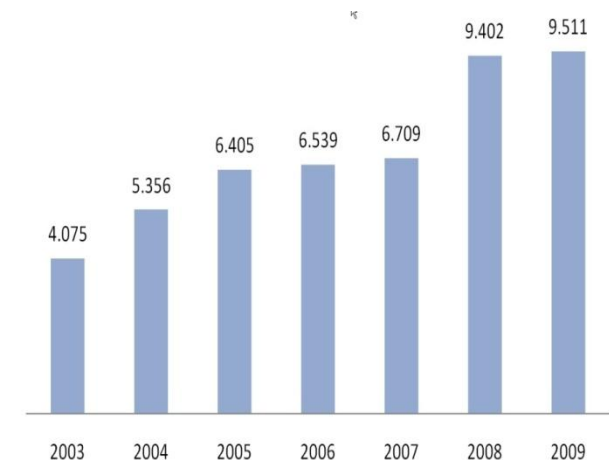
- Existing in different forms since 1963
- 4 Office Locations
- Staff – apprx. 100 employees
 - Knowledge Factory: 75% with technical Background
 - 52% university degrees / students

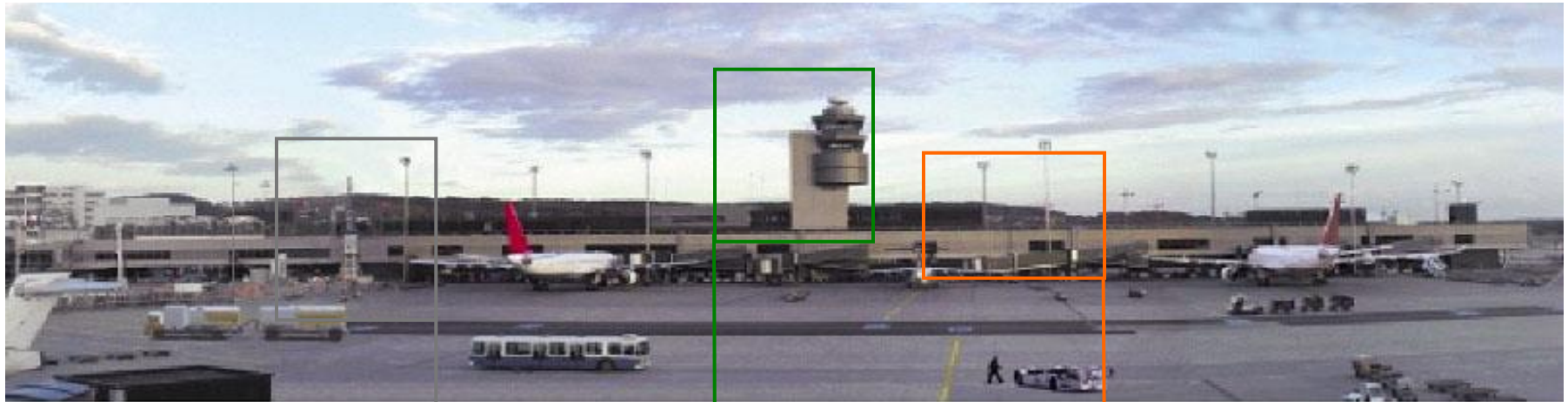
Frankfurt am Main,
Germany

Bratislava,
Slovakia

Friedrichshafen,
Germany

Konstanz,
Germany





Data Communication Systems

AFTN-CIDIN-AMHS Switches
& Gateways
Multi-protocol User Terminals
(AFTN, AMHS P3/P7, ...)

Tower System

Tower Management
Airport Weather Information
ATIS, NOTAM, maps, airfield
conditions,
Electronic Flight Strip Systems

AIM

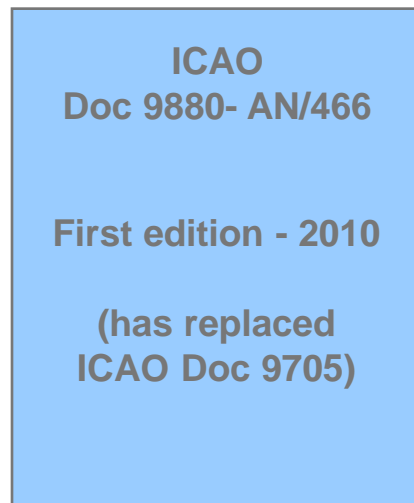
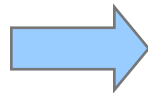
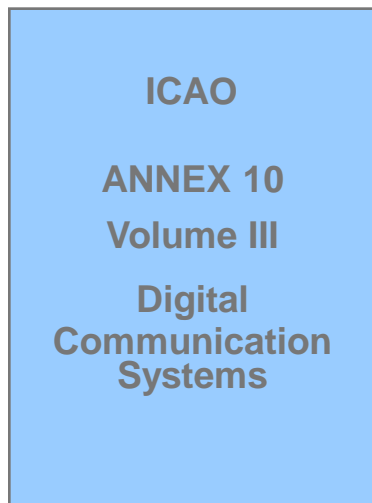
Automated NOTAM Database
FPL Database
Integrated Briefing
AIP / FLIP / Chart Production/
AIXM Database (V5++)
Obstacle & Terrain Database

Latest ICAO SARPS standards - Turnkey Systems - Product & Project Services

Regulatory provisions

Technical Specification (SARPs)

Guidance Material



ATN: Chapter 3

AMHS: Part II

AMHS: Part III, Section 6

EUR Documents

- ICAO EUR Doc 020 – EUR AMHS Manual, V8.0, 25-04-2013
 - Appx. A: Abbreviations, Glossary and Definitions
 - Appx. B: European ATS Messaging Service Profile
 - Appx. C: AMHS Testing Requirements
 - Appx. D: AMHS Conformance Tests
 - Appx. E: AMHS Interoperability Tests
 - Appx. F: AMHS Pre-Operational Tests
 - Appx. G: European Directory Service

- ICAO EUR Doc 021 – ATS Messaging Management Manual, V9.0, 25-04-2013

- ICAO EUR Doc 022 - AFS Security Guidelines, V5.0, 25-04-2013

- ICAO EUR Doc 026 – AMHS COM Centre Training Guidelines, V1.0, 30-04-2012

- ICAO EUR Doc 027 – IP Infrastructure Test Guidelines for EUR AMHS, V1.0, 24-04-2012

- EUROCONTROL Specification on the Air Traffic Services Messages Handling System (AMHS), Ed. 2.0, September 2009



AMHS Conformance Test Statement

The following AMHS Implementation Under Test (IUT) has been subjected to the AMHS Conformance Tests:

Tunisian AviSuite Integrated AFTN/AMHS System
Office de l'Aviation Civile et des Aéroports (OACA)

(The system specification of the IUT is detailed at the following page.)

All Conformance Test cases for the *Basic ATS Message Service* as described in ICAO EUR Doc 020 - EUR AMHS Manual, Version 7.0, Appendix D have been performed with the AMHS Test Suite at

Friedrichshafen, 21 st and 22nd of May, 2013

The AMHS Implementation Under Test (IUT) has *not* shown by conformance testing to be *non-conformant* to the AMHS Technical Specification (ICAO Doc 9880-AN/466, Part II, 1st edition 2010).

Based on the test results we confirm that no observations which would prevent from interoperability with other AMHS X.400 (1988) implementations have been made.

The purpose of conformance testing is to increase the probability that different implementations can interwork. However, the complexity of protocols makes exhaustive testing impractical on both technical and economic grounds. Furthermore, there is no guarantee that an IUT which has passed all the relevant tests conforms to a specification. Neither is there a guarantee that such an IUT will interwork with other systems. Rather, the passing of the tests gives confidence that the IUT has the stated capabilities and that its behaviour conforms consistently in representative instances of communication.

Page 1 of 2

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AMHS Conformance Test Statement
Tunisian AviSuite Integrated AFTN/AMHS System
Office de l'Aviation Civile et des Aéroports (OACA)



The AMHS Conformance Tests have been performed with the following configuration:

IUT	Identification and Version
Computer Hardware	HP ProLiant DL380 G7
Operating System	HP-UX cluster with Oracle database 11.2.0.3
ATN/X.400 Software	Isode M-Switch Rel. 15.2v6-0
AMHS/MTCU Software	r35402
AFTN Software	r35402

User Terminals	Identification and Version
AMHS User Agent	Tunisia MTU 3.0.8.0 on Windows 7 Pro Sp1

Test Equipment	Identification and Version
Computer Hardware	Dell Precision M90
Operating System	Linux CentOS 5.5
X.400 Software	Isode M-Switch, Rel. 14.6v8
Test Software	AC-B test application TEWA 2.0, Revision v3_6_2 EURAMHS test package 7.0.3

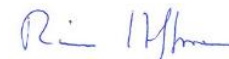
This Conformance Test Statement applies only to the above hardware and software configuration. For test result details, please refer to the associated AMHS Conformance Test Report.

RECOMMENDATIONS

Based on the analysis of the test results and the analysis of the supplier the following recommendations are made:

- None

Friedrichshafen (Germany), 22.05.2013



Rainer Hoffmann (AC-B GmbH)

AC-B is certified as Notified Body of the European Community for AMHS Conformance Testing

Page 2 of 2

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AMHS Interoperability Test Statement

AMHS Interoperability Tests were carried out on 3rd of August 2009 between the following AMHS Implementations Under Test (IUTs):

**Integrated AMHS/AFTN/CIDIN Test Switch
Austro Control COM Centre
Vienna, Austria
Supplier: Thales Air Systems S.A.**

and

**Integrated AFTN/AMHS Test System
HungaroControl COM Centre
Budapest, Hungary
Supplier: Avitech AG**

All test procedures as described in ICAO EUR Doc 020 - EUR AMHS Manual, Version 4.0 dated 02/04/09, Appendix E - except for the optional trilateral test procedures - were performed without any failure or any need for re-test. A detailed Test Report is provided in the document AMHS_INTEROP_RPT_HU-AT_001¹.

Based on the test results we conclude that the implementations in Vienna and Budapest are interoperable.




HungaroControl

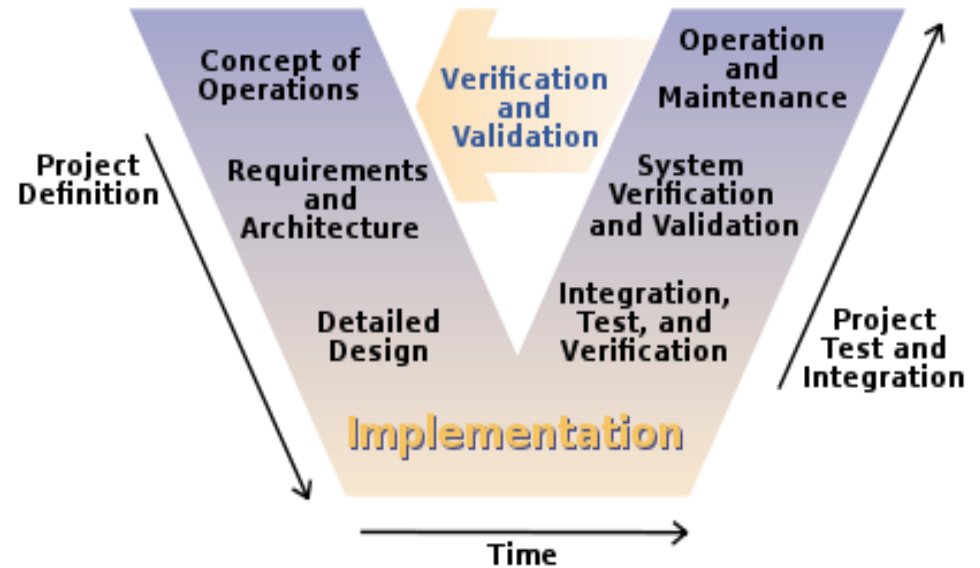

Austro Control

The purpose of interoperability testing is to increase the probability that different implementations can interwork. However, the complexity of protocols makes exhaustive testing impractical on both technical and economic grounds. Furthermore, there is neither a guarantee that an IUT which has passed all the relevant tests conforms to a specification nor that it will interwork with other systems. The passing of the tests gives confidence that the IUT has the stated capabilities and that its behaviour conforms consistently in representative instances of communication.

¹ This Interoperability Test Statement is valid only for the equipment configuration described in the Test Report.

In accordance with the EUR AMHS Manual, Appendix E:

- Numerous successful bilateral interoperability tests
- First successful trilateral interoperability tests world-wide



- ➔ Software Development based on V-Model (corresponding to MIL-STD-498)
- ➔ ESARR 6 Compliancy

→ **Open Architecture**

Modular software structure, which allows easy customisation and flexible expansion

→ **Scalability**

Industry standard hardware allows scalable solutions in terms of message throughput and interface capacity

→ **High Reliability**

Redundant layout of the hardware and software components,
Cluster configuration of servers,
Hotplug HW components

→ **Best of class COTS suppliers (HP, Oracle, Isode)**

- Integrated AFTN/(CIDIN/)AMHS Message Switch
- AFTN switch fully compliant to Annex 10 Vol. II, Amendment 88
- AFTN IA5 and ITA-2 serial, TCP/IP, dial-up interfaces
- Gateways to FAX, E-Mail, SITA, WMO
- Support of long AFTN messages
- ATS Message Server (Message Transfer Agent MTA)
- Protocols:
 - P1 MTS – Transfer via RFC1006/TCP/IPv4 or RFC2126/TCP/IPv6 for communication with other MTAs
 - P3 MTS – Access via TCP/IPv4 for communication with User Agents

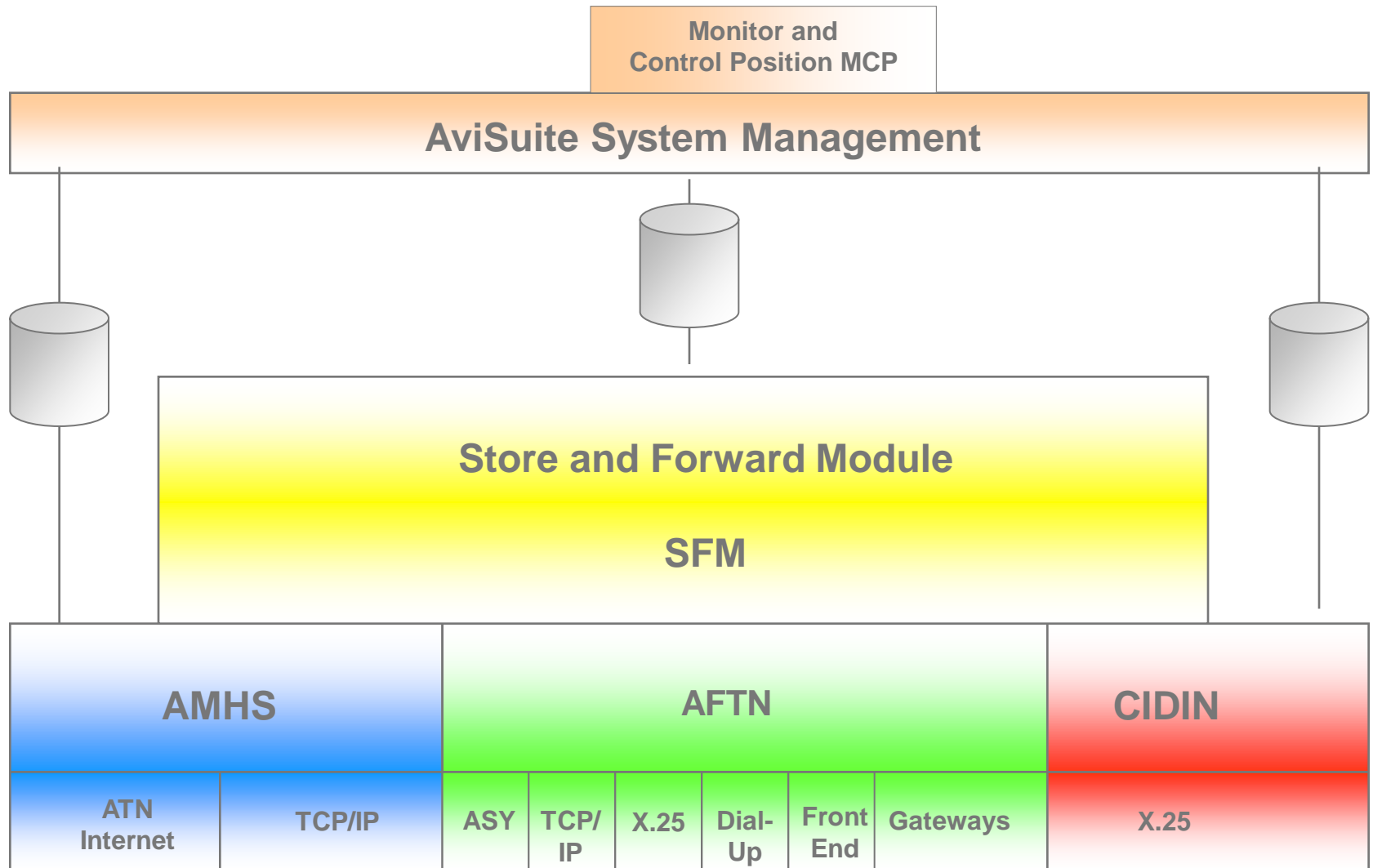
- **Optional Message Store**
 - P7 MS – Access Protocol for communication with User Agents
- **X.500 Directory Server**
- **AFTN/AMHS Gateway ensures interworking between AFTN and AMHS users**
- **Import of Address Look-Up Tables from AMC**

- **Automatic Address Conversion in the ATS User Agent**

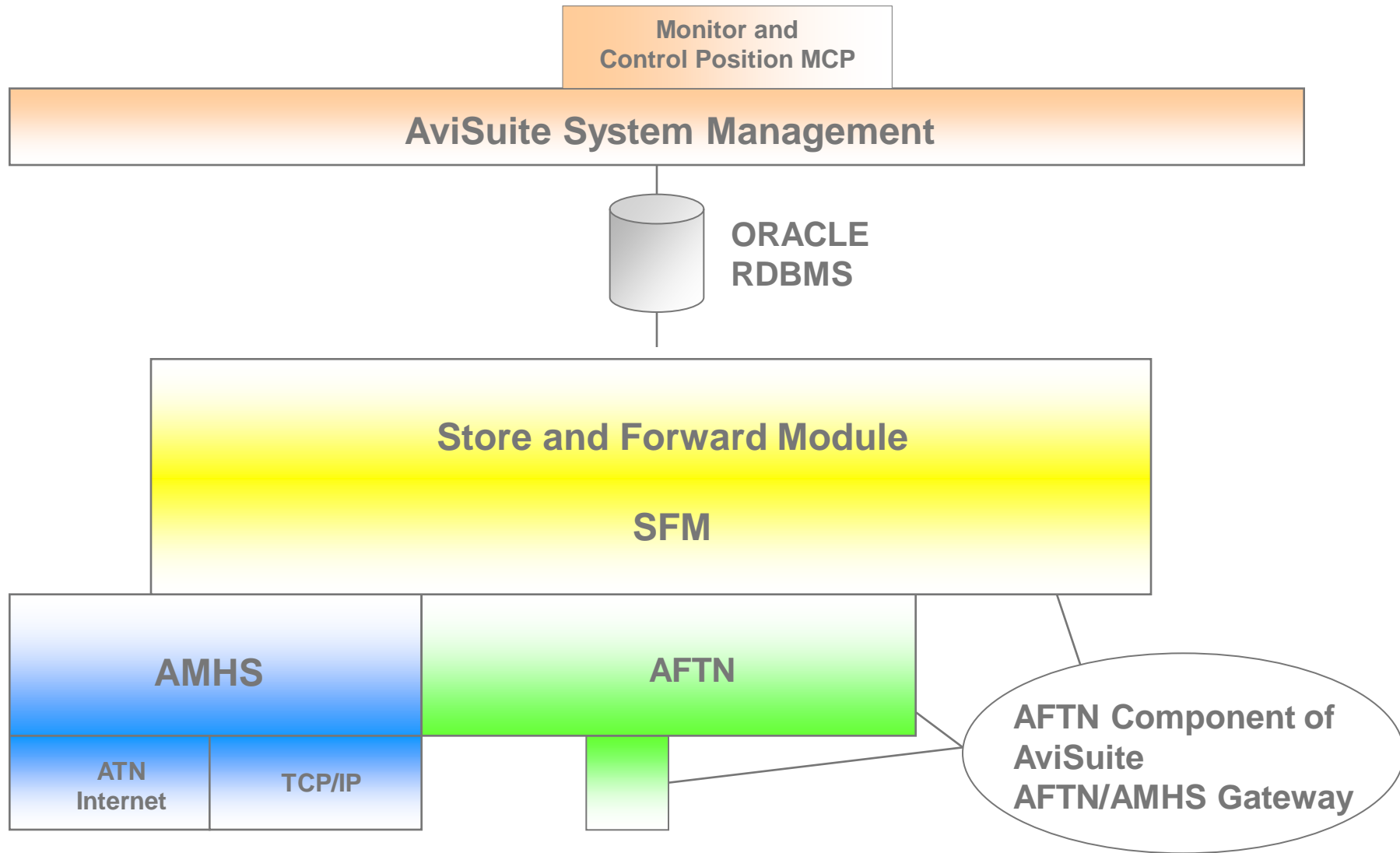
- **Support of Basic ATS Message Service and**
- **Extended ATS Message Service**
 - Use of Directory
 - Transfer of Binary Data (File Transfer Body Part)
 - IPM Heading Extensions
 - Security

- **Retrieval and Repetition Functions**

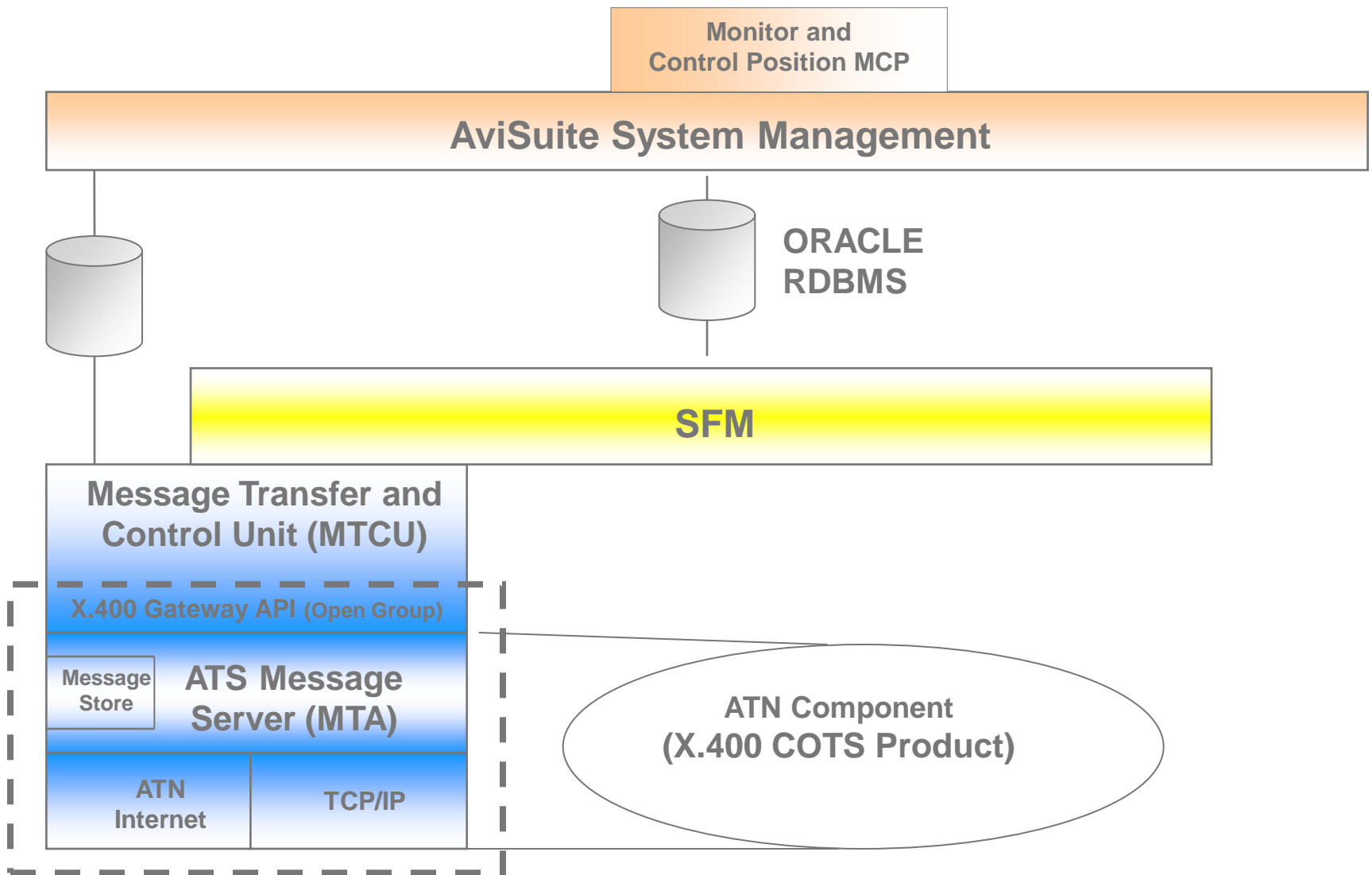
AviSuite Switch Software Architecture Overview



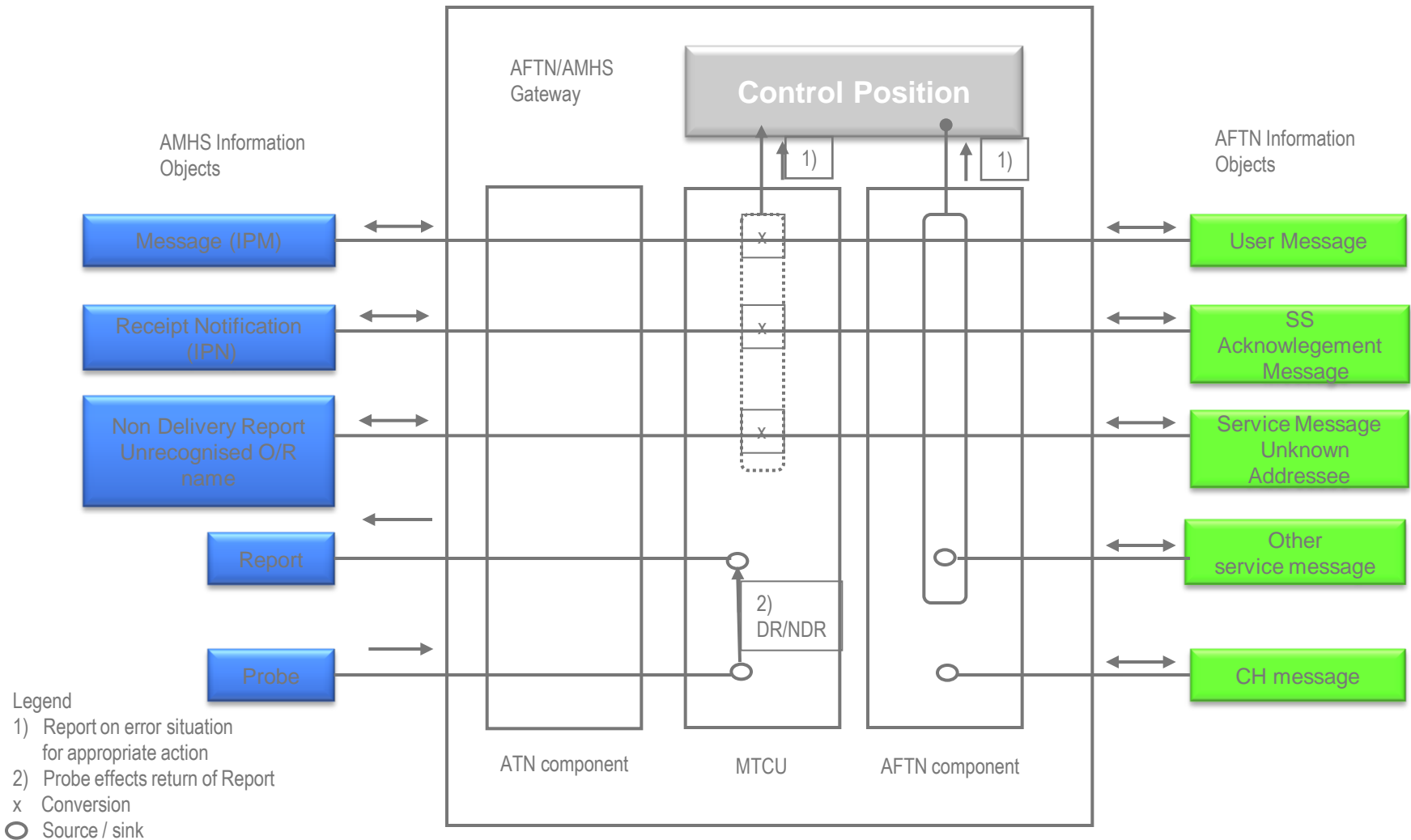
AviSuite Switch Software Architecture Overview



AviSuite Switch Software Architecture Overview



AFTN/AMHS Gateway – the bridge



Integrated Monitoring and Control Position iMCP



System Message Monitor

Alarms: 12 Unread: 43 Count: 46/46

Alarm	Info	Time	Name	Details	Category
		2010-01-22 11:...	<no filter>	<no filter>	NORMAL
		2010-01-22 11:...	AFTN_CHANNEL_STATE	ST100 / A / BLOCKED	NORMAL
		2010-01-22 11:...	AFTN_CIRCUIT_STATE	ST100 / OPERATIVE	NORMAL
		2010-01-22 11:...	AFTN_SVC_LRLS_GENERATED	ST101 / A	NORMAL
		2010-01-22 11:...	GENERAL_ERROR	ST101 / A	NORMAL
		2010-01-22 11:...	AFTN_NO_CONNECTION_ESTA...	AFST102 / A	NORMAL
		2010-01-22 11:...	AFTN_NO_CONNECTION_ESTA...	AFST103 / A	NORMAL
		2010-01-22 11:...	AFTN_CHANNEL_STATE	AFST101 / A / BLOCKED	NORMAL
		2010-01-22 11:...	AFTN_CIRCUIT_STATE	AFST103 / OPERATIVE	NORMAL
		2010-01-22 11:...	AFTN_CHANNEL_STATE	AFST102 / A / BLOCKED	NORMAL
		2010-01-22 11:...	AFTN_CIRCUIT_STATE	AFST102 / OPERATIVE	NORMAL

AFTN_NO_CONNECTION_ESTABLISHED

Last changed: 22.01.2010 11:50:59
 Generation time: 22.01.2010 11:50:54
 Category: NORMAL
 Alarm: false
 Circuit name: AFST102
 Group: TCP
 Channel name: A
 X25 event: CONNECT_TIMEOUT
 Direction: OUTGOING

System Configuration

State	Version	Copy from	Comment	Changed
	00000002		test bundle	2009-07-08 15:...
	00000003	00000016	!!!!## please dont change anything here ##...	2009-11-18 12:...
	00001027	00000003	backup - do not modify please	2009-12-15 16:...
	00001108		CIDIN Lists included, but don't touch the	2010-01-19 09:...

Bundle details

Version: 00001108 State: WORKING Comment: ut don't touch the CIDIN lists at all, please

Comments: sts included, but don't touch the CIDIN lists at all, please

Configuration:

Item	Private MD	Scheme
ADDRESS_ROUTE	FT	XF
ADDRESS_GROUP	FV	XF
ADDRESS_ROUTING	Fw	XF
CIRCUIT	FX	XF
CIRCUIT_ROUTING	FY	XF
DEVICE	FZ	XF
AMHS_MANAGEMENT_DOMAIN_REGISTER	GB	XF
AMHS_USER_ADDRESS_LOOK_UP	GERMANY	CAAS
AMHS_AUTOMATED_DIVERSION	GF	XF
CIDIN_EXIT_CENTRE	GG	XF
CIDIN_ROUTE	GL	XF
CIDIN_ROUTING	GM	XF
CIDIN_VIRTUAL_CIRCUIT_GROUP	GN	XF

Amhs Management Domain Register

Country: XX Admin MD: ICAO Private MD: GERMANY

Scheme type: CAAS User: Username Last changed: 2010-01-19 09:51:24

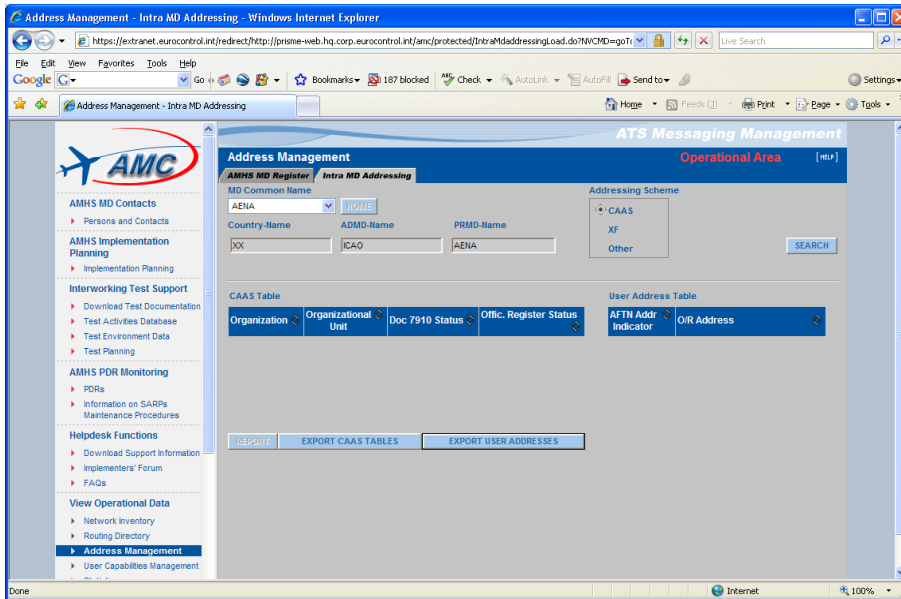
Advanced properties: Areas

Code	Name
ED	Germany
ET	Germany

Organisations and units: GERMANY, EDDG, EDDF, EDDG, EDDK, EDDL, EDDR, EDDG

Aftn Connection State Monitor

Last changed	Circuit	Channel	Device	Circuit state	Hold for priorities	Channel state	Connect state	Connect Type
2010-01-22 ...	AFST100	A	Tcp-Device	OPERATIVE		OPEN	01 DISCONNECTED	FIX
2010-01-22 ...	AFST101	A	Tcp-Device	OPERATIVE		OPEN	01 DISCONNECTED	FIX
2010-01-22 ...	AFST102	A	X25-device	OPERATIVE		OPEN	01 DISCONNECTED	FIX
2010-01-22 ...	AFST103	A	Asy-device	INOPERATIVE		BLOCKED	01 DISCONNECTED	FIX
2010-01-22 ...	AU-AIS	A	Tcp-Device	OPERATIVE		OPEN	01 DISCONNECTED	FIX
2010-01-22 ...	AU-TWR	A	Tas-Device	OPERATIVE		OPEN	01 DISCONNECTED	FIX



- World-wide AFTN/AMHS unique address look-up tables necessary
- Available on AMC web site, apprx. 600 entries in CAAS table)
- Avitech automated table import crucial function

Import of AFTN/AMHS Address Look-Up Tables



Import AMHS MD Look-Up Data for Service List Version: GW000053

File Help

AMHS MD Look-Up Table (new elements)							
Rtind	Country	ADMD	PRMD	Addressing Scheme Identifier	State Territory Organisation		Accept
EUSN	XX	ICAO	EUROPE	CAAS	Euronotam		<input checked="" type="checkbox"/>
							<input type="checkbox"/>
							<input type="checkbox"/>
							<input type="checkbox"/>
							<input type="checkbox"/>

Records:

AMHS MD Look-Up Table (elements to be replaced)							
Rtind	Country	ADMD	PRMD	Addressing Scheme Identifier	State Territory Organisation	Type	Replace
EUEC	XX	ICAO	EUROPE	CAAS	EAD	Import	<input checked="" type="checkbox"/>
EUEC	XX	ICAO	EUEC	XF	Europe - EAD	Exist	<input type="checkbox"/>
GC	XX	ICAO	SPAIN	CAAS	Canary Islands	Import	<input checked="" type="checkbox"/>
GC	XX	ICAO	AENA	CAAS	Canary Islands	Exist	<input type="checkbox"/>
GE	XX	ICAO	SPAIN	CAAS	Spain	Import	<input checked="" type="checkbox"/>
GE	XX	ICAO	AENA	CAAS	Spain	Exist	<input type="checkbox"/>

Records:

AMHS MD Look-Up Table (elements to be deleted)							
Rtind	Country	ADMD	PRMD	Addressing Scheme Identifier	State Territory Organisation		Delete
AAAA	XX	ICAO	AMHSLAND-1	CAAS	AMHS Conformance Test Tool		<input type="checkbox"/>
ABAA	XX	ICAO	AMHSLAND-2	CAAS	AMHS Conformance Test Tool		<input type="checkbox"/>
ABBA	XX	ICAO	AMHSLAND-2	CAAS	AMHS Conformance Test Tool		<input type="checkbox"/>
ABCA	XX	ICAO	AMHSLAND-2	CAAS	AMHS Conformance Test Tool		<input type="checkbox"/>
ACCC	XX	ICAO	AMHSLAND-3	XF	AMHS Conformance Test Tool		<input type="checkbox"/>
AVHH	XX	ICAO	AVIH	CAAS	Avitech MHS DemoSystem Linux		<input type="checkbox"/>

Records:

Status:

- New common technology development, for both communication types (AFTN/AMHS)
- Platform independency through Java
- Web based and conventional stand-alone clients
- Web-start server based client supports roaming users
- Highly modular and configurable through plug-ins
- Access protocols: AFTN, MTS and MS access protocol (P3 and P7)
- Set of Templates (ICAO Doc 4444/8126/ MET)
- Semantics and syntax checking mechanisms

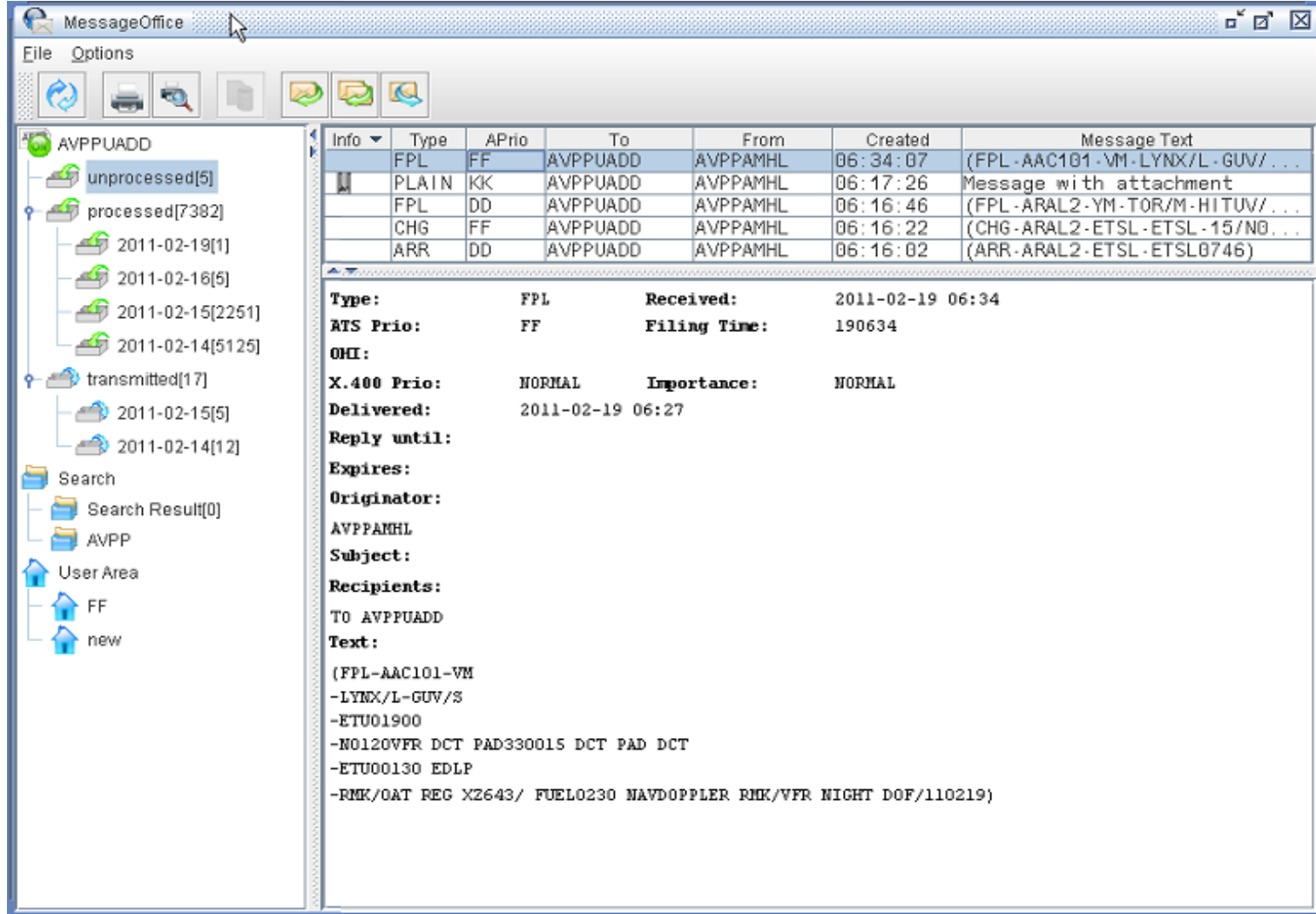
- Flight Plans
 - ***FPL 2012 implemented***

- Extensions:
 - Briefing (PIB)
 - ATS messages
 - Inbound Flight Operations display
 - Outbound Flight Operations display
 - ATFM Messages

- Automatic Address Conversion
 - User can work with AFTN addresses

- Address Book and Directory Service Access

- AviConnector provides a P3 interface to legacy systems
 - use of XML files

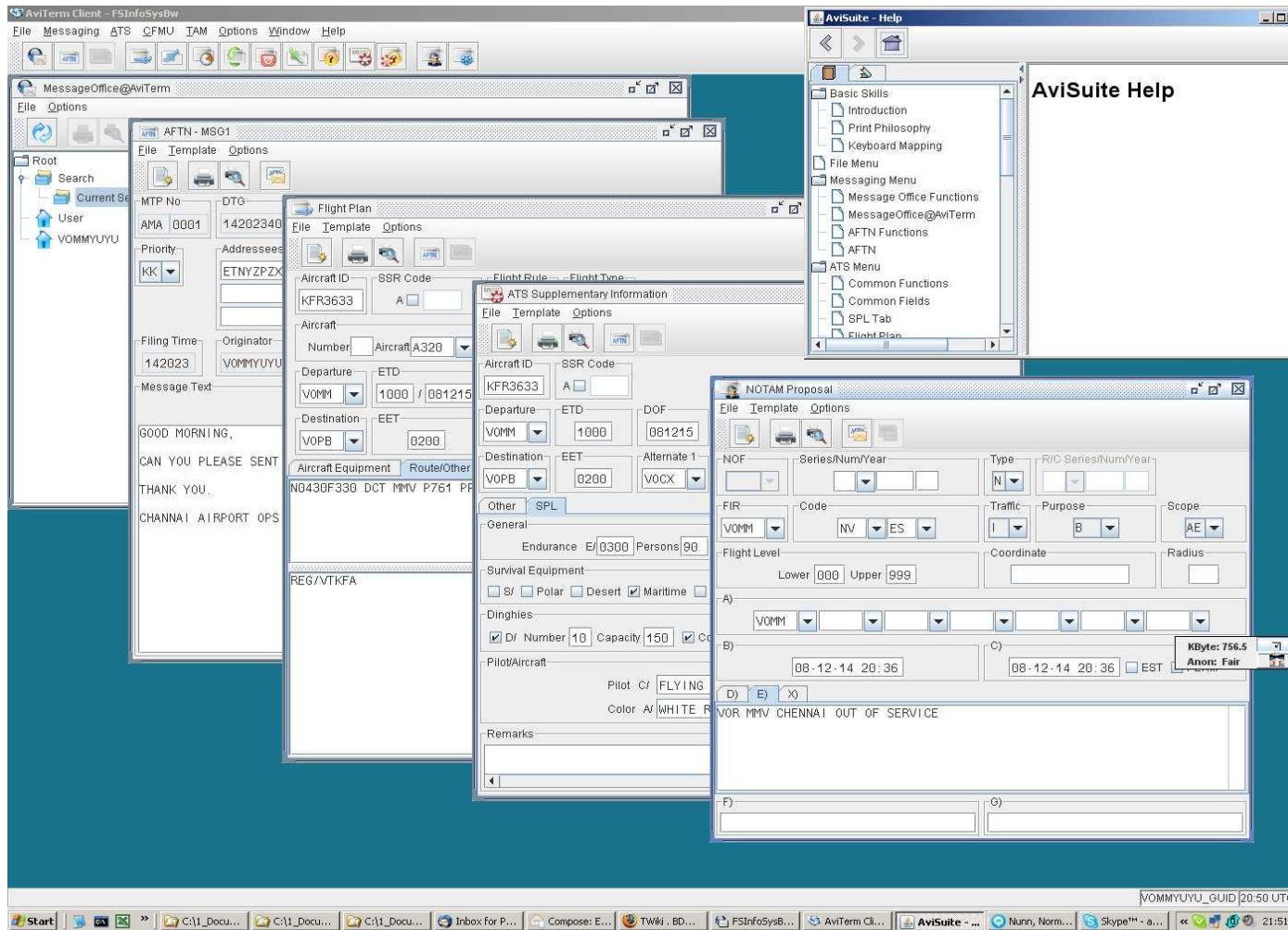


The screenshot shows the MessageOffice application window. The title bar reads "MessageOffice". Below the title bar are menu items "File" and "Options", and a toolbar with icons for refresh, print, search, and other functions. The left pane shows a folder tree for "AVPPUADD" with subfolders like "unprocessed[5]", "processed[7382]", and "transmitted[17]". The right pane displays a table of messages and a detailed view of the selected message.

Info	Type	APrio	To	From	Created	Message Text
	FPL	FF	AVPPUADD	AVPPAMHL	06:34:07	(FPL-AAC101-VM-LYNX/L-GUV/...
	PLAIN	KK	AVPPUADD	AVPPAMHL	06:17:26	Message with attachment
	FPL	DD	AVPPUADD	AVPPAMHL	06:16:46	(FPL-ARAL2-VM-TOR/M-HITUV/...
	CHG	FF	AVPPUADD	AVPPAMHL	06:16:22	(CHG-ARAL2-ETSL-ETSL-15/NO...
	ARR	DD	AVPPUADD	AVPPAMHL	06:16:02	(ARR-ARAL2-ETSL-ETSL0746)

Type: FPL **Received:** 2011-02-19 06:34
ATS Prio: FF **Filing Time:** 190634
OHI:
X.400 Prio: NORMAL **Importance:** NORMAL
Delivered: 2011-02-19 06:27
Reply until:
Expires:
Originator: AVPPAMHL
Subject:
Recipients: TO AVPPUADD
Text:
(FPL-AAC101-VM
-LYNX/L-GUV/S
-ETU01900
-NO120VFR DCT PAD330015 DCT PAD DCT
-ETU00130 EDLP
-RMK/OAT REG XZ643/ FUEL0230 NAVDOPPLER RMK/VFR NIGHT DOF/110219)

AviTerm User Agent – Message Forms



The screenshot displays the AviTerm Client interface with several overlapping windows:

- MessageOffice@AviTerm:** Shows message details including MTP No (AMA 0001), DTG (14202340), Priority (KK), and Message Text: "GOOD MORNING, CAN YOU PLEASE SENT THANK YOU. CHANNAI AIRPORT OPS".
- Flight Plan:** Displays aircraft information for KFR3633, including SSR Code (A), Aircraft Number (A320), Departure (VOMM 1000), ETD (081215), Destination (EET), and VOPB (0200).
- ATS Supplementary Information:** Shows similar aircraft details for KFR3633, including DOF (081215), Destination (EET), and VOPB (0200).
- NOTAM Proposal:** A form for creating a NOTAM with fields for FIR (VOMM), Code (NV), ES, Traffic (I), Purpose (B), Scope (AE), and Flight Level (Lower 000, Upper 999). It includes a text area with "VOR MMV CHENNAI OUT OF SERVICE".
- AviSuite Help:** A help window with a tree view containing sections like Basic Skills, Messaging Menu, and ATS Menu.

The Windows taskbar at the bottom shows the Start button and several open applications, including FSInfoSysBw, AviTerm Client, and AviSuite. The system tray indicates the user is VOMMYUYU_GUID and the time is 20:50 UTC.

AviTerm User Agent – Address Conversion



AviSuite

File Messaging Tam Fpl Tools Options Window Help

AMHS AMHS

File Template Options

Message Details Advanced Properties

ATS Prio Filing Time Optional Heading Information

KK 122028 THIS IS AN OPTIONAL HEADING INFORMATION

Originator

/CN=O.JAMAMJF/OU=O.JAM/O=O.JAC/PRMD=OJ/ADMD=ICA0/C=XX/

Recipients

VABBYFYX	VIDDYFYX	ETCCYFYX	OJAMYFYX	OBBIYFYX	OBBSYFYX	LHBPYFYX
EPWYFYX	CYAAFYX	DTTCYFYX	EDNYZTZ	EUCHYFYX	EUCBYFYX	LFPYZKZX
LFPYAAAA	EDDDYFYX	UUUYFYX	LSSYFYX	LIIYFYX	WSSYFYX	VCCYFYX

Subject

Subject 01

Message Text

This is a test text.

20:28:07

AviSuite

File Messaging Tam Fpl Tools Options Window Help

AMHS AMHS

File Template Options

Message Details Advanced Properties

ATS Prio Filing Time Optional Heading Information

KK 122030 THIS IS AN OPTIONAL HEADING INFORMATION

Originator

/CN=O.JAMAMJF/OU=O.JAM/O=O.JAC/PRMD=OJ/ADMD=ICA0/C=XX/

Recipients

To /CN=OJAMYFYX/OU=OJAM/O=OJAC/PRMD=OJ/ADMD=ICA0/C=XX/

To /CN=OBBIYFYX/OU=OBBI/O=CIVIL AVIATION AFFAIRS/PRMD=OB/ADMD=ICA0/...

To /CN=OBBSYFYX/OU=OBBS/O=BAHRAIN DEFENCE FORCE/PRMD=OB/ADMD=ICA0/...

To /OU=LHBPYFYX/O=AFTN/PRMD=LH/ADMD=ICA0/C=XX/

To /OU=EPWYFYX/O=AFTN/PRMD=EP/ADMD=ICA0/C=XX/

To /OU=CYAAFYX/O=AFTN/PRMD=C/ADMD=ICA0/C=XX/

To /CN=DTTCYFYX/OU=DTTC/O=DTTC/PRMD=DT/ADMD=ICA0/C=XX/

To /CN=EDNYZTZ/OU=EDNY/O=EDMW/PRMD=GERMANY/ADMD=ICA0/C=XX/

To /CN=EUCHYFYX/OU=EUCH/O=CFMUH/PRMD=EUROCONTROL - CFMU/ADMD=ICA0/C=XX/

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To /CN=LFPYZKZX/OU=LFPY/O=CFMUB/PRMD=EUROCONTROL - CFMU/ADMD=ICA0/C=XX/

To /CN=LFPYAAAA/OU=LFPY/O=LFFF/PRMD=FRANCE/ADMD=ICA0/C=XX/

To /CN=EDDDYFYX/OU=EDDD/O=EDDD/PRMD=GERMANY/ADMD=ICA0/C=XX/

To /CN=UUUYFYX/OU=UUUU/O=UU/PRMD=RUSSIA/ADMD=ICA0/C=XX/

To /CN=LSSYFYX/OU=LSSS/O=LS/PRMD=SUISSE/ADMD=ICA0/C=XX/

To /OU=LIIYFYX/O=AFTN/PRMD=LI/ADMD=ICA0/C=XX/

To /OU=LIIYFYX/O=AFTN/PRMD=LI/ADMD=ICA0/C=XX/

Subject

Subject 01

20:30:21

High reliable Hardware (1)



(Server)



(LAN Switch)

- High reliability
- Low power consumption
- Low noise
- Easy to maintain

The Central Server Unit

HP ProLiant BL460c Server Blade 5405
Quad-core Intel Xeon 5405 processor (2 GHz, 1333 FSB)
2 x 6 MB level 2 cache
Intel 5000P chipset
2 GB (2x 1 GB) PC2-5300 677 MHz RAM
2x single port NC373i multifunction Gigabit NICs
1x 10/100 NIC for iLO 2 Management
Smart Array E200i Controller with 64 MB
Two (2) HP 36GB 10K SAS 2.5 Hot Plug Hard Drives

HP StorageWorks Ultrium 920c
Tape Blade
One (1) LTO-3 Ultrium 400/800 GB
Tape Drive

Dual-Redundant
Main System



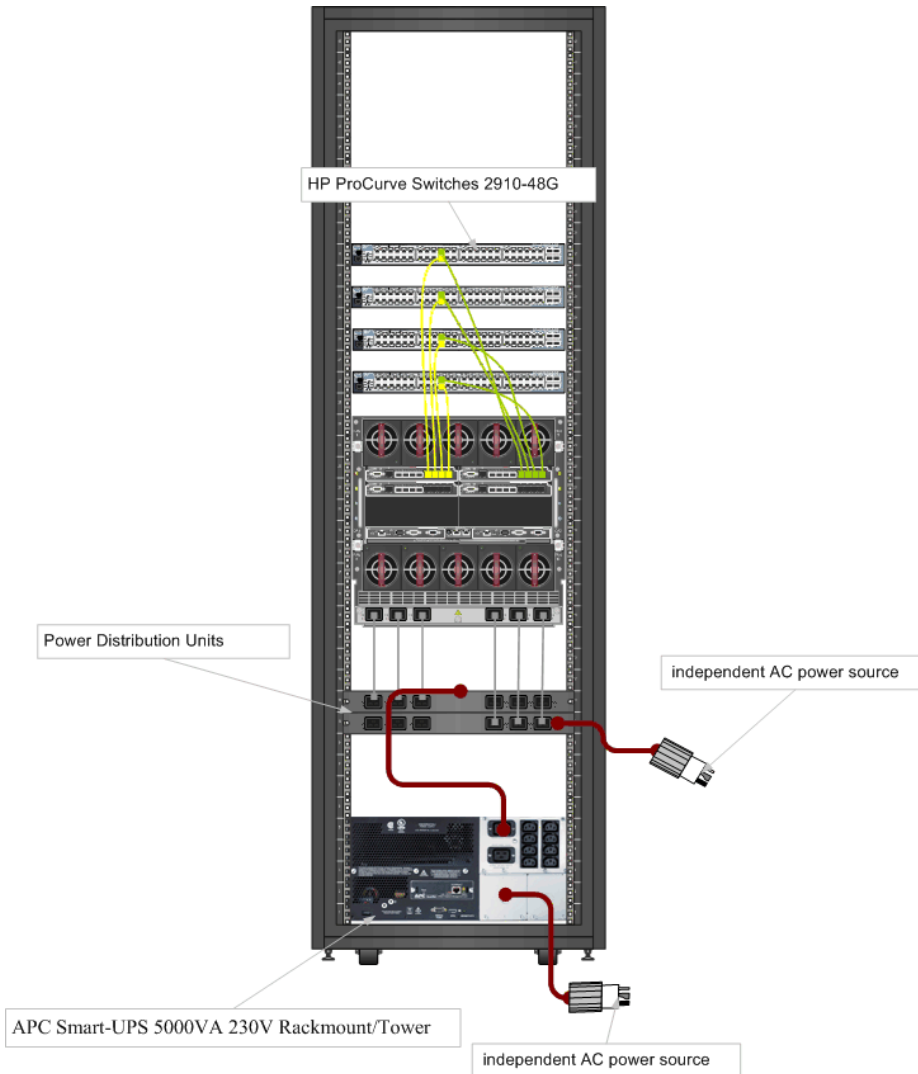
HP ProLiant BL c-Class SB600c Storage
Blade
Server Blade 5140 as Storage Controller
Smart Array P400 RAID controller 256 MB
cache, RAID 0/1/5/6 (ADG)
Three (3) HP 146GB 10K SAS 2.5 Hot
Plug Hard Drives
Windows 2003 Storage Server

HP ProLiant BladeSystem c-Class c7000 Enclosure
Single phase enclosure
4 power supplies
10 fans



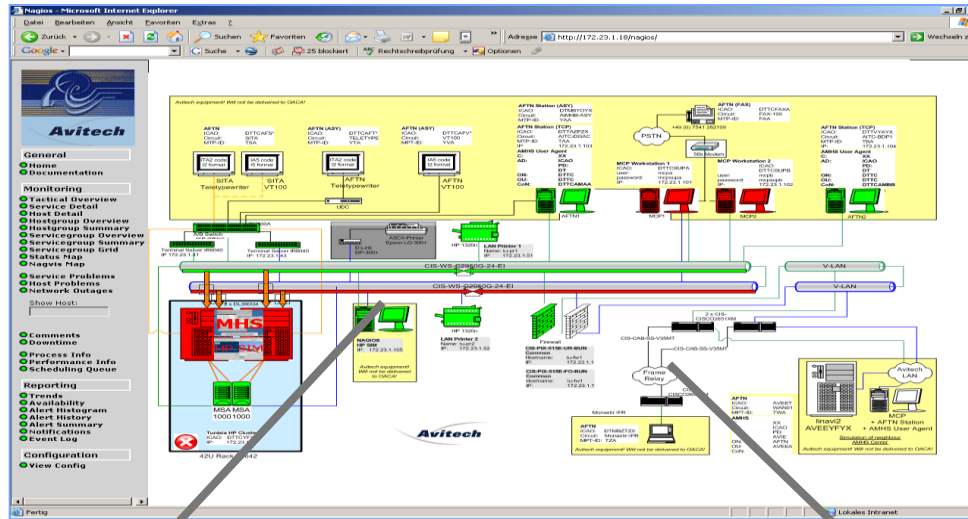
Monitoring & Backup Server

High reliable Hardware (2)



- Independent power supply
- Hot plug replacement of discs
- Built in control BITE
- Remote-configuration
- On board administrator

Realtime status monitor via web access



Alert Summary Report
Last Updated: Sat Apr 1 13:42:59 UTC 2006
Nagios® - www.nagios.org
Logged in as nagios

Most Recent Alerts
03-26-2006 13:42:59 to 04-01-2006 13:42:59
Duration: 5d 0m 0s

Report Options Summary:
Alert Types: All
Host States: Up, Down, Unreachable
Service States: OK, Warning, Unknown

Generate New Report

Displaying most recent 25 of 787 total matching alerts

Time	Alert Type	Host	Load	State	Severity	Host	Load	State	Severity
04-01-2006 13:40:45	Service Alert	bu-cc2	Load: 2.96 2.98 2.94	2.98 > 3	WARNING	HARDO	Load: 3.23 3.02 3.85	3.22 > 3	WARNING
04-01-2006 13:40:38	Service Alert	bu-cc2	Load: 1.84 2.54 0.92	2.94 > 3	WARNING	HARDO	Load: 3.36 3.07 3.77	3.36 > 3	WARNING
04-01-2006 13:35:36	Service Alert	bu-cc2	Load: 2.55 2.93 2.72	2.93 > 3	WARNING	HARDO	Load: 3.14 3.04 3.75	3.14 > 3	WARNING
04-01-2006 13:34:28	Service Alert	bu-cc2	Load: 2.82 2.97 2.78	2.97 > 3	WARNING	HARDO	Load: 3.05 3.15 3.77	3.05 > 3	WARNING
04-01-2006 13:33:58	Service Alert	bu-cc2	Load: 3.24 3.03 2.78	3.24 > 3	WARNING	HARDO	Load: 2.78 2.97 2.70	2.78 > 3	WARNING
04-01-2006 13:32:38	Service Alert	bu-cc2	Load: 3.12 3.06 2.72	3.12 > 3	WARNING	HARDO	Load: 2.42 2.94 2.97	2.94 > 3	WARNING
04-01-2006 13:31:58	Service Alert	bu-cc2	Load: 3.08 3.09 2.71	3.09 > 3	WARNING	HARDO	Load: 3.78 3.12 2.61	3.78 > 3	WARNING
04-01-2006 13:31:08	Service Alert	bu-cc2	Load: 3.84 3.08 2.57	3.84 > 3	WARNING	HARDO	Load: 2.78 2.97 2.70	2.78 > 3	WARNING
04-01-2006 13:29:48	Service Alert	bu-cc2	Load: 2.78 2.97 2.70	2.78 > 3	WARNING	HARDO	Load: 2.04 1.98 2.00	2.04 > 2	WARNING
04-01-2006 13:28:26	Service Alert	bu-cc2	Load: 2.83 2.08 2.04	2.08 > 2	WARNING	HARDO	Load: 1.86 1.94 1.90	1.94 > 2	WARNING
04-01-2006 13:11:48	Service Alert	bu-cc2	Load: 2.18 2.00 2.02	2.02 > 2	WARNING	HARDO	Load: 1.80 1.95 2.00	1.95 > 2	WARNING
04-01-2006 13:10:48	Service Alert	bu-cc2	Load: 1.80 1.95 2.00	2.00 > 2	WARNING	HARDO	Load: 2.32 2.08 2.03	2.05 > 2	WARNING

Hostgroup Availability Report
Last Updated: Sat Apr 1 14:55:53 UTC 2006
Nagios® - www.nagios.org
Logged in as nagios

03-26-2006 14:55:53 to 04-01-2006 14:55:53
Duration: 5d 0m 0s

[Availability report completed in 0 min 3 sec]

All Hostgroups
First assumed host state: Unspecified
First assumed service state: Unspecified
Report period: Last 7 Days
Update

Hostgroup 'AFTN Stations' Host State Breakdowns:

Host	% Time Up	% Time Down	% Time Unreachable	% Time Undetermined
AFTN-Station-1	61.598%	0.090%	0.067%	0.190%
AFTN-Station-2	61.749%	0.000%	0.000%	0.000%
Average	61.671%	0.040%	0.034%	0.066%

Hostgroup 'Cluster' Host State Breakdowns:

Host	% Time Up	% Time Down	% Time Unreachable	% Time Undetermined
bu-cc	61.744%	0.001%	0.000%	0.000%
bu-cc-1	61.745%	0.000%	0.000%	0.000%
bu-cc-2	61.745%	0.000%	0.000%	0.000%
Average	61.744%	0.000%	0.001%	0.000%

Hostgroup 'MCP Stations' Host State Breakdowns:

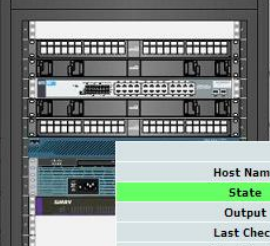
Host	% Time Up	% Time Down	% Time Unreachable	% Time Undetermined
MCP-1	61.631%	0.000%	0.000%	0.000%
MCP-2	61.742%	0.003%	0.000%	0.000%
Average	61.631%	0.001%	0.000%	0.000%

Detailed status information available for individual components

Firewall
1 x Cisco ASA 5510 incl. DMZ

Terminal Server
MRV LX-4048T Server
with 48 Ports

TC Phase 2



LAN Switch
2 x Patch Panel with 24 Ports
1 x HP E2810-48G Switch
2 x Cable Manager 1U

Management Server
1 x HP ProLiant DL360

Enclosure
1 x HP ProLiant BL c-Class
c7000 Blade Server
6 x HP ProLiant BL460c Server
4 x HP X1800sb Network Storage
Blades
4 x HP SB40c Storage Blades
4 x HP GbE2c Ethernet Blade
switch
1 x HP BLc c7000 Onboard
Administrator

UPS
1 x HP USV R 7000VA Runtime
module
3 x HP USV R Battery Pack

Host (Last state refresh: 2012-05-29 11:19:38)

Host Name	State	Output	Last Check
ae-dwc-test-cn1 (ae-dwc-test-cn1)	UP / HARD - 1/3	OK - 172.26.110.10: rta 13.193ms, lost 0%	2012-05-11 05:55:33

Summary State UP

Summary Output The Host is UP. There are 6 OK Services.

Service Name	State	Output
snmp-load	OK	LOAD OK - load average: 0,44 0,51 0,44
udp_snmp	OK	Uptime is OK - Timeticks: (14365777) 1 day, 15:54:17,77
icmp_ping_alive	OK	OK - 172.26.110.10: rta 75,995ms, lost 0%
avi-snmp-trap	OK	OK: NO TRAP FOR THIS HOST
avi-snmp-time-dwc	OK	The client time is in future - 1 sec. Time source: 2012-5-14 7:24:34.0 +0:0 Time client: 2012-5-14 7:24:35.0 +0:0
HP-insight	OK	Status: OK Std: OK Array: OK SCSI: OK Health: OK Thrsh: OK OS: OK IDE: OK

Virtualization Server
1 x HP ProLiant BL460c Server

Web Server
1 x HP ProLiant BL460c Server

Keyboard and Monitor
1 x HP TFT7600 Rack-mount
Keyboard



AviSuite Aeronautical Data and Message Handling Systems “The Reference Projects in Detail”

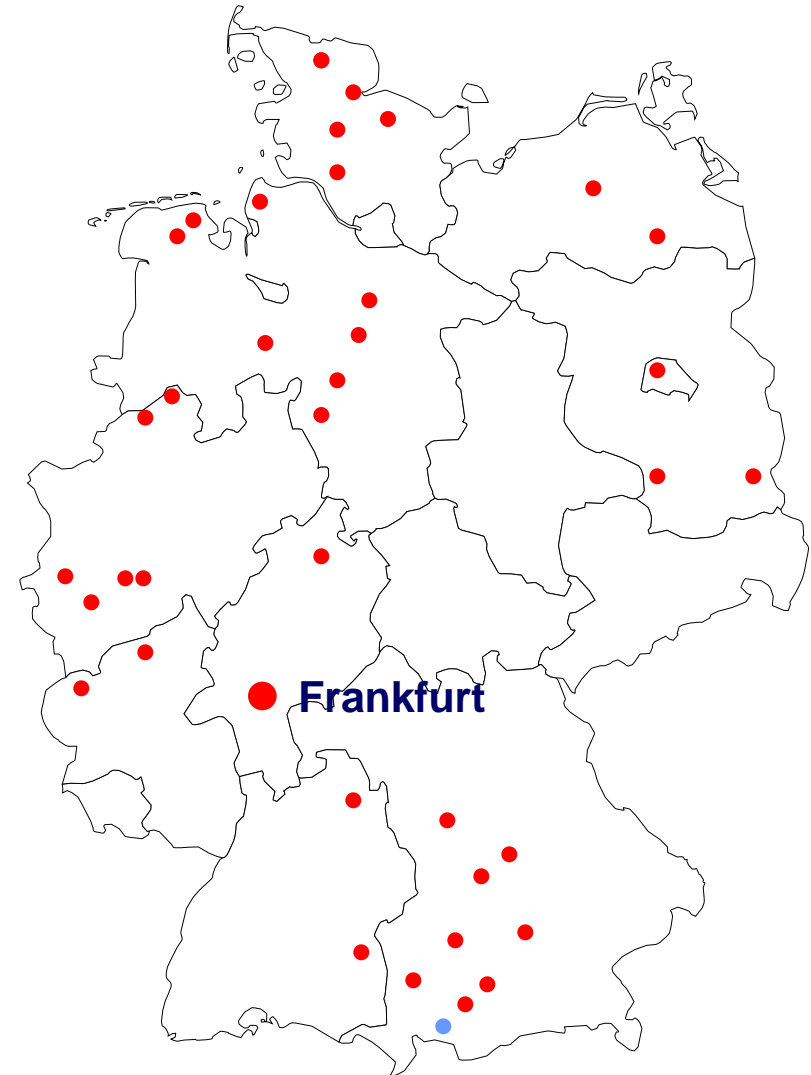
Avitech GmbH



German Federal Armed Forces

(Air Force, Army, Navy)

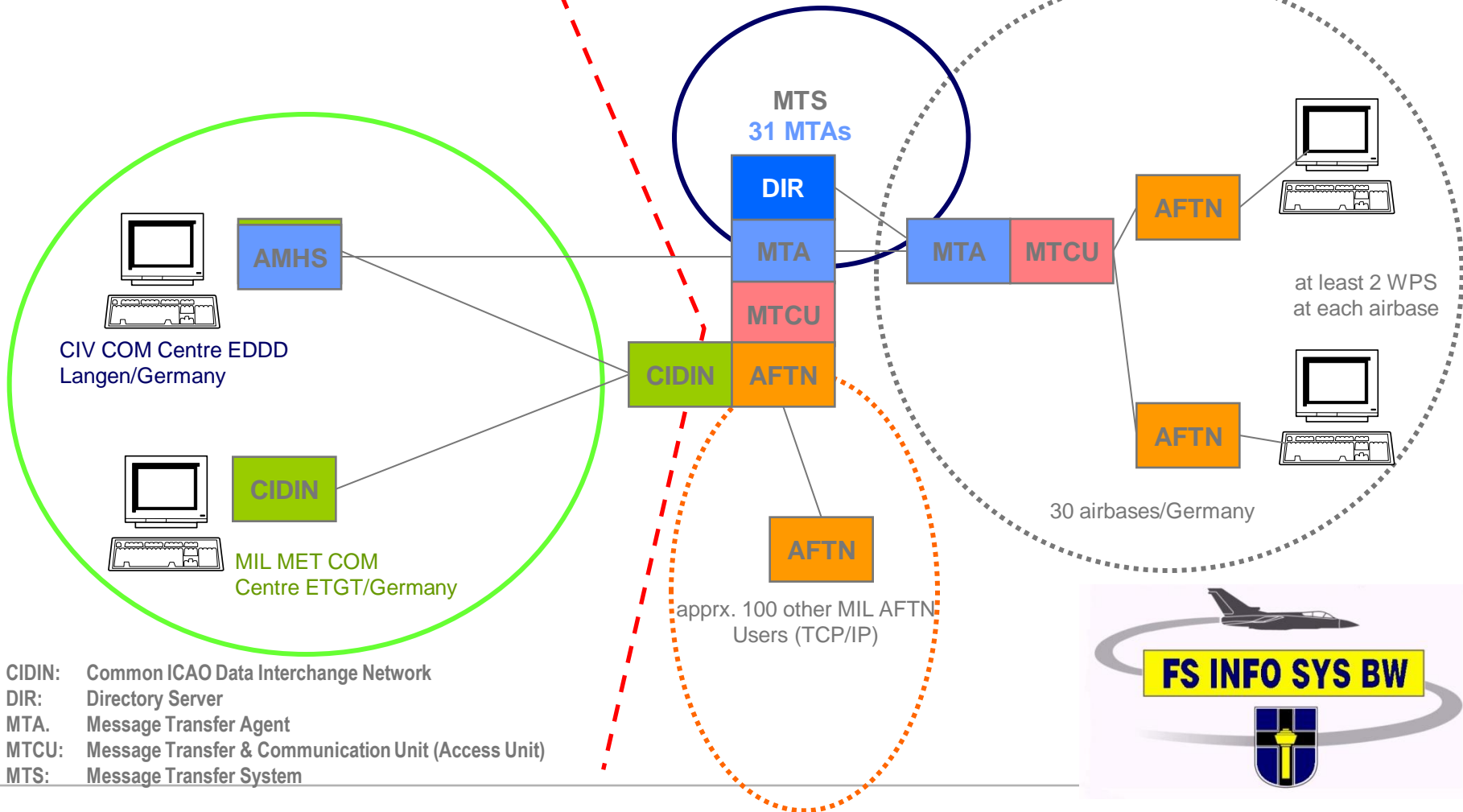
- More than 30 MTAs on 30 Airbases and COM Centre Frankfurt
- MIL NOTAM-Office, Flight Planning, Pilot Briefing
- AFTN/AMHS/CIDIN Switch
- Use of a central X.500 DIR Server
- First AMHS network world-wide (since 1998)
- **AMHS/TCP/IP/Frame Relay connection with German civil ANSP DFS in operation since February 2011**
- Close support, stepwise extension over more than a decade, HW/SW/protocol replacements without operational disruptions





Other Networks/Communication Partners

German Armed Forces Managed



- CIDIN: Common ICAO Data Interchange Network
- DIR: Directory Server
- MTA: Message Transfer Agent
- MTCU: Message Transfer & Communication Unit (Access Unit)
- MTS: Message Transfer System





- AFTN/AMHS COM Centre Tunis
- 4 international connections
- 80 domestic AFTN users, most of them connected via TCP/IP through the nationwide IP WAN
- in operation since 2008
- Major hardware and software upgrade in 2013
- AMHS Conformance Tests successfully passed in May 2013
- AMHS tests with neighbour COM Centres yet outstanding





- AFTN/AMHS COM Centre Amman
- 6 international connections
- approx. 30 national AFTN users
- 32 (new) AFTN User Agents (TCP/IP)
- 32 (new) AMHS User Agents
- Use of VPN for some clients
- 4 Monitoring and Control Positions
- in operation since Dec 2008
- AMHS bilateral and trilateral Interoperability and Pre-Operational Tests with the U.A.E., Egypt and Saudi-Arabia successfully performed in 2010

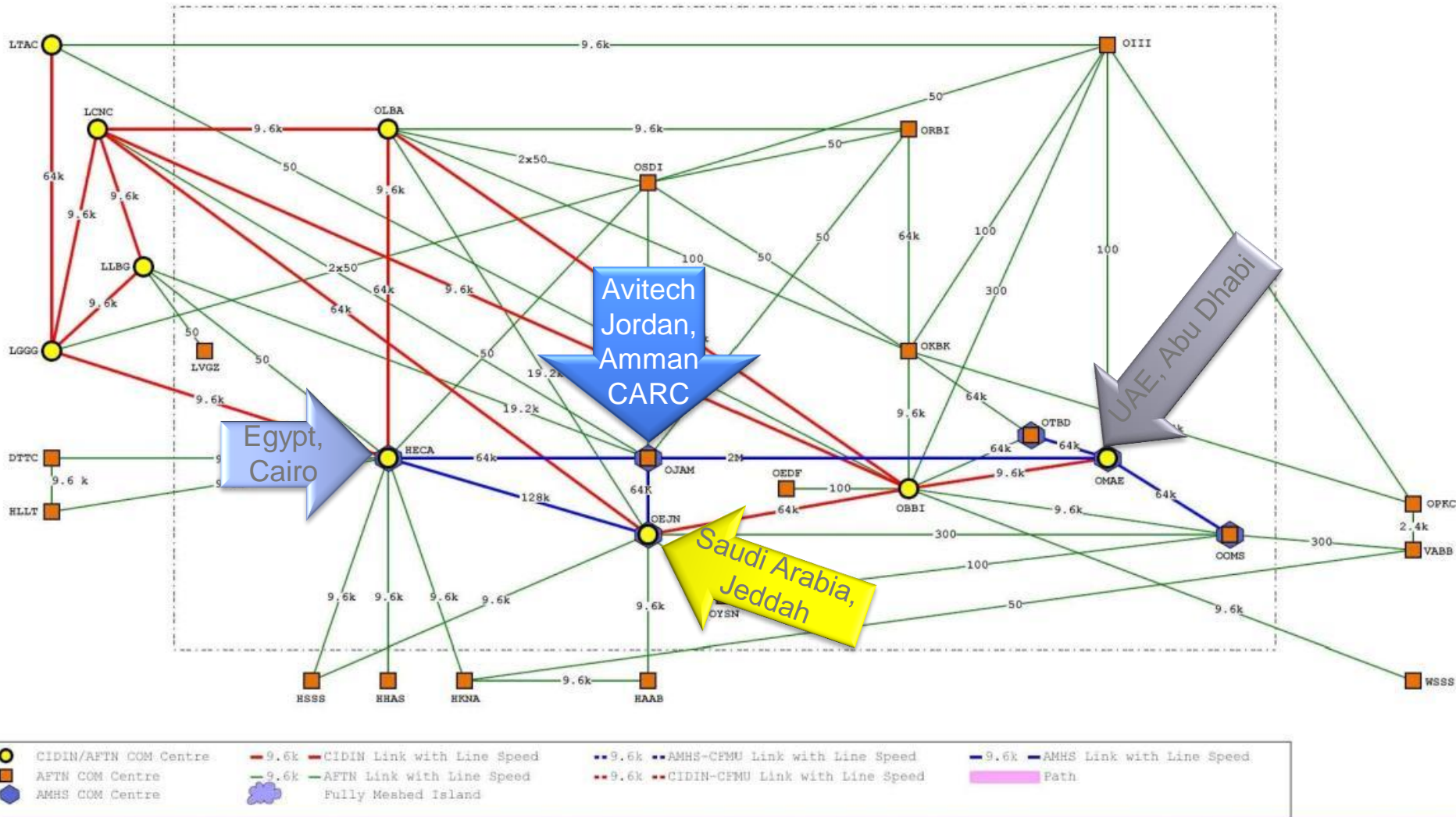


- First international AMHS link via VPN through public internet to the U.A.E. operationally used since 3rd March 2010
- AMHS links with Egypt and Saudi Arabia operationally used since September and November 2010
- First operational AMHS triangle world-wide
- First use of AviConnector to connect a legacy system to AMHS via P3 protocol
- Migration from AFTN to AMHS UAs started

First operational AMHS triangle world-wide in MID

MID COM Chart

(30/06/2011)





- Integrated AFTN/AMHS Switch & AIM System
- Operational and Contingency, Test & Training System
- AFTN/AMHS User Agents
- AMHS Interoperability and Pre-Operational Tests with Abu Dhabi successfully passed in summer 2012
- ***AMHS link to Abu Dhabi in operation since August 2012***





- AFTN/CIDIN/AMHS COM Centre Warsaw
- AFTN/CIDIN operational since 2001
- 3 international connections
- Continuous support
- AMHS upgrade delivered and accepted in 2011
- AMHS Conformance Tests successfully passed
- AMHS Bilateral Interoperability and Pre-Operational Tests with Lithuania successfully passed
- **AMHS Link with Lithuania in operation since August 2012**
- AMHS Bilateral Interoperability Tests with Denmark in preparation



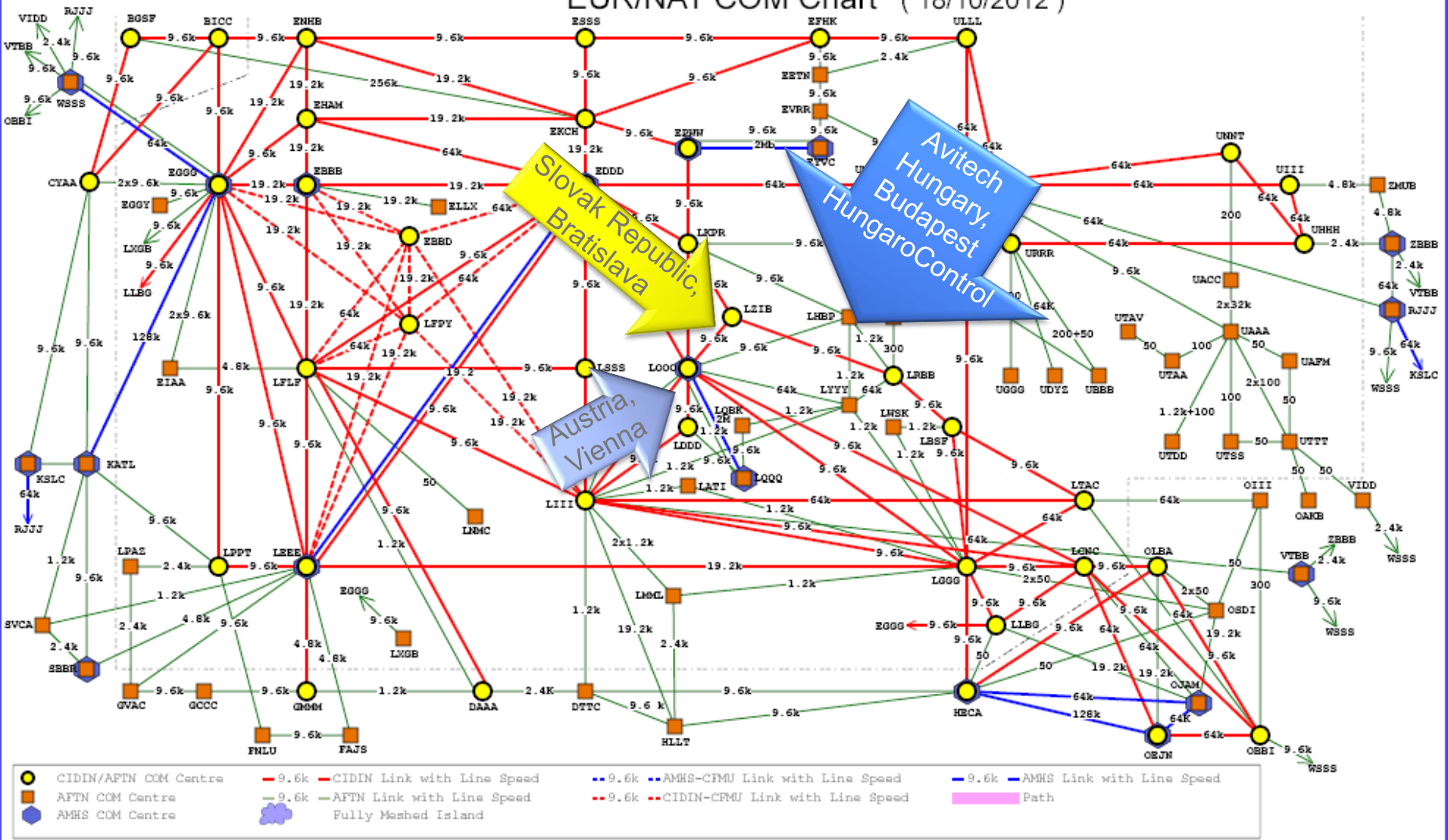


- AFTN/AMHS COM Centre Budapest
- 5 international connections
- operational since 2009
- 50 AFTN/AMHS P3 User Agents, incl. web based User Agents
- **Successful performance of bilateral and trilateral AMHS Interoperability Tests (Austria, Hungary, Slovakia, 3 systems of 3 different suppliers)**
- **Implementation of AMHS Multi Delivery function**



AMHS – trilateral Interoperability Tests in EUR

EUR/NAT COM Chart (18/10/2012)





- ➔ AFTN/CIDIN/AMHS COM Centre Ankara
- ➔ incl. Flight Plan Database
- ➔ 5 international connections
- ➔ operational since 2009
- ➔ 250 AFTN / AMHS P3 User Agents
- ➔ ***AMHS Interoperability Tests with adjacent COM Centres in preparation***



- AFTN/CIDIN/AMHS COM Centre Ottawa
- AFTN/CIDIN operational since 2000
- Continuous support
- 3 international AFTN links
- 2 international CIDIN links
- More than 200 domestic users
- **AMHS upgrade delivered in 2012**
- **AMHS Conformance Test successfully passed in 2012**
- **Interoperability Tests with FAA (USA) planned in 2013**





- AFTN/AMHS COM Centre Phnom Penh
- 2 international AFTN links
- AFTN and AMHS User Agents
- TCP/IP connection to Bangkok via VSAT
- ***AMHS interoperability tests with Thailand planned for July 2013***



2012:

- 3 FPL 2012 converters serving 5 States
- Installation and Commissioning within few weeks after order

2013/2014:

- Integrated AFTN/AMHS systems
 - to go operational in 10 COM Centres
 - as training system in EAMAC
- AFTN/AMHS gateway functionality included
- AMHS User Agents
- Various gateways to other protocols, e.g. SITA, WMO
- NOTAM Database at 3 locations



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Thank you

