



International Civil Aviation Organization

CAR/SAM Regional Planning and Implementation Group (GREPECAS)

Fourteenth Meeting of the CAR/SAM Regional Planning and Implementation Group (GREPECAS/14)

(San Jose, Costa Rica, April 16 to 20, 2007)

GREPECAS/14-IP/23

25/3/07

Agenda Item 7: Other Business

CENTRAL AMERICAN AMHS SYSTEM DEVELOPED BY COCESNA

(Presented by COCESNA)

Summary

On this information paper is given a description of the AMHS System developed and implemented by COCESNA in all the Central American COCESNA Member States (Belize, Costa Rica, El Salvador, Guatemala, Honduras and Nicaragua).

1. Introduction

- 1.1 The goal of the Aeronautic Information Service is to ensure that it is properly distributed the necessary information for the safety, regularity and efficiency of air navigation. To achieve this, a high availability is required for the air navigation service installations, equipment and systems. The information and the aeronautic data are critical components of the CNS/ATM systems. Safety, regularity and efficiency of the aeronautical operations depend on the electronic formats of the aeronautical information and that this information can be accessible and interchangeable from different data bases.
- 1.2 With ICAO directives for the evolution of the CNS/ATM systems and particularly the development of the ATN Network, in its ground-ground communications, it's recommended the implementation of message systems under the AMHS (Aeronautical Message Handling Service) concept in substitution to the AFTN.
- 1.3 Because of the above and according to the Global Air Navigation Plan for the CNS/ATM systems and the AIS Automation Plan, COCESNA has focused in the development of technological solutions with high safety and quality levels, designed with the objective of satisfying the different necessities of the Aeronautical Information Service, as it has been with COCESNA AMHS System, which is already operative.

2. COCESNA AMHS System Project

- 2.1 As a result of the high technological level and experience, the operative experience and the AFTN system maintenance, COCESNA has developed its own system based on ICAO standards and other applicable standards. With this implementation COCESNA had innovated the aeronautical messaging service in the Central American FIR with new technology and functionalities aimed to the ATN. The system consists of Message Transfer Agents (MTA) in COCESNA headquarters and other MTAs in: Belize, Costa Rica, El Salvador, Guatemala, Honduras and Nicaragua.

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- 2.2 The AMHS system complies strictly with the procedures defined by ICAO in the Annex 10 and the WMO (Buffer format), and is capable of managing both procedures, allowing the modernization of its own message switching system with a ATN/AFTN compatible platform.
- 2.3 For the complete ATN implementation, COCESNA is developing and implementing the AFTN/AMHS GATEWAY, considering the inclusion of the air-ground communications and the new address IPV6 (Internet Protocol version 6) requirements.

More details about the system and its capabilities are shown in the attachment to this document.

3. Suggested action

The Meeting is invited to take note of this information.

- END -

ATTACHMENT

AMHS System Project

The system developed by COCESNA, is a general purposes aeronautic message switching application that maximizes the advantages of the modern techniques in network management. The AMHS system is completely configurable and it can implement different networks from the range of "point to point" configuration to wide area networks (WAN). It can be implemented for various types of message application, including AFTN/OACI.

The AMHS System was designed to operate without interruption, based on "open" architecture, completely redundant and robust.

The system is modularly developed and complies with the Open System Standards using web based technology. The operators, supervision and administration modules are accessible through a windows and menu based user graphic interface, which facilitates its usage. This is complemented with a series of visual tools like mimics, colors and graphic status alarms that uses TCP/IP connection, allows information interchange and access of authorized users through any computer with network access.

The AMHS System is operative in all COCESNA Member States since April 2006. For illustration see Fig. No. 2.

The AMHS System of COCESNA offers various functionalities, among them:

- a. Message routing/switching: The system is capable of processing and routing simultaneous a high message volume, designed in a client/server architecture allowing various user sessions (serial/LAN), sending to each other different amount of message at the same time.
- b. Monitoring and Control: This module allows the control and monitoring of one or various AMHS servers at the same time, through a management interface. Using an internal protocol for sending and execution of controls also facilitates the alarm/incident allocation in the equipment, as well as the depuration of transmission and messages. The monitoring and control system was developed with the purposes of keeping an effective control of the performance of the AMHS system, also presents functions that permit the remote control preventive and corrective maintenance, to all the SW and HW of the Stations. The system is so robust that permits control and interaction with the operative system and data base handler of the Station, permitting inclusively the capability to restart the equipment regardless of its location.

The access to the monitoring and control are thru a windows-menu based user graphic interface, allowing its easy use complemented with a series of visuals tools such as: Mimics, colors and status graphic alarms. It also includes various modules for the correct message received administration.

In figure No. 5 the Monitoring and centralized screen for all the AMHS node is shown.

- c. Operative Supervision: This module allows the operative and technical supervisors to do the system configurations, monitor the message treatment processes, generate operative statistics and message generation.
- d. Connections: The system allows ICAO standard serial connections and TCP/IP network

connections using normalized LAN/WAN (X.25) protocols, and it can migrate to the X.400 and X.500 (ATN/AMHS) protocols.

On figure No. 4, various system application screens are shown.

Relevant AMHS System Architecture Considerations:

- a. Redundancy of Central processing and Communications units, Fig. No. 3.
- b. Message storage and processing: the received and transmitted messages are stored in the integrated data base to allow its easy search and restore. Also includes the facility to transfer or import registers of the data base to other standard formats (text, worksheet) for further analysis in other Station.
- c. Statistics: Reports are automatically generated or by user demand, informing the circuit traffic. Also system configurable reports can be generated, as well as assisting in the billing and pricing.

AFTN/AMHS GATEWAY development of the AMHS System

Following the established in the Global Air Navigation for the ICAO CNS/ATM Systems, it's considered that the AMHS network will co-exist with the present AFTN network. Up to present, COCESNA is working on the development of various applications. These applications, which run on the same present completely redundant hardware, includes the MTS (Message Transfer System), the UA (User Agent) and the MS (Message Storage). Along with these, the AFTN/AMHS Gateway application was developed to allow the communication with the present AFTN systems.

The system has functionalities such as: routing functions using the X.400 protocol, multi-user Supervisor positions thru WAN, TCP/IP, X.25, etc. connections, Directory service and ATS basic and extended services.

Fig. No. 1 ATN Network

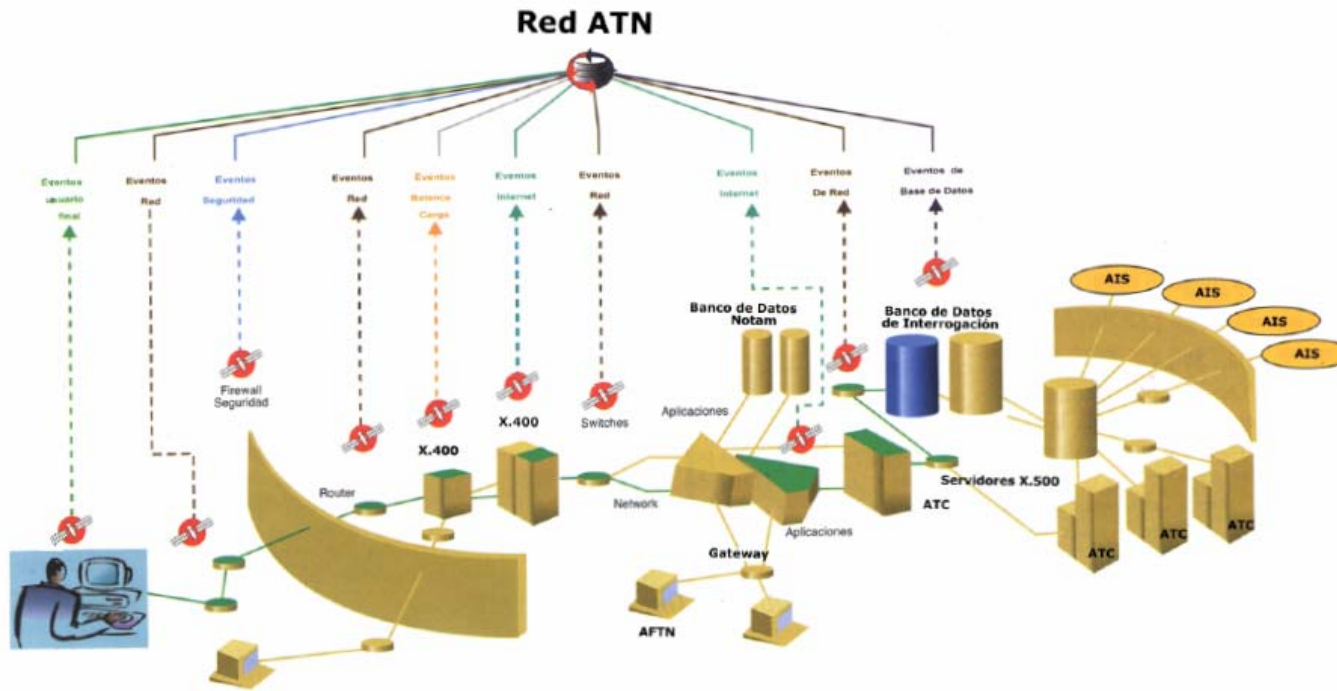


Fig No. 2 AMHS System Architecture (Operative)

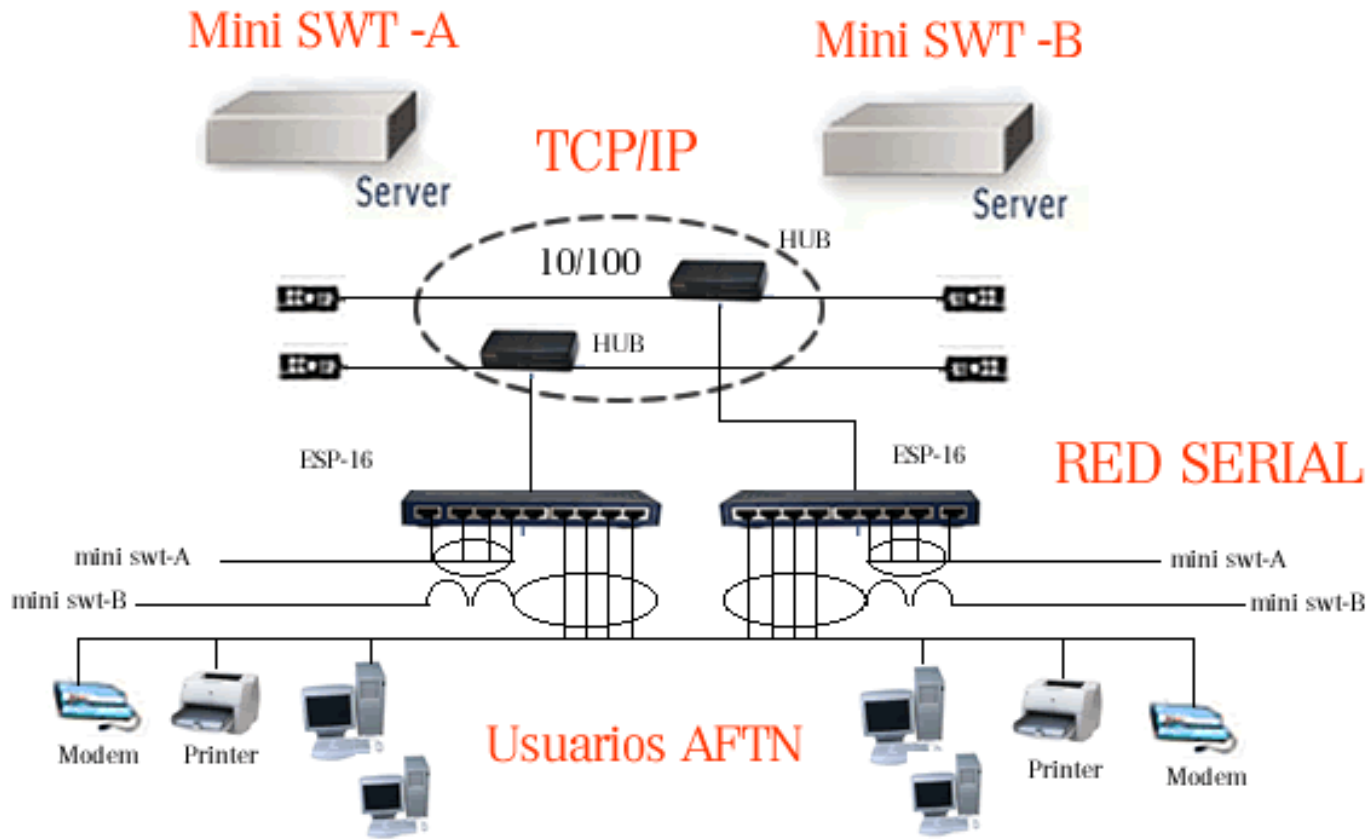


Fig. No. 3 Hot Redundancy in the AMHS Servers

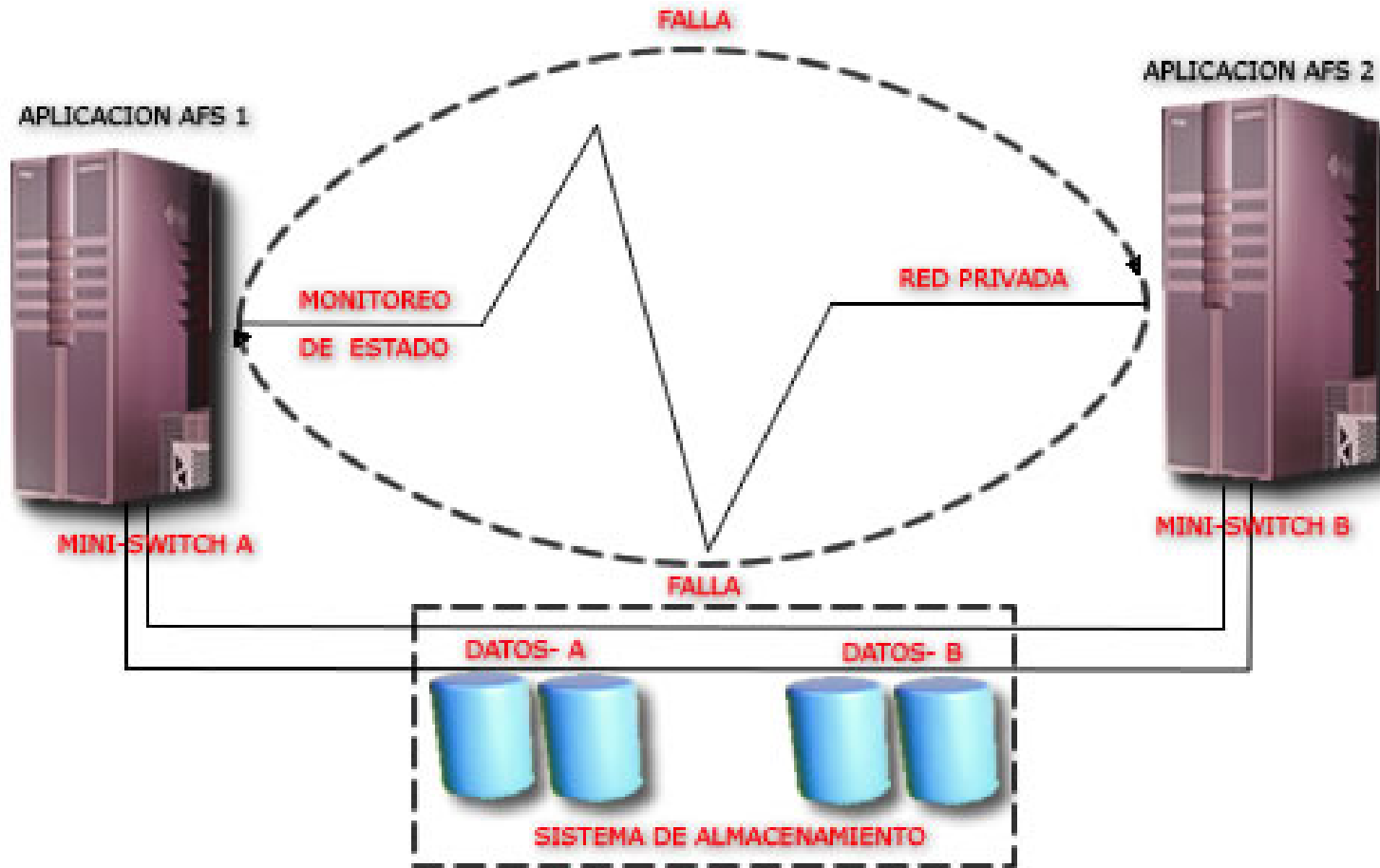


Fig. No. 4A. Views of AMHS System: Supervision Application

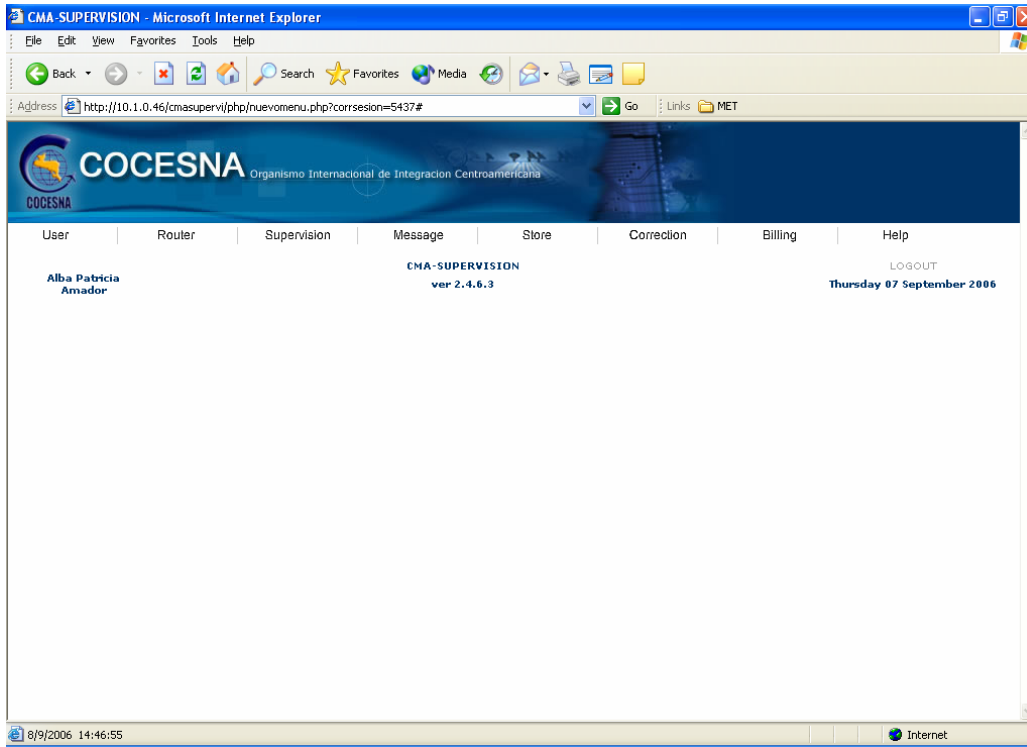


Fig. No. 4B. Views of AMHS System: Statistics Application

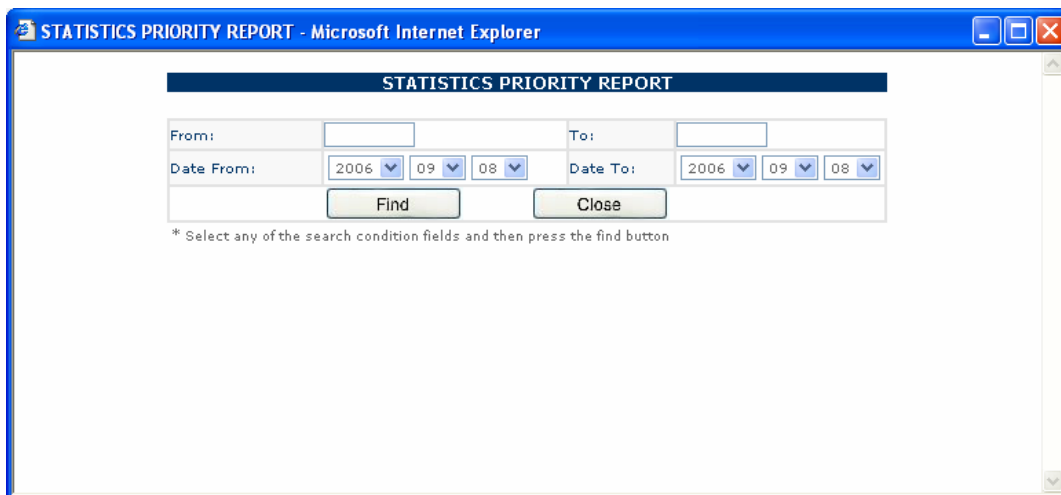


Fig. No. 4C. Views of AMHS System: Configuration Application



Fig. No. 4D. Views of AMHS System: Supervision Application

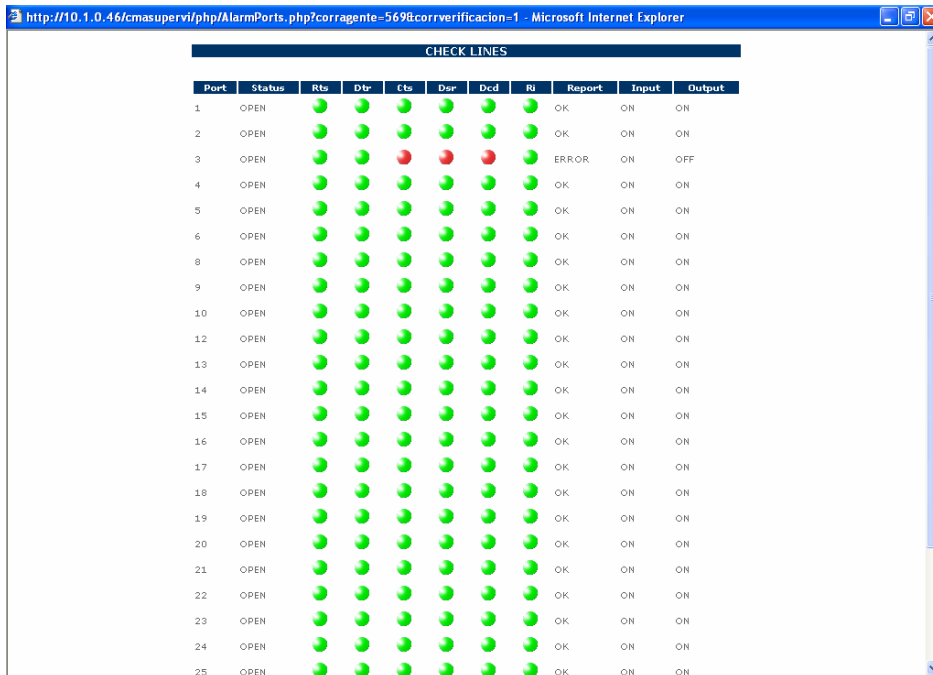
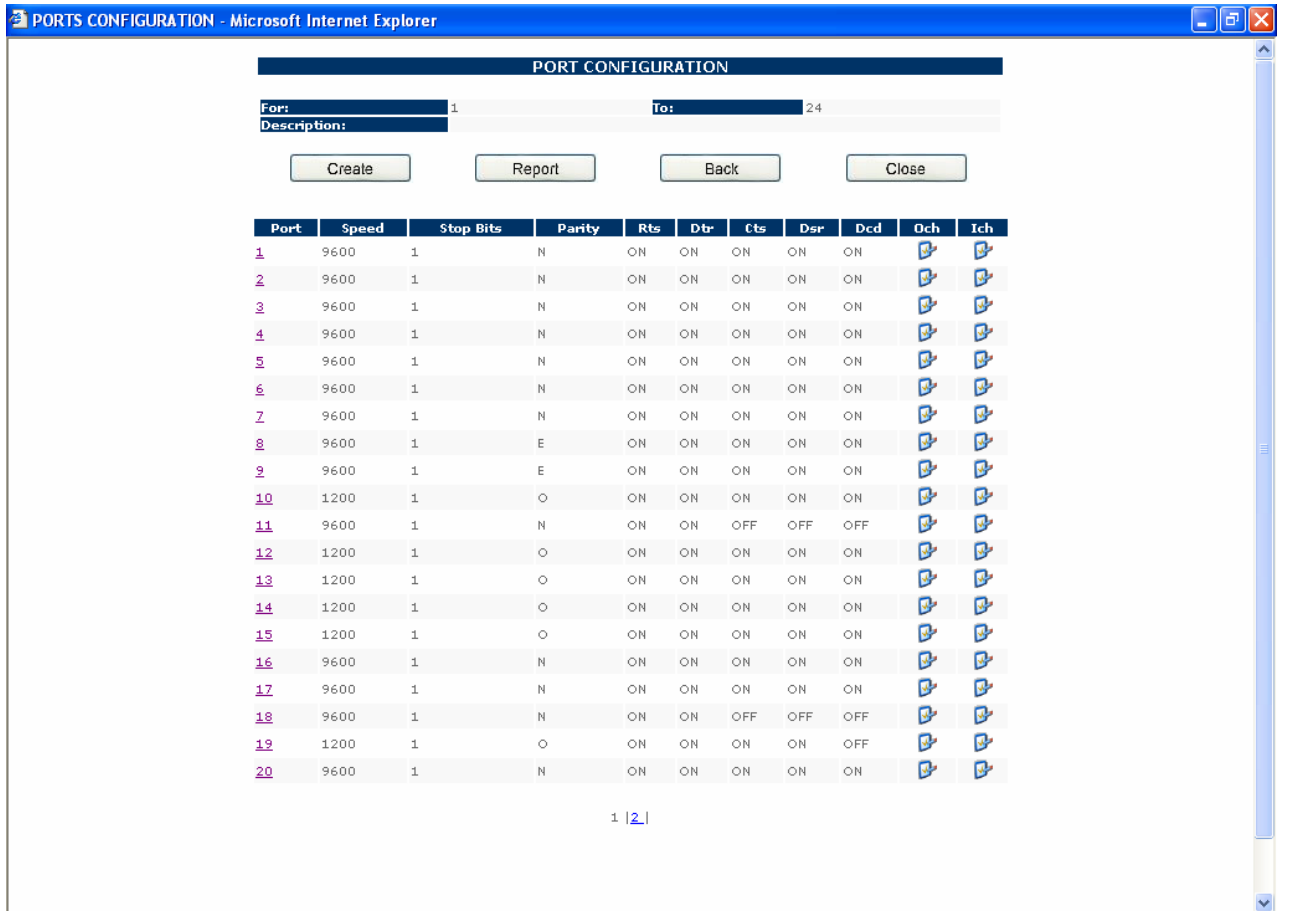
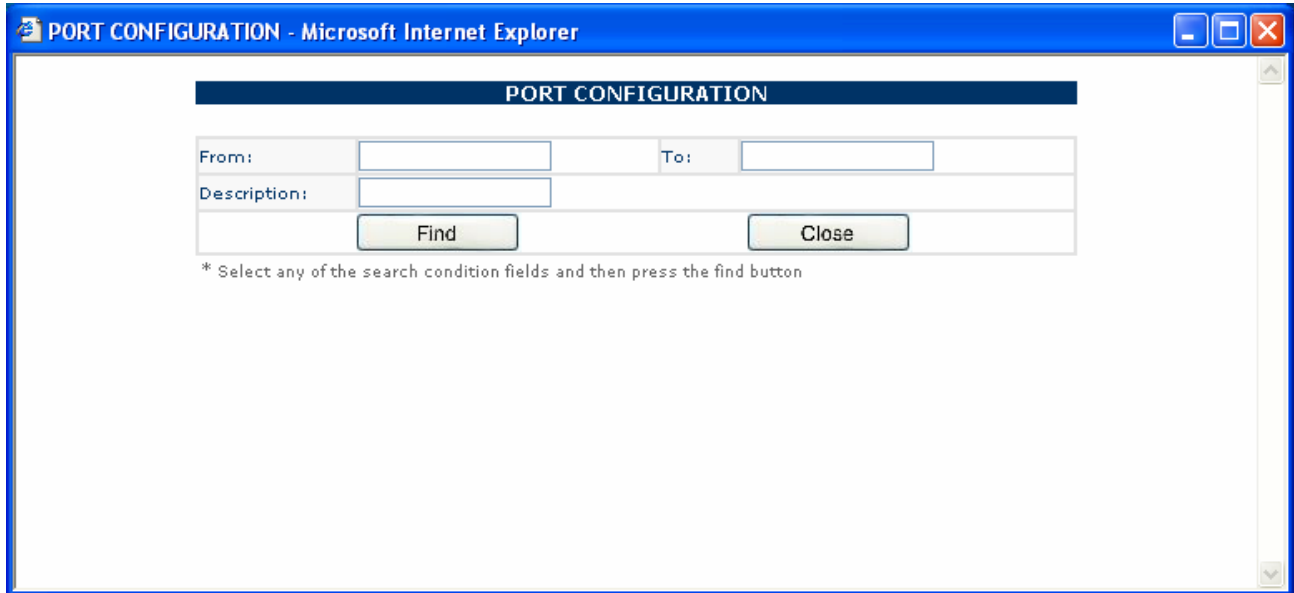


Fig. No. 4E. Views of AMHS System: Configuration Application



MESSAGE REPETITION OF CHANNEL OUTPUT - Microsoft Internet Explorer

MESSAGE REPETITION OF CHANNEL OUTPUT

Channel ID:	<input type="text"/>	Type Message:	<input type="text"/>
Originator:	<input type="text"/>	Addressees:	<input type="text"/>
Csn From:	<input type="text"/>	Csn To:	<input type="text"/>
Date From:	2006 <input type="text"/> 09 <input type="text"/> 08 <input type="text"/>	Time From:	<input type="text"/>
Date To:	2006 <input type="text"/> 09 <input type="text"/> 08 <input type="text"/>	Time To:	<input type="text"/>

* Select any of the search condition fields and then press the find button

MESSAGES CORRECTION - Microsoft Internet Explorer

MESSAGES UNDERCORRECTION VIEW

* Select any of the search condition fields and then press the find button

Id	Error	Date	Time
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Fig. No. 5. Views of AMHS System: Global Supervision Monitoring Application

