SKYSOFT SERVICIOS S.A.

SKS X.400 MILITARY ELECTRONIC MESSAGING SYSTEM

Introduction and General Concepts

Skysoft Servicios S.A. offers a complete and proven solution for a Military Electronic Messaging System, SKS X.400. The system will be able to interconnect local users via a LAN, as well as remote users, using existing links. The system package includes installation, configuration, and commissioning in a secure location, with annual operational trustworthiness higher than **99.99%.**

The SKS X.400 will just be one more application installed on the user's PCs, where required.

The SKS X.400 Military Electronic Messaging System supports international standards as defined by the International Telecommunication Union (ITU) in conjunction with the standards of the International Standard Organization (ISO), International Electrotechnical Commision (IEC) as well as fully responding to the X.400 email transmission structure and the STANAG 4406 standard of the North Atlantic Treaty Organization (NATO).

The security features provided by the X.400 standard are far superior to those of SMTP/MIME (regular email). These features are based on the very concepts of these protocols, for which they were intended.

X.400 is a superior protocol to SMTP/MIME on which to build a sophisticated network. X.400 has very comprehensive definitions of functionality and network connection requirement standards. X.400 has numerous security characteristics as well as guaranteed delivery of messages and notifications.

Messages, which comply with the P722 format, will be sent from the user to the MTA/MS (Message Switch and Message Store), from where they will be routed to their destinations. If these destinations are other X.400 domain users, they will be transmitted using X.400 P3 protocols to the MS and then received at the terminals using X.400 P7, and if addressed to adjacent MTA they will be routed using X.400 P1 protocols.

Our solution is all based on Commercial Off the Shelf (COTS) equipment for the MTA/MS/DS and the X.400/X.500 is based on Lightweight Directory Access Protocol (LDAP) COTS software. This same messaging X.400 product is used in the 73 locations and 200 terminals of the AMHS system of Argentina, in operation since December 2005, processing over 65,000 messages daily. This X.400 messaging system is one of the first in the world and the first in the Americas, all developed built, installed, and set to work by our company. The Argentine Prefectura Naval (Coast Guard) and the Argentine Air Force both operate X.400 Systems provided by Skysoft Servicios.

Large organizations that require guaranteed network services and where security and information leak prevention are critical would rather use X.400 over SMTP/MIME. A clear example is ICAO adopting it for the aeronautical industry as well as the fact that it is used by military personnel around the world.

Our SKS X.400 Military Electronic Messaging System product complies with those indicated for messaging services, including:

- A directory that allows you to perform a dynamic configuration.
- Directory support for address mapping, public pages, security support via PKI, and data management tools.
- Routing of the SKS X.400 Military Electronic Messaging System, is based on the use of X.500 to contain the general schema and X.400 for effective route mapping.
- MTA and MS that meet the requirements of Military Electronic Messaging Services.
- System administration with all required functionalities.

Basic capabilities and functionalities of the SKS X.400System:

The main capabilities and functionalities are:

- Avoid deception
- Source encryption
- Message traceability
- Creating an environment that supports the transition of existing systems.
- Routing including Directory support (extended using distribution lists).
- Automatic message re-routing.
- File (messages, logs, statistics, and alarms).
- Message recovery.
- Statistics.
- Communication with local users (over ITU-T, X.400, P7 or P3 protocols).
- Possibility of converting addresses and formats. (Optional)
- SNMP agent for network management.
- Message creation with no length, or number of recipient restriction.
- Storage of all traffic, reports, statistics, logs, and other data of interest, for at least the last thirty (30) days.
- Information that is stored in external magnetic media may be retrieved for legal purposes or in the event of disasters.

Extended features:

- Actual end-to-end message delivery recognition.

- Unrestricted message length.
- Message content is not solely limited to text (binary, encoded, graphic, etc.).
- Three **real priority levels** according to X.400 regulations.
- Expiration of messages in accordance to X.400 regulations.

Design Considerations:

The system is designed based on the client-server architecture model and the OSI Open Systems Interconnection reference model.

The architecture is fully modular, based on various application services running on the server

System Characteristics

The system is based on the following operating systems:

- Windows 10 or higher for Terminals.
- Linux Red Hat Enterprise: For MTA/MS/DS servers. The systems are integrated based on the following components:
- M-Switch MTA/MS (ATS X.400 Messaging Servers).
- M-Vault DS (X 500 Directory Servers).
- Applications for Management and Supervision.
- Military Electronic Messaging System SKS X.400 terminals.
- Duplicate Local Area Network over TCP/IP.
- WAN over TCP/IP (not included in the scope of this proposal)

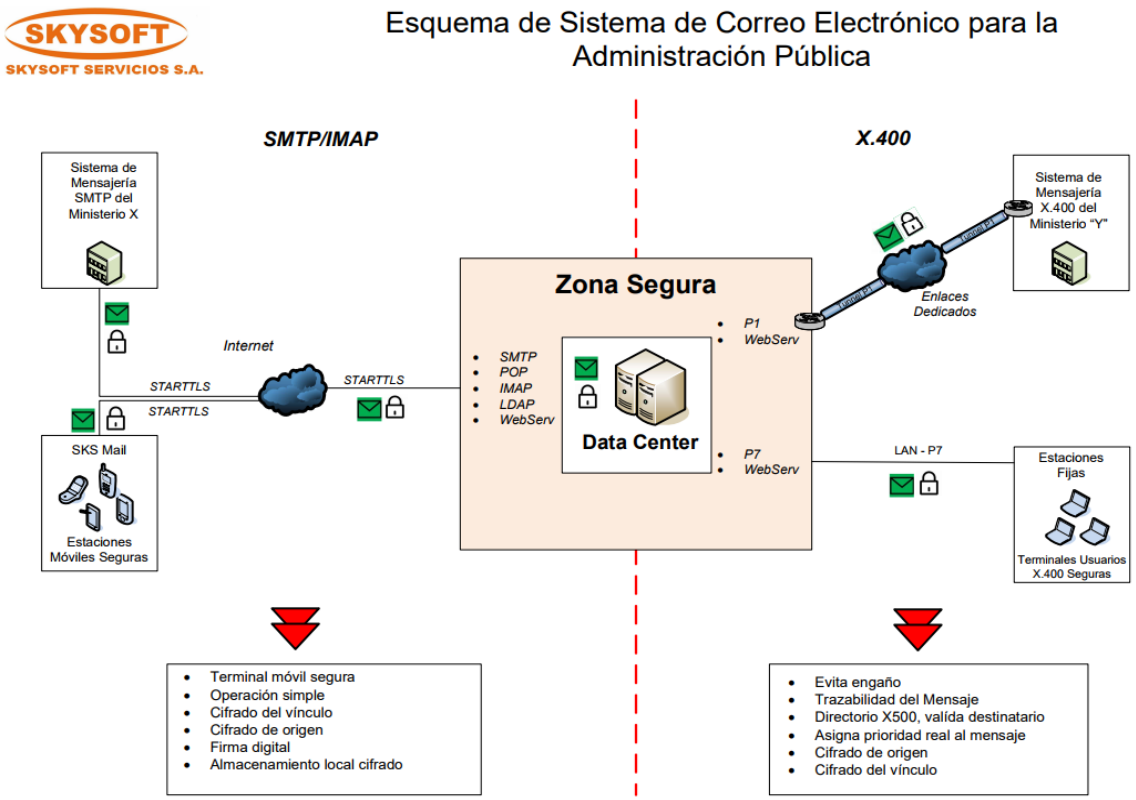
System Structure

The system is integrated based on the following services or applications running on one or more servers and clients depending on the size of the system.

- MSwitch MTA/MS (ATS X.400 Messaging Server)
- MVault DS (X 500 Directory Servers)
- Applications for Management and Supervision
- Terminal Agent User

In turn, on the hardware of servers and/or clients there is the possibility to implement different operating systems. Our systems are typically based on the following operating systems: Windows 10 or higher for Terminals, and Unix/Linux Red Hat Enterprise for MTA/MS/DS core servers.

Below is a schematic representation of the components and structure of the system.



MTA/MS/DS Main Servers

It is possible to use servers that the contracting entity may have available and are of high availability, with sufficient disk capacity for the required operation.

In addition, a Firewall is included for system protection, and for remote maintenance tasks, broadband Internet access is required, this we recommend in order to carry out technical support tasks within an exclusive controlled environment with restricted access.

The TCP/IP transport protocol is configurable using the options offered by the S.O. Linux RedHat ES for each Ethernet interface of the system.

Monitoring Terminals and Consoles

They will be configured in safe and appropriate locations to be operated by system supervisors.

Connectivity

The existing network will be used, where necessary the equipment will be installed according to the needs arising from specific client or space requirements resulting from our site surveys. The system will optionally be able to use the proposed "WhatsUp Gold from Cisco Works" configuration.

Software

The system architecture is fully modular, based on various application services.

We have made the effort to make our hardware as vendor-independent a solution as possible as well as the operating systems, whether Windows or Linux/Unix.

The objective of building our system with this modularity, is to allow the replacement of hardware or software based on the evolution of technology.

This has given us the advantage of great flexibility (also with respect to OSI transport layers) which allows us to offer solutions to those users that have a large disparity of systems in their communication infrastructure.

All our systems are provided with the original installation discs, the necessary and non-revocable non-exclusive perpetual licenses, and the English language system operating manuals.

The system is designed based on the client-server architecture model and the OSI Open Systems Interconnection reference model.

Project Implementation, Installation and Commissioning

Once the project has been awarded, the final design will be put forward to be approved by the purchaser.

The entire system installation will be carried out by our staff with the support and participation of customer personnel.

A Schedule will be presented, outlining the main delivery and installation moments for your SKS X.400 Military Electronic Messaging System.

During installation, maintenance records will be kept detailing all repairs, modifications, redesigns, alignments, errors and system-related activities.

Tests

Full testing of the hardware and software for final acceptance of the SKS X.400 Military Electronic Messaging System will be carried out, following the protocols previously submitted and approved by the contracting agency.

Training

The contracting agencies' designated technicians el organization will be trained locally in all aspects of the supervision, operation, and maintenance of the SKS X.400 Military Electronic Messaging System.

Term

The maximum execution period of the Project from the signing of the Contract to the final acceptance test of the SKS X.400 Military Electronic Messaging System should not exceed 60 calendar days assuming no unexpected delays, acts of god or other unforeseen circumstances.

Warranty

Skysoft Servicios SA guarantees all software of the SKS X.400 Military Electronic Messaging System for manufacturing failures or other failures during normal use, for the periods of three (3) years from final acceptance of the System. The warranty includes adequate technical support.

Proposal

- Installation, configuration, and commissioning of a Military Electronic Messaging System.
- 400 Users customer licenses for 36 months.
- Preventive and corrective maintenance for the duration of the warranty.
- Technical support 24 hours a day, 365 days a year.
- Software updates for 36 months.
- Training for system administrators and users.