The importance of military message handling

Military organisations rely on Formal messaging systems for the distribution of plans, orders and other vital information. Formal messaging systems must deliver messages with integrity and authenticity in nations and to allies in peacetime, crisis, conflict and war. A military message handling system must reflect the military organisational structures.

A military message handling service must provide

To the users

- Labelling of all messages
- Digital signatures on all messages
- Military workflow support
- Reachable from anywhere
- Must provide Community Of Interest (COI) connectivity
- Must exceed Minimum Military Requirement (MMR)

To the service owner

- Accountability
- Centralized and common management
- Integrated Archive service
- Integrated with a Common Directory service
- Integrate with PKI services
- Data centric messaging service
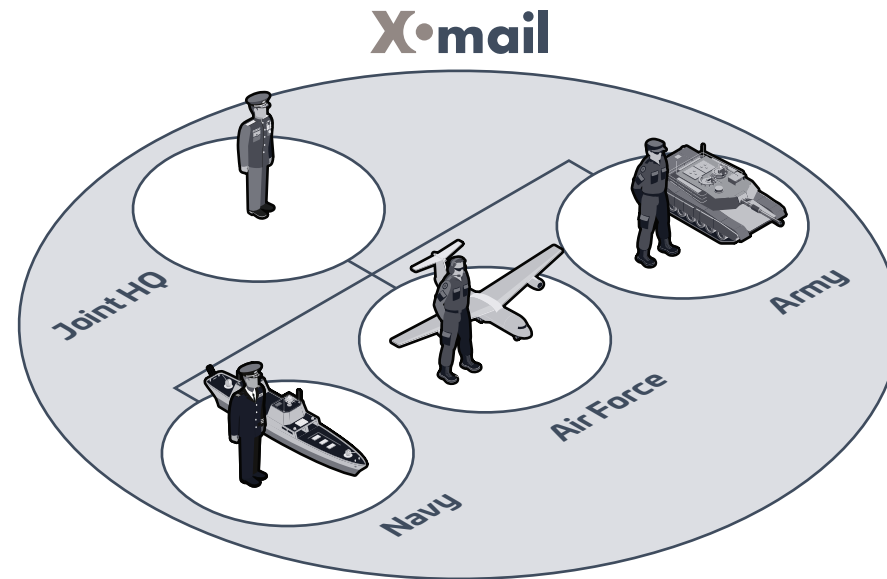
> **XOmail has been selected for the New NATO Messaging Service, making XOmail Enterprise the ideal solution for all National Military Messaging systems.**
>
> *Bengt R. Kristiansen,*
> *Product manager XOmail*

Operational Solution

XOmail III is the third generation Formal Messaging System in the XOmail family. XOmail Enterprise is a new Data Centric product providing Messaging as a Service (MaaS). XOmail is a highly flexible and scalable messaging system, for implementation on modern IaaS.

XOmail is dedicated to meet the specific operational needs for message handling in military organisations. XOmail supports tri-service operations, achieving seamless message flow from strategic command to the lowest tactical levels. Connectivity is provided both within nations and with Allied and Partner nations.

XOmail Enterprise provides MaaS on any IaaS from single computers to large virtualized server systems. In addition to the normal XOmail clients, the XOmail API Toolkit enables C2 systems to be included in the Enterprise as XOmail Users. In a modern IaaS, there will be a set of management and monitoring tools shared with other services. An XOmail installation will interface these common tools. Directory services are shared services from which XOmail will collect information. In systems where PKI is provided as a common service, XOmail can consume this service to provide organizational or personal signatures.

All Critical services provided by a datacentre must be up to date and relevant according to a Cybersecurity policy. Similar to other services, XOmail must be periodically maintained and updated.
XOmail allows upgrading without loss of service to the Messaging Users.

In addition to the daily operation, the messaging service must be available for training and exercises. The XOmail Enterprise supports daily operational use and ad hoc training and exercises at the same time within the same operational solution.

The modular and scalable capabilities of XOmail allows incremental deployment, modernisation, and replacement of existing legacy systems like AIFS/AIMS and BRASS.

XOmail product family

XOmail enables

- A Data Centric solution providing Messaging as a Service in a virtualized environment

- A common solution from high-level strategic command to individual soldier

- Simultaneous operation, training and exercises within a single XOmail Enterprise

- Interconnection of systems with different security policies

- Use of common management tools, Directory- and PKI-services

- Integration of C2 applications as XOmail Users

- Information exchange with allies, partners and deployed forces

XOmail Enterprise

The XOmail Enterprise product can be configured to meet specific military and governmental requirements. An XOmail based solution will provide essential functions such as archiving, battle log, acknowledgement, priority, and security classification. Store and forward capabilities within XOmail provides reliable message flow, even across disruptive communication links. XOmail is a flexible and scalable solution for Formal Messaging Systems, allowing step-wise and incremental deployment. The number of XOmail Users can be increased without the need for software changes. As a system grows, new external interfaces can be enabled to allow interfacing to external message processing systems. In most cases, such enhancements is implemented without the need for re-installing any software.

The Security Policy is represented in XOmail by a SPIF allowing XOmail to enforce any security policy. XOmail has been certified to CC EAL 4.

XOmail provides enhanced security services such as Integrity protection, Non-repudiation and Certificate -based address validation when integrated with a PKI. XOmail easily integrates with any PKI that supports PKCS#11 or Microsoft CAPI.

An XOmail Enterprise scales from 30 to over 100.000 XOmail Users, and contains a number of optional interfaces that provide connectivity to systems external to the XOmail Domain. It supports military messaging for strategic and tactical systems, with required features for security, military workflow, priority handling, and interfaces to other systems and networks.

XOmail Enterprise includes a number of capabilities, such as STANAG 4406 Interface, ACP 145 Interface, SMTP Interface, ACP 127 Interface and Central Archive. This ensures that all messaging functionality within an enterprise can be provided by a single solution. XOmail differentiates strictly between formal messages (to organisational departments and roles) and personal messages (to individual users). Although initially designed for military use, this makes XOmail suited also for governments and large organizations that need formal handling and formal workflows.

DIRECTORY INTEGRATION
XOmail integrates with enterprise directory services such as NEDS and national directory services. In addition, XOmail still allows local address management. Directory information is automatically distributed throughout the enterprise, and special tactical directory functions are available for keeping deployed units updated even via low-bandwidth and/or unreliable links. The NEDS interface allows NATO address information to be available throughout the XOmail domain. XOmail is capable of exporting address information to NATO.

FLEXIBILITY AND SCALABILITY
XOmail Enterprise supports all sizes of organizations, from single servers with a few XOmail users, to large data centres and geographically distributed enterprises with more than 100 000 XOmail users. An XOmail installation can be extended and enhanced without re-installing any software.

MANAGEMENT
The XOmail administration interface provides powerful functions for setting up and maintaining local components. Remote on-line administration makes it easy to manage a nationwide service. Management operations, including configuration changes, do not require restarts or editing of files. XOmail integrates with enterprise management tools such as log collection and analysis, user account management, backup and recovery, and system status supervision.

MILITARY CHARACTERISTICS
XOmail includes specific functionality to support military messaging. This includes security labelling, priority handling, archiving, and battle logs. The store and forward capability allows reliable message flow, even across disruptive communication links. The XOmail API Toolkit allows integration of C2 systems into the XOmail domain as XOmail Users. XOmail supports exchange of ADatP-3 formatted information, typically between C2 Systems.
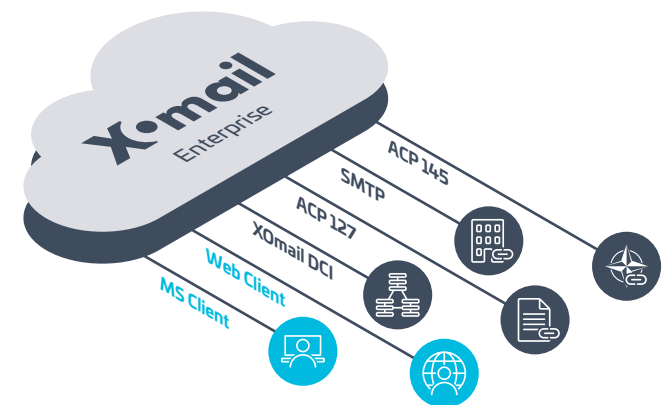
XOmail WEB CLIENT

The XOmailWEB Client provides XOmail users with messaging functions accessed from a web browser. XOmailWEB provides functionality for message Drafters, Reviewer and Authorisers, and is the preferred Client for most users.

XOmail MS CLIENT

The XOmail MS Client provides advanced XOmail users and Traffic Operators with a modern user interface according to Microsoft user interface guidelines.

XOmail ADMIN CLIENT

The XOmail Admin Client is an application for configuration and management of the XOmail products.

XOmail API TOOLKIT

The XOmail API Toolkit provides an interface library. This enables applications to be integrates with XOmail as XOmail Users.
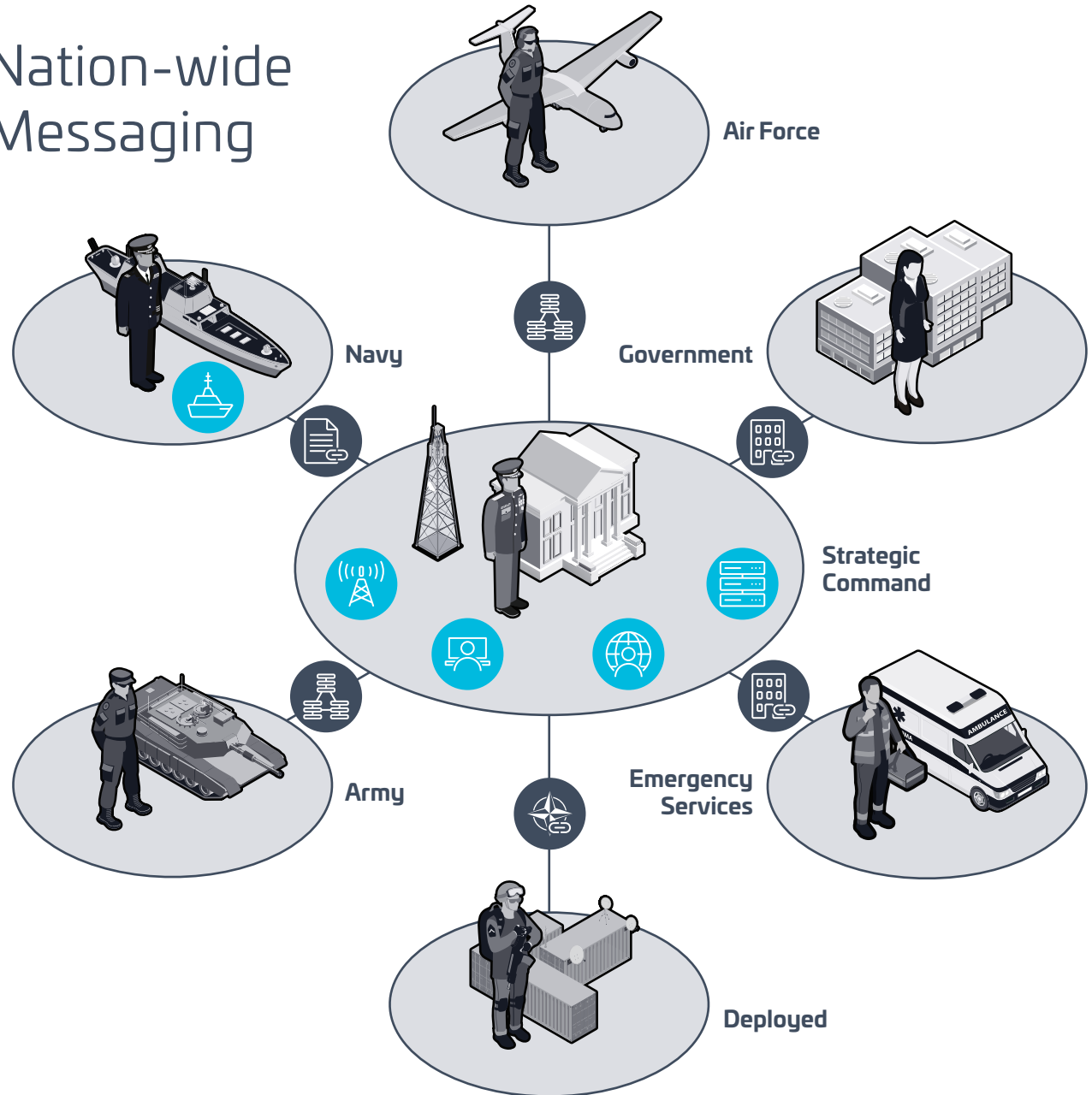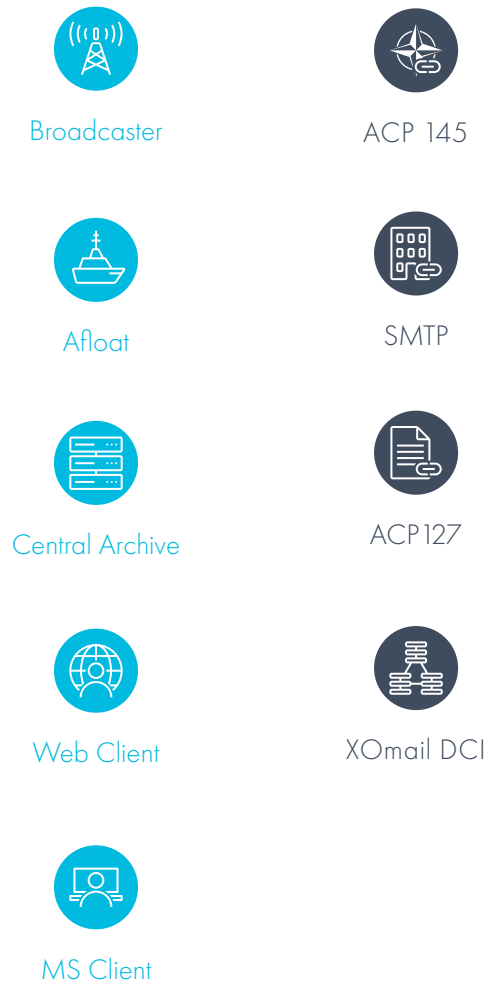
XOmail CENTRAL ARCHIVE

XOmail Central Archive provides functionality for complying with Information Retention policies. The archive provides long-term storage of messages and powerful mechanisms that allow authorised users to search for and retrieve archived messages. The Central Archive provides automatic archiving of all messages that originate within the system, along with all messages received from external systems.

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Products | Interfaces

Nation-wide Messaging

Products:
- Broadcaster
- Afloat
- Central Archive
- Web Client
- MS Client

Interfaces:
- ACP 145
- SMTP
- ACP 127
- XOmail DCI

Air Force
Navy
Government
Strategic Command
Army
Emergency Services
Deployed

International Messaging Collaboration

Nation-wide Messaging

Allied nation

International Mission

NATO

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Military messaging

A military messaging service has to be true end-to-end interoperable. Within the NATO alliance, a set of Minimum Military Requirements (MMR) has been agreed. These requirements remain applicable and include the needs for security, military workflow, priority handling etc. An ordinary email system will not meet all these requirements. XOmail Enterprise meets and exceeds all agreed MMR and is chosen by NATO for the New NATO Messaging Service. Below is a description of how XOmail fulfils some of the military requirements.

FORMAL WORKFLOW SUPPORT

A formal messaging service must be adapted to the work processes of an organisation, and replace error-prone manual operations with automated procedures. Unlike in ordinary email solutions, messages are sent between organisations or departments rather than individual persons. The XOmail notification service is able to notify the sender of successful delivery. On request of the sender, the notification service is able to notify the sender if the receiver has not read the message within a specified time limit. Another important quality of XOmail is the ability to integrate with command and control systems and standard office tools.

DIGITAL SIGNATURES

The use of digital signatures is an effective way to achieve capabilities such as integrity, authenticity and non-repudiation within a modern formal messaging system. A Public Key Infrastructures (PKI) can generate and verify digital signatures. The digital signatures can be either organisational or personal. XOmail has a configurable policy for digital signatures.

GUARANTEED DELIVERY

XOmail guarantees delivery of all messages. The messaging policy contains time limits for each priority level. If a message is not read within the defined time limit, XOmail will take appropriate actions. Appropriate actions can be to forward the message to an alternate destination, or returning a non-delivery report to the originator.

MANAGEMENT

XOmail has many management capabilities, new users need to be defined, obsolete user definitions removed, policies updated and software maintained. The cost of ownership is a concern to all service owners. Modern IT platforms are capable of providing several services to users. XOmail can be integrated with common enterprise tools.

DIRECTORY INTEGRATION

XOmail interworks with Directory Services for sharing addresses within and between domains, allowing all military address types, and preventing use of non-approved addresses. XOmail integrates with enterprise directory services such as NEDS and national directory services. In addition, XOmail still allows local address management. Address information can be automatically distributed throughout the XOmail domain, and special tactical functions are available for keeping deployed XOmail installations updated.

SECURITY

XOmail protects classified information from unauthorized disclosure. XOmail will only send classified messages on external protected connections. Classified messages are only delivered to authorized users. The system conveys an indication of the security policy, classification, and any caveats in the security label associated with the message. XOmail supports multiple security policies (defined in the SPIF), and allows users to have different clearances and authorizations. Trustworthy platforms are required to host XOmail.

INTEROPERABILITY

XOmail contributes to automatic end-to-end interoperability. XOmail Enterprise has interfaces to ensure interoperability with old and new messaging systems. Alternatively, XOmail XD products can provide external gateway capabilities. XOmail can sign messages on behalf of users belonging to other domains (without a PKI), to contribute to end-to-end interoperability.

PRIORITY

All messages have a priority level. XOmail handles messages according to the priority level, both internally and on external interfaces. High-priority messages may suspend lower priority messages until resources becomes available.

Implementing XOmail

Experience has shown us that implementing XOmail is easy. In a large organization one would need approximately one day by following the Installation guide and one day to define the Security policies to set up an XOmail installation. Then, XOmail is ready for the step towards approval. All organisations are different, each XOmail implementation is tailor the configured to the specific needs of each customer. Some want XOmail to replace one or more existing messaging systems, whereas other customers need XOmail to coexist with existing messaging systems.

Thales have both the technical knowledge and the necessary experience to assist a customer to find solutions that comply with operational and policy requirements To ensure the success of Thales can support you to:

- design the appropriate solution
- develop a robust migration plan
- implement, test and verify interoperability (IT & V)
- to train the users, operators and administrators
- to obtain a formal approval and Authorization To Operate (ATO)
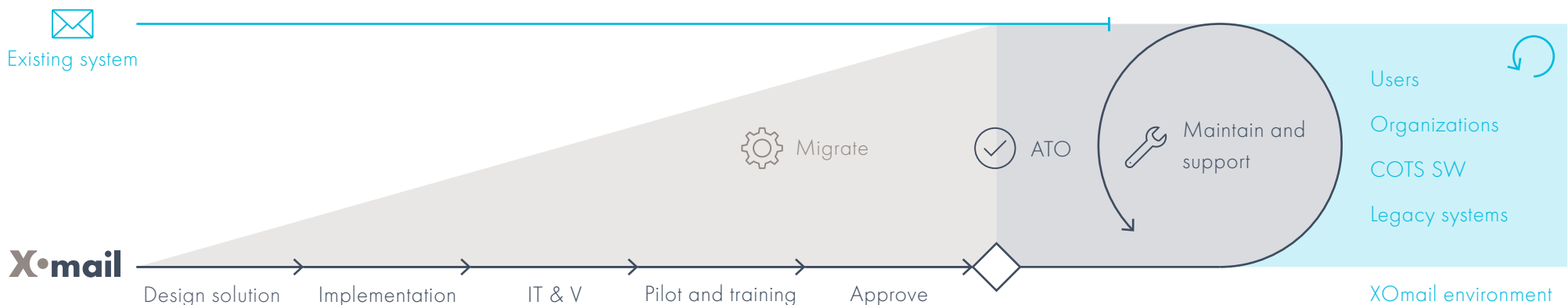- maintain XOmail, to keep it updated and relevant during the operational live time

UPDATED AND RELEVANT
Over time, organizations evolve, legacy systems are replaced and all COTS software surrounding XOmail change, and so must XOmail.
To retain the formal approval for the messaging system, XOmail needs to be patched and updated periodically.

As new technologies come available and responsibilities of organizations change, new functionalities in the message system may be required.
Thales has a long term Product Improvement Plan for XOmail. Customers having a software maintenance agreement will receive security patches, updates and upgrades.

Existing system

X•mail

Design solution · Implementation · IT & V · Pilot and training · Approve

Migrate · ATO · Maintain and support

Users
Organizations
COTS SW
Legacy systems

XOmail environment

Naval formal messaging

Formal messaging is an important part of naval operations. BRASS is the backbone infrastructure in NATO and NATO countries. NATO or national broadcasters send/receive messages to/from Vessels. HF has regained interest and several nations are investing in new HF infrastructures with higher bandwidth. XOmail offers shore-side broadcaster functionality and messaging capabilities for vessels.

XOMAIL BROADCASTER

XOmail Broadcaster provides a modern and flexible solution to maritime messaging, while maintaining the ability to use legacy protocols and operating modes.

XOmail Broadcaster provides functions for handling Broadcast, Ship-Shore and Maritime Rear Link (MRL) circuits. XOmail Broadcaster supports STANAG 5066 channels, Battle Force E-Mail (BFEM), SATCOM, and legacy ACP 127 infrastructures.

XOmail Broadcaster is in full operational use in several countries and provides field-proven integration of BRASS and BRASS Enhancement One (EO) functions with national and NATO messaging systems. The XOmail Broadcaster is compliant with the BRASS and BRASS EO/BLOS Message Processing Services.

Features:
- Automatic broadcast compilation, including Traffic List generation and transmission
- Ship-Shore functions
- MRLs
- ACP 127 channels and STANAG 4406

- BRASS EO tactical protocols (SMTP/BFEM, PMUL)
- Supports surface and submarine formats
- Supports STANAG 5066, including wide-band HF

XOMAIL AFLOAT

XOmail Afloat runs on deployed platforms, and extends the formal messaging service to surface and sub-surface (submarine) naval vessels. This provides a scalable service suited for all vessel sizes.
XOmail Afloat provides Broadcast reception, Ship-Shore transmission, Inter-Ship traffic and Re-Broadcast. XOmail Afloat integrates with the existing infrastructure on vessels. XOmail Afloat increases overall combat effectiveness through automated message handling and integration with internal command and control systems.

Features:
- Broadcast reception
- Ship-Shore transmission
- Inter-Ship and MRL
- Highly automated operation
- Supports SATCOM, STANAG 5066 and future wide-band HF
- Integrates ACP 127, STANAG 4406 and SMTP (BFEM)
- Hides legacy equipment and procedures
- Formal and informal (chat-type) Inter-Ship messaging
- Tactical Directory

XOmail XD PRODUCTS

XOmail Enterprise provides three optional external interfaces for connecting to other external messaging systems. There may be operational requirements for interconnections to be via separate and self-contained IEG's. To meet these requirements, the new XOmail product family includes the following Cross Domain solutions:
- XOmail ACP 145 XD
- XOmail ACP 127 XD
- XOmail SMTP XD
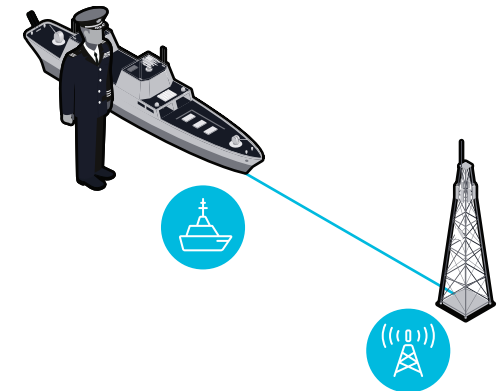
XOmail way ahead

XOmail is constantly evolving to keep up with changes in technologies, standardization and operational concepts. In addition, new virtualization concepts and cloud-native architectures influence the XOmail Product Improvement plan.

The XOmail Product Improvement Plan provides yearly minor releases, and major releases with intervals of 3-4 years. All future releases, minor and major, will contain improvements that reduce the total cost of ownership. Major releases include adaptations required for XOmail to operate effectively in future COTS environments.

The next major release (XOmail IV) will contain functional improvements to support deployable assets:

- Automated XOmail Broadcaster functions supporting new BLOS solutions
- Extension of the XOmail Enterprise into the deployed domain (FMN)

- New XOmail deployed solution replacing XOmail Afloat
- Adaptive capabilities in XOmail for management
- Improved labelling for Data Centric Security
- Integration between formal messaging and chat

Following XOmail IV the next major release will be XOmail V, with focus on Cloud related improvements.

- Simplifying management tasks by integration with new Cloud management tools
- Authorization and access control based on Identity Management Services
- Information Sharing policy enforcment
- Improved and enhanced capabilities for interconnection of Smart Machines and sensors
- Provide Data Centric Security according to maturity level 3
- Integrate with quantum resistant messaging exchange

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I am convinced that the need for information exchange will persist long into the future, even as automated smart machines replace the majority of today's messaging clients. My vision is that XOmail shall be up-to-date and relevant at all times.

"

Bengt R. Kristiansen,
Product manager XOmail

X•mail

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