

**Achievement of Market-Friendly Initiatives and Results Program
(AMIR 2.0 Program)**

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Jordan e.Government eMail Statement of Needs

Final Report

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This report was prepared by Paul MacLean, in collaboration with Chemonics International Inc., prime contractor to the U.S. Agency for International Development for the AMIR Program in Jordan.

0 Document Control

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0.3 Acknowledgements

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0.4 Distribution List

Allan Gormley	EDS
Kendall Lott	EDS
Reginald Miller	AMIR
Mahmoud Ali Khasawneh	MoICT
Abed Shamlawi	AMIR

0.5 Referenced Documents

Number	Title	Reference	Note
1.	N/A		
2.			
3.			
4.			
5.			

0.6 Abbreviations

MoICT	Ministry of Information, Communications and Technology (previously MoPC).
MDS	Messaging and Directory Services
MAPI	Messaging Application Interface
SMTP	Simple Mail Transfer Protocol
SGN	Secure Government Network
DMZ	Demilitarized Zone

0.7 Glossary

N/A

1 Introduction

1.1 Government of Jordan Messaging and Directory Services

In support of the Government of Jordan's move towards becoming an electronic Government there is an agreed strategy to provide a corporate directory and an enterprise messaging service. These services will be made available to all registered Government employees and applications. They will be used as the source of business information as well as the primary method of communication and workflow within the government.

These services will allow the Government of Jordan to host multiple organizations on a shared hardware platform. MDS services can be offered in a scalable, reliable, fast and feature rich environment. Optimally these services have the potential to reduce the total cost of ownership for electronic communications and information flow. For example, one common MDS infrastructure may drive down the total cost of ownership by standardizing hardware, software, administration, maintenance, user interface and training.

1.2 Purpose

This document identifies the functional requirements for the Government of Jordan's Messaging and Directory Services. These requirements are the culmination of analysis of six Ministries and eight Agencies that were identified by MOICT and Amir as being potential Early Adapters of the new MDS.

- Ministry of Information & Communications Technology (MoICT)
- Ministry of Industry & Trade (MIT)
- Ministry of Planning (MoP)
- Ministry of Public Works & Housing (MPW)
- Prime Ministry (PM)
- Ministry of Finance (MoF)
- Customs Department
- National Library
- Department of Statistics
- Department of Social Security
- Capital Markets/Stock Exchange
- Municipality of Greater Amman (MOGA)
- Jordan Investment Board (JIB)
- Jordan Export Development & Commercial Centers Corporation (JEDCO)
- Jordan Industrial Estates Corporation (JIEC)
- Central Bank of Jordan
- National Information Center
-

Organizational, Administrative and User requirements were gathered during the analysis of these organizations. Since these organizations are only a representative sample of the 103 total Government Ministries/ Agencies, the resulting design must be flexible and scalable to be able to handle future requirements as new Ministries/Agencies join the MDS.

1.3 Scope

The Government of Jordan is seeking to implement a Government-wide service, for messaging and directory services that can be utilized to support all Departments and approved vendors. The Messaging and Directory service (MDS) will enable reliable Department-to-Department communication and workflow, and provide an Enterprise Directory of Government employee information.

There currently exists a mixed messaging environment, within the Government of Jordan. Each department has their own solution, with some ministries/agencies having no email solution. There is no inter-department communication except through the Internet and no central enterprise wide directory.

The Government expects all departments to move to the new centralized eMail system in a phased approach. Initially six Government Ministries have been identified to move to the new email system first, and over time it is expected that the centralized service will support all Government Ministries and Agencies. As depicted in Figure 1, the first phase of deployment will consist of approximately 700 users. Each department will be able to maintain their own identity by providing naming conventions to allow people to easily distinguish individuals in different departments, as well as allow ease of addressing of those departments (e.g. username@moict.gov.jo, username@mopw.gov.jo).

Ministry	Current eMail Users	Initial eMail Users	Current eMail System
Ministry of Information and Communication Technology (MOICT)	70	70	Exchange 5.5
Municipality of Greater Amman (MoGA)	1	30	Dial-up
Ministry of Industry and Trade (MIT)	108	108	SendMail
Ministry of Planning (MOP)	180	180	SendMail
Prime Ministry (PM)	120	120	SendMail
Ministry of Finance (MOF)	22	30	SendMail

Figure 1 – Ministry eMail Users

In order to deliver these services, the MDS project will have to integrate closely with the infrastructure deployed as part of the Secure Government Network (SGN) project. SGN will provide the secure, managed connectivity between the government network, the Departments network(s) and the Internet. The Messaging and Directory services will provide the application communication and information repository layer.

In the future other applications will utilize the messaging environment to conduct workflow and provide notices, while leveraging the enterprise directory for authentication and information retrieval/lookups.

While all the requirements detailed in this document need to be addressed in the selection of a Messaging Infrastructure and the design of the MDS, not all requirements, features, and functionality will be part of the initial deployment.

1.4 Assumptions

This document was created with the following assumptions

- The Directory services mentioned in this document will be designed for the messaging services infrastructure and will not necessarily contain all functionality of an enterprise directory. This will be the future basis for Enterprise Directory Services.
- The preferred server platform will be Microsoft Windows 2000

2 Functional Requirements

2.1 Messaging Service

The Messaging service will be made available to all registered Government employees and internal applications to provide a full messaging service (messaging, calendaring, scheduling, contact lists, etc). This service will also provide a central point for the interconnection of department's email into a Government-wide network, including connectivity to the external Internet.

It is expected that the messaging service will improve existing communications while providing a better class of service. Through redundant technologies and security measures the environment will be improved both in its ease and speed of communication as well as its fault tolerant design.

Although, a feature rich client will provide the primary access to the service, a variety of clients will be supported to accommodate users such as remote or mobile users.

2.1.1 Messaging Service requirements

1. Support for a central environment that will act as the single point of communication with Ministries/Agencies and Internet mail.
2. Support for the ability to handle multiple email domains.
3. Support for MAPI, SMTP, POP3 and IMAP4
4. The messaging solution needs to support full functionality with a web browser.
5. Environment capable of scaling up to 100,000 + users.
6. The scalability of the solution must include the requirement that not all 100,000 users will be supported day one and the solution, without loss of functionality, must be able to be deployed as the user population grows. The first phase of deployment will consist of six ministries and approximately 700 users. See Figure 1.
7. Support for common portal technologies.
8. Support for other clients/devices in the long term e.g. wireless or PDA's.
9. Support for inter-connectivity between differing email services/products in a seamless manner (from the end user perspective), including Internet email services (SMTP), Exchange, MS mail, Lotus Domino, etc.
10. Support for a "Global catalogue" of email users, including all users of departmental email services.
11. Support for working with a corporate central directory (based on X.500) through standard X.500 supported protocols, including LDAPv3.
12. Support for 'electronic forms'.
13. Support for workflow.
14. Support for remote management through the use of standard products and protocols e.g. SNMP, and/or through use of specific management/administration tools provided with the product.
15. Support for the Arabic language.
16. Spell checking capability at the client level.
17. Support for Auditing and Reporting e.g. Mail File sizes, authentication failures, usage, etc.
18. Support for Mailbox limitations.
19. Support for Mailbox archiving.

20. Support for Administration tools.
21. Support for integration with leading Document Management technologies and products.

2.2 SMTP Relay Service

The Government of Jordan expects that all Inbound/Outbound Internet mail traffic will flow through the SMTP Relay service. The SMTP Relay service will provide the ability for departments to communicate with each other while maintaining a speed and class of service that will attract all departments. This centralized service will provide the optimal ability for controlling viruses, content management and message tracking In and out of the Government wide network.

2.2.1 SMTP Relay Service requirements

22. The SMTP Relay service must be able to relay messages from both the Internet and other Ministries that are on the SGN but not yet connected to the Centralized Messaging system.
23. The SMTP Relay service will support the routing of multiple email domains for both inbound/outbound eMail.
24. The SMTP Relay service will be isolated in a "DMZ" from the Internet and the internal production network.
25. The SMTP Relay service should support anti-virus scanners and content management.

2.3 Directory Service

The Directory service will be made available to all registered Government employees and internal applications to provide a single information repository for employee information. This Enterprise Directory will be synchronized with other application directories in order to keep information accurate.

The Enterprise Directory will be leveraged, as much as possible, by users and applications as a central point for querying information. Other internal applications will leverage this directory for authentication and information queries. The Directory should support synchronization with an external directory if external applications are required to update this directory.

The Enterprise directory will hold sensitive information so proper security methods need to be in place to protect the information from unauthorized use.

2.3.1 Directory Service requirements

26. The product must support X.500 based standards, especially Lightweight Directory Access Protocol (LDAPv3).
27. The product must support the ability to extend the schema by providing tools and interfaces to add/modify/delete object classes and attributes.
28. The product must support methods of distributing the directory and segmenting the management of information.
29. Support for limiting the distribution of information (only a subset of information and/or attributes) to/from other directories during replication and synchronization.
30. Synchronization with other directories, either by use of third party tools or standard methods, must be 'near instantaneous'.
31. The directory must be able to support additions/changes/deletes from multiple directories

32. The directory must be able to address synchronization conflicts (e.g. through rules based resolution or administrative notifications) with limited effect on the end-users or applications ability to receive accurate information in a query.
33. The product must support access from a range of clients and 'platforms' to the directory e.g. application, browser, third-party email client, PC, wireless, PDA, etc.
34. Support for remote administration of the directory either through specific tools or integrated with the management toolset.
35. Management of the directory must be through an intuitive, easy to use, interface.
36. Support for Single Signon on functionality.
37. Support for a wide variety of queries based on objects and values stored in the directory.

2.4 Security

The Government of Jordan has the requirement to share information with trusted Ministries, agencies, and applications. The ability to segment information to certain entities will become key to the Government's plans to maintain a centralized repository of information.

2.4.1 Security requirements

38. Provide adequate levels of authorization and data content security, as well as third-party security capabilities through the utilization of industry supported APIs.
39. Clear and manageable security mechanisms must be in place for the allocation and control of administrative rights and permissions with the service.
40. Support for administration delegation of duties and access control to functions/tasks.
41. The product must support the use of access control lists, along with secure management of those lists.
42. The product must support encryption and digital signatures e.g. PKI.
43. The product must support secure access over a public infrastructure e.g. Internet.
44. The product must support the integration of market leading anti-virus products, both at the server and client level.

2.5 Resilience

The ability to have a service available 24x7 requires careful planning and an appropriate infrastructure. The Government of Jordan sees Messaging and Directory services to be critical applications for their business. The environment must be available to users when they need it, which could be any time. The consolidation of multiple departments into a single environment means that downtime now, will impact a much larger percentage of the Government.

2.5.1 Resilience requirements

45. The product and its operating system must support failover architectures.
46. The product must be able to utilize mass data storage solutions in a form that can ease back-up and recovery, minimize any downtime and enable the addition of extra storage to be 'invisible' to the service as seen by the end user.

47. The product must be capable of supporting a dynamic back-up and recovery regime whereby data can be easily backed-up, without recourse to closing the system down, and restored, either completely or in part (both must be supported).

2.6 Migration / Coexistence

The Government of Jordan currently has a mixed messaging environment. Each department has their own solution, with some ministries/agencies having no email solution. There is no inter-department communication except through the Internet and no central enterprise wide directory. Because of these facts the new email system can be thought of as a “green field”.

2.6.1 Migration / Coexistence requirements

48. Ministries/ Agencies must be deployed, in a manner that all current eMail users retain their current functionality, including inbound/outbound Internet Mail, throughout the deployment phase.
49. There must be a mechanism for a user’s existing eMail data to be made available to him, in a readable format, in the new system.
50. Ministries/Agencies that have not yet joined the centralized eMail system must be able to send/ receive eMail to/from the centralized eMail system. Either through the Internet or the SGN.

2.7 Deployment

The Government of Jordan will be doing a phased deployment of the MDS system. Six Ministries have been identified to participate in the first phase of deployment.

2.7.1 Deployment requirements

51. MOICT will be the first ministry to be deployed on the new eMail system. They will be the example that all other ministries will follow.
52. There will be a pilot phase to allow for the piloting of features and functionality.
53. The six ministries will be deployed incrementally throughout the first phase deployment.

3 Client Considerations

In a perfect world the latest and greatest client software would be deployed along with the rollout of the MDS infrastructure, to be able to take full advantage of the MDS infrastructure. The GOJ has many disparate client machines with various levels of memory, processor, and disk space. These machines are also running Win9x operating systems with varying versions of Microsoft Outlook. While the new MDS infrastructure should work with the majority of client machines in the field, these machines would not take advantage of all the features and functionality that is provided with a state of the art Messaging and Directory services deployment. It would be very unrealistic to assume that all GOJ Clients will have upgraded hardware and software by the October time frame for rollout. A close assessment of the existing client machines needs to be done to develop a realistic standard minimum client configuration for the October rollout of the GOJ MDS. While this minimum configuration will allow the rollout to begin, it is highly recommended that GOJ work as soon as possible to do a hardware/software refresh to bring all machines up to a Windows XP/Office XP configuration. This configuration will provide the security required for a government, the latest and greatest feature functionality, and lower the total cost of ownership (TCO) of the client environment. Below are some options for the client environment.

3.1 Windows XP pro / Office XP

Windows XP pro / Office XP would provide the latest and most reliable client. Unfortunately most of the current GOJ machines in the field would not meet the Windows XP pro minimum requirements.

Minimum Requirements Windows XP Pro	
Computer/Processor	Pentium 233-megahertz (MHz) processor or faster (300 MHz is recommended)
Memory	128 megabytes (MB) of RAM recommended minimum; more memory generally improves responsiveness + 8 MB for each office XP application running simultaneous.
Hard Disk	At least 1.5 gigabytes (GB) of available space on the hard disk

Figure 2 – Windows XP pro requirements

3.2 Windows 2000 pro / Office XP

A majority of the GOJ machines would meet the minimum Windows 2000 pro requirements.

Minimum Requirements	
Computer/Processor	133 MHz or higher Pentium-compatible CPU
Memory	64 megabytes (MB) of RAM recommended minimum; more memory generally improves responsiveness
Hard Disk	2GB hard disk with a minimum of 650MB of free space
CPU Support	Windows 2000 Professional supports single and dual CPU systems

Figure 3 – Windows 2000 pro requirements

3.3 Reasons for upgrading the clients

1. Security. Security is a high priority for GOJ. There is a lot of talk about PKI and other security features that GOJ wants to implement. The desktop is the first line of defense in your security policy. Windows 2000 and Windows XP are far superior in terms of desktop, individual user, file level access and Internet security. Windows XP is more secure than Windows 2000. Windows 9x is not very secure at all.
2. When hooking up machines to the E2K system, We won't really know what state a machine is in. We could spend hours trouble shooting problems on machines that never really worked. The problems may not have anything to do with E2K or AD but we don't have a standard client build so the problem may be hard to identify.

3. Win9x clients are obsolete and are very expensive to maintain compared to Windows XP and Windows 2000. WinXP has the lowest TCO associated with it. Win9x cannot use the features of AD for controlling desktops.
4. Win9x also would require the Dsclient to be installed to make some use of the AD. Such as site awareness and the ability to do LDAP searches. Also this would allow Any DC to accept password changes rather than the Just the PDC emulator processing password changes. In a centralized data center deployment the PDC emulator is not as big a deal as if it was a distributed configuration.

3.4 Win9x / Office XP

Another option would be to upgrade to Office XP (Outlook 2002) on the current operating system. This would allow you to use all the features of Exchange 2000 such as automatic resource scheduling which cannot be done with Outlook 9x. Outlook 98 and 97 work differently than Outlook 2000 and 2002. Outlook 2000+ contacts the GC directly (after the first address lookup) but Outlook 97/98 contacts the exchange server that acts as a proxy to the GC. The address lookup is much faster in Outlook 2000 and 2002. I don't think this necessarily increase the traffic but does increase the cpu cycles on the exchange server. There is a patch to 98 to make it function more like 2000.

RAM Requirements For all Office XP suites:

RAM requirements depend on the operating system used:

- **Windows 98, or Windows 98 Second Edition**
24 MB of RAM plus an additional 8 MB of RAM for each Office program (such as Microsoft Word) running simultaneously
- **Windows Me, or Microsoft Windows NT®**
32 MB of RAM plus an additional 8 MB of RAM for each Office application (such as Microsoft Word) running simultaneously
- **Windows 2000 Professional**
64 MB of RAM plus an additional 8 MB of RAM for each Office application (such as Microsoft Word) running simultaneously
- **Windows XP Professional, or Windows XP Home Edition**
128 MB of RAM plus an additional 8 MB of RAM for each Office application (such as Microsoft Word) running simultaneously

3.5 Microsoft OWA email client

The Last option would be to look at using a browser based solution as a "phase I deployment" to get ministries up and running on email. This browser-based deployment can then be migrated easily to the full MAPI client deployment as Directory services are being rolled out throughout the ministries.

If using a browser based client, the machine should be upgraded to the latest version of IE. IE 6 for Win98, IE5.5 sp2 for Win95

3.5.1 Advantages and Drawbacks of OWA client

Advantages:

- Less End User Education (Do not have to join or log into a domain).
- Less End User Configuration (Client and Network).
- Less Network Bandwidth requirements. "Same Server Sizing though"
- Much Faster Rollout "You only distribute user names and passwords" upon Data Center Setup.

Drawbacks:

- Requirement for SSL to protect clear text passwords "Slightly Affects Performance / Needs to get certificate from 3rd Party Certificate Provider e.g. Verisign"
- No ability for users to work offline.
- No ability for users to store local copies of mails on PCs "Unless Using POP3 / IMAP4".
- The upper point will cause MORE Server Storage requirements.
- No ability to use secure mail "Digital Signature"
- No ability to read encrypted messages

Of course, GOJ would not want to deploy only OWA to users who are currently using the full-featured Outlook client, but the majority of the users in the initial 6 ministries are not using full featured clients.