# Functional Requirement

1. Functional Requirements  
  
1.1 Email Creation Function   
 Function ID: FR-01   
 Description: The system allows the Administrator to create a new email by entering the subject, body, and selecting recipients from the Email Contact Distribution Group.   
 Input: Email subject, email body, recipient list (individual contacts or distribution groups).   
 Output: A new Email object with associated metadata stored in the system and archived in the Email Archive.  
  
1.2 Email Sending Function   
 Function ID: FR-02   
 Description: The system sends the created email to the selected recipients using the associated Email Account.   
 Input: Email content, recipient list, and the associated Email Account.   
 Output: The email is successfully delivered to the recipients, and a copy is archived in the Email Archive.  
  
1.3 Email Receiving Function   
 Function ID: FR-03   
 Description: The system detects and retrieves incoming emails to the associated Email Account and stores them in the system.   
 Input: Incoming email data from the Email Account.   
 Output: A new Email object with sender and metadata stored in the system and archived in the Email Archive.  
  
1.4 Email Viewing Function   
 Function ID: FR-04   
 Description: The system allows the Administrator to view the content and metadata of an existing email.   
 Input: Email ID or identifier selected from the Email Archive.   
 Output: Email content and metadata displayed in a read-only format.  
  
1.5 Email Deletion Function   
 Function ID: FR-05   
 Description: The system allows the Administrator to delete an email from the system and archive it in the Email Archive.   
 Input: Email ID or identifier selected from the system.   
 Output: The email is deleted from the system and archived in the Email Archive.  
  
1.6 Email Archiving Function   
 Function ID: FR-06   
 Description: The system allows the Administrator to manually archive an email to the Email Archive.   
 Input: Email ID or identifier selected from the system.   
 Output: The email is moved to the Email Archive with an associated EmailArchiveRecord.  
  
1.7 Email Recovery Function   
 Function ID: FR-07   
 Description: The system allows the Administrator to recover a previously archived email and restore it to the system.   
 Input: Email ID or identifier selected from the Email Archive.   
 Output: The email is restored to the system and associated with the relevant Email Account.  
  
1.8 Contact Creation Function   
 Function ID: FR-08   
 Description: The system allows the Administrator to create a new contact with details such as name, email address, phone number, and address.   
 Input: Contact name, email address, phone number, and address.   
 Output: A new Contact object stored in the system and associated with the Email Contact Distribution Group.  
  
1.9 Contact Update Function   
 Function ID: FR-09   
 Description: The system allows the Administrator to update an existing contact’s information.   
 Input: Contact ID, updated contact details (e.g., name, email, phone number).   
 Output: Updated Contact object stored in the system and associated with the Email Contact Distribution Group.  
  
1.10 Contact Deletion Function   
 Function ID: FR-10   
 Description: The system allows the Administrator to delete an existing contact from the Email Contact Distribution Group.   
 Input: Contact ID selected from the system.   
 Output: The contact is removed from the system and associated Email Contact Distribution Group.  
  
1.11 Contact Viewing Function   
 Function ID: FR-11   
 Description: The system allows the Administrator to view the details of an existing contact.   
 Input: Contact ID or identifier selected from the system.   
 Output: Contact details displayed in a read-only format.  
  
1.12 Distribution Group Creation Function   
 Function ID: FR-12   
 Description: The system allows the Administrator to create a new distribution group with a name, description, and associated contacts.   
 Input: Group name, description, and selected contacts.   
 Output: A new DistributionGroup object stored in the system and associated with the Email Contact Distribution Group.  
  
1.13 Distribution Group Update Function   
 Function ID: FR-13   
 Description: The system allows the Administrator to update a distribution group’s name, description, or contact list.   
 Input: Group ID, updated group name, description, and/or contact list.   
 Output: Updated DistributionGroup object stored in the system.  
  
1.14 Distribution Group Deletion Function   
 Function ID: FR-14   
 Description: The system allows the Administrator to delete an existing distribution group from the system.   
 Input: Group ID selected from the system.   
 Output: The distribution group is removed from the system and associated Email Contact Distribution Group.  
  
1.15 Add Contact to Distribution Group Function   
 Function ID: FR-15   
 Description: The system allows the Administrator to add an existing contact to a distribution group.   
 Input: Contact ID and Distribution Group ID.   
 Output: Updated DistributionGroup object with the new contact added.  
  
1.16 Remove Contact from Distribution Group Function   
 Function ID: FR-16   
 Description: The system allows the Administrator to remove a contact from a distribution group.   
 Input: Contact ID and Distribution Group ID.   
 Output: Updated DistributionGroup object with the contact removed.  
  
1.17 Email Account Management Function   
 Function ID: FR-17   
 Description: The system allows the Administrator to manage the settings of an existing email account, including username, password, domain, and signature.   
 Input: Email Account ID and updated account settings.   
 Output: Updated EmailAccount object stored in the system.  
  
1.18 Email Account Update Function   
 Function ID: FR-18   
 Description: The system allows the Administrator to update the configuration of an email account.   
 Input: Email Account ID and updated configuration data.   
 Output: Updated EmailAccount object stored in the system.  
  
1.19 Email Account Deletion Function   
 Function ID: FR-19   
 Description: The system allows the Administrator to delete an email account from the system.   
 Input: Email Account ID.   
 Output: The email account is removed from the system, and a copy is archived if needed.  
  
1.20 Email Account Permission Management Function   
 Function ID: FR-20   
 Description: The system allows the Administrator to update the access permissions of an email account, including which distribution groups or users can interact with it.   
 Input: Email Account ID and updated permission settings.   
 Output: Updated permissions for the Email Account and updated Email Contact Distribution Group.  
  
1.21 Audit Record Viewing Function   
 Function ID: FR-21   
 Description: The system allows the Administrator to view an Audit Record to track system actions (e.g., email creation, deletion, archive).   
 Input: Audit Record ID or identifier selected from the system.   
 Output: Audit Record details displayed in a read-only format.  
  
1.22 Compliance Report Generation Function   
 Function ID: FR-22   
 Description: The system allows the Administrator to generate a compliance report by retrieving relevant data from the Email Archive, Audit Record, and Email Contact Distribution Group.   
 Input: Report criteria such as date range, Email Account, or group.   
 Output: A structured compliance report displayed to the Administrator for download or printing.  
  
1.23 Email Update Function   
 Function ID: FR-23   
 Description: The system allows the Administrator to update an existing email’s content or metadata.   
 Input: Email ID, updated subject, body, or recipient list.   
 Output: Updated Email object stored in the system and archived in the Email Archive.  
  
1.24 Email Archive Management Function   
 Function ID: FR-24   
 Description: The system allows the Administrator to manage archived emails, including tagging, categorizing, or moving them to subfolders.   
 Input: EmailArchiveRecord ID and management action (e.g., tag, move, delete).   
 Output: Updated EmailArchiveRecord and Audit Record documenting the action.  
  
1.25 Email Archive Deletion Function   
 Function ID: FR-25   
 Description: The system allows the Administrator to permanently delete an email from the Email Archive.   
 Input: EmailArchiveRecord ID selected from the Email Archive.   
 Output: The email is permanently removed from the Email Archive, and an Audit Record is generated.

# External Description

2. External Interfaces  
  
2.1 User Interface Output   
The system interacts with the Administrator through a user interface to perform the following actions:   
- Display screens for creating, updating, and deleting emails, contacts, and distribution groups.   
- Display read-only views of email content and metadata, contact details, and audit records.   
- Allow the Administrator to select recipients from the Email Contact Distribution Group when creating or sending emails.   
- Display a structured compliance report for download or printing.   
- Provide visual feedback for actions such as archiving, restoring, or deleting emails and contacts.   
- Enable the Administrator to manage email accounts, including updating usernames, passwords, domains, and signatures.   
- Allow navigation and interaction with the Email Archive, including tagging, categorizing, and moving archived emails to subfolders.   
  
The user interface should support intuitive controls and clear data representation to facilitate efficient system usage. It must be consistent in terminology and design, aligning with the functional requirements to ensure clarity and reduce confusion for the user.  
  
2.2 Hardware Interface Output   
There are no direct hardware interfaces required for this system. All operations are conducted through software and user interaction. However, the system must be compatible with standard computing hardware such as servers, workstations, and storage devices used to host the application and databases.   
  
The system may indirectly interact with hardware interfaces for tasks such as:   
- Email sending and receiving via network hardware (e.g., routers, switches).   
- Storing and retrieving emails and contacts from disk-based storage systems.   
  
These interactions are abstracted through software and communication interfaces and are not explicitly required for the system's core functionality.  
  
2.3 Software Interface Output   
The system interacts with the following software components and data sources:   
  
2.3.1 Email Archive   
- \*\*Definition\*\*: A repository where emails are stored after being archived by the system.   
- \*\*Role\*\*: Stores and manages historical email records, including metadata and audit trails.   
- \*\*Interaction Method\*\*:   
 - Input: Email object, EmailArchiveRecord, and management actions (e.g., tag, move, delete).   
 - Output: Archived Email object, updated EmailArchiveRecord, and Audit Record when applicable.   
- \*\*Description\*\*: The Email Archive is a critical data store for compliance and audit purposes. Emails are archived automatically upon deletion or manually via the Email Archiving Function (FR-06). The system allows the Administrator to manage these archived records, including tagging, categorizing, and recovery (FR-24, FR-25).   
  
2.3.2 Email Contact Distribution Group   
- \*\*Definition\*\*: A collection of contacts or sub-groups used to manage recipient lists for emails.   
- \*\*Role\*\*: Provides the structure for selecting recipients when emails are created or sent.   
- \*\*Interaction Method\*\*:   
 - Input: Contact IDs, distribution group names, descriptions, and configuration changes.   
 - Output: Updated distribution groups, contact associations, and Audit Records when changes are made.   
- \*\*Description\*\*: The Email Contact Distribution Group allows the Administrator to organize contacts into logical groups for efficient email distribution. It is used in the Email Creation Function (FR-01), Distribution Group Management Functions (FR-12 to FR-16), and Compliance Report Generation (FR-22).   
  
2.3.3 Email Account   
- \*\*Definition\*\*: A configured email account used for sending and receiving emails.   
- \*\*Role\*\*: Provides the credentials and settings for email communication.   
- \*\*Interaction Method\*\*:   
 - Input: Email Account ID, credentials (username, password), domain, signature, and configuration updates.   
 - Output: Updated EmailAccount object and Audit Record when changes are made.   
- \*\*Description\*\*: The Email Account is used to authenticate and send emails to recipients, as well as retrieve incoming emails. It is a core component of the Email Sending Function (FR-02), Email Receiving Function (FR-03), and Email Account Management Functions (FR-17 to FR-20).   
  
2.3.4 Audit Record   
- \*\*Definition\*\*: A log of all system actions, such as email creation, deletion, archiving, and updates.   
- \*\*Role\*\*: Tracks user activity and system changes for auditing and compliance purposes.   
- \*\*Interaction Method\*\*:   
 - Input: Email or contact actions (e.g., deletion, archiving).   
 - Output: An Audit Record is generated and stored in the system.   
- \*\*Description\*\*: The Audit Record is essential for system transparency and accountability. It is generated automatically when emails or contacts are deleted or archived (FR-05, FR-06, FR-25) and can be manually viewed by the Administrator (FR-21).   
  
2.3.5 Contact Database   
- \*\*Definition\*\*: A database or data store that contains all contact records.   
- \*\*Role\*\*: Stores and retrieves contact information for email distribution.   
- \*\*Interaction Method\*\*:   
 - Input: Contact details (name, email address, phone number, address) and actions (create, update, delete).   
 - Output: Contact object stored in the database and associated with the Email Contact Distribution Group.   
- \*\*Description\*\*: The system relies on the Contact Database to maintain up-to-date contact information. It is used in all Contact Management Functions (FR-08 to FR-11 and FR-15 to FR-16).   
  
2.4 Communication Interface Output   
The system communicates with external systems or services via the following communication interfaces:   
  
2.4.1 Email Server (SMTP/IMAP)   
- \*\*Definition\*\*: A third-party or internal email server that handles the sending and receiving of emails.   
- \*\*Role\*\*: Facilitates the delivery of outgoing emails and the retrieval of incoming emails.   
- \*\*Interaction Method\*\*:   
 - Input: Email content, recipient list, and authentication credentials from the Email Account.   
 - Output: Delivery confirmation for outgoing emails and incoming email data retrieved from the server.   
- \*\*Description\*\*: The system interacts with email servers using SMTP for sending and IMAP/POP3 for receiving emails. This is a core part of the Email Sending Function (FR-02) and Email Receiving Function (FR-03).   
  
2.4.2 Compliance Report Data Sources   
- \*\*Definition\*\*: A combination of the Email Archive, Audit Records, and Email Contact Distribution Group used to generate compliance reports.   
- \*\*Role\*\*: Provides structured data for regulatory or internal compliance audits.   
- \*\*Interaction Method\*\*:   
 - Input: Report criteria such as date ranges, specific Email Accounts, or groups.   
 - Output: A structured compliance report that can be downloaded or printed.   
- \*\*Description\*\*: The system pulls data from multiple sources to compile a compliance report. The Administrator can request reports based on specific time frames, email accounts, or distribution groups (FR-22).   
  
2.4.3 Email Notification Service (Optional)   
- \*\*Definition\*\*: An external service that can push notifications or updates to the Administrator.   
- \*\*Role\*\*: Notifies the Administrator of system events, such as new incoming emails or compliance report completion.   
- \*\*Interaction Method\*\*:   
 - Input: System events (e.g., new email received, compliance report ready).   
 - Output: Notification sent to the Administrator via email or in-app alerts.   
- \*\*Description\*\*: This interface is optional but can be integrated to enhance user experience by providing real-time updates. It is not explicitly required by the functional requirements but can be considered for system enhancement.   
  
2.4.4 Web-Based Communication (Optional)   
- \*\*Definition\*\*: The system may be accessed via a web browser or web application.   
- \*\*Role\*\*: Enables remote access to the system for managing emails, contacts, and distribution groups.   
- \*\*Interaction Method\*\*:   
 - Input: User login credentials and actions performed via the web interface.   
 - Output: Web-based display of system data and responses to user actions.   
- \*\*Description\*\*: If the system is deployed as a web application, it will support communication via HTTP/HTTPS protocols. This is optional but can be considered for scalability and accessibility.   
  
This section has identified all external data sources and interfaces that are referenced in the functional requirements. Each interface is clearly defined, with its role and interaction method described to ensure clarity for developers and stakeholders.