

Sunward Portal Management System

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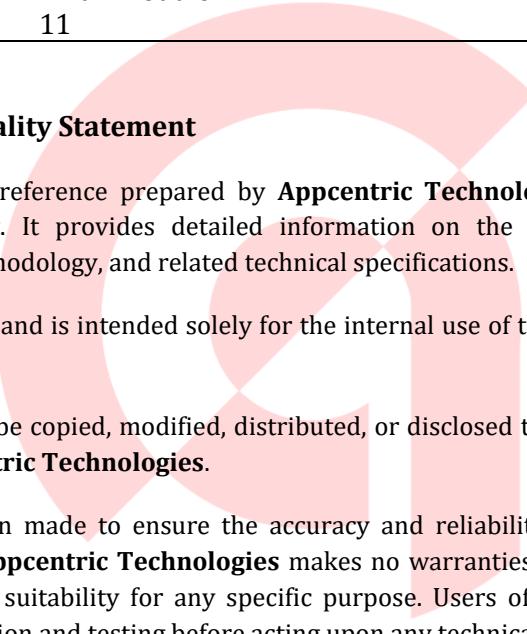
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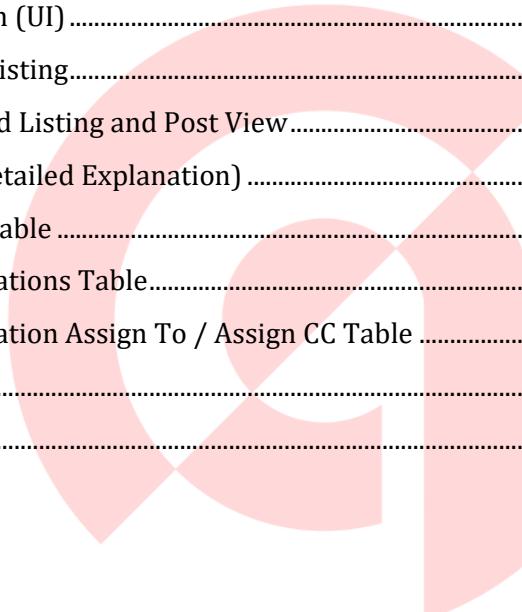
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1. Project Overview

The Email module manages internal user communication, allowing users to create, view, reply, and manage email-like messages within the system. It supports user-based visibility, tagging, attachment management, and due date tracking. This document explains the technical flow, entity relationships, and business rules to guide developers in implementing and maintaining this module.

2. Objectives

The primary objective of the Email Module is to provide a centralized, secure, and structured communication platform within the system. This module enables users to initiate, manage, and track internal communication threads efficiently while maintaining complete auditability and role-based visibility. The system ensures that all communication associated with business processes remains organized, accessible, and compliant with operational standards.

2.1 Key Objectives:

- Enable Structured Internal Communication

Provide a topic-based email framework allowing users to create, reply, track, and archive internal discussions linked to business activities.

- Improve Collaboration Across Departments

Facilitate communication between different users, roles, and departments through controlled To/CC participant management and threaded conversations.

- Ensure Secure and Role-Based Access

Protect communication data through permission-controlled access to topics, replies, and attachments, ensuring only authorized users can view or act on content.

- Centralize Document & Attachment Handling

Support secure uploading, storage, and retrieval of attachments with complete access control and logging.

- Support Efficient Information Retrieval

Offer filtering, searching, and categorization features that help users quickly find relevant topics and communication threads.

- Improve Management Insights

Enable reporting on email activity, conversation volume, deadlines, and performance to support decision-making and operational monitoring.

3. System Modules & Key Functions

Module	Description	Key Users
Email Topic Management	Create and manage email topics (Subject, Category, Action, Tags, Due Dates). Handles ownership, permissions, and visibility control.	All Users, Department Heads
Email Conversation & Replies	Threaded communication within each topic. Users can reply, quote, forward within internal workflow.	All Users
Participant Management (To/CC/Add User)	Add or update participants for an email topic. Controls visibility and access rights.	Topic Owner, Administrator
Attachments Management	Upload, download, secure access, and audit tracking of all files linked to Email Conversations	All Users
Email View & Filtering	Two-pane UI for All / Assign To / Sent Items / Library with advanced filtering and tabs.	All Users
Tagging & Categorization	User Tags, Other Tags, Categories for structured grouping and filtering.	All Users

4. Functional Components

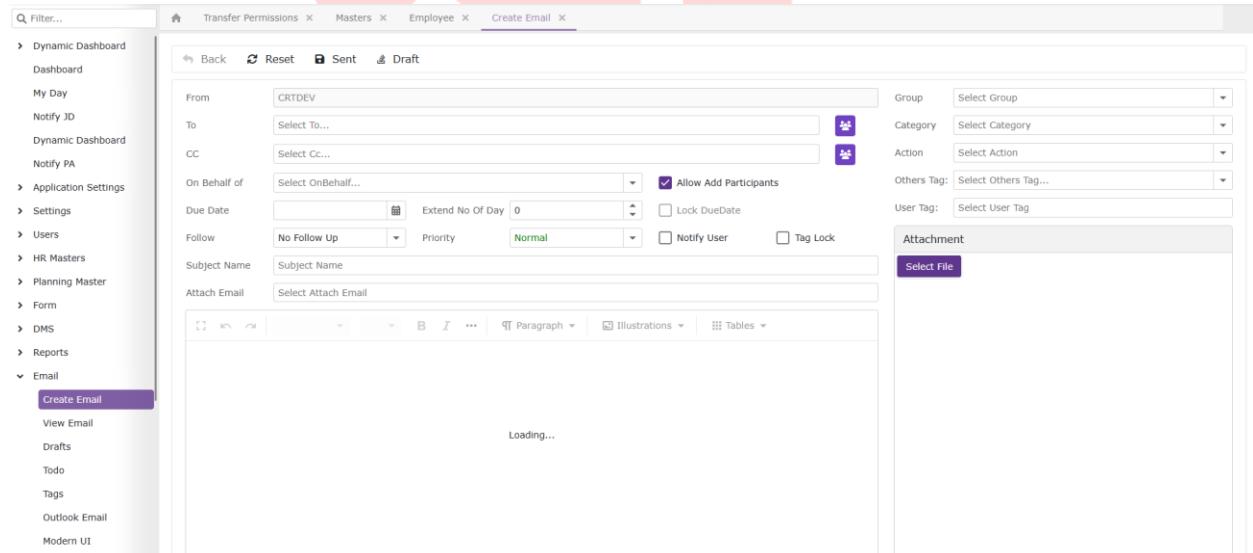
The Email module consists of the following key screens and features:

- Create Email: Allows users to compose and send internal emails with attachments and participants.
- View Email: Displays received, sent, and assigned emails with filtering and tagging options.
- Reply & Add Participant: Enables users to reply and include new recipients dynamically.
- Todo, Tags, Attachments: Integrated for reminders, categorization, and file management.
- Archiving & DueDate Management: Provides organization and scheduling functionalities.

4.1 Create Email Screen (UI)

Image shows the Create Email screen with fields and actions. Mapping to entities and flow:

- Fields: From, To, CC, On Behalf, DueDate, Subject Name, Category, Action, Others Tag, User Tag, Attachment.
- On submit: create/update EmailTopics and EmailConversations, and insert EmailConversationAssignTo / EmailConversationAssignCC entries.
- Attachments: saved to EmailAttachments with ConversationID/TopicID linkage.
- AllowAddParticipants controls dynamic adding of recipients.



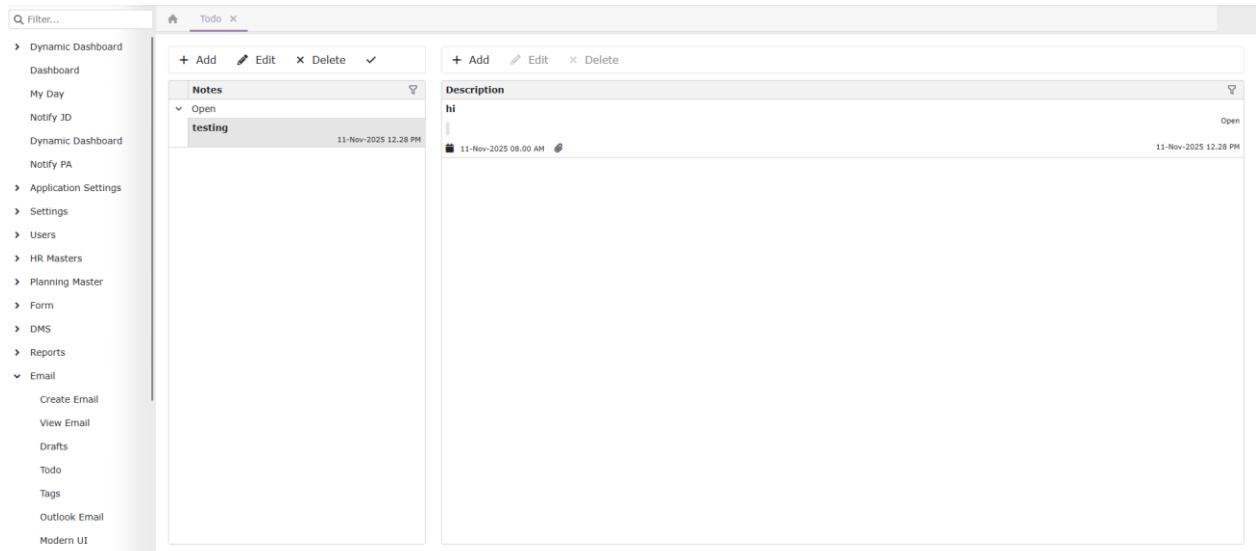
The screenshot shows the 'Create Email' screen in a web-based application. The left sidebar has a 'Create Email' button highlighted in purple. The main area has a header with tabs: 'Transfer Permissions', 'Masters', 'Employee', and 'Create Email'. Below the header, there are input fields for 'From' (CRTDEV), 'To' (Select To...), 'CC' (Select Cc...), 'On Behalf of' (Select OnBehalf...), 'Due Date' (Extend No Of Day: 0, Lock DueDate checked), 'Follow' (No Follow Up, Priority: Normal, Notify User checked, Tag Lock checked), 'Subject Name' (Subject Name), and 'Attach Email' (Select Attach Email). To the right, there are dropdowns for 'Group', 'Category', 'Action', 'Others Tag', and 'User Tag', each with a 'Select' button. A large red circle highlights the 'Allow Add Participants' checkbox, which is checked. At the bottom, there's a rich text editor toolbar and a 'Select File' button for attachments.

4.2 Todo / Two-pane Listing

Shows the two-pane layout used for 'Todo' and listing topics. Left pane shows topic list and right pane shows thread content and actions.

- Left pane lists EmailTopics filtered by current user via EmailConversationAssignTo.UserID.

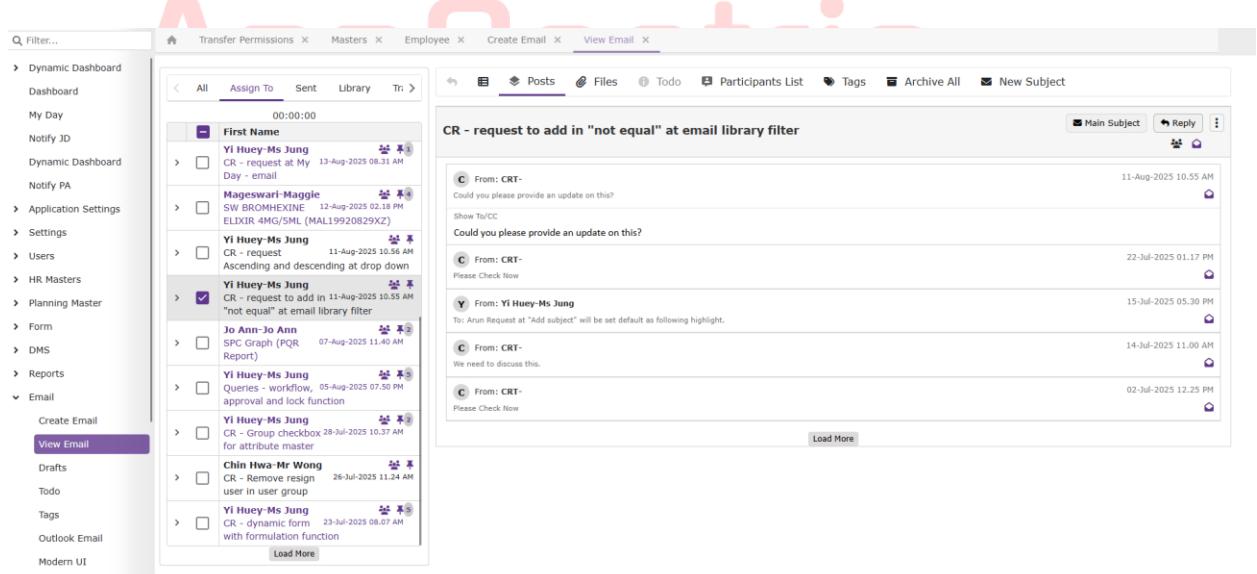
- Right pane renders EmailConversations for selected topic.
- Actions like Reply, Main Subject, Files, and Todo trigger inserts into EmailConversations, EmailAttachments, or EmailTopicTags.



4.3 View Email - Thread Listing and Post View

Illustrates the View Email screen with tabs (All, Assign To, Sent, Library, etc.), topic list and posts view. Each post maps to EmailConversations.

- Tabs map to filters over EmailTopics/EmailConversations (e.g. Sent = topics where current user is sender; Assign To = topics where user is in EmailConversationAssignTo).
- 'Load More' increments pagination for topics and messages. Update LastActivityUtc on reply to keep ordering consistent.



5. Database Structure (Detailed Explanation)

Below is a detailed explanation of each database table based on screenshots.

The Email Module database is designed using a topic-conversation model where each email thread is represented as a Topic, and every reply is stored as a Conversation under the same Topic. Participants (To/CC) are managed through mapping tables. This ensures proper visibility control, auditability, and performance in filtering, tagging, and retrieving threaded communication.

5.1 Email Topics Table

This table stores the **header-level information** of each email thread created in the system.

- Represents the main subject/topic
- Controls permissions, due dates, tags, archiving, workflow rules
- Links all related conversations and metadata

Column Name	Data Type	Allow Nulls
ID	bigint	<input type="checkbox"/>
TicketNo	varchar(150)	<input checked="" type="checkbox"/>
TopicName	varchar(300)	<input checked="" type="checkbox"/>
TypeId	bigint	<input checked="" type="checkbox"/>
CategoryId	bigint	<input checked="" type="checkbox"/>
StartDate	smalldatetime	<input checked="" type="checkbox"/>
EndDate	smalldatetime	<input checked="" type="checkbox"/>
DueDate	smalldatetime	<input checked="" type="checkbox"/>
TopicFrom	bigint	<input type="checkbox"/>
Status	varchar(50)	<input checked="" type="checkbox"/>
Remarks	varchar(250)	<input checked="" type="checkbox"/>
Description	nvarchar(500)	<input checked="" type="checkbox"/>
FileData	varbinary(MAX)	<input checked="" type="checkbox"/>
Type	varchar(50)	<input checked="" type="checkbox"/>
SeqNo	int	<input checked="" type="checkbox"/>
SubjectName	varchar(150)	<input checked="" type="checkbox"/>
StatusCodeID	int	<input type="checkbox"/>
AddedByUserID	int	<input type="checkbox"/>
AddedDate	smalldatetime	<input type="checkbox"/>
ModifiedByUserID	int	<input checked="" type="checkbox"/>
ModifiedDate	smalldatetime	<input checked="" type="checkbox"/>
SessionId	uniqueidentifier	<input checked="" type="checkbox"/>
[To]	varchar(50)	<input checked="" type="checkbox"/>
CC	varchar(50)	<input checked="" type="checkbox"/>
Participants	varchar(50)	<input checked="" type="checkbox"/>
Label	varchar(50)	<input checked="" type="checkbox"/>
TypeName	varchar(50)	<input checked="" type="checkbox"/>
Follow	varchar(50)	<input checked="" type="checkbox"/>
OnBehalf	bigint	<input checked="" type="checkbox"/>
Urgent	bit	<input checked="" type="checkbox"/>

5.2 Email Conversations Table

This table stores **each message (reply)** under a topic.

- Stores the actual communication content
- Tracks reply structure (threading)
- Stores attachment metadata, follow-up action choices, and added participants
 - All replies, edits, and message-level attachments are stored here.

Column Name	Data Type	Allow Nulls
ID	int	<input type="checkbox"/>
Name	varchar(300)	<input checked="" type="checkbox"/>
TopicID	bigint	<input checked="" type="checkbox"/>
Message	varchar(MAX)	<input checked="" type="checkbox"/>
FileData	varbinary(MAX)	<input checked="" type="checkbox"/>
ParticipantId	bigint	<input checked="" type="checkbox"/>
ReplyId	bigint	<input checked="" type="checkbox"/>
AddedDate	datetime	<input checked="" type="checkbox"/>
ModifiedByUserID	int	<input checked="" type="checkbox"/>
ModifiedDate	datetime	<input checked="" type="checkbox"/>
SessionId	uniqueidentifier	<input type="checkbox"/>
AddedByUserID	int	<input checked="" type="checkbox"/>
StatusCodeID	int	<input checked="" type="checkbox"/>
IsAllowParticipants	bit	<input checked="" type="checkbox"/>
DueDate	smalldatetime	<input checked="" type="checkbox"/>
OnBehalf	bigint	<input checked="" type="checkbox"/>
Follow	varchar(50)	<input checked="" type="checkbox"/>
Urgent	bit	<input checked="" type="checkbox"/>
IsMobile	int	<input checked="" type="checkbox"/>
LastUpdateUserID	int	<input checked="" type="checkbox"/>
LastUpdateDate	datetime	<input checked="" type="checkbox"/>
NotifyUser	bit	<input checked="" type="checkbox"/>
UserType	varchar(10)	<input checked="" type="checkbox"/>
NoOfDays	int	<input checked="" type="checkbox"/>
ExpiryDueDate	smalldatetime	<input checked="" type="checkbox"/>
DynamicFormDataUploa...	uniqueidentifier	<input checked="" type="checkbox"/>



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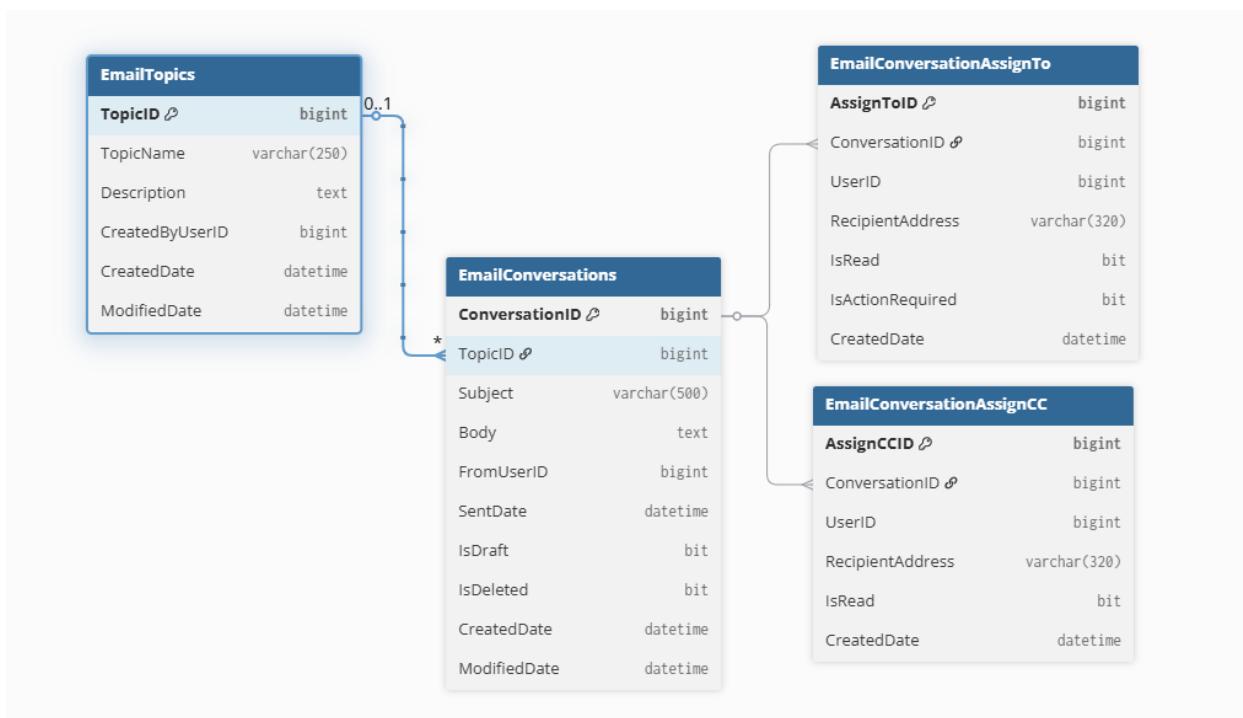
5.3 Email Conversation Assign To / Assign CC Table

- Controls message visibility (security layer)
- Defines who receives the email in their Inbox or Assign To tab
- Helps in notification routing

	Column Name	Data Type	Allow Nulls
▶	ID	bigint	<input type="checkbox"/>
	ConversationId	bigint	<input type="checkbox"/>
	TopicId	bigint	<input type="checkbox"/>
	UserId	bigint	<input type="checkbox"/>
	StatusCodeID	int	<input type="checkbox"/>
	AddedByUserID	int	<input type="checkbox"/>
	AddedDate	smalldatetime	<input type="checkbox"/>
	ModifiedByUserID	int	<input checked="" type="checkbox"/>
	ModifiedDate	smalldatetime	<input checked="" type="checkbox"/>
	SessionId	uniqueidentifier	<input checked="" type="checkbox"/>
			<input type="checkbox"/>

EmailTopics (1)

- └── EmailConversations (Many)
 - ├── EmailConversationAssignTo (Many)
 - └── EmailConversationAssignCC (Many)



6. Business Logic

Each email belongs to a topic (thread). Replies append to the same topic.

- Drafts are stored as EmailConversations with IsDraft = 1.
- When sending an email, records are created in EmailConversations and EmailConversationAssignTo.
- Attachments are stored in EmailAttachments and linked to ConversationID or TopicID.
- Tags and categories are stored in EmailTopicTags for easy search and filtering.
- All user actions (send, assign, rename, due date change) are recorded in Email Notification.

7. Summary

This document provides a detailed explanation of the Email module's architecture and operational workflow. It outlines how user interactions connect to the backend structure and how the relationships between entities ensure integrity, visibility, and performance within the system.