

BDiC Visual Conference Application

PROPOSED DATABASE DESIGN

HIGH LEVEL ER / DOMAIN MODEL (CONCEPTUAL)

Main entities and relationships:

- **User** —< *has many* — **Subscription**
- **User** —< *has many* — **PaymentMethod**
- **User** —< *has many* — **Meeting** (owner/host)
- **Meeting** —< *has many* — **MeetingParticipant**
- **Meeting** —< *has many* — **Recording**
- **Meeting** —< *has many* — **ChatMessage**
- **Meeting** —< *has many* — **FileShare**
- **Meeting** — *may have many* — **BreakoutRoom** —< *has many* — **BreakoutParticipant**
- **AdminUser** — manages users/subscriptions/KYC
- **KYCSubmission** — linked to User (one-to-many: retry attempts)
- **AuditLog** — generic audit for critical actions
- **Notification** — per user (email/push/web)
- **Content** — blog posts / FAQs / announcements
- **Plan** — catalog of subscription plans (free, premium, custom)

LOGICAL SCHEMA (CORE TABLES)

Below are the core tables with suggested columns and notes. Types use PostgreSQL style.

users

Stores account information and auth.

- `id` UUID PRIMARY KEY
- `email` VARCHAR UNIQUE NOT NULL
- `email_verified` BOOLEAN DEFAULT FALSE
- `password_hash` TEXT NULL (nullable for social login)
- `full_name` VARCHAR
- `display_name` VARCHAR
- `phone` VARCHAR NULL
- `role` VARCHAR NOT NULL DEFAULT 'user' -- enum: user, admin, support
- `status` VARCHAR NOT NULL DEFAULT 'active' -- enum: active, suspended, deleted
- `signup_source` VARCHAR -- e.g., 'email', 'google', 'facebook'
- `two_fa_enabled` BOOLEAN DEFAULT FALSE
- `created_at` TIMESTAMP WITH TIME ZONE DEFAULT now()

- `last_login_at` `TIMESTAMP WITH TIME ZONE`
- `deleted_at` `TIMESTAMP WITH TIME ZONE NULL`
- `profile_picture_url` `TEXT`
- **Indexes:** email unique index, index on status, created_at.

plans

Catalog of plans (Free, Premium, enterprise).

- `id` `SERIAL PRIMARY KEY`
- `slug` `VARCHAR UNIQUE` (e.g., 'free', 'premium')
- `name` `VARCHAR`
- `billing_cycle` `VARCHAR` ('monthly', 'yearly', 'one-time')
- `price_cents` `INTEGER`
- `max_participants` `INTEGER`
- `is_active` `BOOLEAN DEFAULT TRUE`

subscriptions

Tracks user subscriptions / renewals (one user can have many history records).

- `id` `UUID PRIMARY KEY`
- `user_id` `UUID REFERENCES users(id) ON DELETE CASCADE`
- `plan_id` `INT REFERENCES plans(id)`
- `status` `VARCHAR -- enum: active, past_due, cancelled, expired`
- `started_at` `TIMESTAMP`
- `expires_at` `TIMESTAMP`
- `auto_renew` `BOOLEAN`
- `stripe_subscription_id` `VARCHAR NULL`
- `created_at` `TIMESTAMP DEFAULT now()`

Indexes: user_id, status, expires_at (for cron jobs).

payment_methods

Payment sources for a user (tokenized).

- `id` `UUID PRIMARY KEY`
- `user_id` `UUID REFERENCES users(id)`
- `provider` `VARCHAR ()`
- `provider_customer_id` `VARCHAR`
- `provider_payment_method_id` `VARCHAR`
- `is_default` `BOOLEAN`
- `created_at` `TIMESTAMP`

meetings

Meeting metadata and scheduled meetings.

- `id` UUID PRIMARY KEY
- `host_user_id` UUID REFERENCES `users(id)`
- `title` VARCHAR
- `description` TEXT
- `meeting_code` VARCHAR UNIQUE -- short code or UUID-based
- `is_instant` BOOLEAN DEFAULT FALSE
- `starts_at` TIMESTAMP NULL
- `ends_at` TIMESTAMP NULL
- `max_participants` INTEGER
- `is_locked` BOOLEAN DEFAULT FALSE
- `join_url` TEXT -- generated link (signed)
- `conference_server_id` VARCHAR NULL -- pointer to SFU/MCU node or room id
- `created_at` TIMESTAMP DEFAULT `now()`
- `updated_at` TIMESTAMP
- `recording_allowed` BOOLEAN DEFAULT TRUE
- `transcription_enabled` BOOLEAN DEFAULT FALSE

Indexes: `host_user_id`, `starts_at`, `meeting_code`.

meeting_participants

Who joined/invited to a meeting.

- `id` UUID PRIMARY KEY
- `meeting_id` UUID REFERENCES `meetings(id)` ON DELETE CASCADE
- `user_id` UUID REFERENCES `users(id)` NULLABLE (guest users null)
- `display_name` VARCHAR
- `role` VARCHAR DEFAULT 'participant' -- enum: host, cohost, participant, moderator
- `joined_at` TIMESTAMP
- `left_at` TIMESTAMP NULL
- `is_muted` BOOLEAN DEFAULT FALSE
- `is_video_on` BOOLEAN DEFAULT TRUE
- `was_removed` BOOLEAN DEFAULT FALSE

Indexes: `meeting_id`, `user_id`.

chat_messages

Chat messages for meetings. (Option: store in NoSQL if huge scale)

- `id` BIGSERIAL PRIMARY KEY
- `meeting_id` UUID REFERENCES `meetings(id)` ON DELETE CASCADE
- `sender_user_id` UUID REFERENCES `users(id)` NULLABLE
- `sender_name` VARCHAR
- `message_text` TEXT
- `message_type` VARCHAR DEFAULT 'text' -- text, file, system, poll

- attachments JSONB NULL -- pointers to file storage
 - created_at TIMESTAMP DEFAULT now()
- Indexes:** meeting_id, created_at (for retrieving recent messages), full-text index on message_text if search needed.

files (file shares & KYC file metadata)

Single place for user uploaded files and recordings metadata.

- id UUID PRIMARY KEY
 - owner_user_id UUID REFERENCES users(id) NULLABLE
 - meeting_id UUID REFERENCES meetings(id) NULLABLE
 - type VARCHAR -- 'recording', 'attachment', 'kyc', 'avatar'
 - storage_url TEXT -- S3 path
 - size_bytes BIGINT
 - mime_type VARCHAR
 - checksum VARCHAR
 - status VARCHAR -- for KYC: pending, approved, rejected
 - created_at TIMESTAMP DEFAULT now()
- Indexes:** owner_user_id, meeting_id, type.

recordings

Store recording metadata (actual files in S3).

- id UUID PRIMARY KEY
- meeting_id UUID REFERENCES meetings(id)
- file_id UUID REFERENCES files(id)
- started_at TIMESTAMP
- stopped_at TIMESTAMP
- duration_sec INTEGER
- size_bytes BIGINT
- created_at TIMESTAMP DEFAULT now()

kyc_submissions

KYC verification submissions for a user.

- id UUID PRIMARY KEY
 - user_id UUID REFERENCES users(id)
 - file_id UUID REFERENCES files(id) -- scanned id
 - selfie_file_id UUID REFERENCES files(id)
 - status VARCHAR -- pending, approved, rejected
 - reviewed_by UUID REFERENCES admin_users(id) NULL
 - review_comment TEXT
 - submitted_at TIMESTAMP DEFAULT now()
 - reviewed_at TIMESTAMP NULL
- Indexes:** user_id, status.

admin_users

Admin accounts (separate for admin/privileged operations)

- id UUID PRIMARY KEY
- user_id UUID REFERENCES users(id) UNIQUE
- role VARCHAR -- admin, moderator, compliance
- created_at TIMESTAMP

audit_logs

Security/audit trail.

- id BIGSERIAL PRIMARY KEY
- actor_user_id UUID NULLABLE -- who performed action
- actor_ip INET
- entity_type VARCHAR -- 'user','subscription','meeting',...
- entity_id UUID or TEXT
- action VARCHAR -- created, updated, deleted, login_failed, kyc_reviewed
- before JSONB NULL
- after JSONB NULL
- created_at TIMESTAMP DEFAULT now()

Note: Trim before/after to avoid PII leaks.

notifications

Incoming notifications entries and status.

- id UUID PRIMARY KEY
- user_id UUID REFERENCES users(id)
- type VARCHAR -- 'meeting_reminder','payment','system'
- payload JSONB
- channel VARCHAR -- 'email','push','inapp'
- sent BOOLEAN DEFAULT FALSE
- sent_at TIMESTAMP NULL
- created_at TIMESTAMP DEFAULT now()

content (blog/faq/announcements)

- id UUID PRIMARY KEY
- title VARCHAR
- slug VARCHAR UNIQUE
- body TEXT
- excerpt TEXT
- tags TEXT[]
- published BOOLEAN
- published_at TIMESTAMP
- author_user_id UUID
- created_at, updated_at

Entity Relationship Diagram

