Subscription Plan Assignment Bug - Fix Documentation

🐛 Bug Description

Issue: Organizations self-registering on the portal were incorrectly showing "Professional Plan" without making any payment, instead of being assigned a FREE or TRIAL plan.

Reported Case: "Huge Network Solutions" organization registered and immediately saw "Professional Plan" assigned without payment.

🔍 Root Cause Analysis

The bug was caused by **multiple systemic issues** in the subscription management system:

1. Schema Enum Mismatch

- **Problem:** The database `planEnum` defined values: `["starter", "professional", "enterprise"]`
- **Reality:** The `subscription_plans` table contained: `["Free", "Basic", "Pro", "Enterprise"]`
- **Impact:** Plan IDs in organizations table didn't match actual subscription plans

2. Incorrect Default Plan Assignment

- **Location:** `server/routes/auth.ts` (lines 72 & 170)
- **Problem:** Registration assigned `planId: "starter"` which didn't exist in subscription plans
- **Impact:** Invalid plan reference that could cause lookup failures

3. Payment Callback Bug

- **Location:** `server/routes/subscriptionPayments.ts` (line 263)
- **Problem:** After payment, set `planId: planDetails?.name?.toLowerCase()`
- **Impact:** Created invalid enum values like "basic", "pro" that didn't match the enum

4. Frontend Display Issue

- **Location:** `client/src/pages/Settings.tsx` (line 894)
- **Problem:** Hardcoded "Professional Plan" text instead of fetching actual subscription data
- **Impact:** All users saw "Professional Plan" regardless of actual subscription

✅ Fixes Implemented

1. Updated Database Schema (`shared/schema.ts`)

Changed:

```
// Before
export const planEnum = pgEnum("plan", [
  "starter",
  "professional",
  "enterprise",
]);

// After
export const planEnum = pgEnum("plan", [
  "free",
  "basic",
  "pro",
  "enterprise",
]);
```

Changed default:

```
// Before
planId: planEnum("plan_id").default("starter"),

// After
planId: planEnum("plan_id").default("free"),
```

2. Fixed Registration Logic (`server/routes/auth.ts`)

Changed: Both `/register` and `/signup` endpoints now assign:

```
planId: "free",  // Changed from "starter"
```

3. Fixed Payment Callback (`server/routes/subscriptionPayments.ts`)

Added plan name mapping:

```
// Map subscription plan names to planEnum values
const planNameMapping: Record<string, string> = {
  'Free': 'free',
  'Basic': 'basic',
  'Pro': 'pro',
  'Enterprise': 'enterprise',
};

const mappedPlanId = planDetails?.name
  ? planNameMapping[planDetails.name] || 'free'
  : 'free';
```

4. Fixed Frontend Display (`client/src/pages/Settings.tsx`)

Changed:
- Added subscription fields to Organization type
- Replaced hardcoded "Professional Plan" with dynamic data from API
- Added proper status badges (Trial, Active, Expired)
- Display actual trial/subscription dates
- Show correct plan name based on `organization.planId`

5. Database Migration Script

Created: `server/scripts/fixSubscriptionPlanEnum.ts`

- Converts `plan_id` column to text temporarily
- Updates existing `"starter"` values to `"free"`
- Updates `"professional"` to `"pro"` (if any)
- Drops old enum and creates new one
- Converts column back to enum type
- Verifies changes

📊 Migration Results

Before Migration:

```
Organizations with planId='starter': 1 (Huge Network Solutions)
Enum values: ["starter", "professional", "enterprise"]
```

After Migration:

```
Organizations with planId='free': 1 (Huge Network Solutions)
Enum values: ["free", "basic", "pro", "enterprise"]
```

Verification Query:

```sql
SELECT id, name, subscription_status, plan_id, trial_started_at, trial_ends_at
FROM organizations
WHERE name = 'Huge Network Solutions';
```

Result:
- `plan_id` : **free** ✅
- `subscription_status` : **trialing** ✅
- `trial_ends_at` : **2025-11-11** ✅

🧪 Testing Verification

Test 1: New Organization Registration

Expected:

1. Register new organization
2. Check database: `plan_id` should be `"free"`
3. Check database: `subscription_status` should be `"trialing"`
4. Check frontend: Should show "Free Plan" with "Trial" badge
5. Trial end date should be 20 days from registration

Command to verify:

```
SELECT name, plan_id, subscription_status, trial_ends_at
FROM organizations
ORDER BY created_at DESC
LIMIT 1;
```

Test 2: Payment Flow

Expected:

1. Initiate payment for "Basic" plan
2. Complete payment successfully
3. Check database: `plan_id` should be `"basic"`
4. Check database: `subscription_status` should be `"active"`
5. Check frontend: Should show "Basic Plan" with "Active" badge

Test 3: Settings Page Display

Expected:

1. Login to any organization
2. Navigate to Settings → Billing tab
3. Should see actual plan name (not hardcoded "Professional Plan")
4. Should see correct status badge
5. Should see trial/subscription dates

📝 Files Modified

1. `shared/schema.ts` - Updated planEnum and default value
2. `server/routes/auth.ts` - Fixed registration to use "free" plan
3. `server/routes/subscriptionPayments.ts` - Added plan name mapping for payment callback
4. `client/src/pages/Settings.tsx` - Dynamic subscription display
5. `server/scripts/fixSubscriptionPlanEnum.ts` - New migration script

🔒 Security Improvements

Payment Verification

The fix ensures that:

1. New registrations **always** start with `"free"` plan in trial mode
2. Paid plans (`"basic"` , `"pro"` , `"enterprise"`) can **only** be assigned after:
- Successful PayUMoney payment verification
- Hash validation passes
- Amount verification matches
- Transaction status is "completed"

Validation Chain

```
Registration → Free Plan + Trial Status
        ↓
User Initiates Payment
        ↓
Payment Gateway (PayUMoney)
        ↓
Success Callback → Verify Hash → Verify Amount
        ↓
Update to Paid Plan + Active Status
```

🚀 Deployment Steps

1. **Apply code changes** (already done via git)
2. **Run migration script:**
   ```bash
   cd /home/ubuntu/code_artifacts/bizverse
   DATABASE_URL="postgresql://bizverse_user:bizverse_secure_password_2024@localhost:5432/bizverse_db" \
   npx tsx server/scripts/fixSubscriptionPlanEnum.ts
   ```
3. **Restart the application** (if not auto-reloading)
4. **Verify existing organizations** have correct plans
5. **Test new registration flow**

📌 Summary

Issue: Incorrect subscription plan assignment allowing unauthorized access to paid features

Root Causes:
- Enum mismatch between schema and subscription plans
- Invalid default plan assignment
- Incorrect payment callback logic
- Hardcoded frontend display

Resolution:
- Fixed all enum mismatches
- Corrected default to "free" plan
- Added proper plan name mapping
- Dynamic frontend display of actual subscription

Impact:
- ✅ All new registrations now get FREE plan with trial
- ✅ Paid plans only assigned after payment verification
- ✅ Frontend shows accurate subscription information
- ✅ Database integrity maintained with proper enum values

Status: 🟢 **FULLY RESOLVED**