

# STEP 22: Notifications & Reminders Engine - Testing Guide

**Implementation Date:** November 30, 2025

**Status:**  Complete

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## Overview

This testing guide provides comprehensive test scenarios for the Notifications & Reminders Engine. All tests should be performed to ensure the system works correctly for both buyers and suppliers.

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## Test Scenarios

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### 1. Event-Based Notifications

#### Test 1.1: Supplier Response Submitted

**Steps:**

1. Log in as a supplier
2. Navigate to an RFP with open submission window
3. Fill out and submit a response
4. Log out and log in as the buyer (RFP owner)
5. Check the bell icon for unread count
6. Navigate to /dashboard/notifications

**Expected Result:**

- Buyer should see unread notification count badge
  - Notification should appear with title "Supplier Response Submitted"
  - Message should include supplier name and RFP title
  - Notification should be marked as unread (blue background, dot indicator)
  - Email should be sent to buyer (if email notifications enabled)
-

## **Test 1.2: Supplier Question Created**

### **Steps:**

1. Log in as a supplier
2. Navigate to RFP questions page
3. Submit a new question (during Q&A window)
4. Log out and log in as the buyer
5. Check notifications

### **Expected Result:**

- Buyer receives “New Supplier Question” notification
  - Bell icon shows unread count
  - Clicking notification navigates to RFP detail page
- 

## **Test 1.3: Supplier Question Answered (Non-Broadcast)**

### **Steps:**

1. Log in as a buyer
2. Navigate to RFP detail page
3. Go to Q&A panel and answer a specific supplier question
4. Ensure “broadcast” toggle is OFF
5. Log out and log in as the supplier (who asked the question)
6. Check notifications

### **Expected Result:**

- Only the specific supplier receives notification
  - Notification title: “Your Question Was Answered”
  - Email sent to supplier if enabled
- 

## **Test 1.4: Broadcast Created**

### **Steps:**

1. Log in as a buyer
2. Navigate to RFP detail page
3. Go to Q&A panel
4. Either:
  - Answer a question with “Broadcast to ALL suppliers” toggle ON
  - OR create a manual broadcast message
5. Log out and log in as multiple suppliers

### **Expected Result:**

- ALL suppliers with portalUserId receive “New Buyer Announcement” notification
  - Each supplier can see their own notification
  - Suppliers cannot see each other’s notifications
-

## 2. Timeline-Based Notifications

### Test 2.1: Q&A Window Open

**Steps:**

1. As a buyer, create/edit an RFP
2. Set `askQuestionsStart` to today's date
3. Ensure suppliers are invited
4. Call the notification runner: `POST /api/notifications/run`
5. Log in as each supplier

**Expected Result:**

- Each supplier receives “Q&A Window Open” notification
  - Notification appears only once per day (idempotent)
- 

### Test 2.2: Q&A Window Closing Soon

**Steps:**

1. Set `askQuestionsEnd` to 3 days from today
2. Call notification runner
3. Check supplier notifications

**Expected Result:**

- Suppliers receive “Q&A Window Closing Soon” notification
- 

### Test 2.3: Submission Window Open

**Steps:**

1. Set `submissionStart` to today's date
2. Call notification runner
3. Check supplier notifications

**Expected Result:**

- Suppliers receive “Response Submission Window Open” notification
- 

### Test 2.4: Submission Deadline Soon

**Steps:**

1. Set `submissionEnd` to 3 days from today
2. Call notification runner
3. Check supplier notifications

**Expected Result:**

- Suppliers receive “Response Deadline Approaching” notification
- 

### Test 2.5: Submission Deadline Passed

**Steps:**

1. Set `submissionEnd` to yesterday

2. Call notification runner
3. Check buyer notifications

**Expected Result:**

- Buyer receives “Response Submission Deadline Passed” notification
- 

### Test 2.6: Demo Window Open

**Steps:**

1. Set `demoWindowStart` to today
2. Call notification runner
3. Check buyer notifications

**Expected Result:**

- Buyer receives “Demo Window Open” notification
- 

### Test 2.7: Award Date Soon

**Steps:**

1. Set `awardDate` to 3 days from today
2. Call notification runner
3. Check buyer notifications

**Expected Result:**

- Buyer receives “Award Date Approaching” notification
- 

### Test 2.8: Award Date Reached

**Steps:**

1. Set `awardDate` to today
2. Call notification runner
3. Check buyer notifications

**Expected Result:**

- Buyer receives “Award Date Reached” notification
- 

## 3. Notification Preferences

### Test 3.1: Disable Email Only

**Steps:**

1. Log in as a buyer
2. Navigate to /dashboard/settings/notifications
3. Turn OFF “Email Notifications”
4. Keep “In-App Notifications” ON
5. Trigger a notification event (e.g., supplier submits response)

**Expected Result:**

- In-app notification is created

- NO email is sent
  - Notification appears in notification center
- 

### **Test 3.2: Disable Both Email and In-App**

**Steps:**

1. Turn OFF both “Email Notifications” and “In-App Notifications”
2. Trigger a notification event

**Expected Result:**

- NO notifications are created
  - No email is sent
  - Bell icon shows 0 unread
- 

### **Test 3.3: Disable Specific Category**

**Steps:**

1. Turn OFF “Supplier Responses” notifications
2. Keep other categories enabled
3. Trigger supplier response submission

**Expected Result:**

- NO notification created for supplier response
  - Other categories still work
- 

### **Test 3.4: Supplier Preferences**

**Steps:**

1. Log in as a supplier
2. Navigate to /supplier/settings/notifications
3. Disable “Q&A Timeline”
4. Trigger Q&A window opening event

**Expected Result:**

- Supplier does NOT receive Q&A window notification
  - Other notification types still work
- 

## **4. Notification Center UI**

### **Test 4.1: View Notification List**

**Steps:**

1. Log in as a buyer with several notifications
2. Navigate to /dashboard/notifications

**Expected Result:**

- Notifications displayed in reverse-chronological order
- Unread notifications have blue background and dot indicator

- Read notifications have normal background
  - Relative time displayed (e.g., “2 hours ago”)
  - Category badges color-coded correctly
- 

### Test 4.2: Mark as Read

**Steps:**

1. Click the check button on an unread notification
2. Observe the UI update
3. Check bell icon unread count

**Expected Result:**

- Notification immediately marked as read (optimistic update)
  - Blue background and dot removed
  - Unread count decreases by 1
- 

### Test 4.3: Navigate to RFP

**Steps:**

1. Click on a notification with associated rfplId
2. Observe navigation

**Expected Result:**

- Automatically navigates to RFP detail page
  - Notification marked as read
  - URL is correct ( /dashboard/rfps/[id] )
- 

### Test 4.4: Empty State

**Steps:**

1. Create a new buyer account with no notifications
2. Navigate to /dashboard/notifications

**Expected Result:**

- Empty state message displayed
  - Bell icon shows
  - “Back to RFPs” button visible
- 

## 5. Bell Icon Functionality

### Test 5.1: Unread Count Display

**Steps:**

1. Create 3 unread notifications
2. Check bell icon in header

**Expected Result:**

- Red badge shows “3”
  - BellDot icon displayed (instead of plain Bell)
- 

**Test 5.2: Unread Count Updates****Steps:**

1. Mark one notification as read
2. Wait a few seconds for poll
3. Check bell icon

**Expected Result:**

- Badge updates to “2”
  - Polls every 30 seconds
- 

**Test 5.3: Bell Icon Navigation****Steps:**

1. Click the bell icon
2. Observe navigation

**Expected Result:**

- Navigates to /dashboard/notifications (buyer)
  - Navigates to /supplier/notifications (supplier)
- 

**6. Readiness Indicator Updates (Optional)****Test 6.1: Readiness Recalculation****Steps:**

1. As a buyer, run readiness calculation: `POST /api/dashboard/rfps/[id]/comparison/readiness`
2. Check notifications

**Expected Result:**

- Buyer receives “Supplier Readiness Updated” notification
- 

**7. Comparison Report Ready (Optional)****Test 7.1: Report Generation****Steps:**

1. As a buyer, generate comparison report: `POST /api/rfps/[id]/compare/report`
2. Check notifications

**Expected Result:**

- Buyer receives “Comparison Report Ready” notification
  - Clicking notification navigates to RFP detail page
-

# API Testing

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## Test Notification Runner

```
# Log in as buyer, then:
curl -X POST https://[your-domain]/api/notifications/run \
-H "Cookie: [your-session-cookie]" \
-H "Content-Type: application/json"

# Expected Response:
{
  "success": true,
  "processedRfps": 5,
  "notificationsCreated": 3,
  "timestamp": "2025-11-30T...",
  "message": "Processed 5 RFPs and created 3 notifications"
}
```

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## Test Unread Count

```
curl -X GET https://[your-domain]/api/notifications/unread-count \
-H "Cookie: [your-session-cookie]"

# Expected Response:
{
  "count": 5
}
```

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## Test Mark as Read

```
curl -X PATCH https://[your-domain]/api/notifications/[id]/read \
-H "Cookie: [your-session-cookie]"

# Expected Response:
{
  "success": true,
  "notification": { ... }
}
```

## Test Preferences API

```
# GET preferences
curl -X GET https://[your-domain]/api/settings/notifications \
-H "Cookie: [your-session-cookie]" \

# POST preferences
curl -X POST https://[your-domain]/api/settings/notifications \
-H "Cookie: [your-session-cookie]" \
-H "Content-Type: application/json" \
-d '{
    "emailEnabled": false,
    "inAppEnabled": true,
    "buyerRfpTimeline": true
}'
```

## Database Verification

### Check Notification Records

```
SELECT
  id,
  userId,
  type,
  category,
  title,
  message,
  readAt,
  createdAt,
  rfpId
FROM "Notification"
ORDER BY createdAt DESC
LIMIT 10;
```

### Check Notification Preferences

```
SELECT
  userId,
  emailEnabled,
  inAppEnabled,
  buyerRfpTimeline,
  buyerSupplierResponses,
  supplierQATimeline,
  supplierSubmissionTimeline
FROM "NotificationPreference"
WHERE userId = '[user-id]';
```

## Check Duplicate Prevention

```
-- Should return 0 or 1 for a given user/rfp/type on the same day
SELECT COUNT(*) as duplicate_count
FROM "Notification"
WHERE userId = '[user-id]'
  AND rfpId = '[rfp-id]'
  AND type = 'RFP_TIMELINE_QA_WINDOW_OPEN'
  AND createdAt >= CURRENT_DATE;
```

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## Validation Checklist

### Schema Changes

- [ ] `Notification` model created with all fields
- [ ] `NotificationPreference` model created with all toggles
- [ ] `User` model updated with relations
- [ ] Prisma migration successful

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### API Endpoints

- [ ] `POST /api/notifications/run` works
- [ ] `GET /api/notifications/unread-count` returns correct count
- [ ] `PATCH /api/notifications/[id]/read` marks as read
- [ ] `GET /api/settings/notifications` returns preferences
- [ ] `POST /api/settings/notifications` updates preferences

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### Event Hooks

- [ ] Supplier response submission triggers notification
- [ ] Supplier question creation triggers notification
- [ ] Buyer answering question triggers notification
- [ ] Broadcast creation triggers notifications to all suppliers
- [ ] Readiness update triggers notification (optional)
- [ ] Report generation triggers notification (optional)

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### Timeline Reminders

- [ ] Q&A window open notifications sent
- [ ] Q&A window closing soon notifications sent
- [ ] Submission window open notifications sent
- [ ] Submission deadline soon notifications sent
- [ ] Submission deadline passed notification sent
- [ ] Demo window open notification sent

- [ ] Award date soon notification sent
  - [ ] Award date reached notification sent
- 

## UI Components

- [ ] Buyer notification center displays correctly
  - [ ] Buyer preferences page works
  - [ ] Supplier notification center displays correctly
  - [ ] Supplier preferences page works
  - [ ] Buyer bell icon shows unread count
  - [ ] Supplier bell icon shows unread count
- 

## Security

- [ ] Notifications are user-scoped (no data leakage)
  - [ ] API endpoints verify authentication
  - [ ] API endpoints verify ownership
  - [ ] Suppliers cannot access buyer-only routes
  - [ ] Buyers cannot see supplier portal notifications
- 

## No Breaking Changes

- [ ] All existing RFP flows still work
  - [ ] Supplier response submission unchanged
  - [ ] Q&A system unchanged
  - [ ] Comparison engine unchanged
  - [ ] No API response format changes
- 

## Common Issues & Fixes

### Issue: Notifications not appearing

#### Fix:

- Check user preferences (may be disabled)
  - Verify API authentication
  - Check browser console for errors
- 

### Issue: Duplicate notifications

#### Fix:

- Verify `checkIfNotificationSentToday()` logic
- Check date comparison functions
- Ensure notification runner not called multiple times

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## Issue: Bell icon unread count not updating

**Fix:**

- Wait for 30-second poll interval
  - Check network tab for API calls
  - Verify session is active
- 

## Issue: Email notifications not sent

**Fix:**

- Check `RESEND_API_KEY` in `.env`
  - Verify `sendEmail()` function works
  - Check user email preferences
- 

## Performance Checks

### Load Testing

- [ ] Create 100+ notifications for a user
  - [ ] Page loads in < 2 seconds
  - [ ] Bell icon updates in < 500ms
  - [ ] No memory leaks from polling
- 

### Database Indexing

- [ ] Index on `(userId, createdAt)` exists
  - [ ] Index on `rfpId` exists
  - [ ] Queries complete in < 100ms
- 

## Next Steps

After completing all tests:

1. Document any issues found
  2. Fix critical bugs before deployment
  3. Schedule regular notification runner via cron
  4. Monitor notification delivery rates
  5. Collect user feedback on notification frequency
- 

**Testing Complete:** [Date]

**Tested By:** [Name]

**Issues Found:** [Count]

**Status:** [Pass/Fail]