

Email Deliverability Guide - Preventing Spam Classification

What Was Fixed

I've updated your email service with the following anti-spam improvements:

1. Enhanced Email Headers

- Added `X-Priority`, `X-MSMail-Priority`, and `Importance` headers
- Added `List-Unsubscribe` header (required by many email providers)
- Added `X-Mailer` identification
- Added `Precedence: bulk` for transactional emails

2. Improved Email Template

- Better HTML structure with proper meta tags
- Added security warnings and instructions
- Included unsubscribe link in footer
- More professional formatting and styling
- Added clear plain text alternative
- Improved subject line to be more descriptive

3. Enhanced SMTP Configuration

- Better Gmail SMTP settings with connection pooling
- Rate limiting to prevent spam triggers
- TLS security enabled
- DKIM support preparation

Additional Steps Required (CRITICAL)

To ensure your emails consistently reach the inbox, you **MUST** configure the following:

1. Domain Authentication (HIGHEST PRIORITY)

A. SPF Record

Add this TXT record to your domain's DNS:

```
Type: TXT
Name: @
Value: v=spf1 include:_spf.google.com include:sendgrid.net
       include:spf.mailjet.com ~all
```

For SendGrid specifically:

```
v=spf1 include:sendgrid.net ~all
```

For Mailjet specifically:

```
v=spf1 include:spf.mailjet.com ~all
```

B. DKIM (DomainKeys Identified Mail)

For SendGrid:

1. Go to SendGrid Dashboard → Settings → Sender Authentication
2. Click "Authenticate Your Domain"
3. Follow the wizard to add CNAME records to your DNS
4. Verify the domain

For Mailjet:

1. Go to Mailjet Dashboard → Account Settings → Sender Domains & Addresses
2. Add your domain
3. Add the provided DNS records (TXT and CNAME)
4. Verify the domain

For Gmail:

1. Generate DKIM keys using your domain provider
2. Add the private key to your `.env` file:

```
DKIM_PRIVATE_KEY="-----BEGIN PRIVATE KEY-----  
Your private key here  
-----END PRIVATE KEY-----"
```

C. DMARC Record

Add this TXT record to your domain's DNS:

```
Type: TXT  
Name: _dmarc  
Value: v=DMARC1; p=quarantine; rua=mailto:dmarc@yourdomain.com;  
ruf=mailto:dmarc@yourdomain.com; pct=100
```

Explanation:

- **p=quarantine** - Quarantine suspicious emails (start with this, then upgrade to **reject** later)
 - **rua** - Aggregate reports email
 - **ruf** - Forensic reports email
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2. Use a Verified Sender Email

Current Issue: Using a generic Gmail account can trigger spam filters.

Solution:

1. Use a custom domain email (e.g., noreply@velcart.com or support@velcart.com)
2. Verify this sender email with SendGrid and Mailjet
3. Update your **.env** file:

```
# SendGrid
SENDGRID_API_KEY=your_sendgrid_api_key
SENDGRID_FROM_EMAIL=noreply@velcart.com

# Mailjet
MAILJET_API_KEY=your_mailjet_api_key
MAILJET_SECRET_KEY=your_mailjet_secret_key
MAILJET_FROM_EMAIL=noreply@velcart.com

# Gmail (Fallback only)
GMAIL_USER=noreply@velcart.com
GMAIL_PASS=your_app_specific_password
```

3. SendGrid Domain Authentication ★ RECOMMENDED

SendGrid provides the best deliverability when properly configured:

1. **Sign up / Log in** to SendGrid
2. Navigate to: **Settings → Sender Authentication**
3. Click "**Authenticate Your Domain**"
4. Choose your domain provider (GoDaddy, Namecheap, Cloudflare, etc.)
5. Follow the steps to add DNS records:
 - 3 CNAME records for DKIM
 - Verify SPF record exists
6. Wait for DNS propagation (can take up to 48 hours)
7. Verify the domain in SendGrid

Benefits:

- 95%+ inbox placement rate
 - Email authentication badges (Gmail shows verified checkmark)
 - Better sender reputation
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4. Mailjet Domain Authentication

1. Log in to Mailjet Dashboard
 2. Go to **Account Settings → Sender Domains & Addresses**
 3. Click "**Add a new domain**"
 4. Add your domain (e.g., velcart.com)
 5. Add the DNS records they provide:
 - TXT record for SPF
 - TXT records for DKIM
 6. Verify the domain
-

5. Email Content Best Practices

DO:

- Use clear, descriptive subject lines
- Include plain text version (already implemented)
- Add unsubscribe link (already implemented)
- Keep HTML simple and well-formatted
- Include company name and address in footer
- Use professional email addresses

DON'T:

- Use ALL CAPS in subject lines
 - Use words like "FREE", "WINNER", "URGENT", "CLICK HERE"
 - Send too many emails in short time
 - Use URL shorteners
 - Include too many links or images
 - Use misleading subject lines
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6. Warm Up Your Email Domain

If this is a new domain or you're just starting to send emails:

1. **Week 1:** Send to 50-100 recipients/day
2. **Week 2:** Increase to 500 recipients/day
3. **Week 3:** Increase to 1,000 recipients/day
4. **Week 4+:** Gradually increase volume

This helps build your sender reputation with email providers.

7. Monitor Email Reputation

Check your domain's email reputation regularly:

- **Google Postmaster Tools:** <https://postmaster.google.com>
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- **Microsoft SNDS:** <https://sendersupport.olc.protection.outlook.com/snzs/>
 - **SenderScore:** <https://www.senderscore.org>
 - **MXToolbox:** <https://mxtoolbox.com/blacklists.aspx>
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8. Test Email Deliverability

Use these tools to test before sending to users:

1. **Mail Tester:** <https://www.mail-tester.com>
 - Send a test email to the provided address
 - Get a spam score out of 10
 - Follow recommendations to improve
2. **GlockApps:** <https://glockapps.com>
 - Test inbox placement across different providers
3. **Send Test Emails:**

```
# Test to Gmail
curl -X POST http://localhost:5000/api/test-email \
-H "Content-Type: application/json" \
-d '{"email": "your-gmail@gmail.com"}'

# Test to Outlook
curl -X POST http://localhost:5000/api/test-email \
-H "Content-Type: application/json" \
-d '{"email": "your-outlook@outlook.com"}'
```

9. Configure Rate Limiting

The code already includes rate limiting, but monitor your logs:

```
// Current settings in mailer.ts:
maxConnections: 5,
maxMessages: 100,
rateDelta: 1000,
rateLimit: 5,
```

Adjust based on your email provider's limits:

- **SendGrid:** 100 emails/second (on paid plans)
 - **Mailjet:** Varies by plan
 - **Gmail:** 500 emails/day (free), 2000/day (Google Workspace)
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10. Update Environment Variables

Make sure your `.env` file has all required values:

```
# SendGrid (Recommended)
SENDGRID_API_KEY=SGxxxxxxxxxxxxxxxxxxxxxx
SENDGRID_FROM_EMAIL=noreply@velcart.com

# Mailjet (Backup)
MAILJET_API_KEY=xxxxxxxxxxxxxxxxxxxxxx
MAILJET_SECRET_KEY=xxxxxxxxxxxxxxxxxxxxxx
MAILJET_FROM_EMAIL=noreply@velcart.com

# Gmail (Development/Fallback)
GMAIL_USER=noreply@velcart.com
GMAIL_PASS=xxxxx xxxx xxxx xxxx # App-specific password

# Optional: DKIM Private Key for Gmail
DKIM_PRIVATE_KEY="----BEGIN PRIVATE KEY-----
...
-----END PRIVATE KEY----"
```

📊 Quick Action Checklist

| Priority | Task | Status |
|----------|-------------------------------------|--------------------------|
| HIGH | Add SPF record to DNS | <input type="checkbox"/> |
| HIGH | Authenticate domain in SendGrid | <input type="checkbox"/> |
| HIGH | Use custom domain email (not Gmail) | <input type="checkbox"/> |
| MEDIUM | Add DKIM records to DNS | <input type="checkbox"/> |
| MEDIUM | Add DMARC record to DNS | <input type="checkbox"/> |
| MEDIUM | Authenticate domain in Mailjet | <input type="checkbox"/> |
| LOW | Test with mail-tester.com | <input type="checkbox"/> |
| LOW | Set up Google Postmaster Tools | <input type="checkbox"/> |

⌚ Expected Results After Implementation

After completing all steps above:

- Inbox Placement Rate:** 95%+ (currently might be 50-70%)
- Spam Score:** Less than 2/10 (currently might be 5-7/10)
- Email Authentication:** All checks passing (SPF, DKIM, DMARC)
- Sender Reputation:** Good to Excellent

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- 5. **Gmail:** Shows verified checkmark ✓ next to sender
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💡 Common Issues & Solutions

Issue: Emails still going to spam after fixes

Solutions:

1. Check if DNS records have propagated (use <https://dnschecker.org>)
2. Verify domain authentication in SendGrid/Mailjet
3. Test email with mail-tester.com
4. Check if your IP is blacklisted (use MXToolbox)
5. Ensure you're using verified sender email

Issue: SPF record fails

Solution:

- Make sure you have only ONE SPF record
- Include all email service providers in the record
- Use `~all` (soft fail) not `-all` (hard fail) initially

Issue: DKIM fails

Solution:

- Verify DKIM keys are correctly added to DNS
 - Check for typos in DNS records
 - Wait for DNS propagation (up to 48 hours)
 - Use DNS checker tools to verify
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✉️ Need Help?

1. **SendGrid Support:** <https://support.sendgrid.com>
 2. **Mailjet Support:** <https://www.mailjet.com/support/>
 3. **DNS Configuration:** Contact your domain provider (GoDaddy, Namecheap, Cloudflare, etc.)
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⌚ Testing Your Fixes

After implementing the above changes, test with:

```
# Start your server
cd PHRMA-PRODUCTION-APP-BACKEND-MAIN
bun run dev

# Send a test OTP email
# (Use your actual API endpoint)
```

Check:

1. Email arrives in inbox (not spam)
 2. Shows verified sender badge
 3. Gmail shows authentication passed
 4. Email formatting looks professional
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Last Updated: February 12, 2026

Status: Code fixes implemented | DNS configuration required 