# Setting Up Notifications in GitHub Actions for Slack and Email (AWS SES)

## 1. Using GitHub Actions Bot for Slack Notifications

This section describes how to set up the official GitHub Actions Bot for sending notifications to Slack channels.  
  
### Add GitHub Actions Bot to Your Slack Workspace  
  
1. Open Slack and navigate to \*\*Apps\*\*.  
2. Search for \*\*"GitHub Actions"\*\*.  
3. Click \*\*Add to Slack\*\*.  
4. Authorize the app to connect it to your Slack workspace.  
  
### Invite the Bot to Slack Channels  
  
1. Go to the desired Slack channel where you want notifications.  
2. Type the following command:  
 ```  
 /invite @GitHub Actions  
 ```  
3. Grant the bot permissions to post messages in the channel.  
  
### Subscribe Slack Channel to a GitHub Repository  
  
- To start receiving notifications from a specific repository:  
 ```  
 /github subscribe owner/repo  
 ```  
 Example: `/github subscribe myorg/myrepo`  
  
- To unsubscribe from a repository:  
 ```  
 /github unsubscribe owner/repo  
 ```  
  
This will enable notifications like workflow status, pull requests, and push events in the subscribed Slack channel.  
  
### Add Slack Bot Token in GitHub Secrets  
  
1. Navigate to \*\*GitHub Repository > Settings > Secrets and variables > Actions\*\*.  
2. Add a new secret:  
 - \*\*Name:\*\* `SLACK\_BOT\_TOKEN`  
 - \*\*Value:\*\* Your Slack Bot token (starts with `xoxb-...`).  
  
### GitHub Actions Workflow Example  
  
This example demonstrates how to send a notification to Slack using the GitHub Actions Bot.  
  
```yaml  
name: Slack Notification via GitHub Actions Bot  
  
on:  
 push:  
 branches:  
 - main  
  
jobs:  
 notify:  
 runs-on: ubuntu-latest  
 steps:  
 - name: Checkout Repository  
 uses: actions/checkout@v3  
  
 - name: Slack Notification via GitHub Actions Bot  
 env:  
 SLACK\_BOT\_TOKEN: ${{ secrets.SLACK\_BOT\_TOKEN }}  
 run: |  
 curl -X POST -H "Authorization: Bearer $SLACK\_BOT\_TOKEN" -H "Content-Type: application/json" --data '{  
 "channel": "#your-channel-name",  
 "text": "🎉 GitHub Actions Workflow completed successfully on main branch!"  
 }' https://slack.com/api/chat.postMessage  
```  
  
### Key Considerations  
  
- Replace `#your-channel-name` with the name of the Slack channel where the bot is subscribed.  
- Customize the notification message to include relevant details about the workflow.

## 2. Using AWS SES for Email Notifications

This section provides a guide to using AWS SES (Simple Email Service) for email notifications in GitHub Actions.  
  
### Configure AWS SES  
  
1. \*\*Log in to AWS Console:\*\* Go to the \*\*SES (Simple Email Service)\*\* section.  
2. \*\*Verify Email Address or Domain:\*\*  
 - Navigate to \*\*Verified Identities\*\*.  
 - Click \*\*Create Identity\*\* and verify your email address (e.g., `ci-cd@yourcompany.com`) or your domain (e.g., `yourcompany.com`).  
3. \*\*Move Out of Sandbox Mode:\*\* (Optional, but recommended)  
 - Raise a \*\*Service Limit Increase Request\*\* in AWS Support to send emails to unverified recipients.  
4. \*\*Generate IAM User Credentials:\*\*  
 - Go to \*\*IAM > Users > Add User\*\*.  
 - Enable \*\*Programmatic Access\*\*.  
 - Attach the \*\*AmazonSESFullAccess\*\* policy.  
 - Save the \*\*Access Key ID\*\* and \*\*Secret Access Key\*\* securely.  
  
### Add AWS Credentials to GitHub Secrets  
  
1. Navigate to \*\*GitHub Repository > Settings > Secrets and variables > Actions\*\*.  
2. Add the following secrets:  
 - `AWS\_ACCESS\_KEY\_ID`: Your AWS IAM access key ID.  
 - `AWS\_SECRET\_ACCESS\_KEY`: Your AWS IAM secret access key.  
 - `AWS\_REGION`: The AWS region for SES (e.g., `us-east-1`).  
 - `SES\_FROM\_EMAIL`: Your verified email address (e.g., `ci-cd@yourcompany.com`).  
 - `SES\_TO\_EMAIL`: Recipient email address (e.g., `team@yourcompany.com`).  
  
### GitHub Actions Workflow Example  
  
This example demonstrates how to send an email notification using AWS SES.  
  
```yaml  
name: AWS SES Email Notification  
  
on:  
 workflow\_run:  
 workflows: ["CI/CD Pipeline"]  
 types:  
 - completed  
  
jobs:  
 send-email:  
 runs-on: ubuntu-latest  
 steps:  
 - name: Configure AWS CLI  
 uses: aws-actions/configure-aws-credentials@v4  
 with:  
 aws-access-key-id: ${{ secrets.AWS\_ACCESS\_KEY\_ID }}  
 aws-secret-access-key: ${{ secrets.AWS\_SECRET\_ACCESS\_KEY }}  
 aws-region: ${{ secrets.AWS\_REGION }}  
  
 - name: Send Email via AWS SES  
 run: |  
 aws ses send-email --from "${{ secrets.SES\_FROM\_EMAIL }}" --to "${{ secrets.SES\_TO\_EMAIL }}" --subject "CI/CD Pipeline Notification: Workflow ${{ github.workflow }} Completed" --text "The CI/CD pipeline '${{ github.workflow }}' has completed successfully.\nWorkflow Status: ${{ job.status }}\nBranch: ${{ github.ref }}\nCommit: ${{ github.sha }}"  
```  
  
### Advanced Configurations  
  
#### a. \*\*Send HTML Emails\*\*  
```yaml  
--html "<h1>CI/CD Workflow Complete</h1><p>Status: Success</p>"  
```  
  
#### b. \*\*Include Attachments\*\*  
AWS SES supports attachments through MIME format. Use libraries or tools to format emails with attachments.  
  
### Security Best Practices  
  
- Use \*\*IAM policies with least privilege\*\* for SES access.  
- Store sensitive data like AWS credentials in \*\*GitHub Secrets\*\*.  
- Regularly rotate IAM credentials.

## 3. Advantages of These Approaches

### Slack Notifications  
- \*\*Real-Time Alerts:\*\* Notifications appear instantly in Slack channels.  
- \*\*Collaborative Environment:\*\* Team members can discuss issues directly in Slack.  
- \*\*Simplified Setup:\*\* Minimal configuration with the GitHub Actions Bot.  
  
### AWS SES Email Notifications  
- \*\*Scalable:\*\* Send thousands of emails per second.  
- \*\*Reliable Delivery:\*\* Built-in monitoring and retries.  
- \*\*Customizable:\*\* Supports rich HTML emails and attachments.

## Conclusion

By integrating Slack and AWS SES notifications into your GitHub Actions CI/CD workflows, you can ensure timely updates and efficient collaboration among team members. Choose the method that aligns best with your team's needs, or use both for maximum flexibility.  
  
If you need further assistance or customization, feel free to reach out!