Delay-Flow SCTE-35 Automated Insertion

AWS Marketplace Documentation

Overview

Delay-Flow, part of the Ad-Flow SCTE-35 Automated Insertion system, is a containerized solution that enables:

- Live video capture (RTP and SRT) containing ad content
- Delays and re-streams the video stream to match with Ad-Stream's output
- Performance monitoring through Grafana dashboards
- Error tracking via CloudWatch logs

The solution processes live video streams from RTP or SRT sources, delays it before forwarding to video encoders like AWS Elemental MediaLive. The video stream will be used as the secondary input to the video encoder.

Security and Data Management

Sensitive Information Storage

- All credentials (SRT passphrases, stream IDs) are stored as environment variables within the ECS task definition
- No sensitive data is persisted to disk
- Grafana login credentials are stored in the container and should be changed upon first login

Data Encryption

1. In-Transit Encryption:
    - SRT protocol offers built-in encryption for video streams when using passphrases
    - HTTPS access to Grafana dashboards using self-signed certificates
    - CloudWatch logs are encrypted using AWS default encryption
2. Configuration Steps for SRT Encryption:
    - Set INPUT_SRT_PASSPHRASE and OUTPUT_SRT_PASSPHRASE in the container environment variables
    - Ensure matching passphrases are configured on your contribution encoder and MediaLive input

Credential and Key Rotation

Follow these steps to rotate credentials:

1. SRT Passphrases:

- Update INPUT_SRT_PASSPHRASE and OUTPUT_SRT_PASSPHRASE in the ECS task definition
- Update corresponding passphrases in your contribution encoder and MediaLive input
- Redeploy the ECS task to apply changes

2. Grafana Password:
    - Access Grafana at https://[publicIPv4DNS]:3000
    - Navigate to User Settings
    - Select "Change Password"
    - Enter new password credentials

3. Grafana TLS certificate:
    - Self-signed certificates are generated on EC2 instance startup. Rebooting the EC2 instance will generate a new TLS certificate.

Deployment Instructions

Prerequisites

- AWS account with permissions to create ECS clusters and tasks
- Network allowing RTP/SRT traffic on specified ports
- MediaLive input configured for your chosen protocol

Step-by-Step Deployment

1. Deploy CloudFormation Cluster Template:
    - Navigate to CloudFormation in AWS Console
    - Click "Create Stack"
    - Upload the Cluster template
    - Follow prompts to create ECS cluster
2. Deploy Container Template:
    - Click "Create Stack" again
    - Upload the Task/Container template
    - Configure environment variables:

INPUT_IP: Source IP address
INPUT_PORT: Source port (default: 5004)
OUTPUT_IP: Destination IP address
OUTPUT_PORT: Destination port
DELAY_SECONDS: Processing delay time
STREAM_PROTOCOL: "rtp" or "srt"
METRICS_PUSH_GATEWAY: "http://localhost:9091/metrics"
CHANNEL_NAME: Instance name for metrics

For SRT, additional required variables:

INPUT_SRT_STREAMID: Source stream identifier
INPUT_SRT_PASSPHRASE: Source encryption passphrase
OUTPUT_SRT_STREAMID: Destination stream identifier
OUTPUT_SRT_PASSPHRASE: Destination encryption passphrase

Monitoring and Health Assessment

CloudWatch Logs

1. Navigate to CloudWatch in AWS Console
2. Select "Log Groups"
3. Find the log group matching your ECS cluster name
4. Review logs for errors or warnings

Grafana Monitoring

1. Access Grafana:
    - Navigate to https://[publicIPv4DNS]:3000
    - Default credentials:
        - Username: admin
        - Password: admin (change upon first login)
2. View Metrics:
    - Select "Dashboards"
    - Choose "Capture Metrics Dashboard"
    - Monitor:
        - Input/output transfer rates
        - Ad break detection count (note: will be 0 for Delay-Flow)
        - Stream health metrics

EC2 Instance Health

1. Navigate to EC2 Console
2. Verify correct region
3. Select "Instances"
4. Choose your ECS cluster instance
5. Review "Status Checks" tab
6. Monitor:
    - System status checks
    - Instance status checks
    - CPU utilization
    - Network performance

AWS Service Quotas and Costs

Service Quotas

- ECS Service Quota: 1000 tasks per service (default)
- EC2 Instance Quota: Varies by region and instance type
- Network Interface Quota: 5 per instance (default)

To request quota increases:

1. Navigate to Service Quotas console
2. Select the service requiring an increase
3. Choose the quota to modify
4. Click "Request quota increase"

Cost Breakdown

Estimated monthly costs above standard quotas:

1. EC2 Instance: Varies by instance type
2. ECS: No additional cost
3. CloudWatch Logs: $0.50 per GB ingested
4. Network Transfer: $0.09 per GB out to internet

Troubleshooting

Common issues and resolutions:

1. Stream not receiving:
    - Verify security group allows traffic on INPUT_PORT
    - Confirm source IP matches INPUT_IP
    - Check CloudWatch logs for connection errors
2. SCTE-35 markers not appearing:
    - Verify DELAY_SECONDS is sufficient for ad detection
    - Review SCTE35_FILLER_REPEAT_SECONDS setting
    - Check CloudWatch logs for detection issues
3. Grafana access issues:
    - Confirm security group allows traffic on port 3000
    - Verify correct public DNS address
    - Check instance status in EC2 console

For additional support, contact AWS Marketplace support, Alchemy-Flow support or refer to detailed documentation.