## Zenpulse: From Curiosity to Cloud

## What is Zenpulse?

**Zenpulse** is a real-time multichannel notification simulation platform built using native AWS services and OpenAI intelligence.

It generates lifecycle-based notifications across SMS, Email, Slack, and Push in response to user-defined triggers.

## What is a Lifecycle in Tech?

In the world of software and systems, a **lifecycle** refers to the **sequence of events or states** that a user, system, or object experiences from start to finish.

It's like the **story arc** of a customer interacting with your app — from the moment they land on the homepage to that final "Thank you for your order" message.

### **Example:** E-commerce Customer Lifecycle:

Stage	Description
Added to Cart	Customer adds product to cart
Abandoned Cart	No checkout — system follows up
✓ Order Placed	Customer completes purchase
📦 Order Shipped	System notifies shipping status
Modelivered Delivered	Final confirmation & feedback request

Zenpulse captures these lifecycle **moments** and **emits them as intelligent, channel-specific events** using OpenAI + AWS.

You define the lifecycle class (*ecom*, *banking*, *support*), and Zenpulse brings it to life across SMS, Email, Slack, and Push — in real time.

## Why Zenpulse?

#### Zenpulse: Real-World Use Case Scenarios (For Production)

#### • CI/CD Deployment Events

Instantly notify dev teams across Slack, Email, or WebSocket when deployments succeed, fail, or roll back — without modifying pipeline code.

#### • Microservice Health Monitoring

Trigger alerts when ECS, EKS, or Lambda containers report unhealthy — Zenpulse emits retries + escalations to Slack, SMS, or custom endpoints.

#### E-commerce Transactional Messaging

Lifecycle-driven notifications for cart abandonment, order confirmations, and shipping updates — enhanced by OpenAI, delivered over SMS, Email, Slack, Push.

#### • Banking Transaction Bridge

Real-time transaction updates (debit, credit, balance alerts, fraud warnings) routed via EventBridge — no backend changes needed.

## • Support Workflow Automation

Auto-alert agents and users on ticket assignment, escalation, or SLA breaches using channel-based routing (Slack, Email, WebSocket).

#### Enter Zenpulse: Loosely Coupled, Lambda-Powered Notification Engine

Zenpulse was designed from the ground up to answer every challenge in **Serverless Guru's** notification platform brief — and then go beyond.

**100%** *Serverless* — Built using AWS Lambda, EventBridge, DynamoDB, API Gateway, CloudWatch, and S3.

- *Lifecycle-Driven* OpenAI crafts dynamic messages based on simulation type (ecom, banking, support).
- *Multi-Channel by Default* SMS (SNS), Email (SES), Slack (Webhook), Push (WebSocket) all supported natively.
- *Scalable by Design* Built on Lambda + EventBridge with auto-scaling, global reach, and low latency.
- Secure and Isolated IAM roles scoped per channel; no shared secrets or leaky APIs.
- **Retries? Done.** EventBridge handles automatic retries and delivery durability.
- *Fully Observable* Integrated with CloudWatch and DynamoDB for real-time logs, metrics, and replayable history.
- *Extensible by Default* Add or remove channels (SMS, Email, Push, Slack, WhatsApp) without modifying your backend logic.
- **Loosely Coupled** Each channel is triggered by an EventBridge rule; no spaghetti code or inter-service dependencies.

# Zenpulse is not just a notification engine — it's the future of communication pipelines.

No vendor lock-in. No backend rewrites. Just pure AWS-native velocity, powered by OpenAI.

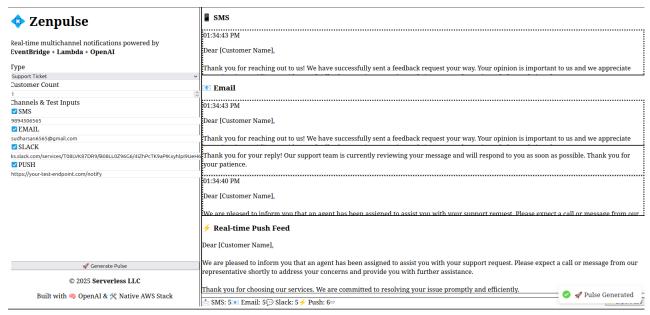
## Zenpulse Dashboard – Tester Guide 101

Include on Page 3 with the screenshot:

Visit: <a href="https://sim.sudharsan17.online">https://sim.sudharsan17.online</a>

No login. No setup. Just:

Select lifecycle (ecom, banking, or support)



- Fill test input fields for each selected channel (SMS, Email, Slack, Push)
- Click **%** "Generate Pulse"
- Watch:
- Real-time logs update for each channel (SMS, Email, Slack)
- Push tab reflects new messages instantly via WebSocket
- Stats bar updates with latest counts
- Export CSV with one click

## Zenpulse Technology Stack Summary

#### Frontend:

- React + Tailwind CSS Lightning-fast UI, responsive across all devices
- Wite Super-fast build tool for instant development feedback
- **MebSocket (API Gateway)** Real-time push notifications, instant client updates
- **Custom Metrics + CSV Export** Live stats tracking and export support

#### Backend (100% Serverless):

- **OpenAI (GPT)** Dynamically generates lifecycle-based notification content
- X AWS Lambda Stateless compute engine powering business logic
- **@ Amazon EventBridge** Core event router, fully decoupled architecture
- Amazon SNS + SES SMS and Email delivery at scale
- **I** Slack Webhooks Seamless integration with messaging workflows
- DynamoDB Stores notification logs per channel for auditing and replay

• **API Gateway (HTTP + WebSocket)** – Handles REST and live socket connections

#### **Infrastructure:**

- 📄 S3 (Static Web Hosting) Frontend deployed securely and globally
- CloudFront CDN edge delivery for low-latency dashboard access
- State 1 DNS routing for custom domain: sim.sudharsan17.online
- **ACM** + **HTTPS** Secure SSL/TLS everywhere, including CloudFront