

Building a Production-Ready Shared Hosting Infrastructure on **AWS**

Host 5 Websites on One EC2 Instance Using Nginx, SSL, DuckDNS & CloudWatch

This case study highlights how **ScaleHost** designed, implemented, and optimized a production-ready shared hosting environment on AWS to host multiple business websites securely, efficiently, and at scale.



TECHNOLOGY STACK



Amazon EC2

High-performance RHEL 10 instance



RHEL 10

Enterprise-grade Linux OS



Nginx

Web server & reverse proxy with virtual hosts



Let's Encrypt SSL

Free SSL certificates for all domains



DuckDNS

Dynamic DNS for easy domain mapping



Amazon CloudWatch

Real-time monitoring & alerting



ApacheBench

Load testing for perforWatch validation



WEBSITES HOSTED

5

Live Business Websites



ENVIRONMENT

AWS EC2

RHEL 10 + Nginx



SECURITY

HTTPS

SSL Secured



MONITORING

24/7

CloudWatch Enabled



A cost-effective, secure, and scalable solution to host multiple business websites on a single EC2 instance with enterprise-grade monitoring, performance optimization, and security.



ScaleHost
Scalable Hosting, Simplified.—

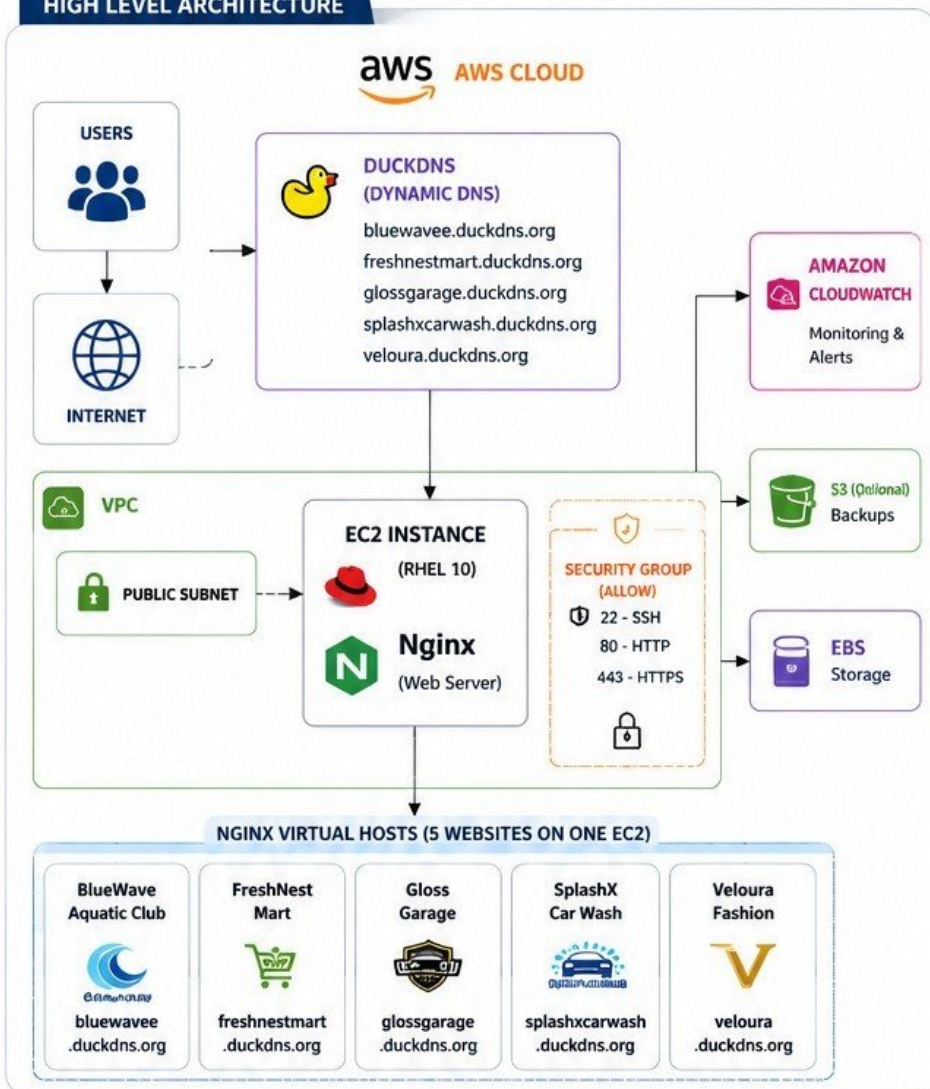
PROJECT OVERVIEW & OBJECTIVES

The goal of this project was to design and deploy a production-ready shared hosting environment on AWS to host five independent business websites on a single EC2 instance.

PROJECT OBJECTIVES

- Deploy Production-Ready Infrastructure**
Launch and configure a secure EC2 instance on AWS (RHEL 10) for hosting.
- Host Multiple Business Websites**
Host 5 independent websites using Nginx virtual hosts on a single server.
- Secure with HTTPS**
Implement Let's Encrypt SSL certificates for all domains.
- Domain Management with DuckDNS**
Use DuckDNS for dynamic DNS mapping to the EC2 Elastic IP.
- Monitor with CloudWatch**
Enable real-time monitoring of system metrics and performance.
- Performance Testing**
Validate infrastructure using ApacheBench for load and stress testing.
- High Availability & Scalability**
Design a scalable and maintainable infrastructure following AWS best practices.

HIGH LEVEL ARCHITECTURE



INFRASTRUCTURE SUMMARY

COMPONENT	TECHNOLOGY / SERVICE
 Cloud Provider	Amazon Web Services (AWS)
 Compute	Amazon EC2 (RHEL 10)
 Web Server	Nginx
 Operating System	Red Hat Enterprise Linux 10
 DNS	DuckDNS (Dynamic DNS)
 SSL	Let's Encrypt (Free SSL)
 Monitoring	Amazon CloudWatch
 Load Testing	ApacheBench
 Websites Hosted	5 Independent Business Websites

KEY HIGHLIGHTS

- ✓ **Cost-Effective Solution**
Host 5 websites on a single EC2 instance.
- ✓ **Secure & Reliable**
All websites are protected with HTTPS.
- ✓ **Performance Optimized**
Nginx + Proper Configuration for high performance.
- ✓ **Real-Time Monitoring**
CloudWatch enabled for CPU, Network, Disk & more.
- ✓ **Production Ready**
Built following AWS best practices and security standards.

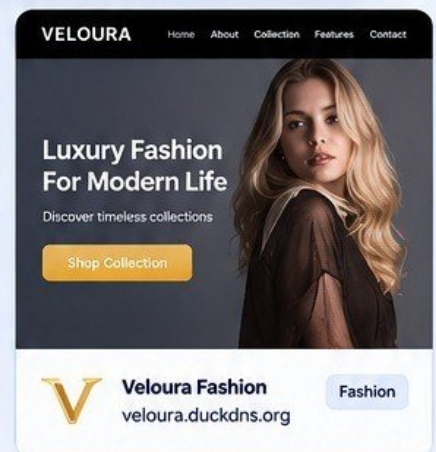
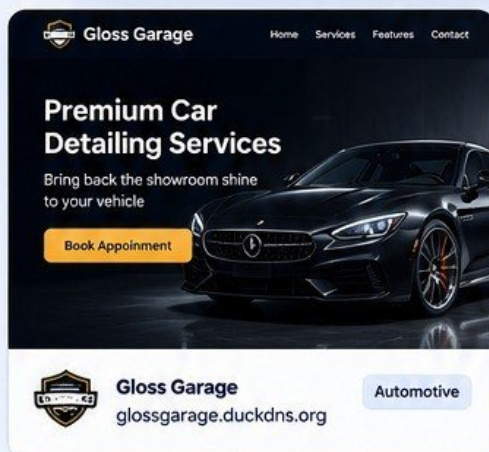
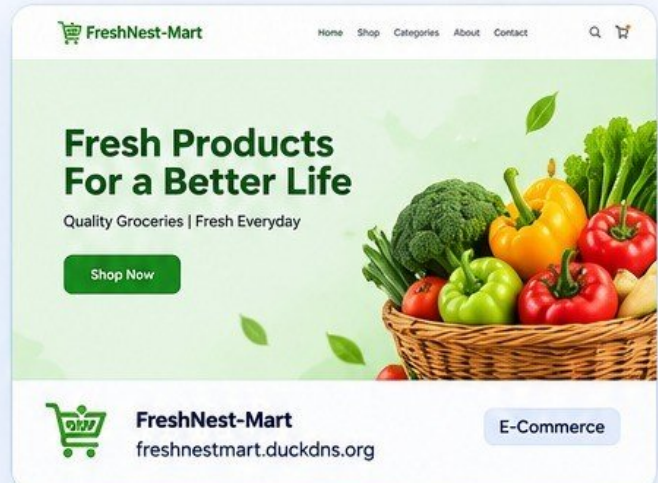
“One Infrastructure. Five Websites. Infinite Possibilities.”

”

Hosted Business Websites

5 Independent Websites Running on a Single AWS EC2 Instance

Using Nginx Virtual Hosts, DuckDNS and Let's Encrypt SSL, we successfully hosted 5 completely separate business websites on a single EC2 (RHEL 10) instance with high performance and security.



DuckDNS Configuration

● All Domains Live

All 5 subdomains are mapped to the same EC2 Elastic IP using DuckDNS. Nginx virtual hosts route each domain to its respective website directory.

domains 5/5

http:// sub domain .duckdns.org add domain

domain	current ip	ipv6	changed
bluewavee	13.201.108.133 update ip	ipv6 address update ipv6	2 hours ago delete domain
freshnestmart	13.201.108.133 update ip	ipv6 address update ipv6	7 minutes ago delete domain
glossgarage	13.201.108.133 update ip	ipv6 address update ipv6	4 minutes ago delete domain
splashxcarwash	13.201.108.133 update ip	ipv6 address update ipv6	2 minutes ago delete domain
veloura	13.201.108.133 update ip	ipv6 address update ipv6	0 seconds ago delete domain

Key Benefits



Shared Infrastructure
Multiple websites on one powerful server



Cost Optimized
Lower infrastructure cost with high efficiency



Secure & Encrypted
HTTPS for all websites with Let's Encrypt



High Performance
Nginx optimized for speed and reliability



Easily Scalable
Ready to handle more websites & traffic

Real-Time Monitoring with Amazon CloudWatch

Ensuring High Performance, Stability and Reliability

We used **Amazon CloudWatch** to monitor the health, performance and resource utilization of our shared hosting infrastructure in real-time. This gives complete visibility into server load, network traffic and system behavior while hosting **5 websites** on a single EC2 instance.



CPU Utilization
~63%
(Peak under load)



Network In
161.9 MB
Peak Traffic



Network Out
95.0 MB
Peak Traffic



EBS Write Ops
62.8
Peak Value

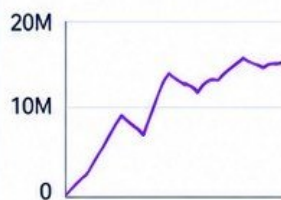
Performance Metrics (CloudWatch Dashboard)

Region: Asia Pacific (Mumbai)

CPU Utilization (%)



Network In (Bytes)



Network Out (Bytes)



Why Monitoring Matters?

- ✓ Detects performance issues before they impact users
- ✓ Provides real-time visibility into server health
- ✓ Helps in capacity planning and scaling decisions
- ✓ Ensures 24/7 availability and business continuity
- ✓ Builds a reliable and production-ready infrastructure



Real-Time Metrics
Live monitoring of CPU,
Network, Disk and more



Instant Alerts
Get notified on
abnormal behavior



Better Security
Tracks unusual activity
for faster response



Performance Insight
Data driven decisions
for optimization



Highly Reliable
Ensures smooth
experience for all websites



With Amazon CloudWatch, we achieved full visibility and control over our hosting infrastructure, making our shared hosting environment secure, stable and performance driven.



Production-Ready. Scalable. Performance Proven.

We successfully built and tested a production-ready shared hosting infrastructure on AWS, capable of hosting multiple independent websites with high performance, security and reliability.



PROJECT OUTCOMES & RESULTS



Websites Hosted

5

Independent Websites
Live on One EC2



Availability

99%+

High Availability
Achieved



Load Handled

100K+

Requests Handled
Successfully



Peak CPU Utilization

~63%

Under Heavy
Load Test



SSL Secured

100%

All Websites Secured
with Let's Encrypt SSL

CHALLENGES & SOLUTIONS

CHALLENGES



High load causing
CPU spikes



SSL handshake
failures under load



Managing multiple
domains on one server



Data safety and
recovery



Real-time visibility
was required

SOLUTIONS



Optimized Nginx + system tuning,
KeepAlive and caching enabled



Optimized SSL configuration
and enabled TLS session reuse



Nginx virtual hosts with clean
configuration and DNS mapping
using DuckDNS



Automated daily backups
and tested restoration process



Integrated Amazon CloudWatch
for real-time monitoring and alerts

KEY LEARNINGS



Efficient Resource Utilization

Proper configuration and optimization can handle multiple websites on a single server efficiently.



Performance Optimization Matters

Nginx tuning, caching, and system-level optimization significantly improve performance under load.



Security is Non-Negotiable

SSL, regular updates, firewall, and secure configurations are essential for a production environment.



Monitoring Ensures Reliability

Real-time monitoring with CloudWatch helps in proactive issue detection and maintaining high availability.



Scalability is Built-in

AWS infrastructure allows seamless scaling as traffic and business grow.

TECHNOLOGY STACK



AWS EC2

Compute instance to host
all websites



Amazon CloudWatch

Real-time monitoring
and alerts



RHEL 10

Operating system
for stability and security



DuckDNS

Dynamic DNS for domain
mapping



Nginx

Web server & reverse proxy
for virtual hosting



Let's Encrypt SSL

Free SSL certificates for
all domains



ApacheBench (ab)

Load testing tool
for performance testing



5 Independent Websites

Hosted successfully
on one EC2 instance

CONCLUSION



This project demonstrates the successful design, implementation and testing of a production-ready shared hosting environment on AWS. By leveraging best practices, performance optimization, and real-time monitoring, we achieved a secure, reliable and high-performing infrastructure capable of hosting multiple business websites efficiently.



This setup serves as a strong foundation for ScaleHost to deliver premium hosting solutions for businesses with excellence.



Built with Best Practices.

Optimized for Performance. Ready for Scale.

WHY SCALEHOST?



High Performance
Optimized for speed
and reliability



Secure & Trusted
Enterprise-grade security
with SSL & backups



Scalable Infrastructure
Easily scale as your
business grows



24/7 Monitoring
Real-time monitoring
and instant alerts



Expert Support
Always here to support
your business

Conclusion & Final Takeaways

This project demonstrates the successful design, implementation, and testing of a production-ready shared hosting infrastructure on AWS.

By leveraging the power of Amazon EC2, RHEL 10, Nginx, Let's Encrypt SSL, DuckDNS, and Amazon CloudWatch, we achieved a secure, reliable, and high-performing environment capable of hosting multiple independent business websites efficiently.

The solution is optimized for performance, security, scalability, and cost-efficiency, making it a strong foundation for ScaleHost to deliver premium hosting solutions to businesses with confidence.



PROJECT IMPACT AT A GLANCE



5

Websites Hosted
Independently on
One EC2 Instance



99%+

Availability
High Availability
Achieved



100K+

Requests Handled
Successfully during
Load Testing



~63%

Peak CPU Utilization
Under Heavy
Load Test



100%

SSL Secured
All Websites Secured
with Let's Encrypt SSL



**Real-time
Monitoring**

Proactive Monitoring
with CloudWatch

WHAT WE ACHIEVED



High Performance

Handled 100K+ requests with stable performance and efficient resource utilization.



Cost Efficiency

Hosted multiple websites on a single instance, optimizing AWS resource costs.



Strong Security

Implemented SSL, firewall, secure configurations, and regular updates to ensure data safety.



Scalability Ready

The architecture is designed to scale effortlessly as traffic and business grow.



Reliability & Monitoring

Real-time monitoring with CloudWatch ensures high availability and quick issue resolution.

KEY LEARNINGS



Efficient Resource Utilization

Proper configuration and optimization can handle multiple websites efficiently on a single server.



Performance Optimization Matters

Nginx tuning, caching, and system-level optimizations significantly improve performance under load.



Security is Continuous

Regular updates, monitoring, backups, and secure practices are essential for production environments.



Monitoring Ensures Reliability

CloudWatch provides valuable insights for proactive issue detection and performance optimization.



AWS Provides the Perfect Foundation

AWS infrastructure offers flexibility, scalability, and reliability for modern hosting solutions.

WHAT'S NEXT?



1

Scale Infrastructure

Migrate to Multi-AZ setup with Auto Scaling for higher availability.



2

Enable CDN

Integrate CloudFront CDN for faster global content delivery.



3

Automate Backups

Implement automated snapshots and offsite backup strategy.



4

CI/CD Integration

Setup automated deployment pipeline for faster updates.



5

Advanced Monitoring

Implement detailed alerts and dashboards for deeper insights.

Thank You!

This case study reflects our commitment to building secure, scalable, and high-performing hosting infrastructure on AWS.

– ScaleHost Team



ScaleHost – Scalable Hosting, Simplified.

We help businesses grow with reliable, secure and high-performance AWS hosting solutions.



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