

# CASE STUDY

**Medhost Realizes \$1m in  
Infrastructure Savings with Online  
Personal Health Record Solution**

**softserve**

## Client Background

**M**EDHOST provides market-leading enterprise, departmental, and healthcare engagement solutions to more than 1,000 healthcare facilities. Its' integrated product portfolio includes intuitive clinical, financial, and operational solutions, including YourCare® suite of products and services. MEDHOST's integrated clinical and financial solutions help streamline billing, manage electronic health data, and increase workflow efficiency. The company was founded in 1984 and is based in Franklin, Tennessee.

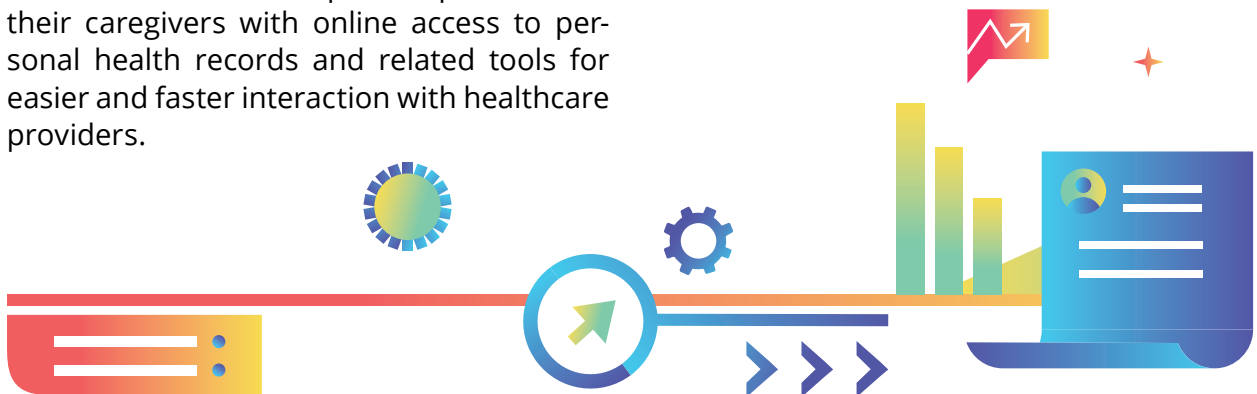
## Business Challenge

**W**ith more than 35 years of experience in the healthcare industry, MEDHOST has a long history of developing and implementing innovative approaches to address the evolving needs of healthcare professionals. Customer experience is becoming an increasingly key differentiator for industry leaders, so MEDHOST set out to develop a new solution aimed at automating and simplifying patient and provider-related tasks and communications.

The solution needed to provide patients and their caregivers with online access to personal health records and related tools for easier and faster interaction with healthcare providers.

Specific goals our client wanted to achieve included:

- Increase service density within Virtual Machine
- Create easy release management
- Implement infrastructure as code
- Automate disaster recovery
- Develop single code base shared by TechOps/DevOps
- Implement extended monitoring and issue tracking in place
- Stabilize EMPI solution
- Stabilize external web application integration
- Increase service availability
- Decrease performance bottleneck
- Simplify AWS and release Management
- Upgrade security
- System upgrades Release-Code traceability
- Add close-to-real time disaster recovery



## Project Description

SoftServe organized this project into four phases.

### Phase 1.

Organized migration of large stand-alone PostgreSQL database instances to RDS (Relational Database Service), increased container (Docker) density for each node, and decreased number of EC2 (Elastic Compute Cloud) instances being used.

### Phase 2.

Stabilized EMPI solution and External web application integration, increased service availability, upgraded security, simplified AWS Management, and decreased performance bottleneck.

### Phase 3.

Focused on development, DevOps, and TechOps area, reduced the time and allowed avoiding manual errors while creating release branches, simplified AMI upgrade that helped to close security upgrades, and facilitated disaster recovery by evolving AWS.

### Phase 4.

Implemented Business Process Management solutions, developed new microservices, added close-to-real time disaster recovery, implemented extended monitoring, extended release management and code quality control.

Specific challenges the project team faced included:

- Absence of production-like environments to test the application before deployment
- Deployment to production was time-consuming due to manual steps
- Implementation of goals could affect MEDHOST clients
- Constant manual intervention to keep it as stable environment
- Impossibility of testing infrastructure setup and configuration management before applying it in production
- Usage of different tools and automation in development and staging
- Involvement of multiple members to the delivery process.

## Tools and Technologies

- Docker
- Hashicorp Terraform, Consul, Vault, Nomad, Packer
- Chef
- Opsgenie
- Sumo Logic
- TeamCity
- Atlassian Jira, Confluence, Bitbucket
- Nessus
- JFrog Xray
- Deep Security



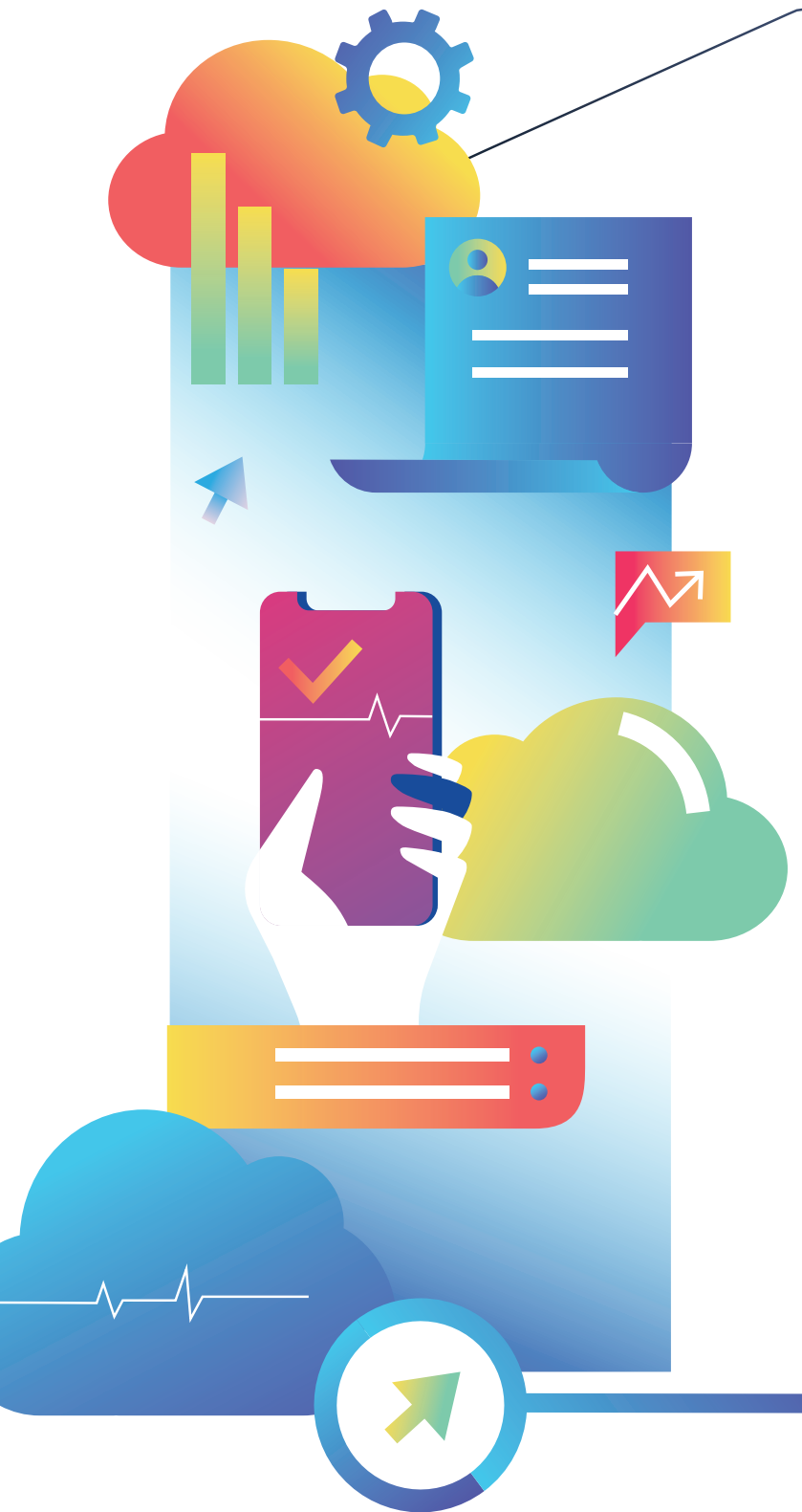
## AWS Services

- EC2
- Batch
- S3/S3 Glacier
- RDS
- DynamoDB
- ElastiCache
- Database Migration Service
- VPC
- CloudFront
- Route 53
- Direct Connect
- CodeCommit
- CloudWatch
- CloudTrail
- OpsWorks
- Systems Manager
- Elastic Transcoder
- Elasticsearch Service
- IAM
- Inspector
- WAF & Shield

## Results

- Infrastructure as code (full traceability and consistent environments)
- Easy release management (release <20 minutes, approval process in place, UI to manage release cycle and lifecycle of service)
- Migration of large stand-alone PostgreSQL database instances to RDS (Relational Database Service)
- Single code base shared by TechOps/DevOps (infrastructure is delivered as code and tested multiple times before reaching stage/production)
- Simplified infrastructure (one VPC vs Multiple VPCs, simplified development process, development to production – MEDHOST network)
- Automated disaster recovery (documented and tested DR process, automated DR process)
- Simplified AWS management, decreased performance bottleneck, and stabilized web applications.





## Value Delivered

- Increased container (Docker) density for each node
- Decreased number of EC2 (Elastic Compute Cloud) instances being used
- Increased Deployment density and resources utilization. Additionally deployed 20 microservices on same resources scope

The reduction of effort and time to implement changes together with optimized deployments resulted in around \$1M infrastructure savings:

- Overall month to month reduction by 3x
- YOY savings estimated at almost \$800K
- Deploy/Support savings at around \$200K

Additionally, this solution supported the efficient development of existing services and efficient delivery of new services and products. The number of customers and patients doubled since this solution was implemented.



## ABOUT US

SoftServe is a digital authority that advises and provides at the cutting-edge of technology. We reveal, transform, accelerate, and optimize the way enterprises and software companies do business. With expertise across healthcare, retail, energy, financial services, and more, we implement end-to-end solutions to deliver the innovation, quality, and speed that our clients' users expect.

SoftServe delivers open innovation, from generating compelling new ideas, to developing and implementing transformational products and services.

Our work and client experience is built on a foundation of empathetic, human-focused experience design that ensures continuity from concept to release.

We empower enterprises and software companies to (re)identify differentiation, accelerate solution development, and vigorously compete in today's digital economy. No matter where you are in your journey.

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