Service Name

AWS Elastic Beanstalk

Service Overview

AWS Elastic Beanstalk is a platform-as-a-service offering that simplifies deploying, managing, and scaling web applications and services. It abstracts infrastructure complexity by automatically handling provisioning of Amazon EC2 instances, load balancing, auto-scaling, and application health monitoring. Supporting multiple programming languages including Java, .NET, PHP, Node.js, Python, Ruby, Go, and Docker containers, Elastic Beanstalk enables developers to focus on writing code while AWS manages the underlying infrastructure. The service automatically provisions necessary AWS resources including servers, databases, load balancers, and auto scaling groups while maintaining full control and visibility over the AWS resources powering the application.

Key Use Cases

- Web application deployment: Rapid deployment of web applications across multiple programming languages and frameworks without infrastructure management
- DevOps acceleration: Streamlined CI/CD workflows with blue/green deployments, application versioning, and rollback capabilities
- Microservices architecture: Deploying containerized applications and APIs with automatic scaling and load balancing
- Development environment provisioning: Quick setup of development, testing, and staging environments with consistent configurations
- Legacy application modernization: Migrating existing applications to cloud with minimal code changes while gaining scalability benefits

Features

- **Multi-platform Support**: Supports Java, .NET, PHP, Node.js, Python, Ruby, Go, and Docker containers with pre-configured runtime environments
- **Automatic Scaling**: Built-in auto-scaling capabilities using Amazon EC2 Auto Scaling with CloudWatch metrics and triggers
- **Load Balancing**: Integrated Elastic Load Balancing with support for Application, Network, and Classic Load Balancers
- **Health Monitoring**: Comprehensive application health monitoring with automatic instance replacement and detailed health dashboards
- **Application Versioning**: Complete application lifecycle management with version control, rollback capabilities, and blue/green deployments

- **Configuration Management**: Centralized configuration templates and integration with AWS Systems Manager Parameter Store and Secrets Manager
- **Security Integration**: Native IAM integration, VPC support, and compliance with HIPAA, SOC, and PCI DSS standards

Value Proposition

Elastic Beanstalk delivers significant time-to-market advantages by eliminating infrastructure management complexity while maintaining full control over AWS resources. Unlike traditional hosting solutions, it provides automatic scaling, built-in monitoring, and seamless integration with the broader AWS ecosystem:

- The service offers zero additional cost beyond underlying AWS resources, making it highly cost-effective
- Key differentiators include support for multiple deployment strategies (rolling, blue/green, immutable), comprehensive platform coverage, and the ability to customize underlying infrastructure when needed
- This makes it ideal for teams wanting rapid deployment capabilities without sacrificing flexibility or AWS native integrations

Service Integration

Elastic Beanstalk deeply integrates with core AWS services to provide a comprehensive application platform. Primary integrations include Amazon EC2 for compute instances, Auto Scaling for automatic capacity management, and Elastic Load Balancing for traffic distribution:

- The service leverages Amazon S3 for application version storage, CloudWatch for monitoring and logging, and CloudFormation for infrastructure orchestration
- Additional integrations encompass Amazon RDS for databases, Amazon VPC for networking, IAM for security, AWS Systems Manager for configuration management, and AWS Secrets Manager for credential storage
- This extensive integration enables Elastic Beanstalk to provide enterprise-grade capabilities while maintaining simplicity in deployment and management workflows

Onboarding and Offboarding

Getting started with Elastic Beanstalk involves creating an AWS account and accessing the service through the AWS Console, CLI, or EB CLI. The process begins by creating an application, uploading application code (or using sample applications), and launching an environment:

- Elastic Beanstalk provides pre-built sample applications for immediate deployment and testing
- Users can deploy applications via ZIP files, Git integration, or container images

- The service automatically provisions necessary AWS resources including EC2 instances, security groups, load balancers, and CloudFormation stacks
- Configuration options allow customization of instance types, scaling policies, and environment variables during the setup process

Getting Started Guide:
https://docs.aws.amazon.com/elasticbeanstalk/latest/dg/GettingStarted.html

Data Removal

Offboarding involves terminating Elastic Beanstalk environments and deleting applications through the console, CLI, or API. The termination process automatically removes all associated AWS resources including EC2 instances, load balancers, Auto Scaling groups, and security groups. Application versions stored in S3 can be manually deleted or configured for automatic deletion through lifecycle policies. Complete data removal requires deleting all application versions, terminating all environments, and finally deleting the application container to ensure no residual resources remain.

Backup/Restore and Disaster Recovery

Elastic Beanstalk provides backup capabilities through application version storage in Amazon S3 and configuration templates. Application code and configurations are automatically preserved in S3, enabling rollback and recovery scenarios. The service integrates with AWS Backup for automated backup of underlying EC2 instances and EBS volumes. Disaster recovery is supported through multi-Availability Zone deployments, cross-region application deployment capabilities, and integration with AWS Elastic Disaster Recovery for comprehensive business continuity planning.

Backup Capabilities

Elastic Beanstalk maintains automatic backups of application versions in Amazon S3 with configurable lifecycle policies. The service preserves up to 1000 application versions by default and supports integration with AWS Backup for underlying infrastructure backup:

- Configuration templates provide backup of environment settings and can be used to recreate environments
- Application source bundles are retained in S3 unless explicitly deleted, providing inherent backup capabilities for application code and configurations

Disaster Recovery

Disaster recovery support includes multi-Availability Zone deployments for high availability and cross-region deployment capabilities for geographic redundancy. The service integrates with AWS Elastic Disaster Recovery for comprehensive DR scenarios and supports blue/green deployment strategies for minimizing downtime during updates. Auto

Scaling and health monitoring provide automatic recovery from instance failures, while configuration templates enable rapid environment recreation in alternate regions.

Recovery Objectives

Elastic Beanstalk helps achieve low RTO through automated scaling, health monitoring, and blue/green deployments that minimize downtime during updates and failures. RPO objectives are supported through continuous application version storage in S3 and regular configuration snapshots. Multi-AZ deployments provide sub-minute failover capabilities, while cross-region deployment strategies enable recovery from regional outages. The combination of automated infrastructure management and AWS integration capabilities supports both aggressive and conservative recovery objectives.

Service Constraints

Service Quotas:
https://docs.aws.amazon.com/elasticbeanstalk/latest/api/API_ResourceQuotas.html

FAQ: https://aws.amazon.com/elasticbeanstalk/faqs/

Technical Requirements

Service Documentation:
https://docs.aws.amazon.com/elasticbeanstalk/latest/dg/Welcome.html

User Guide: https://docs.aws.amazon.com/elasticbeanstalk/latest/dg/Welcome.html

API Reference: https://docs.aws.amazon.com/elasticbeanstalk/latest/api/Welcome.html

Pricing Overview

Please see the AWS UK G Cloud 15 Pricing Document accompanying this service in the Digital Marketplace.

Public Pricing: https://aws.amazon.com/elasticbeanstalk/pricing/

Cost Optimization

Elastic Beanstalk offers unique cost optimization through its zero-service-fee model where customers pay only for underlying AWS resources. Cost optimization strategies include leveraging Spot Instances for significant savings on non-critical environments, implementing time-based scaling to match traffic patterns, and using AWS Graviton processors for improved price-performance ratios:

- The service supports Savings Plans and Reserved Instances for predictable workloads

- Environment-specific optimizations include right-sizing instance types based on application requirements, configuring auto-scaling policies to minimize over-provisioning, and utilizing single-instance environments for development scenarios
- Application version lifecycle policies help manage S3 storage costs by automatically cleaning up old versions

Savings Considerations

Primary cost savings come from Elastic Beanstalk's automatic scaling capabilities that eliminate over-provisioning and reduce waste during low-traffic periods. The service's integration with AWS Cost Optimization tools enables identification of rightsizing opportunities and unused resources:

- Significant savings are achievable through strategic use of Spot Instances for development and testing environments, implementing scheduled scaling for predictable traffic patterns, and leveraging multi-AZ deployments only when high availability is required
- Cross-region deployment strategies should balance disaster recovery requirements with data transfer costs
- Regular review of application versions and cleanup of unused resources prevents unnecessary S3 storage charges