Cheetah Loyalty Security Overview

Features and Best Practices

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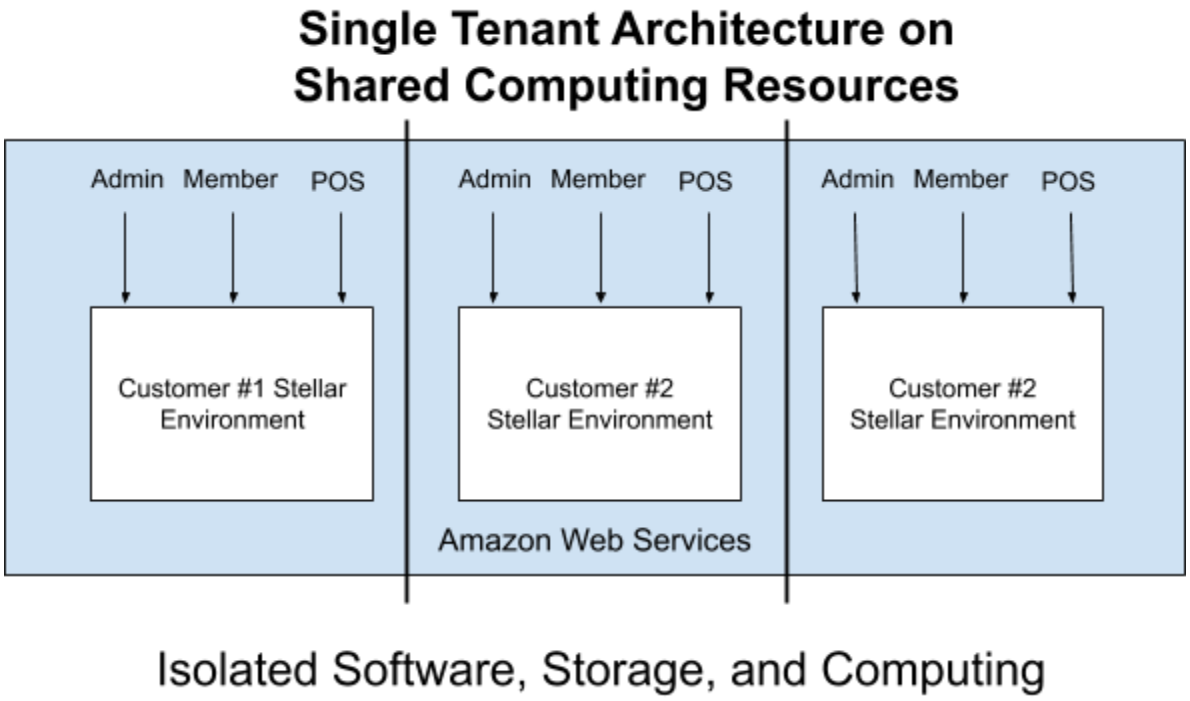
Introduction

At its core, Cheetah Loyalty uses a single-tenant architecture, which ensures that each Cheetah Loyalty environment is isolated from every other Cheetah Loyalty environment. Physical computing resources are virtualized and may be shared to achieve cost-effective, massive scalability, but physical storage, software, and application processes are never shared among customer environments. In summary, no commingling occurs between any two Cheetah Loyalty environments, including those for the same customer (say for test and production or for different loyalty programs).



Benefits of the Cheetah Loyalty Cloud

The Cheetah Loyalty Cloud provides unmatched benefits and world-class security unmatched by on premise deployments.

- Operational Cost
  - Lower computing costs via use of commodity clusters
  - All-inclusive installation, upgrades and monitoring

- Elasticity
  - Fine-tune Cheetah Loyalty environment size based on application usage
  - Dynamically increase and decrease customer environments for peaks and valleys
  - Joint-use of Cheetah Loyalty's large-scale analytics cluster

- Always current
  - Automatic updates to latest Cheetah Loyalty software releases
  - Zero-downtime rollouts with Cheetah Loyalty schema versioning

- Proactive Security
  - Automated updates to latest security releases
  - Proactive system-wide monitoring of resource utilization, application performance, and operational health via Amazon CloudWatch

Operational Security

Cheetah Loyalty leverages Amazon Web Service's world-class security capabilities to deliver built-in security features (see http://aws.amazon.com/security):

- Secure data transport via SSL/TLS
- Encrypted data and file storage using Advanced Encryption Standards (AES) 256
- Private Subnets and built-in firewalls for each Cheetah Loyalty environment via AWS Virtual Private Cloud (VPC) (option)
- Unique users via AWS Identity and Access Management (IAM) with Multi-factor authentication (MFA)
- Security Logs via AWS CloudTrail
- Highly secure data centers with electronic surveillance and trained security guards
- Resiliency and failover via multiple geographic regions and availability zones

Application Security

Cheetah Loyalty's single-tenant architecture delivers secure computing by isolating application software, storage, and processing.

- Separate, isolated application binaries for each customer environment
  - No commingling of software binaries
  - Ability to upgrade and patch each environment
- Separate, isolated, encrypted application storage for each customer environment
  - Program definitions and all application data in separate MySql databases
  - Activity queues in separate, dedicated Apache Kafka topics environment
  - Member data in CRM system (e.g. salesforce.com)
  - Member activities in separate, dedicated HBase tables
  - Files in separate, dedicated S3 buckets
  - Isolated Apache Hadoop cluster per Cheetah Loyalty environment (option)
- Separate, isolated application processing for each customer environment
  - Dedicated Cheetah Loyalty App Servers per customer environment
  - Dedicated Cheetah Loyalty Finagle Servers per customer environment
  - Dedicated Apache Storm topology per customer environment
  - Dedicated Apache Spark context per customer environment
- Secure Authentication and Authorization
  - Strict password policies for admin and member logins
  - Multi-factor Authentication (MFA) for admin users
  - Dedicated member authentication services per customer environment
  - Role-based authorization for marketing users
  - Audit trail for marketing users
- Deliberate Handling of Member Personal Identifiable Information (PII)
  - Member PII stored in CRM system (e.g. Salesforce)
  - Member PII separated from Member Activity data
  - No Member PII in aggregate and analytics processing
- Penetration Testing
  - Verified x-site scripting, SQL injection, and DOS attacks
  - Security audit by Salesforce.com

Admin Access Control

Cheetah Loyalty utilizes the following mechanisms to prevent Cheetah Digital and Customer Employees from unauthorized access to customer data:

AWS Access

- Fine-grained, secure access to AWS accounts and resources
    - Individual IAM-user access for each Cheetah Digital employee per customer environment: no shared credentials
    - User authentication via Multi Factor Authentication (MFA) devices and X.509 certificates.

- AWS Audit trails
    - AWS CloudTrail activated to log IAM actions, STS acteions, and AWS Management Console sign-ins

Cheetah Loyalty Marketing Console

- Strong Passwords
    - Use of strong passwords (e.g. minimum length, special characters, etc) can be enforced for Cheetah Loyalty Marketing Console admins
- Effectivity Dates
    - Each Cheetah Loyalty Marketing Console admin has a start and end date that controls the dates when their logins are valid.
    - Set end dates to ensure that admins access is automatically terminated in the future.
- Roles and Permissions
    - Each Cheetah Loyalty Marketing Console admin has one or more roles that give the admin read, write, and admin access to one or more Marketing Console screens.
    - Use roles and permissions to give the minimum amount of access to each admin.

Disaster Recovery

Cheetah Loyalty leverages Amazon Web Services' low-cost offline backups, multi-availability zones, and network of data centers for disaster recovery.

- Automated Backups
  - Automated backups and database snapshots via Amazon RDS
  - Hbase region snapshots and table snapshots
  - Store backup snapshots into AWS Glacier for long-term storage (option)

- High availability and failover support for customer data
  - Utilize Amazon RDS multi-AZ deployment for MySql databases
  - Hbase on highly redundant setup with multiple Zookeeper servers and dedicated Master servers
  - Amazon S3 files written automatically to at least three AWS facilities

- Near real-time replication to disaster recovery data center (option)

Certifications

Cheetah Digital conducts regular security review and certifications to minimize the risk of data loss and security breaches.

- SOC 2
  - Review of Amazon Web Services SOC 2 certifications
  - Annual SOC 2 Type 1 and Type 2 audits of Cheetah Loyalty's processes and procedures
- Security Testing
  - Use best-of-breed security tools to run internal security tests of Cheetah Loyalty's production landscape
  - Engage a third-party security firm to conduct security tests against Cheetah Loyalty's production landscape
- GDPR
  - Review and verify Stella Loyalty's production landscape and procedures to ensure compliance with European Union General Data Protection Regulations

References

Cheetah Loyalty

- Cloud Platform ebook
- SOC 2 Audit Report
- EU GDPR White Paper

Amazon Web Services

- Security Features: http://aws.amazon.com/security/
- Global Infrastructure: http://aws.amazon.com/about-aws/global-infrastructure/