Adobe Business Catalyst Security Overview

Table of contents

Adobe Security

At Adobe, we take the security of your digital experience seriously. From our rigorous integration of security into our internal software development process and tools to our cross-functional incident response teams, we strive to be proactive and nimble. What's more, our collaborative work with partners, researchers, and other industry organizations helps us understand the latest threats and security best practices, as well as continually build security into the products and services we offer.

This white paper describes the proactive approach and procedures implemented by Adobe to increase the security of your Business Catalyst experience and your data.

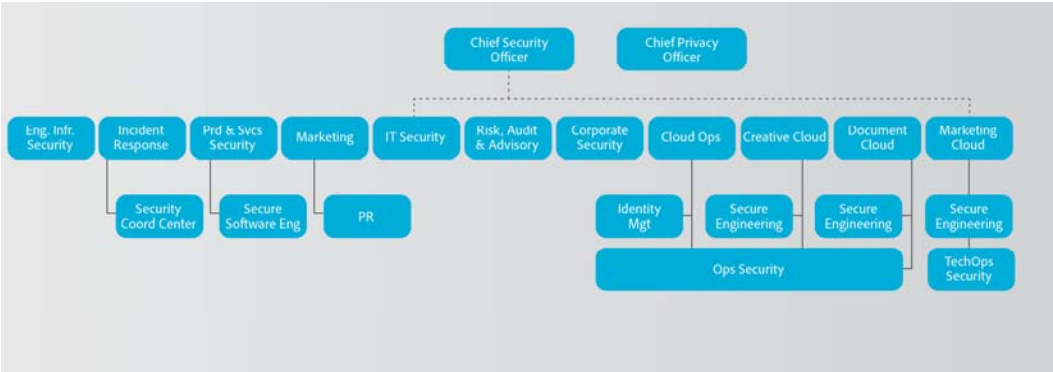
About Business Catalyst

Business Catalyst (BC) is an all-in-one business website and online marketing solution providing an integrated platform for Content Management (CMS), Customer Relationship Management (CRM), E-Mail Marketing, E-Commerce, and Analytics.

The Adobe Security Organization

As part of our commitment to the security of our products and services, Adobe coordinates all security efforts under the Chief Security Officer (CSO). The office of the CSO coordinates all product and service security initiatives and the implementation of the *Adobe Secure Product Lifecycle (SPLC)*.

The CSO also manages the Adobe Secure Software Engineering Team (ASSET), a dedicated, central team of security experts who serve as consultants to key Adobe product and operations teams, including the Business Catalyst Engineering team. ASSET researchers work with individual Adobe product and operations teams to strive to achieve the right level of security for products and services and advise these teams on security practices for clear and repeatable processes for development, deployment, operations, and incident response.



Adobe Security Organization

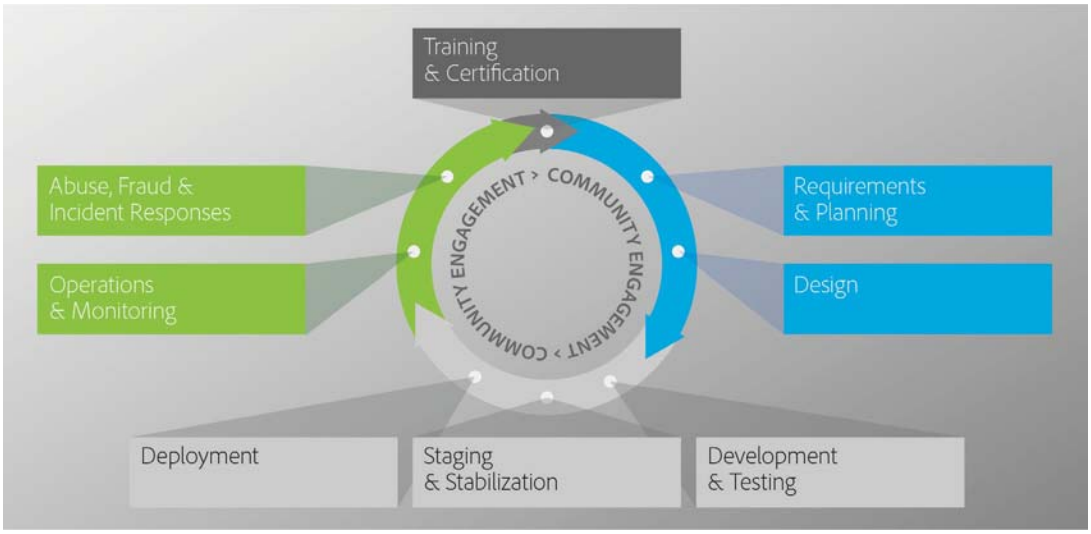
Adobe Secure Product Development

As with other key Adobe product and service organizations, the Business Catalyst team employs the Adobe Secure Product Lifecycle (SPLC) process. A rigorous set of several hundred specific security activities spanning software development practices, processes, and tools, the Adobe SPLC is integrated into multiple stages of the product lifecycle, from design and development to quality assurance, testing, and deployment. ASSET security researchers provide specific SPLC guidance for each key product or service based on an assessment of potential security issues. Complemented by continuous community engagement, the Adobe SPLC evolves to stay current as changes occur in technology, security practices, and the threat landscape.

Adobe Secure Product Lifecycle

The Adobe SPLC activities include some or all of the following recommended practices, processes, and tools, depending on the specific Creative Cloud service:

- Security training and certification for product teams
- Product health, risk, and threat landscape analysis
- Secure coding guidelines, rules, and analysis
- Service roadmaps, security tools, and testing methods that guide the Business Catalyst security team to help address the Open Web Application Security Project (OWASP) Top 10 most critical web application security flaws and others
- Security architecture review and penetration testing
- Source code reviews to help eliminate known flaws that could lead to vulnerabilities
- User-generated content validation
- Static and dynamic code analysis
- Application and network scanning
- Full readiness review, response plans, and release of developer education materials.



Adobe Secure Product Lifecycle (SPLC)

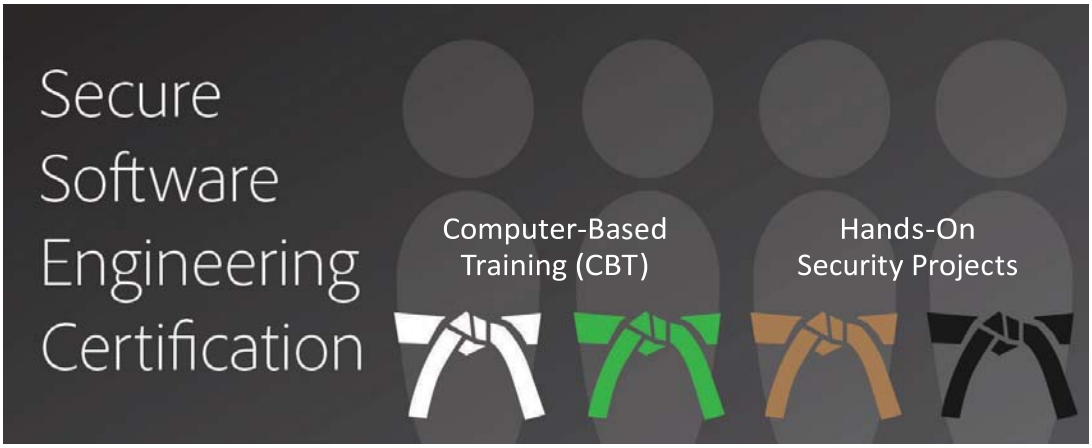
Adobe Security Training

Adobe Software Security Certification Program

As part of the Adobe SPLC, Adobe conducts ongoing security training within development teams to enhance security knowledge throughout the company and improve the overall security of our products and services. Employees participating in the Adobe Software Security Certification Program attain different certification levels by completing security projects.

The program has four levels, each designated by a colored 'belt': white, green, brown, and black. The white and green levels are achieved by completing computer-based training. The higher brown and black belt levels require completion of months- or year-long hands-on security projects. Employees attaining brown and black belts become security champions and experts within their product teams. Adobe updates training on a regular basis to reflect new threats and mitigations, as well as new controls and software languages.

Various Business Catalyst teams participate in additional security training and workshops to increase awareness of how security affects their specific roles within the organization and the company as a whole.



Adobe Software Security Certification Program

Business Catalyst Architecture

Business Catalyst is fully hosted in Amazon Web Services (AWS) and it takes advantage of a large set of its products: Amazon Elastic Compute Cloud (EC2) for scalable computing capacity in the cloud, Elastic Block Store (EBS), Simple Storage Service (S3) and Glacier for storing and retrieving data, ElastiCache for caching data, Virtual Private Cloud (VPC), Identity and Access Management (IAM), CloudTrail, Trusted Advisor, Security Groups, and others for security purposes, Simple Email Service (SES) for sending emails, Simple Queue Service (SQS) for queuing purposes, and others.

In order to obtain a higher performance level, Business Catalyst customers are hosted and served from three AWS data centers, in Ireland (EU), Virginia (US-East), and Sydney (APAC).

AWS offers a reliable platform for software services used by thousands of businesses worldwide, provides services in accordance with security best practices, and undergoes regular industry-recognized certifications and audits. More information can be found in the *AWS Security White Paper*.

Operational Responsibilities of AWS and Adobe

AWS operates, manages, and controls the components from the hypervisor virtualization layer down to the physical security of the facilities in which Business Catalyst operates. In turn, Adobe assumes responsibility and management of the guest operating system (including updates and security patches) and application software, as well as the configuration of the AWS-provided security group firewall.

AWS also operates the cloud infrastructure used by Adobe to provision a variety of basic computing resources, including processing and storage. The AWS infrastructure includes facilities, network, and hardware, as well as operational software (e.g., host OS, virtualization software, etc.), which supports the provisioning and use of these resources. Amazon designed and manages according to security best practices as well as a variety of security compliance standards.

Secure Management

Adobe uses Multi-Factor Authentication (MfA), Secure Shell (SSH) and Secure Sockets Layer (SSL) for management connections to manage the AWS infrastructure.

Intrusion Detection Systems

Adobe employs network level intrusion detection systems (IDS), as well as host level ones (HIDS), to detect and stop any attempts of unauthorized access to business systems.

Anti-virus Scanners

Adobe uses advanced, enterprise level and centralized anti-virus systems to ensure any infected e-mails or files are cleaned instantly and the infrastructure remains clean.

Level 1 PCI and DSS compliance

Business Catalyst undergoes annual PCI audits to obtain Level 1 PCI DSS compliant certification. Level 1 PCI compliance is the highest tier of compliance and requires multiple validation checks to ensure Business Catalyst is more than adequately capable of securely processing credit card transactions.

Adobe Business Catalyst Authentication (Adobe ID)

When creating a free signup on www.businesscatalyst.com users must create an Adobe ID, which is used every time they access the Business Catalyst Partner Portal or their individual sites.

Adobe ID leverages a strong hash algorithm in combination with password salts and a large number of hash iterations. Adobe continually monitors Adobe ID accounts for unusual or anomalous account activity and evaluates this information to help quickly mitigate threats to the security of your Adobe ID account.

Additional security is utilized if multiple consecutive failed login attempts occur upon attempting to gain access to the admin console of a Business Catalyst site. After several failed attempts a reCAPTCHA field will need to be completed to verify that the login attempts are not automated.

Upon a successful login attempt, the user's username and password is verified through a secure connection utilizing a 128-bit SSL certificate and then redirected to their site's admin console.

Customers have the ability to secure sensitive web pages and content behind a secure zone. A secure zone will require a visitor to log in with a username and password in order to gain access. A user can update a customer's password within the admin console of a site, however that password is not viewable in plain-text nor will the password be viewable in plain-text through email communication such as email campaigns.

Payment gateway information is updated through the admin console. The page that facilitates this is served over HTTPS. Furthermore, whenever a customer submits a payment, the payment is also always processed over HTTPS. HTTPS is secured via an SSL connection utilizing a 128-bit SSL certificate.

Whenever a sensitive site change is made within the admin console the user paying for the site will be notified by email. Sensitive site changes include updating payment gateway information, updating admin user permissions, updating user roles, updating information on the My Details page, etc.

Adobe Risk & Vulnerability Management

Penetration Testing

Adobe engages with third-party vendors to perform penetration testing for identifying potential security vulnerabilities and improve the overall security of Adobe products and services. The vendors complete the tests according to industry best practices. Adobe documents these vulnerabilities, evaluates severity and priority, and then creates a mitigation strategy or remediation plan.

Incident Response

New vulnerabilities and threats evolve each day and Adobe strives to respond to and mitigate newly discovered threats. In addition to subscribing to industry-wide vulnerability announcement lists, Adobe also subscribes to the latest security alert lists issued by major security vendors.

For incidents, vulnerabilities, and threats that impact the AWS Data Center, the Amazon Incident Management team employs industry-standard diagnostic procedures to drive resolution during business-impacting events. Staff operators provide 24x7x365 coverage to detect incidents, manage the impact and resolution, and inform Adobe and other AWS customers.

For Adobe cloud-based services, including Adobe Business Catalyst, we centralize incident response, decision-making, and external monitoring in our Security Coordination Center (SCC), providing cross-functional consistency and expedient resolution of issues.

When an incident, vulnerability, or threat impacts an Adobe product or service, the SCC works with the involved Adobe product or service incident response and development teams to help identify, mitigate, and resolve the issue using the following process:

- Assess the status of the vulnerability
- Mitigate risk in production services
- Quarantine, investigate, and destroy compromised nodes (cloud-based services only)
- Develop a fix for the vulnerability
- Deploy the fix to contain the problem
- Monitor activity and confirm resolution

About Amazon Web Services (AWS)

Geographic Location of Customer Data on AWS Network

Except for very few operational information (e.g., DNS entries), customers' data is stored exclusively in the designated AWS region / data center. Content that customers store in Business Catalyst (e.g., assets) is not replicated to other data centers in other regions.

Isolation of Customer Data/Segregation of AWS Customers

Business Catalyst data stored by Adobe on AWS includes strong tenant isolation security and control capabilities. As a virtualized, multi-tenant environment, AWS implements security management processes and other security controls designed to isolate each customer, such as Business Catalyst, from other AWS customers. AWS Identity and Access Management (IAM) is used to further lock down access to compute and storage instances.

Secure Network Architecture

AWS employs network devices, including firewall and other boundary devices, to monitor and control communications at the external boundary of the network and at key internal boundaries within the network. These boundary devices employ rule sets, access control lists (ACL), and configurations to enforce the flow of information to specific information system services. ACLs, or traffic flow policies, exist on each managed interface to manage and enforce the flow of traffic. Amazon Information Security approves all ACL policies and automatically pushes them to each managed interface using AWS's ACL- Manage tool, helping to ensure these managed interfaces enforce the most up-to-date ACLs.

Network Monitoring and Protection
AWS uses a variety of automated monitoring systems to provide a high level of service performance and availability. Monitoring tools help detect unusual or unauthorized activities and conditions at ingress and egress communication points.

The AWS network provides significant protection against traditional network security issues:

- Distributed Denial Of Service (DDoS) Attacks
- Man in the Middle (MITM) Attacks
- IP Spoofing
- Port Scanning
- Packet sniffing by other tenants

You can find more information about Network Monitoring and Protection in the *AWS Security Whitepaper* on the Amazon website.

Service Monitoring
AWS monitors electrical, mechanical, and life support systems and equipment to help ensure immediate identification of any issues. In order to maintain the continued operability of equipment, AWS performs ongoing preventative maintenance.

Data Storage and Backup
Business Catalyst stores data in Amazon EBS and backups in Amazon S3.

Change Management
AWS authorizes, logs, tests, approves, and documents routine, emergency, and configuration changes to existing AWS infrastructure in accordance with industry norms for similar systems. Amazon schedules updates to AWS to minimize any customer impact. AWS communicates with customers, either via email, or through the *AWS Service Health Dashboard* when service use is likely to be adversely affected. Business Catalyst also maintains a similar *status page*.

Patch Management
AWS maintains responsibility for patching systems that support the delivery of AWS services, such as the hypervisor and networking services. Adobe is responsible for patching its guest operating systems (OS), software, and applications running in AWS.

AWS Data Center Physical and Environmental Controls

AWS physical and environmental controls are specifically outlined in a SOC 1, Type 2 report. The following section outlines some of the security measures and controls in place at every AWS data center around the world. You can find more detailed information about AWS and *Amazon's security controls* on the Amazon security website.

Physical Facility Security
AWS data centers utilize state-of-the-art, innovative architectural and engineering approaches. Amazon applied its many years of experience designing, constructing, and operating its own large-scale data centers to the AWS platform and infrastructure. AWS data centers are housed in nondescript facilities, and Amazon strictly controls physical access both at the perimeter and at building ingress points using professional security staff, video surveillance, intrusion detection systems, and other electronic means. Authorized staff must pass two-factor authentication a minimum of two times to access data center floors. All visitors and contractors are required to present identification and are signed in and continually escorted by authorized staff.

AWS only provides data center access and information to employees and contractors who have a legitimate business need for such privileges. When an employee no longer has a business need for these privileges, his or her access is immediately revoked, even if he or she continues to be an employee of Amazon or Amazon Web Services. All physical access to data centers by AWS employees is logged and audited routinely.

Fire Suppression
AWS installs automatic fire detection and suppression equipment in all AWS data centers. The fire detection system utilizes smoke detection sensors in all data center environments, mechanical and electrical infrastructure spaces, chiller rooms and generator equipment rooms. These areas are protected by either wet-pipe, double-interlocked pre-action, or gaseous sprinkler systems.

Controlled Environment
AWS employs a climate control system to maintain a constant operating temperature for servers and other hardware, preventing overheating and reducing the possibility of service outages. AWS data centers maintain atmospheric conditions at optimal levels. AWS personnel and systems monitor and control both temperature and humidity at appropriate levels.

Backup Power
AWS data center electrical power systems are designed to be fully redundant and maintainable without impact to operations, 24 hours a day, 7 days a week. Uninterruptible Power Supply (UPS) units provide back-up power in the event of an electrical failure for critical and essential loads in the facility. Data centers use generators to provide back-up power for the entire facility.

Video Surveillance
Professional security staff strictly controls physical access both at the perimeter and at building ingress points for AWS Data Centers using video surveillance, intrusion detection systems, and other electronic means.

Disaster Recovery
AWS data centers include a high level of availability and tolerate system or hardware failures with minimal impact. Built in clusters in various global regions, all data centers remain online 24/7/365 to serve customers; no data center is "cold." In case of failure, automated processes move customer data traffic away from the affected area. Core applications are deployed in an N+1 configuration, so that in the event of a data center failure, there is sufficient capacity to enable traffic to be load-balanced to the remaining sites. You can find more information about *AWS disaster recovery protocols* on the Amazon Security website.

Adobe Corporate Locations

Adobe maintains offices around the world and implements the following processes and procedures company-wide to protect the company against security threats:

Physical Security
Every Adobe corporate office location employs on-site guards to protect the premises 24x7. Adobe employees carry a key card ID badge for building access. Visitors enter through the front entrance, sign in and out with the receptionist, display a temporary Visitor ID badge, and are accompanied by an employee at all times. Adobe keeps all server equipment, development machines, phone systems, file and mail servers, and other sensitive systems locked at all times in environment-controlled server rooms accessible only by appropriate, authorized staff members.

Virus Protection
Adobe scans all in-bound and out-bound corporate email for known malware threats.

Adobe Employees

Employee Access to Customer Data
Adobe maintains segmented development and production environments for Business Catalyst, using technical controls to limit network and application-level access to live production systems. Employees have specific authorizations to access development and production systems.

Background Checks

Adobe obtains background check reports for employment purposes. The specific nature and scope of the report that Adobe typically seeks includes inquiries regarding educational background; work history; court records, including criminal conviction records; and references obtained from professional and personal associates, each as permitted by applicable law. These background check requirements apply to regular U.S. new hire employees, including those who will be administering systems or have access to customer information. New U.S. temporary agency workers are subject to background check requirements through the applicable temporary agency, in compliance with Adobe's background screen guidelines. Outside the U.S., Adobe conducts background checks on certain new employees in accordance with Adobe's background check policy and applicable local laws.

Employee Termination

When an employee leaves Adobe, the employee's manager submits an exiting worker form. Once approved, Adobe People Resources initiates an email workflow to inform relevant stakeholders to take specific actions leading up to the employee's last day. In the event that Adobe terminates an employee, Adobe People Resources sends a similar email notification to relevant stakeholders, including the specific date and time of the employment termination.

Adobe Corporate Security then schedules the following actions to help ensure that, upon conclusion of the employee's final day of employment, he or she can no longer access Adobe confidential files or offices:

- Email Access Removal
- Remote VPN Access Removal
- Office and Datacenter Badge Invalidation
- Network Access Termination

Upon request, managers may ask building security to escort the terminated employee from the Adobe office or building.

Customer Data Confidentiality

Adobe always treats customer data as confidential. Adobe does not use or share the information collected on behalf of a customer except as may be allowed in a contract with that customer and as set forth in the *Adobe Terms of Use* and the *Adobe Privacy Policy*.

Conclusion

The proactive approach to security and stringent procedures described in this paper help protect the security of the Business Catalyst platform. At Adobe, we take the security of your digital experience seriously.

For more information, please visit: *http://www.adobe.com/security*

5/15

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