

### Scenario:

Botium Toys is a small U.S. business that develops and sells toys. The business has a single physical location, which serves as their main office, a storefront, and warehouse for their products. However, Botium Toy's online presence has grown, attracting customers in the U.S. and abroad. As a result, their information technology (IT) department is under increasing pressure to support their online market worldwide.

The manager of the IT department has decided that an internal IT audit needs to be conducted. She expresses concerns about not having a solidified plan of action to ensure business continuity and compliance, as the business grows. She believes an internal audit can help better secure the company's infrastructure and help them identify and mitigate potential risks, threats, or vulnerabilities to critical assets. The manager is also interested in ensuring that they comply with regulations related to internally processing and accepting online payments and conducting business in the European Union (E.U.).

The IT manager starts by implementing the National Institute of Standards and Technology Cybersecurity Framework (NIST CSF), establishing an audit scope and goals, listing assets currently managed by the IT department, and completing a risk assessment. The goal of the audit is to provide an overview of the risks and/or fines that the company might experience due to the current state of their security posture.

Your task is to review the IT manager's scope, goals, and risk assessment report. Then, perform an internal audit by completing a controls and compliance checklist.

# Botium Toys: Scope, goals, and risk assessment report

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## Scope and goals of the audit

**Scope:** The scope is defined as the entire security program at Botium Toys. This means all assets need to be assessed alongside internal processes and procedures related to the implementation of controls and compliance best practices.

**Goals:** Assess existing assets and complete the controls and compliance checklist to determine which controls and compliance best practices need to be implemented to improve Botium Toys' security posture.

## Current assets

Assets managed by the IT Department include:

- On-premises equipment for in-office business needs
- Employee equipment: end-user devices (desktops/laptops, smartphones), remote workstations, headsets, cables, keyboards, mice, docking stations, surveillance cameras, etc.
- Storefront products available for retail sale on site and online; stored in the company's adjoining warehouse
- Management of systems, software, and services: accounting, telecommunication, database, security, ecommerce, and inventory management
- Internet access
- Internal network
- Data retention and storage
- Legacy system maintenance: end-of-life systems that require human monitoring

## Risk assessment

### Risk description

Currently, there is inadequate management of assets. Additionally, Botium Toys does not have all of the proper controls in place and may not be fully compliant with U.S. and international regulations and standards.

### Control best practices

The first of the five functions of the NIST CSF is Identify. Botium Toys will need to dedicate resources to identify assets so they can appropriately manage them. Additionally, they will need to classify existing assets and determine the impact of the loss of existing assets, including systems, on business continuity.

### Risk score

On a scale of 1 to 10, the risk score is 8, which is fairly high. This is due to a lack of controls and adherence to compliance best practices.

### Additional comments

The potential impact from the loss of an asset is rated as medium, because the IT department does not know which assets would be at risk. The risk to assets or fines from governing bodies is high because Botium Toys does not have all of the necessary controls in place and is not fully adhering to best practices related to compliance regulations that keep critical data private/secure. Review the following bullet points for specific details:

- Currently, all Botium Toys employees have access to internally stored data and may be able to access cardholder data and customers' PII/SPII.
- Encryption is not currently used to ensure confidentiality of customers' credit card information that is accepted, processed, transmitted, and stored locally in the company's internal database.
- Access controls pertaining to least privilege and separation of duties have not been implemented.
- The IT department has ensured availability and integrated controls to ensure data integrity.
- The IT department has a firewall that blocks traffic based on an appropriately defined set of security rules.
- Antivirus software is installed and monitored regularly by the IT department.

- The IT department has not installed an intrusion detection system (IDS).
- There are no disaster recovery plans currently in place, and the company does not have backups of critical data.
- The IT department has established a plan to notify E.U. customers within 72 hours if there is a security breach. Additionally, privacy policies, procedures, and processes have been developed and are enforced among IT department members/other employees, to properly document and maintain data.
- Although a password policy exists, its requirements are nominal and not in line with current minimum password complexity requirements (e.g., at least eight characters, a combination of letters and at least one number; special characters).
- There is no centralized password management system that enforces the password policy's minimum requirements, which sometimes affects productivity when employees/vendors submit a ticket to the IT department to recover or reset a password.
- While legacy systems are monitored and maintained, there is no regular schedule in place for these tasks and intervention methods are unclear.
- The store's physical location, which includes Botium Toys' main offices, store front, and warehouse of products, has sufficient locks, up-to-date closed-circuit television (CCTV) surveillance, as well as functioning fire detection and prevention systems.

# Controls and compliance checklist

## Controls assessment checklist

Yes	No	Control
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Least Privilege
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Disaster recovery plans
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Password policies
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Separation of duties
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Firewall
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Intrusion detection system (IDS)
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Backups
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Antivirus software
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Manual monitoring, maintenance, and intervention for legacy systems
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Encryption
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Password management system
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Locks (offices, storefront, warehouse)
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Closed-circuit television (CCTV) surveillance
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Fire detection/prevention (fire alarm, sprinkler system, etc.)

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## Compliance checklist

Payment Card Industry Data Security Standard (PCI DSS)

Yes	No	Best practice
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Only authorized users have access to customers' credit card information.
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Credit card information is stored, accepted, processed, and transmitted internally, in a secure environment.
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Implement data encryption procedures to better secure credit card transaction touchpoints and data.
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Adopt secure password management policies.

#### General Data Protection Regulation (GDPR)

Yes	No	Best practice
<input type="checkbox"/>	<input checked="" type="checkbox"/>	E.U. customers' data is kept private/secured.
<input checked="" type="checkbox"/>	<input type="checkbox"/>	There is a plan in place to notify E.U. customers within 72 hours if their data is compromised/there is a breach.
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Ensure data is properly classified and inventoried.
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Enforce privacy policies, procedures, and processes to properly document and maintain data.

#### System and Organizations Controls (SOC type 1, SOC type 2)

Yes	No	Best practice
<input type="checkbox"/>	<input checked="" type="checkbox"/>	User access policies are established.
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Sensitive data (PII/SPII) is confidential/private.
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Data integrity ensures the data is consistent, complete, accurate, and has been validated.
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Data is available to individuals authorized to access it.

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## Recommendations:

1. **Implementation of Access Control Policies:** It advises Botium Toys to implement comprehensive access control policies aimed at regulating access to sensitive data and critical systems based on users' roles and responsibilities. This measure seeks to safeguard the confidentiality of data, including sensitive customer information such as credit card details and personally identifiable information (PII/SPII), ensuring that only authorized personnel possess access privileges. Moreover, the principle of least privilege control should be adhered to, limiting user access rights to the minimum necessary for their designated tasks. Additionally, the segregation of private data, particularly customer information, into a distinct and highly secure environment is recommended to further fortify data protection measures against unauthorized access or compromise.
2. **Establishment of Encryption Protocols:** To bolster data security, particularly concerning private customer information, the implementation of encryption protocols both at rest and in transit is imperative. This entails employing robust encryption algorithms and ensuring the secure management and storage of encryption keys. Such measures aim to enhance the confidentiality of sensitive data, especially during credit card transactions, by safeguarding against unauthorized access or interception.
3. **Enforcement of Strong Password Policies and Multi-Factor Authentication (MFA):** It is proposed to enforce stringent password policies supplemented by Multi-Factor Authentication (MFA) mechanisms to augment overall security measures. This initiative introduces an additional layer of protection, thereby mitigating the risk of unauthorized access in scenarios involving compromised

credentials. Furthermore, the adoption of a password management system can alleviate password fatigue while further enhancing security posture.

4. **Establishment of Disaster Recovery Protocols and Regular Backup Regimens:** To ensure business continuity and resilience in the face of potential security breaches, the development of a robust Disaster Recovery Plan alongside the implementation of regular backup systems is recommended. These measures facilitate the timely restoration of critical data and operations, thereby minimizing the impact of security incidents on organizational continuity.
5. **Strengthening of Endpoint Security:** Enhancing endpoint security warrants the deployment of Intrusion Detection Systems (IDS) or Intrusion Prevention Systems (IPS) to proactively identify and mitigate anomalous network traffic patterns or unauthorized access attempts. Furthermore, the establishment of comprehensive logging and monitoring mechanisms facilitates the continuous surveillance of user activities, system events, and network traffic. Regular review and auditing of these logs serve to ensure ongoing vigilance against potential security threats.
6. **Implementation of Regular Monitoring and Maintenance for Legacy Systems:** It is recommended to implement a structured schedule of manual monitoring, maintenance, and intervention protocols for all legacy systems within the organizational infrastructure. Such proactive measures are essential for ensuring the continued functionality, stability, and security of legacy systems. Additionally, they facilitate the early detection and remediation of potential vulnerabilities or system failures, thereby minimizing downtime and mitigating the risk of data breaches or operational disruptions.