

Data Loss Playbook

CyberAlberta

March 13, 2024

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Published by:
Technology and Innovation, Cybersecurity Division

Preface

This document is a generic playbook based on the Government of Alberta's data loss incident standard operating procedure. You can use this document to construct your own organization's data loss incident playbook or process. References to internal teams or policy instruments have been encapsulated in brackets (“< >”). These should be replaced with information specific to your organization. For more information, please contact the CyberAlberta general mailbox:

CyberAlberta Support
cyberalberta@gov.ab.ca

Anyone who observes a loss of data should report it immediately to <your help desk or IT service desk>, per the <your organization's Security Incident Response Process>, where the incident will be tracked and managed.

Note: This page can be excluded or re-written to be a preface tailored to your organization.

Effective Date

This publication takes effect on March 16, 2024.

Approved by: Martin Dinel	Owner: CyberAlberta (Martin Dinel, ADM)	
Approval date: 16-02-2024	Reviewed date: 16-03-2024	Next review date: 16-03-2025
Contact: Martin Dinel, ADM for the Cybersecurity Division Email: martin.dinel@gov.ab.ca	Policy Instrument type: Playbook	



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Overview

Data loss within an organization refers to the unintended or unauthorized loss, destruction, or integrity loss of sensitive information or data that is under the control of said organization. This loss can occur due to various reasons, including human error, technical failures, cyber-attacks, or malicious actions. The scope of this playbook is limited to data loss, and not data leakage or data breach.

Organizations often handle vast amounts of sensitive and confidential data, including personal information, trade secrets, financial records, and more. The consequences of data loss in such contexts can be severe and wide-ranging, impacting not only the affected individuals but also the organization's ability to function effectively and securely.

A Data Loss Playbook serves as a comprehensive guide to effectively respond to potential data loss incidents within our organization. This playbook can be used as a template which outlines the steps and procedures that the incident response team must follow to detect, assess, contain, and mitigate data loss events promptly and minimize their impact on sensitive information.

The primary objective of this playbook is to safeguard the organization's sensitive data, including intellectual property, customer information, and confidential documents, from unauthorized access, exfiltration, or accidental exposure. By having a well-structured data loss incident response process, we aim to minimize financial losses, maintain the trust of our stakeholders, and comply with applicable data protection regulations.

This document outlines the steps to take when affected by a data loss incident. It is broken down into three phases:

1. Assessment
2. Response
3. Post-Incident

If you have experienced a data loss incident and need advice and guidance on how to recover jump to the Assessment Phase and report the data loss incident to <your Service Desk> at <phone number or contact information>.

For more information on data loss incidents or other cybersecurity-related topics please email <your cybersecurity department mailbox>

Assessment

Verifying reported incidents and assessing their potential impact on the organization is a critical part of the incident response process. It involves a systematic approach to gather information, analyze data, and make informed decisions about the nature and severity of the reported incident. Below is a guide on accomplishing this.



Once a data loss incident has been reported, it enters the assessment phase. Key activities that occur during the assessment phase include, but are not limited, to the following:

Activity	Actions
1	<input type="checkbox"/> Determining the legitimacy of the data loss (e.g., is it genuine? Is it just misplaced? Is this malicious or accidental? Etc.)
2	<input type="checkbox"/> Notifying leadership within your organization accordingly based on severity
3	<input type="checkbox"/> Mobilizing cybersecurity incident response team to determine the scope of the data loss. This initial investigation will include the following steps: <ul style="list-style-type: none"> ○ determining whether data loss or data breach has occurred; ○ determining the preliminary business impact;

Activity	Actions
	<ul style="list-style-type: none"> ○ determining how the cyber incident was reported; ○ determining the initial number of affected assets across the organization; ○ identifying the attack email or ingress point; ○ identifying indicators of compromise; ○ examining additional reporting relating to affected assets, including AV logs, system event logs, and network monitoring logs; ○ researching threat Intelligence sources to gain further intelligence and support mitigation by others; & ○ noting any current action(s) being undertaken.

Essential communications during the assessment phase of a data loss incident can include:

Timing	From	To	General Message
After initial investigation and confirmation of data loss incident	Cybersecurity	Senior Management Corporate Communication Canadian Centre for Cybersecurity (CCCS) Local Law Enforcement CyberAlberta (Recommended)	Confirmation of incident and extent of incident, as well as high level plan to resolve the incident. It is important to also notify CCCS so that they are aware of the issue. They may provide assistance depending on the severity of the incident and will ensure that other Canadian organizations are alerted to potential related attacks. Intentional destruction of data is a crime and just as any other crimes, the information should also be reported to law enforcement. Consider identifying a contact for your Corporate Communications team who can facilitate reviews and approvals. CyberAlberta may be able to provide assistance, as well as reach out to COI members to warn of potential attacks.
If a privacy breach is suspected	Cybersecurity	Office of the Information Privacy Commissioner (OIPC)	Communicate incident details and evidences suggesting that this may result in a privacy incident. Provide details as to the records and individuals whose data might be compromised.
In response to multiple public concerns or media inquiries	Communications	Public	High-level messaging noting that service impacts are being investigated and thanking clients for their understanding. At this stage, public communications should remain reactive. Avoid sharing undetermined information, including details about the potential attack and restoration timelines. Messaging should be approved by appropriate members of cybersecurity and leadership. Responding to public comments can help control the narrative and reduce speculation.

Response

There are several key activities to the response phase when dealing with a data loss incident, with the main goal being to recover from the incident in the least amount of time possible.

Key activities of responding to a data loss incident include:

Activity	Actions
1	<ul style="list-style-type: none"> <input type="checkbox"/> The internal forensic team should be contacted immediately upon identifying a data loss incident within the organization
2	<ul style="list-style-type: none"> <input type="checkbox"/> Engage operations support teams (e.g., server team, storage team) to aid in the implementation of the response plan by restoring lost data from back-up systems.
3	<ul style="list-style-type: none"> <input type="checkbox"/> Determine the nature of the data loss. Was this accidental, system issue, malicious (i.e., malware, or targeted cyber attack)? <input type="checkbox"/> If malicious, review affected infrastructure for indicators of compromise derived from the malware analysis to identify any additional compromised systems and verifying all infected assets are in the process of being recalled and quarantined.
4	<ul style="list-style-type: none"> <input type="checkbox"/> Identify any data impacted by the data loss incident, including data-in-transit. Data owners and the business should be engaged to understand the business impact of the compromised data and to
5	<ul style="list-style-type: none"> <input type="checkbox"/> Determine the likelihood that any identified data's confidentiality, integrity or availability was compromised. If confidentiality has been compromised, please refer to the data breach playbook.
6	<ul style="list-style-type: none"> <input type="checkbox"/> Provide an interim incident report to the service owners of the affected system(s).
7	<ul style="list-style-type: none"> <input type="checkbox"/> Preserve any compromised assets or copies, if possible, for future analysis including forensic investigation.
8	<ul style="list-style-type: none"> <input type="checkbox"/> Incorporate technical and business analysis in developing a prioritized remediation plan which includes a communication strategy.
9	<ul style="list-style-type: none"> <input type="checkbox"/> If malicious, suspend confirmed and suspected compromised accounts.
10	<ul style="list-style-type: none"> <input type="checkbox"/> If malicious, reduce any further malicious activity by quarantining affected systems (either using manual or automatic means) and removing them from the network, where possible, or applying access controls to isolate them from production networks. Business data owner(s) and stakeholders should be kept abreast of the progress of containment activities. <input type="checkbox"/> The scope of containment can be defined by searching for the: <ul style="list-style-type: none"> o SHA-1 process name; o executable file name; & o URL or IP address of similar connections on the network. <input type="checkbox"/> Protection measures derived from the results of malicious code analysis to protect infrastructure from the malicious code and other malware that may attempt to infect using the same mechanism should also be developed at this time.
11	<ul style="list-style-type: none"> <input type="checkbox"/> Restore affected data and or systems from a trusted and tested backup. The priority of recovery of these systems will be based on business impact analysis and business criticality.
12	<ul style="list-style-type: none"> <input type="checkbox"/> The systems/ devices that have been affected should be re-imaged. This includes, at a minimum the following:

Activity	Actions
	<ul style="list-style-type: none"> ○ Re-installing any standalone systems from a clean Operating System (OS) backup before updating with trusted data back-ups. ○ Re-setting the credentials of all compromised system(s) and users' account details if applicable. □ Coordinate the implementation of patches or vulnerability remediation activities.
13	<ul style="list-style-type: none"> □ Once the data or system(s) have been restored and re-imaged the restoration of service can begin. Activities involved in this step include, but are not limited to: <ul style="list-style-type: none"> ○ Complete malware scanning of environment systems, if applicable. ○ Reintegrate previously compromised systems. ○ Restore corrupted or destroyed data. ○ Restore suspended services. ○ Continue to monitor for signatures and other indicators of compromise to prevent the malware attack from re-emerging. ○ Confirm policy compliance across the organization.

Essential stakeholder communications during the response phase of a data loss incident include:

Timing	From	To	General Message
After initial assessment is completed and initial communication occurred	Cybersecurity	Forensics Team IT Support Teams Leadership	Notify Forensics team to preserve any evidence as required for root cause analysis. IT support teams (namely, server, storage and/or back-up teams) to resolve encrypted files. Leadership should be provided a high-level resolution plan.
Routinely according to the impact and urgency to restore the data	Cybersecurity	Leadership	Leadership should retrieve routine status updates.
After the initial impact has been assessed	Cybersecurity	Communications Team	If your organization has a communications team, they may be able to support stakeholder, internal, and public communications. Ensure communications is aware of high-level updates, as they may impact messaging. Public communications materials and approach should be approved by appropriate members of cybersecurity and leadership.
After privacy impacts have been discovered	Cybersecurity	Privacy Team	The Privacy team will need to be notified to initiate their own processes for response to privacy breaches.
After the initial impact has been assessed and there are any suspected acts, regulation, or policy violations	Cybersecurity	Legal Team	The legal team should be notified of the nature of the impact, including the type of data, and whom the stakeholders are for this data. They may need to look at the legal implications the loss could present.

Depending on the severity of the incident, essential public communications during the response phase of a data loss incident can include:

Timing	From	Tactic	General Message
Upon notification	Communications	Communications plan Key messages	Outline the overall communications approach for stakeholders, staff, and the public. Develop key messages that share the most important pieces of information with the audience to help keep messaging consistent. Consider timing and messaging. Be transparent without sharing sensitive information. The plan and messaging should be approved by appropriate members of cybersecurity and leadership.
In response to public inquiries	Communications	Social media	Provide high-level updates to keep clients informed on the situation. Responding to public comments can help control the narrative and reduce speculation. Individuals will often go to social media when experiencing a technical issue. Avoid sharing sensitive or undetermined information, including restoration timelines. Depending on the level of public impact, consider whether a reactive or proactive approach is most appropriate. Reactive may be more suitable when public impacts are minimal, whereas proactive may be more suitable for larger incidents.
In response to media inquiries	Communications	Media statement or response Web content Direct stakeholder communications	Provide information about the incident. If a breach results in significant public impacts, inform stakeholders of the incident and steps being taken to resolve the situation. Use existing channels and, if required, provide multiple updates. This will help reduce speculation and assure clients they are being considered during response. Be transparent without sharing sensitive information. Avoid undetermined information, including restoration timelines. It should be approved by appropriate members of cybersecurity and leadership.

Post Incident

A comprehensive post-mortem analysis should be conducted after resolving a data loss incident or any significant cybersecurity event. It involves a detailed examination of the incident response process to identify strengths, weaknesses, and lessons learned. The analysis should be carried out by the incident response team and key stakeholders, using incident data, logs, and documentation to gain insights into the incident's root causes, response effectiveness, and opportunities for improvement. The findings from

the post-mortem analysis serve as valuable input to update the data loss playbook, enhance incident response procedures, and fortify the organization's security posture against future incidents.

If the organization does experience a data loss incident, conducting lessons learned exercises post-recovery is an excellent method to implement further mitigation measures and corrective actions and strategies that did not go as planned. Revising the incident response plan based on these lessons learned will ensure that the organization has the most robust response and recovery plans possible. These lessons learned may also be shared through secure channels with other organizations, such as the CyberAlberta Community of Interest, as sharing these lessons can benefit other organizations and the cybersecurity community, ensuring greater all-around protection for Albertans.

Key activities of the post-incident phase include, but are not limited to:

Activity	Actions
1	<input type="checkbox"/> Complete root cause analysis, possibly in conjunction with the forensic team, to determine how the data loss occurred.
2	<input type="checkbox"/> Draft a post-incident report that includes the following details as a minimum: <ul style="list-style-type: none"> ○ details of the cause, impact, and actions taken (successful or otherwise) to mitigate the cyber incident; ○ timings, type, and location of the incident; ○ any effects on users and/or clients caused by the attack or during the remediation; ○ activities undertaken by relevant operations groups, service providers, and business stakeholders that enabled normal business operations to resume; ○ recommendations of any aspects of people, processes, or technology that could be improved across the organization to help prevent a similar cyber incident from reoccurring; & ○ review of staff welfare (e.g., working hours, overtime, time off in lieu and expenses).
3	<input type="checkbox"/> Completing the formal lessons identified process to feedback into future preparation activities. Document the lessons learned from the incident response. This includes best practices, new insights, and strategies to enhance the data loss playbook and incident response procedures
4	<input type="checkbox"/> Publishing internal communications to inform and educate employees on data loss incidents and security awareness.
5	<input type="checkbox"/> Publishing external communications, if appropriate, inline with the communications strategy to provide advice to customers, engage with the market, and inform the press of the cyber incident. <input type="checkbox"/> These communications should provide key information about the cyber incident without leaving the organization vulnerable or inciting further data attacks.
6	<input type="checkbox"/> Reverse-engineering any malware used in a secure environment to understand its mechanisms and the functionality it implemented <ul style="list-style-type: none"> ○ The reverse-engineering may be helped by executing the malware in a secure environment or sandbox, segregated from the business network, to determine its behaviour on a test system, including created files, launched services, modified registry keys, and network communications <input type="checkbox"/> Classify the malware by submitting it to AV vendors and determining the family it belongs to.
7	<input type="checkbox"/> Use the findings from the post-mortem analysis to update the data loss playbook. Incorporate improvements, refine response procedures, and integrate new knowledge gained from the incident.
8	<input type="checkbox"/> Complete root cause analysis, possibly in conjunction with the forensic team, to determine how the data loss occurred.



Essential communications during the post incident phase of a data loss incident attack can include

Timing	From	To	General Message
After the incident has been resolved	Cybersecurity	Leadership	Post incident report, including: <ul style="list-style-type: none"> • Root cause analysis • High level information about what happened, when, how it was resolved, and any potential repercussions or related advice to stakeholders • Lessons Learned • Planned preventative measures
After post incident report has been communicated to leadership	Cybersecurity and leadership or Communication team	Clients/ stakeholders/ or the public if it makes sense for the organization	High level information about what happened, when, how it was resolved, and any potential repercussions or related advice to stakeholders. Consider alignment with previously shared messaging.