



Australian Government Information Security Manual

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Guidelines for cyber security incidents

Detecting cyber security incidents

Cyber security events

A cyber security event is an occurrence of a system, service or network state indicating a possible breach of security policy, failure of safeguards or a previously unknown situation that may be relevant to security.

Cyber security incidents

A cyber security incident is an unwanted or unexpected cyber security event, or a series of such events, that have a significant probability of compromising business operations.

Detecting cyber security incidents

One of the core elements of detecting and investigating cyber security incidents is the availability of appropriate data sources. Fortunately, many data sources can be extracted from existing systems without requiring specialised capabilities.

The following table describes some of the data sources that organisations can use for detecting and investigating cyber security incidents.

Data Source	Description
Domain Name System (DNS) logs	Can assist in identifying attempts to resolve malicious domains or Internet Protocol (IP) addresses which can indicate an exploitation attempt or successful compromise.
Email server logs	Can assist in identifying users targeted with spear-phishing emails. Can also assist in identifying the initial vector of a compromise.
Operating system event logs	Can assist in tracking process execution, file/registry/network activity, authentication events,

	operating system created security alerts and other activity.
Virtual Private Network (VPN) and remote access logs	Can assist in identifying unusual source addresses, times of access and logon/logoff times associated with malicious activity.
Web proxy logs	Can assist in identifying Hypertext Transfer Protocol (HTTP)-based vectors and malware communication traffic.

In addition, logs created by various security tools and appliances such as antivirus software, content filters and host-based or network-based intrusion detection or intrusion prevention systems can be captured and correlated alongside other data sources.

Finally, many potential cyber security incidents are noticed by personnel rather than software tools. As such, successful detection of cyber security incidents is often based around trained cyber security personnel with access to sufficient data sources complemented by tools supporting both manual and automated analysis.

Security Control: 0576; Revision: 6; Updated: Sep-18; Applicability: O, P, S, TS; Priority: Must

An intrusion detection and prevention strategy is developed and implemented that includes:

- *network-based intrusion detection and prevention*
- *procedures and resources for maintaining detection signatures*
- *procedures and resources for the analysis of event logs and real-time alerts*
- *procedures and resources for responding to detected cyber security incidents*
- *the frequency for review of intrusion detection and prevention procedures and resourcing.*

Security Control: 0120; Revision: 4; Updated: Sep-18; Applicability: O, P, S, TS; Priority: Must

Cyber security personnel have access to sufficient data sources and tools to ensure that any security alerts generated by systems are investigated and that systems and data sources are able to be searched for key indicators of compromise including but not limited to IP addresses, domains and file hashes.

Further information

Further information on detecting cyber security incidents can be found in the **Event logging and auditing** section of the **Guidelines for system monitoring**.

Managing cyber security incidents

Recording cyber security incidents

The purpose of recording cyber security incidents in a register is to highlight their type and frequency so that corrective action can be taken. This information, along with information on the costs of any remediation activities, can also be used as an input to future security risk assessments.

Security Control: 0125; Revision: 3; Updated: Sep-18; Applicability: O, P, S, TS; Priority: Should

Cyber security incidents are recorded in a register with the following information:

- *the date the cyber security incident occurred*

- *the date the cyber security incident was discovered*
- *a description of the cyber security incident*
- *any actions taken in response to the cyber security incident*
- *to whom the cyber security incident was reported.*

Handling and containing data spills

When a data spill occurs, organisations should inform information owners and restrict access to the information. In doing so, affected systems can be powered off, have their network connectivity removed or have additional access controls applied to the information. It should be noted though that powering off systems could destroy information that would be useful for forensic investigations. Furthermore, users should be made aware of appropriate actions to take in the event of a data spill such as not deleting, copying, printing or emailing the information.

Security Control: 0133; Revision: 1; Updated: Sep-18; Applicability: O, P, S, TS; Priority: Must
When a data spill occurs, information owners are advised and access to the information is restricted.

Handling and containing malicious code infections

Taking immediate remediation steps after the discovery of malicious code can minimise the time and cost spent eradicating and recovering from the infection. As a priority, all infected systems and media should be isolated to prevent the infection from spreading further. Once isolated, infected systems and media can be scanned by antivirus software to potentially remove the infection. It is important to note though, a complete operating system restoration from a known good backup or reinstallation is the only reliable way to ensure that malicious code can be truly eradicated.

Security Control: 0917; Revision: 6; Updated: Sep-18; Applicability: O, P, S, TS; Priority: Should
When malicious code is detected, the following steps are taken to handle the infection:

- *the infected system is isolated*
- *all previously connected systems, including any media used in the period leading up to the infection, are scanned for signs of infection and isolated if necessary*
- *antivirus software is used to remove the infection from infected systems and media*
- *if possible, any previously infected system is restored from a known good backup or rebuilt.*

Allowing targeted cyber intrusions to continue

When a targeted cyber intrusion is detected, organisations may wish to allow the intrusion to continue for a short period of time in order to understand its extent. Organisations allowing a targeted cyber intrusion to continue on a system should establish with their legal advisors whether the actions are breaching the **Telecommunications (Interception and Access) Act 1979**.

Security Control: 0137; Revision: 2; Updated: Sep-18; Applicability: O, P, S, TS; Priority: Must
Legal advice is sought before allowing targeted cyber intrusion activity to continue on a system for the purpose of collecting further information or evidence.

Post-incident analysis

Post-incident analysis after a targeted cyber intrusion can assist in determining whether an adversary has been removed from a system. This can be achieved, in part, by conducting a full network traffic capture for at least seven days. Organisations should then be able to identify anomalous behaviour that may indicate whether the adversary has persisted on the system or not.

Security Control: 1213; Revision: 1; Updated: Sep-18; Applicability: O, P, S, TS; Priority: Should

Post-incident analysis is performed for successful targeted cyber intrusions; this includes storing full network traffic for at least seven days after a targeted cyber intrusion.

Integrity of evidence

When gathering evidence following any form of cyber security incident, it is important that its integrity is maintained. Even though an investigation may not directly lead to a law enforcement agency prosecution, it is important that the integrity of evidence such as manual logs, automatic audit trails and intrusion detection tool outputs be protected.

If the Australian Cyber Security Centre (ACSC) is requested to assist in investigations, the ACSC requests that no actions which could affect the integrity of evidence be carried out before the ACSC becomes involved.

Security Control: 0138; Revision: 3; Updated: Sep-18; Applicability: O, P, S, TS; Priority: Should

The integrity of evidence gathered during an investigation is maintained by investigators recording all of their actions and ensuring raw audit trails are copied onto media for archiving.

Further information

Further information on documenting cyber security incident responsibilities and procedures can be found in the **System-specific security documentation** section of the **Guidelines for security documentation**.

Further information on event logging, including retention periods, can be found in the **Event logging and auditing** section of the **Guidelines for system monitoring**.

Reporting cyber security incidents

Reporting cyber security incidents

Reporting cyber security incidents to an organisation's Chief Information Security Officer (CISO), or one of their delegates, as soon as possible after they occur or are discovered provides senior management with the opportunity to assess damage to systems and their organisation, and to take remedial action if necessary, including seeking advice from the ACSC.

Security Control: 0123; Revision: 3; Updated: Sep-18; Applicability: O, P, S, TS; Priority: Must

Cyber security incidents are reported to an organisation's CISO, or one of their delegates, as soon as possible after they occur or are discovered.

Security Control: 0141; Revision: 3; Updated: Sep-18; Applicability: O, P, S, TS; Priority: Must

When organisations use outsourced information technology or cloud services, their service providers report all cyber security incidents to the organisation's CISO, or one of their delegates, as soon as possible after they occur or are discovered.

Reporting cyber security incidents to the ACSC

The ACSC uses the cyber security incident reports it receives as the basis for providing assistance to organisations. Cyber security incident reports are also used by the ACSC to identify trends and maintain an accurate threat environment picture. The ACSC utilises this understanding to assist in the development of new or updated cyber security advice, capabilities and techniques to better prevent and respond to evolving cyber threats. Organisations are recommended to internally coordinate their reporting of cyber security incidents to the ACSC.

Security Control: 0140; Revision: 6; Updated: May-19; Applicability: O, P, S, TS; Priority: Must

Cyber security incidents are reported to the ACSC.

Further information

Further information on reporting cyber security incidents to the ACSC is available at <https://www.cyber.gov.au/report>.