

Data Loss Prevention Procedure		
Directive No.: 2150-P-24.0	CIO Approval: 12/30/2016	Transmittal No.: 17-004a

Issued by the EPA Chief Information Officer, Pursuant to Delegation 1-19, dated 07/07/2005

# Data Loss Prevention Procedure

#### 1. PURPOSE

To extend and provide specificity to the Environmental Protection Agency (EPA) Information Security Policy regarding data loss prevention (DLP) and digital rights management. The procedure will also serve as the authority for future development of additional operational procedures, standards and guidance that may become necessary to enhance protection of EPA data.

#### 2. SCOPE

This procedure covers all EPA information and information systems to include information and information systems used, managed or operated by a contractor, another agency or other organization on behalf of the EPA.

This procedure applies to all EPA employees, contractors, grantees and all other users of EPA information and information systems that support the operations and assets of the EPA.

#### 3. AUDIENCE

The audience is all EPA employees, contractors, grantees and all other users of EPA information and information systems that support the operations and assets of EPA.

#### 4. BACKGROUND

The Federal Information Security Modernization Act (FISMA) of 2014 requires the EPA Chief Information Officer (CIO) to implement policies and procedures that provide for agency information security. Information security entails ensuring appropriate controls and measures are in place to protect the confidentiality, integrity and availability of agency information. EPA has categorized its information by sensitivity and protection needs in accordance with the National Institute of Standards and Technologies (NIST) publications and aligned it to categories and subcategories defined under the National Archives and Records Administration's (NARA) Controlled Unclassified Information (CUI) Program. Differing information sensitivity requires varying controls that adequately protect its confidentiality, integrity and availability while enabling maximum use given its threat environment. The "loss" of information is defined as the compromise of its confidentiality, when information is inappropriately removed from, shared out or otherwise "leaked" from authorized to unauthorized systems, whether intentionally or unintentionally. To help prevent this loss, this procedure establishes an agency Data Loss Prevention Program. The DLP Program will also protect agency information from unauthorized access through the application of digital rights.



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## 5. AUTHORITY

The information directive is issued by the EPA Chief Information Officer, Pursuant to Delegation 1-19, dated 07/07/2005.

Additional legal foundations for the procedure include:

- E-Government Act of 2002, Public Law 107-347, Title III, Federal Information Security Management Act, as amended
- Freedom of Information Act (FOIA), 5 U.S.C. § 552, as amended by Public Law 104-231, 110 Stat. 3048, Electronic Freedom of Information Act Amendments of 1996
- Federal Information Security Modernization Act of 2014, Public Law 113-283, to amend chapter 35 of title 44, United States Code (U.S.C.)
- Clinger-Cohen Act of 1996, Public Law 104-106
- Paperwork Reduction Act of 1995 (44 U.S.C. 3501-3519)
- Privacy Act of 1974 (5 U.S.C. § 552a) as amended
- USA PATRIOT Act of 2001, Public Law 107-56
- Code of Federal Regulations, Part 5 Administrative Personnel, Subpart C— Employees Responsible for the Management or Use of Federal Computer Systems, Section 930.301 through 930.305 (5 C.F.R. 930.301-305)
- Office of Management and Budget (OMB) Memorandum M-00-07, "Incorporating and Funding Security in Information Systems Investments," February 2000
- OMB Memorandum M-03-22, "OMB Guidance for Implementing the Privacy Provisions of the E-Government Act of 2002," September 2003
- OMB Memorandum M-06-16, "Protection of Sensitive Agency Information," June 2006
- OMB Circular A-11, "Preparation, Submission and Execution of the Budget," June 2006
- OMB Circular A-123, "Revisions to OMB Circular A-123, Management's Responsibility for Internal Control," December 2004
- OMB Circular A-130, "Management of Federal Information Resources," Appendix III, "Security of Federal Information Resources," November 2000
- Federal Information Processing Standards (FIPS) 199, Standards for Security Categorization of Federal Information and Information Systems, February 2004
- FIPS 200, Minimum Security Requirements for Federal Information and Information Systems, March 2006
- FIPS 201-1, Personal Identity Verification (PIV) of Federal Employees and Contractors, March 2006
- EPA Information Security Program Plan
- EPA Information Security Policy
- EPA Roles and Responsibilities Procedures
- CIO Policy Framework and Numbering System
- EPA Information Security Continuous Monitoring Strategic Plan



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## 6. PROCEDURE

The DLP procedure establishes a DLP program at EPA. Program objectives are the prevention of data loss and protection of agency digital rights.

#### 6.1 Data Loss Prevention Program

- The Senior Agency Information Security Officer (SAISO) shall establish a DLP program to prevent data loss and manage digital rights. The DLP program shall focus on identifying, developing, implementing and managing controls and processes that enable and leverage digital rights management protections to help prevent the loss of data. With regard to DLP program functions, the SAISO shall:
  - Develop, implement and oversee a DLP governance structure.
    - Coordinate with Program Office and Region personnel to identify and maintain sensitive information characteristics to enable information labeling and tracking.
    - Coordinate with Program Office and Region personnel to develop, operate and maintain processes to review and adjudicate detected possible data leakage.
  - Evaluate protections' effectiveness.
    - Create, capture and use performance metrics to improve procedures, processes and controls.
  - Ensure awareness through outreach and training.
- The SAISO and the Director of the Office of Information Technology Operations (OITO), in coordination with the Director of the Office of Information Management (OIM), shall coordinate to define, build, implement and maintain a DLP solution that automates information labeling and the detection of and prevention of sensitive data leakage.
  - The DLP solution shall be capable of detecting and preventing leakage from the EPA network to the Internet or other external entities outside the agency boundary, between network enclaves within the enterprise network, from endpoint and mobile devices and from cloud solutions to include encrypted traffic at a minimum.
  - The scope of the DLP program shall include EPA data originating or accessed from, or transiting through EPA information systems, to include EPA owned and operated mobile devices (cell phones, tablets, etc.) and home-based devices (e.g., "telework" devices and systems) regardless of physical location.
- The SAISO and the Director of OIM shall coordinate to verify annually the sensitive information inventory.
  - The annual verification shall include but not be limited to a review of:
    - Existing data inventories.
    - High-value assets.
    - Mission Essential Functions (MEF).



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## 6.2 Information Classification

Information classification identifies, in broad terms, characteristics that will be used to prevent the loss of sensitive data. Classification is recurring and data classifications will change over time.

- The SAISO and the Director of OIM shall coordinate to:
  - Develop a data classification scheme that is consistent with other agency data classification and Open Government initiatives.
  - Define data characteristics.
  - Protect data classes (not individual data elements).
  - Identify information owners (IO) and users.
  - Utilize DLP data discovery scans to gather data characteristics.
  - Define and identify approved storage systems.
  - Catalog data locations and approved transmission, storage and use locations.

#### 6.3 Discovery

Data discovery identifies what the data is, where it resides and how it is utilized at EPA. This information is used to define data characteristics, data types and data classifications further. Discovery results also assist with the identification of sensitive data. Meta data that results from the data discovery is integrated into the DLP policy.

- The SAISO and the Director of OIM shall coordinate to develop and maintain a strategic plan for an agency-wide data discovery effort.
- The SAISO and the Director of OIM shall, in conjunction with the Director of OITO, develop and execute a tactical data discovery plan agency-wide. The tactical plan shall:
  - Create a data discovery program,
  - Define data storage types,
  - Define data categories,
  - Define data owners,
  - Monitor all data states,
  - Identify data locations,
  - Identify data,
  - Categorize data and
  - Identity sensitive data.
- The SAISO and the Director of OIM shall, in conjunction with data owners, identify and recommend data types that are associated with a data classification. Data associations shall be used to develop/update the agency DLP discovery process.
- The SAISO and the Director of OIM shall use the data characteristics and defined values to identify agency data. The output of applying the data characteristic values shall include:
  - Creation and management of an agency sensitive data inventory,
  - Overseeing agency data clean-up and
  - Identifying and refining key terms, content identifiers and other elements for use in ongoing DLP monitoring.
     Note: DLP policy rules shall integrate with a DLP solution that automates the identification of agency data.



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- Senior Information Officials (SIO) shall:
  - Coordinate with the SAISO and Director of OIM to identify Program Office and Region specific data and create and maintain an information inventory.
  - Oversee data clean-up at the Program Office or Region and
  - Provide the SAISO with additional key terms, content identifiers and other elements that can be used for DLP monitoring.

#### 6.4 Monitor

Monitoring shall occur on a continuous basis and information gathered shall be used to refine data characteristics and classifications.

- The SAISO and the Director of OITO, shall coordinate to develop and implement DLP controls and procedures for monitoring information in-use, in transit and at rest for indicators of compromise and policy and procedures violations.
  - In-use monitoring endpoints used by EPA personnel and contractors in their day-to-day use of EPA data (e.g., servers, desktops, laptops, mobile devices, personal devices, removable media, etc.).
    - Examples of indicators of potential compromise or policy and procedures violations:
      - Anomalies such as downloads of a large number of files without prior approval or downloads after normal working hours.
  - In-transit monitoring information transmitted between endpoints both internal and external endpoints (e.g., cloud providers, email, mobile, network, social media, web).
    - Network monitoring shall be at the EPA enterprise network boundary points and at internal enterprise network points separating networks or systems of different categorization or sensitivity and at other points as determined by risk analyses. Network traffic, to include encrypted traffic, shall be examined to prevent the loss of sensitive data or violation of digital rights.
    - Examples of indicators of compromise or policy and procedures violations:
      - Anomalies such as large transfers of information or encrypted traffic on standard ports used for normally unencrypted protocols.
      - Non-standard protocols used on well-known ports.
      - Transmission of sensitive data to network segments or systems that do not use sensitive data.
  - Storage level (at-rest) monitoring storage devices (e.g., cloud providers, collaboration servers, databases, removable media, servers, etc.). Storage devices shall be regularly scanned to



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	on devices not ap	ty controls.		
• The SA	AISO shall: Manage and operate the monitorir review output, coordinate respons			
Region loss of	region personnel and conduct prod AISO shall coordinate with the releva- i(s) to integrate appropriate agency sensitive data. Examples of approp Insider Threat Program. Vulnerability Management.	cess oversight. ant Program Office(s) or initiatives seeking to prevent riate initiatives:		
	Phishing/Social Engineering exerc rector of OITO shall manage and op			
System     approv	n and infrastructure layers. n owners (SO) shall implement com ed devices and capabilities and coc or of OITO to implement and maintai n.	ordinate with the SAISO and		
<ul> <li>SOs ar and pro</li> </ul>	nd IOs shall control access to sensit ptection. Access to sensitive data sh ots of 'least-privilege' and 'need-to-k ed by:	nall be granted under the now'. These concepts shall be		
	Performing regular audits of acces Reviewing privilege user access a Responding to DLP indications of procedures violations.	nd		
common da including b • Sensiti stored	bls are in place to minimize loss of d ata use cases: in-use, in-motion, at ut not limited to destruction, disappe ve information shall not be downloa in locations not approved for that in common of compiling information char	-rest and possible loss modes earance, leakage and theft. ded to storage devices or formation type.		

- Large volumes of sensitive information shall not be downloaded from EPA systems or transmitted outside the EPA enterprise network without explicit approval from the SIO.
- Classified information and CUI shall be handled in a manner consistent with EPA information security procedures.
- Personally Identifiable information (PII) shall be handled in a manner consistent with EPA's privacy procedures. Sensitive Personally Identifiable Information (SPII) shall not be transmitted outside of EPA without explicit approval from the SIO.



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- Users shall only have access to agency information for which they have a business need-to-know and appropriate clearance.
- Only devices approved for use by the agency shall be used to process, store or transmit EPA information.
  - The capability to process, store or transfer data to writable media or external devices on systems that do not require that capability for business purposes shall be disabled. For example, networked servers in a data center may be configured without Universal Serial Bus (USB) ports. In addition, in situations where identified risks prohibit their use, the ability to use writable media or external devices will be disabled on systems used in that situation. For example, disabling USB ports on laptops when traveling to high risk locations. (Refer to EPA's Information Security – System and Information Integrity Procedures and International Travel Procedures for Mobile Devices Procedures).
  - Information Security Officers (ISO) shall validate the authenticity of devices being used on the agency's network.
- EPA information shall only be encrypted using agency-approved encryption standards (Refer to EPA's *Information Security - Configuration Management Procedures*). EPA employees, contractors and all other users of EPA data and information systems are prohibited from using unauthorized encryption capabilities to encrypt EPA information.
- Information systems that have the ability to write or store information on removable media (e.g., CDs, DVDs, USB drives) shall employ a mechanism that automatically encrypts the information stored on those devices using EPA-approved encryption standards when the storage devices are not an approved type that does the encryption natively.
- EPA's procedure Preservation of Separating, Transferring or Separated Personnel's Records in Accordance with the Federal Records Act shall be followed to minimize potential data loss resulting from personnel changes.

# 6.6 Response to Indicators of Compromise or Violation of Policy and Procedures

Indicators of compromise and violation of policy and procedures shall be treated as and reported as an information security incident. Incident reporting shall conform to procedures outlined in EPA's *Information Security – Incident Response Procedures*.

- The SAISO shall, as needed, develop additional procedures that facilitate effective reporting and remediation of data loss incidents. Additionally, the SAISO shall develop metrics to measure the effectiveness of the incident response procedures.
  - Information transmissions and downloads that violate agency policy and procedures shall be blocked.
  - Sensitive information discovered on unapproved storage devices and on approved devices in violation of policy shall be removed from those devices moved to approved and appropriate devices.



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#### 6.7 Awareness

An effective DLP program depends upon an informed user community. Awareness is an element of the DLP program. DLP awareness training will be offered in two ways: 1) stand-alone classes on DLP will be developed, and 2) DLP capabilities will be interwoven into other EPA training initiatives as appropriate.

• The SAISO, in conjunction with ISOs, shall develop an awareness plan. The awareness plan shall define communication methods used by the agency to inform all users of EPA's DLP and digital rights management initiatives and requirements. The SAISO shall develop, disseminate and distribute DLP awareness training content and materials. Training content and materials shall address both IOs and users.

## 7. ROLES AND RESPONSIBILITIES

#### Information Owners (IO)

- IOs have the following responsibilities with respect to data protection:
  - Identify and collect all sensitive data and PII within their respective systems, in coordination with the SOs and Information Management Officer (IMOs).
  - In coordination with the Agency Privacy Officer, describe the purpose(s) for which PII is collected, used, maintained and shared in its privacy notices.
  - Retain PII for timelines identified in NARA record retention schedules to fulfill the purpose(s) identified in the schedule or as required by law.
  - Dispose of, destroy, erase and/or anonymize the PII, regardless of the method of storage, in accordance with a NARA-approved record retention schedule and in a manner that prevents loss, theft, misuse or unauthorized access.
  - Use techniques identified in NIST Special Publication (SP) 800-88, Guidelines for Media Sanitization, to ensure secure deletion or destruction of PII (including originals, copies and archived records).
  - Ensure terms of service and other contractual agreements satisfy the security and privacy requirements applicable to EPA information systems and information for services for non-enterprise services obtained.
  - Assist with controlling access to sensitive data for prevention of loss and protection.

# Director of Office of Information Management (OIM)

- The Director of OIM has the following responsibilities with respect to data protection:
  - Coordinate with the SAISO and others in defining, building, implementing and maintaining a DLP solution.
  - Coordinate with the SAISO and others in annual verification of sensitive information inventory, including MEFs and high-value assets.
  - Coordinate with and assist the SAISO and mission and information owners to:



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- Develop a data classification scheme.
- o Define data characteristics.
- Protect data classes.
- o Identify information owners and users.
- o Utilize DLP data discovery scans to gather data characteristics.
- o Define and identify approved storage systems.
- Catalog data locations and approved transmission, storage and use locations.
- Develop and maintain a strategic plan for an agency-wide data discovery effort.
- Develop and execute a tactical data discovery plan agency-wide.
- Identify and recommend data types that are associated with a data classification.
- Use the data characteristics and defined values to identify agency data.

## Director of Office of Information Technology Operations (OITO)

- The Director of OITO has the following responsibilities with respect to data protection:
  - Coordinate with the SAISO and others in defining, building, implementing and maintaining a DLP solution that automates information labeling and the detection of and prevention of sensitive data leakage.
  - Manage and operate the monitoring solution platform and infrastructure layers.

#### EPA Personnel (e.g., System Users)

- Personnel have the following responsibilities with respect to data loss prevention:
  - Use of only EPA approved devices to process, store or transfer EPA information.
  - Use of only EPA approved encryption capabilities to encrypt information.
  - Report all incidents involving the unauthorized release of information to the EPA Computer Security Incident Response Capability (CSIRC). Incidents are reported via the EPA Call Center 1-866-4-EPA (4372), option 1.

#### Information Security Officers (ISO)

- ISOs have the following responsibilities with respect to data loss prevention:
  - Validate the authenticity of devices being used on the agency's network.
  - Assist with the development of an awareness plan.

#### Senior Agency Information Security Officer (SAISO)

- The SAISO has the following responsibilities with respect to data loss prevention:
  - Establish a DLP program to prevent data loss and manage digital rights.
  - Develop, implement and oversee a DLP governance structure.



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- Evaluate DLP protections' effectiveness.
- Ensure awareness through outreach and training.
- Coordinate with the Director of OITO and others to define, build, implement and maintain a DLP solution that automates information labeling and the detection of and prevention of sensitive data leakage.
- Coordinate with the Director of OIM and mission and information owners to:
  - Verify annually the sensitive information inventory, including MEFs and other high-value assets.
  - Develop a data classification scheme that is consistent with other agency data classification and Open Government initiatives.
  - Define data characteristics.
  - Protect data classes (not individual data elements).
  - o Identify information owners and users.
  - Utilize DLP data discovery scans to gather data characteristics.
  - o Define and identify approved storage systems.
  - Catalog data locations and approved transmission, storage and use locations.
- Develop a strategic plan for an agency-wide data discovery effort.
- Coordinate with the Director of OIM and the Director of OITO to develop and execute a tactical data discovery plan agency-wide.
- Coordinate with the Director of OIM and IOs to identify and recommend information types that are associated with a data classification to develop and update the agency DLP discovery process.
- Use the information characteristics and defined values to identify agency information. The output of applying the information characteristic values shall include:
  - Creation and management of an agency sensitive information inventory,
  - Overseeing agency data clean-up and
  - Identifying and refining key terms, content identifiers and other elements for use in ongoing DLP monitoring.
- Coordinate with the Director of OITO to develop and implement DLP controls and procedures for monitoring information.
- Manage and operate the monitoring solution application layer, review output, coordinate response with program office and region personnel and conduct process oversight.

#### Senior Information Officials (SIO)

- The SIO has the following responsibilities with respect to data loss prevention:
  - Coordinate with the SAISO and Director of OIM to identify Program Office and Region specific data and create and maintain an information inventory.
  - Oversee data clean-up at the Program Office or Region.



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 Provide the SAISO with additional key terms, content identifiers and other elements that can be used for DLP monitoring.

#### System Owners (SO)

- The SO has the following responsibilities with respect to data loss prevention:
  - Assist with identification and collection of all sensitive data and PII within their respective systems, in coordination with the IMO;
  - Implement commensurate security controls and approved devices and capabilities and coordinate with the SAISO and Director of OITO to implement and maintain interoperability with the DLP solution.
  - Shall approve only authorized transmissions of PII or sensitive data outside of EPA's network.
  - Control access to sensitive data for prevention of loss and protection.

#### 8. RELATED INFORMATION

EPA Information Procedure: CIO 2150-P-20.0, Spillage of Classified Information onto Unclassified Systems, September 11, 2015

CIO Policy Transmittal 09-005: Interim Guidance - PointSec Encryption of Agency Desktop Computer Systems

EPA Information Procedures: CIO 2155-P-04.0, Preservation of Separating, Transferring or Separated Personnel's Records in Accordance with the Federal Records Act, December 23, 2014

EPA National Rules of Behavior

Executive Order 13556, Controlled Unclassified Information, November 4, 2010. NIST Special Publications, 800 Series

#### 9. DEFINITIONS

**CUI:** Controlled unclassified information that requires safeguarding or dissemination controls pursuant to and consistent with applicable law.

Data Leakage: Occurs when sensitive data is no longer under the control of the agency.

**Data Disappearance:** Occurs when sensitive data is no longer available to the agency in correct form.

**Information Security:** the protection of information and information systems from unauthorized access, use, disclosure, disruption, modification or destruction in order to provide confidentiality, integrity and availability.

**Information System:** a discrete set of information resources organized for the collection, processing, maintenance, use, sharing, dissemination or disposition of information.

**Personnel:** all classes of users to include EPA employees, grantees, contractors and other users of EPA information.



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**Personally Identifiable Information (PII):** Any information about an individual maintained by an agency that can be used to distinguish, trace or identify an individual's identity, including personal information which is linked or linkable to an individual.

**Sensitive Personally Identifiable Information (SPII):** A subset of PII that, if lost, compromised or disclosed without authorization, could result in substantial harm, embarrassment, inconvenience or unfairness to an individual. At EPA, SPII is defined as social security numbers or comparable identification numbers, financial information associated with individuals and medical information associated with individuals. SPII requires additional levels of security controls.

Abbreviations including acronyms are summarized in Appendix: Acronyms & Abbreviations.

## 10. WAIVERS

Waivers may be requested from the CIO by submitting a justification based on:

- substantive business case need(s)
- demonstration of, or a proposal for, establishment of adequate compensating controls that provide a suitable alternative to the mandated protection

The CIO may grant a waiver when in his/her judgment it is in the best interests of the agency.

The SAISO and Director of OITO shall coordinate to maintain a central repository of all waivers.

#### 11. MATERIAL SUPERSEDED

• EPA Information Security Manual, Directive 2195A1, 1999 Edition, Sections 2.6.1, and 13.0

# 12. CONTACTS

For further information, please contact the Office of Environmental Information (OEI), Office of Information Security & Privacy (OISP).

Ann Dunkin Chief Information Officer U.S. Environmental Protection Agency



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#### APPENDIX: ACRONYMS & ABBREVIATIONS

CIO CFR CSIRC CUI DLP EPA FIPS FISMA FOIA IMO IO ISO MEF NARA NIST OEI OIM OISP OITO OMB PII PIV SAISO SIO SO SP SPII	Chief Information Officer Code of Federal Regulations Computer Security Incident Response Capability Controlled Unclassified Information Data Loss Prevention Environmental Protection Agency Federal Information Processing Standards Federal Information Security Modernization Act Freedom of Information Act Information Management Officer Information Owner Information Security Officer Mission Essential Functions National Archives and Records Administration National Institute of Standards and Technology Office of Environmental Information Office of Information Management Office of Information Management Office of Information Technology Operations Office of Information Technology Operations Office of Management and Budget Personally Identifiable Information Personal Identity Verification Senior Agency Information Security Officer Senior Information Official System Owner Special Publication Sensitive Personally Identifiable Information
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