



**IT Security Procedural Guide:  
Information Security Continuous  
Monitoring (ISCM) Strategy & Ongoing  
Authorization (OA) Program  
CIO-IT Security-12-66**

**Revision 4**

**November 4, 2022**

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**APPROVAL**

IT Security Procedural Guide: Information Security Continuous Monitoring (ISCM) Strategy and Ongoing Authorization (OA) Program, CIO-IT Security-12-66, Revision 4, is hereby approved for distribution.

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**Notes:**

- Hyperlinks in running text will be provided if they link to a location within this document (i.e., a different section). Hyperlinks will be provided for external sources unless the hyperlink is to a web page or document listed in [Appendix B](#). For example, Google Forms, Google Docs, and websites will have links.
- It may be necessary to copy and paste hyperlinks in this document (Right-Click, Select Copy Hyperlink) directly into a web browser rather than using Ctrl-Click to access them within the document.

## 1 Introduction

Information Security Continuous Monitoring (ISCM) as defined by the National Institute of Standards and Technology (NIST) Special Publication (SP) 800-137, Information Security Continuous Monitoring (ISCM) for Federal Information Systems and Organizations, is maintaining ongoing awareness of information security, vulnerabilities, and threats to support organizational risk management decisions.

Per NIST SP 800-137, “An ISCM program is established to collect information in accordance with preestablished metrics, utilizing information readily available in part through implemented security controls,” and “Organizations’ security architectures, operational security capabilities, and monitoring processes will improve and mature over time to better respond to the dynamic threat and vulnerability landscape. An organization’s ISCM strategy and program are routinely reviewed for relevance and are revised as needed to increase visibility into assets and awareness of vulnerabilities. This further enables data-driven control of the security of an organization’s information infrastructure and increase organizational resilience.”

The General Services Administration’s (GSA) ISCM Strategy and Ongoing Authorization (OA) Program, in accordance with (IAW) NIST SP 800-137, will facilitate a migration from compliance-driven risk management to data-driven risk management. This move will provide GSA with the information necessary to support risk response decisions, security status information, and ongoing insight into security control effectiveness.

### 1.1 Purpose

The purpose of this guide is to define the GSA ISCM Strategy and the approach for implementing and maintaining the Office of the Chief Information Security Officer (OCISO) OA Program. It also establishes an OA process model for information systems accepted into the agency’s OA Program. This guide provides GSA Federal employees and contractors with significant security responsibilities and other IT personnel involved in implementing the ISCM Strategy and OA Program requirements.

### 1.2 Scope

The requirements outlined within this guide apply to and must be followed by all GSA Federal employees and contractors who are involved in implementing and maintaining GSA’s ISCM Strategy and OA Program. All GSA IT Systems are a part of GSA’s overall ISCM strategy and systems in OA must adhere to the requirements of the OA Program.

### 1.3 Policy

GSA CIO 2100.1, GSA Information Technology (IT) Security Policy, contains the following policy statements regarding requirements related to the ISCM program.

**Chapter 3: Policy for Identify Function, states:**3. Governance.

i. AOs must ensure risk assessments are performed and documented as part of A&A activities IAW GSA CIO-IT Security-06-30:

- (1) Before a system is placed into production;
- (2) When significant changes are made to the system;
- (3) At least every three (3) years; or
- (4) Via continuous monitoring based on continuous monitoring plans reviewed and accepted by the GSA CISO.

m. Extension of a system's current ATO for a period not to exceed one year (365 days) may only be requested under one of the following conditions. The system must continue to maintain its complete set of A&A documentation (e.g., System Security Plan, Contingency Plan, POA&Ms). All actions to satisfy the conditions below must be completed within the extension period (i.e., no longer than 12 months).

- (1) Transitioning to ongoing authorization.

**Chapter 5, Policy for Identify Function, states:**2. Security continuous monitoring.

a. OCISO will implement continuous monitoring of systems using Continuous Diagnostics and Mitigation (CDM) and other enterprise security tools as described in GSA CIO-IT Security-12-66, Information Security Continuous Monitoring.

## 2 ISCM Roles and Responsibilities

There are many roles and responsibilities associated with implementing and managing an effective ISCM strategy and OA Program. The roles and responsibilities identified in this section have been paraphrased from the [ISCM Responsible, Accountable, Consulted, Informed \(RACI\) Chart](#) and are in addition to the agency's Security Roles and Responsibilities defined by GSA Order CIO 2100.1.

### 2.1 Chief Information Security Officer (CISO)

Responsibilities include the following:

- Developing, implementing, and maintaining an agency-wide GSA ISCM Strategy and OA Program.
- Reporting to the GSA CIO on the implementation and maintenance of the GSA's OA Program.
- Acquiring or developing and maintaining automated tools to support the ISCM Strategy and OA Program.
- Providing training on the organization's ISCM Strategy, OA Program, and operational process.

- Providing support to information system OAs and system owners on how to implement the OA Program requirements for their systems.
- Accepting the risk of operating GSA information systems under their purview, including having implemented required continuous monitoring controls and settings in accordance with GSA and Federal policies and requirements.

## 2.2 Authorizing Official (AO)

Responsibilities include the following:

- Accepting the risk of operating GSA information systems under their purview, including having implemented required continuous monitoring controls and settings in accordance with GSA and Federal policies and requirements.
- Ensuring a POA&M item is established and managed to address any controls required as a part of continuous monitoring that have not been fully implemented.
- Reviewing continuous monitoring reports/dashboard and making a risk-based determination on a system's ongoing authorization status.
- Determining whether a breach or information system change requires an event-driven reauthorization.
- Ensuring the organization's OA Program is applied with respect to a given information system.

## 2.3 System Owner

Responsibilities include the following:

- Ensuring required continuous monitoring controls and settings are in place and operating in accordance with GSA and Federal policies and requirements.
- Maintaining required continuous monitoring documentation.
- Reviewing continuous monitoring reports/dashboard and responding, as necessary, to maintain a system's ongoing authorization.
- Assisting in determining whether a breach or information system change requires an event-driven reauthorization.

## 2.4 OA Information Systems Security Manager (ISSM)

Responsibilities include the following:

- Assisting in the OA Program's Biannual Performance Metric review requirements.
- Managing systems' risk remediation activities as necessary in maintaining the system's OATO.
- Monitoring and supporting the resolution of POA&Ms to mitigate system vulnerabilities regarding continuous monitoring controls for all systems under their purview.
- Coordinating with ISSOs on information systems' monthly, quarterly, and annual security requirements.



- Coordinating with OA ISSOs to establish and manage ISCM processes and procedures (e.g., reviewing and coordinating ISCM reports/dashboards, reviewing events to determine if an event-driven reauthorization is required).

## 2.5 OA Information Systems Security Owner (ISSO)

Responsibilities include the following:

- Ensuring required continuous monitoring controls and settings are in place and operating in accordance with GSA and Federal policies and requirements.
- Developing and maintaining POA&Ms, as necessary, regarding continuous monitoring controls for assigned systems.
- Verifying the maintenance of (or maintaining) required continuous monitoring documentation.
- Maintaining compliance with continuous monitoring processes and procedures (e.g., inventories are up to date, reports are submitted).
- Assisting in remediation activities as necessary to maintain ongoing authorization.
- Collaborating with the OA Team on completing assigned OA Checklists and Biannual Performance Metric Review (PMR) requirements.

## 2.6 OCISO Policy and Compliance Division (ISP)

Responsibilities include the following:

- Acting as custodian of the Archer Governance, Risk, and Compliance (GRC) tool and the CDM Program Management Office (PMO).
- Facilitating OA Program reporting requirements to CISO, AOs, and System Owner.
- Managing the OA Program system prioritization list.
- Providing formal ISCM Strategy and OA Program guidance.
- Providing security management oversight of the OA Program and the defined performance metrics.
- Drafting OATO letter, for AO and CISO approvals.

## 2.7 OA Team

Responsibilities include the following:

- Architecting, reviewing, and defining various OA Program processes for efficiency, compliance, and accuracy.
- Managing the OA Program onboarding processes of new information systems.
- Conducting Biannual PMRs of all systems accepted into the OA Program with the assigned OA ISSOs.
- Facilitating OA Program reporting requirements to the OA ISSM.
- Conducting OA Program reporting requirements.

- Coordinating system onboarding and offboarding requirements with all system custodians.
- Conducting OA Program training activities for OA ISSOs and ISSMs.

### 3 ISCM Strategy

The GSA ISCM Strategy leverages both manual and automated processes that involve the monitoring of managed information system's NIST IT Security and Privacy requirements. The strategy ensures all key IT Security and Privacy controls are periodically assessed for effectiveness. Monitoring and reporting activities are biased on requirements with the greatest operational impact. GSA's ISCM Strategy will expand and mature over time to ensure continuous improvement. Security control analysis, monitoring and assessment frequencies of continuous monitoring and verification requirements will change in accordance with GSA's needs. The OCISO will regularly review the ISCM Strategy to ensure it sufficiently supports the GSA's requirements to operate systems within acceptable risk tolerance levels, identify ways to improve organizational insight into security posture, effectively support informed risk management decisions, and improve GSA's ability to respond to known and emerging threats.

GSA's ISCM organizational strategy leverages its deployment of Continuous Diagnostics and Mitigation (CDM) and other Enterprise Security Management tools. GSA's tool stack facilitates near real-time risk management of GSA information systems. All GSA managed IT systems benefit from GSA's ISCM risk management processes based on the continuous monitoring of vulnerabilities, threats, and actions taken to reduce, mitigate, or eliminate them. GSA has implemented its ISCM strategy leveraging regular vulnerability scanning activities and the requirement to maintain Security Assessment and Authorization (A&A) documents in an as-is state. In addition to the automation provided by the GSA IT Security tool stack, the GSA's ISCM strategy leverages manual processes defined by:

- CIO-IT Security-01-02, Incident Response (IR)
- CIO-IT Security-04-26, Federal Information Security Modernization Act (FISMA) Implementation
- CIO-IT Security-06-30, Managing Enterprise Cybersecurity Risk
- CIO-IT Security-08-39, FYxx IT Security Program Management Implementation Plan
- CIO-IT Security-09-44, Plan of Action and Milestones (POA&M)
- CIO-IT Security-09-48, Security and Privacy Requirements for IT Acquisition Efforts
- CIO-IT Security-11-51, Conducting Penetration Test Exercises
- CIO-IT Security-17-80, Vulnerability Management Process
- CIO-IT Security-18-90, Information Security Program Plan (ISPP)
- CIO-IT Security-18-91, Risk Management Strategy (RMS)
- CIO-IT Security-19-95, Security Engineering Architectural Reviews
- CIO-IT Security-19-97, Robotic Process Automation (RPA) Security
- CIO-IT Security-19-101, External Information System Monitoring

In addition to the ISCM Strategy, GSA has established an OA Program with defined information system qualifying requirements. The OA Program objective has been defined to achieve Ongoing Authorization to Operate (OATO) for GSA managed information systems. The OCISO and the system's AO accept an information system into the OA Program based on it meeting the program's prerequisites, its usage of enterprise security tools, and its compliance with the requirements of the program. Upon acceptance

for OATO, systems no longer require re-authorization every three years, however, an event driven re-authorization is required if an OA system:

- Has a significant change as defined in NIST SP 800-37, Revision 2, Risk Management Framework for Information Systems and Organizations: A System Life Cycle Approach for Security and Privacy, Appendix F
- Has a security breach that impacts the security posture of the system
- Has not complied with OA Program requirements (see Section [4.2.3](#))

GSA information systems that do not meet the qualifying requirements for transitioning into the OA Program must follow one of the A&A processes defined by CIO-IT Security-06-30.

## 4 The OA Program

GSA's OA Program was established to provide a path for FISMA systems to maintain their Authorization to Operate (ATO) on a continuous basis. The OA Program's continuous assessment and communication activities provide a more frequent view into the security posture of the onboarded systems. Systems selected for the OA Program have been identified as meeting a high caliber of compliance across various IT management and cyber hygiene requirements across hardware asset management, software asset management, configuration compliance, vulnerability management, POA&M management, annual documentation deliverables, and GSA defined showstopper controls.

The overall program strategy ensures key information security controls are periodically assessed for effectiveness at a higher frequency than the Agency's traditional 3-year ATO processes. The OA Program uses biannual reviews to ensure all responsible parties are executing their responsibilities according to the defined OA Program requirements and ensures systems' OATOs are maintained. As the OA Program at GSA matures and grows, the OCISO will revise the program, as appropriate, to ensure systems' security posture can be monitored regularly, continue to operate within GSA's risk tolerance, and can quickly respond to emerging threats.

### 4.1 Onboarding Systems into Ongoing Authorization

Before an information system can become part of the OA Program, it must go through an onboarding process to ensure the system has met all CIO-IT Security-06-30 and the OA Program requirements. The following OA subsections of this guide elaborate on each of the major steps involved in the OA onboarding processes as shown in Figure 4-1.

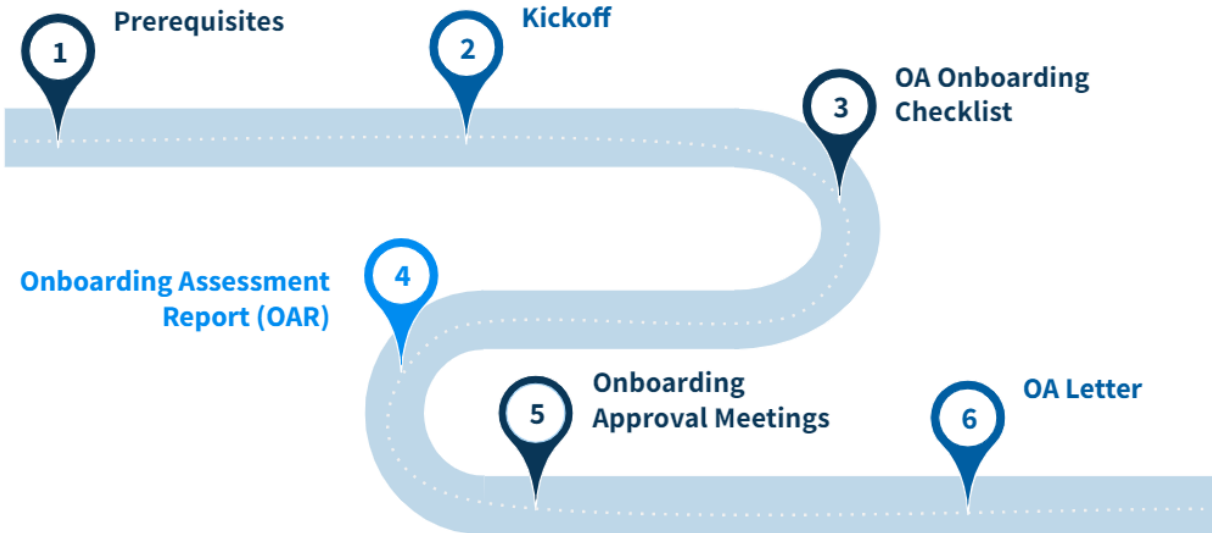


Figure 4-1. Ongoing Authorization Steps

#### 4.1.1 Prerequisites for Requesting Ongoing Authorization

A GSA information system must meet the following requirements before it can be considered for onboarding into the OA Program. These prerequisites are part of the pre-assessment conducted by the OA Team and determine the system's OATO eligibility.

- The information system must have had all its NIST SP 800-53 security controls for its applicable FIPS 199 level and any additional controls required by the GSA CISO assessed within the past 18 months and issued an ATO.
- The information system must have deployed GSA's enterprise ISCM tools, based on applicable system requirements, defined within the [GSA ISCM Enterprise Security Management Tools](#) spreadsheet.
- The information system must be compliant with all showstopper controls as identified in CIO-IT Security-06-30.
- The information system must be compliant with Department of Homeland Security (DHS) Cybersecurity and Infrastructure Security Agency (CISA) [Cybersecurity Directives](#) (i.e., Binding Operational Directives [BOD] and Emergency Directives [ED]).

#### 4.1.2 OA Kickoff Meeting

After a candidate system has met the OA Program's prerequisites, an OA kickoff meeting will be scheduled with all relevant stakeholders. The OA team arranges and leads the meeting which serves to clearly identify the OA Program's onboarding process and schedule. The kickoff agenda will include, at minimum:

- Review of the OA Onboarding Checklist
- Review of the OA Onboarding Assessment Report (OAR)
- Review of the OA Controls (see [Appendix A](#))

- Review of the OATO Letter
- Scheduling of the next OA Review Meeting
- Identification of system security documentation for review
- System Security and Privacy Plan (SSPP)
- Plan of Action and Milestones (POA&M)
- FISMA Self-Assessment results
- Platform vulnerability scan results (as applicable)
- Unauthenticated Web Vulnerability scan results (as applicable)
- Authenticated Web Vulnerability scan results (as applicable)
- Penetration Test results (as applicable)
- Hardware Asset Inventory Report generated by an automated tool
- Software Asset Inventory Report generated by an automated tool
- Configuration compliance scan results
- Configuration Management Plan
- IT Contingency Plan
- IT Contingency Plan Test results
- Incident Response Plan
- Incident Response Plan Test results
- Privacy Threshold Analysis or Privacy Impact Assessment (PIA) (as applicable)

After the OA kickoff meeting, all attendees will have gained an understanding of their roles and responsibilities regarding the OA Program requirements and the onboarding schedule. The OA Team will work with the system ISSO and stakeholders to address any OA questions and the scheduling of follow-on meetings.

#### 4.1.3 OA Onboarding Checklists

There are two OA Onboarding Checklists: one for on-premise systems and one for GSA cloud managed systems. The OA Onboarding Checklists are completed by the OA Team in coordination with the system team members (System Owner, ISSO and ISSM). It serves as evidentiary documentation detailing the compliance status for all relevant OA controls of the assessed candidate system identified during the onboarding review process. The OA checklist results are utilized to represent the system's readiness for the system's AO and CISO onboarding approvals and entry into the OA Program.

Both the on-premise and cloud OA checklists review five main security areas, including ISCM/CDM Tools, Vulnerability Management, Configuration Compliance, Critical Security Controls, and Security Documentation. Each category has several requirements that are rated Fully Satisfied (green), Partially Satisfied (yellow) or Not Satisfied (red). The OA Team records detailed assessment results and links to system specific evidence artifact(s) for each requirement. Not all review items or checks are showstoppers (as identified by CIO-IT Security-06-30). A system's OA Program requirements not rated as Fully Satisfied can delay or even remove the system from OA Program acceptance eligibility. This decision is made after the completed OA Checklist and OAR are reviewed and accepted by the system team. Upon completion the system's OA Checklist and OAR are presented to the AO and CISO to make a risk-based determination on whether to proceed with OATO approval processing.

#### 4.1.4 Onboarding Approval Meeting (OAM)

An OAM is scheduled after the OA Checklist and OAR have been completed. The meeting is led by the OA Team and includes the system team and personnel from ISP. In this meeting an overview of the results of the OA Checklist and OAR are presented, and a final recommendation will be made by the ISP Director. The meeting will identify any contingent actions that must be completed before the system is onboard ready. The OAM may result in a system being placed on hold to resolve unsatisfied OA Program requirements. At the end of the OAM, the OA Team will provide attendees with a summary of the meeting and identify assigned actions or next steps.

#### 4.1.5 OATO Letter

An [ISCM Ongoing Authorization Letter](#) (“OATO Letter”) is prepared by the OA Team in coordination with the OA ISSO and OA ISSM and is sent to the CISO and AO for their approval and concurrence. Upon completion of signage, a signed copy will be uploaded into the Archer GRC A&A Repository. The system’s OATO is updated within the agency’s inventory.

#### 4.1.6 OA Onboarding Assessment Report (OAR)

The OA Team and the system’s ISSO are responsible for the creation of the OAR. The OAR addresses the required actions taken to maintain a compliant status within the OA Program. It is created for the initial assessment of an information system and provides evidence that the system has met all requirements for onboarding into the OA Program. Additionally, the OAR is a reference document that can be used as a resource showing the strategy and requirements for maintaining the OATO by the System Owner, ISSO, and ISSM.

Functionally, the OAR amounts to a Security Assessment Report (SAR) for the OA Program. It contains an executive summary, an overview of the status of the system’s ISCM security controls, a summary report of the OA Checklist, a listing of any system POA&Ms opened per the OAR results, and an OA Program recommendation. Along with the OATO Letter the OAR is the key document for identifying if a system should or should not be allowed to progress into the OA Program. The OAR is completed by the OA Team and the results concurred with by the System Owner, ISSO, and ISSM.

## 4.2 Maintaining Ongoing Authorization

After a system has been onboarded into the OA Program, there are little to no changes in the day-to-day O&M activities performed by the system’s OA ISSO and OA ISSM. They will remain the primary security points of contact and liaisons for their assigned system. They are responsible for monitoring, reporting upon, and ensuring the accuracy of the system’s automated reports, based upon the system’s inventory requirements. They are required to maintain their system’s security documents and perform periodic reviews according to their defined frequencies. They are required to monitor and manage the timely completion of system POA&Ms.

Though the daily operations are similar, the reporting and review mechanics of a system’s ongoing authorization are different. Instead of the agency’s traditional 3-year ATO cycle, systems in the OA

program are subject to Biannual PMRs. After each PMR is completed, the results are presented to the CISO and the system's AO who make a risk-based decision regarding continuing the system's OATO.

#### **4.2.1 Automated Reporting and ISSO Checklist**

In support of the Biannual PMRs, OA ISSOs must perform the following actions for their systems in the OA Program:

- Ensure applicable system automated reports are generated by the applicable enterprise security tools per defined frequencies. Review the generated reports for system boundary accuracy and perform risk management responsibilities.
- Complete the GRC ISSO Checklists for assigned systems within the allotted timeframe specified for each checklist.

#### **4.2.2 Biannual Performance Metric Review (PMR)**

Biannual Performance Metric Reviews (PMRs) are the OA Program's continuous feedback mechanism. PMRs are used to ensure GSA information systems with an OATO continue to operate in accordance with the OA program's requirements. Independent assessors are selected to perform the Biannual PMRs. Annually prior to conducting the Biannual PMR, the control assessment plan is reviewed by ISSOs/ISSMs, OCISO directors, AO, or designated representative. The OCISO will provide Biannual PMR status updates to the AOs on their systems' performance within the OA Program. The PMR tracks submissions of required OA Program deliverables to the OCISO and the continued effectiveness of CDM and GSA ISCM Enterprise Security Management automated capabilities for each information system (as applicable).

##### **4.2.2.1 Biannual PMR Report**

After a system is granted an OATO and is integrated into the OA Program, the system must meet the agency's defined performance metrics, as identified in the Biannual Performance Metric Review (PMR) Report template (a Google Sheet provided by the OA Team on an annual basis). The Biannual PMR Report template will be updated as new performance metrics are identified, per each fiscal year (FY). Any updates will be communicated to OA ISSOs and OA ISSMs with systems in the OA Program prior to the first FY scheduled PMR. The Biannual Performance Metric Review (PMR) Report describes the scope of the assessment, the procedures activities, including each applicable NIST 800-53 security control and control enhancements, under PMR assessment. The performance metrics results are utilized to provide the CISO and AOs with a holistic view of the security posture of the systems within the OA Program. The performance measures include areas covered by security automation domains and manual deliverables. Metrics have been defined to align with the information security goals for each of the following domains:

- Hardware Asset Management
- Software Asset Management
- Configuration Settings Management
- Vulnerability Management
- Event Management



- Periodic Deliverables
- Annual Deliverables
- Showstopper Controls

ISP has evaluated each performance metric and assigned reporting status levels. Each level is based upon the metric's security risk impact, per the OA Program's reporting requirements. The metric reporting status levels are color coded:

- Red – identifies the metric is Not Satisfied
- Yellow – identifies the metric is Partially Satisfied
- Green – identifies the metric is Fully Satisfied

The Biannual PMR report includes an executive level dashboard and summarizes the performance metric information captured during the system's PMR. It provides trending information upon completion of both FY PMRs. The trending information provides ISP, CISO, and the AOs the ability to see the progress or regression of a system within the OA Program.

The Biannual PMR report is completed by the OA Team in coordination with the system OA ISSO, OA ISSM, and ISP. If the review indicates any partially or non-compliant metrics, the OA Team works with the system's security team to verify the findings. On a case-by-case basis, the OA Team will allow for remediation actions to be performed to improve PMR metrics before completing their review. As system PMRs are completed, they are sent to the ISP Director for review. Once all the PMRs are completed, the findings are analyzed including identifying any common threads. Based on this analysis, a presentation is prepared for the CISO highlighting significant system specific findings, common threads, and recommendations regarding the OA Program or specific systems.

#### **4.2.2.2 OCISO Reviews**

The OCISO uses the Biannual PMR reports to evaluate a system's performance within the OA Program and to measure the effectiveness of the implemented OA continuous monitoring controls and security automation domains. Biannual status reports using the defined performance metrics are sent to the AOs and the CISO, copied are the OA ISSMs, OA ISSOs, and system owners for performance tracking. Performance metrics summarize the system's overall security posture and serve as a means for the AO and CISO to make a risk-based decision on maintaining the system's OATO.

Based on a review of the Biannual PMR Reports, the CISO and AO will determine if a system's previously approved OATO is being effectively implemented and maintained. If the AO and the CISO determine that the system's OATO is not effectively being maintained, the System Owner/Program Manager, OA ISSM, and OA ISSO will be notified of the observed deficiencies. The system will be identified as OA Non-Compliant, and the system team will be provided with a timeframe to address the identified OA Program deficiencies.

#### **4.2.3 OA Non-Compliance**

If a system is identified as OA Non-Compliant, the timeframe allotted to correct deficiencies will be considered a system's probation period within the OA Program. If the observed deficiencies have been fully addressed, the system retains its OATO. If the observed deficiencies are not fully addressed during



the probation period, the system team will be required to present their progress in correcting deficiencies to the CISO and AO for their review and consideration. Based on their review, the AO and CISO may determine the system:

- Has made adequate progress addressing deficiencies and there is an acceptable plan to address remaining issues. The system retains its OATO.
- Has not made adequate progress addressing deficiencies or the plan to address remaining issues is not adequate. The system will be required to exit the OA Program and complete a standard A&A defined in CIO-IT Security-06-30 to achieve a new ATO.

#### 4.2.4 Handling Incidents or Significant Change within the OA Program

Information systems undergo frequent changes to hardware, software, firmware, or supporting networks during the system's life cycle. Such changes are typically addressed via configuration management and control processes ensuring all proposed changes are tested to observe the effects and impact of the change, and are approved prior to implementation, thereby minimizing the risk of adverse results. All system changes, regardless of size, should follow the formal, documented change management process for the system, and that change management process should contain the steps for completing a Security Impact Analysis on any proposed change. Not all system changes will have an impact on security. The system's OA ISSO and OA ISSM should be involved in the analysis prior to the change to determine the risks the change presents and recommend an appropriate course of action.

Significant changes must be coordinated with the OCISO prior to a final determination being made and a course of action agreed upon for handling the change.

Examples of significant changes to an information system include:

- Installation of a new or upgraded operating system, middleware component, or application;
- Modifications to system ports, protocols, or services;
- Installation of a new or upgraded hardware platform;
- Modifications to cryptographic modules or services; or
- Modifications to security controls.

Examples of significant changes to the environment of operation include:

- Moving to a new facility;
- Adding new core missions or business functions;
- Acquiring specific and credible threat information that the organization is being targeted by a threat source;
- Establishing new/modified laws, directives, policies, or regulations;
- Virtualization of the system;
- Addition of telecommunication capability; or
- Moving the system to the Cloud.

Incidents or significant changes to a system may require its reauthorization. The reauthorization process differs from the initial authorization in as much as the AO can initiate a complete zero-base review of the information system or common controls; or a targeted review based on the type of event that triggered the re-authorization, the assessment of risk related to the event, and the organizational risk tolerance. Re-authorization is a separate activity from the ongoing authorization process, though security- and privacy-related information from the organization's OA Program may still be leveraged to support re-authorization.

## 5 Continuous Diagnostics and Mitigation (CDM) Tools

The overall focus in utilizing CDM tools as part of the GSA ISCM Strategy and OA Program is to provide sufficient information about a GSA managed information systems security control effectiveness and security status to allow GSA management to make informed, timely security risk management decisions aimed at supporting system's authorizations.

### 5.1 Automation Capabilities Supporting ISCM

NIST SP 800-53A, Revision 5 defines a security capability or privacy capability as "a combination of mutually reinforcing security controls or privacy controls (i.e., safeguards and countermeasures) implemented by technical means (i.e., functionality in hardware, software, and firmware), physical means (i.e., physical devices and protective measures), and procedural means (i.e., procedures performed by individuals."

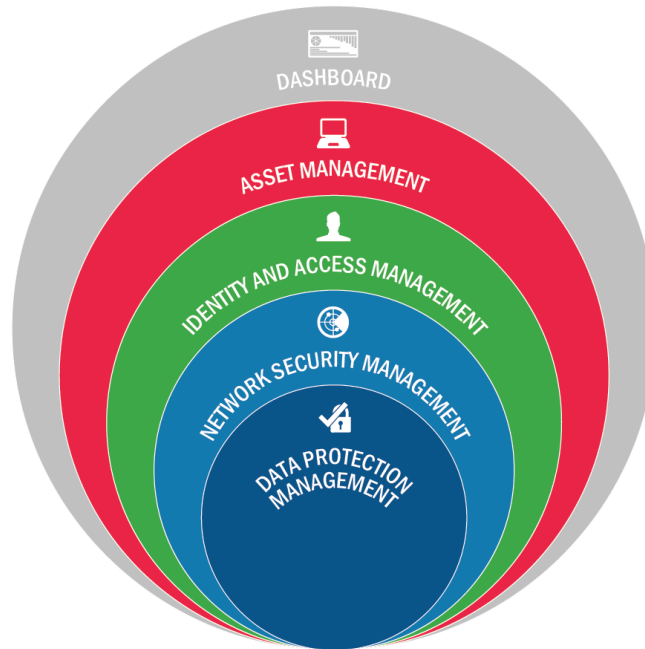
NIST SP 800-53A, Revision 5 guidance further notes that:

- Failure of a single control or, in some cases, the failure of multiple controls, may not affect the overall security and privacy capability required by an organization.
- Employing the broader capability construct allows an organization to assess the severity of vulnerabilities discovered in their systems and organizations and determine if the failure of a particular security control (associated with a vulnerability) or the decision not to deploy a certain control, affects the overall capability needed for mission/business protection.

Using this concept of security and privacy capabilities, the DHS CISA CDM program delivers capabilities in four areas:

1. Asset Management - What is on the network?
2. Identity and Access Management – Who is on the network?
3. Network Security Management – What is happening on the network? How is the network protected?
4. Data Management Protection – How is data protected?

Figure 5.1 presents the CISA CDM Program's four capability areas. This figure is also available at the [DHS CISA CDM website](#).(expand capabilities on the website to learn more).



**Figure 5-1. CDM Capability Areas**

The Asset Management capability area includes:

- HWAM - Hardware Asset Management
- SWAM - Software Asset Management
- CSM - Configuration Settings Management
- VUL - Vulnerability Management

## 5.2 GSA Security Capabilities

This section identifies the security capabilities supporting ISCM/CDM that GSA has implemented. In addition to the current ISCM processes for monitoring controls, the GSA Enterprise CDM tools will provide inherited controls for HWAM, SWAM and Security Configuration Compliance (as a part of Configuration Settings Management), White/Blacklisting, and Vulnerability Scanning. As GSA's Continuous Monitoring program matures over time, additional capabilities will be added.

System Owners, OA ISSMs, and OA ISSOs are responsible for ensuring that all ISCM controls are implemented. For inherited controls, including the common portion of hybrid controls, their responsibility is to ensure the providing system agrees the system is inheriting the control. For technical controls satisfied by the implementation of enterprise tools, they must ensure the tools are deployed and operating as intended by the enterprise.

### 5.2.1 Manage Assets

The Manage Assets family and its capabilities act as a foundation for the other security automation domains. The primary objective of the Manage Assets family is to manage hardware and software inventories and the security (configuration and vulnerabilities) of the inventoried assets in the organization.

### 5.2.2 Hardware Asset Management (HWAM)

**Purpose** - Maintain an asset inventory of authorized hardware assets/devices allowed to connect to a network. Identify unauthorized and unmanaged devices that are likely to be used by attackers as a platform from which to extend compromise of a network. The Hardware Asset Management capability ensures that a hardware inventory and supporting processes are in place to confirm that only authorized hardware can be added to a network.

**NIST SP 800-53 Controls** - Controls related to hardware asset management include but are not limited to CM-8, CM-8(1), CM-8(2), CM-8(3), CM-8(4), and CM-8(7).

**Target Attack Vectors** - Attackable Hardware Devices including all IP-addressable devices (or equivalent) on a network. Attackers continually scan for hardware systems that they can exploit to gain control of and use to access other devices and data. Typically, the most exposed devices are unauthorized or unmanaged.

**Implementation Approach** - Maintain a list of authorized hardware and who manages it. Treat other hardware on the network as a defect. Remove, authorize/assign, or accept risk of unauthorized hardware assets. This can be accomplished via a combination of system configuration, network management, and license management tools, or with a special-purpose tool. Employ both active tools that scan through network address ranges and passive tools that identify hosts based on analyzing their traffic.

**GSA Enterprise Tool(s)** - GSA uses a combination of agent-based, agentless (discovery scans), network management, IT Service Management, and IP Management solutions to implement hardware asset management. Please refer to the [GSA ISCM Enterprise Security Management Tools](#) spreadsheet for a detailed list of tools used to implement hardware asset management for different asset categories in the GSA environment.

### 5.2.3 Software Asset Management (SWAM)

**Purpose** - Maintain an asset inventory of approved software. Identify unauthorized software on devices that are likely to be used by attackers as a platform from which to extend compromise of a network.

**NIST SP 800-53 Controls** - Controls related to software asset management are CM-2, CM-2(2), and CM-7(5).

**Target Attack Vectors** - Software products (e.g., MS Word) and executables (individual program files). Identify executables by their digital fingerprints.

**Implementation Approach** - Maintain a list of authorized software at both the product and executable level. Treat other software on the network as a defect. In other words, deploy application whitelisting technology that allows systems to run software only if it is included on the whitelist and prevents execution of all other software on the system. Remove, authorize/assign, or accept risk of unauthorized software.

**GSA Enterprise Tool(s)** - GSA uses a combination of agent-based solutions to implement software asset management. GSA also uses application whitelisting tools to prevent software execution IAW the list of

authorized software programs. The [GSA ISCM Enterprise Security Management Tools](#) spreadsheet provides a detailed list of tools used to implement software asset management for different asset categories in the GSA environment.

#### 5.2.4 Configuration Settings Management (CSM)

Configuration settings management is primarily focused on the configuration status of computing devices and software across an enterprise. It involves determining compliance by collecting detailed information about specific configuration settings and comparing that data against an organization's standard configuration. GSA has established a series of hardening guides for commonly used technologies (e.g., operating systems, database management systems) with defined standard configuration settings against which existing and newly added assets will be measured. Hardening guides are available on the GSA.gov [IT Security Technical Guides and Standards](#) webpage. CDM tools will be used for measuring configuration compliance and can support determining root causes for misconfiguration and implementing corrections.

**Purpose** - Manage configuration settings, monitor changes to settings, collect setting status, and restore settings as needed. Identify configuration settings (CCEs) on devices that are likely to be used by attackers to compromise a device and use it as a platform from which to extend compromise to the network. Configuration settings are often used to support other capabilities, such as blocking certain software and/or granting/denying privilege(s).

**NIST SP 800-53 Controls** - Controls related to configuration settings management are CM-2(2), CM-6, CM-6(1), CM-7, CM-7(1), CM-7(2), and CM-7(5).

**Target Attack Vectors** - Individual Configuration settings, or groups of such settings.

**Implementation Approach** - Maintain a list of authorized settings/configuration benchmarks for software product categories such as Operating System, Servers (Web, Email, Application, DNS, Directory, etc.), networking devices (Routers, Switches), multifunction peripheral devices, desktop applications, web browser, etc. Remove, authorize/assign, or accept risk for unauthorized settings.

**GSA Enterprise Tool(s)** - GSA will leverage existing ISCM enterprise security and CDM tools to provide asset management for software products installed on applicable endpoints for centrally managing, applying, and verifying configuration settings. [GSA ISCM Enterprise Security Management Tools](#) spreadsheet provides a detailed list of tools used to implement configuration compliance.

#### 5.2.5 Vulnerability Management (VUL)

Vulnerability management is concerned with understanding the security posture with respect to known vulnerabilities. It involves collecting information regarding vulnerabilities and patch levels of assets across the enterprise.

##### 5.2.5.1 Vulnerability Detection

**Purpose** - Identify vulnerabilities (CVEs) on devices that are likely to be used by attackers to compromise a device and use it as a platform from which to extend compromise to the network.

**NIST SP 800-53 Controls** - Controls related to vulnerability management of known vulnerabilities and patches and remediating flaws or mitigating vulnerabilities are RA-5, SI-2, SI-2(2), SI-2(3), and SI-4.

**Targets Attack Vectors** - Individual CVEs, or groups of such CVEs.

**Implementation Approach** - The [National Vulnerability Database](#) (NVD) provides a library of vulnerabilities mapped to vulnerable software. Poor coding practices can manifest as vulnerabilities that are discovered and assigned a CVE. Upgrade the software to newer, non-vulnerable versions, apply appropriate patches, modify the code to eliminate or mitigate vulnerabilities, or accept the risk.

**GSA Enterprise Tool(s)** - GSA uses the Tenable enterprise vulnerability scanning tool to identify known vulnerabilities and will leverage the CDM BigFix tool as an enterprise patch management solution to deploy latest patches for operating systems and applications. The [GSA ISCM Enterprise Security Management Tools](#) spreadsheet provides a detailed list of tools used to implement vulnerability and patch management. Also, GSA uses Kubernetes security solution to detect, manage, mitigate security risks and vulnerabilities (CVEs).

#### 5.2.5.2 Malware Detection

**Purpose** - Provide the ability to identify and report on the presence of viruses, Trojan, spyware, or other malicious code on or destined for a target system.

**NIST SP 800-53 Controls** - Controls related to identifying unauthorized or malicious code and employing protection mechanisms against malicious code execution, and controls related to detect unauthorized changes to software to ensure software and information integrity: SI-3, SI-7, and SI-7(3).

**Targets Attack Vectors** - End-users and organizations via web browsing, email attachments, endpoint devices such as workstations, mobile devices, executables, etc.

**Implementation Approach** - Employ malware detection tools and mechanisms at information system entry and exit points (e.g., firewalls, email servers, Web servers, proxy servers, remote access servers) and at endpoint devices (e.g., workstations, servers, mobile computing devices) on the network to detect and remove malicious code. Malware detection mechanisms can be configured to perform periodic scans of information systems, as well as real-time scans of files from external sources as the files are downloaded, opened, or executed IAW organizational security policy.

**GSA Enterprise Tool(s)** - GSA uses centrally managed integrity verification tools and application whitelisting tools that detects and prevents/blocks malicious code execution. GSA also employs Antivirus tools on workstations, servers, and mobile devices. The [GSA ISCM Enterprise Security Management Tools](#) spreadsheet provides a detailed list of tools used to implement malware detection.

#### 5.2.6 Manage Events

The Manage Events family and its capabilities use automated tools to identify incidents and events and assist in responding to them. In addition to automated tools, the identification and response to incidents and events requires planning which is typically documented in incident response and contingency plans, and testing/reporting. The primary objective of the Manage Events family is to identify and respond to incidents and events while continuing to perform the business functions of the organization.

### 5.2.6.1 Prepare for and Detect Incidents and Contingencies

**Purpose** - Provide the ability to automate the process of monitoring the events occurring in an information system or network and analyzing them for signs of possible incidents and attempting to stop detected events from becoming incidents and responding to incidents and contingencies when necessary. Review events selected for monitoring and update, as appropriate.

**NIST SP 800-53 Controls** - Controls related to the process of generating, transmitting, storing, analyzing, and preparing for the response to events and incidents are AU-2, AU-6, AU-6(4), IR-5, IR-8, and SI-4. Controls related to the process of preparing for contingencies are CP-2 and CP-4.

**Targets Attack Vectors** - Lack of effective security logging and analysis may allow attackers to hide their location, and activities on compromised machines. Without audit logs, an attack may go unnoticed indefinitely. Ineffective contingency plans may allow unforeseen events to cause a system/network to be unavailable or degraded to such an extent the organization cannot perform its business functions.

**Implementation Approach** - Deploy a logging platform as a management tool for log aggregation and consolidation from multiple sources to enable analysis of correlated events and logs. Develop effective contingency plans allowing systems/networks to effectively operate under emergencies and disasters. Review events selected for monitoring annually and revise, as appropriate.

**GSA Enterprise Tool(s)** - GSA uses an Enterprise Logging Platform (ELP) tool to centralize review and analysis of audit records from multiple systems to identify correlated events. The ELP tool detects, and alerts designated personnel on anomalous events. Incident Response and Handling Tools used by GSA are detailed in Appendix C of CIO-IT Security-01-02, Incident Response.

### 5.2.6.2 Respond to Incidents and Contingencies

**Purpose** - Provide the ability to use automation to assist in the process of responding to events occurring in an information system or network or events impacting them, analyzing the events/incidents, and taking appropriate action to eliminate or mitigate the threats while allowing the business functions of the organization to continue. Reporting events/incidents, as necessary, to the appropriate parties/organizations. Executing contingency plans when emergencies or disasters require them to be implemented.

**NIST SP 800-53 Controls** - Controls related to the process of responding to events and incidents are IR-5, IR-6, IR-8, and SI-4. Controls related to responding to contingencies are CP-2 and CP-4.

**Targets Attack Vectors** - Lack of effectively responding to events or incidents identified by security logging and analysis may allow attackers to continue to perform malicious activities against the system/network and organization. Without effective response, an attack may last longer and subject the organization to extended malicious actions. Ineffective contingency plans may allow systems/networks to be adversely affected to a degree that the organization cannot fulfill its business functions.

**Implementation Approach** - Deploy Intrusion Detection Systems/Intrusion Preventions Systems (ISDs/IPSs) along with an ELP tool to identify events and incidents that require action. Develop an Incident Response Plan, train and test it to ensure response is timely and effective. Incident Response and Handling Tools used by GSA are detailed in Appendix C of CIO-IT Security-01-02. Develop a Contingency Plan, train and test it to ensure reaction and recovery is timely and effective.

**GSA Enterprise Tool(s)** - GSA uses IDSs/IPSs and an ELP tool to centralize review and analysis of event and incident data from multiple systems to correlate events and incidents. These tools detect and alert designated personnel when anomalous events/incidents occur so they can take action as required by the Incident Response Plan. The [GSA ISCM Enterprise Security Management Tools](#) spreadsheet provides a detailed list of tools used to respond to events and incidents.



## Appendix A: ISCM Controls

Table A-1 provides, for information systems accepted into the OA Program, common control responses for CA-2, CA-7, and CM-8(7) or standard control responses that require updating within a system's SSPP. Table A-2 identifies GSA's automated ISCM controls along with a brief implementation description. Table A-3 identifies GSA's process based ISCM controls along with a brief implementation description.

**Table A-1: OA Program Common Control Responses**

<b>CA-2: Security Assessments</b>	Control Summary Information
Implementation Status:	Implemented
Control Origination:	Hybrid Control (Shared Between the [ACRONYM] and GSA OCISO).
Part a	<p><u>GSA OCISO (Common Control)</u>  GSA's OCISO A&amp;A security assessment processes are documented within CIO-IT Security-06-30, Managing Enterprise Cybersecurity Risk. GSA security assessment plans are created per each system's A&amp;A requirements. Each plan identifies the assessment team and the assessment team's roles and responsibilities. GSA OCISO has established an Information System Continuous Monitoring (ISCM) Ongoing Authorization (OA) Program and is defined by CIO-IT Security-12-66, Information Security Continuous Monitoring Strategy &amp; OA Program. Information systems under consideration for acceptance into the OA Program undergo an OA assessment performed by the OA Team.</p>
Part b	<p><u>GSA OCISO (Common Control)</u>  GSA's OCISO A&amp;A security assessment processes are documented within CIO-IT Security-06-30, Managing Enterprise Cybersecurity Risk. GSA security assessment plans are created per each system's A&amp;A requirements. Each plan describes the scope of the system's assessment to include the security controls under assessment, the assessment procedures used to determine the security controls effectiveness, the assessment environment, identification of the assessment team, and the assessment team's roles and responsibilities. GSA OCISO has established an Information System Continuous Monitoring (ISCM) Ongoing Authorization (OA) Program and is defined by CIO-IT Security-12-66, Information Security Continuous Monitoring Strategy &amp; OA Program. OA Information systems are required to have a completed GSA A&amp;A within 18 months prior to their acceptance into the OA Program and issuance of their OATO letter. Upon acceptance into the OA Program, systems undergo Biannual Performance Metric Reviews (PMRs) as defined by CIO-IT Security-12-66. The OA Program's PMRs function as periodic system security control assessments, per the OA Program's requirements.</p>

<b>CA-2: Security Assessments</b>	Control Summary Information
Part c	<p><u>GSA OCISO (Common Control)</u> GSA OCISO has established an OA Program and is defined by CIO-IT Security-12-66. For detailed annual ISCM Program assessment requirements, reference CIO-IT Security-12-66. Annually, prior to conducting the Biannual PMR, the control assessment plan is reviewed by ISSOs/ISSMs, OCISO directors, AO, or designated representative.</p>
Part d	<p><u>GSA OCISO (Common Control)</u> Per CIO-IT Security-06-30 and CIO-IT Security-04-26, FISMA Implementation Guide, GSA's annual FISMA self-assessments will assess a subset of security controls. Controls are selected based on an analysis of past audit findings, known weaknesses or controls that have resulted in security breaches, key controls (e.g., Showstopper controls, critical controls), and volatile controls that should be assessed frequently.</p> <p><u>[ACRONYM] (System-Specific Response)</u> [ACRONYM] has been accepted into GSA's OA Program and currently operates with an OATO. As a requirement of maintaining the system's OATO, the designated [ACRONYM] OA ISSO is required to annually assess the security controls of the information system and complete the annual FISMA Self-Assessment. Upon completion of the annual control assessment, the OA ISSO requests the review and SSPP signature approvals from the system's assigned ISSM and System Owner.</p>
Part e	<p><u>GSA OCISO (Common Control)</u> GSA's OCISO A&amp;A security assessment processes are documented within CIO-IT Security-06-30. As an output of an A&amp;A, the OCISO produces a Security Assessment Report (SAR). GSA OCISO has established an OA Program and is defined by CIO-IT Security-12-66. As part of the OA Program system onboarding activities, an OA Onboarding Assessment Report (OAR) is created and documents the results of the system's OA Program assessment. Results of the OA Program's Biannual Performance Metric Reviews (PMRs) are documented and disseminated using internal email communications. Please reference CIO-IT Security-12-66 for more details.</p> <p><u>[ACRONYM] (System-Specific Response)</u> [ACRONYM] has been accepted into GSA's OA Program and currently operates with an OATO dated [add date of OATO issuance]. As a requirement of maintaining the system's OATO, the designated [ACRONYM] ISSO is required to complete GSA's Annual FISMA Self-Assessment for the information system. The results of the system's FY FISMA Self-Assessment, reports upon the results of the assessment activities performed by the ISSO.</p>

<b>CA-2: Security Assessments</b>	Control Summary Information
Part f	<p><u>GSA OCISO (Common Control)</u> The results of [ACRONYM] last A&amp;A are documented within the system's Security Assessment Report (SAR). The SAR was disseminated to the system's ISSO, ISSM, System Owner, and AO. The OA Program's Onboarding Assessment Report (OAR) and Biannual Performance Metric Review (PMR) results are disseminated to the system's OA ISSO, OA ISSM, System Owner, CISO, and AO. Please reference CIO-IT Security-12-66 for more details.</p> <p><u>[ACRONYM] (System-Specific Response)</u> The [ACRONYM] OA ISSO is required to maintain the system's last A&amp;A SAR and Ongoing Assessment Report (OAR) within its Archer GRC A&amp;A documentation repository.</p>

<b>CA-7: Continuous Monitoring</b>	Control Summary Information
Implementation Status:	Implemented
Control Origination:	Hybrid Control (Shared Between the [ACRONYM] and GSA OCISO.
Part a	<p><u>GSA OCISO (Common Control)</u> The GSA OCISO has developed an agency Information System Continuous Monitoring (ISCM) Strategy CIO-IT Security-12-66, (ISCM Strategy and OA Program) and has established system-level metric monitoring requirements, as defined by Section 3 of the CIO-IT Security-08-39, Management Implementation Plan and CIO-IT Security-12-66, ISCM Strategy and OA Program.</p>
Part b	<p><u>GSA OCISO (Common Control)</u> The GSA OCISO has established system-level monitoring and control assessment requirements within CIO-IT Security-08-39, Management Implementation Plan and CIO-IT Security-12-66, ISCM Strategy and OA Program.</p>

<b>CA-7: Continuous Monitoring</b>	Control Summary Information
Part c	<p><u>GSA OCISO (Common Control)</u> Ongoing control assessments are performed based on GSA's ATO processes defined by CIO-IT Security-06-30, Managing Enterprise Risk and CIO-IT Security-12-66 for systems accepted into the OA Program. Additionally, the OCISO requires all systems to complete an Annual FISMA Self-Assessment. Systems that have completed a full Assessment &amp; Authorization (A&amp;A) that FY, are exempt from the annual FISMA Self-Assessment requirement.</p> <p><u>[ACRONYM] (System-Specific Response)</u> The designated [ACRONYM] ISSO either performs or facilitates the defined OA Program's assessment requirements and performs the system's Annual FISMA Self-Assessment activities.</p>
Part d	<p>The GSA OCISO performs ongoing monitoring of system and organization-defined metrics using automated enterprise management tools and manual processes defined by:</p> <ul style="list-style-type: none"> <li>• CIO-IT Security-06-30, Managing Enterprise Risk</li> <li>• CIO-IT Security-08-39, Management Implementation Plan</li> <li>• CIO-IT Security-09-44, Plan of Action and Milestones</li> <li>• CIO-IT Security-17-80, Vulnerability Management Process</li> <li>• CIO-IT Security-18-91, Risk Management Strategy (RMS)</li> <li>• CIO-IT Security-19-101, External Information System Monitoring</li> </ul> <p>System Owners, ISSOs, and ISSMs are responsible for monitoring and performing their assigned system level metrics in accordance with GSA IT Security Policies and procedures.</p>

<b>CA-7: Continuous Monitoring</b>	Control Summary Information
Part e	<p><u>GSA OCISO (Common Control)</u> System-assigned ISSOs and ISSMs record and manage the mitigation and remediation of identified weaknesses and deficiencies, not associated with accepted risks, in organizational information system's POA&amp;M per CIO-IT Security-09-44, Plan of Action and Milestones. System-assigned ISSOs and ISSMs continuously perform system-level correlation and analysis of assessment results and system risk monitoring activities by performing POA&amp;M management in coordination with System Owners and system custodians.</p> <p>The OCISO performs POA&amp;M reviews upon completion of an A&amp;A and quarterly thereafter. System Level Quarterly POA&amp;M Review Reports are generated by the OCSIO and are provided to ISSOs for quality reviews and process improvement activities. ISSM Management Reports are generated quarterly by the OCISO for providing an agency view of status in correcting weaknesses or deficiencies associated with the managed information system portfolio.</p>
Part f	<p><u>GSA OCISO (Common Control)</u> The OCISO has established and defined system-level response action requirements within:</p> <ul style="list-style-type: none"> <li>• CIO-IT Security-06-30, Managing Enterprise Risk</li> <li>• CIO-IT Security-09-44, Plan of Action and Milestones</li> <li>• CIO-IT Security-17-80, Vulnerability Management Process</li> </ul> <p>System Owners, ISSOs, and ISSMs are responsible for managing system-level risk response activities as system risks are identified per monitoring and assessment activities.</p> <p><u>[ACRONYM] (System-Specific Response)</u> The designated [ACRONYM] OA ISSO is required to track all OA Program response actions identified within the system's POA&amp;M and/or via an Acceptance of Risk (AOR) when applicable.</p>

<b>CA-7: Continuous Monitoring</b>	Control Summary Information
Part g	<p><u>GSA OCISO (Common Control)</u> The OCISO has established and defined methods for reporting System-Level security and privacy status within the CIO-IT Security-08-39, Management Implementation Plan and CIO-IT Security-12-66, ISCM Strategy and OA Program. The OCISO conducts quarterly AO/CISO briefings during which system's cyber hygiene and operational statuses are reported to the AOs.</p> <p>System Owners, ISSOs, ISSMs, and system custodians are responsible for reporting system-level security and privacy statuses per predefined reporting frequencies and mechanisms (e.g., ISSO Checklists, POA&amp;M, and ad hoc data calls).</p> <p><u>[ACRONYM] (System-Specific Response)</u> Biannually the OA Team reports the results of the FY Q2 &amp; Q4 Performance Metric reviews, to each information system's ISSO, ISSM, System Owner, AO and CISO. The designated [ACRONYM] ISSO is responsible for providing stakeholder system specific security status reports, based upon the system's security management requirements. Stakeholders include but are not limited to; ISSM, System Owner, AO, CO/COR, Program Managers, System Project Managers, and custodians. ISSO to ISSM monthly system status reporting is performed using Archer GRC assigned ISSO Checklists.</p>

<b>CM-8(7): Information System Component Inventory   Centralized Repository</b>	Control Summary Information
Implementation Status:	Implemented
Control Origination:	Hybrid Control (Shared Between the [ACRONYM] and GSA EIO)

<b>CM-8(7): Information System Component Inventory   Centralized Repository</b>	Control Summary Information
NIST Supplemental Guidance	NIST Supplemental Guidance: Organizations may choose to implement centralized information system component inventories that include components from all organizational information systems. Centralized repositories of information system component inventories provide opportunities for efficiencies in accounting for organizational hardware, software, and firmware assets. Such repositories may also help organizations rapidly identify the location and responsible individuals of system components that have been compromised, breached, or are otherwise in need of mitigation actions. Organizations ensure that the resulting centralized inventories include system-specific information required for proper component accountability (e.g., information system association, information system owner).
<b>**Instructions:</b> The GSA EIO Common and System-Specific Control responses are to be used by information systems where their full inventory is managed using BigFix.	<u>GSA EIO (Common Control)</u> This control requirement is implemented for [ACRONYM] as a hybrid control. GSA EIO manages the BigFix enterprise management tool that provides the capabilities of performing Information System Component Inventory using BigFix as the Centralized Repository.  <u>[ACRONYM] (System-Specific Response)</u> The designated [ACRONYM] ISSO is responsible for ensuring the system's inventory is up-to-date and all BigFix agents have been deployed to the identified system's OS. Monthly inventory change reporting and monthly ISSO inventory reviews ensure the [ACRONYM] BigFix reporting is continuously up to date and reliable.

Table A-2: Automated ISCM Controls

Control	Control Name	Implementation Information
AU-2	Audit Events	Systems are to comply with the GSA hardening guides applicable to components in their inventory, including the events required to be audited by the associated security benchmarks. Systems' configurations are to be verified using GSA's CDM tools.
AU-6	Audit Review, Analysis, and Reporting	Audit records are to be integrated with the Enterprise Logging Platform. This integration automates much of the process of analyzing logs for inappropriate or unusual activity.
CM-2	Baseline Configuration	System's baseline compliance and baseline updates are to be verified using GSA's CDM tools.
CM-2(2)	Baseline Configuration   Automation Support for Accuracy and Currency	System baseline configuration information is to be maintained using GSA's CDM tools.
CM-6	Configuration Settings	All systems must adhere to GSA hardening guides, United States Government Configuration Baseline, NIST guidelines, Center for Internet Security (CIS) Benchmarks (Level 1), or industry best practice guidelines, as deemed appropriate by the AO. All information systems must use the <a href="#">Security Deviation Request Form</a> to document and get approval for any deviations from GSA agency-wide hardening guides.
CM-6(1)	Configuration Settings   Automated Management Application, and Verification	System's baseline updates are to be verified using GSA's CDM tools.
CM-7	Least Functionality	System's compliance with the hardening guides, including only having essential functions, ports, protocols, and services enabled are to be verified using GSA's CDM tools.
CM-7(5)	Least Functionality   Authorized Software – Allow-By-Exception	Systems are to have GSA's enterprise security tools deployed to identify software by a digital fingerprint and allow authorized software to run, blocking everything else.
CM-8	System Component Inventory	Systems are to have GSA's automated tools deployed to maintain an up-to-date and readily available hardware asset inventory. Systems are to have GSA's automated tools deployed to ensure components are not duplicated in system hardware asset inventories.
CM-8(1)	System Component Inventory   Updates During Installations and Removals	Systems are to have GSA's automated tools deployed to maintain an up-to-date and readily available hardware asset inventory.
CM-8(2)	System Component Inventory   Automated Maintenance	Systems are to have GSA's automated tools deployed to maintain an up-to-date and readily available hardware asset inventory.



Control	Control Name	Implementation Information
CM-8(3)	System Component Inventory   Automated Unauthorized Component Detection	Systems are to have GSA's automated tools deployed to maintain an up-to-date and readily available hardware asset inventory.
CM-8(7)	System Component Inventory   Centralized Repository	Systems are to have GSA's automated tools deployed to establish a centralized repository for hardware asset inventory.
RA-5	Vulnerability Monitoring and Scanning	Systems are to have GSA's automated tools deployed to identify vulnerabilities for assets. Any asset that cannot have an agent installed will need to be scanned for vulnerabilities using the enterprise scan tool. Systems need to ensure vulnerability scanning agents and tests can be updated on system assets.
SI-2	Flaw Remediation	Systems are to have GSA's automated tools deployed to identify flaws/required updates and remediate flaws/apply updates in accordance with GSA established timelines.
SI-2(2)	Flaw Remediation   Automated Flaw Remediation Status	Systems are to have GSA's automated tools deployed to identify the status of flaws/required updates in accordance with GSA established frequencies in the <a href="#">06-30-Scanning Parameter Spreadsheet</a> or CDM tool configurations.
SI-2(3)	Flaw Remediation   Time to Remediate Flaws and Benchmarks for Corrective Actions	Systems are to have GSA's automated tools deployed to identify the time to remediate of flaws/required updates in accordance with GSA established frequencies in CIO-IT Security-06-30, Managing Enterprise Risk, GSA's enterprise architecture process for managing approved updates, and the system's Configuration Management Plan.
SI-3	Malicious Code Protection	Systems are to have GSA's automated tools deployed to protect systems from malware.
SI-4	System Monitoring	Systems are to deploy GSA's automated capabilities such as ELP, IDS, IPS and others to perform information system monitoring and log management and event analysis. Tools are to be capable of integrating feeds with the enterprise ELP tool OCISO uses which correlates data from many sources to support near real-time analysis of events.
SI-7	Software, Firmware, and Information Integrity	Systems are to have GSA's centrally managed automated tools deployed that detect unauthorized changes and perform integrity verification of systems.

**Table A-3: Process-based ISCM Controls**

Control	Control Name	Implementation Information
AC-2	Account Management	Systems are to perform an annual review and recertification of user accounts to verify if the account holder requires continued access to the system. The results of the annual user recertification process need to be provided as part of the ISCM program annual deliverables; this document should also address AC-6 and AC-6(2).
CA-2	Control Assessments	An annual FISMA self-assessment will be performed based on controls selected by the OCISO. The specific controls, assessment test cases, and deadlines will be coordinated through Information System Security Managers (ISSMs) and Information System Security Officers (ISSOs).
CA-5	Plan of Action and Milestones	System POA&Ms must be updated at least quarterly and made available for OCISO review IAW CIO-IT Security-09-44, Plan of Action and Milestones (POA&M).
CA-7	Continuous Monitoring	Perform continuous monitoring activities in accordance with the ISCM Program to include reviewing GSA-defined performance metrics, remediating security vulnerabilities and reporting on the security status of the information system assets.
CA-8	Penetration Testing	All Internet facing and FIPS 199 High systems must have penetration tests performed annually and provided to OCISO IAW CIO-IT Security-11-51, Conducting Penetration Test Exercises.
CM-9	Configuration Management Plan	System Configuration Management Plans must be reviewed annually and updated as necessary IAW CIO-IT Security-01-05, Configuration Management.
CP-2	Contingency Plan	System Contingency Plans must be reviewed annually and updated when necessary IAW CIO-IT Security-06-29, Contingency Planning.
CP-4	Contingency Plan Testing	System Contingency Plans must be tested annually IAW CIO-IT Security-06-29, Contingency Planning.
IR-8	Incident Response Plan	Incident Response Plans must be reviewed annually and updated when necessary IAW CIO-IT Security-01-02, Incident Response and GSA's Information Security Program Plan.
PL-2	System Security and Privacy Plan	System Security Plans must be reviewed annually and updated when necessary IAW CIO-IT Security-06-30, Managing Enterprise Risk. ISSOs are required to perform annual SSPP reviews and sign offs. System Owner, ISSM and ISSOs should all be signatories.
RA-8	Privacy Impact Assessment	PTAs/PIAs must be reviewed annually and updated when necessary IAW the ISPP and GSA Privacy Program requirements.

## Appendix B: References

### Federal Laws, Standards, Regulations, and Publications:

- [FISMA 2014](#), Public Law 113-283, Federal Information Security Modernization Act of 2014
- [Executive Order 13800](#), Strengthening the Cybersecurity of Federal Networks and Critical Infrastructure
- [OMB Circular A-130](#), Managing Information as a Strategic Resource
- [OMB Memorandum M-14-03](#), Enhancing the Security of Federal Information and Information Systems
- [Federal Information Processing Standard \(FIPS\) 199](#), Standards for Security Categorization of Federal Information and Information Systems
- [NIST SP 800-37, Revision 2](#), Risk Management Framework for Information Systems and Organizations: A System Life Cycle Approach for Security and Privacy
- [NIST SP 800-53, Revision 5](#), Security and Privacy Controls for Information Systems and Organizations
- [NIST SP 800-137](#), Information Security Continuous Monitoring (ISCM) for Federal Information Systems and Organizations
- [NISTIR 8011, Volume 1](#), Automation Support for Security Control Assessments: Overview
- [NISTIR 8011, Volume 2](#), Automation Support for Security Control Assessments: Hardware Asset Management
- [NIST Cybersecurity Framework](#), Framework for Improving Critical Infrastructure Cybersecurity

### GSA Policies, Procedures, Guidance:

The GSA policies listed below are available on the [GSA.gov Directives Library](#) page.

- GSA Order CIO 2100.1, GSA Information Technology (IT) Security Policy
- GSA Order CIO 2101.2, GSA Enterprise Information Technology Management (ITM) Policy
- GSA Order CIO 2181.1, GSA HSPD-12 Personal Identity Verification and Credentialing Handbook ([link to policy on gsa.gov](#))
- GSA Order ADM 9732.1E, Personnel Security and Suitability Program Handbook

The GSA CIO-IT Security Procedural Guides listed below are available on the GSA.gov IT Security Procedural Guides page with the exception of CIO-IT Security-18-90 which is restricted. It is available on the internal GSA InSite [IT Security Procedural Guides](#) page.

- CIO-IT Security 01-02, Incident Response (IR)
- CIO-IT Security 01-05, Configuration Management
- CIO-IT Security-01-08, Audit and Accountability
- CIO-IT Security-04-26, FISMA Implementation Guide

- CIO-IT Security 06-29, Contingency Planning
- CIO-IT Security-06-30, Managing Enterprise Risk
- CIO-IT Security-09-44, Plan of Action and Milestones (POA&M)
- CIO-IT Security-11-51, Conducting Penetration Test Exercises
- CIO-IT Security 17-80, Vulnerability Management Process
- CIO-IT Security-18-90, Information Security Program Plan (ISPP)
- CIO-IT Security-19-95, Security Engineering Architectural Reviews
- CIO-IT Security-19-101, External Information System Monitoring (RMS)
- CIO-IT Security 21-117, Cyber Supply Chain Risk Management (C-SCRM) Program
- CIO IT Security 22-120, Supply Chain Risk Management (SR) Controls