

mission multiplier

Becoming DFARS / NIST Compliant (Cybersecurity)

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Briefing Overview



Content Structure

- Define DFARS 252.204-7012
 - Controlled Defense Information
 - Contractor Internal System
 - Adequate Security Defined
- Define NIST SP 800-171
 - Requirements Overview
 - Required Deliverables
 - Impact of non-compliance / teeth
- Recommendations
 - DoD Guidance for Reviewing System Security Plans and the NIST SP 800-171 Security Requirements Not Yet Implemented
 - Sample Recommendations
- Conclusion
 - Key Take-Aways

Intent

- ✓ Achieve understanding of the DFARS requirement
- ✓ Achieve understanding of how to achieve compliance with DFARS
- ✓ Identify industry "best practices" for becoming compliant



DFARS Clause 252.204-7012



DFARS Clause 252.204-7012 requires contractors / sub-contractors to:

- 1. Provide adequate security to safeguard <u>covered defense information</u> that resides on or is transiting through a contractor's internal information system or network
- 2. Report cyber incidents that affect a covered contractor information system or the covered defense information residing therein, or that affect the contractor's ability to perform requirements designated as operationally critical support
- 3. Submit malicious software discovered and isolated in connection with a reported cyber incident to the DoD Cyber Crime Center
- 4. Submit media (if requested) and additional information to support a damage assessment
- 5. Flow down the clause in subcontracts for operationally critical support, or for which subcontract performance will involve covered defense information.



Covered Defense Information – Definition



Covered defense information means:

- 1. Unclassified controlled technical information (CTI) or other information as described in the CUI Registry that requires safeguarding or dissemination controls pursuant to and consistent with the law, regulations, and government-wide policies and is
 - a. Marked or otherwise identified in the contract, task order, or delivery order and provided to contractor by or on behalf of, DoD in support of the performance of the contract; <u>OR</u>
 - b. Collected, developed, received, transmitted, used, or stored by, or on behalf of, the contractor in support of the performance of the contract.*

* In support of the performance of the contract is not meant to include the contractor's internal information (e.g., human resources or financial) that is incidental to the contract performance

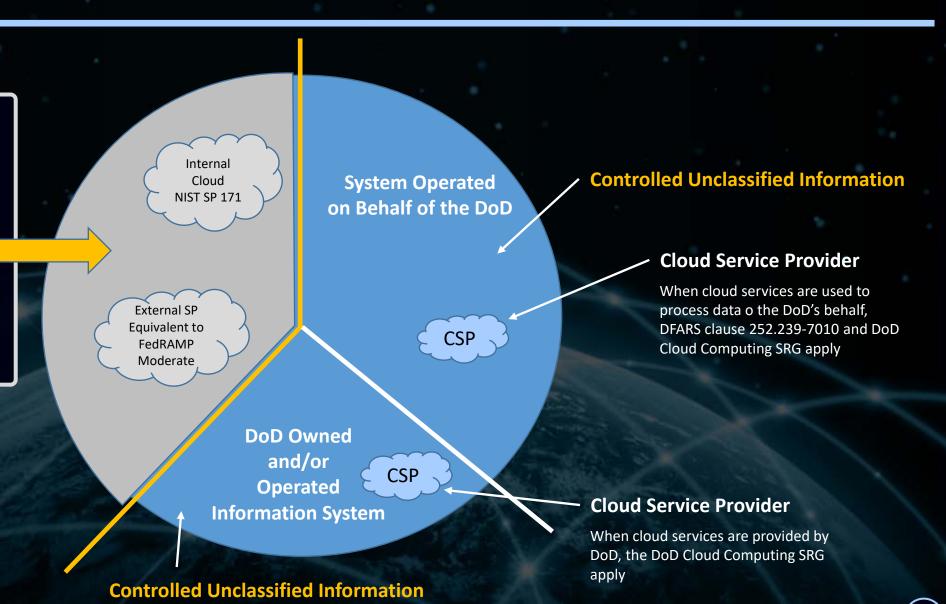


What Information Do You Need to Protect?



Contractor's Internal System

- Federal Contract Information
- Controlled Unclassified Information
- Covered Defense Information
 - Includes Unclassified
 Controlled Technical
 Information





Adequate Security Defined



- DFARS 252.204-7012 (b) Adequate security. The Contractor shall provide adequate security on all covered contractor information systems. To provide adequate security, the Contractor shall implement, at a minimum, the following information security protections:
 - (b)(2)(ii)(A): *The Contractor shall implement NIST SP 800-171*, as soon as practical, but not later than December 31, 2017. For all contracts awarded prior to October 1, 2017
 - Contractor shall notify the DoD Chief Information Officer (CIO), via email at osd.dibcsia@mail.mil, within 30 days of contract award, of any security requirements specified by NIST SP 800-171 not implemented at the time of contract award.



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NIST SP 800-171 Requirements



NIST Special Publication 800-171

Protecting Controlled Unclassified Information in Nonfederal Information Systems and Organizations

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This publication is available free of charge from http://dx.doi.org/10.6028/NIST.SP.800-17:

June 2015



U.S. Department of Commerce Penny Pritzker, Secretary

National Institute of Standards and Technology Willie May, Under Secretary of Commerce for Standards and Technology and Director

- Details the security requirements to protect confidentiality of Federal Contract Information, CDI, or CUI on non-Federal information systems.
- Acts as a non-tailorable baseline, but offers flexibility in how to meet requirements
- Most requirements focus on policy, process, and configuring IT securely, but a number of controls may require security-related software or hardware.



NIST SP 800-171 Requirements



NIST Special Publication 800-171

Protecting Controlled Unclassified Information in Nonfederal Information Systems and Organizations

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U.S. Department of Commerce

National Institute of Standards and Technology Willie May, Under Secretary of Commerce for Standards and Technology

FAMILY	FAMILY			
Access Control	Media Protection			
Awareness and Training	Personnel Security			
Audit and Accountability	Physical Protection			
Configuration Management	Risk Assessment			
Identification and Authentication	Security Assessment			
Incident Response	System and Communications Protection			
Maintenance	System and Information Integrity			

- For ease of use, the security requirements are organized into
 14 control families
- Each family contains the requirements related to the general security topic of the family, and contain a total of 110 individual controls/ requirements.



NIST SP 800-171 Required Deliverables



NIST Special Publication 800-171

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U.S. Department of Commerce

National Institute of Standards and Technology Willie May, Under Secretary of Commerce for Standards and Technology To document implementation of NIST SP 800-171, companies should have a system security plan in place, in addition to any associated plans of action:

- NIST SP 800-171, Security Requirement 3.12.4 (System Security Plan):
 - Develop, document, and periodically update, system security plans that describe system boundaries, system environments of operation, how security requirements are implemented, and the relationships with or connections to other systems
- NIST SP 800-171, Security Requirement 3.12.2 (Plans of Action):
 - Develop and implement *plans of action* designed to correct deficiencies and reduce or eliminate vulnerabilities in organizational systems
- * The contractor self-attests (by signing contract) to be compliant with DFARS Clause 252.204-7012, to include implementation of NIST SP 800-171 (which allows for planned implementation of some requirements if documented in the system security plan and associated plans of action).



NIST SP 800-171 Teeth



ASSESSING THE STATE OF A CONTRACTOR'S INTERNAL INFORMATION SYSYEM IN A PROCUREMENT ACTION

	OBJECTIVE	SOLICITATION/RFP	SOURCE SELECTION	CONTRACT						
1.	evaluate implementation of NIST SP 800-171* at source selection	 DFARS Provision 252.204-7008 DFARS Clause 252.204-7012 		DFARS Clause 252.204-7012						
	Alternative 1A.: Go/No Go decision based on implementation status of NIST SP 800-171*	 RFP (e.g., Section L) must require delivery of NIST SP 800-171 Security Requirement 3.12.4 - System Security Plan (or specified elements of) with the contractor's technical proposal RFP (e.g., Section L) must require delivery of NIST SP 800-171 Security Requirement 3.12.2 - Plans of Action with the contractor's technical proposal RFP (e.g., Section M) must identify requirements for an "Acceptable" (Go/No Go threshold) rating. [See Resources: DoD Guidance for Reviewing System Security Plans] 	Evaluate NIST SP 800-171 Security Requirement 3.12.4 - System Security Plan (or specified elements of) and any NIST SP 800-171 Security Requirement 3.12.2 - Plans of Action, in accordance with Section M [See Resources: DoD Guidance for Reviewing System Security Plans]	Incorporate NIST SP 800-171 Security Requirement 3.12.4 - System Security Plan (or specified elements of) and any NIST SP 800-171 Security Requirement 3.12.2 - Plans of Action as part of contract						

DARS-2018-0023-0002 "Assessing the State of a Contractor's Internal Information System in a Procurement Action" has been provided to illustrate how DoD may choose to assess submitted SSPs and POA&Ms in procurement actions that require the implementation of NIST SP 800-171.

https://www.regulations.gov/document?D=DARS-2018-0023-0002



NIST SP 800-171 Teeth



Pre-Award

Post-Award

ContinuousMonitoring

- 1. Evaluate implementation of NIST SP 800-171 at source selection
 - Alternative 1A: Go/No-Go Decision based on status of NIST SP 800-171 compliance
 - Alternative 1B: Assess NIST SP 800-171 implementation as a separate technical evaluation factor
- 2. Require protections in addition to the security requirements in NIST SP 800-171 and evaluate at source selection
- 3. Assess/Track implementation of NIST SP 800-171 security requirements after contract award
 - The government may also monitor compliance of NIST SP 800-171 (e.g. MDA CAT)
- 4. Contractors "self-attest" to compliance with DFARS 252.204-7012 and implementation of NIST SP 800-171



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Recommendations



DoD Guidance for Reviewing SSPs and the NIST SP 800-171 Security Requirements Not Yet Implemented

NIST SP 800-171 Security Requirement		Corresponding NIST SP 800-53 Security Controls		NIST Priority	DoD Value High (5-3) Mod (2) Low (1)	Comments
	NIST SP 800-	•		NIST SP 800-53r4		
3.1.4	Separate the duties of individuals to reduce the risk of malevolent activity without collusion.	AC-5	Separation of Duties	P1	5/3	METHOD(S) TO IMPLEMENT: IT Configuration VALUE: For businesses with a small number of information technology personnel to separate duties; risk may be assessed at level 3 if company has few IT assets to manage (e.g., small businesses).
3.1.5	Employ the principle of least privilege, including for specific security functions and privileged accounts.	AC-6(1) AC-6(5)	Least Privilege Least Privilege Authorize Access to Security Functions Least Privilege Privileged Accounts	P1 P1	5/3	METHOD(S) TO IMPLEMENT: IT Configuration VALUE: For businesses with a small number of information technology personnel to separate duties; risk may be assessed at level 3 if company has few IT assets to manage.
3.1.6	Use non-privileged accounts or roles when accessing nonsecurity functions.	AC-6(2)	Least Privilege Non-Privileged Access for Nonsecurity Functions	P1	5	METHOD(S) TO IMPLEMENT: IT Configuration When all regular users have limited administrative privileges (e.g., to load software), they are not considered privileged users.
3.1.7	Prevent non-privileged users from executing privileged functions and audit the execution of such functions.	AC-6(9) AC-6(10)	Least Privilege Auditing Use of Privileged Functions Least Privilege Prohibit Non- Privileged Users from Executing Privileged Functions	P1 P1	5	METHOD(S) TO IMPLEMENT: IT Configuration When all regular users have limited administrative privileges (e.g., to load software), they are not considered privileged users, and do not require auditing as privileged users.
3.1.8	Limit unsuccessful logon attempts.	AC-7	Unsuccessful Logon Attempts	P2	2	METHOD(S) TO IMPLEMENT: IT Configuration

- Two key artifacts should guide your efforts
- With limited time and resources, organizations may want to prioritize which controls to enact first as well as determine which controls may be implemented internally and which may require outside assistance.

NIST SP 800-171A, Assessing Security Requirements for Controlled Unclassified Information

3.1.1	Limit syst	REQUIREMENT em access to authorized users, processes acting on behalf of authorized users, es (including other systems).							
		ASSESSMENT OBJECTIVE Determine if:							
	3.1.1[a] authorized users are identified.								
	3.1.1[b] processes acting on behalf of authorized users are identified.								
	3.1.1[c]	devices (and other systems) authorized to connect to the system are identified.							
	3.1.1[d]	system access is limited to authorized users.							
	3.1.1[e] system access is limited to processes acting on behalf of authorized user								
	3.1.1[f]	system access is limited to authorized devices (including other systems).							

POTENTIAL ASSESSMENT METHODS AND OBJECTS

Examine: [SELECT FROM: Access control policy; procedures addressing account management; system security plan; system design documentation; system configuration settings and associated documentation; list of active system accounts and the name of the individual associated with each account; notifications or records of recently transferred, separated, or terminated employees; list of conditions for group and role membership; list of recently disabled system accounts along with the name of the individual associated with each account; access authorization records; account management compliance reviews; system monitoring records; system audit logs and records; list of devices and systems authorized to connect to organizational systems; other relevant documents or records].

<u>Interview</u>: [SELECT FROM: Personnel with account management responsibilities; system or network administrators; personnel with information security responsibilities].

<u>Test</u>: [SELECT FROM: Organizational processes for managing system accounts; mechanisms for implementing account management].



Recommendations



DoD Guidance for Reviewing System Security Plans and the NIST SP 800-171 Security Requirements Not Yet Implemented

- "NIST SP 800-53 priority codes were considered in the calculation of the DoD Implementation Value for corresponding NIST SP 800-171 security requirements."
- "DoD Values range from 5 representing the highest impact on the information system, or highest priority to implement, to 1 representing the lowest impact on the information system, or lowest priority to implement."
- "The DoD Value for NIST SP 800-171 security requirements are typically 5, but may range between 5 and 3."
- "The guidance is not to be used to assess implemented security requirements, nor to compare or score a company's approach to implementing a security requirement."

https://www.regulations.gov/document?D=DARS-2018-0023-0002

S	NIST SP 800-171 Corresponding NIST SP 800-53 Security Requirement Table D-14 NIST SP 800-171			NIST Priority Table D-2 NIST SP 800-53r4	ı	DoD Value gh (5-3) Mod (2) Low (1)	Comments
3.1.4	Separate the duties of	AC-5	Separation of	P1	Г	5/3	METHOD(S) TO IMPLEMENT: IT Configuration
	individuals to reduce the risk of malevolent activity without collusion.		Duties				VALUE: For businesses with a small number of information technology personnel to separate duties; risk may be assessed at level 3 if company has few IT assets to manage (e.g., small businesses).
3.1.5	Employ the principle of	AC-6	Least Privilege	P1	П	5/3	METHOD(S) TO IMPLEMENT: IT Configuration
	least privilege, including for specific security functions and privileged accounts.	AC-6(1)	Least Privilege Authorize Access to Security Functions	P1		X	<u>VALUE</u> : For businesses with a small number of information technology personnel to separate duties; risk may be assessed at level 3 if company has few IT assets to manage.
		AC-6(5)	Least Privilege Privileged Accounts	P1			
3.1.6	Use non-privileged accounts or roles when accessing nonsecurity functions.	AC-6(2)	Least Privilege Non-Privileged Access for Nonsecurity Functions	P1		5	METHOD(S) TO IMPLEMENT: IT Configuration When all regular users have limited administrative privileges (e.g., to load software), they are not considered privileged users.
3.1.7	Prevent non-privileged users from executing privileged functions and audit the execution of such functions.	AC-6(9)	Least Privilege Auditing Use of Privileged Functions Least Privilege Prohibit Non- Privileged Users	P1 P1		5	METHOD(s) TO IMPLEMENT: IT Configuration When all regular users have limited administrative privileges (e.g., to load software), they are not considered privileged users, and do not require auditing as privileged users.
			from Executing Privileged Functions				
3.1.8	Limit unsuccessful logon attempts.	AC-7	Unsuccessful Logon Attempts	P2		2	METHOD(S) TO IMPLEMENT: IT Configuration





NIST SP 800-171 Security Requirement Corresponding NIST SP 800-53 Security Controls		NIST Priority	DoD Value High (5-3) Mod (2) Low (1)	Comments		
Table D-14 NIST SP 800-171			Table D-2 NIST SP 800-53r4			
3.1.9	Provide privacy and security notices consistent with applicable CUI rules.	AC-8 System Use Notification		P1	1	METHOD(S) TO IMPLEMENT: IT Configuration VALUE: This risk assessment differs from NIST's high priority for AC-8, System Use Notification (i.e., computer banner on acceptable/lawful use). Since the 'System Use Notification' generally is not related to protection of CUI, requirement 3.1.9 was refocused on providing security notices based on CUI rules. The risk associated with this requirement is low since CUI rules are still in development.

"Where necessary, posters or other printed materials may be used in lieu of an automated system banner." NIST SP 800-171R1 Protecting Controlled Unclassified Information in Nonfederal Systems and Organizations, Appendix F, Discussion on 3.1.9, p71.





3.1.21	Limit use of	AC-20(2)	Use of	P1	5	METHOD(S) TO IMPLEMENT: Policy/Process.
	organizational portable		External			This requires a policy restricting use of device outside
	storage devices on		Systems			company (e.g., do not use with hotel computers). No
	external systems.		Portable			IT configuration, or software/hardware required.
			Storage Devices			

- "Limits on the use of organization-controlled portable storage devices in external systems include, for example, complete prohibition of the use of such devices or restrictions on how the devices may be used and under what conditions the devices may be used." NIST SP 800-171R1 Protecting Controlled Unclassified Information in Nonfederal Systems and Organizations, Appendix F, Discussion on 3.1.21, p75.
- Even though this control is rated at a "5," the guidance shows that only a policy is required.
- Technical limitations/ configurations (e.g. Iron Key) are not required for this particular requirement.





3.2.3	Provide security	AT-2(2)	Security	P1	2 - 1	METHOD(S) TO IMPLEMENT: Policy/Process
	awareness training on recognizing and reporting potential indicators of insider threat.		Awareness Training Insider Threat			No cost training available at https://www.cdse.edu/catalog/insider-threat.html VALUE: Original NIST SP 800-53 control based on insider risk to classified networks, which does not apply in this case, where assessment of risk is moderate to low.

- Free Basic Insider Threat Training: www.cdse.edu/catalog/elearning/INT101.html
- "Organizations may consider tailoring insider threat awareness topics to the role (e.g., training for managers may be focused on specific changes in behavior of team members, while training for employees may be focused on more general observations). NIST SP 800-171R1 Protecting Controlled Unclassified Information in Nonfederal Systems and Organizations, Appendix F, Discussion on 3.1.9, p76.
- Free In-Depth Insider Threat Training: www.cdse.edu/catalog/insider-threat.html





3.4.9	Control and monitor user- installed software.	CM-11	User-Installed Software	P1	5	METHOD(S) TO IMPLEMENT: Policy/Process, IT Configuration; Software
						This requirement does not necessarily require use of IT configuration or software. A policy/process of periodic examination of user accounts is acceptable.

- "Policy enforcement methods include procedural methods, automated methods, or both." NIST SP 800-171R1 Protecting Controlled Unclassified Information in Nonfederal Systems and Organizations, Appendix F, Discussion on 3.4.9, p83.
- Even though this control is rated at a "5," the guidance shows that only a policy is required.
- Information systems can be configured to automatically deny user-installed software, but this can be probative to organizations like software developers.





3.11.2	Scan for vulnerabilities in	RA-5	Vulnerability	P1	5	METHOD(S) TO IMPLEMENT:	Software
	organizational systems and		Scanning				
	applications periodically	RA-5(5)	Vulnerability	P1			
	and when new		Scanning				
	vulnerabilities affecting		Privileged				
	those systems and		Access				
	applications are identified.						

- "Vulnerability scanning includes, for example: scanning for patch levels; scanning for functions, ports, protocols, and services that should not be accessible to users or devices; and scanning for improperly configured or incorrectly operating information flow control mechanisms." NIST SP 800-171R1 Protecting Controlled Unclassified Information in Nonfederal Systems and Organizations, Appendix F, Discussion on 3.11.2, p97.
- This control requires additional tools.
- The requirement may require outside assistance to define routine scan frequencies, configure scan utilities, and interpret scan results.
- Market is quickly evolving, and very cost effective and proven tools are now available (e.g., MARS Box)



Conclusion



- "DFARS Compliance" incorporates more than just following a simple DFARS clause
 - It encompasses protecting by implementing security controls established by NIST 800-171 and abiding by DFARS252.204-7012 in terms of protection and incident reporting
- There's a lot to do: Identifying Federal Contract Information, CDI, or CUI, determining which of the 110 NIST 800-171 Controls aren't in place in an SSP, planning for their remediation in a POA&M, and then actually implementing the controls

- All organizations have the opportunity to implement the requirements in-house, or they can contract
 out work to a third party to support a compliance assessment, policy development, architecture
 updates, or on-going monitoring.
- Depending on the complexity of your organization should drive this decision-making



Questions







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Reference Slides



Cyber Incident Reporting



DFARS 204.7302 (d)

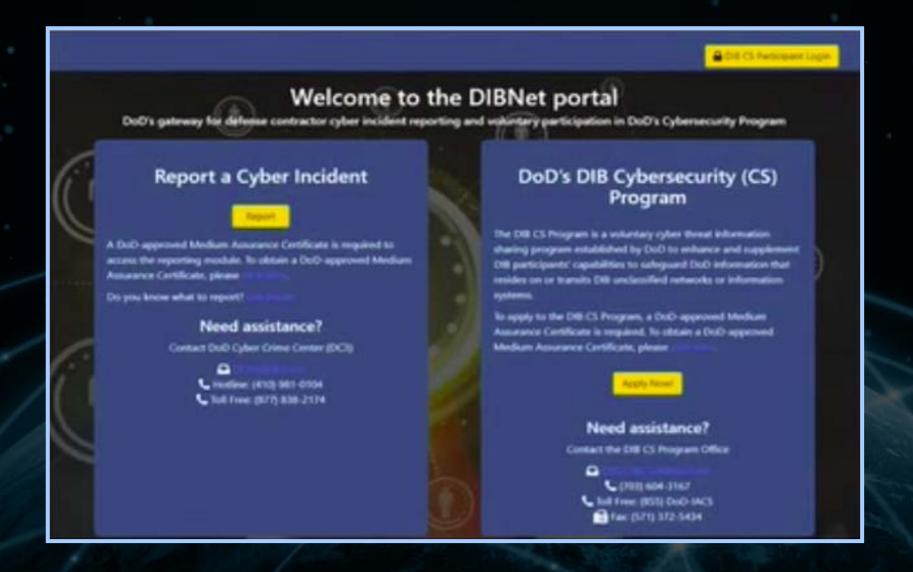
A cyber incident that is reported by a contractor or subcontractor shall not, by itself, be interpreted as evidence that the contractor or subcontractor has failed to provide adequate security on their covered contractor information systems, or has otherwise failed to meet the requirements of the clause at 252.204-7012, *Safeguarding Covered Defense Information and Cyber Incident Reporting*

- Contractors / sub-contractors must submit a cyber incident report via https://dibnet.dod.mil/
- Upon receipt of a cyber incident report
 - DoD Cyber Crime Center (DC3) sends the report to the contracting officer(s)
 - The contracting officer(s) provides the report to the requiring activities
 - DC3 analyzes report to identify cyber threat vectors and adversary trends
 - DCS contacts the reporting company if the report is incomplete



Cyber Incident Reporting







Sub-Contractor Flow down



When should DFARS clause 252.204-7012 flow down to sub-contractors?

- The clause is required to flow down to subcontractors only when performance will involve operationally critical support or covered defense information
- The contractor shall determine if the information required for subcontractor performance is, or retains its
 identity as, covered defense information and requires safeguarding
- Flow down is a requirement of the terms of the contract with the government, which must be enforced by the prime contractor as a result of compliance with these terms
 - If a sub-contractor does not agree to comply with the terms of DFARS clause 252.204-7012, then
 covered defense information shall not be shared with the sub-contractor or otherwise reside on its
 information system

The DoD's emphasis is on the deliberate management of information requiring protection. Prime contractors should minimize the flow down of information requiring protection



Resources



- NIST SP 800-171A, Assessing Security Requirements for Controlled Unclassified Information
 - This document is intended to help organizations develop assessment plans and conduct efficient, effective, and cost-effective assessments of the security requirements in SP 800-171, Protecting Controlled Unclassified Information in Non-Federal Systems and Organizations
 - https://nvlpubs.nist.gov/nistpubs/SpecialPublications/NIST.SP.800-171A.pdf
- Cybersecurity Evaluation Tool (CSET)
 - No-cost application, developed by DHS's Industrial Control Systems Cyber Emergency Response Team (ICS-CERT), provides step-by-step process to evaluate industrial control systems and IT network security practices
 - https://ics-cert.us-cert.gov/Downloading-and-Installing-CSET
- NIST MEP Handbook Cybersecurity Handbook (HB-162)
 - Handbook provides a step-by-step guide to assessing a small manufacturer's information systems
 against the security requirements in NIST SP 800-171, rev 1 ,"Protecting Controlled Unclassified
 Information in Non-Federal Systems and Organizations"
 - https://www.nist.gov/mep