NIST SP 800-171 Revision 3 Impacts

Stuart Itkin
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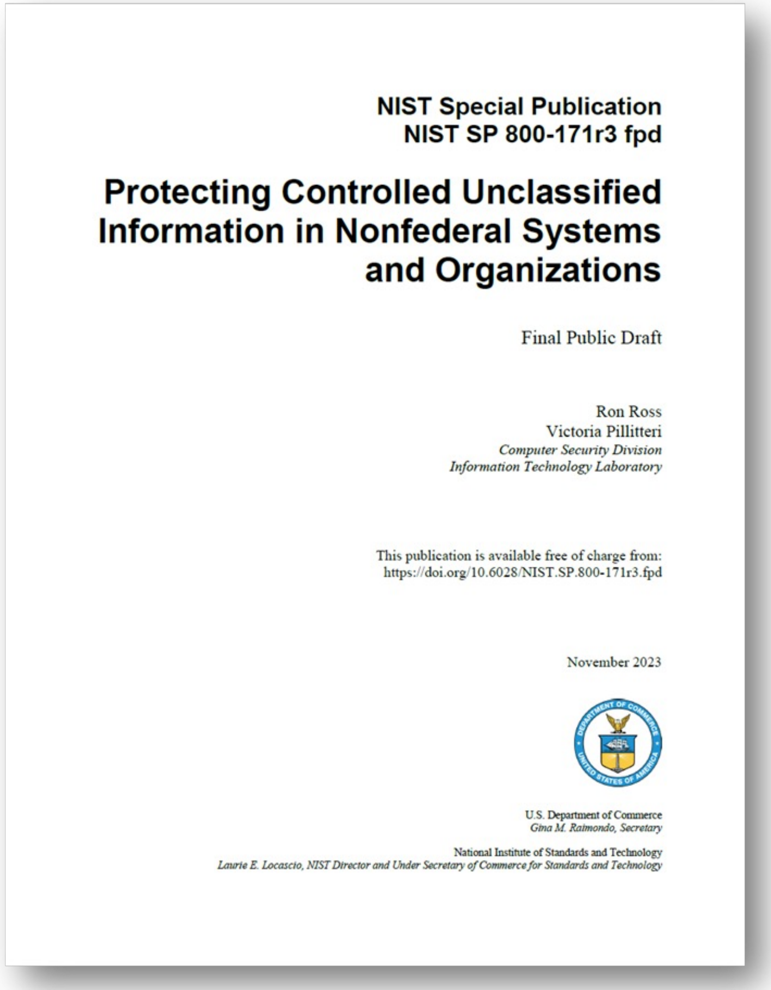
A Bit About Me

- Started out as a small child in Chicago, IL
- Key contributor to LOGMARS standard and the application of automation technologies to the DoD supply chain starting in the 1990s
- Currently Senior Vice President at NeoSystems, focused on bringing managed services and professional services to small and medium businesses to address their DoD cybersecurity requirements
- Previously:
  - Vice President of CMMC and FedRAMP Assurance at Coalfire Federal, an authorized C3PAO and RPO
  - Vice President of Products and Marketing at Exostar, a Boeing, Lockheed Martin, Raytheon Technologies, BAE Systems, Rolls Royce formed joint venture company
  - Lead mentor at Virginia State Government funded MACH37 cybersecurity product accelerator
- BA, MA, and ABD from the University of Illinois at Urbana-Champaign

What’s NIST 800-171’s Role?

- To provide a uniform set of standards for non-federal entities to ensure they maintain a baseline level of security consistent with federal expectations.
- To enhance the overall security of the federal supply chain to reduce the risk of cyber threats and information breaches.



NIST Special Publication
NIST SP 800-171r3 fpd

Protecting Controlled Unclassified Information in Nonfederal Systems and Organizations

Final Public Draft

Ron Ross
Victoria Pillitteri
Computer Security Division
Information Technology Laboratory

This publication is available free of charge from:
https://doi.org/10.6028/NIST.SP.800-171r3.fpd

November 2023

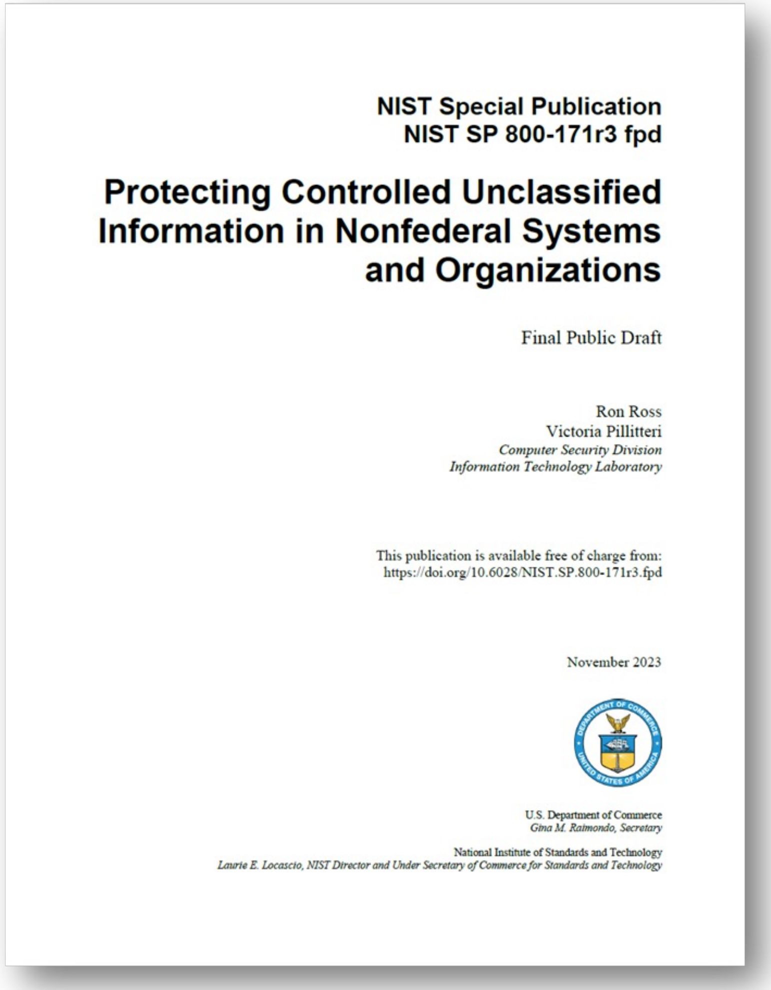
U.S. Department of Commerce
Gina M. Raimondo, Secretary

National Institute of Standards and Technology
Laurie E. Locascio, NIST Director and Under Secretary of Commerce for Standards and Technology

Where did NIST 800-171 come from?

Executive Order 13556, November 4, 2010

- Established a governmentwide Controlled Unclassified Information (CUI) Program to standardize the way unclassified information that requires protection should be handled
- Designated the National Archive and Records Administration (NARA) as the Executive Agent to implement the program
- Tasked the Secretary of Commerce, through the Director of the National Institute of Standards and Technology (NIST), to develop and issue standardized guidelines for the protection of CUI on nonfederal information systems



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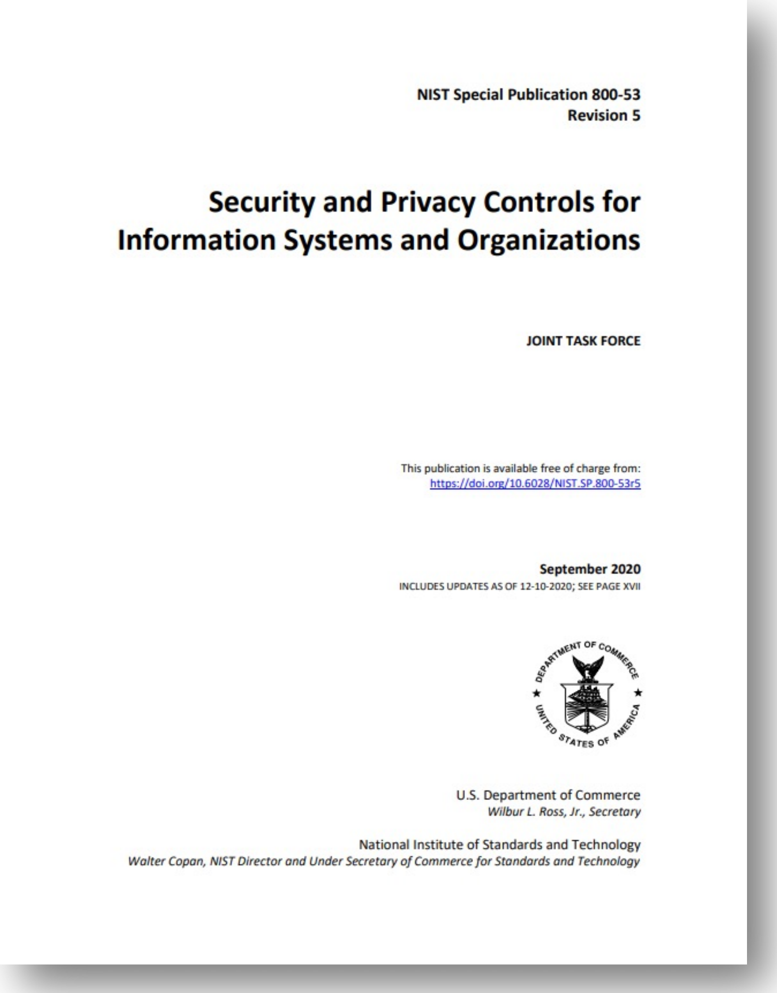
More specifically, Where did it come from?

NIST 800-53, "Security and Privacy Controls for Information Systems and Organizations."

- NARA had already established the Moderate Baseline for the protection of CUI in Government Systems
- Selected controls from the NIST 800-53 catalog that were relevant to protecting CUI in non-Federal systems where it was stored, processed, or transmitted by
- 800-171 Rev 2
  - 110 Controls
  - `14 families



NIST Special Publication 800-53
Revision 5

Security and Privacy Controls for
Information Systems and Organizations

JOINT TASK FORCE

This publication is available free of charge from:
https://doi.org/10.6028/NIST.SP.800-53r5

September 2020
INCLUDES UPDATES AS OF 12-10-2020; SEE PAGE XVII

U.S. Department of Commerce
Wilbur L. Ross, Jr., Secretary

National Institute of Standards and Technology
Walter Copan, NIST Director and Under Secretary of Commerce for Standards and Technology

Why did NIST create 800-171Rev 3?

- NIST 800-171Rev 2 based on NIST 800-53 Rev 4
- NIST 800-53 was update from Rev 4 to Rev 5 in 2020
  - Address evolving security and privacy challenges
  - Incorporate lessons learned
  - Reflects changes in technology and threat landscapes
- NIST 800-171Rev 3 establishes alignment with 800-53 Rev 5

NOTE, the following are all affected:

- NIST SP 800-171 Rev 3
- NIST SP 800-171A Rev 3
- NIST SP 800-172 Rev 3
- NIST SP 800-172A Rev 3

Recent Events

- Public Comments for Rev 3 (FPD) closed 1/26/2024
- Public Comments published 2/21/2024
- Rev 3 Final expected Spring, 2024

What about CMMC?

- NIST 800-171 Rev 2 is the foundation of CMMC 2.11 as described in the proposed rule
- NIST 800-171 Rev 3 is expected to be published Spring, 2024
- DFARS 252.204-7012(b)(2)(i) states:

> Except as provided in paragraph (b)(2)(ii) of this clause, **the covered contractor information system shall be subject to the security requirements in National Institute of Standards and Technology (NIST) Special Publication (SP) 800-171**, “Protecting Controlled Unclassified Information in Nonfederal Information Systems and Organizations” (available via the internet at http://dx.doi.org/10.6028/NIST.SP.800-171) **in effect at the time the solicitation is issued or as authorized by the Contracting Officer**.

Houston, do we have a problem?

So, what has changed in 800-171Rev 3?

- Improved readability
- **Updated Security Requirements**
  - Added, deleted, and changed security requirements to reflect controls and families in SP 800-53 Rev 5 and moderate baseline in 800-53B
  - Eliminated distinction between basic and derived requirements
  - Increased specificity and grouped requirements
  - Introduced organization-defined parameters (ODPs)
  - Removed outdated & redundant requirements
- Updated Tailoring Criteria
  - Recategorized selected controls from SP 800-53B moderate baseline
- Added Supplemental Resources

From 14 to 17 Control Families

Access Control (AC) - Policies and procedures for limiting access to systems and information to authorized users.

Awareness and Training (AT) - Ensuring that all users are aware of the security risks associated with their activities and the applicable policies, standards, and procedures related to the security of the system.

Audit and Accountability (AU) - Implementing mechanisms to record and examine activity in information systems.

Configuration Management (CM) - Establishing and maintaining the integrity of software and hardware through control of processes for initializing, changing, and monitoring configurations.

Identification and Authentication (IA) - Ensuring that only authorized individuals can access the system by verifying the identity of users, processes, or devices as a prerequisite to allowing access.

Incident Response (IR) - Establishing an operational incident-handling capability for organizational systems, including preparation, detection, analysis, containment, recovery, and user response activities.

Maintenance (MA) - Performing periodic maintenance on systems and providing effective controls on the tools, techniques, mechanisms, and personnel used to conduct system maintenance.

Media Protection (MP) - Protecting digital and non-digital media containing CUI, including limiting access to authorized users and sanitizing or destroying media before disposal or reuse.

Physical Protection (PE) - Limiting physical access to systems, equipment, and the respective operating environments to authorized individuals

Personnel Security (PS) - Ensuring that individuals occupying positions of responsibility within an organization (including third-party service providers) are trustworthy and meet established security criteria for those positions.

Risk Assessment (RA) - Assessing the security risks associated with the operation and use of organizational systems.

Security Assessment (CA) - Assessing the security controls in organizational systems to determine if the controls are effective in their application.

System and Communications Protection (SC) - Protecting the confidentiality, integrity, and availability of information being transmitted or received.

System and Information Integrity (SI) - Ensuring that systems and information are protected against malicious code, unauthorized changes, and other integrity violations.

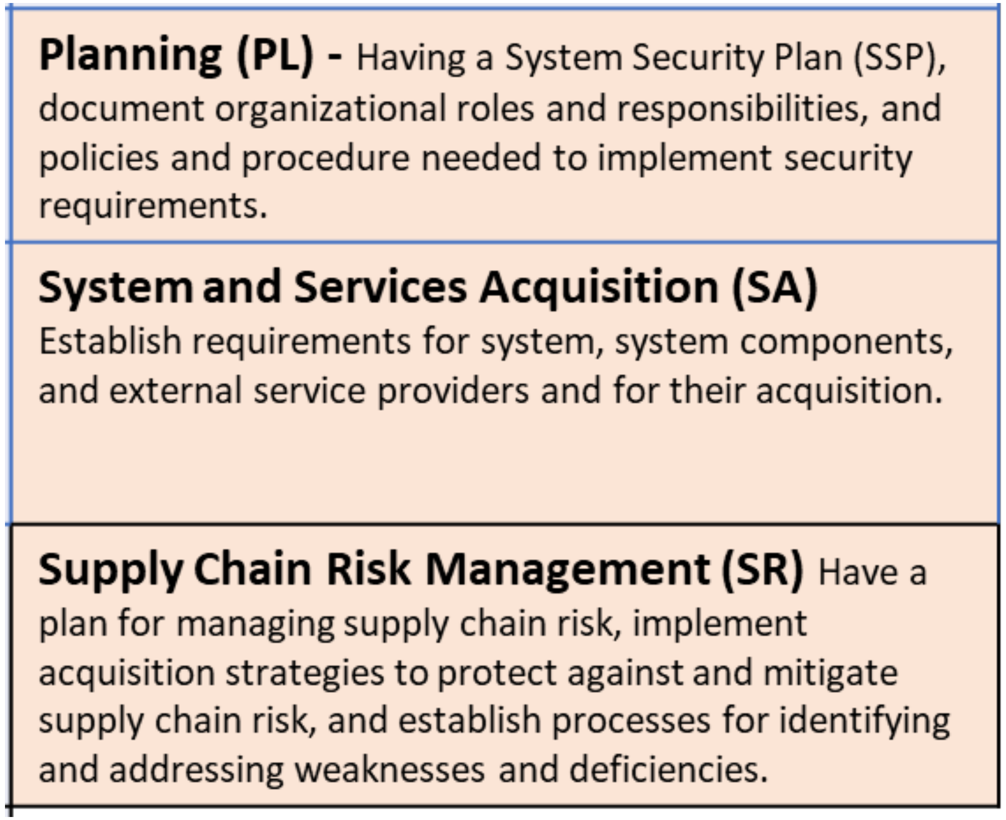
Planning (PL) - Having a System Security Plan (SSP), document organizational roles and responsibilities, and policies and procedure needed to implement security requirements.

System and Services Acquisition (SA) Establish requirements for system, system components, and external service providers and for their acquisition.

Supply Chain Risk Management (SR) Have a plan for managing supply chain risk, implement acquisition strategies to protect against and mitigate supply chain risk, and establish processes for identifying and addressing weaknesses and deficiencies.

CUI-CON

From 14 to 17 Control Families



Planning (PL) - Having a System Security Plan (SSP), document organizational roles and responsibilities, and policies and procedure needed to implement security requirements.

System and Services Acquisition (SA) Establish requirements for system, system components, and external service providers and for their acquisition.

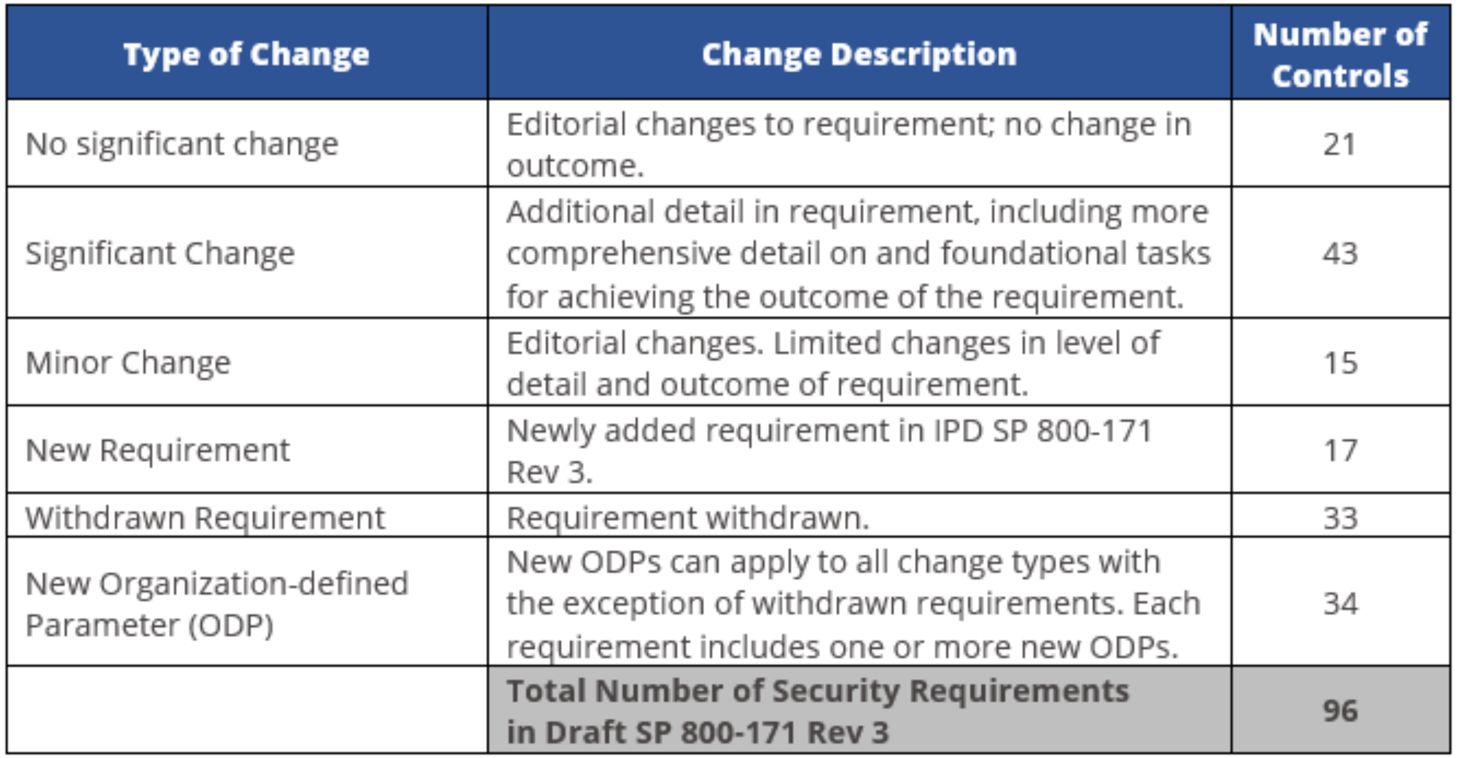
Supply Chain Risk Management (SR) Have a plan for managing supply chain risk, implement acquisition strategies to protect against and mitigate supply chain risk, and establish processes for identifying and addressing weaknesses and deficiencies.

Requires a System Security Plan
Explicit policies and procedure for how those policies are implemented

Critical aspects of systems and components during and after acquisition.
Replacement of unsupported components.
Standards for External Service Providers (ESPs)

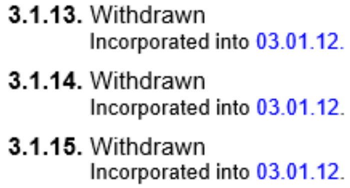
Plan for identifying, assessing, and remediating 3rd Party Risk.
Assess and monitor vendors, evaluate their alignment with NIST 800-171.
Define requirements in contracts.

From 110 to 95 CUI Controls: -14%



Type of Change	Change Description	Number of Controls
No significant change	Editorial changes to requirement; no change in outcome.	21
Significant Change	Additional detail in requirement, including more comprehensive detail on and foundational tasks for achieving the outcome of the requirement.	43
Minor Change	Editorial changes. Limited changes in level of detail and outcome of requirement.	15
New Requirement	Newly added requirement in IPD SP 800-171 Rev 3.	17
Withdrawn Requirement	Requirement withdrawn.	33
New Organization-defined Parameter (ODP)	New ODPs can apply to all change types with the exception of withdrawn requirements. Each requirement includes one or more new ODPs.	34
	Total Number of Security Requirements in Draft SP 800-171 Rev 3	**96**

But some “Withdrawn Requirements” have been Consolidated

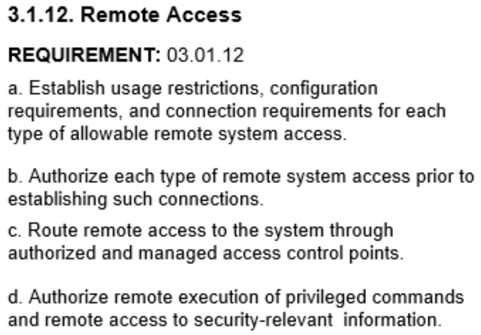


3.1.13. Withdrawn
Incorporated into 03.01.12.

3.1.14. Withdrawn
Incorporated into 03.01.12.

3.1.15. Withdrawn
Incorporated into 03.01.12.

So, some CUI Controls now have multiple Control Items



3.1.12. Remote Access

REQUIREMENT: 03.01.12

a. Establish usage restrictions, configuration requirements, and connection requirements for each type of allowable remote system access.

b. Authorize each type of remote system access prior to establishing such connections.

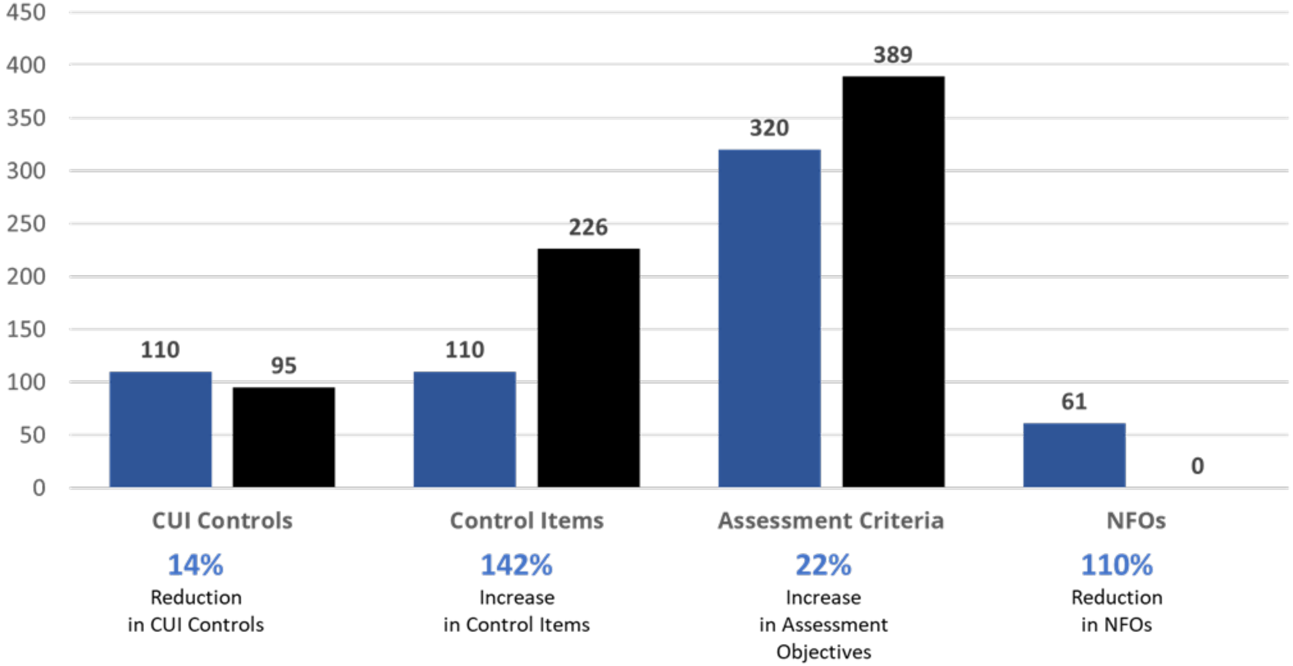
c. Route remote access to the system through authorized and managed access control points.

d. Authorize remote execution of privileged commands and remote access to security-relevant information.

From 110 to 226 Control Items: +142%

Net Impact of Control Slight of Hand

	Assessment Objectives	
NIST 800-171r2	320	
NIST 800-171r3	445	+40%
AOs that are ODPs	(56)	
Net Assessment Objectives	389	+22%



14% Reduction in CUI Controls

142% Increase in Control Items

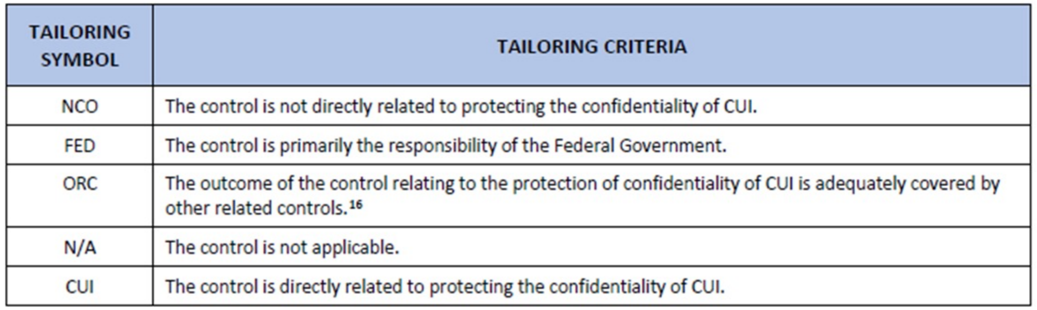
22% Increase in Assessment Objectives

110% Reduction in NFOs

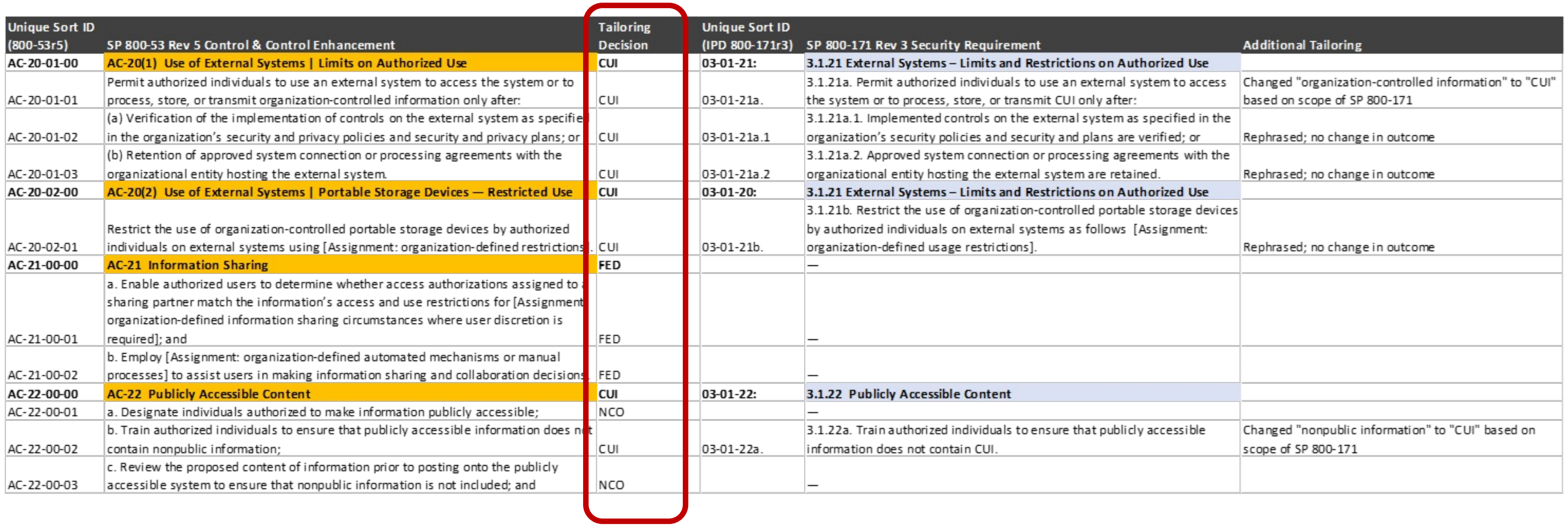
Establishing NIST 800-171 Rev 3 Controls

How NIST decided which 800-53 controls went into 800-171 Rev 3

Security control tailoring criteria



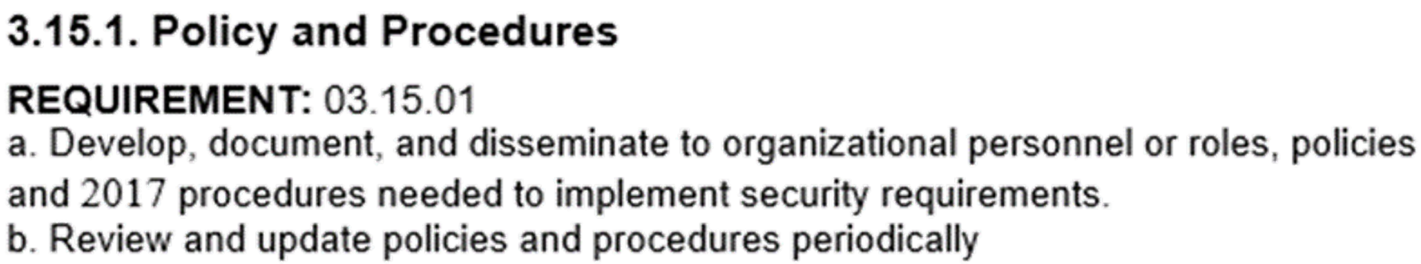
TAILORING SYMBOL	TAILORING CRITERIA
NCO	The control is not directly related to protecting the confidentiality of CUI.
FED	The control is primarily the responsibility of the Federal Government.
ORC	The outcome of the control relating to the protection of confidentiality of CUI is adequately covered by other related controls.[16]
N/A	The control is not applicable.
CUI	The control is directly related to protecting the confidentiality of CUI.



Unique Sort ID (800-53r5)	SP 800-53 Rev 5 Control & Control Enhancement	Tailoring Decision	Unique Sort ID (IPD 800-171r3)	SP 800-171 Rev 3 Security Requirement	Additional Tailoring
AC-20-01-00	**AC-20(1) Use of External Systems | Limits on Authorized Use**	**CUI**	**03-01-21:**	**3.1.21 External Systems – Limits and Restrictions on Authorized Use**	
AC-20-01-01	Permit authorized individuals to use an external system to access the system or to process, store, or transmit organization-controlled information only after:	CUI	03-01-21a.	3.1.21a. Permit authorized individuals to use an external system to access the system or to process, store, or transmit CUI only after:	Changed "organization-controlled information" to "CUI" based on scope of SP 800-171
AC-20-01-02	(a) Verification of the implementation of controls on the external system as specifie in the organization's security and privacy policies and security and privacy plans; or	CUI	03-01-21a.1	3.1.21a.1. Implemented controls on the external system as specified in the organization's security policies and security and plans are verified; or	Rephrased; no change in outcome
AC-20-01-03	(b) Retention of approved system connection or processing agreements with the organizational entity hosting the external system.	CUI	03-01-21a.2	3.1.21a.2. Approved system connection or processing agreements with the organizational entity hosting the external system are retained.	Rephrased; no change in outcome
AC-20-02-00	**AC-20(2) Use of External Systems | Portable Storage Devices — Restricted Use**	**CUI**	**03-01-20:**	**3.1.21 External Systems – Limits and Restrictions on Authorized Use**	
AC-20-02-01	Restrict the use of organization-controlled portable storage devices by authorized individuals on external systems using [Assignment: organization-defined restrictions].	CUI	03-01-21b.	3.1.21b. Restrict the use of organization-controlled portable storage devices by authorized individuals on external systems as follows [Assignment: organization-defined usage restrictions].	Rephrased; no change in outcome
AC-21-00-00	**AC-21 Information Sharing**	**FED**		—	
AC-21-00-01	a. Enable authorized users to determine whether access authorizations assigned to sharing partner match the information's access and use restrictions for [Assignment organization-defined information sharing circumstances where user discretion is required]; and	FED		—	
AC-21-00-02	b. Employ [Assignment: organization-defined automated mechanisms or manual processes] to assist users in making information sharing and collaboration decision	FED		—	
AC-22-00-00	**AC-22 Publicly Accessible Content**	**CUI**	**03-01-22:**	**3.1.22 Publicly Accessible Content**	
AC-22-00-01	a. Designate individuals authorized to make information publicly accessible;	NCO		—	
AC-22-00-02	b. Train authorized individuals to ensure that publicly accessible information does n t contain nonpublic information;	CUI	03-01-22a.	3.1.22a. Train authorized individuals to ensure that publicly accessible information does not contain CUI.	Changed "nonpublic information" to "CUI" based on scope of SP 800-171
AC-22-00-03	c. Review the proposed content of information prior to posting onto the publicly accessible system to ensure that nonpublic information is not included; and	NCO		—	

Also noteworthy while we talk about controls

Policy and Procedures are now explicitly required !



3.15.1. Policy and Procedures

REQUIREMENT: 03.15.01
a. Develop, document, and disseminate to organizational personnel or roles, policies and 2017 procedures needed to implement security requirements.
b. Review and update policies and procedures periodically

Beware of “Ghost Controls”

- Removed legacy control still reasonably required to demonstrate compliance

  NFO AT-4 (Training Records) was removed.

  The ability to demonstrate that training was performed requires evidence of individual training records.

  AT-4 technically exists as a ghost control

Enhanced Clarity and Specificity

Eliminating the distinction between “Basic” and “Derived” requirements

  - FIPS 200 “Basic Requirements”
  - 800-53 “Derived Requirements”

Both had to be satisfied

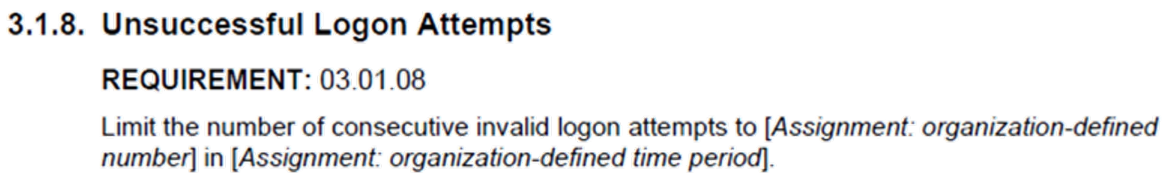
- NIST decided to rely on 800-53 controls to enhance specificity
- Many “Derived” requirements folded into existing requirements to enhance clarity

This removes subjectivity to the benefit of OSCs and Assessors

Organization Defined Parameters (ODP)

NIST 800-171 introduces ODPs

- Provide specificity
- Provide flexibility to align requirements with mission and effectively manage risk
- Support consistent security assessments

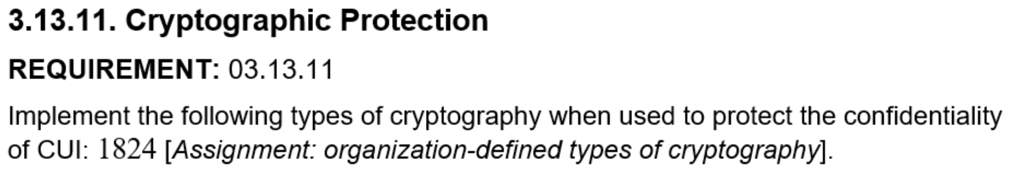


3.1.8. Unsuccessful Logon Attempts

REQUIREMENT: 03.01.08

Limit the number of consecutive invalid logon attempts to [*Assignment: organization-defined number*] in [*Assignment: organization-defined time period*].

- ODPs set by government (federal agency or a group of federal agencies)
- Where not prescribed, r3 requires contractor to assign the value
- Encryption is now an ODP



3.13.11. Cryptographic Protection

REQUIREMENT: 03.13.11

Implement the following types of cryptography when used to protect the confidentiality of CUI: 1824 [*Assignment: organization-defined types of cryptography*].

NOTE: NIST SP 800-171A Rev 3 contains more ODPs than NIST SP 800-171 Rev 3
You must follow the Assessment Guide.

When will NIST 800-171r3 go into effect?

- DFARS 252.204-7012(b)(2)(i) states:

> Except as provided in paragraph (b)(2)(ii) of this clause, **the covered contractor information system shall be subject to the security requirements in National Institute of Standards and Technology (NIST) Special Publication (SP) 800-171**, “Protecting Controlled Unclassified Information in Nonfederal Information Systems and Organizations” (available via the internet at http://dx.doi.org/10.6028/NIST.SP.800-171) **in effect at the time the solicitation is issued or as authorized by the Contracting Officer**.

- Look for a revision to DFARS 7012 before the end of this year
  - Otherwise look for DoD to issue a temporary waiver or guidance memo
- Remember
  - DoD initially (2015) provided contractors 2 years to implement NIST 800-171
  - It took FedRAMP 32 months to move from NIST 800-53 Rev 4 to Rev 5

Takeaways

- Rev 3 gives you a little more work to do
- What you need to do is more clear
- Nothing you’re doing to satisfy Rev 2 will be wasted
- Rev 3 shouldn’t derail the CMMC 2.11 rollout

- Satisfying Rev 3 requirements will make you more secure

For More Information:

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