NIST SP-800-53 r5 – The Control Reference Layer: Taming the Beast beneath CCM 4.0 to NIST 800-53 Mapping Discussing the Cloud Security Alliance Working Group

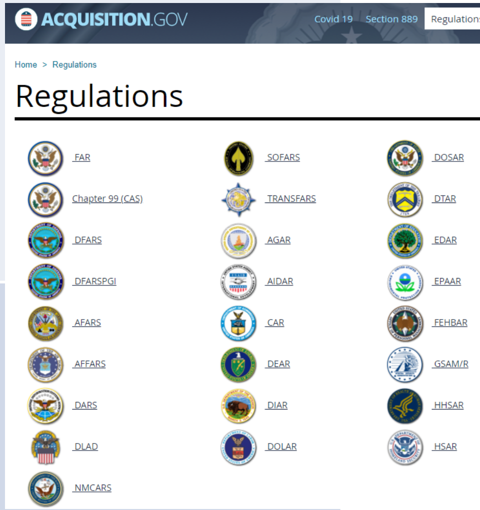
Robin Basham, CEO, EnterpriseGRC Solutions

President, ISC2 East Bay Chapter

Presentation to ISACA San Francisco,
Wednesday, Aug 25 at 12:00-1:00 PM PDT

Resources Frequently Mentioned During this presentation

	Critical Resource Website link		
CYBERSECURITY & INFRASTRUCTURE SECURITY AGENCY	Homepage | CISA	CIS Center for Internet Security (cisecurity.org)	CIS Center for Internet Security® Confidence in the Connected World®
CSA cloud security alliance®	https://cloudsecurityalliance.org/	How to Become FedRAMP Authorized | FedRAMP.gov	FR FedRAMP
NIST	National Institute of Standards and Technology | NIST	Acquisition.GOV | www.acquisition.gov Location for DFARS	DEFENSE INFORMATION SYSTEMS AGENCY



ACQUISITION.GOV Covid 19 Section 889 Regulation

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Regulations

- FAR
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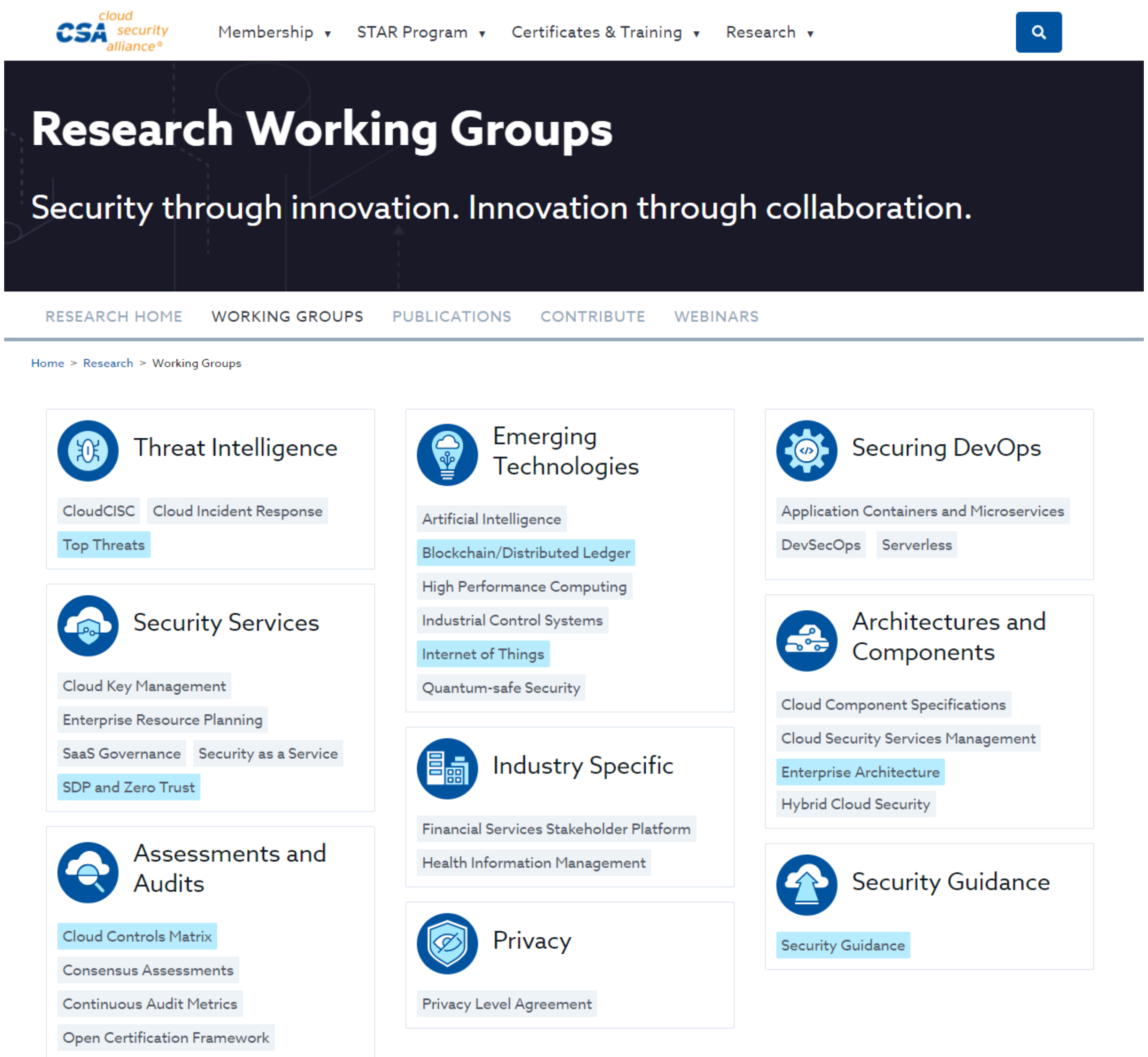

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Threat Intelligence
- CloudCISC
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- Top Threats

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- Cloud Key Management
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- SaaS Governance
- Security as a Service
- SDP and Zero Trust

Assessments and Audits
- Cloud Controls Matrix
- Consensus Assessments
- Continuous Audit Metrics
- Open Certification Framework

Emerging Technologies
- Artificial Intelligence
- Blockchain/Distributed Ledger
- High Performance Computing
- Industrial Control Systems
- Internet of Things
- Quantum-safe Security

Industry Specific
- Financial Services Stakeholder Platform
- Health Information Management

Privacy
- Privacy Level Agreement

Securing DevOps
- Application Containers and Microservices
- DevSecOps
- Serverless

Architectures and Components
- Cloud Component Specifications
- Cloud Security Services Management
- Enterprise Architecture
- Hybrid Cloud Security

Security Guidance
- Security Guidance

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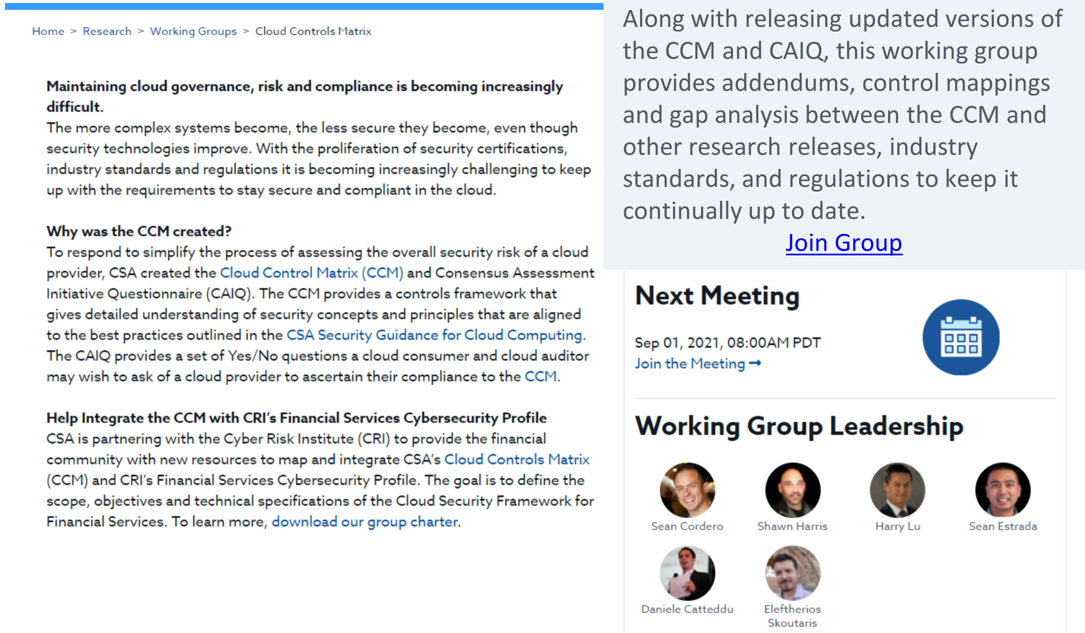
People who want to join a Cloud Security Alliance Research Working Group should reach out to [Cloud Controls Matrix Working Group | CSA (cloudsecurityalliance.org)]

I'm very honored to be a lead among the Mapping of NIST 800-53r5 and CCM 4.0 WG



Home > Research > Working Groups > Cloud Controls Matrix

Maintaining cloud governance, risk and compliance is becoming increasingly difficult.
The more complex systems become, the less secure they become, even though security technologies improve. With the proliferation of security certifications, industry standards and regulations it is becoming increasingly challenging to keep up with the requirements to stay secure and compliant in the cloud.

Why was the CCM created?
To respond to simplify the process of assessing the overall security risk of a cloud provider, CSA created the Cloud Control Matrix (CCM) and Consensus Assessment Initiative Questionnaire (CAIQ). The CCM provides a controls framework that gives detailed understanding of security concepts and principles that are aligned to the best practices outlined in the CSA Security Guidance for Cloud Computing. The CAIQ provides a set of Yes/No questions a cloud consumer and cloud auditor may wish to ask of a cloud provider to ascertain their compliance to the CCM.

Help Integrate the CCM with CRI's Financial Services Cybersecurity Profile
CSA is partnering with the Cyber Risk Institute (CRI) to provide the financial community with new resources to map and integrate CSA's Cloud Controls Matrix (CCM) and CRI's Financial Services Cybersecurity Profile. The goal is to define the scope, objectives and technical specifications of the Cloud Security Framework for Financial Services. To learn more, download our group charter.

Along with releasing updated versions of the CCM and CAIQ, this working group provides addendums, control mappings and gap analysis between the CCM and other research releases, industry standards, and regulations to keep it continually up to date.

Join Group

Next Meeting

Sep 01, 2021, 08:00AM PDT
Join the Meeting →

Working Group Leadership

Sean Cordero
Shawn Harris
Harry Lu
Sean Estrada
Daniele Catteddu
Eleftherios Skoutaris

"We'd like to use Cloud Control Matrix & NIST SP 800-53 r5 Mapping as our Master Control List"

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1 *RESOURCES / REASONS:* Companies using NIST *SP 800-53 r4, must update to Rev 5.1. Cloud Controls Matrix has recently updated to CCM 4.0 – **We need them both, now.***

2 Problem: NIST SP 800-53 as a **mediating** framework is incompletely or inaccurately mapped in products; It requires updates for CIS CSC 7.1->8.1, CCM 3.1->4.0, NIST SP 800-171 r2 & NIST SP 800-172 (Cybersecurity Enhancement), plus New Tailoring Criteria

3 Opportunity: Leveraging NIST SP 800-53 r5 to complete ©AICPA SOC 2, ©HITRUST, PCI DSS 3.21, CSTAR CCM, DFARS CMMC, ©ISO/IEC 27001 plus Privacy, Processing and Cloud requires detail understanding of these frameworks – i.e., experience completing engagements to do this work, but it can be done.

4 Methodology: Creating *useable* cyber framework mapping is an exercise that drives common language across all Policies and Programs and is necessary to meaningful resilience and compliance.

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Why Now: Cryptographic, Data Center, and Data Security Privacy

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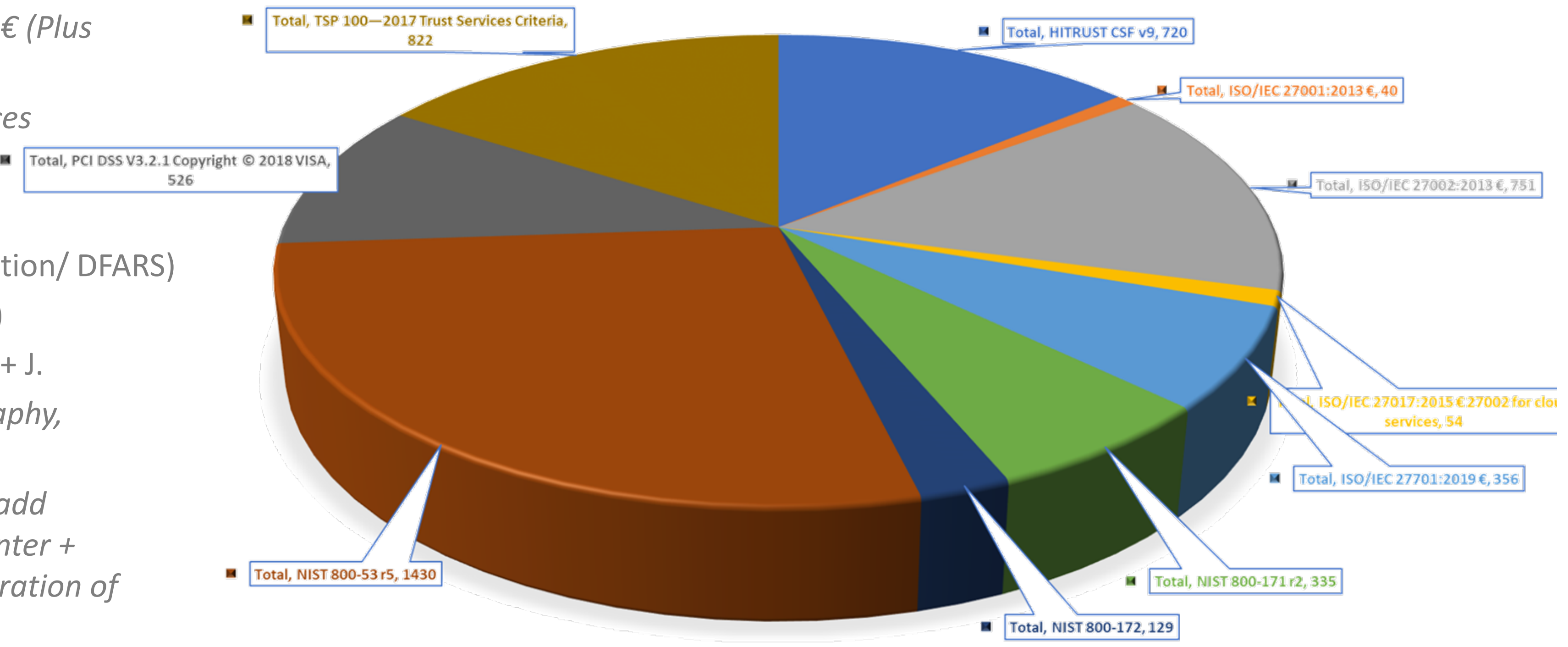
- California Consumer Privacy Act of 2018, California Privacy Rights and Enforcement Act of 2020 (CPRA) – *Privacy + Cryptography*
- For the ISO/IEC 27001 using ISO/IEC 27002:2013 € *(Plus Privacy, Processing, Cloud)*
  - *ISO/IEC 27017:2015 € 27002 for cloud services*
  - *ISO/IEC 27701:2019 € Privacy*
  - *ISO/IEC 27018:2019 € Processing*
- NIST 800-171 r2 (Controlled Unclassified Information/ DFARS)
- NIST 800-172 (Plus Cybersecurity Enhancements)
- NIST 800-53 r5 (NIST-800-53B) replaces Annex H + J.
- PCI DSS V3.2.1 Copyright © 2018 VISA (*Cryptography, Privacy*)
- TSP 100—2017 Trust Services Criteria – *Likely to add Cybersecurity, Healthcare, Supply Chain - Datacenter + Privacy + Cryptography greatly improve demonstration of these controls.*
- HITRUST CSF v9* – *Privacy + Cryptography + Data Center (to operate with HITRUST contact Hitrust.org)*

ARRAY OF TESTS ASSIGNED TO CLOUD SECURITY ALLIANCE CLOUD CONTROLS MATRIX V4.0



ISO/IEC 27701:2019 € Security techniques — Extension to ISO/IEC 27001 and ISO/IEC 27002 for privacy information management — Requirements and guidelines
ISO/IEC 27018:2019 € Information technology — Security techniques — Code of practice for protection of personally identifiable information (PII) in public clouds acting as PII processors
ISO/IEC 27017:2015 € 27002 for cloud services

*EnterpriseGRC Solutions verifies and purchases a copy of each framework each time we do a mapping exercise for our client. Clients are required to show their license to operate with CSA, CIS, HITRUST, GAMP, ISACA, AICPA etc. and the content of the mapping remains with that client for their operational application only. We do not provide framework content to the public. We do not work with unlicensed content. We give mapping to NIST, CIS, CSA, AICPA in good faith to support their working groups and advance our Professional Community.

cloud security alliance®

Cloud Control Matrix 17 Domains, 197 Controls, 262 Tests + Implementation Guidance

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Audit and Assurance - A&A	Audit and Assurance Policy and Procedures; Independent Assessments; Risk Based Planning Assessment; Requirements Compliance; Audit Management Process; Remediation
Application and Interface Security - AIS	Application and Interface Security Policy and Procedures; Application Security Baseline Requirements; Application Security Metrics; Secure Application Design and Development; Automated Application Security Testing; Automated Secure Application Deployment; Application Vulnerability Remediation
Business Continuity Management and Operational Resilience - BCR	Business Continuity Management Policy and Procedures; Risk Assessment and Impact Analysis; Business Continuity Strategy; Business Continuity Planning; Documentation; Business Continuity Exercises; Communication; Backup; Disaster Response Plan; Response Plan Exercise; Equipment Redundancy
Change Control and Configuration Management - CCC	Change Management Policy and Procedures; Quality Testing; Change Management Technology; Unauthorized Change Protection; Change Agreements; Change Management Baseline; Detection of Baseline Deviation; Exception Management; Change Restoration
Cryptography, Encryption and Key Management - CEK	Encryption and Key Management Policy and Procedures; CEK Roles and Responsibilities; Data Encryption; Encryption Algorithm; Encryption Change Management; Encryption Change Cost Benefit Analysis; Encryption Risk Management; CSC Key Management Capability; Encryption and Key Management Audit; Key Generation; Key Purpose; Key Rotation; Key Revocation; Key Destruction; Key Activation; Key Suspension; Key Deactivation; Key Archival; Key Compromise; Key Recovery; Key Inventory Management
Datacenter Security - DCS	Off-Site Equipment Disposal Policy and Procedures; Off-Site Transfer Authorization Policy and Procedures; Secure Area Policy and Procedures; Secure Media Transportation Policy and Procedures; Assets Classification; Assets Cataloguing and Tracking; Controlled Access Points; Equipment Identification; Secure Area Authorization; Surveillance System; Unauthorized Access Response Training; Cabling Security; Environmental Systems; Secure Utilities; Equipment Location
Data Security and Privacy Lifecycle Management - DSP	Security and Privacy Policy and Procedures; Secure Disposal; Data Inventory; Data Classification; Data Flow Documentation; Data Ownership and Stewardship; Data Protection by Design and Default; Data Privacy by Design and Default; Data Protection Impact Assessment; Sensitive Data Transfer; Personal Data Access, Reversal, Rectification and Deletion; Limitation of Purpose in Personal Data Processing; Personal Data Sub-processing; Disclosure of Data Sub-processors; Limitation of Production Data Use; Data Retention and Deletion; Sensitive Data Protection; Disclosure Notification; Data Location
Governance, Risk and Compliance - GRC	Governance Program Policy and Procedures; Risk Management Program; Organizational Policy Reviews; Policy Exception Process; Information Security Program; Governance Responsibility Model; Information System Regulatory Mapping; Special Interest Groups
Human Resources - HRS	Background Screening Policy and Procedures; Acceptable Use of Technology Policy and Procedures; Clean Desk Policy and Procedures; Remote and Home Working Policy and Procedures; Asset returns; Employment Termination; Employment Agreement Process; Employment Agreement Content; Personnel Roles and Responsibilities; Non-Disclosure Agreements; Security Awareness Training; Personal and Sensitive Data Awareness and Training; Compliance User Responsibility
Identity and Access Management - IAM	Identity and Access Management Policy and Procedures; Strong Password Policy and Procedures; Identity Inventory; Separation of Duties; Least Privilege; User Access Provisioning; User Access Changes and Revocation; User Access Review; Segregation of Privileged Access Roles; Management of Privileged Access Roles; CSCs Approval for Agreed Privileged Access Roles; Safeguard Logs Integrity; Uniquely Identifiable Users; Strong Authentication; Passwords Management; Authorization Mechanisms
Interoperability and Portability - IPY	Interoperability and Portability Policy and Procedures; Application Interface Availability; Secure Interoperability and Portability Management; Data Portability Contractual Obligations
Infrastructure and Virtualization Security - IVS	Infrastructure and Virtualization Security Policy and Procedures; Capacity and Resource Planning; Network Security; OS Hardening and Base Controls; Production and Non-Production Environments; Segmentation and Segregation; Migration to Cloud Environments; Network Architecture Documentation; Network Defense
Logging and Monitoring - LOG	Logging and Monitoring Policy and Procedures; Audit Logs Protection; Security Monitoring and Alerting; Audit Logs Access and Accountability; Audit Logs Monitoring and Response; Clock Synchronization; Logging Scope; Log Records; Log Protection; Encryption Monitoring and Reporting; Transaction/Activity Logging; Access Control Logs; Failures and Anomalies Reporting
Security Incident Management, E-Discovery, and Cloud Forensics - SEF	Security Incident Management Policy and Procedures; Service Management Policy and Procedures; Incident Response Plans; Incident Response Testing; Incident Response Metrics; Event Triage Processes; Security Breach Notification; Points of Contact Maintenance
Supply Chain Management, Transparency, and Accountability - STA	SSRM Policy and Procedures; SSRM Supply Chain; SSRM Guidance; SSRM Control Ownership; SSRM Documentation Review; SSRM Control Implementation; Supply Chain Inventory; Supply Chain Risk Management; Primary Service and Contractual Agreement; Supply Chain Agreement Review; Internal Compliance Testing; Supply Chain Service Agreement Compliance; Supply Chain Governance Review; Supply Chain Data Security Assessment
Threat and Vulnerability Management - TVM	Threat and Vulnerability Management Policy and Procedures; Malware Protection Policy and Procedures; Vulnerability Remediation Schedule; Detection Updates; External Library Vulnerabilities; Penetration Testing; Vulnerability Identification; Vulnerability Prioritization; Vulnerability Management Reporting; Vulnerability Management Metrics
Universal Endpoint Management - UEM	Endpoint Devices Policy and Procedures; Application and Service Approval; Compatibility; Endpoint Inventory; Endpoint Management; Automatic Lock Screen; Operating Systems; Storage Encryption; Anti-Malware Detection and Prevention; Software Firewall; Data Loss Prevention; Remote Locate; Remote Wipe; Third-Party Endpoint Security Posture

CCM 4.0 Framework Coverage (especially Data Center, Data Security & Privacy, and Cryptography) is necessary for current Privacy, Processing and Cloud Cybersecurity Framework Controls

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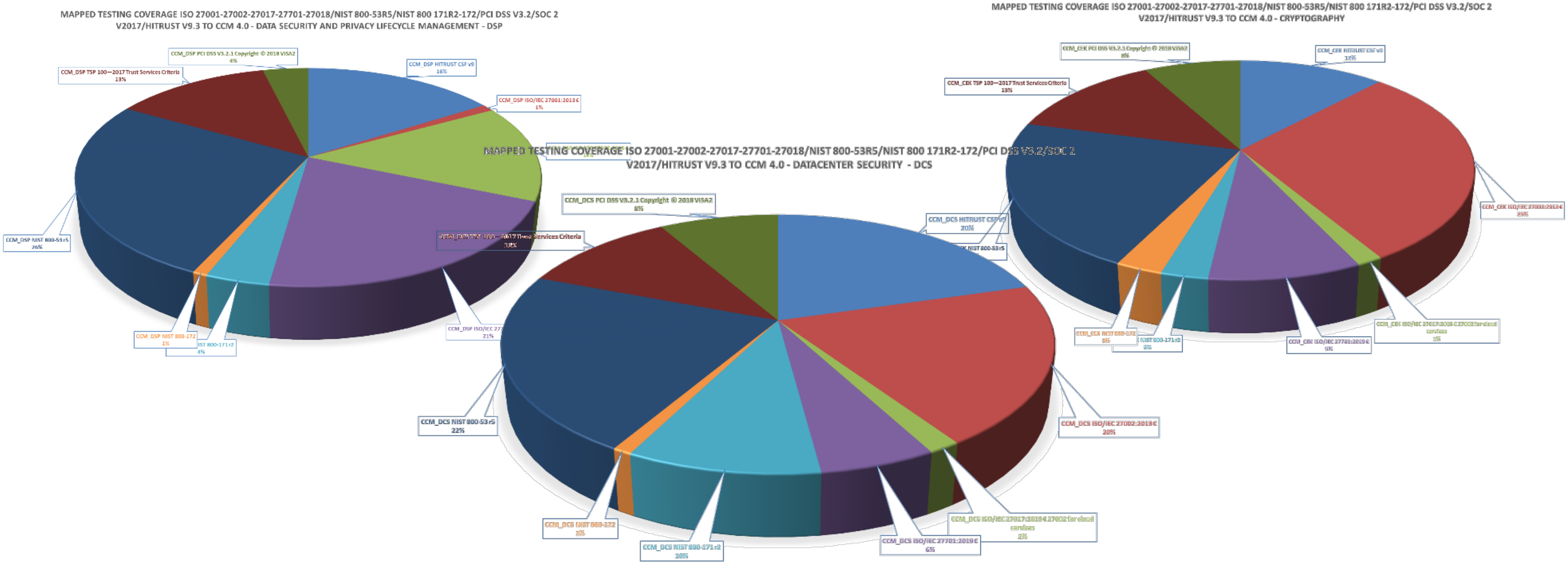

MAPPED TESTING COVERAGE ISO 27001-27002-27017-27701-27018/NIST 800-53R5/NIST 800 171R2-172/PCI DSS V3.2/SOC 2 V2017/HITRUST V9.3 TO CCM 4.0 - DATA SECURITY AND PRIVACY LIFECYCLE MANAGEMENT - DSP

MAPPED TESTING COVERAGE ISO 27001-27002-27017-27701-27018/NIST 800-53R5/NIST 800 171R2-172/PCI DSS V3.2/SOC 2 V2017/HITRUST V9.3 TO CCM 4.0 - DATACENTER SECURITY - DCS

MAPPED TESTING COVERAGE ISO 27001-27002-27017-27701-27018/NIST 800-53R5/NIST 800 171R2-172/PCI DSS V3.2/SOC 2 V2017/HITRUST V9.3 TO CCM 4.0 - CRYPTOGRAPHY

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LEGAL Requirement - FISMA PL 113-283
NIST SP 800-53 r5, NIST SP 800-171 r2 and NIST SP 800-172

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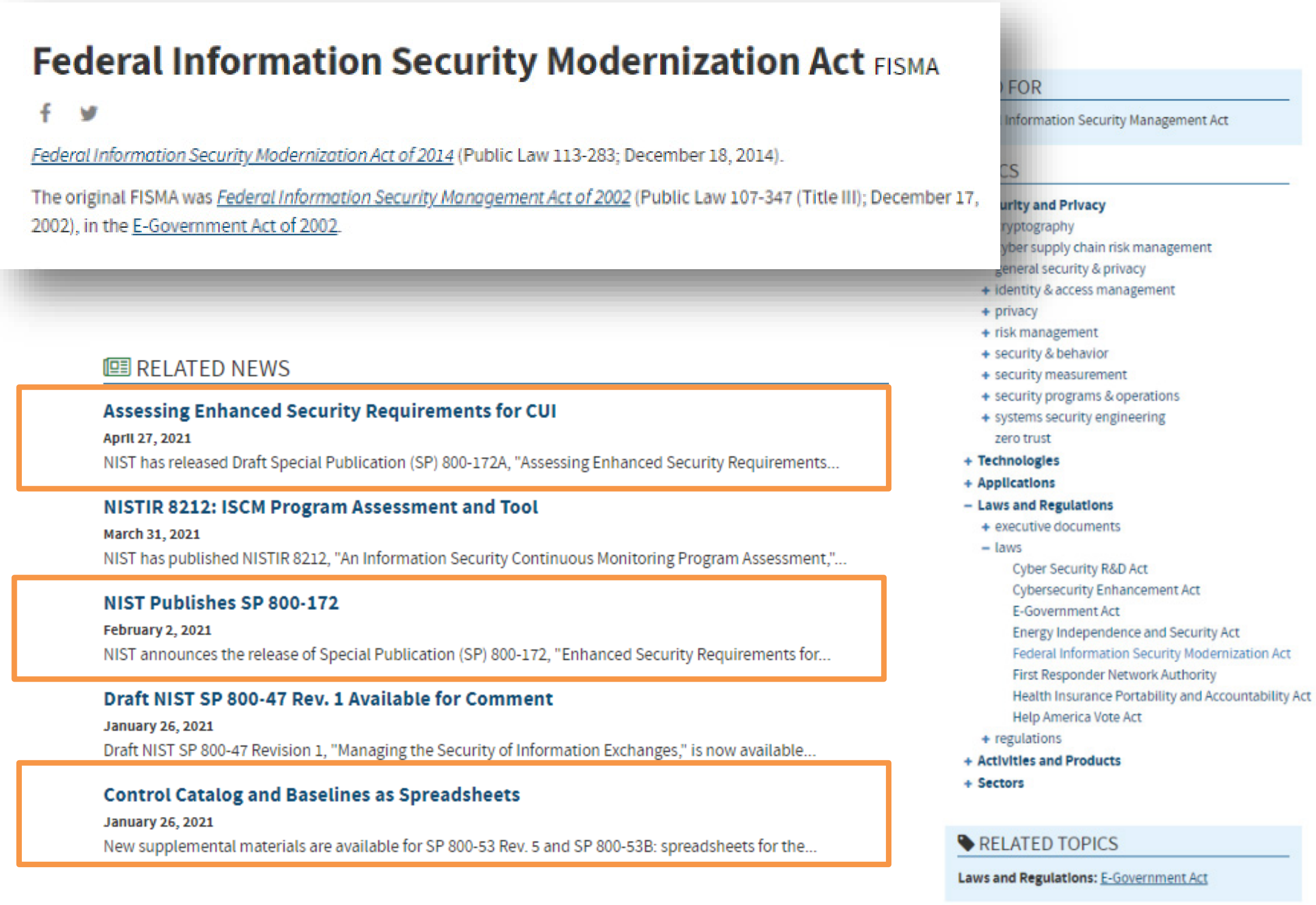

Federal Information Security Modernization Act FISMA

Federal Information Security Modernization Act of 2014 (Public Law 113-283; December 18, 2014).

The original FISMA was Federal Information Security Management Act of 2002 (Public Law 107-347 (Title III); December 17, 2002), in the E-Government Act of 2002.

RELATED NEWS

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April 27, 2021
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NIST has published NISTIR 8212, "An Information Security Continuous Monitoring Program Assessment,"...

NIST Publishes SP 800-172
February 2, 2021
NIST announces the release of Special Publication (SP) 800-172, "Enhanced Security Requirements for...

Draft NIST SP 800-47 Rev. 1 Available for Comment
January 26, 2021
Draft NIST SP 800-47 Revision 1, "Managing the Security of Information Exchanges," is now available...

Control Catalog and Baselines as Spreadsheets
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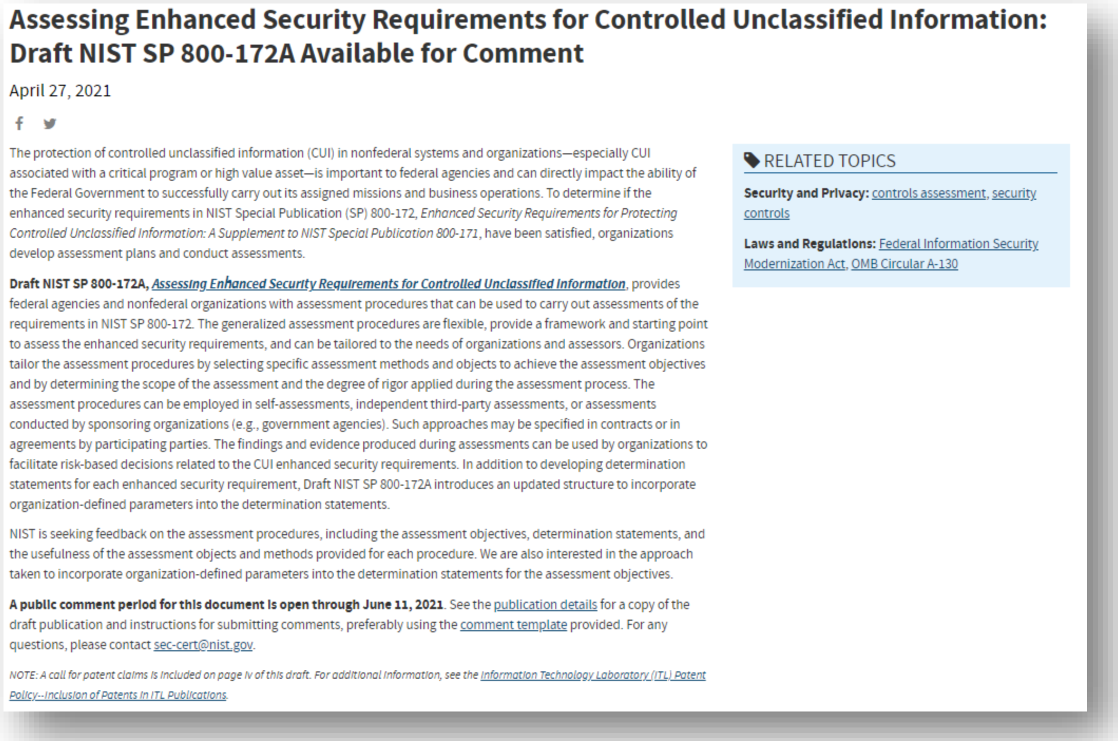


Assessing Enhanced Security Requirements for Controlled Unclassified Information: Draft NIST SP 800-172A Available for Comment

April 27, 2021

The protection of controlled unclassified information (CUI) in nonfederal systems and organizations—especially CUI associated with a critical program or high value asset—is important to federal agencies and can directly impact the ability of the Federal Government to successfully carry out its assigned missions and business operations. To determine if the enhanced security requirements in NIST Special Publication (SP) 800-172, *Enhanced Security Requirements for Protecting Controlled Unclassified Information: A Supplement to NIST Special Publication 800-171*, have been satisfied, organizations develop assessment plans and conduct assessments.

Draft NIST SP 800-172A, *Assessing Enhanced Security Requirements for Controlled Unclassified Information*, provides federal agencies and nonfederal organizations with assessment procedures that can be used to carry out assessments of the requirements in NIST SP 800-172. The generalized assessment procedures are flexible, provide a framework and starting point to assess the enhanced security requirements, and can be tailored to the needs of organizations and assessors. Organizations tailor the assessment procedures by selecting specific assessment methods and objects to achieve the assessment objectives and by determining the scope of the assessment and the degree of rigor applied during the assessment process. The assessment procedures can be employed in self-assessments, independent third-party assessments, or assessments conducted by sponsoring organizations (e.g., government agencies). Such approaches may be specified in contracts or in agreements by participating parties. The findings and evidence produced during assessments can be used by organizations to facilitate risk-based decisions related to the CUI enhanced security requirements. In addition to developing determination statements for each enhanced security requirement, Draft NIST SP 800-172A introduces an updated structure to incorporate organization-defined parameters into the determination statements.

NIST is seeking feedback on the assessment procedures, including the assessment objectives, determination statements, and the usefulness of the assessment objects and methods provided for each procedure. We are also interested in the approach taken to incorporate organization-defined parameters into the determination statements for the assessment objectives.

A public comment period for this document is open through June 11, 2021. See the publication details for a copy of the draft publication and instructions for submitting comments, preferably using the comment template provided. For any questions, please contact sec-cert@nist.gov.

NOTE: A call for patent claims is included on page iv of this draft. For additional information, see the Information Technology Laboratory (ITL) Patent Policy--Inclusion of Patents in ITL Publications.

RELATED TOPICS

Security and Privacy: controls assessment, security controls

Laws and Regulations: Federal Information Security Modernization Act, OMB Circular A-130

https://csrc.nist.gov/Topics/Laws-and-Regulations/laws/FISMA

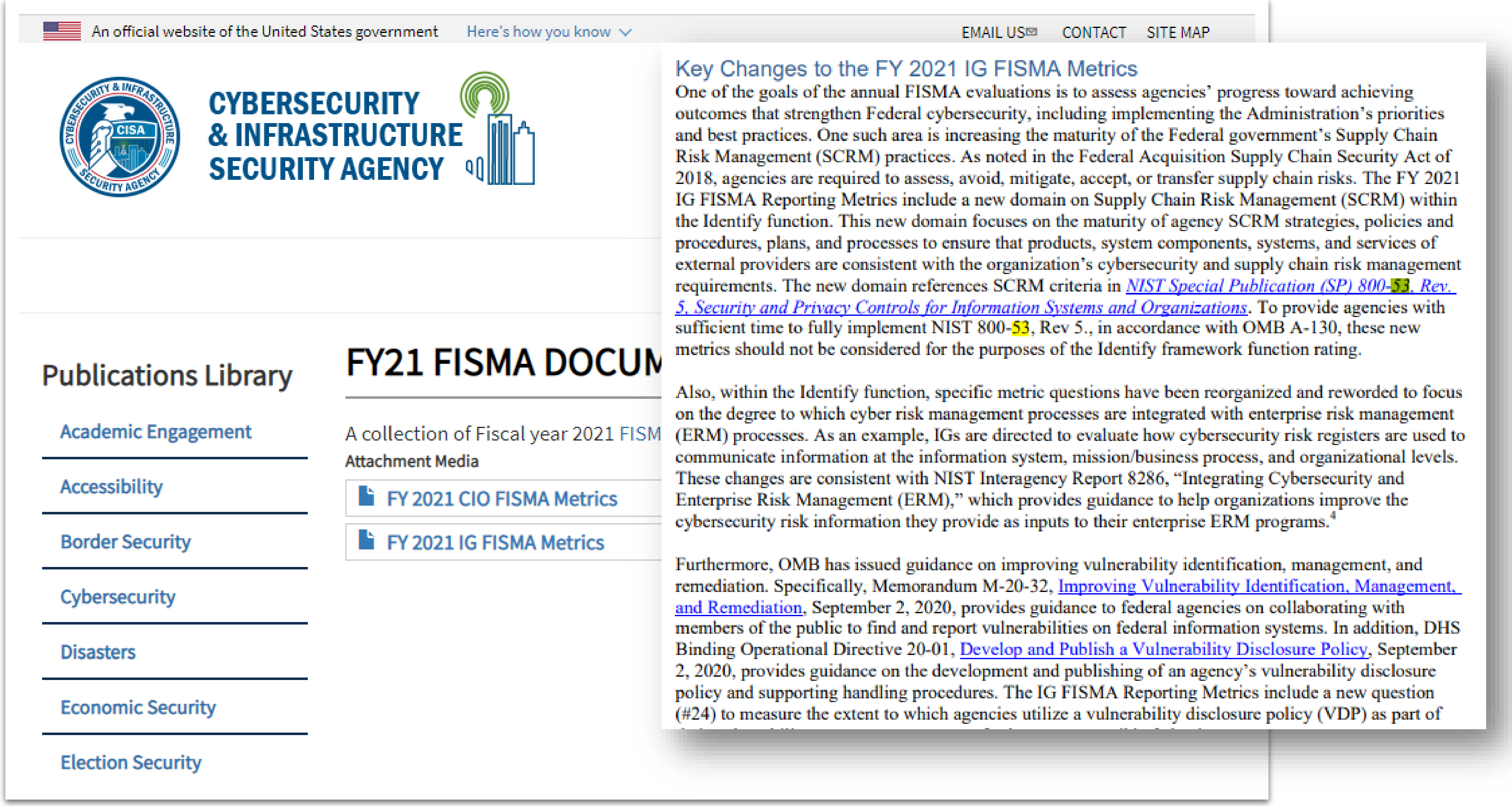
Protecting Controlled Unclassified Information in Nonfederal Systems and Organizations

FY 2021 IG METRICS DEPEND ON NIST SP 800-53 r5 - https://www.cisa.gov/

FY21 FISMA Documents | CISA

FY 2021 Inspector General FISMA Reporting Measures v1.1 (cisa.gov)

FY 2021 Inspector General Federal Information Security Modernization Act of 2014 (FISMA) Reporting Metrics Version 1.1 **May 12, 2021**



FY21 FISMA DOCUM

A collection of Fiscal year 2021 FISM

Attachment Media

FY 2021 CIO FISMA Metrics

FY 2021 IG FISMA Metrics

Key Changes to the FY 2021 IG FISMA Metrics

One of the goals of the annual FISMA evaluations is to assess agencies' progress toward achieving outcomes that strengthen Federal cybersecurity, including implementing the Administration's priorities and best practices. One such area is increasing the maturity of the Federal government's Supply Chain Risk Management (SCRM) practices. As noted in the Federal Acquisition Supply Chain Security Act of 2018, agencies are required to assess, avoid, mitigate, accept, or transfer supply chain risks. The FY 2021 IG FISMA Reporting Metrics include a new domain on Supply Chain Risk Management (SCRM) within the Identify function. This new domain focuses on the maturity of agency SCRM strategies, policies and procedures, plans, and processes to ensure that products, system components, systems, and services of external providers are consistent with the organization's cybersecurity and supply chain risk management requirements. The new domain references SCRM criteria in *NIST Special Publication (SP) 800-53, Rev. 5, Security and Privacy Controls for Information Systems and Organizations*. To provide agencies with sufficient time to fully implement NIST 800-53, Rev 5., in accordance with OMB A-130, these new metrics should not be considered for the purposes of the Identify framework function rating.

Also, within the Identify function, specific metric questions have been reorganized and reworded to focus on the degree to which cyber risk management processes are integrated with enterprise risk management (ERM) processes. As an example, IGs are directed to evaluate how cybersecurity risk registers are used to communicate information at the information system, mission/business process, and organizational levels. These changes are consistent with NIST Interagency Report 8286, "Integrating Cybersecurity and Enterprise Risk Management (ERM)," which provides guidance to help organizations improve the cybersecurity risk information they provide as inputs to their enterprise ERM programs.[4]

Furthermore, OMB has issued guidance on improving vulnerability identification, management, and remediation. Specifically, Memorandum M-20-32, Improving Vulnerability Identification, Management, and Remediation, September 2, 2020, provides guidance to federal agencies on collaborating with members of the public to find and report vulnerabilities on federal information systems. In addition, DHS Binding Operational Directive 20-01, Develop and Publish a Vulnerability Disclosure Policy, September 2, 2020, provides guidance on the development and publishing of an agency's vulnerability disclosure policy and supporting handling procedures. The IG FISMA Reporting Metrics include a new question (#24) to measure the extent to which agencies utilize a vulnerability disclosure policy (VDP) as part of

SP 800-53 R5 New Families, Attributes, and Outcomes

- Two new control families: (PT) Personally Identifiable Information Processing and Transparency, (SR) Supply Chain Risk Management
- Consolidates Program Management to main catalog (PM)
- Attributes: Control or control enhancement is implemented by "S" System, or "O" organization, or both "O/S"
- Integrated Privacy controls across the entire catalog notated by "P"
- ALL controls shift from descriptive to outcome - based criteria:
  - Example "The information system *enforces approved*" v. "***Enforce approved authorization***"

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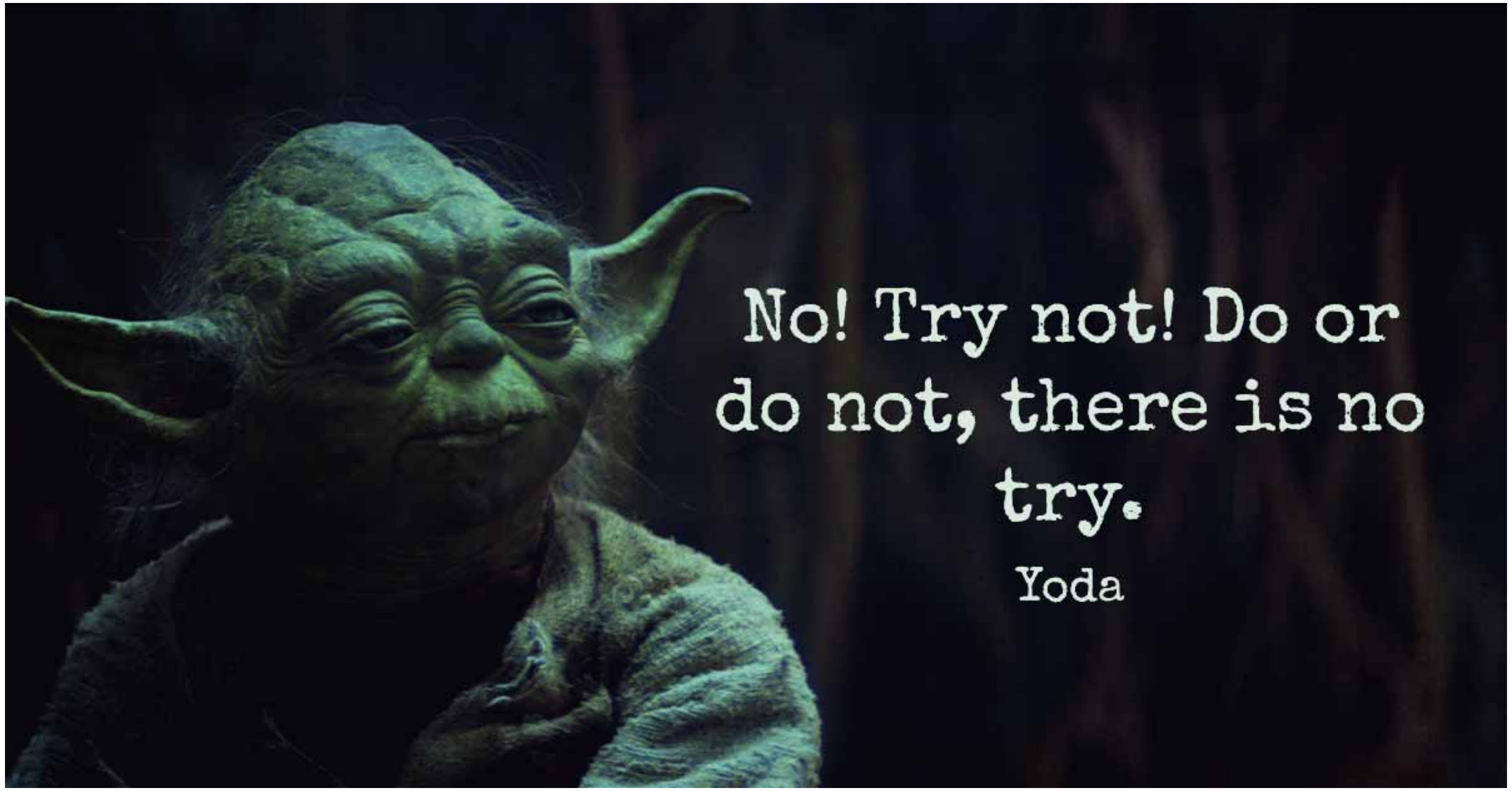
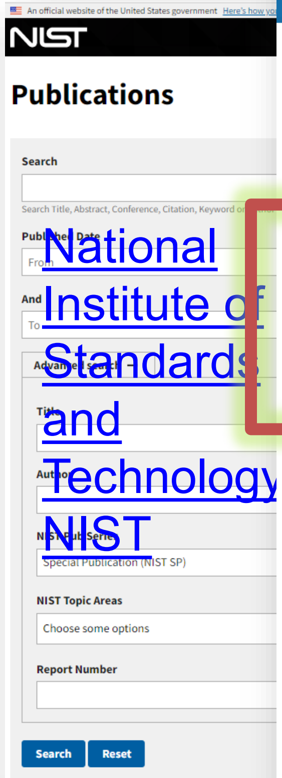
Transition to NIST SP 800-53 r5.1, you must.

-Yoda



NIST.GOV NIST SP 800-53 Rev. 5 final updates DECEMBER 2020



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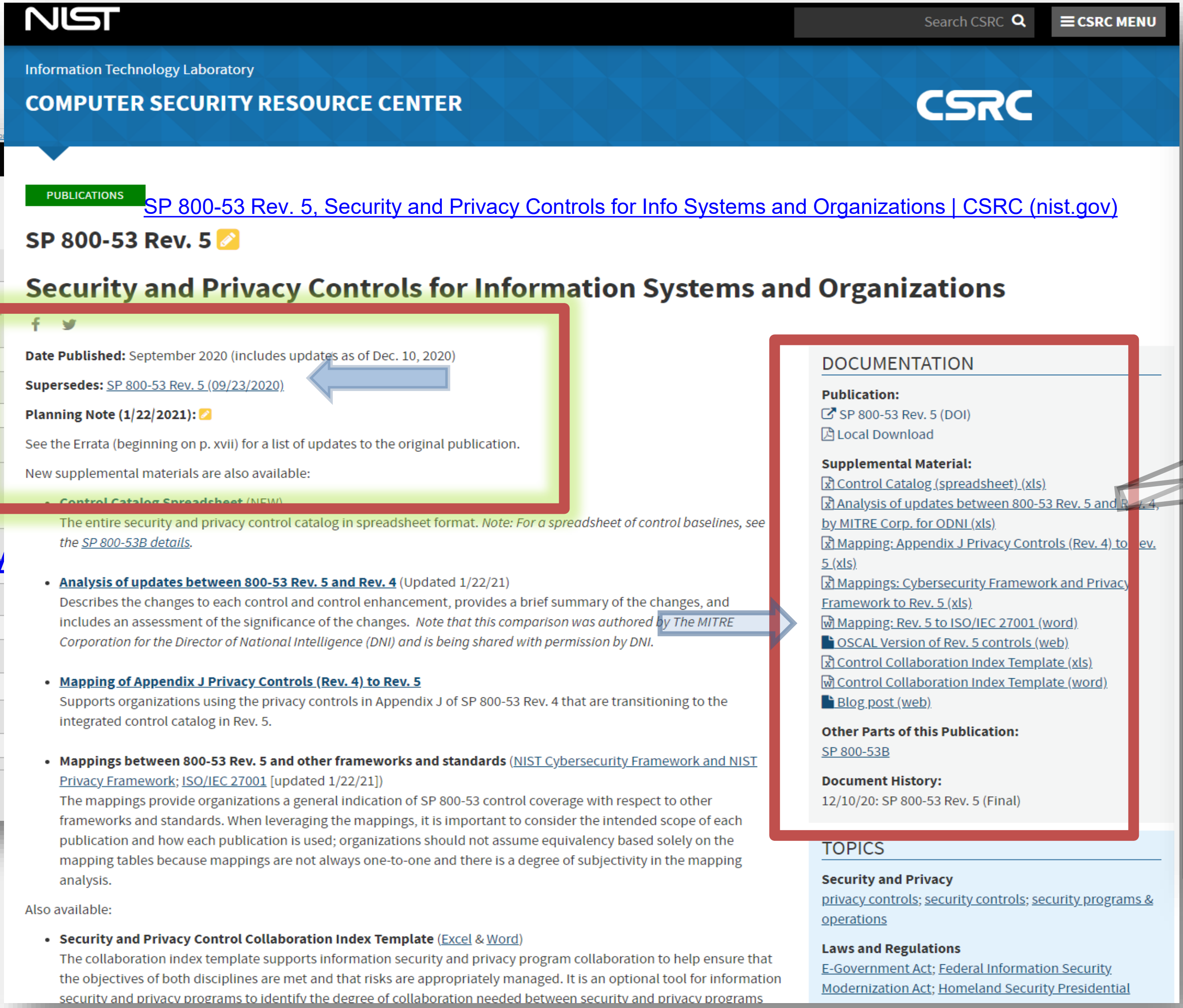

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PUBLICATIONS

SP 800-53 Rev. 5, Security and Privacy Controls for Info Systems and Organizations | CSRC (nist.gov)

SP 800-53 Rev. 5

Security and Privacy Controls for Information Systems and Organizations

Date Published: September 2020 (includes updates as of Dec. 10, 2020)

Supersedes: SP 800-53 Rev. 5 (09/23/2020)

Planning Note (1/22/2021):

See the Errata (beginning on p. xvii) for a list of updates to the original publication.

New supplemental materials are also available:

- **Control Catalog Spreadsheet** (NEW)
  The entire security and privacy control catalog in spreadsheet format. *Note: For a spreadsheet of control baselines, see the SP 800-53B details.*
- **Analysis of updates between 800-53 Rev. 5 and Rev. 4** (Updated 1/22/21)
  Describes the changes to each control and control enhancement, provides a brief summary of the changes, and includes an assessment of the significance of the changes. *Note that this comparison was authored by The MITRE Corporation for the Director of National Intelligence (DNI) and is being shared with permission by DNI.*
- **Mapping of Appendix J Privacy Controls (Rev. 4) to Rev. 5**
  Supports organizations using the privacy controls in Appendix J of SP 800-53 Rev. 4 that are transitioning to the integrated control catalog in Rev. 5.
- **Mappings between 800-53 Rev. 5 and other frameworks and standards** (NIST Cybersecurity Framework and NIST Privacy Framework; ISO/IEC 27001 [updated 1/22/21])
  The mappings provide organizations a general indication of SP 800-53 control coverage with respect to other frameworks and standards. When leveraging the mappings, it is important to consider the intended scope of each publication and how each publication is used; organizations should not assume equivalency based solely on the mapping tables because mappings are not always one-to-one and there is a degree of subjectivity in the mapping analysis.

Also available:

- **Security and Privacy Control Collaboration Index Template** (Excel & Word)
  The collaboration index template supports information security and privacy program collaboration to help ensure that the objectives of both disciplines are met and that risks are appropriately managed. It is an optional tool for information security and privacy programs to identify the degree of collaboration needed between security and privacy programs

DOCUMENTATION

Publication:
SP 800-53 Rev. 5 (DOI)
Local Download

Supplemental Material:
Control Catalog (spreadsheet) (xls)
Analysis of updates between 800-53 Rev. 5 and Rev. 4, by MITRE Corp. for ODNI (xls)
Mapping: Appendix J Privacy Controls (Rev. 4) to Rev. 5 (xls)
Mappings: Cybersecurity Framework and Privacy Framework to Rev. 5 (xls)
Mapping: Rev. 5 to ISO/IEC 27001 (word)
OSCAL Version of Rev. 5 controls (web)
Control Collaboration Index Template (xls)
Control Collaboration Index Template (word)
Blog post (web)

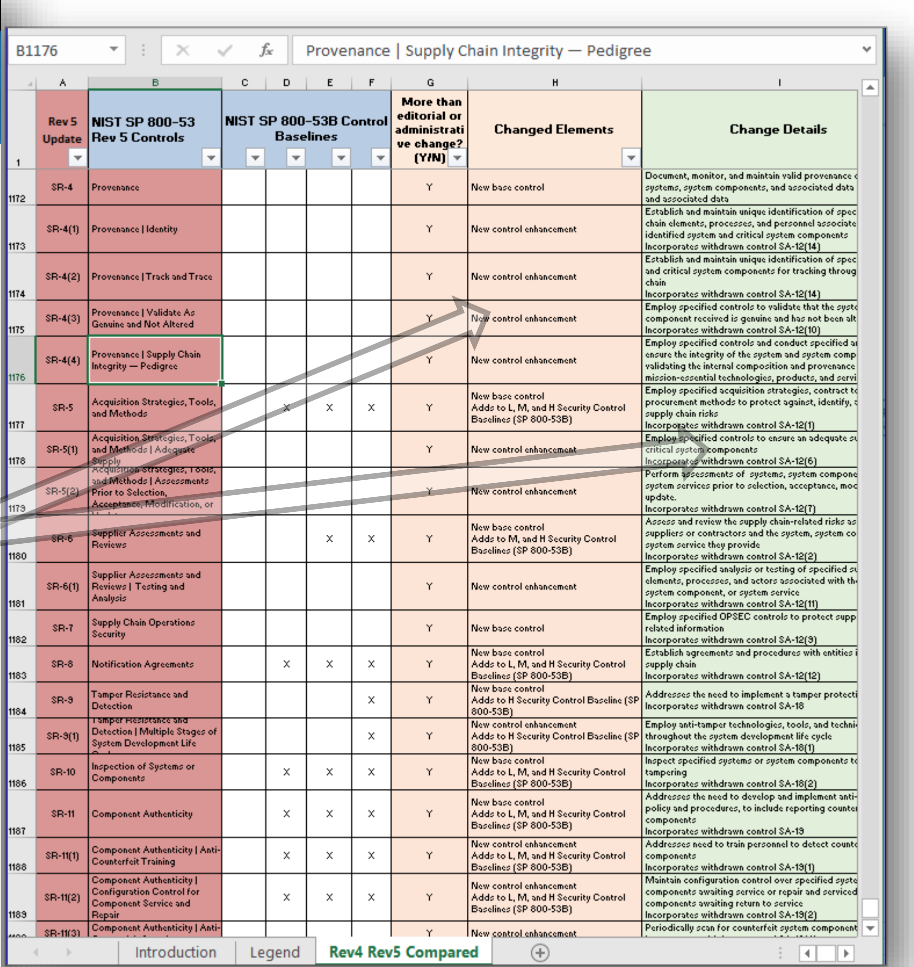
Other Parts of this Publication:
SP 800-53B

Document History:
12/10/20: SP 800-53 Rev. 5 (Final)

TOPICS

Security and Privacy
privacy controls; security controls; security programs & operations

Laws and Regulations
E-Government Act; Federal Information Security Modernization Act; Homeland Security Presidential



B1176 | Provenance | Supply Chain Integrity — Pedigree

	A	B	C	D	E	F	G	H	I
1	Rev 5 Update	NIST SP 800-53 Rev 5 Controls	NIST SP 800-53B Control Baselines				More than editorial or administrative change? (Y/N)	Changed Elements	Change Details
1172	SR-4	Provenance					Y	New base control	Document, monitor, and maintain valid provenance c systems, system components, and associated data and associated data
1173	SR-4(1)	Provenance | Identity					Y	New control enhancement	Establish and maintain unique identification of spec chain elements, processes, and personnel associate identified system and critical system components Incorporates withdrawn control SA-12(14)
1174	SR-4(2)	Provenance | Track and Trace					Y	New control enhancement	Establish and maintain unique identification of spec and critical system components for tracking throug chain Incorporates withdrawn control SA-12(14)
1175	SR-4(3)	Provenance | Validate As Genuine and Not Altered					Y	New control enhancement	Employ specified controls to validate that the syste component received is genuine and has not been alt Incorporates withdrawn control SA-12(10)
1176	SR-4(4)	Provenance | Supply Chain Integrity — Pedigree					Y	New control enhancement	Employ specified controls and conduct specified a ensure the integrity of the system and system comp validating the internal composition and provenance mission-essential technologies, products, and servi
1177	SR-5	Acquisition Strategies, Tools, and Methods		X	X	X	Y	New base control Adds to L, M, and H Security Control Baselines (SP 800-53B)	Employ specified acquisition strategies, contract to procurement methods to protect against, identify, supply chain risks Incorporates withdrawn control SA-12(1)
1178	SR-5(1)	Acquisition Strategies, Tools, and Methods | Adequate Supply					Y	New control enhancement	Employ specified controls to ensure an adequate su critical system components Incorporates withdrawn control SA-12(6)
1179	SR-5(2)	Acquisition Strategies, Tools, and Methods | Assessments Prior to Selection, Acceptance, Modification, or					Y	New control enhancement	Perform assessments of systems, system compone system services prior to selection, acceptance, moc update. Incorporates withdrawn control SA-12(7)
1180	SR-6	Supplier Assessments and Reviews			X	X	Y	New base control Adds to M, and H Security Control Baselines (SP 800-53B)	Assess and review the supply chain-related risks as suppliers or contractors and the system, system co system service they provide Incorporates withdrawn control SA-12(2)
1181	SR-6(1)	Supplier Assessments and Reviews | Testing and Analysis					Y	New control enhancement	Employ specified analysis or testing of specified su elements, processes, and actors associated with th system component, or system service Incorporates withdrawn control SA-12(11)
1182	SR-7	Supply Chain Operations Security					Y	New base control	Employ specified OPSEC controls to protect supp related information Incorporates withdrawn control SA-12(9)
1183	SR-8	Notification Agreements		X	X	X	Y	New base control Adds to L, M, and H Security Control Baselines (SP 800-53B)	Establish agreements and procedures with entities i supply chain Incorporates withdrawn control SA-12(12)
1184	SR-9	Tamper Resistance and Detection				X	Y	New base control Adds to H Security Control Baseline (SP 800-53B)	Addresses the need to implement a tamper protecti Incorporates withdrawn control SA-18
1185	SR-9(1)	Tamper Resistance and Detection | Multiple Stages of System Development Life				X	Y	New control enhancement Adds to H Security Control Baseline (SP 800-53B)	Employ anti-tamper technologies, tools, and techni throughout the system development life cycle Incorporates withdrawn control SA-18(1)
1186	SR-10	Inspection of Systems or Components		X	X	X	Y	New base control Adds to L, M, and H Security Control Baselines (SP 800-53B)	Inspect specified systems or system components to tampering Incorporates withdrawn control SA-18(2)
1187	SR-11	Component Authenticity		X	X	X	Y	New base control Adds to L, M, and H Security Control Baselines (SP 800-53B)	Addresses the need to develop and implement anti- policy and procedures, to include reporting counter components Incorporates withdrawn control SA-19
1188	SR-11(1)	Component Authenticity | Anti-Counterfeit Training		X	X	X	Y	New control enhancement Adds to L, M, and H Security Control Baselines (SP 800-53B)	Addresses need to train personnel to detect counte components Incorporates withdrawn control SA-19(1)
1189	SR-11(2)	Component Authenticity | Configuration Control for Component Service and Repair		X	X	X	Y	New control enhancement Adds to L, M, and H Security Control Baselines (SP 800-53B)	Maintain configuration control over specified syste components awaiting service or repair and serviced components awaiting return to service Incorporates withdrawn control SA-19(2)
	SR-11(3)	Component Authenticity | Anti-					Y	New control enhancement	Periodically scan for counterfeit system component

Introduction | Legend | Rev4 Rev5 Compared

20 Families (Two New Domains)

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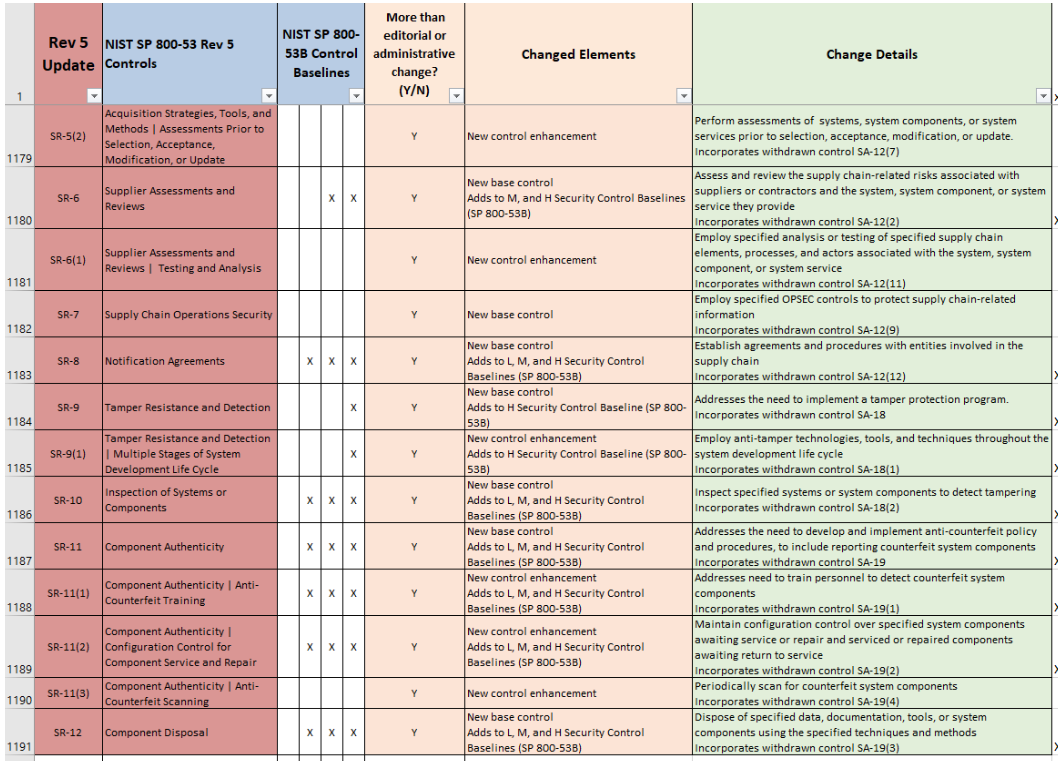
AC - ACCESS CONTROL	AT - AWARENESS AND TRAINING	AU - AUDIT AND ACCOUNTABILITY	CA - ASSESSMENT, AUTHORIZATION, AND MONITORING
CM - CONFIGURATION MANAGEME	CP - CONTINGENCY PLANNING	IA - IDENTIFICATION AND AUTHENTICATION	IR - INCIDENT RESPONSE
MA - MAINTENANCE	MP - MEDIA PROTECTION	PE - PHYSICAL AND ENVIRONMENTAL PROTECTION	PL - PLANNING
PM - PROGRAM MANAGEMENT	PS - PERSONNEL SECURITY	PT - PERSONALLY IDENTIFIABLE INFORMATION PROCESSING AND TRANSPARENCY	RA - RISK ASSESSMENT
SA - SYSTEM AND SERVICES ACQUISITION	SC - SYSTEM AND COMMUNICATIONS PROTECTION	SI - System and Information Integrity	SR - SUPPLY CHAIN RISK MANAGEMENT

- The total number of tracked items since the start of NIST SP 800-53 is 1,189 items. That includes everything withdrawn and everything active. *Green boxes are the Control Families used for SP 800-171r2 and NIST SP 800-172.

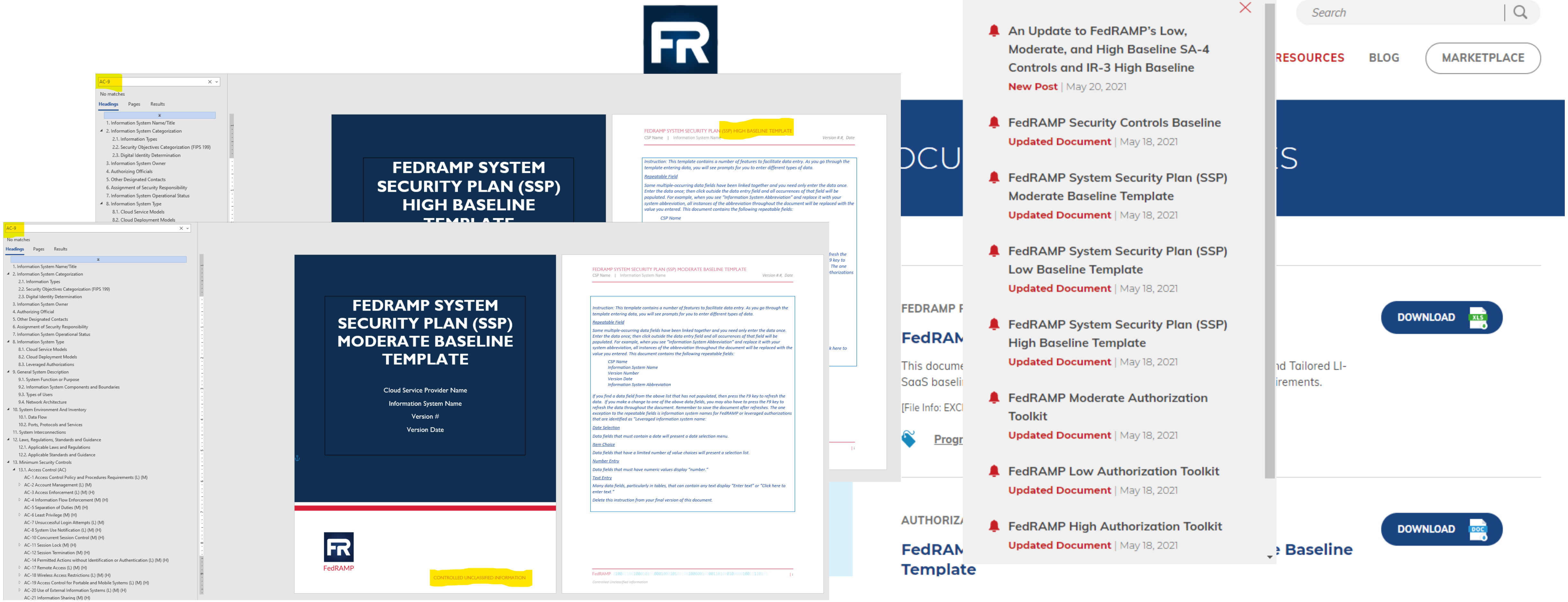


1	Rev 5 Update	NIST SP 800-53 Rev 5 Controls	NIST SP 800-53B Control Baselines				More than editorial or administrative change? (Y/N)	Changed Elements	Change Details
1179	SR-5(2)	Acquisition Strategies, Tools, and Methods | Assessments Prior to Selection, Acceptance, Modification, or Update					Y	New control enhancement	Perform assessments of systems, system components, or system services prior to selection, acceptance, modification, or update. Incorporates withdrawn control SA-12(7)
1180	SR-6	Supplier Assessments and Reviews			X	X	Y	New base control Adds to M, and H Security Control Baselines (SP 800-53B)	Assess and review the supply chain-related risks associated with suppliers or contractors and the system, system component, or system service they provide Incorporates withdrawn control SA-12(2)
1181	SR-6(1)	Supplier Assessments and Reviews | Testing and Analysis					Y	New control enhancement	Employ specified analysis or testing of specified supply chain elements, processes, and actors associated with the system, system component, or system service Incorporates withdrawn control SA-12(11)
1182	SR-7	Supply Chain Operations Security					Y	New base control	Employ specified OPSEC controls to protect supply chain-related information Incorporates withdrawn control SA-12(9)
1183	SR-8	Notification Agreements		X	X	X	Y	New base control Adds to L, M, and H Security Control Baselines (SP 800-53B)	Establish agreements and procedures with entities involved in the supply chain Incorporates withdrawn control SA-12(12)
1184	SR-9	Tamper Resistance and Detection				X	Y	New base control Adds to H Security Control Baseline (SP 800-53B)	Addresses the need to implement a tamper protection program. Incorporates withdrawn control SA-18
1185	SR-9(1)	Tamper Resistance and Detection | Multiple Stages of System Development Life Cycle				X	Y	New control enhancement Adds to H Security Control Baseline (SP 800-53B)	Employ anti-tamper technologies, tools, and techniques throughout the system development life cycle Incorporates withdrawn control SA-18(1)
1186	SR-10	Inspection of Systems or Components		X	X	X	Y	New base control Adds to L, M, and H Security Control Baselines (SP 800-53B)	Inspect specified systems or system components to detect tampering Incorporates withdrawn control SA-18(2)
1187	SR-11	Component Authenticity		X	X	X	Y	New base control Adds to L, M, and H Security Control Baselines (SP 800-53B)	Addresses the need to develop and implement anti-counterfeit policy and procedures, to include reporting counterfeit system components Incorporates withdrawn control SA-19
1188	SR-11(1)	Component Authenticity | Anti-Counterfeit Training		X	X	X	Y	New control enhancement Adds to L, M, and H Security Control Baselines (SP 800-53B)	Addresses need to train personnel to detect counterfeit system components Incorporates withdrawn control SA-19(1)
1189	SR-11(2)	Component Authenticity | Configuration Control for Component Service and Repair		X	X	X	Y	New control enhancement Adds to L, M, and H Security Control Baselines (SP 800-53B)	Maintain configuration control over specified system components awaiting service or repair and serviced or repaired components awaiting return to service Incorporates withdrawn control SA-19(2)
1190	SR-11(3)	Component Authenticity | Anti-Counterfeit Scanning					Y	New control enhancement	Periodically scan for counterfeit system components Incorporates withdrawn control SA-19(4)
1191	SR-12	Component Disposal		X	X	X	Y	New base control Adds to L, M, and H Security Control Baselines (SP 800-53B)	Dispose of specified data, documentation, tools, or system components using the specified techniques and methods Incorporates withdrawn control SA-19(3)

- Big Domains/Families 20
- Medium Controls/Universe 298
- Small Tests Enhancements Detail 710

Some of the New Controls Affect the SSP Baselines
Some Controls Do Not appear in any Baseline

[Search For Any FedRAMP Policy or Guidance Resource | FedRAMP.gov]



AC-9

No matches

Headings Pages Results

1. Information System Name/Title
2. Information System Categorization
   - 2.1. Information Types
   - 2.2. Security Objectives Categorization (FIPS 199)
   - 2.3. Digital Identity Determination
3. Information System Owner
4. Authorizing Official
5. Other Designated Contacts
6. Assignment of Security Responsibility
7. Information System Operational Status
8. Information System Type
   - 8.1. Cloud Service Models
   - 8.2. Cloud Deployment Models
   - 8.3. Leveraged Authorizations
9. General System Description
   - 9.1. System Function or Purpose
   - 9.2. Information System Components and Boundaries
   - 9.3. Types of Users
   - 9.4. Network Architecture
10. System Environment And Inventory
    - 10.1. Data Flow
    - 10.2. Ports, Protocols and Services
11. System Interconnections
12. Laws, Regulations, Standards and Guidance
    - 12.1. Applicable Laws and Regulations
    - 12.2. Applicable Standards and Guidance
13. Minimum Security Controls
    - 13.1. Access Control (AC)
      - AC-1 Access Control Policy and Procedures Requirements (L) (M)
      - AC-2 Account Management (L) (M)
      - AC-3 Access Enforcement (L) (M) (H)
      - AC-4 Information Flow Enforcement (M) (H)
      - AC-5 Separation of Duties (M) (H)
      - AC-6 Least Privilege (M) (H)
      - AC-7 Unsuccessful Login Attempts (L) (M)
      - AC-8 System Use Notification (L) (M) (H)
      - AC-10 Concurrent Session Control (M) (H)
      - AC-11 Session Lock (M) (H)
      - AC-12 Session Termination (M) (H)
      - AC-14 Permitted Actions without Identification or Authentication (L) (M) (H)
      - AC-17 Remote Access (L) (M) (H)
      - AC-18 Wireless Access Restrictions (L) (M) (H)
      - AC-19 Access Control for Portable and Mobile Systems (L) (M) (H)
      - AC-20 Use of External Information Systems (L) (M) (H)
      - AC-21 Information Sharing (M) (H)

FEDRAMP SYSTEM SECURITY PLAN (SSP) HIGH BASELINE TEMPLATE

FEDRAMP SYSTEM SECURITY PLAN (SSP) MODERATE BASELINE TEMPLATE

Cloud Service Provider Name

Information System Name

Version #

Version Date

FedRAMP

CONTROLLED UNCLASSIFIED INFORMATION

FEDRAMP SYSTEM SECURITY PLAN (SSP) MODERATE BASELINE TEMPLATE
CSP Name | Information System Name Version #.#, Date

Instruction: This template contains a number of features to facilitate data entry. As you go through the template entering data, you will see prompts for you to enter different types of data.

Repeatable Field

Some multiple-occurring data fields have been linked together and you need only enter the data once. Enter the data once; then click outside the data entry field and all occurrences of that field will be populated. For example, when you see "Information System Abbreviation" and replace it with your system abbreviation, all instances of the abbreviation throughout the document will be replaced with the value you entered. This document contains the following repeatable fields:

CSP Name
Information System Name
Version Number
Version Date
Information System Abbreviation

If you find a data field from the above list that has not populated, then press the F9 key to refresh the data. If you make a change to one of the above data fields, you may also have to press the F9 key to refresh the data throughout the document. Remember to save the document after refreshes. The one exception to the repeatable fields is information system names for FedRAMP or leveraged authorizations that are identified as "Leveraged information system name:

Date Selection

Data fields that must contain a date will present a date selection menu.

Item Choice

Data fields that have a limited number of value choices will present a selection list.

Number Entry

Data fields that must have numeric values display "number."

Text Entry

Many data fields, particularly in tables, that can contain any text display "Enter text" or "Click here to enter text."

Delete this instruction from your final version of this document.

FedRAMP 0100011001000101010001000101001001000001010011010101000001001111010 | i

Controlled Unclassified Information

- An Update to FedRAMP's Low, Moderate, and High Baseline SA-4 Controls and IR-3 High Baseline
  New Post | May 20, 2021
- FedRAMP Security Controls Baseline
  Updated Document | May 18, 2021
- FedRAMP System Security Plan (SSP) Moderate Baseline Template
  Updated Document | May 18, 2021
- FedRAMP System Security Plan (SSP) Low Baseline Template
  Updated Document | May 18, 2021
- FedRAMP System Security Plan (SSP) High Baseline Template
  Updated Document | May 18, 2021
- FedRAMP Moderate Authorization Toolkit
  Updated Document | May 18, 2021
- FedRAMP Low Authorization Toolkit
  Updated Document | May 18, 2021
- FedRAMP High Authorization Toolkit
  Updated Document | May 18, 2021

These Controls Are Not Part of any Baseline

Ctrl ID	Control Name				
AC-9	Previous Logon Notification	PE-22	Component Marking	SC-40	Wireless Link Protection
AC-16	Security and Privacy Attributes	PE-23	Facility Location	SC-41	Port and I/O Device Access
AC-23	Data Mining Protection	PL-7	Concept of Operations	SC-42	Sensor Capability and Data
AC-24	Access Control Decisions	RA-6	Technical Surveillance Countermeasures Survey	SC-43	Usage Restrictions
AC-25	Reference Monitor	RA-10	Threat Hunting	SC-44	Detonation Chambers
AT-6	Training Feedback	SA-20	Customized Development of Critical Components	SC-45	System Time Synchronization
AU-13	Monitoring for Information Disclosure	SA-23	Specialization	SC-46	Cross Domain Policy Enforcement
AU-14	Session Audit	SC-6	Resource Availability	SC-47	Alternate Communications Paths
AU-16	Cross-organizational Audit Logging	SC-11	Trusted Path	SC-48	Sensor Relocation
CM-13	Data Action Mapping	SC-16	Transmission of Security and Privacy Attributes	SC-49	Hardware-enforced Separation and Policy Enforcement
CM-14	Signed Components	SC-25	Thin Nodes	SC-50	Software-enforced Separation and Policy Enforcement
CP-11	Alternate Communications Protocols	SC-26	Decoys	SC-51	Hardware-based Protection
CP-12	Safe Mode	SC-27	Platform-independent Applications	SI-13	Predictable Failure Prevention
CP-13	Alternative Security Mechanisms	SC-29	Heterogeneity	SI-14	Non-persistence
IA-9	Service Identification and Authentication	SC-30	Concealment and Misdirection	SI-15	Information Output Filtering
IA-10	Adaptive Authentication	SC-31	Covert Channel Analysis	SI-17	Fail-safe Procedures
IR-9	Information Spillage Response	SC-32	System Partitioning	SI-20	Tainting
MA-7	Field Maintenance	SC-34	Non-modifiable Executable Programs	SI-21	Information Refresh
MP-8	Media Downgrading	SC-35	External Malicious Code Identification	SI-22	Information Diversity
PE-19	Information Leakage	SC-36	Distributed Processing and Storage	SI-23	Information Fragmentation
PE-20	Asset Monitoring and Tracking	SC-37	Out-of-band Channels	SR-4	Provenance
PE-21	Electromagnetic Pulse Protection	SC-38	Operations Security	SR-7	Supply Chain Operations Security

These Controls & Enhancements are withdrawn / replaced

CTRL ID	Control Name				
AT-3.4	AT-3.4 Suspicious Communications and Anomalous System Behavior	IA-9.2	IA-9.2 Transmission of Decisions	SA-12.15	SA-12.15 Processes to Address Weaknesses or Deficiencies
AU-2.3	AU-2.3 Reviews and Updates	IR-9.1	IR-9.1 Responsible Personnel	SA-18.1	SA-18.1 Multiple Phases of System Development Life Cycle
AU-3.2	AU-3.2 Centralized Management of Planned Audit Record Content	PE-5.1	PE-5.1 Access to Output by Authorized Individuals	SA-18.2	SA-18.2 Inspection of Systems or Components
AU-7.2	AU-7.2 Automatic Sort and Search	PE-5.3	PE-5.3 Marking Output Devices	SA-19.1	SA-19.1 Anti-counterfeit Training
AU-8.1	AU-8.1 Synchronization with Authoritative Time Source	PE-18.1	PE-18.1 Facility Site	SA-19.2	SA-19.2 Configuration Control for Component Service and Repair
AU-8.2	AU-8.2 Secondary Authoritative Time Source	PL-2.3	PL-2.3 Plan and Coordinate with Other Organizational Entities	SA-19.3	SA-19.3 Component Disposal
AU-14.2	AU-14.2 Capture and Record Content	SA-12.1	SA-12.1 Acquisition Strategies / Tools / Methods	SA-19.4	SA-19.4 Anti-counterfeit Scanning
CA-3.1	CA-3.1 Unclassified National Security System Connections	SA-12.2	SA-12.2 Supplier Reviews	SA-22.1	SA-22.1 Alternative Sources for Continued Support
CA-3.2	CA-3.2 Classified National Security System Connections	SA-12.5	SA-12.5 Limitation of Harm	SC-34.3	SC-34.3 Hardware-based Protection
CA-3.3	CA-3.3 Unclassified Non-national Security System Connections	SA-12.7	SA-12.7 Assessments Prior to Selection / Acceptance / Update	SC-42.3	SC-42.3 Prohibit Use of Devices
CA-3.4	CA-3.4 Connections to Public Networks	SA-12.8	SA-12.8 Use of All-source Intelligence	SI-2.1	SI-2.1 Central Management
CA-3.5	CA-3.5 Restrictions on External System Connections	SA-12.9	SA-12.9 Operations Security	SI-3.1	SI-3.1 Central Management
CM-5.2	CM-5.2 Review System Changes	SA-12.10	SA-12.10 Validate as Genuine and Not Altered	SI-3.9	SI-3.9 Authenticate Remote Commands
CM-5.3	CM-5.3 Signed Components	SA-12.11	SA-12.11 Penetration Testing / Analysis of Elements, Processes, and Actors	SI-7.11	SI-7.11 Confined Environments with Limited Privileges
CM-8.5	CM-8.5 No Duplicate Accounting of Components	SA-12.12	SA-12.12 Inter-organizational Agreements	SI-7.13	SI-7.13 Code Execution in Protected Environments
CP-2.4	CP-2.4 Resume All Mission and Business Functions	SA-12.14	SA-12.14 Identity and Traceability	SI-7.14	SI-7.14 Binary or Machine Executable Code
IA-9.1	IA-9.1 Information Exchange			SI-8.1	SI-8.1 Central Management

268 New & Substantially changed Enhancements and Controls

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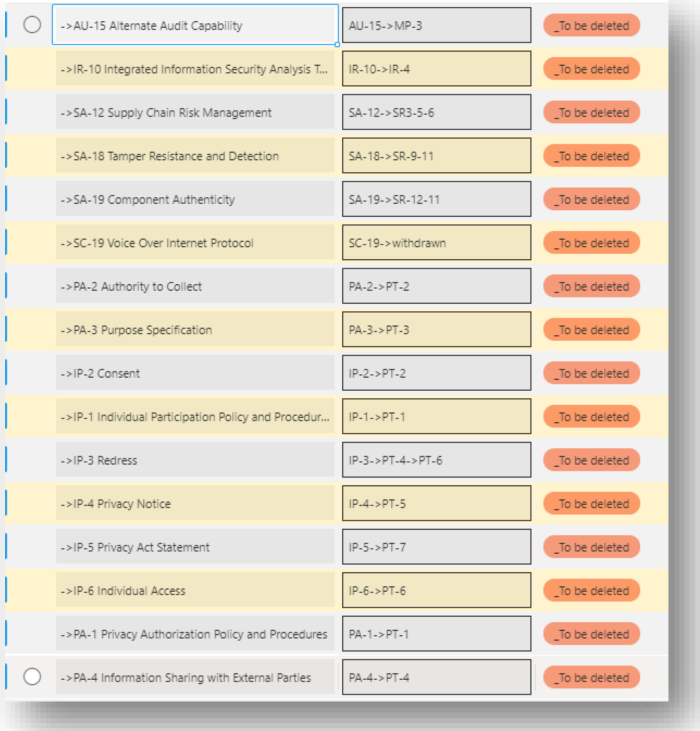
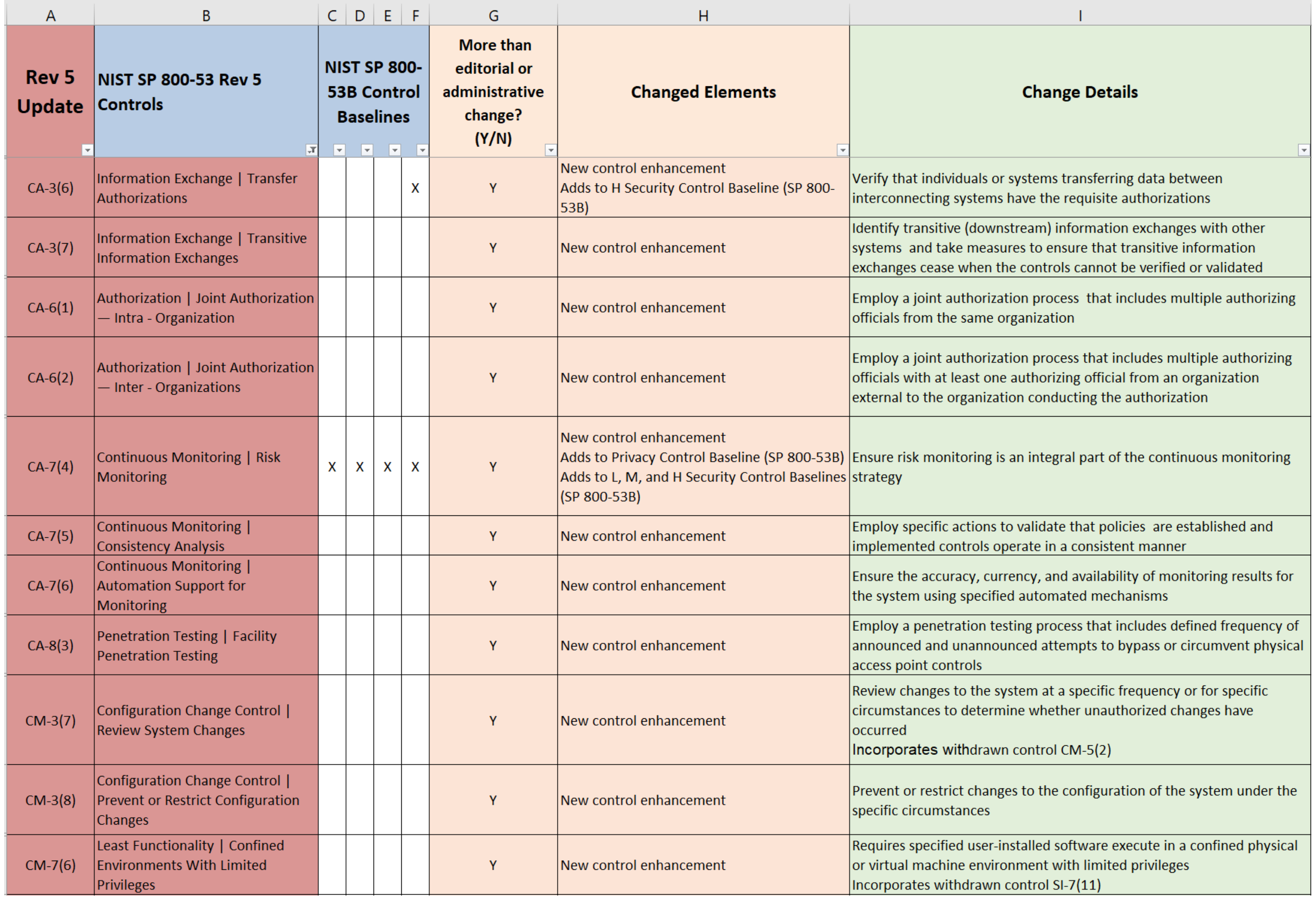
- 20 (Big) Family Domains PT, SR
- 298 (Medium) Control Family /Universe (example AC-2)
- 710 (Child Small) Tests Enhancements (example AC-2(3))



○	->AU-15 Alternate Audit Capability	AU-15->MP-3	_To be deleted
	->IR-10 Integrated Information Security Analysis T...	IR-10->IR-4	_To be deleted
	->SA-12 Supply Chain Risk Management	SA-12->SR3-5-6	_To be deleted
	->SA-18 Tamper Resistance and Detection	SA-18->SR-9-11	_To be deleted
	->SA-19 Component Authenticity	SA-19->SR-12-11	_To be deleted
	->SC-19 Voice Over Internet Protocol	SC-19->withdrawn	_To be deleted
	->PA-2 Authority to Collect	PA-2->PT-2	_To be deleted
	->PA-3 Purpose Specification	PA-3->PT-3	_To be deleted
	->IP-2 Consent	IP-2->PT-2	_To be deleted
	->IP-1 Individual Participation Policy and Procedur...	IP-1->PT-1	_To be deleted
	->IP-3 Redress	IP-3->PT-4->PT-6	_To be deleted
	->IP-4 Privacy Notice	IP-4->PT-5	_To be deleted
	->IP-5 Privacy Act Statement	IP-5->PT-7	_To be deleted
	->IP-6 Individual Access	IP-6->PT-6	_To be deleted
	->PA-1 Privacy Authorization Policy and Procedures	PA-1->PT-1	_To be deleted
○	->PA-4 Information Sharing with External Parties	PA-4->PT-4	_To be deleted

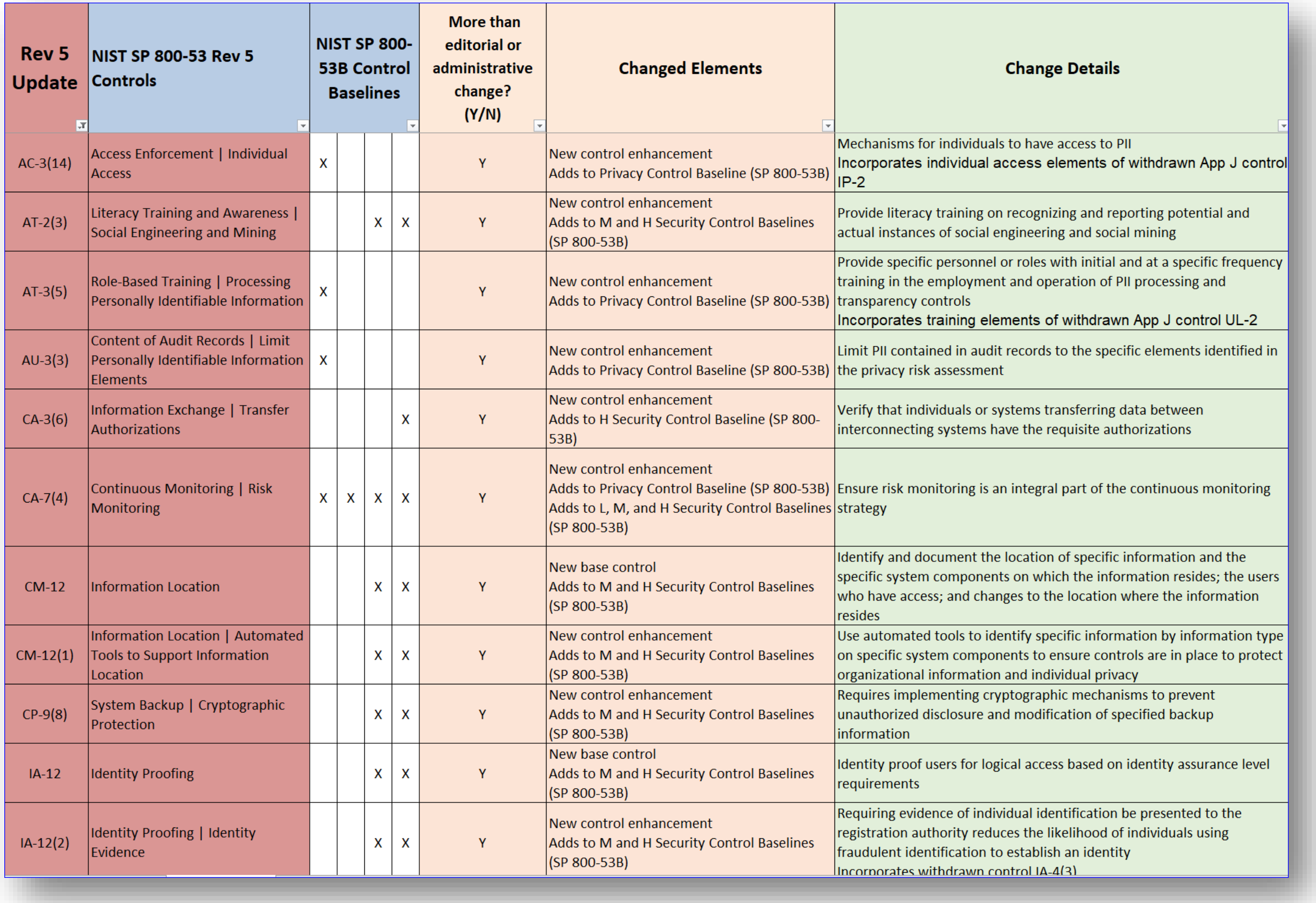


A	B	C	D	E	F	G	H	I
Rev 5 Update	NIST SP 800-53 Rev 5 Controls	NIST SP 800-53B Control Baselines				More than editorial or administrative change? (Y/N)	Changed Elements	Change Details
CA-3(6)	Information Exchange | Transfer Authorizations				X	Y	New control enhancement Adds to H Security Control Baseline (SP 800-53B)	Verify that individuals or systems transferring data between interconnecting systems have the requisite authorizations
CA-3(7)	Information Exchange | Transitive Information Exchanges					Y	New control enhancement	Identify transitive (downstream) information exchanges with other systems and take measures to ensure that transitive information exchanges cease when the controls cannot be verified or validated
CA-6(1)	Authorization | Joint Authorization — Intra - Organization					Y	New control enhancement	Employ a joint authorization process that includes multiple authorizing officials from the same organization
CA-6(2)	Authorization | Joint Authorization — Inter - Organizations					Y	New control enhancement	Employ a joint authorization process that includes multiple authorizing officials with at least one authorizing official from an organization external to the organization conducting the authorization
CA-7(4)	Continuous Monitoring | Risk Monitoring	X	X	X	X	Y	New control enhancement Adds to Privacy Control Baseline (SP 800-53B) Adds to L, M, and H Security Control Baselines (SP 800-53B)	Ensure risk monitoring is an integral part of the continuous monitoring strategy
CA-7(5)	Continuous Monitoring | Consistency Analysis					Y	New control enhancement	Employ specific actions to validate that policies are established and implemented controls operate in a consistent manner
CA-7(6)	Continuous Monitoring | Automation Support for Monitoring					Y	New control enhancement	Ensure the accuracy, currency, and availability of monitoring results for the system using specified automated mechanisms
CA-8(3)	Penetration Testing | Facility Penetration Testing					Y	New control enhancement	Employ a penetration testing process that includes defined frequency of announced and unannounced attempts to bypass or circumvent physical access point controls
CM-3(7)	Configuration Change Control | Review System Changes					Y	New control enhancement	Review changes to the system at a specific frequency or for specific circumstances to determine whether unauthorized changes have occurred Incorporates withdrawn control CM-5(2)
CM-3(8)	Configuration Change Control | Prevent or Restrict Configuration Changes					Y	New control enhancement	Prevent or restrict changes to the configuration of the system under the specific circumstances
CM-7(6)	Least Functionality | Confined Environments With Limited Privileges					Y	New control enhancement	Requires specified user-installed software execute in a confined physical or virtual machine environment with limited privileges Incorporates withdrawn control SI-7(11)

75 Changes have implications in the Baselines, NIST 800-53B

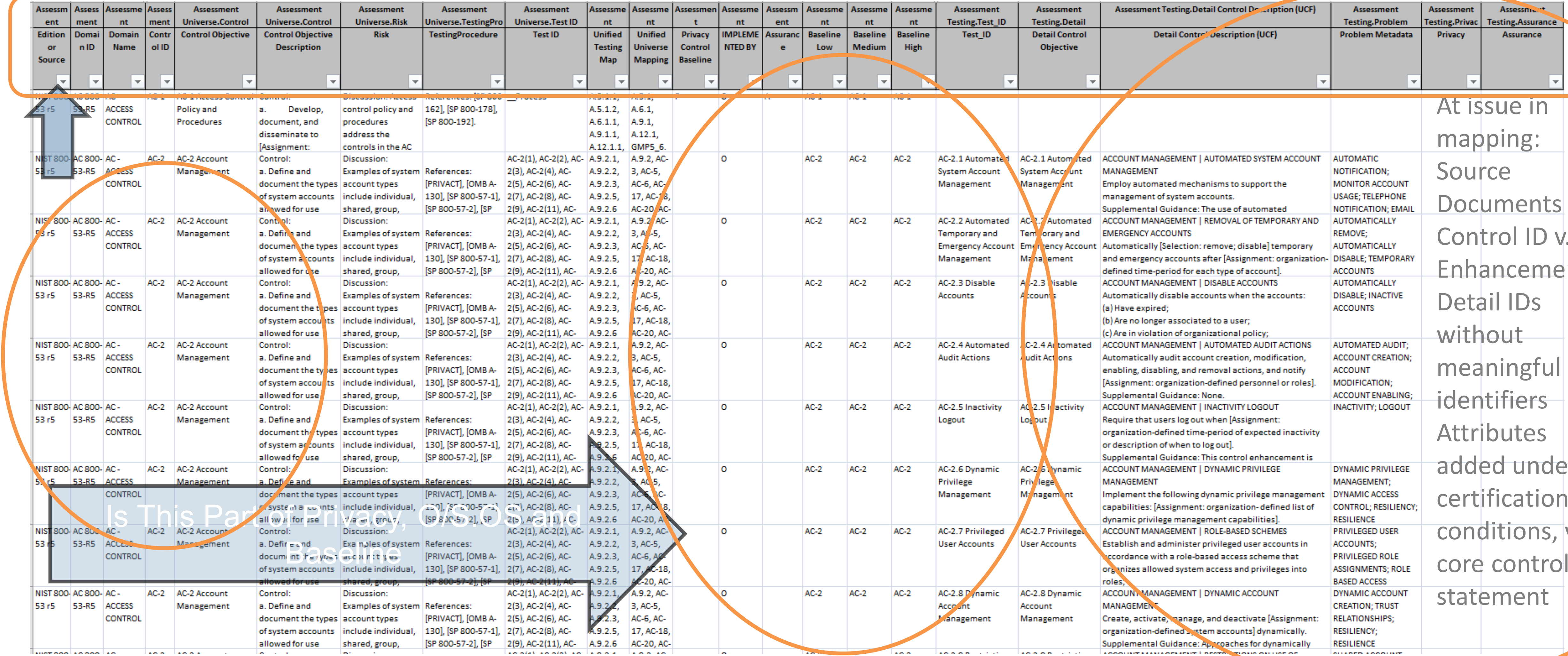
EnterpriseGRC Solutions, Inc.

- Privacy Attribute (P)
- Part of Low, Medium, High
- Changes to details and modifications to the baselines used for FedRamp
- Addition of S/O/SO attribute
- Associated Tailoring Criteria



Rev 5 Update	NIST SP 800-53 Rev 5 Controls	NIST SP 800-53B Control Baselines				More than editorial or administrative change? (Y/N)	Changed Elements	Change Details
AC-3(14)	Access Enforcement | Individual Access	X				Y	New control enhancement Adds to Privacy Control Baseline (SP 800-53B)	Mechanisms for individuals to have access to PII Incorporates individual access elements of withdrawn App J control IP-2
AT-2(3)	Literacy Training and Awareness | Social Engineering and Mining			X	X	Y	New control enhancement Adds to M and H Security Control Baselines (SP 800-53B)	Provide literacy training on recognizing and reporting potential and actual instances of social engineering and social mining
AT-3(5)	Role-Based Training | Processing Personally Identifiable Information	X				Y	New control enhancement Adds to Privacy Control Baseline (SP 800-53B)	Provide specific personnel or roles with initial and at a specific frequency training in the employment and operation of PII processing and transparency controls Incorporates training elements of withdrawn App J control UL-2
AU-3(3)	Content of Audit Records | Limit Personally Identifiable Information Elements	X				Y	New control enhancement Adds to Privacy Control Baseline (SP 800-53B)	Limit PII contained in audit records to the specific elements identified in the privacy risk assessment
CA-3(6)	Information Exchange | Transfer Authorizations				X	Y	New control enhancement Adds to H Security Control Baseline (SP 800-53B)	Verify that individuals or systems transferring data between interconnecting systems have the requisite authorizations
CA-7(4)	Continuous Monitoring | Risk Monitoring	X	X	X	X	Y	New control enhancement Adds to Privacy Control Baseline (SP 800-53B) Adds to L, M, and H Security Control Baselines (SP 800-53B)	Ensure risk monitoring is an integral part of the continuous monitoring strategy
CM-12	Information Location			X	X	Y	New base control Adds to M and H Security Control Baselines (SP 800-53B)	Identify and document the location of specific information and the specific system components on which the information resides; the users who have access; and changes to the location where the information resides
CM-12(1)	Information Location | Automated Tools to Support Information Location			X	X	Y	New control enhancement Adds to M and H Security Control Baselines (SP 800-53B)	Use automated tools to identify specific information by information type on specific system components to ensure controls are in place to protect organizational information and individual privacy
CP-9(8)	System Backup | Cryptographic Protection			X	X	Y	New control enhancement Adds to M and H Security Control Baselines (SP 800-53B)	Requires implementing cryptographic mechanisms to prevent unauthorized disclosure and modification of specified backup information
IA-12	Identity Proofing			X	X	Y	New base control Adds to M and H Security Control Baselines (SP 800-53B)	Identity proof users for logical access based on identity assurance level requirements
IA-12(2)	Identity Proofing | Identity Evidence			X	X	Y	New control enhancement Adds to M and H Security Control Baselines (SP 800-53B)	Requiring evidence of individual identification be presented to the registration authority reduces the likelihood of individuals using fraudulent identification to establish an identity Incorporates withdrawn control IA-4(3)

Three Tiers – Domain, Control, Test

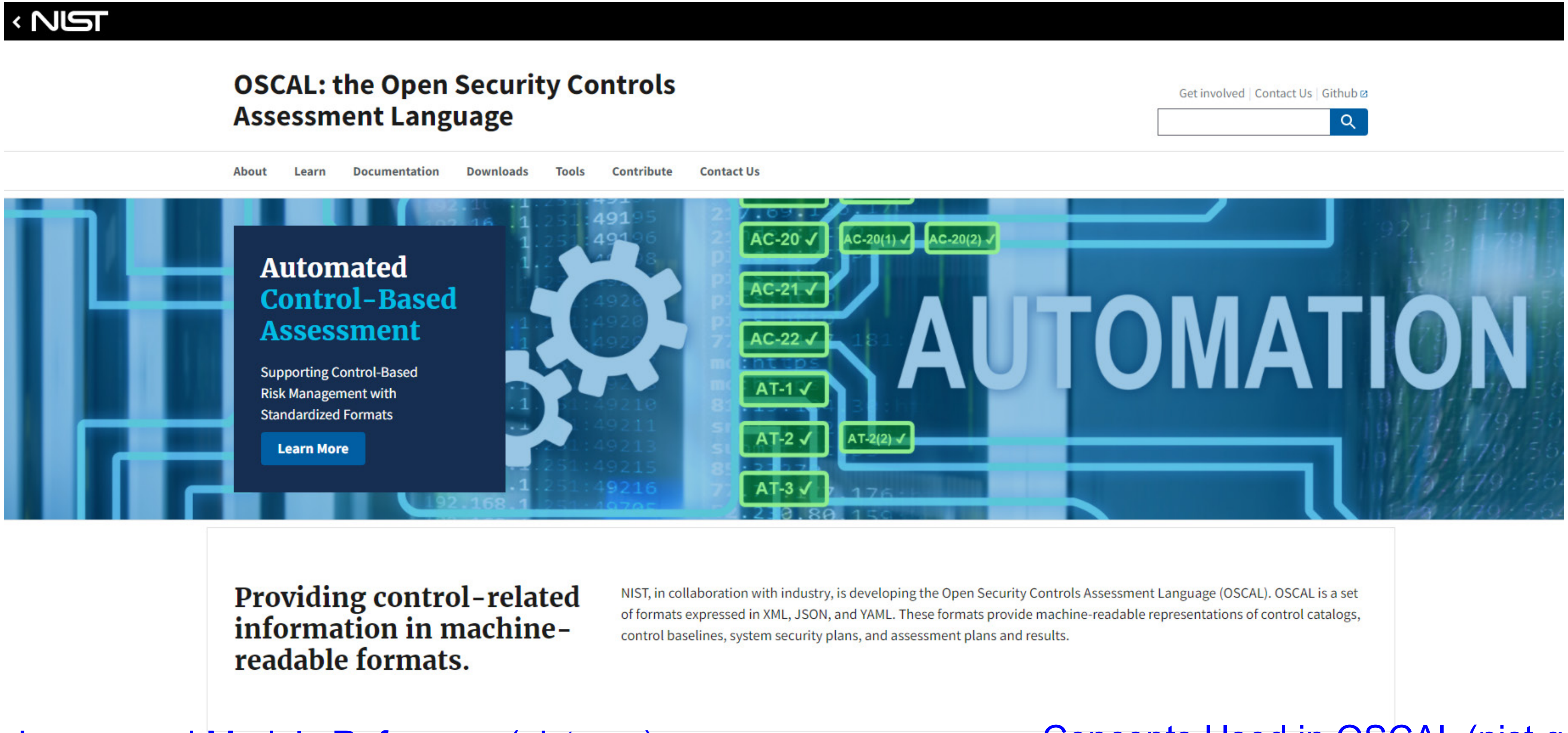


Assessment	Assessment	Assessment	Assessment	Assessment Universe.Control	Assessment Universe.Control	Assessment Universe.Risk	Assessment Universe.TestingPro	Assessment Universe.Test ID	Assessment	Assessment	Assessment	Assessment	Assessment	Assessment	Assessment	Assessment	Assessment Testing.Test_ID	Assessment Testing.Detail	Assessment Testing.Detail Control Description (UCF)	Assessment Testing.Problem	Assessment Testing.Privac	Assessment Testing.Assurance
Edition or Source	Domain ID	Domain Name	Control ID	Control Objective	Control Objective Description	Risk	TestingProcedure	Test ID	Unified Testing Map	Unified Universe Mapping	Privacy Control Baseline	IMPLEMENTED BY	Assurance	Baseline Low	Baseline Medium	Baseline High	Test_ID	Detail Control Objective	Detail Control Description (UCF)	Problem Metadata	Privacy	Assurance
NIST 800-53 r5	AC 800-53-R5	AC - ACCESS CONTROL	AC-1	AC-1 Access Control Policy and Procedures	Control: a. Develop, document, and disseminate to [Assignment:	Discussion: Access control policy and procedures address the controls in the AC	References: [SP 800-162], [SP 800-178], [SP 800-192].	__Process	A.5.1.1, A.5.1.2, A.6.1.1, A.9.1.1, A.12.1.1,	A.5.1, A.6.1, A.9.1, A.12.1, GMP5_6.	P	O	A	AC-1	AC-1	AC-1						
NIST 800-53 r5	AC 800-53-R5	AC - ACCESS CONTROL	AC-2	AC-2 Account Management	Control: a. Define and document the types of system accounts allowed for use	Discussion: Examples of system account types include individual, shared, group,	References: [PRIVACT], [OMB A-130], [SP 800-57-1], [SP 800-57-2], [SP	AC-2(1), AC-2(2), AC-2(3), AC-2(4), AC-2(5), AC-2(6), AC-2(7), AC-2(8), AC-2(9), AC-2(11), AC-	A.9.2.1, A.9.2.2, A.9.2.3, A.9.2.5, A.9.2.6	A.9.2, AC-3, AC-5, AC-6, AC-17, AC-18, AC-20, AC-		O		AC-2	AC-2	AC-2	AC-2.1 Automated System Account Management	AC-2.1 Automated System Account Management	ACCOUNT MANAGEMENT | AUTOMATED SYSTEM ACCOUNT MANAGEMENT Employ automated mechanisms to support the management of system accounts. Supplemental Guidance: The use of automated	AUTOMATIC NOTIFICATION; MONITOR ACCOUNT USAGE; TELEPHONE NOTIFICATION; EMAIL		
NIST 800-53 r5	AC 800-53-R5	AC - ACCESS CONTROL	AC-2	AC-2 Account Management	Control: a. Define and document the types of system accounts allowed for use	Discussion: Examples of system account types include individual, shared, group,	References: [PRIVACT], [OMB A-130], [SP 800-57-1], [SP 800-57-2], [SP	AC-2(1), AC-2(2), AC-2(3), AC-2(4), AC-2(5), AC-2(6), AC-2(7), AC-2(8), AC-2(9), AC-2(11), AC-	A.9.2.1, A.9.2.2, A.9.2.3, A.9.2.5, A.9.2.6	A.9.2, AC-3, AC-5, AC-6, AC-17, AC-18, AC-20, AC-		O		AC-2	AC-2	AC-2	AC-2.2 Automated Temporary and Emergency Account Management	AC-2.2 Automated Temporary and Emergency Account Management	ACCOUNT MANAGEMENT | REMOVAL OF TEMPORARY AND EMERGENCY ACCOUNTS Automatically [Selection: remove; disable] temporary and emergency accounts after [Assignment: organization-defined time-period for each type of account].	AUTOMATICALLY REMOVE; AUTOMATICALLY DISABLE; TEMPORARY ACCOUNTS		
NIST 800-53 r5	AC 800-53-R5	AC - ACCESS CONTROL	AC-2	AC-2 Account Management	Control: a. Define and document the types of system accounts allowed for use	Discussion: Examples of system account types include individual, shared, group,	References: [PRIVACT], [OMB A-130], [SP 800-57-1], [SP 800-57-2], [SP	AC-2(1), AC-2(2), AC-2(3), AC-2(4), AC-2(5), AC-2(6), AC-2(7), AC-2(8), AC-2(9), AC-2(11), AC-	A.9.2.1, A.9.2.2, A.9.2.3, A.9.2.5, A.9.2.6	A.9.2, AC-3, AC-5, AC-6, AC-17, AC-18, AC-20, AC-		O		AC-2	AC-2	AC-2	AC-2.3 Disable Accounts	AC-2.3 Disable Accounts	ACCOUNT MANAGEMENT | DISABLE ACCOUNTS Automatically disable accounts when the accounts: (a) Have expired; (b) Are no longer associated to a user; (c) Are in violation of organizational policy;	AUTOMATICALLY DISABLE; INACTIVE ACCOUNTS		
NIST 800-53 r5	AC 800-53-R5	AC - ACCESS CONTROL	AC-2	AC-2 Account Management	Control: a. Define and document the types of system accounts allowed for use	Discussion: Examples of system account types include individual, shared, group,	References: [PRIVACT], [OMB A-130], [SP 800-57-1], [SP 800-57-2], [SP	AC-2(1), AC-2(2), AC-2(3), AC-2(4), AC-2(5), AC-2(6), AC-2(7), AC-2(8), AC-2(9), AC-2(11), AC-	A.9.2.1, A.9.2.2, A.9.2.3, A.9.2.5, A.9.2.6	A.9.2, AC-3, AC-5, AC-6, AC-17, AC-18, AC-20, AC-		O		AC-2	AC-2	AC-2	AC-2.4 Automated Audit Actions	AC-2.4 Automated Audit Actions	ACCOUNT MANAGEMENT | AUTOMATED AUDIT ACTIONS Automatically audit account creation, modification, enabling, disabling, and removal actions, and notify [Assignment: organization-defined personnel or roles]. Supplemental Guidance: None.	AUTOMATED AUDIT; ACCOUNT CREATION; ACCOUNT MODIFICATION; ACCOUNT ENABLING;		
NIST 800-53 r5	AC 800-53-R5	AC - ACCESS CONTROL	AC-2	AC-2 Account Management	Control: a. Define and document the types of system accounts allowed for use	Discussion: Examples of system account types include individual, shared, group,	References: [PRIVACT], [OMB A-130], [SP 800-57-1], [SP 800-57-2], [SP	AC-2(1), AC-2(2), AC-2(3), AC-2(4), AC-2(5), AC-2(6), AC-2(7), AC-2(8), AC-2(9), AC-2(11), AC-	A.9.2.1, A.9.2.2, A.9.2.3, A.9.2.5, A.9.2.6	A.9.2, AC-3, AC-5, AC-6, AC-17, AC-18, AC-20, AC-		O		AC-2	AC-2	AC-2	AC-2.5 Inactivity Logout	AC-2.5 Inactivity Logout	ACCOUNT MANAGEMENT | INACTIVITY LOGOUT Require that users log out when [Assignment: organization-defined time-period of expected inactivity or description of when to log out]. Supplemental Guidance: This control enhancement is	INACTIVITY; LOGOUT		
NIST 800-53 r5	AC 800-53-R5	AC - ACCESS CONTROL	AC-2	AC-2 Account Management	Control: a. Define and document the types of system accounts allowed for use	Discussion: Examples of system account types include individual, shared, group,	References: [PRIVACT], [OMB A-130], [SP 800-57-1], [SP 800-57-2], [SP	AC-2(1), AC-2(2), AC-2(3), AC-2(4), AC-2(5), AC-2(6), AC-2(7), AC-2(8), AC-2(9), AC-2(11), AC-	A.9.2.1, A.9.2.2, A.9.2.3, A.9.2.5, A.9.2.6	A.9.2, AC-3, AC-5, AC-6, AC-17, AC-18, AC-20, AC-		O		AC-2	AC-2	AC-2	AC-2.6 Dynamic Privilege Management	AC-2.6 Dynamic Privilege Management	ACCOUNT MANAGEMENT | DYNAMIC PRIVILEGE MANAGEMENT Implement the following dynamic privilege management capabilities: [Assignment: organization- defined list of dynamic privilege management capabilities].	DYNAMIC PRIVILEGE MANAGEMENT; DYNAMIC ACCESS CONTROL; RESILIENCY; RESILIENCE		
NIST 800-53 r5	AC 800-53-R5	AC - ACCESS CONTROL	AC-2	AC-2 Account Management	Control: a. Define and document the types of system accounts allowed for use	Discussion: Examples of system account types include individual, shared, group,	References: [PRIVACT], [OMB A-130], [SP 800-57-1], [SP 800-57-2], [SP	AC-2(1), AC-2(2), AC-2(3), AC-2(4), AC-2(5), AC-2(6), AC-2(7), AC-2(8), AC-2(9), AC-2(11), AC-	A.9.2.1, A.9.2.2, A.9.2.3, A.9.2.5, A.9.2.6	A.9.2, AC-3, AC-5, AC-6, AC-17, AC-18, AC-20, AC-		O		AC-2	AC-2	AC-2	AC-2.7 Privileged User Accounts	AC-2.7 Privileged User Accounts	ACCOUNT MANAGEMENT | ROLE-BASED SCHEMES Establish and administer privileged user accounts in accordance with a role-based access scheme that organizes allowed system access and privileges into roles;	PRIVILEGED USER ACCOUNTS; PRIVILEGED ROLE ASSIGNMENTS; ROLE BASED ACCESS		
NIST 800-53 r5	AC 800-53-R5	AC - ACCESS CONTROL	AC-2	AC-2 Account Management	Control: a. Define and document the types of system accounts allowed for use	Discussion: Examples of system account types include individual, shared, group,	References: [PRIVACT], [OMB A-130], [SP 800-57-1], [SP 800-57-2], [SP	AC-2(1), AC-2(2), AC-2(3), AC-2(4), AC-2(5), AC-2(6), AC-2(7), AC-2(8), AC-2(9), AC-2(11), AC-	A.9.2.1, A.9.2.2, A.9.2.3, A.9.2.5, A.9.2.6	A.9.2, AC-3, AC-5, AC-6, AC-17, AC-18, AC-20, AC-		O		AC-2	AC-2	AC-2	AC-2.8 Dynamic Account Management	AC-2.8 Dynamic Account Management	ACCOUNT MANAGEMENT | DYNAMIC ACCOUNT MANAGEMENT Create, activate, manage, and deactivate [Assignment: organization-defined system accounts] dynamically. Supplemental Guidance: Approaches for dynamically	DYNAMIC ACCOUNT CREATION; TRUST RELATIONSHIPS; RESILIENCY; RESILIENCE		

Is This Part of Privacy, O/S.OS and Baseline

At issue in mapping:
Source Documents
Control ID v. Enhancement – Detail IDs without meaningful identifiers
Attributes added under certification conditions, v. core control statement

You CANNOT do this by hand - OSCAL (nist.gov)



‹ NIST

OSCAL: the Open Security Controls Assessment Language

Get involved | Contact Us | Github

About | Learn | Documentation | Downloads | Tools | Contribute | Contact Us

Automated Control-Based Assessment

Supporting Control-Based Risk Management with Standardized Formats

Learn More

Providing control-related information in machine-readable formats.

NIST, in collaboration with industry, is developing the Open Security Controls Assessment Language (OSCAL). OSCAL is a set of formats expressed in XML, JSON, and YAML. These formats provide machine-readable representations of control catalogs, control baselines, system security plans, and assessment plans and results.

Layers and Models Reference (nist.gov)

Concepts Used in OSCAL (nist.gov)

Attribute Changes Manual & Automation Resources

Tailoring Criteria for NIST 171 Depend Upon 800-53

- (171r2) security controls are taken from NIST Special Publication 800-53, Revision 4. These ***tables will be updated upon publication of [SP 800-53B]*** which will provide an update to the moderate security control baseline consistent with NIST Special Publication 800-53, Revision 5. Changes to the moderate baseline will affect future updates to the basic and derived security requirements
- The same *tailoring criteria* were applied to the security requirements in [FIPS 200] resulting in the CUI basic security requirements
- There is a close relationship between the security objectives of confidentiality and integrity. Therefore, the security controls in the [SP 800-53] moderate baseline that support protection against unauthorized disclosure also support protection against unauthorized modification.
- 39 The security controls tailored out of the moderate baseline (i.e., controls specifically marked as either NCO or NFO and highlighted in the darker blue shading in Tables E-1 through E-17), are often included as part of an organization's comprehensive security program.

FedRAMP OSCAL Resources and Templates

FedRAMP has published resources to aid stakeholders and vendors in the digitization of FedRAMP authorization package content. Located on the FedRAMP Automation GitHub Repository, these include:

- *New* - **Guide to OSCAL-based FedRAMP Content**. Guidance and concepts common to all FedRAMP deliverables when using OSCAL.
- *Revised* - **Guide to OSCAL-based FedRAMP System Security Plans (SSP)**.
- *New* - **Guide to OSCAL-based FedRAMP Security Assessment Plans (SAP)**.
- *New* - **Guide to OSCAL-based FedRAMP Security Assessment Reports (SAR)**.
- *New* - **Guide to OSCAL-based FedRAMP Plan of Action and Milestones (POA&M)**.
- *Revised* - **Updated FedRAMP OSCAL Registry**.
  Revised - **OSCAL-based FedRAMP SSP Templates/Samples**.
  FedRAMP SSP Template in both XML and JSON formats.
- *New* - **OSCAL-based FedRAMP Templates/Samples**.
  There are now three additional templates/samples covering the SAP, SAR, and POA&M. These exist in both XML and JSON formats.
- *Revised* - **FedRAMP Baselines**. (XML and JSON formats)
  The baselines now include a "CORE" property, enabling tools to identify the FedRAMP core controls; as well as the assessment objectives and methods (Examine, Interview, Test) found in a blank test case workbook (TCW).
- *New* - **Experimental Resources**.
  FedRAMP is offering additional support files to aid tool developers. These provide content in XML and JSON that is relevant to FedRAMP authorization packages yet does not fit in the official OSCAL syntax.

CSF Tools Depends upon Framework Updates

FRAMEWORKS AND CONTROLS

NIST Cybersecurity Framework

- CSF Version 1.1 [Summary]

NIST Special Publication 800-53

- NIST SP 800-53, Revision 4 [Summary]
- NIST SP 800-53, Revision 5 [Summary]

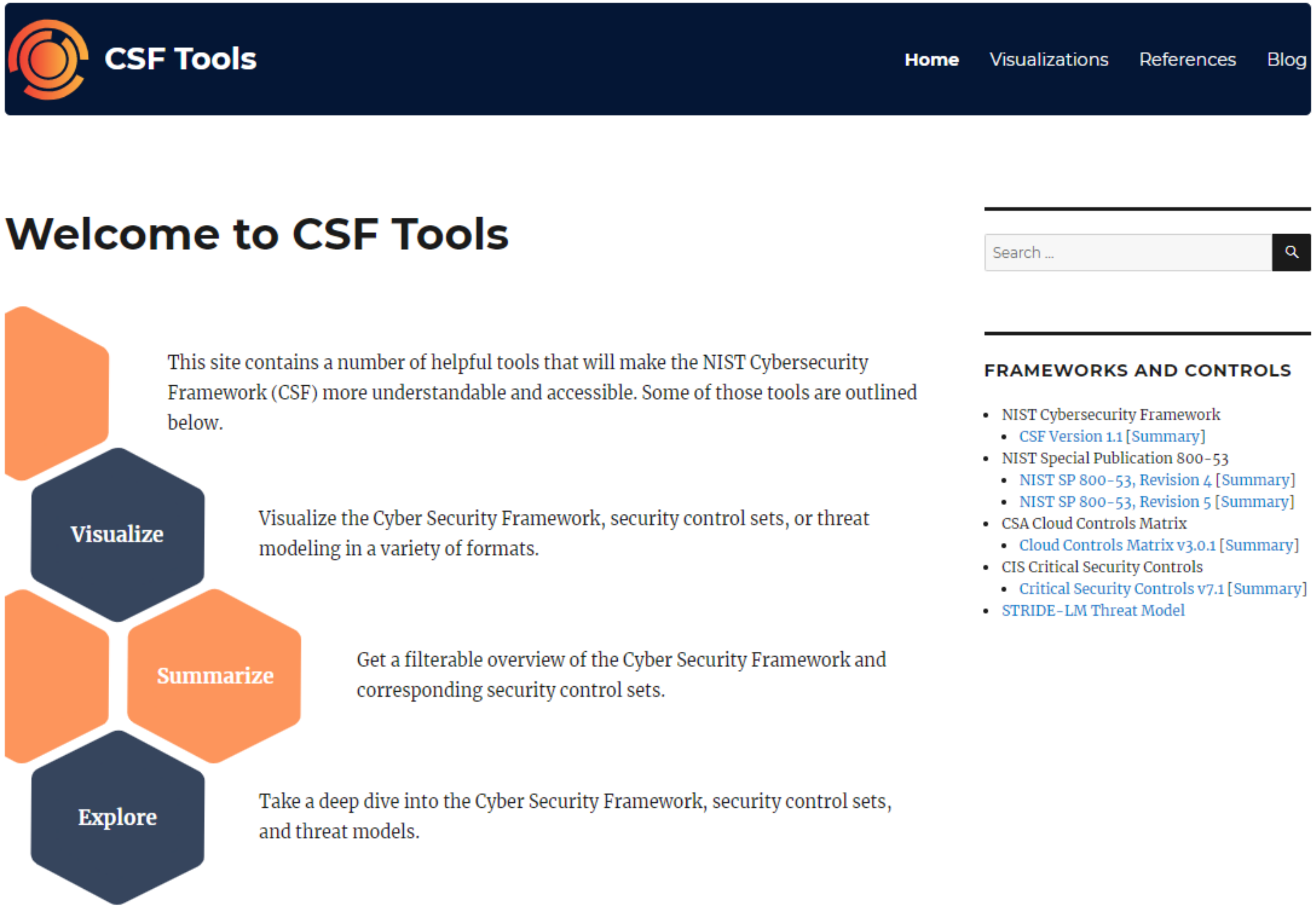
CSA Cloud Controls Matrix

- Cloud Controls Matrix v3.0.1 [Summary] (Update to CCM 4 in process)

CIS Critical Security Controls

- Critical Security Controls v7.1 [Summary] (Update to CSC 8.1 in process)

STRIDE-LM Threat Model



Welcome to CSF Tools

This site contains a number of helpful tools that will make the NIST Cybersecurity Framework (CSF) more understandable and accessible. Some of those tools are outlined below.

Visualize Visualize the Cyber Security Framework, security control sets, or threat modeling in a variety of formats.

Summarize Get a filterable overview of the Cyber Security Framework and corresponding security control sets.

Explore Take a deep dive into the Cyber Security Framework, security control sets, and threat models.

FRAMEWORKS AND CONTROLS

- NIST Cybersecurity Framework
  - CSF Version 1.1 [Summary]
- NIST Special Publication 800-53
  - NIST SP 800-53, Revision 4 [Summary]
  - NIST SP 800-53, Revision 5 [Summary]
- CSA Cloud Controls Matrix
  - Cloud Controls Matrix v3.0.1 [Summary]
- CIS Critical Security Controls
  - Critical Security Controls v7.1 [Summary]
- STRIDE-LM Threat Model

NIST Cyber Security Framework CSF

Control Enhancements

RA-5(2): Update Vulnerabilities to Be Scanned
BASELINE(S): Low Moderate High
Update the system vulnerabilities to be scanned [Assignment (one or more): [Assignment: organization-defined frequency] , prior to a new scan, when new vulnerabilities are identified and reported].

RA-5(3): Breadth and Depth of Coverage
BASELINE(S): (Not part of any baseline)
Define the breadth and depth of vulnerability scanning coverage.

RA-5(4): Discoverable Information
BASELINE(S): High
Determine information about the system that is discoverable and take [Assignment: organization-defined corrective actions].

RA-5(5): Privileged Access
BASELINE(S): Moderate High
Implement privileged access authorization to [Assignment: organization-defined system components] for [Assignment: organization-defined vulnerability scanning activities].

RA-5(6): Automated Trend Analyses
BASELINE(S): (Not part of any baseline)
Compare the results of multiple vulnerability scans using [Assignment: organization-defined automated mechanisms].

RA-5(8): Review Historic Audit Logs
BASELINE(S): (Not part of any baseline)
Review historic audit logs to determine if a vulnerability identified in a [Assignment: organization-defined system] has been previously exploited within an [Assignment: organization-defined time period].

RA-5(10): Correlate Scanning Information
BASELINE(S): (Not part of any baseline)
Correlate the output from vulnerability scanning tools to determine the presence of multi-vulnerability and multi-hop attack vectors.

RA-5(11): Public Disclosure Program
BASELINE(S): Low Moderate High
Establish a public reporting channel for receiving reports of vulnerabilities in organizational systems and system components.

Vulnerability Monitoring and Scanning – CSF Tools

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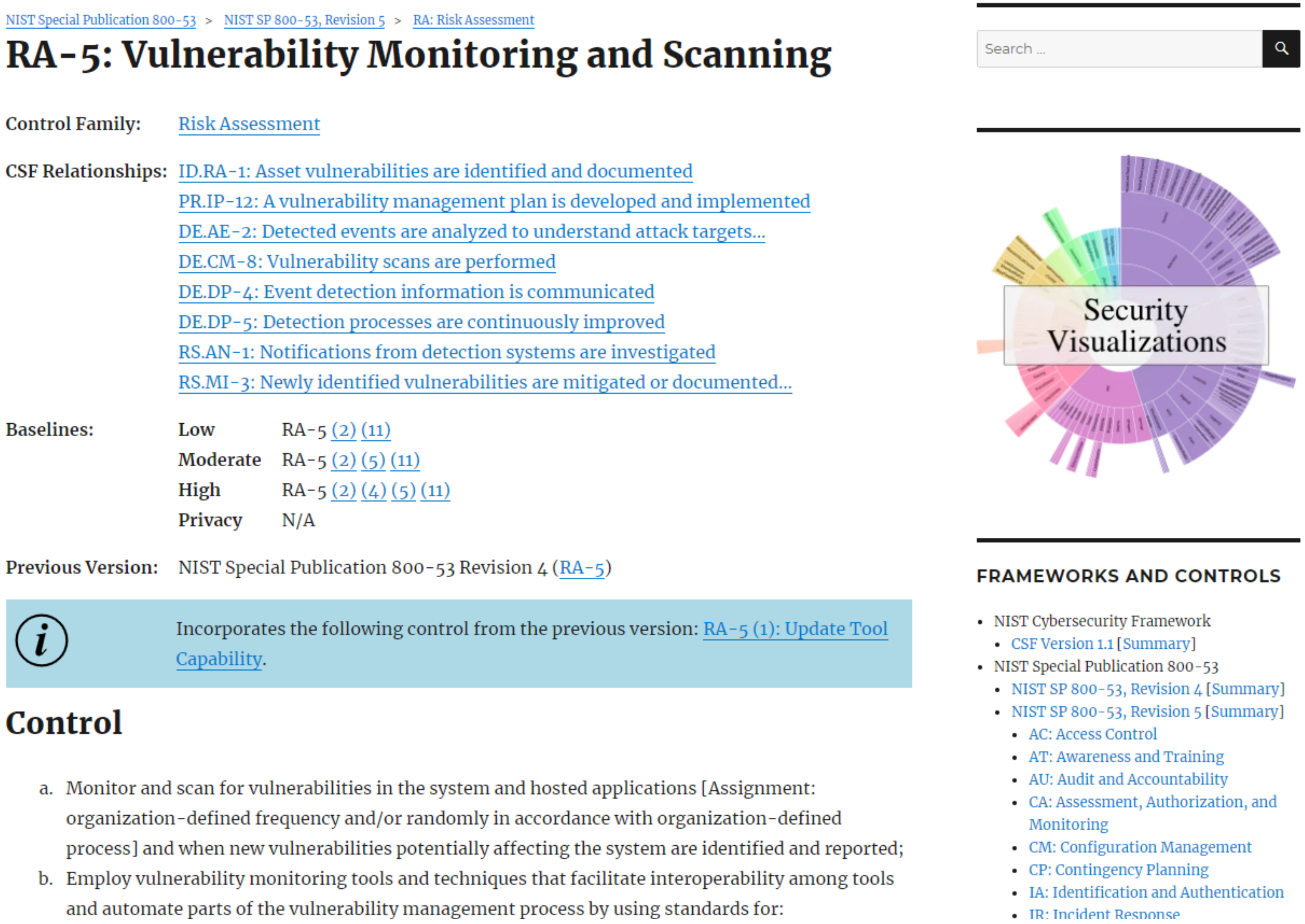


NIST Special Publication 800-53 > NIST SP 800-53, Revision 5 > RA: Risk Assessment

RA-5: Vulnerability Monitoring and Scanning

Control Family: Risk Assessment

CSF Relationships:
ID.RA-1: Asset vulnerabilities are identified and documented
PR.IP-12: A vulnerability management plan is developed and implemented
DE.AE-2: Detected events are analyzed to understand attack targets...
DE.CM-8: Vulnerability scans are performed
DE.DP-4: Event detection information is communicated
DE.DP-5: Detection processes are continuously improved
RS.AN-1: Notifications from detection systems are investigated
RS.MI-3: Newly identified vulnerabilities are mitigated or documented...

Baselines:		
	Low	RA-5 (2) (11)
	Moderate	RA-5 (2) (5) (11)
	High	RA-5 (2) (4) (5) (11)
	Privacy	N/A

Previous Version: NIST Special Publication 800-53 Revision 4 (RA-5)

i Incorporates the following control from the previous version: RA-5 (1): Update Tool Capability.

Control

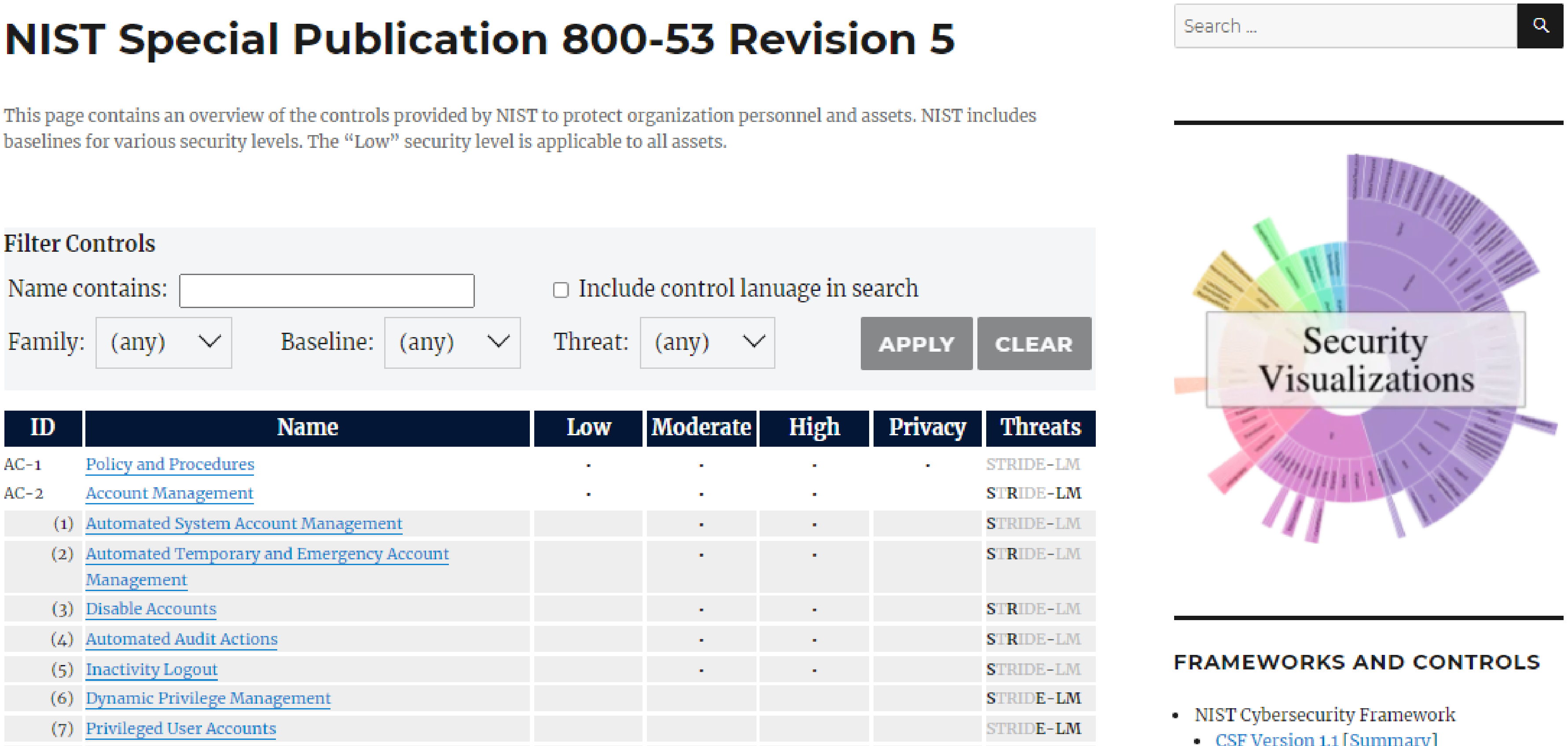
a. Monitor and scan for vulnerabilities in the system and hosted applications [Assignment: organization-defined frequency and/or randomly in accordance with organization-defined process] and when new vulnerabilities potentially affecting the system are identified and reported;
b. Employ vulnerability monitoring tools and techniques that facilitate interoperability among tools and automate parts of the vulnerability management process by using standards for:

Search ...

FRAMEWORKS AND CONTROLS

- NIST Cybersecurity Framework
  - CSF Version 1.1 [Summary]
- NIST Special Publication 800-53
  - NIST SP 800-53, Revision 4 [Summary]
  - NIST SP 800-53, Revision 5 [Summary]
    - AC: Access Control
    - AT: Awareness and Training
    - AU: Audit and Accountability
    - CA: Assessment, Authorization, and Monitoring
    - CM: Configuration Management
    - CP: Contingency Planning
    - IA: Identification and Authentication
    - IR: Incident Response

STRIDE – CSF Tool Depends Upon Updates to NIST SP 800-53 Rev 5, CSA CCM 4.0, CIS CSC 8.1



NIST Special Publication 800-53 Revision 5

This page contains an overview of the controls provided by NIST to protect organization personnel and assets. NIST includes baselines for various security levels. The "Low" security level is applicable to all assets.

Filter Controls

Name contains: ______ □ Include control lanuage in search

Family: (any) Baseline: (any) Threat: (any) APPLY CLEAR

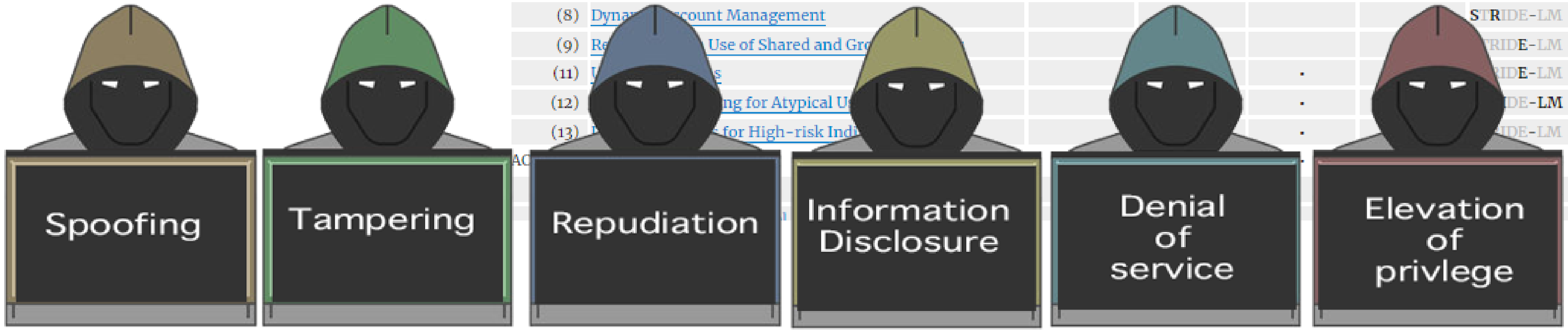
ID	Name	Low	Moderate	High	Privacy	Threats
AC-1	Policy and Procedures	·	·	·	·	STRIDE-LM
AC-2	Account Management	·	·	·		STRIDE-LM
(1)	Automated System Account Management		·	·		STRIDE-LM
(2)	Automated Temporary and Emergency Account Management		·	·		STRIDE-LM
(3)	Disable Accounts		·	·		STRIDE-LM
(4)	Automated Audit Actions		·	·		STRIDE-LM
(5)	Inactivity Logout		·	·		STRIDE-LM
(6)	Dynamic Privilege Management					STRIDE-LM
(7)	Privileged User Accounts					STRIDE-LM
(8)	Dyna count Management					STRIDE-LM
(9)	Re Use of Shared and Gr					RIDE-LM
(11)	s			·		IDE-LM
(12)	ng for Atypical U			·		DE-LM
(13)	for High-risk Indi			·		DE-LM
AC				·		

Search ...

Security Visualizations

FRAMEWORKS AND CONTROLS

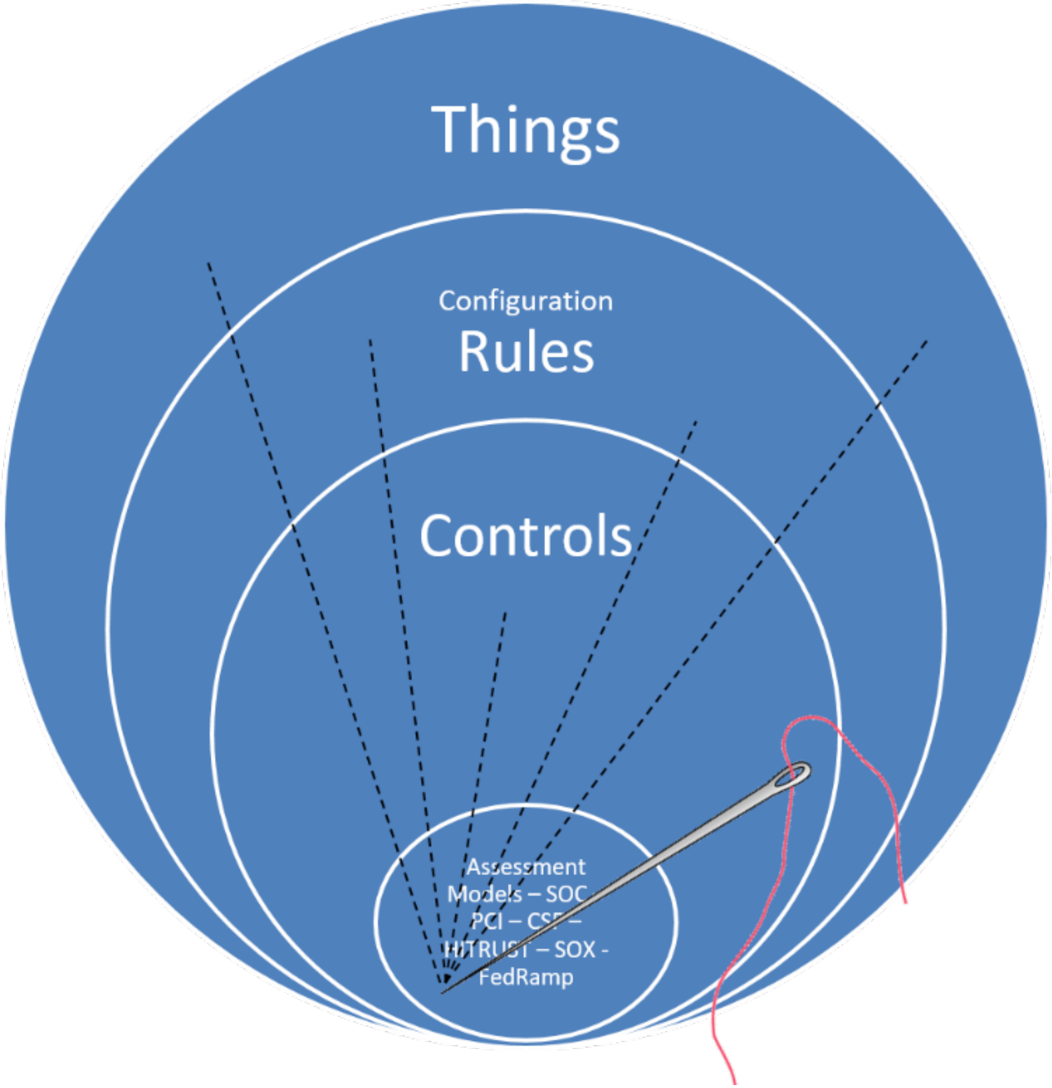
- NIST Cybersecurity Framework
  - CSF Version 1.1 [Summary]
- NIST Special Publication 800-53
  - NIST SP 800-53, Revision 4 [Summary]
  - NIST SP 800-53, Revision 5 [Summary]
- CSA Cloud Controls Matrix
  - Cloud Controls Matrix v3.0.1 [Summary]
- CIS Critical Security Controls
  - Critical Security Controls v7.1 [Summary]
- STRIDE-LM Threat Model



What’s so hard about mapping?

How to map

- Have a workplan
- Identify what sources and domains should map – line up the full schema
- Iterate
- Finalize
- Negative Map (what should have but didn’t)
- Map the Missing
- QA
- Communicate back to content owners



Things

Configuration Rules

Controls

Assessment Models – SOC – PCI – CSF – HITRUST – SOX - FedRamp

For Each Control Statement gather keywords, concepts and suitable common domains

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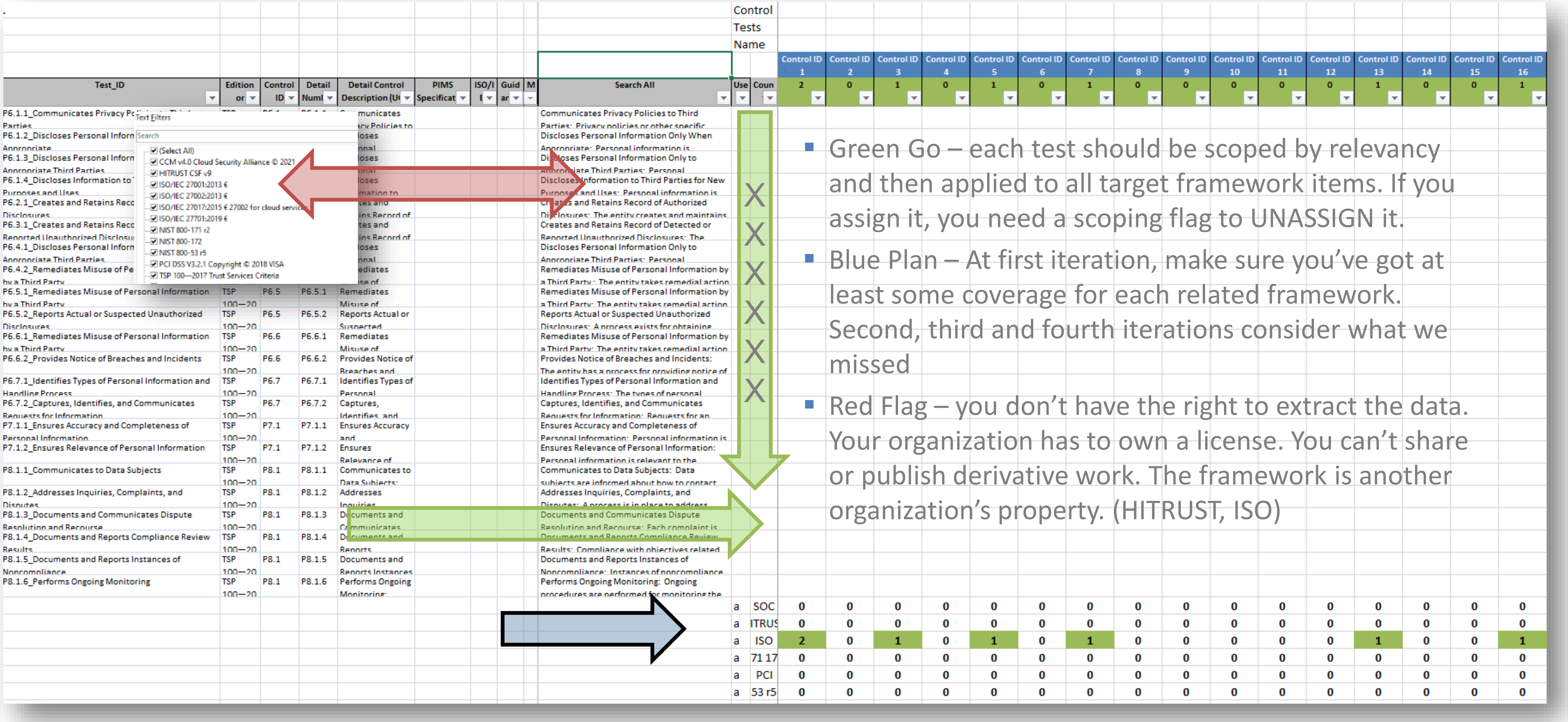
- Search for list of testable items based on keywords and common terms, including global spelling. Consider more than “does it” by asking if the implied understanding of the control is that it “should”.
- Prepare a list of probable matches – likely 1-2% of total population.
- Consider overuse and reduce the number of times we use same items
- Consider that the client may use multiple controls to accomplish a same objective. This exercise may result in client customization to their written policies and program objectives.

Mapping Plan –> Records need sufficient legal rights to put into a searchable system.



Text Filters

Search

- ☑ (Select All)
- ☑ CCM v4.0 Cloud Security Alliance © 2021
- ☑ HITRUST CSF v9
- ☑ ISO/IEC 27001:2013 €
- ☑ ISO/IEC 27002:2013 €
- ☑ ISO/IEC 27017:2015 € 27002 for cloud servic
- ☑ ISO/IEC 27701:2019 €
- ☑ NIST 800-171 r2
- ☑ NIST 800-172
- ☑ NIST 800-53 r5
- ☑ PCI DSS V3.2.1 Copyright © 2018 VISA
- ☑ TSP 100—2017 Trust Services Criteria

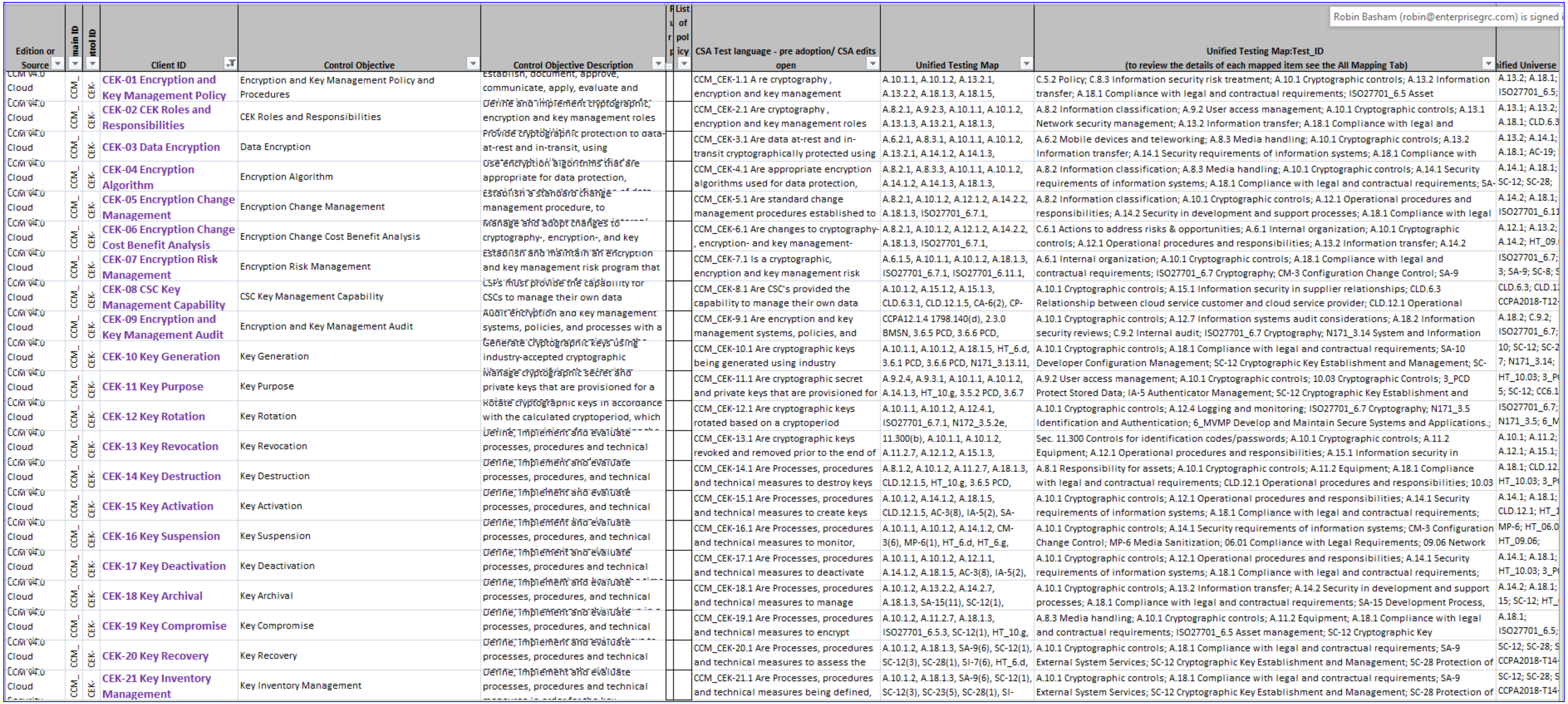
Test_ID	Edition or	Control ID	Detail Numl	Detail Control Description (U(	PIMS Specificat	ISO/I E	Guid ar	M	Search All	Use	Coun
P6.1.1_Communicates Privacy Po Parties				municates acy Policies to					Communicates Privacy Policies to Third Parties: Privacy policies or other specific		
P6.1.2_Discloses Personal Inforn Appropriate				loses onal					Discloses Personal Information Only When Appropriate: Personal information is		
P6.1.3_Discloses Personal Inforn Appropriate Third Parties				loses onal					Discloses Personal Information Only to Appropriate Third Parties: Personal		
P6.1.4_Discloses Information to Purposes and Uses				loses mation to					Discloses Information to Third Parties for New Purposes and Uses: Personal information is		
P6.2.1_Creates and Retains Reco Disclosures				tes and ins Record of					Creates and Retains Record of Authorized Disclosures: The entity creates and maintains		
P6.3.1_Creates and Retains Reco Reported Unauthorized Disclosu				tes and ins Record of					Creates and Retains Record of Detected or Reported Unauthorized Disclosures: The		
P6.4.1_Discloses Personal Inforn Appropriate Third Parties				loses onal					Discloses Personal Information Only to Appropriate Third Parties: Personal		
P6.4.2_Remediates Misuse of Pe by a Third Party				ediates se of					Remediates Misuse of Personal Information by a Third Party : The entity takes remedial action		
P6.5.1_Remediates Misuse of Personal Information by a Third Party	TSP 100—20	P6.5	P6.5.1	Remediates Misuse of					Remediates Misuse of Personal Information by a Third Party: The entity takes remedial action		
P6.5.2_Reports Actual or Suspected Unauthorized Disclosures	TSP 100—20	P6.5	P6.5.2	Reports Actual or Suspected					Reports Actual or Suspected Unauthorized Disclosures: A process exists for obtaining		
P6.6.1_Remediates Misuse of Personal Information by a Third Party	TSP 100—20	P6.6	P6.6.1	Remediates Misuse of					Remediates Misuse of Personal Information by a Third Party: The entity takes remedial action		
P6.6.2_Provides Notice of Breaches and Incidents	TSP 100—20	P6.6	P6.6.2	Provides Notice of Breaches and					Provides Notice of Breaches and Incidents: The entity has a process for providing notice of		
P6.7.1_Identifies Types of Personal Information and Handling Process	TSP 100—20	P6.7	P6.7.1	Identifies Types of Personal					Identifies Types of Personal Information and Handling Process: The types of personal		
P6.7.2_Captures, Identifies, and Communicates Requests for Information	TSP 100—20	P6.7	P6.7.2	Captures, Identifies, and					Captures, Identifies, and Communicates Requests for Information: Requests for an		
P7.1.1_Ensures Accuracy and Completeness of Personal Information	TSP 100—20	P7.1	P7.1.1	Ensures Accuracy and					Ensures Accuracy and Completeness of Personal Information: Personal information is		
P7.1.2_Ensures Relevance of Personal Information	TSP 100—20	P7.1	P7.1.2	Ensures Relevance of					Ensures Relevance of Personal Information: Personal information is relevant to the		
P8.1.1_Communicates to Data Subjects	TSP 100—20	P8.1	P8.1.1	Communicates to Data Subjects:					Communicates to Data Subjects: Data subjects are informed about how to contact		
P8.1.2_Addresses Inquiries, Complaints, and Disputes	TSP 100—20	P8.1	P8.1.2	Addresses Inquiries					Addresses Inquiries, Complaints, and Disputes: A process is in place to address		
P8.1.3_Documents and Communicates Dispute Resolution and Recourse	TSP 100—20	P8.1	P8.1.3	Documents and Communicates					Documents and Communicates Dispute Resolution and Recourse: Each complaint is		
P8.1.4_Documents and Reports Compliance Review Results	TSP 100—20	P8.1	P8.1.4	Documents and Reports					Documents and Reports Compliance Review Results: Compliance with objectives related		
P8.1.5_Documents and Reports Instances of Noncompliance	TSP 100—20	P8.1	P8.1.5	Documents and Reports Instances					Documents and Reports Instances of Noncompliance: Instances of noncompliance		
P8.1.6_Performs Ongoing Monitoring	TSP 100—20	P8.1	P8.1.6	Performs Ongoing Monitoring:					Performs Ongoing Monitoring: Ongoing procedures are performed for monitoring the		

Control Tests Name

Use	Coun	Control ID 1	Control ID 2	Control ID 3	Control ID 4	Control ID 5	Control ID 6	Control ID 7	Control ID 8	Control ID 9	Control ID 10	Control ID 11	Control ID 12	Control ID 13	Control ID 14	Control ID 15	Control ID 16
		2	0	1	0	1	0	1	0	0	0	0	0	1	0	0	1
a	SOC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
a	ITRUS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
a	ISO	2	0	1	0	1	0	1	0	0	0	0	0	1	0	0	1
a	71 17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
a	PCI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
a	53 r5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

- Green Go – each test should be scoped by relevancy and then applied to all target framework items. If you assign it, you need a scoping flag to UNASSIGN it.
- Blue Plan – At first iteration, make sure you've got at least some coverage for each related framework. Second, third and fourth iterations consider what we missed
- Red Flag – you don't have the right to extract the data. Your organization has to own a license. You can't share or publish derivative work. The framework is another organization's property. (HITRUST, ISO)

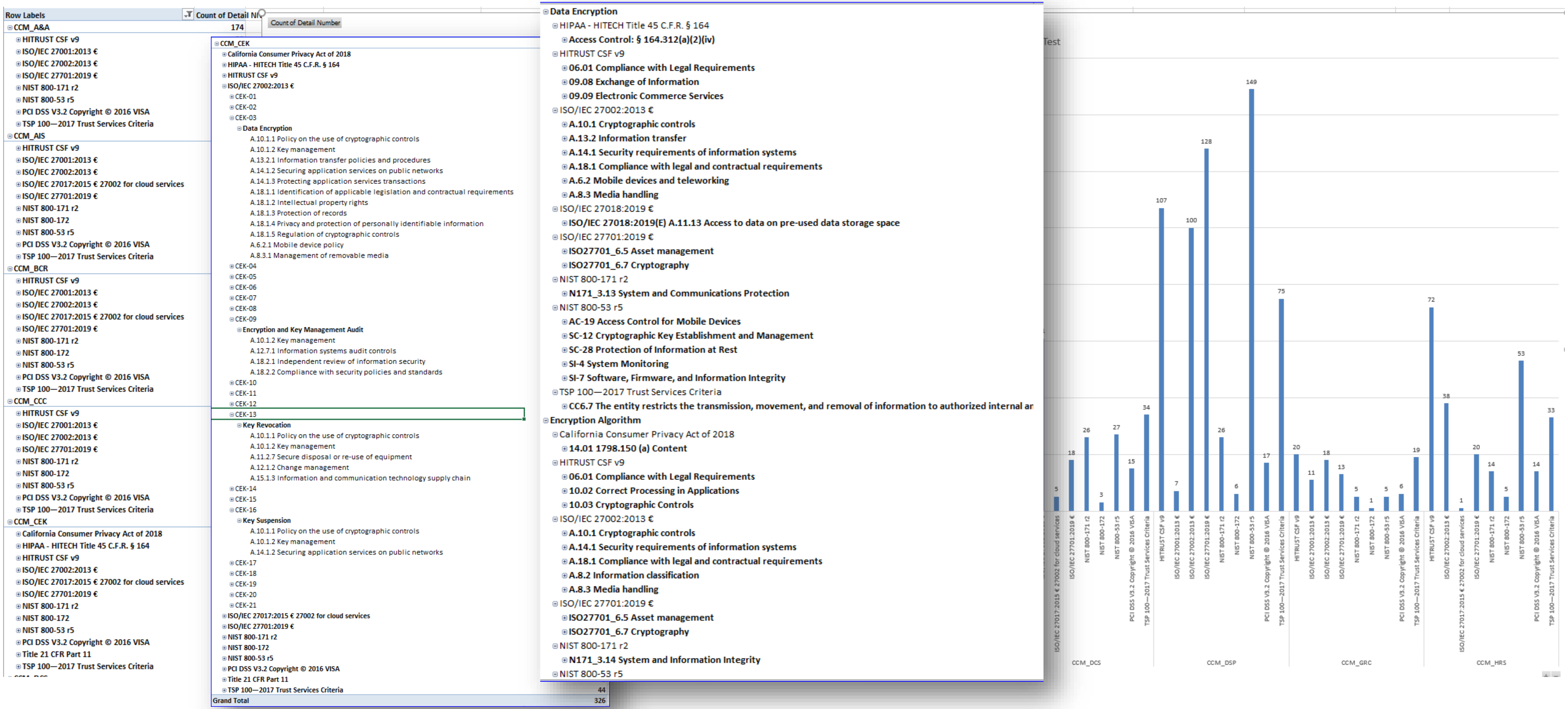
Encryption – Let's discuss –Transition to CCM 4.0 ASAP



Robin Basham (robin@enterprisegrc.com) is signed i

Edition or Source	main ID	trol ID	Client ID	Control Objective	Control Objective Description	Purp	List of policy	CSA Test language - pre adoption/ CSA edits open	Unified Testing Map	Unified Testing Map:Test_ID (to review the details of each mapped item see the All Mapping Tab)	ified Universe
CCM v4.0 Cloud	CCM_	CEK-	CEK-01 Encryption and Key Management Policy	Encryption and Key Management Policy and Procedures	Establish, document, approve, communicate, apply, evaluate and			CCM_CEK-1.1 A re cryptography , encryption and key management	A.10.1.1, A.10.1.2, A.13.2.1, A.13.2.2, A.18.1.3, A.18.1.5,	C.5.2 Policy; C.8.3 Information security risk treatment; A.10.1 Cryptographic controls; A.13.2 Information transfer; A.18.1 Compliance with legal and contractual requirements; ISO27701_6.5 Asset	A.13.2; A.18.1; ISO27701_6.5;
CCM v4.0 Cloud	CCM_	CEK-	CEK-02 CEK Roles and Responsibilities	CEK Roles and Responsibilities	Define and implement cryptographic, encryption and key management roles			CCM_CEK-2.1 Are cryptography , encryption and key management roles	A.8.2.1, A.9.2.3, A.10.1.1, A.10.1.2, A.13.1.3, A.13.2.1, A.18.1.3,	A.8.2 Information classification; A.9.2 User access management; A.10.1 Cryptographic controls; A.13.1 Network security management; A.13.2 Information transfer; A.18.1 Compliance with legal and	A.13.1; A.13.2; A.18.1; CLD.6.3
CCM v4.0 Cloud	CCM_	CEK-	CEK-03 Data Encryption	Data Encryption	Provide cryptographic protection to data-at-rest and in-transit, using			CCM_CEK-3.1 Are data at-rest and in-transit cryptographically protected using	A.6.2.1, A.8.3.1, A.10.1.1, A.10.1.2, A.13.2.1, A.14.1.2, A.14.1.3,	A.6.2 Mobile devices and teleworking; A.8.3 Media handling; A.10.1 Cryptographic controls; A.13.2 Information transfer; A.14.1 Security requirements of information systems; A.18.1 Compliance with	A.13.2; A.14.1; A.18.1; AC-19;
CCM v4.0 Cloud	CCM_	CEK-	CEK-04 Encryption Algorithm	Encryption Algorithm	Use encryption algorithms that are appropriate for data protection,			CCM_CEK-4.1 Are appropriate encryption algorithms used for data protection,	A.8.2.1, A.8.3.3, A.10.1.1, A.10.1.2, A.14.1.2, A.14.1.3, A.18.1.3,	A.8.2 Information classification; A.8.3 Media handling; A.10.1 Cryptographic controls; A.14.1 Security requirements of information systems; A.18.1 Compliance with legal and contractual requirements; SA-	A.14.1; A.18.1; SC-12; SC-28;
CCM v4.0 Cloud	CCM_	CEK-	CEK-05 Encryption Change Management	Encryption Change Management	Establish a standard change management procedure, to			CCM_CEK-5.1 Are standard change management procedures established to	A.8.2.1, A.10.1.2, A.12.1.2, A.14.2.2, A.18.1.3, ISO27701_6.7.1,	A.8.2 Information classification; A.10.1 Cryptographic controls; A.12.1 Operational procedures and responsibilities; A.14.2 Security in development and support processes; A.18.1 Compliance with legal	A.14.2; A.18.1; ISO27701_6.11
CCM v4.0 Cloud	CCM_	CEK-	CEK-06 Encryption Change Cost Benefit Analysis	Encryption Change Cost Benefit Analysis	Manage and adopt changes to cryptography-, encryption-, and key			CCM_CEK-6.1 Are changes to cryptography-, encryption- and key management-	A.8.2.1, A.10.1.2, A.12.1.2, A.14.2.2, A.18.1.3, ISO27701_6.7.1,	C.6.1 Actions to address risks & opportunities; A.6.1 Internal organization; A.10.1 Cryptographic controls; A.12.1 Operational procedures and responsibilities; A.13.2 Information transfer; A.14.2	A.12.1; A.13.2; A.14.2; HT_09.
CCM v4.0 Cloud	CCM_	CEK-	CEK-07 Encryption Risk Management	Encryption Risk Management	Establish and maintain an encryption and key management risk program that			CCM_CEK-7.1 Is a cryptographic, encryption and key management risk	A.6.1.5, A.10.1.1, A.10.1.2, A.18.1.3, ISO27701_6.7.1, ISO27701_6.11.1,	A.6.1 Internal organization; A.10.1 Cryptographic controls; A.18.1 Compliance with legal and contractual requirements; ISO27701_6.7 Cryptography; CM-3 Configuration Change Control; SA-9	ISO27701_6.7; 3; SA-9; SC-8; S
CCM v4.0 Cloud	CCM_	CEK-	CEK-08 CSC Key Management Capability	CSC Key Management Capability	CSPs must provide the capability for CSCs to manage their own data			CCM_CEK-8.1 Are CSC's provided the capability to manage their own data	A.10.1.2, A.15.1.2, A.15.1.3, CLD.6.3.1, CLD.12.1.5, CA-6(2), CP-	A.10.1 Cryptographic controls; A.15.1 Information security in supplier relationships; CLD.6.3 Relationship between cloud service customer and cloud service provider; CLD.12.1 Operational	CLD.6.3; CLD.1 CCPA2018-T12-
CCM v4.0 Cloud	CCM_	CEK-	CEK-09 Encryption and Key Management Audit	Encryption and Key Management Audit	Audit encryption and key management systems, policies, and processes with a			CCM_CEK-9.1 Are encryption and key management systems, policies, and	CCPA12.1.4 1798.140(d), 2.3.0 BMSN, 3.6.5 PCD, 3.6.6 PCD,	A.10.1 Cryptographic controls; A.12.7 Information systems audit considerations; A.18.2 Information security reviews; C.9.2 Internal audit; ISO27701_6.7 Cryptography; N171_3.14 System and Information	A.18.2; C.9.2; ISO27701_6.7;
CCM v4.0 Cloud	CCM_	CEK-	CEK-10 Key Generation	Key Generation	Generate Cryptographic keys using industry-accepted cryptographic			CCM_CEK-10.1 Are cryptographic keys being generated using industry	A.10.1.1, A.10.1.2, A.18.1.5, HT_6.d, 3.6.1 PCD, 3.6.6 PCD, N171_3.13.11,	A.10.1 Cryptographic controls; A.18.1 Compliance with legal and contractual requirements; SA-10 Developer Configuration Management; SC-12 Cryptographic Key Establishment and Management; SC-	10; SC-12; SC-2 7; N171_3.14;
CCM v4.0 Cloud	CCM_	CEK-	CEK-11 Key Purpose	Key Purpose	Manage cryptographic secret and private keys that are provisioned for a			CCM_CEK-11.1 Are cryptographic secret and private keys that are provisioned for	A.9.2.4, A.9.3.1, A.10.1.1, A.10.1.2, A.14.1.3, HT_10.g, 3.5.2 PCD, 3.6.7	A.9.2 User access management; A.10.1 Cryptographic controls; 10.03 Cryptographic Controls; 3_PCD Protect Stored Data; IA-5 Authenticator Management; SC-12 Cryptographic Key Establishment and	HT_10.03; 3_P 5; SC-12; CC6.1
CCM v4.0 Cloud	CCM_	CEK-	CEK-12 Key Rotation	Key Rotation	Rotate cryptographic keys in accordance with the calculated cryptoperiod, which			CCM_CEK-12.1 Are cryptographic keys rotated based on a cryptoperiod	A.10.1.1, A.10.1.2, A.12.4.1, ISO27701_6.7.1, N172_3.5.2e,	A.10.1 Cryptographic controls; A.12.4 Logging and monitoring; ISO27701_6.7 Cryptography; N171_3.5 Identification and Authentication; 6_MVMP Develop and Maintain Secure Systems and Applications.;	ISO27701_6.7; N171_3.5; 6_M
CCM v4.0 Cloud	CCM_	CEK-	CEK-13 Key Revocation	Key Revocation	Define, implement and evaluate processes, procedures and technical			CCM_CEK-13.1 Are cryptographic keys revoked and removed prior to the end of	11.300(b), A.10.1.1, A.10.1.2, A.11.2.7, A.12.1.2, A.15.1.3,	Sec. 11.300 Controls for identification codes/passwords; A.10.1 Cryptographic controls; A.11.2 Equipment; A.12.1 Operational procedures and responsibilities; A.15.1 Information security in	A.10.1; A.11.2; A.12.1; A.15.1;
CCM v4.0 Cloud	CCM_	CEK-	CEK-14 Key Destruction	Key Destruction	Define, implement and evaluate processes, procedures, and technical			CCM_CEK-14.1 Are Processes, procedures and technical measures to destroy keys	A.8.1.2, A.10.1.2, A.11.2.7, A.18.1.3, CLD.12.1.5, HT_10.g, 3.6.5 PCD,	A.8.1 Responsibility for assets; A.10.1 Cryptographic controls; A.11.2 Equipment; A.18.1 Compliance with legal and contractual requirements; CLD.12.1 Operational procedures and responsibilities; 10.03	A.18.1; CLD.12. HT_10.03; 3_P
CCM v4.0 Cloud	CCM_	CEK-	CEK-15 Key Activation	Key Activation	Define, implement and evaluate processes, procedures, and technical			CCM_CEK-15.1 Are Processes, procedures and technical measures to create keys	A.10.1.2, A.14.1.2, A.18.1.5, CLD.12.1.5, AC-3(8), IA-5(2), SA-	A.10.1 Cryptographic controls; A.12.1 Operational procedures and responsibilities; A.14.1 Security requirements of information systems; A.18.1 Compliance with legal and contractual requirements;	A.14.1; A.18.1; CLD.12.1; HT_1
CCM v4.0 Cloud	CCM_	CEK-	CEK-16 Key Suspension	Key Suspension	Define, implement and evaluate processes, procedures, and technical			CCM_CEK-16.1 Are Processes, procedures and technical measures to monitor,	A.10.1.1, A.10.1.2, A.14.1.2, CM-3(6), MP-6(1), HT_6.d, HT_6.g,	A.10.1 Cryptographic controls; A.14.1 Security requirements of information systems; CM-3 Configuration Change Control; MP-6 Media Sanitization; 06.01 Compliance with Legal Requirements; 09.06 Network	MP-6; HT_06.0 HT_09.06;
CCM v4.0 Cloud	CCM_	CEK-	CEK-17 Key Deactivation	Key Deactivation	Define, implement and evaluate processes, procedures and technical			CCM_CEK-17.1 Are Processes, procedures and technical measures to deactivate	A.10.1.1, A.10.1.2, A.12.1.1, A.14.1.2, A.18.1.5, AC-3(8), IA-5(2),	A.10.1 Cryptographic controls; A.12.1 Operational procedures and responsibilities; A.14.1 Security requirements of information systems; A.18.1 Compliance with legal and contractual requirements;	A.14.1; A.18.1; HT_10.03; 3_P
CCM v4.0 Cloud	CCM_	CEK-	CEK-18 Key Archival	Key Archival	Define, implement and evaluate processes, procedures, and technical			CCM_CEK-18.1 Are Processes, procedures and technical measures to manage	A.10.1.2, A.13.2.2, A.14.2.7, A.18.1.3, SA-15(11), SC-12(1),	A.10.1 Cryptographic controls; A.13.2 Information transfer; A.14.2 Security in development and support processes; A.18.1 Compliance with legal and contractual requirements; SA-15 Development Process,	A.14.2; A.18.1; 15; SC-12; HT_
CCM v4.0 Cloud	CCM_	CEK-	CEK-19 Key Compromise	Key Compromise	Define, implement and evaluate processes, procedures, and technical			CCM_CEK-19.1 Are Processes, procedures and technical measures to encrypt	A.10.1.2, A.11.2.7, A.18.1.3, ISO27701_6.5.3, SC-12(1), HT_10.g,	A.8.3 Media handling; A.10.1 Cryptographic controls; A.11.2 Equipment; A.18.1 Compliance with legal and contractual requirements; ISO27701_6.5 Asset management; SC-12 Cryptographic Key	A.18.1; ISO27701_6.5;
CCM v4.0 Cloud	CCM_	CEK-	CEK-20 Key Recovery	Key Recovery	Define, implement and evaluate processes, procedures and technical			CCM_CEK-20.1 Are Processes, procedures and technical measures to assess the	A.10.1.2, A.18.1.3, SA-9(6), SC-12(1), SC-12(3), SC-28(1), SI-7(6), HT_6.d,	A.10.1 Cryptographic controls; A.18.1 Compliance with legal and contractual requirements; SA-9 External System Services; SC-12 Cryptographic Key Establishment and Management; SC-28 Protection of	SC-12; SC-28; S CCPA2018-T14-
CCM v4.0 Cloud	CCM_	CEK-	CEK-21 Key Inventory Management	Key Inventory Management	Define, implement and evaluate processes, procedures and technical			CCM_CEK-21.1 Are Processes, procedures and technical measures being defined,	A.10.1.2, A.18.1.3, SA-9(6), SC-12(1), SC-12(3), SC-23(5), SC-28(1), SI-	A.10.1 Cryptographic controls; A.18.1 Compliance with legal and contractual requirements; SA-9 External System Services; SC-12 Cryptographic Key Establishment and Management; SC-28 Protection of	SC-12; SC-28; S CCPA2018-T14-

Correctly Formatted Mappings Accessible/ Usable



Row Labels | Count of Detail N

⊟CCM_A&A 174
- ⊞HITRUST CSF v9
- ⊞ISO/IEC 27001:2013 €
- ⊞ISO/IEC 27002:2013 €
- ⊞ISO/IEC 27701:2019 €
- ⊞NIST 800-171 r2
- ⊞NIST 800-53 r5
- ⊞PCI DSS V3.2 Copyright © 2016 VISA
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⊟CCM_AIS
- ⊞HITRUST CSF v9
- ⊞ISO/IEC 27001:2013 €
- ⊞ISO/IEC 27002:2013 €
- ⊞ISO/IEC 27017:2015 € 27002 for cloud services
- ⊞ISO/IEC 27701:2019 €
- ⊞NIST 800-171 r2
- ⊞NIST 800-172
- ⊞NIST 800-53 r5
- ⊞PCI DSS V3.2 Copyright © 2016 VISA
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⊟CCM_BCR
- ⊞HITRUST CSF v9
- ⊞ISO/IEC 27001:2013 €
- ⊞ISO/IEC 27002:2013 €
- ⊞ISO/IEC 27017:2015 € 27002 for cloud services
- ⊞ISO/IEC 27701:2019 €
- ⊞NIST 800-171 r2
- ⊞NIST 800-172
- ⊞NIST 800-53 r5
- ⊞PCI DSS V3.2 Copyright © 2016 VISA
- ⊞TSP 100—2017 Trust Services Criteria

⊟CCM_CCC
- ⊞HITRUST CSF v9
- ⊞ISO/IEC 27001:2013 €
- ⊞ISO/IEC 27002:2013 €
- ⊞ISO/IEC 27701:2019 €
- ⊞NIST 800-171 r2
- ⊞NIST 800-172
- ⊞NIST 800-53 r5
- ⊞PCI DSS V3.2 Copyright © 2016 VISA
- ⊞TSP 100—2017 Trust Services Criteria

⊟CCM_CEK
- ⊞California Consumer Privacy Act of 2018
- ⊞HIPAA - HITECH Title 45 C.F.R. § 164
- ⊞HITRUST CSF v9
- ⊞ISO/IEC 27002:2013 €
- ⊞ISO/IEC 27017:2015 € 27002 for cloud services
- ⊞ISO/IEC 27701:2019 €
- ⊞NIST 800-171 r2
- ⊞NIST 800-172
- ⊞NIST 800-53 r5
- ⊞PCI DSS V3.2 Copyright © 2016 VISA
- ⊞Title 21 CFR Part 11
- ⊞TSP 100—2017 Trust Services Criteria

Count of Detail Number

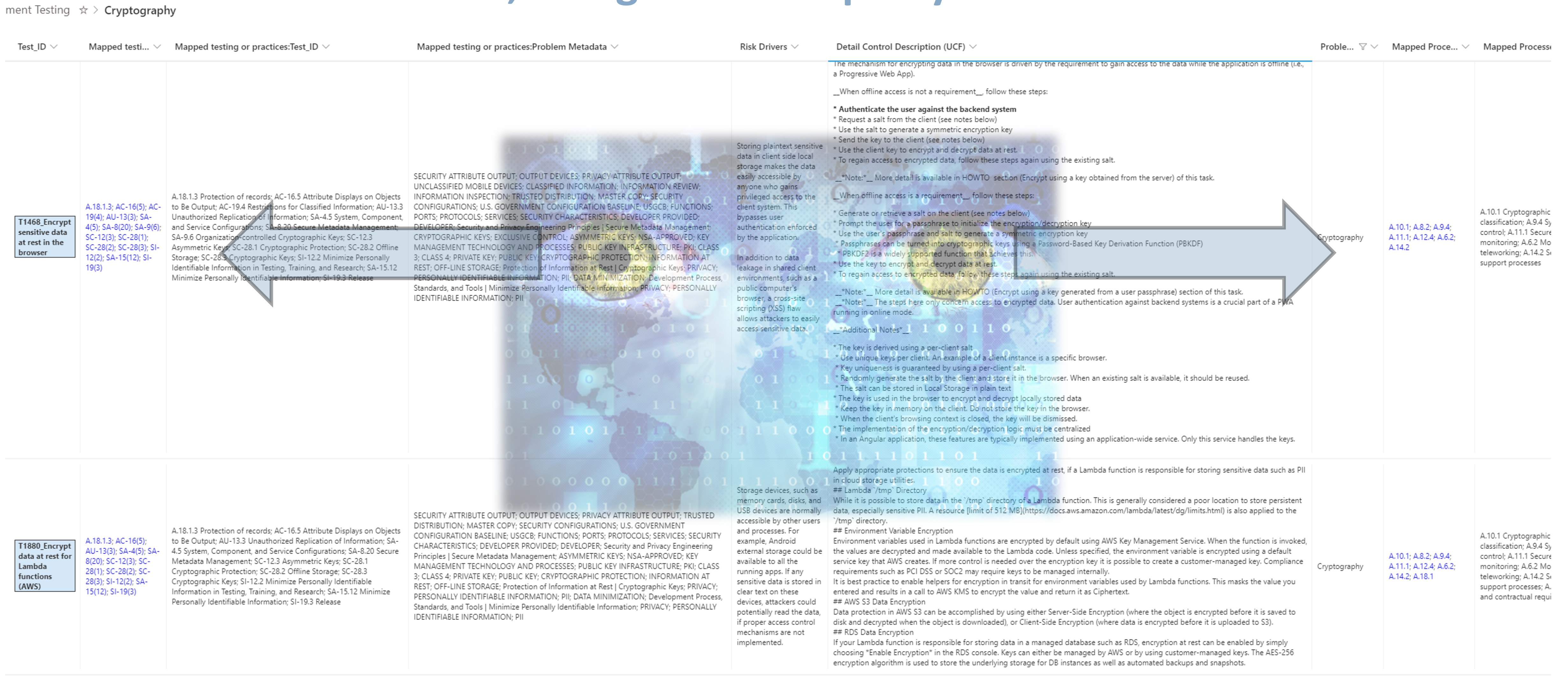
⊟CCM_CEK
- ⊞California Consumer Privacy Act of 2018
- ⊞HIPAA - HITECH Title 45 C.F.R. § 164
- ⊞HITRUST CSF v9
- ⊟ISO/IEC 27002:2013 €
  - ⊞CEK-01
  - ⊞CEK-02
  - ⊟CEK-03
    - ⊟Data Encryption
      - A.10.1.1 Policy on the use of cryptographic controls
      - A.10.1.2 Key management
      - A.13.2.1 Information transfer policies and procedures
      - A.14.1.2 Securing application services on public networks
      - A.14.1.3 Protecting application services transactions
      - A.18.1.1 Identification of applicable legislation and contractual requirements
      - A.18.1.2 Intellectual property rights
      - A.18.1.3 Protection of records
      - A.18.1.4 Privacy and protection of personally identifiable information
      - A.18.1.5 Regulation of cryptographic controls
      - A.6.2.1 Mobile device policy
      - A.8.3.1 Management of removable media
  - ⊞CEK-04
  - ⊞CEK-05
  - ⊞CEK-06
  - ⊞CEK-07
  - ⊞CEK-08
  - ⊟CEK-09
    - ⊟Encryption and Key Management Audit
      - A.10.1.2 Key management
      - A.12.7.1 Information systems audit controls
      - A.18.2.1 Independent review of information security
      - A.18.2.2 Compliance with security policies and standards
  - ⊞CEK-10
  - ⊞CEK-11
  - ⊞CEK-12
  - ⊟CEK-13
    - ⊟Key Revocation
      - A.10.1.1 Policy on the use of cryptographic controls
      - A.10.1.2 Key management
      - A.11.2.7 Secure disposal or re-use of equipment
      - A.12.1.2 Change management
      - A.15.1.3 Information and communication technology supply chain
  - ⊞CEK-14
  - ⊞CEK-15
  - ⊟CEK-16
    - ⊟Key Suspension
      - A.10.1.1 Policy on the use of cryptographic controls
      - A.10.1.2 Key management
      - A.14.1.2 Securing application services on public networks
  - ⊞CEK-17
  - ⊞CEK-18
  - ⊞CEK-19
  - ⊞CEK-20
  - ⊞CEK-21
- ⊞ISO/IEC 27017:2015 € 27002 for cloud services
- ⊞ISO/IEC 27701:2019 €
- ⊞NIST 800-171 r2
- ⊞NIST 800-172
- ⊞NIST 800-53 r5
- ⊞PCI DSS V3.2 Copyright © 2016 VISA
- ⊞Title 21 CFR Part 11
- ⊞TSP 100—2017 Trust Services Criteria 44

Grand Total 326

⊟Data Encryption
- ⊟HIPAA - HITECH Title 45 C.F.R. § 164
  - ⊞**Access Control: § 164.312(a)(2)(iv)**
- ⊟HITRUST CSF v9
  - ⊞**06.01 Compliance with Legal Requirements**
  - ⊞**09.08 Exchange of Information**
  - ⊞**09.09 Electronic Commerce Services**
- ⊟ISO/IEC 27002:2013 €
  - ⊞**A.10.1 Cryptographic controls**
  - ⊞**A.13.2 Information transfer**
  - ⊞**A.14.1 Security requirements of information systems**
  - ⊞**A.18.1 Compliance with legal and contractual requirements**
  - ⊞**A.6.2 Mobile devices and teleworking**
  - ⊞**A.8.3 Media handling**
- ⊟ISO/IEC 27018:2019 €
  - ⊞**ISO/IEC 27018:2019(E) A.11.13 Access to data on pre-used data storage space**
- ⊟ISO/IEC 27701:2019 €
  - ⊞**ISO27701_6.5 Asset management**
  - ⊞**ISO27701_6.7 Cryptography**
- ⊟NIST 800-171 r2
  - ⊞**N171_3.13 System and Communications Protection**
- ⊟NIST 800-53 r5
  - ⊞**AC-19 Access Control for Mobile Devices**
  - ⊞**SC-12 Cryptographic Key Establishment and Management**
  - ⊞**SC-28 Protection of Information at Rest**
  - ⊞**SI-4 System Monitoring**
  - ⊞**SI-7 Software, Firmware, and Information Integrity**
- ⊟TSP 100—2017 Trust Services Criteria
  - ⊞**CC6.7 The entity restricts the transmission, movement, and removal of information to authorized internal ar**

⊟Encryption Algorithm
- ⊟California Consumer Privacy Act of 2018
  - ⊞**14.01 1798.150 (a) Content**
- ⊟HITRUST CSF v9
  - ⊞**06.01 Compliance with Legal Requirements**
  - ⊞**10.02 Correct Processing in Applications**
  - ⊞**10.03 Cryptographic Controls**
- ⊟ISO/IEC 27002:2013 €
  - ⊞**A.10.1 Cryptographic controls**
  - ⊞**A.14.1 Security requirements of information systems**
  - ⊞**A.18.1 Compliance with legal and contractual requirements**
  - ⊞**A.8.2 Information classification**
  - ⊞**A.8.3 Media handling**
- ⊟ISO/IEC 27701:2019 €
  - ⊞**ISO27701_6.5 Asset management**
  - ⊞**ISO27701_6.7 Cryptography**
- ⊟NIST 800-171 r2
  - ⊞**N171_3.14 System and Information Integrity**
- ⊟NIST 800-53 r5

Mappers benefit by mapping technical controls to frameworks, frameworks to client domains, configurations to policy



ment Testing ☆ > Cryptography

Test_ID	Mapped testi...	Mapped testing or practices:Test_ID	Mapped testing or practices:Problem Metadata	Risk Drivers	Detail Control Description (UCF)	Proble...	Mapped Proce...	Mapped Processe
T1468_Encrypt sensitive data at rest in the browser	A.18.1.3; AC-16(5); AC-19(4); AU-13(3); SA-4(5); SA-8(20); SA-9(6); SC-12(3); SC-28(1); SC-28(2); SC-28(3); SI-12(2); SA-15(12); SI-19(3)	A.18.1.3 Protection of records; AC-16.5 Attribute Displays on Objects to Be Output; AC-19.4 Restrictions for Classified Information; AU-13.3 Unauthorized Replication of Information; SA-4.5 System, Component, and Service Configurations; SA-8.20 Secure Metadata Management; SA-9.6 Organization-controlled Cryptographic Keys; SC-12.3 Asymmetric Keys; SC-28.1 Cryptographic Protection; SC-28.2 Offline Storage; SC-28.3 Cryptographic Keys; SI-12.2 Minimize Personally Identifiable Information in Testing, Training, and Research; SA-15.12 Minimize Personally Identifiable Information; SI-19.3 Release	SECURITY ATTRIBUTE OUTPUT; OUTPUT DEVICES; PRIVACY ATTRIBUTE OUTPUT; UNCLASSIFIED MOBILE DEVICES; CLASSIFIED INFORMATION; INFORMATION REVIEW; INFORMATION INSPECTION; TRUSTED DISTRIBUTION; MASTER COPY; SECURITY CONFIGURATIONS; U.S. GOVERNMENT CONFIGURATION BASELINE; USGCB; FUNCTIONS; PORTS; PROTOCOLS; SERVICES; SECURITY CHARACTERISTICS; DEVELOPER PROVIDED; DEVELOPER; Security and Privacy Engineering Principles | Secure Metadata Management; CRYPTOGRAPHIC KEYS; EXCLUSIVE CONTROL; ASYMMETRIC KEYS; NSA-APPROVED; KEY MANAGEMENT TECHNOLOGY AND PROCESSES; PUBLIC KEY INFRASTRUCTURE; PKI; CLASS 3; CLASS 4; PRIVATE KEY; PUBLIC KEY; CRYPTOGRAPHIC PROTECTION; INFORMATION AT REST; OFF-LINE STORAGE; Protection of Information at Rest | Cryptographic Keys; PRIVACY; PERSONALLY IDENTIFIABLE INFORMATION; PII; DATA MINIMIZATION; Development Process, Standards, and Tools | Minimize Personally Identifiable Information; PRIVACY; PERSONALLY IDENTIFIABLE INFORMATION; PII	Storing plaintext sensitive data in client side local storage makes the data easily accessible by anyone who gains privileged access to the client system. This bypasses user authentication enforced by the application. In addition to data leakage in shared client environments, such as a public computer's browser, a cross-site scripting (XSS) flaw allows attackers to easily access sensitive data.	The mechanism for encrypting data in the browser is driven by the requirement to gain access to the data while the application is offline (i.e., a Progressive Web App). __When offline access is not a requirement__, follow these steps: *** Authenticate the user against the backend system** * Request a salt from the client (see notes below) * Use the salt to generate a symmetric encryption key * Send the key to the client (see notes below) * Use the client key to encrypt and decrypt data at rest. * To regain access to encrypted data, follow these steps again using the existing salt. __*Note:*__ More detail is available in HOWTO section (Encrypt using a key obtained from the server) of this task. __When offline access is a requirement__, follow these steps: * Generate or retrieve a salt on the client (see notes below) * Prompt the user for a passphrase to initialize the encryption/decryption key * Use the user's passphrase and salt to generate a symmetric encryption key * Passphrases can be turned into cryptographic keys using a Password-Based Key Derivation Function (PBKDF) * PBKDF2 is a widely supported function that achieves this. * Use the key to encrypt and decrypt data at rest. * To regain access to encrypted data, follow these steps again using the existing salt. __*Note:*__ More detail is available in HOWTO (Encrypt using a key generated from a user passphrase) section of this task. __*Note:*__ The steps here only concern access to encrypted data. User authentication against backend systems is a crucial part of a PWA running in online mode. __*Additional Notes*__ * The key is derived using a per-client salt * Use unique keys per client. An example of a client instance is a specific browser. * Key uniqueness is guaranteed by using a per-client salt. * Randomly generate the salt by the client and store it in the browser. When an existing salt is available, it should be reused. * The salt can be stored in Local Storage in plain text * The key is used in the browser to encrypt and decrypt locally stored data * Keep the key in memory on the client. Do not store the key in the browser. * When the client's browsing context is closed, the key will be dismissed. * The implementation of the encryption/decryption logic must be centralized * In an Angular application, these features are typically implemented using an application-wide service. Only this service handles the keys.	Cryptography	A.10.1; A.8.2; A.9.4; A.11.1; A.12.4; A.6.2; A.14.2	A.10.1 Cryptographic classification; A.9.4 Sy control; A.11.1 Secure monitoring; A.6.2 Mo teleworking; A.14.2 S support processes
T1880_Encrypt data at rest for Lambda functions (AWS)	A.18.1.3; AC-16(5); AU-13(3); SA-4(5); SA-8(20); SC-12(3); SC-28(1); SC-28(2); SC-28(3); SI-12(2); SA-15(12); SI-19(3)	A.18.1.3 Protection of records; AC-16.5 Attribute Displays on Objects to Be Output; AU-13.3 Unauthorized Replication of Information; SA-4.5 System, Component, and Service Configurations; SA-8.20 Secure Metadata Management; SC-12.3 Asymmetric Keys; SC-28.1 Cryptographic Protection; SC-28.2 Offline Storage; SC-28.3 Cryptographic Keys; SI-12.2 Minimize Personally Identifiable Information in Testing, Training, and Research; SA-15.12 Minimize Personally Identifiable Information; SI-19.3 Release	SECURITY ATTRIBUTE OUTPUT; OUTPUT DEVICES; PRIVACY ATTRIBUTE OUTPUT; TRUSTED DISTRIBUTION; MASTER COPY; SECURITY CONFIGURATIONS; U.S. GOVERNMENT CONFIGURATION BASELINE; USGCB; FUNCTIONS; PORTS; PROTOCOLS; SERVICES; SECURITY CHARACTERISTICS; DEVELOPER PROVIDED; DEVELOPER; Security and Privacy Engineering Principles | Secure Metadata Management; ASYMMETRIC KEYS; NSA-APPROVED; KEY MANAGEMENT TECHNOLOGY AND PROCESSES; PUBLIC KEY INFRASTRUCTURE; PKI; CLASS 3; CLASS 4; PRIVATE KEY; PUBLIC KEY; CRYPTOGRAPHIC PROTECTION; INFORMATION AT REST; OFF-LINE STORAGE; Protection of Information at Rest | Cryptographic Keys; PRIVACY; PERSONALLY IDENTIFIABLE INFORMATION; PII; DATA MINIMIZATION; Development Process, Standards, and Tools | Minimize Personally Identifiable Information; PRIVACY; PERSONALLY IDENTIFIABLE INFORMATION; PII	Storage devices, such as memory cards, disks, and USB devices are normally accessible by other users and processes. For example, Android external storage could be available to all the running apps. If any sensitive data is stored in clear text on these devices, attackers could potentially read the data, if proper access control mechanisms are not implemented.	Apply appropriate protections to ensure the data is encrypted at rest, if a Lambda function is responsible for storing sensitive data such as PII in cloud storage utilities. ## Lambda `/tmp` Directory While it is possible to store data in the `/tmp` directory of a Lambda function. This is generally considered a poor location to store persistent data, especially sensitive PII. A resource [limit of 512 MB](https://docs.aws.amazon.com/lambda/latest/dg/limits.html) is also applied to the `/tmp` directory. ## Environment Variable Encryption Environment variables used in Lambda functions are encrypted by default using AWS Key Management Service. When the function is invoked, the values are decrypted and made available to the Lambda code. Unless specified, the environment variable is encrypted using a default service key that AWS creates. If more control is needed over the encryption key it is possible to create a customer-managed key. Compliance requirements such as PCI DSS or SOC2 may require keys to be managed internally. It is best practice to enable helpers for encryption in transit for environment variables used by Lambda functions. This masks the value you entered and results in a call to AWS KMS to encrypt the value and return it as Ciphertext. ## AWS S3 Data Encryption Data protection in AWS S3 can be accomplished by using either Server-Side Encryption (where the object is encrypted before it is saved to disk and decrypted when the object is downloaded), or Client-Side Encryption (where data is encrypted before it is uploaded to S3). ## RDS Data Encryption If your Lambda function is responsible for storing data in a managed database such as RDS, encryption at rest can be enabled by simply choosing *Enable Encryption* in the RDS console. Keys can either be managed by AWS or by using customer-managed keys. The AES-256 encryption algorithm is used to store the underlying storage for DB instances as well as automated backups and snapshots.	Cryptography	A.10.1; A.8.2; A.9.4; A.11.1; A.12.4; A.6.2; A.14.2; A.18.1	A.10.1 Cryptographic classification; A.9.4 Sy control; A.11.1 Secure monitoring; A.6.2 Mo teleworking; A.14.2 S support processes; A. and contractual requi

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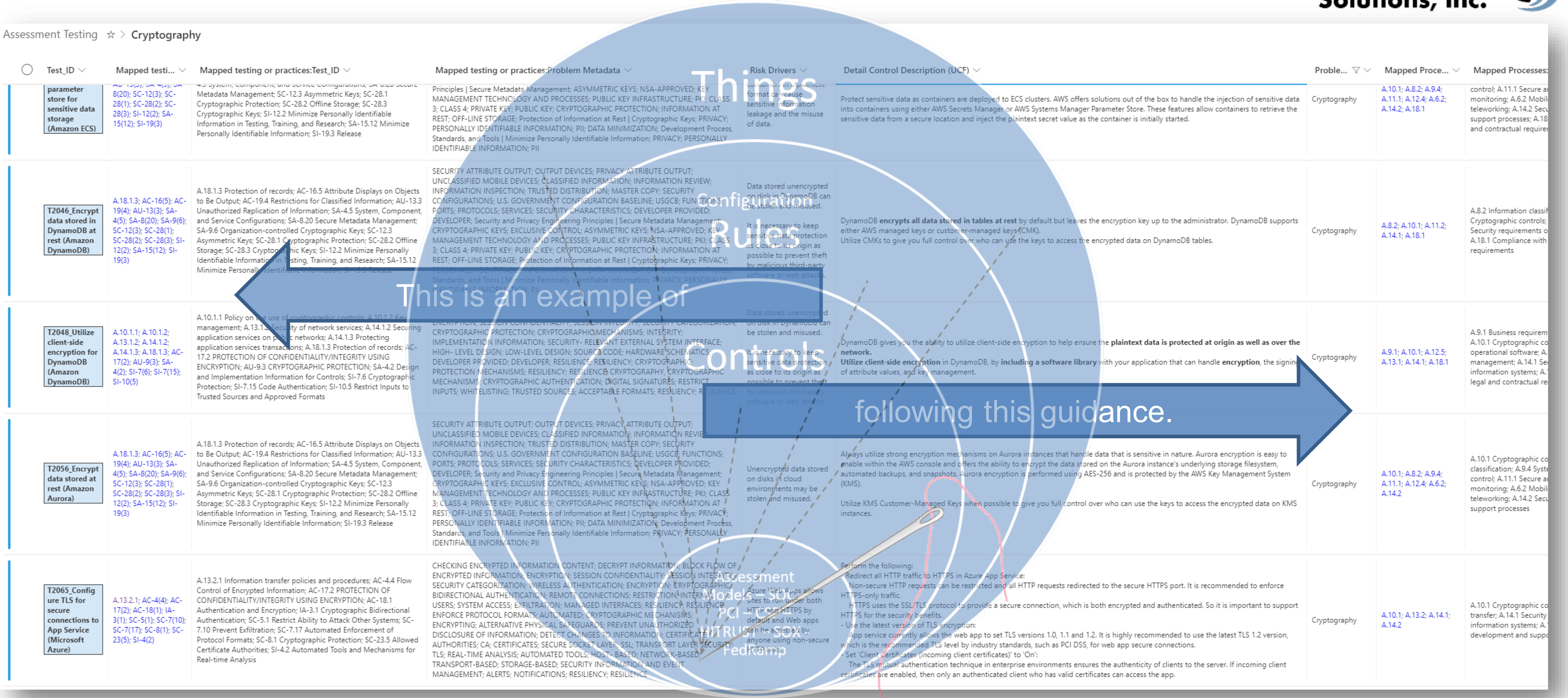
If ANY of these practices are not achieved, they NEED TO FACTOR into the RMF



This is an example of

following this guidance.

Assessment Testing ☆ > Cryptography

Test_ID	Mapped testi...	Mapped testing or practices:Test_ID	Mapped testing or practices:Problem Metadata	Risk Drivers	Detail Control Description (UCF)	Proble...	Mapped Proce...	Mapped Processes:
parameter store for sensitive data storage (Amazon ECS)	AU-13(3); SA-4(5); SA-8(20); SC-12(3); SC-28(1); SC-28(2); SC-28(3); SI-12(2); SA-15(12); SI-19(3)	4.5 System, Component, and Service Configurations; SA-8.20 Secure Metadata Management; SC-12.3 Asymmetric Keys; SC-28.1 Cryptographic Protection; SC-28.2 Offline Storage; SC-28.3 Cryptographic Keys; SI-12.2 Minimize Personally Identifiable Information in Testing, Training, and Research; SA-15.12 Minimize Personally Identifiable Information; SI-19.3 Release	Principles | Secure Metadata Management; ASYMMETRIC KEYS; NSA-APPROVED; KEY MANAGEMENT TECHNOLOGY AND PROCESSES; PUBLIC KEY INFRASTRUCTURE; PKI; CLASS 3; CLASS 4; PRIVATE KEY; PUBLIC KEY; CRYPTOGRAPHIC PROTECTION; INFORMATION AT REST; OFF-LINE STORAGE; Protection of Information at Rest | Cryptographic Keys; PRIVACY; PERSONALLY IDENTIFIABLE INFORMATION; PII; DATA MINIMIZATION; Development Process, Standards, and Tools | Minimize Personally Identifiable Information; PRIVACY; PERSONALLY IDENTIFIABLE INFORMATION; PII	containers in a plaintext format can cause sensitive information leakage and the misuse of data.	Protect sensitive data as containers are deployed to ECS clusters. AWS offers solutions out of the box to handle the injection of sensitive data into containers using either AWS Secrets Manager or AWS Systems Manager Parameter Store. These features allow containers to retrieve the sensitive data from a secure location and inject the plaintext secret value as the container is initially started.	Cryptography	A.10.1; A.8.2; A.9.4; A.11.1; A.12.4; A.6.2; A.14.2; A.18.1	control; A.11.1 Secure a monitoring; A.6.2 Mobil teleworking; A.14.2 Secu support processes; A.18 and contractual requirer
T2046_Encrypt data stored in DynamoDB at rest (Amazon DynamoDB)	A.18.1.3; AC-16(5); AC-19(4); AU-13(3); SA-4(5); SA-8(20); SA-9(6); SC-12(3); SC-28(1); SC-28(2); SC-28(3); SI-12(2); SA-15(12); SI-19(3)	A.18.1.3 Protection of records; AC-16.5 Attribute Displays on Objects to Be Output; AC-19.4 Restrictions for Classified Information; AU-13.3 Unauthorized Replication of Information; SA-4.5 System, Component, and Service Configurations; SA-8.20 Secure Metadata Management; SA-9.6 Organization-controlled Cryptographic Keys; SC-12.3 Asymmetric Keys; SC-28.1 Cryptographic Protection; SC-28.2 Offline Storage; SC-28.3 Cryptographic Keys; SI-12.2 Minimize Personally Identifiable Information in Testing, Training, and Research; SA-15.12 Minimize Personally Identifiable Information; SI-19.3 Release	SECURITY ATTRIBUTE OUTPUT; OUTPUT DEVICES; PRIVACY ATTRIBUTE OUTPUT; UNCLASSIFIED MOBILE DEVICES; CLASSIFIED INFORMATION; INFORMATION REVIEW; INFORMATION INSPECTION; TRUSTED DISTRIBUTION; MASTER COPY; SECURITY CONFIGURATIONS; U.S. GOVERNMENT CONFIGURATION BASELINE; USGCB; FUNCTIONS; PORTS; PROTOCOLS; SERVICES; SECURITY CHARACTERISTICS; DEVELOPER PROVIDED; DEVELOPER; Security and Privacy Engineering Principles | Secure Metadata Management; CRYPTOGRAPHIC KEYS; EXCLUSIVE CONTROL; ASYMMETRIC KEYS; NSA-APPROVED; KEY MANAGEMENT TECHNOLOGY AND PROCESSES; PUBLIC KEY INFRASTRUCTURE; PKI; CLASS 3; CLASS 4; PRIVATE KEY; PUBLIC KEY; CRYPTOGRAPHIC PROTECTION; INFORMATION AT REST; OFF-LINE STORAGE; Protection of Information at Rest | Cryptographic Keys; PRIVACY; PERSONALLY IDENTIFIABLE INFORMATION; PII; DATA MINIMIZATION; Development Process, Standards, and Tools | Minimize Personally Identifiable Information; PRIVACY; PERSONALLY IDENTIFIABLE INFORMATION; PII	Data stored unencrypted on disk in DynamoDB can be stolen and misused. It is necessary to keep sensitive data protection as close to its origin as possible to prevent theft by malicious third-party software or web attacks.	DynamoDB **encrypts all data stored in tables at rest** by default but leaves the encryption key up to the administrator. DynamoDB supports either AWS managed keys or customer-managed keys (CMK). Utilize CMKs to give you full control over who can use the keys to access the encrypted data on DynamoDB tables.	Cryptography	A.8.2; A.10.1; A.11.2; A.14.1; A.18.1	A.8.2 Information classif Cryptographic controls; Security requirements o A.18.1 Compliance with requirements
T2048_Utilize client-side encryption for DynamoDB (Amazon DynamoDB)	A.10.1.1; A.10.1.2; A.13.1.2; A.14.1.2; A.14.1.3; A.18.1.3; AC-17(2); AU-9(3); SA-4(2); SI-7(6); SI-7(15); SI-10(5)	A.10.1.1 Policy on the use of cryptographic controls; A.10.1.2 Key management; A.13.1.2 Security of network services; A.14.1.2 Securing application services on public networks; A.14.1.3 Protecting application services transactions; A.18.1.3 Protection of records; AC-17.2 PROTECTION OF CONFIDENTIALITY/INTEGRITY USING ENCRYPTION; AU-9.3 CRYPTOGRAPHIC PROTECTION; SA-4.2 Design and Implementation Information for Controls; SI-7.6 Cryptographic Protection; SI-7.15 Code Authentication; SI-10.5 Restrict Inputs to Trusted Sources and Approved Formats	ENCRYPTION; SESSION CONFIDENTIALITY; SESSION INTEGRITY; SECURITY CATEGORIZATION; CRYPTOGRAPHIC PROTECTION; CRYPTOGRAPHIC MECHANISMS; INTEGRITY; IMPLEMENTATION INFORMATION; SECURITY- RELEVANT EXTERNAL SYSTEM INTERFACE; HIGH- LEVEL DESIGN; LOW-LEVEL DESIGN; SOURCE CODE; HARDWARE SCHEMATICS; DEVELOPER PROVIDED; DEVELOPER; RESILIENCE; RESILIENCY; CRYPTOGRAPHIC PROTECTION MECHANISMS; RESILIENCY; RESILIENCE CRYPTOGRAPHY, CRYPTOGRAPHIC MECHANISMS; CRYPTOGRAPHIC AUTHENTICATION; DIGITAL SIGNATURES; RESTRICT INPUTS; WHITELISTING; TRUSTED SOURCES; ACCEPTABLE FORMATS; RESILIENCY; RESILIENCE	Data stored unencrypted on disk in DynamoDB can be stolen and misused. It is necessary to keep sensitive data protection as close to its origin as possible to prevent theft by malicious third-party software or web attacks.	DynamoDB gives you the ability to utilize client-side encryption to help ensure the **plaintext data is protected at origin as well as over the network.** **Utilize client-side encryption** in DynamoDB, by **including a software library** with your application that can handle **encryption**, the signing of attribute values, and key management.	Cryptography	A.9.1; A.10.1; A.12.5; A.13.1; A.14.1; A.18.1	A.9.1 Business requirem A.10.1 Cryptographic co operational software; A. management; A.14.1 Se information systems; A. legal and contractual re
T2056_Encrypt data stored at rest (Amazon Aurora)	A.18.1.3; AC-16(5); AC-19(4); AU-13(3); SA-4(5); SA-8(20); SA-9(6); SC-12(3); SC-28(1); SC-28(2); SC-28(3); SI-12(2); SA-15(12); SI-19(3)	A.18.1.3 Protection of records; AC-16.5 Attribute Displays on Objects to Be Output; AC-19.4 Restrictions for Classified Information; AU-13.3 Unauthorized Replication of Information; SA-4.5 System, Component, and Service Configurations; SA-8.20 Secure Metadata Management; SA-9.6 Organization-controlled Cryptographic Keys; SC-12.3 Asymmetric Keys; SC-28.1 Cryptographic Protection; SC-28.2 Offline Storage; SC-28.3 Cryptographic Keys; SI-12.2 Minimize Personally Identifiable Information in Testing, Training, and Research; SA-15.12 Minimize Personally Identifiable Information; SI-19.3 Release	SECURITY ATTRIBUTE OUTPUT; OUTPUT DEVICES; PRIVACY ATTRIBUTE OUTPUT; UNCLASSIFIED MOBILE DEVICES; CLASSIFIED INFORMATION; INFORMATION REVIEW; INFORMATION INSPECTION; TRUSTED DISTRIBUTION; MASTER COPY; SECURITY CONFIGURATIONS; U.S. GOVERNMENT CONFIGURATION BASELINE; USGCB; FUNCTIONS; PORTS; PROTOCOLS; SERVICES; SECURITY CHARACTERISTICS; DEVELOPER PROVIDED; DEVELOPER; Security and Privacy Engineering Principles | Secure Metadata Management; CRYPTOGRAPHIC KEYS; EXCLUSIVE CONTROL; ASYMMETRIC KEYS; NSA-APPROVED; KEY MANAGEMENT TECHNOLOGY AND PROCESSES; PUBLIC KEY INFRASTRUCTURE; PKI; CLASS 3; CLASS 4; PRIVATE KEY; PUBLIC KEY; CRYPTOGRAPHIC PROTECTION; INFORMATION AT REST; OFF-LINE STORAGE; Protection of Information at Rest | Cryptographic Keys; PRIVACY; PERSONALLY IDENTIFIABLE INFORMATION; PII; DATA MINIMIZATION; Development Process, Standards, and Tools | Minimize Personally Identifiable Information; PRIVACY; PERSONALLY IDENTIFIABLE INFORMATION; PII	Unencrypted data stored on disks in cloud environments may be stolen and misused.	Always utilize strong encryption mechanisms on Aurora instances that handle data that is sensitive in nature. Aurora encryption is easy to enable within the AWS console and offers the ability to encrypt the data stored on the Aurora instance's underlying storage filesystem, automated backups, and snapshots. Aurora encryption is performed using AES-256 and is protected by the AWS Key Management System (KMS). Utilize KMS Customer-Managed Keys when possible to give you full control over who can use the keys to access the encrypted data on KMS instances.	Cryptography	A.10.1; A.8.2; A.9.4; A.11.1; A.12.4; A.6.2; A.14.2	A.10.1 Cryptographic co classification; A.9.4 Syste control; A.11.1 Secure ar monitoring; A.6.2 Mobil teleworking; A.14.2 Secu support processes
T2065_Configure TLS for secure connections to App Service (Microsoft Azure)	A.13.2.1; AC-4(4); AC-17(2); AC-18(1); IA-3(1); SC-5(1); SC-7(10); SC-7(17); SC-8(1); SC-23(5); SI-4(2)	A.13.2.1 Information transfer policies and procedures; AC-4.4 Flow Control of Encrypted Information; AC-17.2 PROTECTION OF CONFIDENTIALITY/INTEGRITY USING ENCRYPTION; AC-18.1 Authentication and Encryption; IA-3.1 Cryptographic Bidirectional Authentication; SC-5.1 Restrict Ability to Attack Other Systems; SC-7.10 Prevent Exfiltration; SC-7.17 Automated Enforcement of Protocol Formats; SC-8.1 Cryptographic Protection; SC-23.5 Allowed Certificate Authorities; SI-4.2 Automated Tools and Mechanisms for Real-time Analysis	CHECKING ENCRYPTED INFORMATION CONTENT; DECRYPT INFORMATION; BLOCK FLOW OF ENCRYPTED INFORMATION; ENCRYPTION; SESSION CONFIDENTIALITY; SESSION INTEGRITY; SECURITY CATEGORIZATION; WIRELESS AUTHENTICATION; ENCRYPTION; CRYPTOGRAPHIC BIDIRECTIONAL AUTHENTICATION; REMOTE CONNECTIONS; RESTRICTION; INTERNAL USERS; SYSTEM ACCESS; EXFILTRATION; MANAGED INTERFACES; RESILIENCY; RESILIENCE; ENFORCE PROTOCOL FORMATS; AUTOMATED; CRYPTOGRAPHIC MECHANISMS; ENCRYPTING; ALTERNATIVE PHYSICAL SAFEGUARDS; PREVENT UNAUTHORIZED DISCLOSURE OF INFORMATION; DETECT CHANGES TO INFORMATION; CERTIFICATE AUTHORITIES; CA; CERTIFICATES; SECURE SOCKET LAYER; SSL; TRANSPORT LAYER SECURITY; TLS; REAL-TIME ANALYSIS; AUTOMATED TOOLS; HOST- BASED; NETWORK-BASED; TRANSPORT-BASED; STORAGE-BASED; SECURITY INFORMATION AND EVENT MANAGEMENT; ALERTS; NOTIFICATIONS; RESILIENCY; RESILIENCE	Azure Web Apps allows sites to run under both HTTP and HTTPS by default and Web apps can be accessed by anyone using non-secure HTTP links.	Perform the following: - Redirect all HTTP traffic to HTTPS in Azure App Service: Non-secure HTTP requests can be restricted and all HTTP requests redirected to the secure HTTPS port. It is recommended to enforce HTTPS-only traffic. HTTPS uses the SSL/TLS protocol to provide a secure connection, which is both encrypted and authenticated. So it is important to support HTTPS for the security benefits. - Use the latest version of TLS encryption: App service currently allows the web app to set TLS versions 1.0, 1.1 and 1.2. It is highly recommended to use the latest TLS 1.2 version, which is the recommended TLS level by industry standards, such as PCI DSS, for web app secure connections. - Set 'Client Certificates (Incoming client certificates)' to 'On': The TLS mutual authentication technique in enterprise environments ensures the authenticity of clients to the server. If incoming client certificates are enabled, then only an authenticated client who has valid certificates can access the app.	Cryptography	A.10.1; A.13.2; A.14.1; A.14.2	A.10.1 Cryptographic co transfer; A.14.1 Security information systems; A. development and suppo

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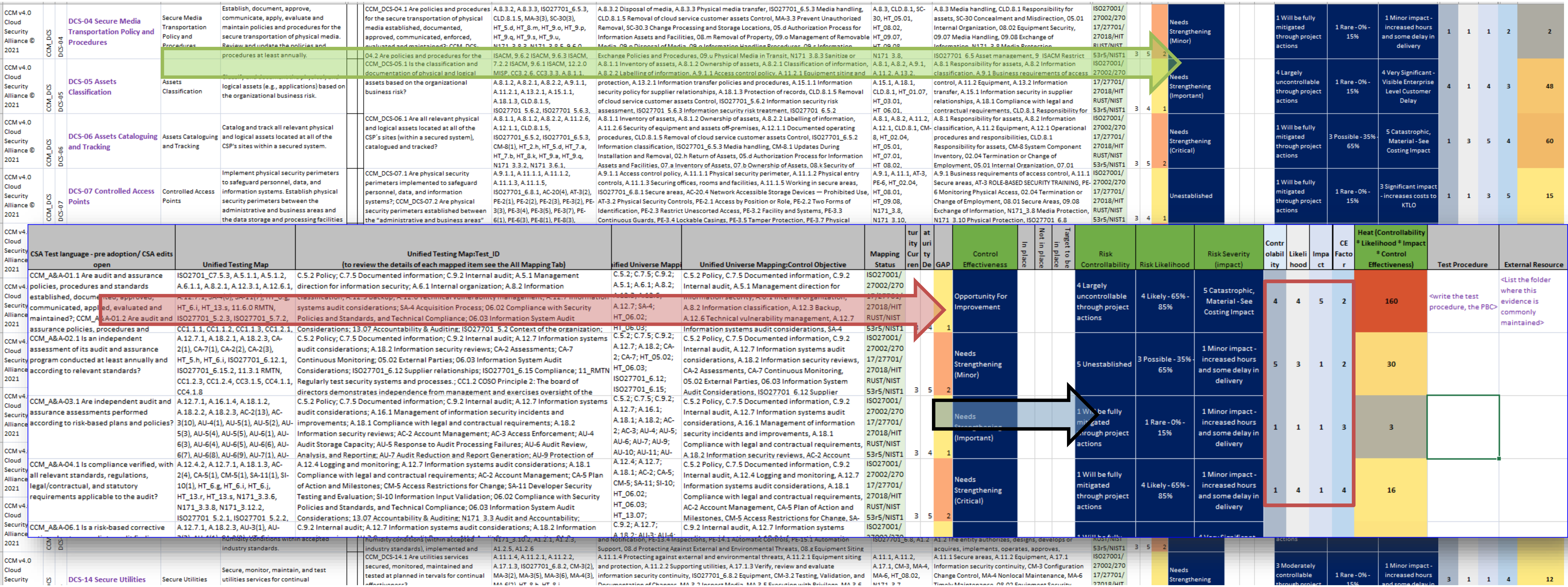
The Product of Mapping is Security & Risk Program Management

EnterpriseGRC Solutions, Inc.



CCM v4.0 Cloud Security Alliance © 2021	CCM_DCS	DCS-04	DCS-04 Secure Media Transportation Policy and Procedures	Secure Media Transportation Policy and Procedures	Establish, document, approve, communicate, apply, evaluate and maintain policies and procedures for the secure transportation of physical media. Review and update the policies and procedures at least annually.	CCM_DCS-04.1 Are policies and procedures for the secure transportation of physical media established, documented, approved, communicated, enforced, evaluated and maintained?; CCM_DCS-04.2 Are policies and procedures for the	A.8.3.2, A.8.3.3, ISO27701_6.5.3, CLD.8.1.5, MA-3(3), SC-30(3), HT_5.d, HT_8.m, HT_9.o, HT_9.p, HT_9.q, HT_9.s, HT_9.u, N171_3.8.3, N171_3.8.5, 9.6.0 ISACM, 9.6.2 ISACM, 9.6.3 ISACM,	A.8.3.2 Disposal of media, A.8.3.3 Physical media transfer, ISO27701_6.5.3 Media handling, CLD.8.1.5 Removal of cloud service customer assets Control, MA-3.3 Prevent Unauthorized Removal, SC-30.3 Change Processing and Storage Locations, 05.d Authorization Process for Information Assets and Facilities, 08.m Removal of Property, 09.o Management of Removable Media, 09.p Disposal of Media, 09.q Information Handling Procedures, 09.s Information Exchange Policies and Procedures, 09.u Physical Media in Transit, N171_3.8.3 Sanitize or	A.8.3, CLD.8.1, SC-30, HT_05.01, HT_08.02, HT_09.07, HT_09.08, N171_3.8,	A.8.3 Media handling, CLD.8.1 Responsibility for assets, SC-30 Concealment and Misdirection, 05.01 Internal Organization, 08.02 Equipment Security, 09.07 Media Handling, 09.08 Exchange of Information, N171_3.8 Media Protection, ISO27701_6.5 Asset management, 9_ISACM Restrict	ISO27001/ 27002/270 17/27701/ 27018/HIT RUST/NIST 53r5/NIST1	3	5	2	Needs Strengthening (Minor)				1 Will be fully mitigated through project actions	1 Rare - 0% - 15%	1 Minor impact - increased hours and some delay in delivery	1	1	1	2	2
CCM v4.0 Cloud Security Alliance © 2021	CCM_DCS	DCS-05	DCS-05 Assets Classification	Assets Classification	Classify and document the physical, and logical assets (e.g., applications) based on the organizational business risk.	CCM_DCS-05.1 Is the classification and documentation of physical and logical assets based on the organizational business risk?	7.2.2 ISACM, 9.6.1 ISACM, 12.2.0 MISP, CC3.2.6, CC3.3.3, A.8.1.1, A.8.1.2, A.8.2.1, A.8.2.2, A.9.1.1, A.11.2.1, A.13.2.1, A.15.1.1, A.18.1.3, CLD.8.1.5, ISO27701_5.6.2, ISO27701_5.6.3,	A.8.1.1 Inventory of assets, A.8.1.2 Ownership of assets, A.8.2.1 Classification of information, A.8.2.2 Labelling of information, A.9.1.1 Access control policy, A.11.2.1 Equipment siting and protection, A.13.2.1 Information transfer policies and procedures, A.15.1.1 Information security policy for supplier relationships, A.18.1.3 Protection of records, CLD.8.1.5 Removal of cloud service customer assets Control, ISO27701_5.6.2 Information security risk assessment, ISO27701_5.6.3 Information security risk treatment, ISO27701_6.5.2	A.8.1, A.8.2, A.9.1, A.11.2, A.13.2, A.15.1, A.18.1, CLD.8.1, HT_01.07, HT_03.01, HT_06.01,	A.8.1 Responsibility for assets, A.8.2 Information classification, A.9.1 Business requirements of access control, A.11.2 Equipment, A.13.2 Information transfer, A.15.1 Information security in supplier relationships, A.18.1 Compliance with legal and contractual requirements, CLD.8.1 Responsibility for	ISO27001/ 27002/270 17/27701/ 27018/HIT RUST/NIST 53r5/NIST1	3	4	1	Needs Strengthening (Important)				4 Largely uncontrollable through project actions	1 Rare - 0% - 15%	4 Very Significant - Visible Enterprise Level Customer Delay	4	1	4	3	48
CCM v4.0 Cloud Security Alliance © 2021	CCM_DCS	DCS-06	DCS-06 Assets Cataloguing and Tracking	Assets Cataloguing and Tracking	Catalog and track all relevant physical and logical assets located at all of the CSP's sites within a secured system.	CCM_DCS-06.1 Are all relevant physical and logical assets located at all of the CSP's sites (within a secured system), catalogued and tracked?	A.8.1.1, A.8.1.2, A.8.2.2, A.11.2.6, A.12.1.1, CLD.8.1.5, ISO27701_6.5.2, ISO27701_6.5.3, CM-8(1), HT_2.h, HT_5.d, HT_7.a, HT_7.b, HT_8.k, HT_9.a, HT_9.q, N171_3.3.2, N171_3.6.1,	A.8.1.1 Inventory of assets, A.8.1.2 Ownership of assets, A.8.2.2 Labelling of information, A.11.2.6 Security of equipment and assets off-premises, A.12.1.1 Documented operating procedures, CLD.8.1.5 Removal of cloud service customer assets Control, ISO27701_6.5.2 Information classification, ISO27701_6.5.3 Media handling, CM-8.1 Updates During Installation and Removal, 02.h Return of Assets, 05.d Authorization Process for Information Assets and Facilities, 07.a Inventory of Assets, 07.b Ownership of Assets, 08.k Security of	A.8.1, A.8.2, A.11.2, A.12.1, CLD.8.1, CM-8, HT_02.04, HT_05.01, HT_07.01, HT_08.02,	A.8.1 Responsibility for assets, A.8.2 Information classification, A.11.2 Equipment, A.12.1 Operational procedures and responsibilities, CLD.8.1 Responsibility for assets, CM-8 System Component Inventory, 02.04 Termination or Change of Employment, 05.01 Internal Organization, 07.01	ISO27001/ 27002/270 17/27701/ 27018/HIT RUST/NIST 53r5/NIST1	3	5	2	Needs Strengthening (Critical)				1 Will be fully mitigated through project actions	3 Possible - 35% - 65%	5 Catastrophic, Material - See Costing Impact	1	3	5	4	60
CCM v4.0 Cloud Security Alliance © 2021	CCM_DCS	DCS-07	DCS-07 Controlled Access Points	Controlled Access Points	Implement physical security perimeters to safeguard personnel, data, and information systems. Establish physical security perimeters between the administrative and business areas and the data storage and processing facilities	CCM_DCS-07.1 Are physical security perimeters implemented to safeguard personnel, data, and information systems?; CCM_DCS-07.2 Are physical security perimeters established between the "administrative and business areas"	A.9.1.1, A.11.1.1, A.11.1.2, A.11.1.3, A.11.1.5, ISO27701_6.8.1, AC-20(4), AT-3(2), PE-2(1), PE-2(2), PE-2(3), PE-3(2), PE-3(3), PE-3(4), PE-3(5), PE-3(7), PE-6(1), PE-6(3), PE-8(1), PE-8(3),	A.9.1.1 Access control policy, A.11.1.1 Physical security perimeter, A.11.1.2 Physical entry controls, A.11.1.3 Securing offices, rooms and facilities, A.11.1.5 Working in secure areas, ISO27701_6.8.1 Secure areas, AC-20.4 Network Accessible Storage Devices — Prohibited Use, AT-3.2 Physical Security Controls, PE-2.1 Access by Position or Role, PE-2.2 Two Forms of Identification, PE-2.3 Restrict Unescorted Access, PE-3.2 Facility and Systems, PE-3.3 Continuous Guards, PE-3.4 Lockable Casings, PE-3.5 Tamper Protection, PE-3.7 Physical	A.9.1, A.11.1, AT-3, PE-6, HT_02.04, HT_08.01, HT_09.08, N171_3.8, N171_3.10,	A.9.1 Business requirements of access control, A.11.1 Secure areas, AT-3 ROLE-BASED SECURITY TRAINING, PE-6 Monitoring Physical Access, 02.04 Termination or Change of Employment, 08.01 Secure Areas, 09.08 Exchange of Information, N171_3.8 Media Protection, N171_3.10 Physical Protection, ISO27701_6.8	ISO27001/ 27002/270 17/27701/ 27018/HIT RUST/NIST 53r5/NIST1	3	4	1	Unestablished				1 Will be fully mitigated through project actions	1 Rare - 0% - 15%	3 Significant impact - increases costs to KTLO	1	1	3	5	15
	CCM	DCS			humidity conditions within accepted industry standards.	humidity conditions (within accepted industry standards), implemented and	N171_3.10.2, A1.2.1, A1.2.3, A1.2.5, A1.2.6	and Notification, PE-13.4 Inspections, PE-14.1 Automatic Controls, PE-15.1 Automation Support, 08.d Protecting Against External and Environmental Threats, 08.g Equipment Siting	ISO27701_6.8, A1.2	A1.2 The entity authorizes, designs, develops or acquires, implements, operates, approves,	RUST/NIST 53r5/NIST1	3	5	2					actions							
CCM v4.0 Cloud Security	CS		DCS-14 Secure Utilities	Secure Utilities	Secure, monitor, maintain, and test utilities services for continual	CCM_DCS-14.1 Are utilities services secured, monitored, maintained and tested at planned in tervals for continual effectiveness?	A.11.1.4, A.11.2.1, A.11.2.2, A.17.1.3, ISO27701_6.8.2, CM-3(2), MA-3(2), MA-3(5), MA-3(6), MA-4(3),	A.11.1.4 Protecting against external and environmental threats, A.11.2.1 Equipment siting and protection, A.11.2.2 Supporting utilities, A.17.1.3 Verify, review and evaluate information security continuity, ISO27701_6.8.2 Equipment, CM-3.2 Testing, Validation, and	A.11.1, A.11.2, A.17.1, CM-3, MA-4, MA-6, HT_08.02,	A.11.1 Secure areas, A.11.2 Equipment, A.17.1 Information security continuity, CM-3 Configuration Change Control, MA-4 Nonlocal Maintenance, MA-6	ISO27001/ 27002/270 17/27701/ 27018/HIT				Needs Strengthening				3 Moderately controllable	1 Rare - 0% - 15%	1 Minor impact - increased hours and some delay in	3	1	1	4	12

CSA Test language - pre adoption/ CSA edits open	Unified Testing Map	Unified Testing Map:Test_ID (to review the details of each mapped item see the All Mapping Tab)	ified Universe Mappi	Unified Universe Mapping:Control Objective	Mapping Status	tur ity Cur ren	at uri ty De	GAP	Control Effectiveness	In place	Not in place	Target to be in place	Risk Controllability	Risk Likelihood	Risk Severity (impact)	Contr olabil ity	Likeli hood	Impa ct	CE Facto r	Heat (Controllability * Likelihood * Impact * Control Effectiveness)	Test Procedure	External Resource
CCM_A&A-01.1 Are audit and assurance policies, procedures and standards established, documented, approved, communicated, applied, evaluated and maintained?; CCM_A&A-01.2 Are audit and assurance policies, procedures and	ISO2701_C7.5.3, A.5.1.1, A.5.1.2, A.6.1.1, A.8.2.1, A.12.3.1, A.12.6.1, A.12.7.1, SA-4(6), SA-11(7), HT_6.g, HT_6.i, HT_13.s, 11.6.0 RMTN, ISO27701_5.2.3, ISO27701_5.7.2, CC1.1.1, CC1.1.2, CC1.1.3, CC1.2.1,	C.5.2 Policy; C.7.5 Documented information; C.9.2 Internal audit; A.5.1 Management direction for information security; A.6.1 Internal organization; A.8.2 Information classification; A.12.3 Backup; A.12.6 Technical vulnerability management; A.12.7 Information systems audit considerations; SA-4 Acquisition Process; 06.02 Compliance with Security Policies and Standards, and Technical Compliance; 06.03 Information System Audit Considerations; 13.07 Accountability & Auditing; ISO27701_5.2 Context of the organization;	C.5.2; C.7.5; C.9.2; A.5.1; A.6.1; A.8.2; A.12.3; A.12.6; A.12.7; SA-4; HT_06.02; HT_06.03;	C.5.2 Policy, C.7.5 Documented information, C.9.2 Internal audit, A.5.1 Management direction for information security, A.6.1 Internal organization, A.8.2 Information classification, A.12.3 Backup, A.12.6 Technical vulnerability management, A.12.7 Information systems audit considerations, SA-4	ISO27001/ 27002/270 17/27701/ 27018/HIT RUST/NIST 53r5/NIST1	3	4	1	Opportunity For Improvement				4 Largely uncontrollable through project actions	4 Likely - 65% - 85%	5 Catastrophic, Material - See Costing Impact	4	4	5	2	160	<write the test procedure, the PBC>	<List the folder where this evidence is commonly maintained>
CCM_A&A-02.1 Is an independent assessment of its audit and assurance program conducted at least annually and according to relevant standards?	A.12.7.1, A.18.2.1, A.18.2.3, CA-2(1), CA-7(1), CA-2(2), CA-2(3), HT_5.h, HT_6.i, ISO27701_6.12.1, ISO27701_6.15.2, 11.3.1 RMTN, CC1.2.3, CC1.2.4, CC3.1.5, CC4.1.1, CC4.1.8	C.5.2 Policy; C.7.5 Documented information; C.9.2 Internal audit; A.12.7 Information systems audit considerations; A.18.2 Information security reviews; CA-2 Assessments; CA-7 Continuous Monitoring; 05.02 External Parties; 06.03 Information System Audit Considerations; ISO27701_6.12 Supplier relationships; ISO27701_6.15 Compliance; 11_RMTN Regularly test security systems and processes.; CC1.2 COSO Principle 2: The board of directors demonstrates independence from management and exercises oversight of the	C.5.2; C.7.5; C.9.2; A.12.7; A.18.2; CA-2; CA-7; HT_05.02; HT_06.03; ISO27701_6.12; ISO27701_6.15;	C.5.2 Policy, C.7.5 Documented information, C.9.2 Internal audit, A.12.7 Information systems audit considerations, A.18.2 Information security reviews, CA-2 Assessments, CA-7 Continuous Monitoring, 05.02 External Parties, 06.03 Information System Audit Considerations, ISO27701_6.12 Supplier	ISO27001/ 27002/270 17/27701/ 27018/HIT RUST/NIST 53r5/NIST1	3	5	2	Needs Strengthening (Minor)				5 Unestablished	3 Possible - 35% - 65%	1 Minor impact - increased hours and some delay in delivery	5	3	1	2	30		
CCM_A&A-03.1 Are independent audit and assurance assessments performed according to risk-based plans and policies?	A.12.7.1, A.16.1.4, A.18.1.2, A.18.2.2, A.18.2.3, AC-2(13), AC-3(10), AU-4(1), AU-5(1), AU-5(2), AU-5(3), AU-5(4), AU-5(5), AU-6(1), AU-6(3), AU-6(4), AU-6(5), AU-6(6), AU-6(7), AU-6(8), AU-6(9), AU-7(1), AU-	C.5.2 Policy; C.7.5 Documented information; C.9.2 Internal audit; A.12.7 Information systems audit considerations; A.16.1 Management of information security incidents and improvements; A.18.1 Compliance with legal and contractual requirements; A.18.2 Information security reviews; AC-2 Account Management; AC-3 Access Enforcement; AU-4 Audit Storage Capacity; AU-5 Response to Audit Processing Failures; AU-6 Audit Review, Analysis, and Reporting; AU-7 Audit Reduction and Report Generation; AU-9 Protection of	C.5.2; C.7.5; C.9.2; A.12.7; A.16.1; A.18.1; A.18.2; AC-2; AC-3; AU-4; AU-5; AU-6; AU-7; AU-9; AU-10; AU-11; AU-	C.5.2 Policy, C.7.5 Documented information, C.9.2 Internal audit, A.12.7 Information systems audit considerations, A.16.1 Management of information security incidents and improvements, A.18.1 Compliance with legal and contractual requirements, A.18.2 Information security reviews, AC-2 Account	ISO27001/ 27002/270 17/27701/ 27018/HIT RUST/NIST 53r5/NIST1	3	4	1	Needs Strengthening (Important)				1 Will be fully mitigated through project actions	1 Rare - 0% - 15%	1 Minor impact - increased hours and some delay in delivery	1	1	1	3	3		
CCM_A&A-04.1 Is compliance verified, with all relevant standards, regulations, legal/contractual, and statutory requirements applicable to the audit?	A.12.4.2, A.12.7.1, A.18.1.3, AC-2(4), CA-5(1), CM-5(1), SA-11(1), SI-10(1), HT_6.g, HT_6.i, HT_6.j, HT_13.r, HT_13.s, N171_3.3.6, N171_3.3.8, N171_3.12.2, ISO27701_5.2.1, ISO27701_5.2.2,	A.12.4 Logging and monitoring; A.12.7 Information systems audit considerations; A.18.1 Compliance with legal and contractual requirements; AC-2 Account Management; CA-5 Plan of Action and Milestones; CM-5 Access Restrictions for Change; SA-11 Developer Security Testing and Evaluation; SI-10 Information Input Validation; 06.02 Compliance with Security Policies and Standards, and Technical Compliance; 06.03 Information System Audit Considerations; 13.07 Accountability & Auditing; N171_3.3 Audit and Accountability;	A.12.4; A.12.7; A.18.1; AC-2; CA-5; CM-5; SA-11; SI-10; HT_06.02; HT_06.03; HT_13.07;	C.5.2 Policy, C.7.5 Documented information, C.9.2 Internal audit, A.12.4 Logging and monitoring, A.12.7 Information systems audit considerations, A.18.1 Compliance with legal and contractual requirements, AC-2 Account Management, CA-5 Plan of Action and Milestones, CM-5 Access Restrictions for Change, SA-	ISO27001/ 27002/270 17/27701/ 27018/HIT RUST/NIST 53r5/NIST1	3	5	2	Needs Strengthening (Critical)				1 Will be fully mitigated through project actions	4 Likely - 65% - 85%	1 Minor impact - increased hours and some delay in delivery	1	4	1	4	16		
CCM_A&A-06.1 Is a risk-based corrective	A.12.7.1, A.18.2.3, AU-3(1), AU-	C.9.2 Internal audit; A.12.7 Information systems audit considerations; A.18.2 Information	C.9.2; A.12.7; A.18.2; AU-3; AU-4;	C.9.2 Internal audit, A.12.7 Information systems	ISO27001/																	

A Control area could have a minor finding – however the overall risk raised by that finding could be negligible

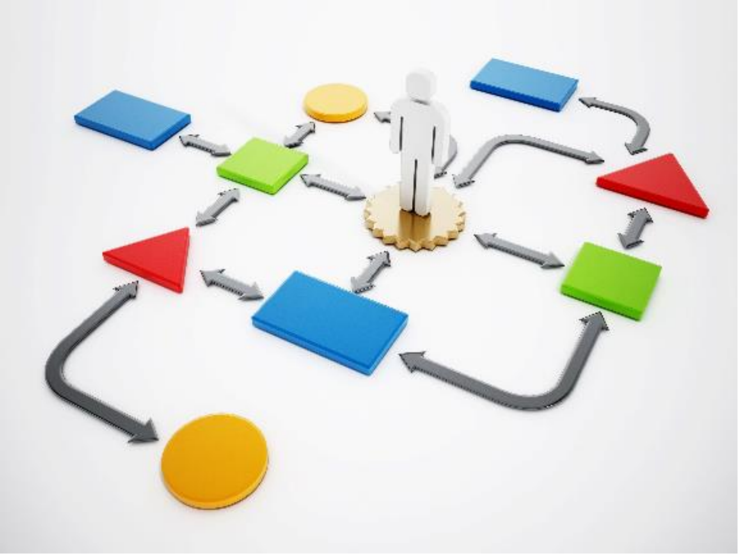
Other OFI could reveal a situation that is unmanaged, will occur again in multiple audits, and has potential for customer facing disruptions and loss of revenue.

Risk Management needs to Only Handle It Once – OHIO, but capture all the inputs, players, timing, and necessary resources for improvement

Recap: Management Strategy First + Why r5 CCM 4 Now

EnterpriseGRC Solutions, Inc.

- GRC Mapping strategy: **Order-of-Operations**
- Risk-> Goals-> Policies->Controls)



- Using NIST SP 800-53 r5 as the underpinning backbone assumes mapping to other major frameworks so the business "Only Handles Policy Once". OHIO
- Use NIST 800-53 r5 as the mediating framework connecting architecture CMDB to CIS/DISA STIGs/OWASP/MITRE ATT&CK
- Use ISO/IEC 27001 with Cloud, Privacy and Processing as the Policy framework – commonly mapped to NIST SP 800-53 r4/r5 as part of NIST Appendix
- Use a RMF on top of your preferred framework (Could be SOC 2, CSTAR, ISO27, **HITRUST™, IMO use NIST CSF).
- Establish Categories for the Corporate Common Controls. Push those categories into Policies, Controls, Programs.

*EnterpriseGRC Solutions wants to share work product delivered to a CSA partner and has approval to share their name during this conversation.

Summarizing and Take-Aways

EnterpriseGRC Solutions, Inc.

1. Mapping accounts for the Risks & associated RACI of a program – so groupings should align with the common job assignments that would implement them.
2. Client based mapping begins with understanding the business programs and should account for domains (LOB) with isolated scope, such as Consumer, Cloud, Fed, Health & Human Service, Financial, Global, etc.
3. Language matching alone, rather than mapping to the recommended implementation guidance, results in guidance that's unusable.
4. Mapping accomplishes an aggregate Policy requirement that will and will always continue to be measured by product and by assessment event and will move at the pace of your slowest audit.

THANK YOU