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RESPECT THE DATA

Cybersecurity Maturity Model Certification (CMMC) 2.0

How to Prepare Your Organization with Data-Centric CUI Protection from Virtru

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CMMC 2.0: Future-Proofing the Defense Industrial Base

Improving and maturing the cybersecurity practices of more than 100,000 companies operating within the defense industrial base (DIB) is a critical part of improving our overall national security. Why? Because the digital threat posed to our national interests has never been greater.

As new technologies rapidly proliferate, the digital operating environment that underpins the DIB is becoming exponentially larger, and increasingly difficult to defend against cyber attacks and espionage. Without standardized security practices and procedures across the DIB, malicious cyber activities have a higher likelihood of disrupting our national security, and also huge swaths of our economy.

Cybersecurity Maturity Model Certification (CMMC) was born out of these concerns and serves as a cybersecurity training, certification, and third-party assessment program aimed at measuring the maturity of an organization's ability to demonstrate compliance with the protection of Federal Contract Information (FCI) and Controlled Unclassified Information (CUI).

An Evolving Set of Standards

CMMC 1.0 was initially introduced in January 2020. In response, defense contractors struggled to understand how to comply and feared what could happen if they did not. Confusion reigned supreme.

CMMC 2.0 was then introduced on November 4, 2021, which was designed to:

- Simplify and streamline the certification process and cut red tape for small and medium-sized businesses
- Set priorities for protecting DoD information, and
- Reinforce cooperation between the DoD and industry in addressing evolving cyber threats.

CMMC 2.0 was developed by the Office of the Under Secretary of Defense Acquisition & Sustainment (OUSD A&S) in partnership with key DoD stakeholders from industry, academia, and federally-funded research centers. The chief purpose of CMMC 2.0 is to protect unclassified information throughout the defense supply chain from cyber threats. CMMC 2.0 will achieve this by requiring DIB contractors to implement unified cybersecurity standards, validated by third-party assessments. CMMC 2.0 promotes the institutionalization of cybersecurity processes to continuously evolve the maturity of the DIB's security posture.

CMMC 2.0 is expected to be enforced 9-24 months after its announcement in November 2021, meaning organizations should plan to be in compliance by August 2022 at the earliest, and November 2023 at the latest. By Fall 2026, all new DoD contracts are expected to include CMMC compliance requirements.

CMMC 2.0 Framework

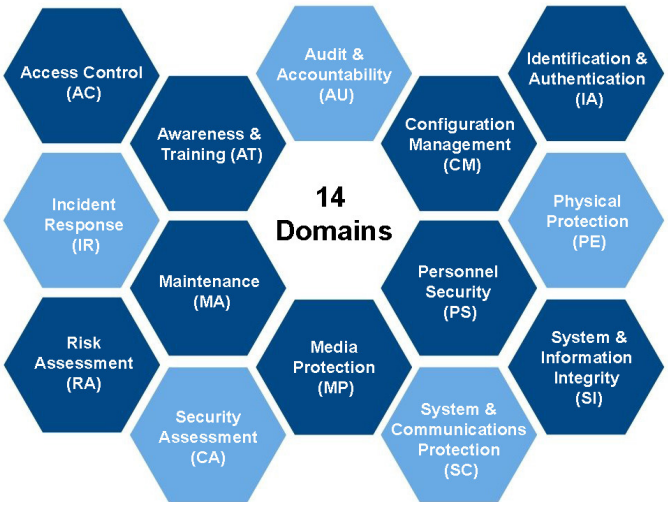
Practices, Processes, and Domains

CMMC encompasses maturity processes and cybersecurity best practices sourced from multiple existing cybersecurity standards as well as discussions with the DIB and cybersecurity industry stakeholders.

Practices are cybersecurity techniques, capabilities, methods, etc. such as protecting sensitive data with end-to-end encryption.

Processes are institutionalized procedures that ensure effective implementation of the practices (as opposed to ad hoc), such as deploying end-to-end encryption tools for end users and configuring policies to enforce their usage.

CMMC 2.0 categorizes these practices and processes into 14 **domains** or groupings of similar security-related areas. Those domains and their abbreviations are illustrated in the figure below:



(Source: *Acquisition & Sustainment*: Cybersecurity Maturity Model Certification - Model Overview)

Certification Levels

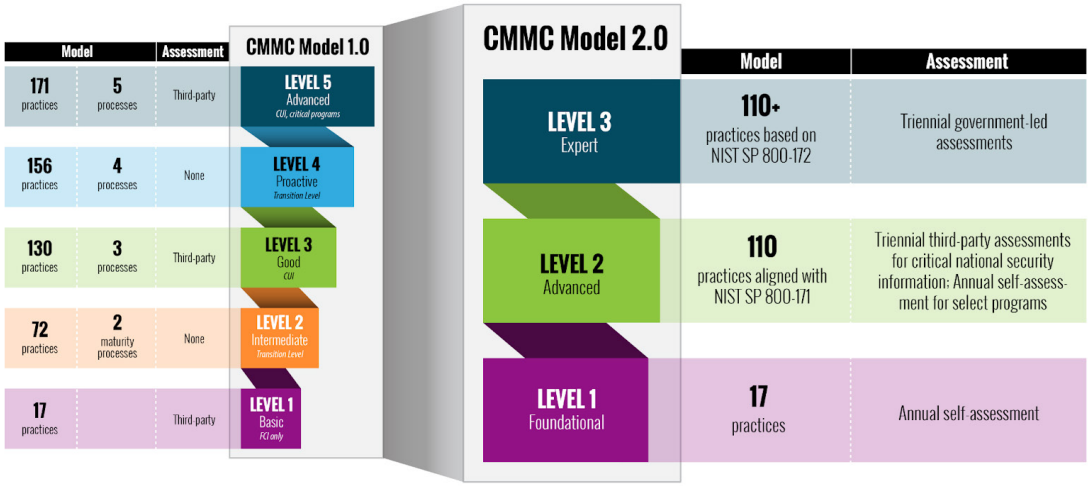
CMMC 2.0 encompasses three tiers of certification to reflect increasing maturity and preparedness.

Level 1 - Safeguard FCI: implement basic cyber practices to protect FCI using basic processes that ensure they're performed. For protecting information that is sensitive but not critical to national security.

Level 2 - Protect CUI - implement intermediate cyber hygiene practices with processes that are actively managed and monitored. This level will embody a mix of self-assessment and third-party assessors.

Level 3 - Reduce Risk of Advanced Persistent Threats (APTs) - implement proactive, progressive cyber security best practices to defend against sophisticated attacks on multiple vectors. Level three requires assessments from government officials.

Achievement of a specific CMMC Level also requires achieving any preceding lower levels. The figure below reflects the cumulative nature of the levels in CMMC 2.0 as they compare to the previous version.



(Source: *Acquisition & Sustainment*: OUSD A&S - Cybersecurity Maturity Model Certification (CMMC))

CMMC'S focus on processes cultivates a future-facing cybersecurity posture that will address more advanced threats as attack vectors evolve. As the levels progress, organizations must step up their efforts in institutionalizing cybersecurity processes.

Alignment with DFARS and NIST

In Fall 2016, the DoD included a new clause in the Defense Federal Acquisition Regulations Supplement (DFARS)—"Safeguarding Covered Defense Information and Cyber Incident Reporting" (DFARS 252.204-7012). This clause was informed by the National Institute of Standards and Technology (NIST) Special Publication (SP) 800-171 "Protecting Controlled Unclassified Information in Nonfederal Information Systems and Organizations" (for more details, see Appendix 2). NIST SP 800-171 and NIST SP 800-172 outline specific guidelines and safeguards for protecting CUI in nonfederal information systems, and DFARS clause 252.204-7012 introduced new requirements related to incident reporting and other practices.

CMMC incorporates DFARS 252.204-7012, NIST SP 800-171, and NIST SP 800-172 guidelines as well as other risk mitigation practices from other standards. But crucially, the CMMC framework works to ensure the practices are implemented to align with a cybersecurity program that advances in maturity over time, as opposed to the "set it and forget it" approach of previous guidelines.

FIPS 140-2 Encryption Requirements

Federal Information Processing Standards (FIPS) Publication 140-2 specifies security requirements for cryptographic modules. The Federal government requires that all encryption is performed by FIPS-validated cryptographic modules. This requirement is also typically required by State and Local governments, government contractors, and government services providers. FIPS validation is specifically required by FedRAMP, CJIS, NIST SP 800-171, and other compliance programs.

CMMC Preparedness Action Plan

Understanding the CMMC framework is a crucial first step, but with that understanding comes two key follow-up questions: What certification level should my organization prepare for? And what does my organization need to do to prepare for that CMMC Level?

Level 1 is a good starting place for most DIB firms, but beyond that, the key is understanding how frequently your firm handles CUI throughout the course of contracting, development, and miscellaneous supply chain operations. If you do frequently handle CUI, CMMC Level 2 at least will be your goal. For Level 2, preparedness starts with understanding how CUI is stored and shared throughout your supply chain collaboration workflows, then mapping CMMC practices to these workflows to keep CUI protected.

Importance of Email and File Protection for the Supply Chain

CUI is shared frequently and rapidly throughout supply chain collaboration workflows. Examples include communications and project management documentation shared between subprime and prime contractors, or product and engineering documentation like specifications, blueprints, or industrial designs shared internally and externally.

CUI takes many forms beyond these examples, but it is frequently stored and shared via email and files. For end users, email and files are convenient, ubiquitous collaboration tools that enable rapid CUI sharing, helping jumpstart joint development initiatives and cement partner relationships. For IT admins, email and file tools meet end-user needs while cloud-based deployments present opportunities for agility, efficiency, and cost-savings.

For the security and compliance teams that must implement appropriate CMMC processes and practices, however, cloud-based email and files present challenges. Email and file workflows often sacrifice security for ease of use and collaboration, and CUI shared via email and files in cloud environments limits security teams' visibility and control of CUI.

CUI is still almost certain to end up being stored and shared via email and files in the cloud, making email and file protection a focal point of any CMMC preparedness action plan. The two standard commercial cloud productivity platforms, Microsoft Office 365, and Google Workspace, provide email and file solutions that come with built-in security features. However, these platforms come up short of many of CMMC's requirements, so you will need to assess third-party data protection vendors to protect and control CUI and prepare for CMMC Level 2.

Email and File Protection Evaluation Criteria

The following criteria serve as a useful guide when evaluating email and file protection solutions to keep CUI protected throughout its lifecycle.

Ease of Use

Security solutions are only effective when they're adopted widely, and this is especially true for user-centric tools like email and files. To encourage widespread usage and keep your organization's CMMC posture strong, protections must be easy to use.

For email and files, ease of use means giving email senders and file owners an on-demand way to protect messages, attachments, and documents, ideally with a simple click of a button or flip of a switch.

Protections should exist within an intuitive user experience, ideally embedded within the existing email or file application's user interface (rather than requiring separate accounts, applications, or workflows). User experiences that force users to exchange keys manually cause confusion, negatively affecting usage and adoption, so key exchanges should always be transparent to end users.

End-to-End Encryption

End-to-end encryption goes beyond network-level encryption. It protects CUI within email and files down to the object level, such that only the data owner and their authorized recipients and collaborators may access the data. This is critical in cloud environments where underlying cloud vendors can access plaintext CUI, and in sharing workflows with limited control or visibility.

Appendix 1 of CMMC 1.0 lists several key CMMC practices in detail, but many focus on protecting CUI's confidentiality, preventing unauthorized or unintended disclosure, and ensuring information integrity. So by virtue of protecting CUI from unauthorized access, end-to-end encryption fulfills requirements for several CMMC practices at once.

Access Controls

Combining granular, persistent access controls with end-to-end encryption provides even greater assurances for CUI confidentiality and prevention of unauthorized access throughout supply chain workflows.

When sharing CUI, users should be able to disable forwarding and set expiration dates for granular control. Watermarks for files and attachments should be provided to help prevent data leaks, and persistent protection for attachments should allow data owners to maintain control even beyond

the initial email. After CUI is shared, data owners should be able to revoke access immediately as partnerships and supply chains evolve.

Collaborator and Recipient Access

As a corollary to ease of use, seamless, secure access for collaborators and recipients is also an integral part of an effective CUI protection solution. Unnecessary friction within recipient experiences slows down joint development workflows and hampers innovation, frustrating supply chain partners and reducing your chances of winning defense contracts.

Recipients should be able to access protected email and files securely and easily to keep collaboration workflows productive. Don't force your partners to create new accounts and use new applications if you don't have to. Authentication should leverage existing accounts for streamlined, secure access.

Administrative Enforcement and Data Loss Prevention (DLP)

Administrators should be able to enforce end-to-end encryption and access controls automatically. On-demand end-user protections are necessary but not enough. Even the most diligent users get careless from time to time and forget to apply protections.

Your CUI protection solution should provide Security Rules, allowing admins to configure rules to scan email and files to detect CUI and then automatically protect it before it's sent or shared. Administratively enforced protections complement end-user protections to maximize the value of your security solution.

Visibility and Audit Logs

Audit and Accountability is a significant domain within CMMC with 14 separate practices, so persistent visibility into who has protected, accessed, or shared CUI throughout its lifecycle, when, where, and for how long is also key to CMMC preparedness.

As a best practice, both end users and administrators should be able to easily view granular audit trails for protected CUI throughout supply chain workflows. Audit logs of all protection, sharing, access, and control activity, as well as administrative actions, should be available for download or integration with security information and event management (SIEM) tools.

Customer-Hosted Encryption Keys

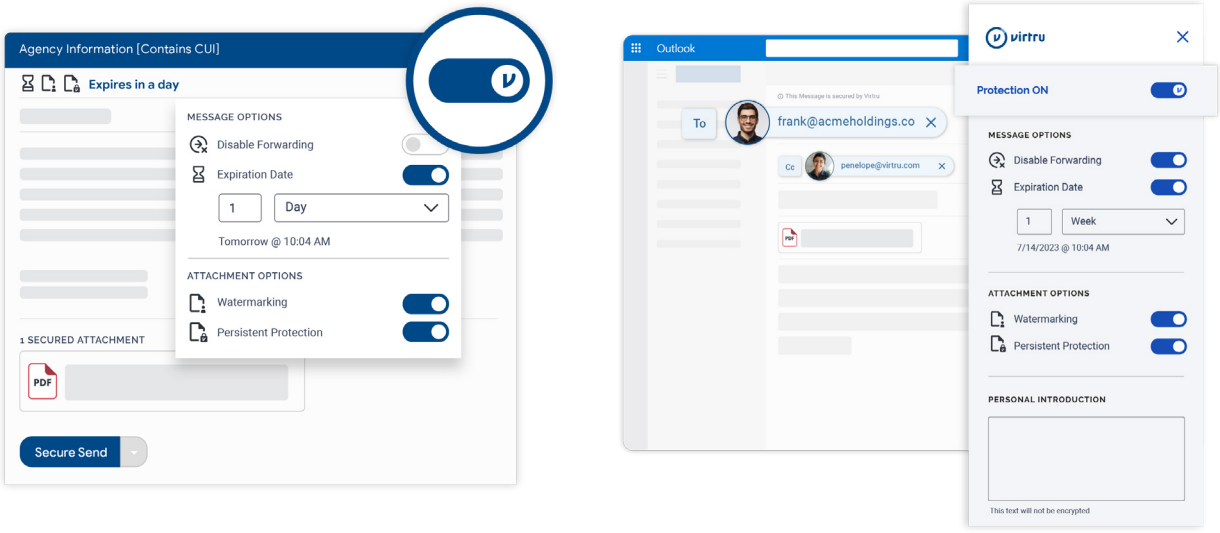
As previously discussed, storing CUI within the cloud and sharing throughout the supply chain exposes it to unauthorized access risks. Cloud vendors protect their infrastructure and networks, but not the customer CUI itself, and their personnel may obtain unauthorized access to plaintext CUI in these environments.

Customer-hosted keys give your organization assurances that despite these risks, you maintain ultimate control of your CUI by virtue of controlling the encryption keys protecting the CUI. Also known as "Hold Your Own Key" schemes, customer-hosted keys let you store encryption keys on-premises.

Virtru for CMMC Level 2 or Beyond

Virtru helps streamline your organization's preparations for CMMC Level 2 Maturity by protecting CUI from unauthorized access everywhere it's shared, with unmatched ease of use. With Virtru, CUI protection persists throughout supply chain collaboration workflows, enabling persistent enforcement and access control across all environments and applications. Virtru's data-centric protections for email and files meet a host of CMMC requirements, spanning Access Control, Audit and Accountability, Media Protection, System and Information Integrity, and more (for more details, see Appendix 1).

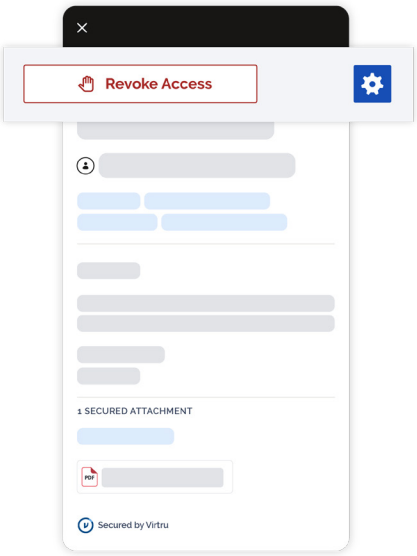
Solution Overview



Virtru's easy end-to-end encryption is embedded directly within Gmail and Microsoft Outlook for seamless CUI protection and control.

Unmatched Ease of Use

Virtru works seamlessly where your users already work to make CMMC readiness a breeze. Deployed as an add-in for Microsoft Outlook or a Google Chrome browser extension for Gmail and Google Drive, Virtru makes CUI protections easy for end users, giving them on-demand protections that encourage widespread adoption. Encryption and access controls are applied with a simple click of a button or flip of the switch, using your existing email address. Unlike other end-to-end encryption solutions that require users to exchange keys manually, all Virtru key exchanges are transparent and handled securely by Virtru's hardened key management infrastructure. You will never need to exchange keys or certificates with Virtru.

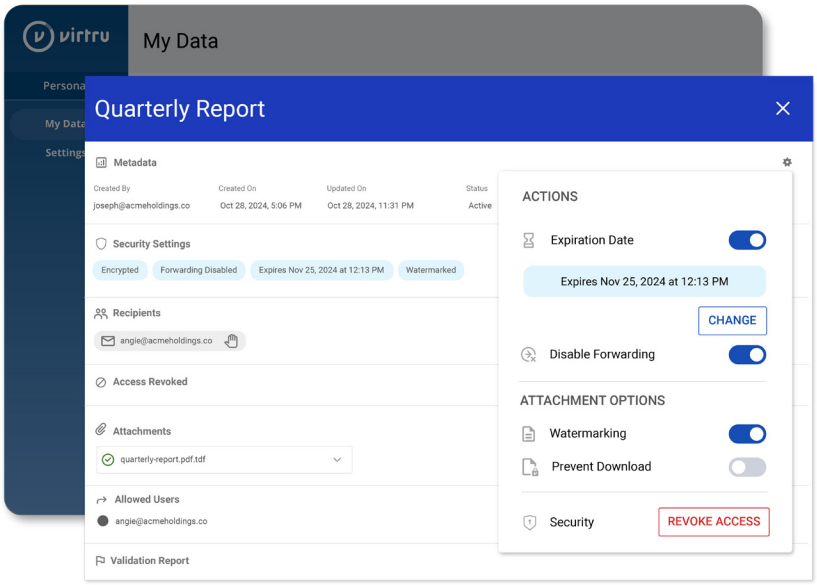


End-to-End Email and File Encryption

Virtru protects messages, attachments, and files at the object-level, directly within the email or file client, to deliver end-to-end encryption. When end users encrypt CUI, Virtru generates unique symmetric encryption keys and binds them to the encrypted payload and its metadata to keep CUI protected from unauthorized disclosure or transfer, maintaining its confidentiality throughout the supply chain.

Granular, Persistent Access Controls

Virtru also allows end users to apply granular access controls to CUI to reinforce protections against unauthorized access. Disable forwarding and expiration help ensure CUI doesn't fall in the wrong hands as it's shared between primes, subprimes, and other mission partners. Watermarks and persistent protection can be applied to email attachments to prevent file-based leaks while facilitating sharing and collaboration where the data owner still maintains control. Access to CUI can be revoked at any time.

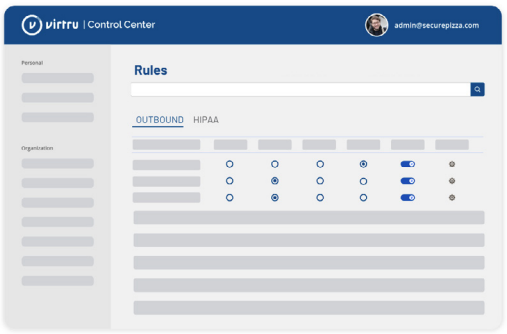


Seamless Sharing and Collaborator Access

With Virtru's data-centric protections and controls, contractors can share CUI confidently and seamlessly within email and file workflows. Meanwhile, recipients and collaborators get secure, easy access to CUI via the Virtru Secure Reader. While other solutions force your supply chain partners to create new passwords or accounts to access protected CUI or require your partners to be pre-configured prior to sharing with them, Virtru simply uses the email address the sender authorized when sharing the protected CUI to authenticate the recipient or collaborator. Emails come directly from your existing email address, and our Secure Reader is branded with your logo to make it easier for people to know the message is coming from you. Responses sent from the Secure Reader are encrypted by default to ensure collaboration workflows keep CUI protected.

Automatic Enforcement with Security Rules

Virtru's end-to-end encryption and granular access controls can be enforced automatically via email and file-sharing Security Rules within the Virtru Dashboard. You can choose from predefined content detectors or create your own, then set rules to encrypt CUI, set expiration dates or disable forwarding, strip attachments, and much more. The Virtru Dashboard also provides a centralized portal with administrative capabilities spanning user management, protection defaults, and audit workflows.



Persistent Visibility and Audit Reporting

Throughout supply chain collaboration workflows, Virtru allows end users and administrators to see who has accessed or shared CUI, when, where, and for how long. As supply chain collaboration evolves, this visibility helps inform access controls, adapting them to suit the context of the CUI. Audit logs of all events related to CUI, including protection, controls, sharing, access, and administrative activity, are available for export and can be integrated with SIEM tools via APIs to enable advanced forensic analysis and threat remediation workflows.

Private Keystore

Virtru offers the Virtru Private Keystore to give security teams the ability to hold their own keys for stronger control over CUI stored and shared in cloud environments. The Virtru Private Keystore rewraps the symmetric keys protecting CUI with a layer of asymmetric encryption, and the customer private key is always stored on premises. The Virtru Private Keystore only allows authorized personnel to access the keys, further preventing unauthorized disclosure or transfer of CUI.

FIPS 140-2 Validated Encryption

All of Virtru's encryption algorithms comply with FIPS 140-2, and Virtru can supply the FIPS 140-2 certificate depending on how Virtru is deployed. For our clients that do leverage FIPS validated modules, not all clients are enabled in FIPS mode by default. We use 3rd-party encryption libraries that have been certified by, or for, companies such as Google, Microsoft, and Apple. As such, Virtru has not been required to go through a validation directly.

Virtru gives end users and administrators visibility into who has accessed and shared CUI as well as comprehensive audit logs to support Audit and Accountability practice.

The Virtru Difference

Virtru's data-centric, user-first protections give organizations a simpler, more effective method to meet CMMC requirements for CUI protection compared to alternatives.

Comparison Category	Virtru	CUI Protection Alternatives (Preveil, Microsoft GCC High)
CUI Protection and Controls	End-to-end encryption and persistent access controls protect CUI from unauthorized access during the defense contract lifecycle and throughout the supply chain. CMMC-ready CUI protections are available out-of the-box.	Capabilities such as Security Rules may not be available and access controls such as revocation may be limited.
Ease of Use	Simple,on-demand protections are provided within an intuitive user experience. No new applications are required. Virtru is embedded into existing email and file applications.	Protections are not easily accessible, often buried in hidden menus or requiring administrative support. Users typically have to adapt to new apps and workflows.
Recipient and Collaborator Access	External recipients and collaborators without Virtru never have to create new accounts or passwords to access protected CUI. Simply authenticate with an existing account.	External recipients often must create a new account to access protected data, forcing collaborators to create and manage another password.
Deployment and Installation	Browser extension or add-in deploys seamlessly via managed Chrome installs or Microsoft. Simple end-user self service is also supported. Inherits groups/OUs from existing platform to streamline administration.	End users may need to download software to their desktop, in addition to a browser extension. Users may not have access to expected functionality without extensive configuration.
Audit	End users can view who has accessed CUI and revoke it, strengthening security awareness and CMMC preparedness. Administrators can download audit logs for analysis or configure the Virtru Audit Export API to integrate with SIEMs.	End users have little visibility into who has accessed CUI. Admins have access to encrypted audit logs but SIEM integrations are not always available.

Comparison Category	Virtru	CUI Protection Alternatives (Preveil, Microsoft GCC High)
Customer-Hosted Encryption Keys	Virtru Private Keystore lets customers hold private encryption keys protecting all data on-premises for ultimate security. Lightweight deployments integrate easily with other key security infrastructure components.	Not supported OR requires significant administrative complexity and trade-offs with other critical security features (e.g. anti-phishing, anti-malware).
Cost	Priced per user, per year at a competitive price point, with deployment and support services included.	Priced per user, per month at a relatively higher price point. Typically requires added services costs for customization and configuration.

Strengthen Zero Trust and CMMC Readiness with Virtru

Virtru's persistent CUI protections, secure sharing workflows, and seamless user experiences give defense contractors a head start on CMMC Level 2 preparedness. But even more importantly, Virtru supports easy, secure collaboration that ensures contractors can share data with confidence throughout the supply chain, powering the development of innovative products, services, and operations that provide a competitive advantage.

At the end of the day, CMMC and Zero Trust security are inextricably linked: By implementing object-level protections for CUI data, you can strengthen your Zero Trust posture and, at the same time, fortify your compliance with CMMC.

If your organization is interested in learning how Virtru can jumpstart your preparations for CMMC Level 2, contact us to see how easy it is to keep CUI protected and under your control throughout the supply chain.

About Virtru

At Virtru, we empower organizations to easily unlock the power of data while maintaining control, everywhere it's stored and shared. Virtru is trusted by more than 7,000 global customers to power their Zero Trust strategies and safeguard their most sensitive data in accordance with the world's strictest security standards. Creators of TDF (Trusted Data Format), the open industry standard for persistent data protection, Virtru provides encryption technology for data shared through email, collaboration tools, cloud environments, and enterprise SaaS applications. For more information, visit virtru.com or follow us on Twitter at @virtruprivacy.

Appendix 1 - Virtru Support for CMMC Levels 2 and 3

The table below provides a detailed explanation of the CMMC practices from Levels 2 and 3 that Virtru's capabilities align with and support most directly, grouped by domain.

Note that some of these capabilities will require additional configuration to ensure they align with CMMC requirements, and many practices not listed below are already supported by services adjacent to Virtru, such as the underlying email and file platform provider or technology partners. Also note that while Virtru supports many practices within Level 1, this appendix focuses on Levels 2 and 3, aligned with the broader context of this guide regarding CUI protection.

CMMC Domain and Practice	Practice Description	Explanation of Virtru Support
Access Control V2 AC.L2-3.1.7	Prevent non-privileged users from executing privileged functions and capture the execution of such functions in audit logs.	Virtru logs the execution of all end-user and administrative actions for comprehensive audit reporting.
Access Control V2 AC.L2-3.1.19	Encrypt CUI on mobile devices and mobile computing platforms.	Virtru provides a mobile application to enable encryption of email messages and attachments containing CUI shared via mobile device.
Audit Correlation V2 AU.L2-3.3.5	Correlate audit record review, analysis, and reporting processes for investigation and response to indications of unlawful, unauthorized, suspicious, or unusual activity.	Virtru end-user and administrator activity event logs are centralized within the Virtru platform.
Audit and Accountability V2 AU.L2-3.3.8	Protect audit information and audit logging tools from unauthorized access, modification, and deletion.	Virtru administrators are authenticated and authorized before accessing audit logs to prevent potential modification or deletion.
Audit and Accountability V2 AU.L2-3.3.9	Limit management of audit logging functionality to a subset of privileged users.	Only Virtru super-administrators and sub-administrators that super-administrators have authorized can access audit logs.

CMMC Domain and Practice	Practice Description	Explanation of Virtru Support
Audit and Accountability V2 AU.L2-3.3.5	Correlate audit record review, analysis, and reporting processes for investigation and response to indications of unlawful, unauthorized, suspicious, or unusual activities.	Virtru audit logs can be exported or integrated into a SIEM tool to perform correlation, analysis, and threat remediation in the event of malicious activities.
Configuration Management V2 CM.L2-3.4.8	Employ application whitelisting and an application vetting process for systems identified by the org.	During deployment and configuration, Virtru deployment engineers review the customer's systems to ensure only trusted domains will interact with the services helping protect CUI.
Media Protection V2 MP.L2-3.8.5	Control access to media containing CUI and maintain accountability for media during transport out of controlled areas.	Virtru's end-to-end encryption protects media that often contains CUI (email, messages, attachments, and files), and granular controls ensure only authorized parties can access that media.
Media Protection V2 MP.L2-3.8.6	Implement cryptographic mechanisms to protect the confidentiality of CUI stored on digital media during transport unless otherwise protected by alternative physical safeguards.	Virtru's end-to-end encryption provides a leading-edge cryptographic method for preventing unauthorized access to CUI stored on digital media throughout its lifecycle.
System and Communication Protection V2 SC.L2-3.13.11	Employ FIPS-validated cryptography when used to protect the confidentiality of CUI.	Virtru's cryptographic libraries leverage FIPS-validated modules when performing end-to-end encryption on CUI, preserving its confidentiality.
System and Communication Protection V1 x SC.3.181	Separate user functionality from system management functionality.	Virtru administrative workflows (e.g user management, Security Rules and policy configuration, default protection settings) are always performed separately from all end-user functionality.

CMMC Domain and Practice	Practice Description	Explanation of Virtru Support
System and Communication Protection V1 x SC.3.185	Implement cryptographic mechanisms to prevent unauthorized disclosure of CUI during transmission unless otherwise protected by alternative physical safeguards.	Virtru's end-to-end encryption and access controls ensure CUI stays protected in-transit as it's shared with supply chain collaborators, preventing disclosure to unauthorized parties.
System and Communication Protection V1 x SC.3.187	Establish and manage cryptographic keys for cryptography employed in organizational systems.	Virtru's hosted key management infrastructure establishes a thorough split-knowledge architecture for managing encryption keys that protect CUI and the policies that control who can access it.
System and Communication Protection SC.L2-3.13.16	Protect the confidentiality of CUI at rest.	In addition to in-transit protection, Virtru's end-to-end encryption and access controls ensure CUI is protected and confidential at rest as it's stored in email and file systems.
System and Information Integrity V1 x SC.3.219	Implement email forgery protections.	With Virtru's end-to-end encryption, email is encrypted directly within the email client, before it interacts with external components or potential bad actors. This prevents forgery or other integrity attacks since the plaintext email content is obscured with ciphertext.

(Source: Acquisition & Sustainment: Assessment Guide Level 2)

Appendix 2 - Virtru Support for NIST SP 800-171 and NIST SP 800-172 Security Requirements, and DFARS 252.204-7012

The table below provides a detailed explanation of the security requirements within NIST SP 800-171 and its expansion NIST SP 800-172 for protecting the confidentiality of CUI in nonfederal systems and organizations that Virtru capabilities align with and support most directly, grouped by security requirement family. Virtru uses 256 Bit AES symmetric key encryption and is FedRAMP moderate ready–further solidifying its alignment with NIST SP 1800-171.

NIST requirements also cover DFARS requirements, as paragraph (b)(2)(i) within DFARS 252.204-7012 states that "the covered contractor information system shall be subject to the security requirements in National Institute of Standards and Technology (NIST) Special Publication (SP) 800-171.

Note that some of these capabilities will require additional configuration to ensure they align with NIST requirements, and many practices not listed below are already supported by services adjacent to Virtru, such as the underlying email and file platform provider or technology partners.

NIST Security Requirement	Requirement Description	Explanation of Virtru Support
Access Control NIST SP 800-172 3.1.3.e	Employ organization-defined secure information transfer solutions to control information flows between security domains on connected systems.	Virtru encrypts CUI directly within the email and file client, controlling CUI by preventing access to CUI in the clear by unauthorized parties and limiting information transfers to only authorized users.
Access Control NIST SP 800-171 3.1.7	Prevent non-privileged users from executing privileged functions and capture the execution of such functions in audit logs.	Virtru administrators are authenticated and authorized before making any privileged administrative changes. Virtru logs the execution of all end user and administrative actions for comprehensive audit reporting.
Access Control NIST SP 800-171 3.1.19	Encrypt CUI on mobile devices and mobile computing platforms.	Virtru provides a mobile application to enable encryption of email messages and attachments containing CUI shared via mobile device.
Audit and Accountability NIST SP 800-171 3.3.1	Create and retain system audit logs and records to the extent needed to enable the monitoring, analysis, investigation, and reporting of unlawful or unauthorized system activity.	All Virtru end-user and administrator activity and events are logged continuously and centralized within the Virtru platform.

NIST Security Requirement	Requirement Description	Explanation of Virtru Support
Audit and Accountability NIST SP 800-171 3.3.2	Ensure that the actions of individual system users can be uniquely traced to those users, so they can be held accountable for their actions.	Virtru event logs always associate system activations to a specific individual user or administrator to allow direct follow-up with that person and remediate accidental or malicious actions.
Audit and Accountability NIST SP 800-171 3.3.5	Correlate audit record review, analysis, and reporting processes for investigation and response to indications of unlawful, unauthorized, suspicious, or unusual activity.	Virtru audit logs can be exported or integrated into a SIEM tool to perform correlation, analysis, and threat remediation in the event of malicious activities.
Audit and Accountability NIST SP 800-171 3.3.8	Protect audit information and audit logging tools from unauthorized access, modification, and deletion.	Virtru administrators are authenticated and authorized before accessing audit logs to prevent potential modification or deletion.
Audit and Accountability NIST SP 800-171 3.3.9	Limit management of audit logging functionality to a subset of privileged users.	Only Virtru super-administrators and sub-administrators that super-administrators have authorized can access audit logs.
Configuration Management NIST SP 800-171 3.4.8	Apply deny-by-exception (blacklisting) policy to prevent the use of unauthorized software or deny-all, permit by-exception (whitelisting) policy to allow the execution of authorized software.	During deployment and configuration, Virtru deployment engineers review the customer's systems to ensure only trusted domains will interact with the services helping protect CUI.
Media Protection NIST SP 800-171 3.8.1	Protect (i.e. physically control and securely store) system media containing CUI, both paper and digital.	Virtru's end-to-end encryption protects media that often contains CUI (email messages, attachments, and files), and granular controls ensure only authorized parties can access that media.

NIST Security Requirement	Requirement Description	Explanation of Virtru Support
Media Protection NIST SP 800-171 3.8.5	Control access to media containing CUI and maintain accountability for media during transport out of controlled areas.	Virtru's access controls and audit capabilities allow owners of CUI to view who has accessed CUI throughout collaboration workflows and hold users accountable for malicious activity. Data owners have the ability to revoke access to CUI immediately.
Media Protection NIST SP 800-171 3.8.6	Implement cryptographic mechanisms to protect the confidentiality of CUI stored on digital media during transport unless otherwise protected by alternative physical safeguards.	Virtru's end-to-end encryption provides a leading-edge cryptographic method for preventing unauthorized access to CUI stored on digital media throughout its lifecycle.
System and Communications Protection NIST SP 800-171 3.13.3	Separate user functionality from system management functionality.	Virtru administrative workflows (e.g user management, Security Rules and policy configuration, default protection settings) are always performed separately from all end-user functionality.
System and Communications Protection NIST SP 800-171 3.13.8	Implement cryptographic mechanisms to prevent unauthorized disclosure of CUI during transmission unless otherwise protected by alternative physical safeguards.	Virtru's end-to-end encryption and access controls ensure CUI stays protected in-transit as it's shared with supply chain collaborators, preventing disclosure to unauthorized parties.
System and Communications Protection NIST SP 800-171 3.13.10	Establish and manage cryptographic keys for cryptography employed in organizational systems.	Virtru's hosted key management infrastructure establishes a thorough split-knowledge architecture for managing encryption keys that protect CUI and the policies that control who can access it.

NIST Security Requirement	Requirement Description	Explanation of Virtru Support
System and Communications Protection NIST SP 800-171 3.13.11	Employ FIPS-validated cryptography when used to protect the confidentiality of CUI.	Virtru's cryptographic libraries leverage FIPS-validated modules when performing end-to-end encryption on CUI, preserving its confidentiality.
System and Communication Protection NIST SP 800-171 3.13.16	Protect the confidentiality of CUI at rest.	In addition to in-transit protection, Virtru's end-to-end encryption and access controls ensure CUI is protected and confidential at rest as it's stored in email and file systems.