Cohasset Associates

SEC 17a-4(f), FINRA 4511(c), CFTC 1.31(c)-(d)
Compliance Assessment

IBM Spectrum Scale

Abstract

IBM Spectrum Scale is an enterprise-grade file system designed to provide resiliency and scalability that can be implemented as an appliance (hardware and software) or software only solution.

Integrated Archive Manager modes enable file immutability and retention capabilities. *Compliant-Plus* mode provides integrated controls designed to meet securities industry requirements for preserving records in a non-rewriteable, non-erasable format.

In this Report, Cohasset Associates, Inc. (Cohasset) assesses the capabilities of IBM Spectrum Scale (see Section 1.3, *Spectrum Scale Overview and Assessment Scope*) relative to:

- The recording, non-rewriteable, non-erasable storage requirements for electronic records, as specified by:

  - Securities and Exchange Commission (SEC) in 17 CFR § 240.17a-4(f), which regulates exchange members, brokers or dealers.

  - Financial Industry Regulatory Authority (FINRA) Rule 4511(c), which defers to the format and media requirements of SEC Rule 17a-4(f).

- The principles-based electronic records requirements of the Commodity Futures Trading Commission (CFTC) in 17 CFR § 1.31(c)-(d), which regulates commodity futures trading.

It is Cohasset's opinion that IBM Spectrum Scale, version 5.1.1, when properly configured, retains records in compliance with the recording and non-rewriteable, non-erasable storage of electronic records of SEC Rule 17a-4(f) and FINRA Rule 4511(c). Additionally, the assessed capabilities of IBM Spectrum Scale meet the principles-based requirements of CFTC Rule 1.31(c)-(d).

BENEFIT FROM COHASSET'S INDUSTRY INSIGHT AND EXPERIENCE

Core to Cohasset's practice is its delivery of records management and information governance professional consulting services, education and training. Cohasset's expert consulting services are tailored to support a multitude of regulated organizations, including those in the financial services industry. Cohasset serves both domestic and multi-national clients, aligning information lifecycle controls with their organizations' business priorities and facilitating regulatory compliance and risk mitigation, all the while generating measurable business efficiencies.

Cohasset has assessed the spectrum of storage technologies and systems designed to meet the requirements of the Securities and Exchange Commission Rule 17a-4(f), as defined by 1) the No Action Letter in 1993 (allowing broker dealers to use non-rewriteable, non-erasable digital storage media); 2) the issuance of the Rule in 1997; and 3) the Interpretive Release in 2003, which authorizes the use of erasable storage, conditioned on integrated control codes, to prevent premature deletion of records.

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1 | Introduction

Regulators, world-wide, establish explicit requirements for regulated entities that elect to retain books and records[1] on electronic storage media. Given the prevalence of electronic books and records, these requirements apply to most broker-dealer and commodity futures trading firms and other organizations with similarly regulated operations.

This Introduction *briefly summarizes the regulatory environment pertaining to this assessment, explains the purpose and approach for Cohasset's assessment, and provides an overview of IBM Spectrum Scale and the scope of this assessment.*

1.1 Overview of the Regulatory Requirements

1.1.1 SEC Rule 17a-4(f) Requirements

In 17 CFR §§ 240.17a-3 and 240.17a-4, the SEC stipulates recordkeeping requirements, including retention periods, for the securities broker-dealer industry. On February 12, 1997, the SEC adopted amendments to 17 CFR § 240.17a-4 (the Rule or Rule 17a-4). These amendments to paragraph (f) expressly allow books and records to be retained on electronic storage media, subject to explicit standards.

> *The Commission is adopting a rule today which, instead of specifying the type of storage technology that may be used, <u>sets forth standards that the electronic storage media must satisfy</u> to be considered an acceptable method of storage under Rule 17a–4.[2]* [emphasis added]

Further, the SEC issued two Interpretive Releases (No. 34-44238 on May 1, 2001, and No. 34-47806 on May 7, 2003), which pertain specifically to the electronic storage media requirements of paragraph (f).

For additional information, refer to Section 5.1, Overview of SEC Rule 17a-4(f) Electronic Records Storage Requirements.

1.1.2 FINRA Rule 4511(c) Requirements

Financial Industry Regulatory Authority (FINRA) Rule 4511(c) explicitly defers to the format and media requirements of SEC Rule 17a-4, for the books and records it requires.

> *All books and records required to be made pursuant to the FINRA rules shall be preserved in a format and media that complies with SEA [Securities Exchange Act] Rule 17a-4.*

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[1] Regulators use the phrase *books and records* to describe information about certain business transactions, customers, personnel and other administrative activities that must be retained. Accordingly, Cohasset has used the term *record file* (versus *data* or *file*) to consistently recognize that the content is a required record.

[2] Exchange Act Release No. 38245 (Feb. 5, 1997), 62 FR 6470 (Feb. 12, 1997) ("Adopting Release").

1.1.3   CFTC Rule 1.31(c)-(d) Requirements

Effective August 28, 2017, 17 CFR § 1.31 (the CFTC Rule), the Commodity Futures Trading Commission (CFTC) promulgated principles-based requirements for organizations electing to retain electronic regulatory records. These amendments modernize and establish technology-neutral requirements for the *form and manner of retention, inspection and production* of regulatory records.

Refer to Section 3, *Summary Assessment of Compliance with CFTC Rule 1.31(c)-(d)*, which correlates the CFTC principles-based requirements to the capabilities of IBM Spectrum Scale. Additionally, refer to Section 5.3, *Overview of CFTC Rule 1.31(c)-(d) Electronic Regulatory Records Requirements*.

1.2   Purpose and Approach

To obtain an independent and objective assessment of the compliance capabilities of Spectrum Scale, IBM engaged Cohasset Associates, Inc. (Cohasset). As a highly-respected consulting firm, Cohasset has recognized expertise and more than 40 years of experience with the legal, technical and operational issues associated with the records management practices of companies regulated by the SEC and CFTC. Additional information about Cohasset is provided in the last section of this report.

IBM engaged Cohasset to:

- Assess the capabilities of IBM Spectrum Scale in comparison to the five requirements of SEC Rule 17a-4(f) for recording and non-rewriteable, non-erasable storage of electronic records; see Section 2, *Assessment of Compliance with SEC Rule 17a-4(f);*

- Associate the principles-based requirements of CFTC Rule 1.31(c)-(d) to the assessed capabilities of IBM Spectrum Scale; see Section 3, *Summary Assessment of Compliance with CFTC Rule 1.31(c)-(d);* and

- Prepare this Assessment Report, enumerating the results of its assessment.

In addition to applying the information in this Assessment Report, regulated entities must ensure that the combination of its policies, procedures and regulatory submissions, in conjunction with the capabilities of implemented electronic recordkeeping solutions, meet all applicable requirements.

This assessment represents the professional opinion of Cohasset and should not be construed as either an endorsement or a rejection, by Cohasset, of IBM Spectrum Scale and its capabilities or other IBM products or services. The information utilized by Cohasset to conduct this assessment consisted of: (a) oral discussions, (b) system documentation, (c) user and system administrator guides, and (d) other directly related materials provided by IBM or obtained from publicly available resources.

The content and conclusions of this assessment are not intended, and must not be construed, as legal advice. Relevant laws and regulations constantly evolve, and legal advice is tailored to the specific circumstances of the organization. Therefore, nothing stated herein should be substituted for the advice of competent legal counsel.

1.3 **Spectrum Scale Overview and Assessment Scope**

IBM Spectrum Scale (Spectrum Scale) is an enterprise-grade file system that can be implemented as an appliance (hardware and software) or software only solution, which supports the combination of flash, disk, cloud, and tape storage.

The Spectrum Scale architecture (illustrated in the diagram) consists of the following components:

- **Spectrum Scale Client** (via Portable Operating System Interface (POSIX), the General Parallel File System (GPFS) API**, Network File System (NFS) or Server Message Block protocol (SMB)** handle access to the immutable fileset to store and retrieve files and manage immutability.

- **Spectrum Scale file system** is a scalable parallel file system which allows configuring immutable partitions called immutable filesets.

- **Immutable fileset** is a directory in the file system that supports managing immutable record files for a specific retention time, during which they cannot be deleted or modified.

- **Spectrum Scale disk storage** is used to store immutable record files on disk (hard disk, flash, and solid-state drives).
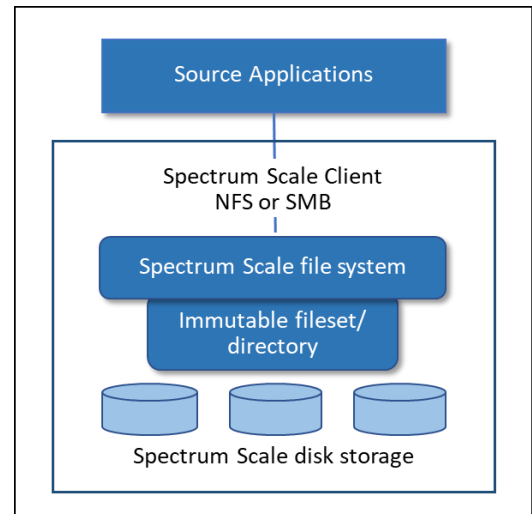
The scope of this assessment is focused specifically on the compliance related capabilities of Spectrum Scale, Version 5.1.1, operating under the following conditions and configurations:

- *Compliant-Plus* Integrated Archive Manager (IAM) mode configured on the fileset.

- One of the following three software/hardware environments:

  1. <u>Appliance</u>: IBM Elastic Storage System (ESS) is a pre-packaged storage solution with IBM Spectrum Scale Software, Spectrum Scale RAID, I/O Servers, and drives.

  2. <u>Software Only</u>: IBM Spectrum Scale Data Access or Data Management Editions deployed on hardware that meets the minimum hardware requirements published by IBM for Spectrum Scale to assure adherence with IBM standards and compatibility. Spectrum Scale Data Access or Data Management Editions are typically deployed in conjunction with external storage systems.

  3. <u>Software Only</u>: IBM Spectrum Scale Erasure Code Edition (ECE) that leverages the IBM Spectrum Scale software and Spectrum Scale RAID and is deployed in conjunction with high-capacity storage servers.

Deploying Spectrum Scale software on public cloud infrastructure is <u>excluded</u> from the scope of this Assessment Letter.

2 | Assessment of Compliance with SEC Rule 17a-4(f)

This section presents Cohasset's assessment of the capabilities of IBM Spectrum Scale, compared to the five requirements related to recording and non-rewriteable, non-erasable storage of electronic records, as stipulated in SEC Rule 17a-4(f).

For each of the five relevant requirements in SEC Rule 17a-4(f), this assessment is organized into the following four topics:

- *Compliance Requirement* – Excerpt of each electronic storage requirement in SEC Rule 17a-4(f) and Cohasset's interpretation of the requirement

- *Compliance Assessment* – Assessment of the relevant capabilities of Spectrum Scale

- *Spectrum Scale Capabilities* – Description of relevant capabilities

- *Additional Considerations* – Additional considerations related to meeting the specific requirement

The following subsections document Cohasset's assessment of the capabilities of Spectrum Scale, as described in Section 1.3, *Spectrum Scale Overview and Assessment Scope*, relative to each pertinent requirement of SEC Rule 17a-4(f).

2.1   Non-Rewriteable, Non-Erasable Record Format

2.1.1   Compliance Requirement [SEC 17a-4(f)(2)(ii)(A)]

As set forth in Section III(B) of the 2001 Interpretive Release, this requirement *"is designed to ensure that electronic records are capable of being accurately reproduced for later reference by maintaining the records in an unalterable form [for the required retention period]."*

> **SEC 17a-4(f)(2)(ii)(A):** Preserve the records exclusively in a non-rewriteable, non-erasable format

The following statement in the 2003 Interpretive Release further clarifies that certain implementations of rewriteable and erasable media, such as magnetic disk or magnetic tape, meet the requirements of a non-rewriteable, non-erasable recording environment provided: (a) the storage solution delivers the prescribed functionality and (b) the functionality is delivered via appropriate integrated control codes for the SEC designated retention period associated with the stored records.

> *A broker-dealer would not violate the requirement in paragraph (f)(2)(ii)(A) of the rule if it used an electronic storage system that <u>prevents the overwriting, erasing or otherwise altering of a record during its required retention period</u> through the use of <u>integrated</u> hardware and software <u>control codes</u>.* [emphasis added]

Further, Section IV of the 2003 Interpretive Release places requirements on the storage system for retaining records beyond the SEC-established retention period when certain circumstances occur, such as a subpoena or legal hold:

> *Moreover, there may be circumstances (such as receipt of a subpoena) where a broker-dealer is required to maintain records beyond the retention periods specified in Rule 17a-4 or other applicable Commission rules. Accordingly, a broker-dealer must take appropriate steps to ensure that records are not deleted during periods when the regulatory retention period has lapsed but other legal requirements mandate that the records continue to be maintained, and <u>the broker-dealer's storage system must allow records to be retained beyond the retentions periods specified in Commission rules</u>.* [emphasis added]

This statement by the SEC clarifies that the storage system must have the capability to retain records beyond the retention period established at the time of initial recording when required for legal matters, external investigations or audits, or other similar circumstances.

2.1.2   Compliance Assessment

It is Cohasset's opinion that the current features of Spectrum Scale, when IAM mode is set to *Compliant-Plus*, meets this SEC requirement to retain records in non-rewriteable, non-erasable format for time-based retention periods, when (a) properly configured, as described in Section 2.1.3, and (b) the considerations described in Section 2.1.4 are satisfied.

2.1.3   Spectrum Scale Capabilities

This section describes the capabilities of Spectrum Scale that directly pertain to this SEC requirement for preserving electronic records as non-rewriteable, non-erasable for the required retention time and any associated legal holds.

Overview

▶ A fileset must be configured in *Compliant-Plus* mode when storing records required for compliance with SEC Rule 17a-4(f).

▶ A specific retention expiration date is applied to each record file based on the last access date and time (*atime*) attribute transmitted by the source application.

▶ When a record file is *Immutable* and retention expiration date is applied within a *Compliance-Plus* fileset, integrated control codes:

  ● Disable write permissions for the content of the file; thus, protecting it against modification and overwrite for its lifespan.

  ● Prohibit deletion, through any mechanism, until the assigned retention expiration date has passed.

  ● Prohibit the *shortening* of the retention expiration date assigned to the record file.

  ● Prohibit renaming the directory associated with the fileset.

  ● Prohibit deleting a fileset containing one or more *Immutable* record files.

Fileset Configurations

▶ A fileset can be set to one of the following four Integrated Archive Manager (IAM) modes: (1) *Advisory*, (2) *Noncompliant*, (3) *Compliant* and (4) *Compliant-Plus*. IAM modes can be upgraded to a higher level of control (example from *Advisory* to *Compliant*), but cannot be downgraded. The IAM modes provide the following controls for managing record files:

- *Advisory* and *Noncompliant* modes include features that either permit deleting a file before its retention time has expired or resetting (shortening) a retention time applied to a file. Therefore, these two modes are *excluded* from this assessment.

- *Compliant* and *Compliant-Plus* modes prohibit (a) resetting the retention time for a file, though a file's retention time can be extended, (b) deleting a file before its retention time has expired, and (c) changing a file over its lifespan. Further, *Compliant-Plus* mode prohibits renaming an empty directory within an immutable fileset in the file system. Accordingly, this report assesses fileset configured with *Compliant-Plus* mode, which was designed for compliance with SEC Rule 17a-4(f) and applies stringent file management controls and retention protection when a record file is set to *Immutable*.

Record file and Retention Controls

▶ A record file within Spectrum Scale is comprised of two elements:

1. **Content:** The contents of the record file (i.e., document, image, video, database image, etc.).

2. **System metadata:** Critical attributes for record file management such as:

   ◆ *Immutable metadata*, e.g., transmitted file name, a cryptographic hash value and creation / storage date and time.

   ◆ *Mutable metadata,* such as *atime*, last modified date and time (which is system managed), user-defined custom metadata and file state.

      ▪ The *atime* field stores the retention expiration date set when the record file is *Immutable* in Spectrum Scale. In *Compliant-Plus* filesets, the *atime* value can be extended but cannot be shortened.

▶ Record files in a *Compliant-Plus* fileset may be in one of the following states:

- *Non-Immutable* is the initial state of new record file. When a record file is in a *Non-Immutable* state, it can be modified, overwritten or deleted. A record file in the *Non-Immutable* state is not compliant with the Rule.

- *Immutable* has a retention expiration date set and the *immutable* attribute set to "yes". When a record file is in an *Immutable* state, it cannot be modified, overwritten, deleted, or renamed. After the retention expiration date has passed, the record file may be deleted but cannot be changed. A record file in an *Immutable* state is compliant with the Rule.

▶ After the source application has written files to a *Compliant-Plus* fileset, the *Immutable* state is applied, using one of the following methods:

- The last access date (*atime*) for the file is set to the desired retention expiration date and the read-only is set, using Portable Operating System Interface (POSIX), the General Parallel File System (GPFS) API, Spectrum Scale commands, NFS or SMB.

- The Spectrum Scale policy engine, along with customized control programs, are leveraged to (1) automatically set record files to immutable on a scheduled timeframe or (2) set a unique retention expiration date for each record file based on characteristics, such as different file types.

▶ After the record file is set to an *Immutable* state, the retention expiration date can only be extended, by setting the *atime* to a later date.

▶ When an immutable record file is **copied**, the *Immutable* state is not applied to the copy; instead, read-only and retention expiration date must be assigned to the new copy.

Legal Holds

▶ When litigation, regulatory investigation, or a subpoena requires record files to be placed on hold, the regulated entity must ensure the subject record files are preserved for the duration of the legal hold. For record files that must be preserved for a duration longer than the assigned retention expiration date, the regulated entity may either: (1) set an *indefinite retention*, or (2) extend the retention expiration date.

1. When using Spectrum Scale commands or the GPFS API, the *indefinite retention* attribute may be set to "yes" for select record files that are subject to the hold. This assigns an *indefinite retention* time to the immutable record files, which prevents deletion or expiration of the file, even if the stored retention expiration date has passed.

   ◆ To release the hold, the *indefinite retention* attribute can be reset to *No* or *null.* This reverts retention controls to the retention expiration date (stored in the file's *atime*). If the retention expiration date has passed, the file may be deleted.

2. When using POSIX, NFS or SMB commands, the retention expiration date may be extended for select record files that are subject to the hold. If the initial extension of the retention expiration date is insufficient, the retention expiration date must continue being extended to meet the legal hold timeframe.

Deletion Controls

▶ Disposition or deletion of record files may be initiated by the user or source application.

▶ To be eligible for deletion, the retention expiration date must be in the past and the *indefinite retention* attribute must be set to *No* or *null*.

- Privileged delete is not allowed for a fileset set to *Compliant-Plus*. Further, the retention expiration date cannot be shortened to allow premature deletion of the record file.

▶ While a record file eligible for deletion can be deleted, it cannot be modified, overwritten, moved or renamed.

▶ A *Compliant-Plus* fileset cannot be deleted, by any mechanism, if it contains any *immutable* record files.

Clock Management

▶ NTP (network time protocol) is highly recommended, though not enforced by Spectrum Scale. When NTP is used, only the *root* user has permission to disable NTP or change the system time.

▶ The time server used for time synchronization of the Spectrum Scale nodes and the application nodes must be identical. Further, manipulation of the time server must be prohibited through system or procedural controls. Specifically, through the Unix-based sudo configuration, the Spectrum Scale and application administrators can be prohibited from manipulating the time service client (for example, ntpd and chronyd) on the Spectrum Scale and application nodes.

▶ When the time server and system time diverge by more than one hour, the system health check displays a warning message that surfaces in the Spectrum Scale GUI and event monitor.

Security

In addition to the stringent retention protection and management controls described above, Spectrum Scale provides the following security capabilities, which support the authenticity and reliability of the record files.

▶ Secure cluster communication modes consisting of the following: 1) AUTHONLY, requires sending and receiving nodes authenticate each other, or 2) Cipher, requires sending and receiving nodes authenticate each other, encrypt transmitted data and check data integrity.

▶ Secure data at rest by using file-level encryption. Record files are encrypted on disk and are not retrievable unless the correct encryption keys, maintained by a separate key manager outside the file system, are available.

▶ Secure transfers with SMB and NFS.

▶ SMB and NFS require user authentication. IBM Spectrum Scale supports various authentication directory servers:

  ● RFC2307 schema-compliant Lightweight Directory Access Protocol (LDAP) server

  ● Microsoft Active Directory (AD) server with or without RFC2307 schema

  ● Network Information Service (NIS) server

▶ Provides secure administration by configuring named users and associated sudo-rules, which eliminates the need for root access.

▶ Supports access control lists (ACLs) to provide fine-grained access control to files and directories.

2.1.4   Additional Considerations

To assure compliance with the non-rewriteable, non-erasable requirements of the SEC Rule, the regulated entity is responsible for:

▶ Configuring the IAM mode in *Compliant-Plus* for filesets that will store books and records required by regulation, thereby establishing the foundation for meeting the requirements of the Rule.

▶ Ensuring each record file required to comply with the Rule has an appropriate retention expiration date applied and is *Immutable*. Cohasset recommends these settings be applied within 24 hours of storage.

▶ Cohasset recommends the use of NTP for clock management to prevent manipulation of system time, which may affect deletion eligibility.

▶ Storing record files requiring event-based[3] retention periods in a separate compliance system, since Spectrum Scale does not currently support event-based retention periods.

▶ For record files that require preservation for legal matters, government investigations, external audits and other similar circumstances, either: (1) setting the *indefinite retention* attribute using Spectrum Scale commands, or (2) extending the retention expiration date, and periodically reviewing the legal holds to determine if the retention expiration date must be extended further to meet on-going holds.

2.2 Accurate Recording Process

2.2.1 Compliance Requirement [SEC 17a-4(f)(2)(ii)(B)]

The intent of this requirement is to ensure both the accuracy and quality of the recording process such that the records read from the storage media are precisely the same as those that were recorded.

> **SEC 17a-4(f)(2)(ii)(B):** Verify automatically the quality and accuracy of the storage media recording process

This requirement includes both a quality verification of the recording process and post-recording verification processes.

2.2.2 Compliance Assessment

Cohasset affirms that the current capabilities of Spectrum Scale, in conjunction with the inherent capabilities of advanced magnetic storage technology, meet this SEC requirement for accurate recording and post-recording verification, when the considerations described in Section 2.2.4 are satisfied.

2.2.3 Spectrum Scale Capabilities

Spectrum Scale has a combination of recording and post-recording verification processes, which are described in the following subsections.

Recording Process:

▶ A combination of checks and balances in the advanced magnetic recording technology (such as inter-component and inter-step cyclical redundancy checks (CRCs), as well as write-error detection and correction) are relied upon to assure that the records are written in a high-quality and accurate manner.

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3   Event-based or event-time-based retention periods require records to be retained indefinitely until a specified event occurs (e.g., a contract expires or an employee terminates), after which the record is retained for a fixed final retention period.

▶ When using the Elastic Storage System (appliance) or Erasure Code Edition, Spectrum Scale RAID calculates and stores a checksum with each block and subsequently uses the checksum for post-recording quality and integrity checks.

▶ Alternatively, for Spectrum Scale <u>software only</u> (Data Access or Data Management Edition) implementations, the source application is responsible for ensuring the accuracy of the stored record file. To ensure write accuracy, the source application should calculate and store a checksum locally, and then validate the local checksum against the post write calculated checksum.

Post-Recording Verification Process

▶ The Elastic Storage System or Erasure Code Edition uses the previously stored checksum for verifications. Specifically, when the record file is read back from the disk, the system verifies the checksum to ensure that the record file has not been altered since it was written.

- During low activity periods, *Data Scrubbing*, an automated process, performs a verification of the block-level checksum. If an error is detected, the duplicate copy is used to correct any mismatch in the data.

2.2.4   Additional Considerations

When using Spectrum Scale <u>software only</u> (Data Access or Data Management Edition), the regulated entity should calculate and store a checksum, and subsequently use the checksum to ensure the accuracy of the write and retrieval processes.

2.3   Serialize the Original and Duplicate Units of Storage Media

2.3.1   Compliance Requirement [SEC 17a-4(f)(2)(ii)(C)]

This requirement, according to Section III(B) of the SEC's 2001 Interpretive Release, *"is intended to ensure both the accuracy and accessibility of the records by indicating the order in which records are stored, thereby making specific records easier to locate and authenticating the storage process."*

> **SEC 17a-4(f)(2)(ii)(C):** Serialize the original and, if applicable, duplicate units of storage media, and time-date for the required period of retention the information placed on such electronic storage media

When the SEC Rule was issued in 1997, this requirement was thought to be more pertinent to tracking the individual units of removable media related to micrographic or optical storage. This requirement for non-unitized electronic storage may be satisfied by capturing and storing immutable metadata, associated with each electronic record, to *uniquely* identify the record and the *date and time of recording*.

2.3.2   Compliance Assessment

It is Cohasset's opinion that Spectrum Scale meets this SEC requirement to serialize the original and duplicate records.

2.3.3   Spectrum Scale Capabilities

▶   The unique record file name, as transmitted by the source application, is stored and maintained in the fileset directory.

▶   The system-managed creation / storage date and time and last modified date and time (mtime) are captured and stored for each record file and are immutable for the duration of the retention period, when the record file is *immutable*.

▶   The combination of the unique record file name and the system-managed creation and last modified date and time provide a serialization of each record file in both space and time.

2.3.4   Additional Considerations

There are no additional considerations related to this requirement.

2.4   Capacity to Download Indexes and Records

2.4.1   Compliance Requirement [SEC 17a-4(f)(2)(ii)(D)]

This requirement necessitates an adequate capacity to readily download records and associated indexes, in a format and on a medium acceptable under the Rule and as specified by the SEC or self-regulatory organization. This allows the SEC or self-regulatory organizations to take possession of the downloaded records and indexes.

> **SEC 17a-4(f)(2)(ii)(D):** Have the capacity to readily download indexes and records preserved on the electronic storage media to any medium acceptable under this paragraph (f) as required by the Commission or the self-regulatory organizations of which the member, broker, or dealer is a member

2.4.2   Compliance Assessment

It is Cohasset's opinion that IBM Spectrum Scale meets this SEC requirement to readily download records and indexes (metadata attributes) when the considerations described in Section 2.4.4 are addressed.

2.4.3   Spectrum Scale Capabilities

▶   Spectrum Scale stores the record file name submitted by the source application in a protected fileset which then allows the source application to request one or more specific record files to be downloaded for viewing, reproduction or transfer to a medium acceptable under the Rule.

▶   The fileset directory in the Spectrum Scale file system can be viewed through standard NAS protocols (NFS or SMB) and POSIX and includes folder name, record file name, time stamps (ctime, atime, and mtime) and other extended attributes (indexes or metadata). Using the directory and file attributes, appropriate record files can be identified, retrieved and downloaded, whereupon they can be transferred using local capabilities to any medium acceptable under the Rule.

2.4.4   Additional Considerations

The regulated entity is responsible for (a) assuring that hardware and software capacity allows for ready access to the record files and metadata (index) attributes, (b) maintaining its encryption keys, and (c) assuring that the

regulator, self-regulatory organization or designated examining authority receive downloads of the record files and metadata (index) attributes, in the requested format and medium.

2.5   Duplicate Copy of the Records Stored Separately

2.5.1   Compliance Requirement [SEC 17a-4(f)(3)(iii)]

The intent of this requirement is to provide an alternate source for accessing the records, should the primary source be compromised, i.e., lost or damaged.

> **SEC 17a-4(f)(3)(iii):** Store separately from the original, a duplicate copy of the record stored on any medium acceptable under § 240.17a-4 for the time required

Note: A *duplicate copy* is defined as a persistent copy that allows the complete and accurate record to be reestablished from data stored on a compliant storage system or medium. Whereas, a *backup copy* is defined as a non-persistent copy that is overwritten as it is *rotated* on a periodic basis, resulting in a much shorter retention period than the original.

2.5.2   Compliance Assessment

Cohasset affirms that the current capabilities of IBM Spectrum Scale meet this SEC requirement for a persistent duplicate copy of the record files, when properly configured, as described in Section 2.5.3.

2.5.3   Spectrum Scale Capabilities

▶   Spectrum Scale provides two options for meeting the conditions of this requirements to separately store a duplicate copy.

   ●   Spectrum Scale provides the ability to synchronously replicate the record files and metadata to up to three storage systems, provided that these distinct storage systems are configured with distinct failure group numbers and that the file system hosting the immutable fileset is configured for synchronous replication of data and metadata.

   ●   IBM Aspera Sync (version 3.9+) may be used, for long distance file transfers over WAN connections, to replicate record files asynchronously from a primary Spectrum Scale cluster to a remote destination Spectrum Scale cluster.

▶   All compliance-required record file attributes are replicated with the duplicate copy of the record file.

▶   In the event that replication is paused or disassociated, all record files on a *Compliant-Plus* configured fileset with an *immutable* attribute will be protected for the retention period.

▶   The duplicate copy can be utilized when the primary copy is not accessible, to either: (a) restore the primary copy, or (b) retrieve record files.

2.5.4   Additional Considerations

When using IBM replication capabilities, the source and destination storage systems must remain connected and must not be disassociated to ensure a duplicate copy is maintained..

3 | Summary Assessment of Compliance with CFTC Rule 1.31(c)-(d)

The objective of this section is to document Cohasset's assessment of the capabilities of IBM Spectrum Scale, as described in Section 1.3, *Spectrum Scale Overview and Assessment Scope*, in comparison to the CFTC requirements.

The individual relevant requirements cited in Section 2, *Assessment of Compliance with SEC Rule 17a-4(f)*, are based on the wording in SEC Rule 17a-4(f) and Cohasset's interpretation of the requirements, given the associated SEC Interpretive Releases. Specifically, the SEC's 2003 Interpretive Release reiterates that the Rule sets forth standards that the electronic storage media must satisfy to be considered an acceptable method of storage under SEC Rule 17a-4:

> *A broker-dealer would not violate the requirement in paragraph (f)(2)(ii)(A) of the rule if it used an electronic storage system that prevents the overwriting, erasing or otherwise altering of a record during its required retention period through the use of <u>integrated</u> hardware and software <u>control codes</u>.* [emphasis added]

Accordingly, it is Cohasset's opinion that the requirements set forth in SEC Rule 17a-4(f) are *technology-neutral* and apply to any electronic solution with (a) integrated control codes that extend to the electronic storage system and (b) features that deliver capabilities that meet the requirements of the Rule.

The August 28, 2017, amendments to CFTC Rule 1.31 establish *technology-neutral*, *principle-based* requirements. As illustrated in the table in this section, it is Cohasset's opinion that the requirements of the modernized CFTC Rule may be achieved by meeting the SEC requirements.

When comparing the capabilities of Spectrum Scale that align with the SEC requirements to the *principles-based* CFTC requirements, it is essential to recognize that the SEC Rule separately describes requirements for index data and audit trail, whereas the CFTC in 17 CFR § 1.31(a) establishes an expanded definition of an *electronic regulatory record* to include the information as specified in paragraph (i) and (ii) below.

> ***Definitions***. *For purposes of this section:*
> <u>Electronic regulatory records</u> *means all regulatory records other than regulatory records exclusively created and maintained by a records entity on paper.*
> <u>Records entity</u> *means any person required by the Act or Commission regulations in this chapter to keep regulatory records.*
> <u>Regulatory records</u> *means all books and records required to be kept by the Act or Commission regulations in this chapter, including any record of any correction or other amendment to such books and records, provided that, <u>with respect to such books and records stored electronically, regulatory records shall also include:</u>*
> <u>*(i) Any data necessary to access, search, or display any such books and records; and*</u>
> <u>*(ii) All data produced and stored electronically describing how and when such books and records were created, formatted, or modified*</u>. [emphasis added]

The focus of Cohasset's assessment, presented in Section 2, pertains to Spectrum Scale in *Compliant-Plus* mode, which is a highly restrictive configuration that assures the storage solution applies controls to (a) protect

immutability of the record content and certain system metadata and (b) prevent deletion over the applied retention time.

In the following table, Cohasset correlates the capabilities of Spectrum Scale in *Compliant-Plus* mode to the *principles-based* CFTC requirements related to the *form and manner of retention* and the *inspection and production of regulatory records*. In addition, Cohasset contends that Spectrum Scale in either *Noncompliant* or *Compliant* mode, meets these *principles-based* CFTC requirements, when the regulated entity applies appropriate procedural controls to oversee operations that may allow content to be modified or deleted prior to expiration of the retention time. These less restrictive configurations provide flexibility to remove or shorten a retention time applied to a file, which may be beneficial for compliance with privacy and data protection requirements.

The left-hand column lists the *principles-based* CFTC requirements. The middle column provides Cohasset's analysis and opinion regarding the ability of Spectrum Scale to meet the requirements for electronic regulatory records in CFTC Rule 1.31(c)-(d). In addition, for ease of reference, the right-hand column lists the correlated SEC requirements.

CFTC 1.31(c)-(d) Requirement	Compliance Assessment Relative to CFTC 1.31(c)-(d)	SEC 17a-4(f) Requirements Listed in the Referenced Sections
(c) Form and manner of retention. Unless specified elsewhere in the Act or Commission regulations in this chapter, all regulatory records must be created and retained by a records entity in accordance with the following requirements: (1) **Generally**. Each records entity shall retain regulatory records in a form and manner that ensures the _authenticity and reliability_ of such regulatory records in accordance with the Act and Commission regulations in this chapter. (2) **Electronic regulatory records**. Each records entity maintaining electronic regulatory records shall establish appropriate systems and controls that ensure the _authenticity and reliability_ of electronic regulatory records, including, without limitation: (i) Systems that _maintain_ the security, signature, and data as necessary to ensure the _authenticity_ of the information contained in electronic regulatory records and to monitor compliance with the Act and Commission regulations in this chapter;	It is Cohasset's opinion that Spectrum Scale capabilities, in _Compliant-Plus_ mode, as described in Sections 2.1 through 2.4 meet CFTC requirements (c)(1) and (c)(2)(i) for record files. Additionally, for _records stored electronically_, the CFTC has expanded the definition of _regulatory records_ in 17 CFR § 1.31(a) to include metadata: _Regulatory records means all books and records required to be kept by the Act or Commission regulations in this chapter, including any record of any correction or other amendment to such books and records, provided that, with respect to such books and records stored electronically, regulatory records shall also include:_ _(i) Any data necessary to access, search, or display any such books and records; and_ _(ii) All data produced and stored electronically describing how and when such books and records were created, formatted, or modified._ [emphasis added] It is Cohasset's opinion that Spectrum Scale retains immutable metadata attributes (e.g., unique file name, last modified date/time and cryptographic hash value), as an integral part of the record file. The record file attributes are subject to the same retention protections as the associated record file itself. To satisfy this requirement for _other_ essential data related to how and when the record files were created, formatted, or modified, the regulated entity must retain this data in a compliant manner.	**Section 2.1** _Non-Rewriteable, Non-Erasable Record Format_ _Preserve the records exclusively in a non-rewriteable, non-erasable format_ **Section 2.2** _Accurate Recording Process_ _Verify automatically the quality and accuracy of the storage media recording process_ **Section 2.3 Serialize the Original and Duplicate Units of Storage Media** _Serialize the original and, if applicable, duplicate units of storage media, and time-date for the required period of retention the information placed on such electronic storage media_ **Section 2.4 Capacity to Download Indexes and Records** _Have the capacity to readily download indexes and records preserved on the electronic storage media to any medium acceptable under this paragraph (f) as required by the Commission or the self-regulatory organizations of which the member, broker, or dealer is a member_
(ii) Systems that ensure the records entity is able to produce electronic regulatory records[4] in accordance with this section, and _ensure the availability of such regulatory records in the event of an emergency or other disruption_ of the records entity's electronic record retention systems; and	It is Cohasset's opinion that Spectrum Scale capabilities described Section 2.5, including options for duplicating or replicating the record files meet the CFTC requirements (c)(2)(ii) to _ensure the availability of such regulatory records in the event of an emergency or other disruption of the records entity's electronic record retention systems_. To satisfy this requirement for _other_ essential data that is not retained in Spectrum Scale (such as separate indices), the regulated entity must retain this _other_ data in a compliant manner.	**_Section 2.5 Duplicate Copy of the Records Stored Separately_** _Store separately from the original, a duplicate copy of the record stored on any medium acceptable under §240.17a-4 for the time required_

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4   17 CFR § 1.31(a) includes indices (_Any data necessary to access, search, or display any such books and records_) in the definition of regulatory records.

CFTC 1.31(c)-(d) Requirement	Compliance Assessment Relative to CFTC 1.31(c)-(d)	SEC 17a-4(f) Requirements Listed in the Referenced Sections
(iii) The creation and maintenance of an _up-to-date inventory_ that identifies and describes each system that maintains information necessary for accessing or producing electronic regulatory records.	The regulated entity is required to create and retain an _up-to-date inventory,_ as required for compliance with 17 CFR § 1.31(c)(iii).	N/A
(d) Inspection and production of regulatory records. Unless specified elsewhere in the Act or Commission regulations in this chapter, a records entity, at its own expense, must _produce or make accessible for inspection_ all regulatory records in accordance with the following requirements: (1) _Inspection_. All regulatory records shall be open to inspection by any representative of the Commission or the United States Department of Justice. (2) _Production of **paper** regulatory records_. *** (3) _Production of **electronic** regulatory records_. (i) A request from a Commission representative for electronic regulatory records will specify a _reasonable form and medium_ in which a records entity must produce such regulatory records. (ii) A records entity must _produce such regulatory records in the form and medium requested promptly_, upon request, unless otherwise directed by the Commission representative. (4) _Production of **original** regulatory records._ ***	It is Cohasset's opinion that Spectrum Scale has features that support the regulated entity's efforts to comply with requests for inspection or production of record files and associated system metadata (i.e., index attributes). ● Specifically, it is Cohasset's opinion that Section 2.4, _Capacity to Download Indexes and Records_, describes use of Spectrum Scale to retrieve and download the record files and the system metadata retained by Spectrum Scale. As noted in the _Additional Considerations_ in Section 2.4.4, the regulated entity is obligated to produce the record files and associated metadata, in the form and medium requested. ● If the regulator requests additional data related to how and when the record files were created, formatted, or modified, the regulated entity will need to provide this information from appropriate source systems.	**Section 2.4 Capacity to Download Indexes and Records** _Have the capacity to readily download indexes and records preserved on the electronic storage media to any medium acceptable under this paragraph (f) as required by the Commission or the self-regulatory organizations of which the member, broker, or dealer is a member_

4 | Conclusions

Cohasset assessed the capabilities of IBM Spectrum Scale, version 5.1.1, set to *Compliant-Plus* mode, in comparison to the five requirements related to the recording and non-rewriteable, non-erasable storage of electronic records, as set forth in SEC Rule 17a-4(f) and its associated Interpretive Releases. (See Section 1.3, *Spectrum Scale Overview and Assessment Scope*.)

Cohasset determined that Spectrum Scale, when properly configured, has the following capabilities, which meet the regulatory requirements:

- Maintains record files and immutable record file metadata in non-rewriteable, non-erasable format for time-based retention periods.

- Allows retention to be extended for legal holds and other purposes by either (a) setting an indefinite retention, or (2) extending the retention expiration date.

- Prohibits the modification and deletion of a record file and its immutable metadata until the retention time for the record file has expired.

- Verifies the accuracy and quality of the recording process through cryptographic hash values (Elastic Storage System or Erasure Code Edition), in addition to the inherent capabilities of advanced magnetic storage technology.

- Uniquely serializes each record file and all duplicate copies with a unique file name and the last modified date and time (*mtime*).

- Provides the capacity and tools to (a) search for a record file, (b) list the file names, and (c) download the record files and associated metadata attributes for a browser or other local tool to render as a human-readable image.

- Synchronously or asynchronously records a minimum of two duplicates of each record file on separate local or remote file systems, which allows for automatic recovery of record files that become lost or damaged.

Cohasset also correlated the assessed capabilities of IBM Spectrum Scale, set to *Compliant-Plus* mode, to the principles-based electronic records requirements in CFTC Rule 1.31(c)-(d).

Accordingly, Cohasset concludes that IBM Spectrum Scale, when properly configured, meets the five requirements related to recording and non-rewriteable, non-erasable storage of electronic records, as specified in SEC Rule 17a-4(f) and FINRA Rule 4511(c).

5 | Overview of Relevant Regulatory Requirements

This section establishes the context for the regulatory requirements that are the subject of this assessment by providing an overview of the regulatory foundation for allowing electronic records to be retained on a variety of compliant electronic storage media.

5.1 Overview of SEC Rule 17a-4(f) Electronic Records Storage Requirements

Recordkeeping requirements for the securities broker-dealer industry are stipulated by the United States Securities and Exchange Commission (SEC) Regulations, including 17 CFR §§ 240.17a-3 and 240.17a-4. Specifically, SEC Rule 17a-4(f), when adopted on February 12, 1997, expressly allow books and records to be retained on electronic storage media, subject to meeting certain conditions.

Three separate foundational documents collectively define and interpret the specific regulatory requirements that must be met for an electronic storage system to be compliant with SEC Rule 17a-4(f). These are:

- The Rule itself, as modified over time by the SEC. These modifications to the original Rule have not affected the requirements for electronic storage media, which are the basis of this assessment. However, certain Interpretive Releases have clarified the context and meaning of certain requirements and conditions of the Rule.

- SEC Interpretive Release No. 34-44238, Commission Guidance to Broker-Dealers on the Use of Electronic Storage Media under the Electronic Signatures in Global and National Commerce Act of 2000 with Respect to Rule 17a-4(f), dated May 1, 2001 (the 2001 Interpretive Release).

- SEC Interpretive Release No. 34-47806, Electronic Storage of Broker-Dealer Records, dated May 7, 2003 (the 2003 Interpretive Release).

In the Rule and in the two subsequent interpretative releases, the SEC authorizes the use of electronic storage media and devices to satisfy the recordkeeping requirements of SEC Rules 17a-3 and 17a-4, when the system delivers the prescribed functionality. Specifically, SEC Rule 17a-4(f)(1)(ii) states:

(f) The records required to be maintained and preserved pursuant to §§ 240.17a-3 and 240.17a-4 may be immediately produced or reproduced on "micrographic media" (as defined in this section) or by means of "electronic storage media" (as defined in this section) that meet the conditions set forth in this paragraph and be maintained and preserved for the required time in that form.
(1) For purposes of this section:
(ii) The term electronic storage media means any digital storage medium or system and, in the case of both paragraphs (f)(1)(i) and (f)(1)(ii) of this section, that <u>meets the applicable conditions set forth in this paragraph (f)</u>. [emphasis added]

The February 12, 1997, Federal Register issued the final rule allowing broker-dealers to use electronic storage media. When issuing the rule, the SEC recognized that technology evolves; and, it set forth standards that the electronic storage media must satisfy, rather than prescribing specific technology, as specified in the following excerpts:

> **SUMMARY:** *The Securities and Exchange Commission ("Commission") is amending its broker-dealer record preservation rule to allow broker-dealers to employ, under certain conditions, electronic storage media to maintain records required to be retained. The amendments reflect a recognition of technological developments that will provide economic as well as time-saving advantages for broker-dealers by expanding the scope of recordkeeping options while at the same time continuing to require broker-dealers to maintain records in a manner that preserves their integrity. The Commission is also issuing an interpretation of its record preservation rule relating to the treatment of electronically generated communications.*
> ***
> **II. Description of Rule Amendments**
> **A. Scope of Permissible Electronic**
> **Storage Media**
> ****The Commission is adopting a rule today which, instead of specifying the type of storage technology that may be used, sets forth standards that the electronic storage media must satisfy to be considered an acceptable method of storage under Rule 17a–4. Specifically, because optical tape, CD–ROM, and certain other methods of electronic storage are available in WORM and can provide the same safeguards against data manipulation and erasure that optical disk provides, the final rule clarifies that broker-dealers may employ any electronic storage media that meets the conditions set forth in the final rule.*[5] [emphasis added]

The 2003 Interpretive Release further clarifies that implementation of rewriteable and erasable media, such as magnetic tape or magnetic disk, meets the requirements of a non-rewriteable, non-erasable recording environment, if the system delivers the prescribed functionality and appropriate **integrated control codes** are in place. The 2003 Interpretive Release states:

> *A broker-dealer would not violate the requirement in paragraph (f)(2)(ii)(A) of the rule if it used an electronic storage system that prevents the overwriting, erasing or otherwise altering of a record during its required retention period through the use of integrated hardware and software control codes.* [emphasis added]

The key words within this statement are '*integrated*' and '*control codes*'. The term '*integrated*' means that the method used to achieve a non-rewriteable, non-erasable recording environment must be an integral part of the recording hardware and software. The term '*control codes*' indicates the acceptability of using attribute codes (metadata), which are integral to the hardware and software of the recording process, to protect against overwriting or erasure of any records.

Examples of *integrated control codes* relevant to a non-rewriteable, non-erasable recording process are:

- A retention period during which the record cannot be erased, overwritten or otherwise modified;

- A unique record identifier that differentiates each record from all other records; and

- The date and time of recording, which in combination with the unique identifier "serializes" the record.

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[5] Exchange Act Release No. 38245 (Feb. 5, 1997), 62 FR 6469 (Feb. 12, 1997) ("Adopting Release").

The 2003 Interpretive Release specifically notes that recording processes or applications which merely mitigate the risk of overwrite or erasure (rather than prevent them), such as relying solely on access control security, will not satisfy the requirements of SEC Rule 17a-4(f).

Further, the 2003 Interpretive Release requires the storage system to be capable of retaining records beyond the SEC-established retention period, when required by a subpoena, legal hold or other similar circumstances. In *Section IV. Discussion*, the 2003 Interpretive Release states:

> *Moreover, there may be circumstances (such as receipt of a subpoena) where a broker-dealer is required to maintain records beyond the retention periods specified in Rule 17a-4 or other applicable Commission rules. Accordingly, a broker-dealer must take appropriate steps to ensure that records are not deleted during periods when the regulatory retention period has lapsed but other legal requirements mandate that the records continue to be maintained, and the broker-dealer's storage system must allow records to be retained beyond the retentions periods specified in Commission rules.* [emphasis added]

An important associated requirement of SEC Rule 17a-4(f)(2)(i) is that a member, broker or dealer electing to electronically store its records required by SEC Rules 17a-3 or 17a-4, must notify its designated examining authority at least ninety (90) days prior to employing any technology other than write-once read-many (WORM) optical media. Examining authorities are self-regulatory organizations (SROs) or designated examining authorities (DEAs) under the jurisdiction of the SEC, such as the Financial Industry Regulatory Authority (FINRA).

See Section 2, *Assessment of Compliance with SEC Rule 17a-4(f),* for a list of the five SEC requirements relevant to the recording and non-rewriteable, non-erasable storage electronic records, together with a description of the capabilities of Spectrum Scale related to each requirement.

5.2   Overview of FINRA Rule 4511(c) Electronic Records Storage Requirements

Financial Industry Regulatory Authority (FINRA) Rule 4511(c) explicitly defers to SEC Rule 17a-4(f), by stipulating:

> *(c) All books and records required to be made pursuant to the FINRA rules shall be preserved in a format and media that complies with SEA [Securities Exchange Act] Rule 17a-4.*

5.3   Overview of CFTC Rule 1.31(c)-(d) Electronic Regulatory Records Requirements

Effective August 28, 2017, the Commodity Futures Trading Commission (CFTC) amended 17 CFR § 1.31 (CFTC Rule) to define principles-based requirements for organizations electing to retain electronic regulatory records. The CFTC requirements for electronic regulatory records evolved through amendments to Rule 1.31. The most substantive changes included:

- The June 28, 1999, amendment first implemented the technical provisions regarding the use of electronic storage media for required books and records.

- The November 2, 2012, amendment clarified the retention period for certain oral communications.

- The August 28, 2017, amendments modernize and make technology-neutral the form and manner in which regulatory records, including electronic regulatory records, must be retained and produced.

To address the transition to electronic regulatory records, the CFTC amended and modernized its recordkeeping regulation to adopt principles-based standards that are less prescriptive. This resulted in rephrasing and modernizing the requirements previously defined in 1999, as explained in the August 28, 2017, Federal Register in *III. Final Rules, D. Regulation 1.31(c): Form and Manner of Retention*:

> *Consistent with the Commission's emphasis on a less-prescriptive, <u>principles-based approach</u>, proposed § 1.31(d)(1) would <u>rephrase the existing requirements in the form of a general standard</u> for each records entity to retain all regulatory records in a form and manner necessary to <u>ensure the records' and recordkeeping systems' authenticity and reliability</u>. The Commission proposed to adopt § 1.31(d)(2) to set forth additional controls for records entities retaining electronic regulatory records. The Commission emphasized in the Proposal that the proposed regulatory text does not create new requirements, but rather updates the existing requirements so that they are set out in a way that appropriately reflects technological advancements and changes to recordkeeping methods since the prior amendments of § 1.31 in 1999.* [emphasis added]

The definitions established in 17 CFR § 1.31(a) are paramount to applying the CFTC requirements.

> *<u>Electronic regulatory records</u> means all regulatory records other than regulatory records exclusively created and maintained by a records entity on paper.*
> *<u>Records entity</u> means any person required by the Act or Commission regulations in this chapter to keep regulatory records.*
> *<u>Regulatory records</u> means all books and records required to be kept by the Act or Commission regulations in this chapter, including any record of any correction or other amendment to such books and records, provided that, <u>with respect to such books and records stored electronically, regulatory records shall also include:</u>*
> > *<u>(i) Any data necessary to access, search, or display any such books and records; and</u>*
> > *<u>(ii) All data produced and stored electronically describing how and when such books and records were created, formatted, or modified.</u>* [emphasis added]

These definitions establish that recordkeeping obligations apply to (a) all *records entities*, without exception, and (b) all *regulatory records*. Further, for *electronic regulatory records*, paragraphs (i) and (ii) establish an expanded definition of an electronic regulatory record to include information describing data necessary to access, search and display records, as well as information describing how and when such books and records were created, formatted, or modified.

The retention time periods for regulated records includes both time-based and event-time-based retention periods. Specifically, 17 CFR § 1.31(b)(1)-(b)(3) states:

> ***Duration of retention****. Unless specified elsewhere in the Act or Commission regulations in this chapter:*
> *(1) A records entity shall keep regulatory records of any swap or related cash or forward transaction (as defined in § 23.200(i) of this chapter), other than regulatory records required by § 23.202(a)(1) and (b)(1)-(3) of this chapter, <u>from the date the regulatory record was created until the termination, maturity, expiration, transfer, assignment, or novation date of the transaction and for a period of not less than five years after such date</u>.*
> *(2) A records entity that is required to retain oral communications, shall keep regulatory records of oral communications for a period of not less than <u>one year from the date of such communication</u>.*
> *(3) A records entity shall keep each regulatory record other than the records described in paragraphs (b)(1) or (b)(2) of this section for a period of not less than <u>five years from the date on which the record was created</u>.* [emphasis added]

For a list of the CFTC principles-based requirements and a summary assessment of Spectrum Scale in relation to each requirement, see Section 3, *Summary Assessment of Compliance with CFTC Rule 1.31(c)-(d)*.

About Cohasset Associates, Inc.

Cohasset Associates, Inc. (www.cohasset.com) is recognized as a leading professional consulting firm, specializing in records management and information governance. Drawing on more than forty years of experience, Cohasset provides its clients with innovative advice on managing their electronic information as the digital age creates operational paradigms, complex technical challenges and unprecedented legal issues.

Cohasset provides award-winning professional services in four areas: management consulting, education, thought-leadership and legal research.

Management Consulting: Cohasset strategizes with its multi-national and domestic clients, engaging in implementation activities to promote interdisciplinary information governance, achieve business objectives, optimize information value, improve compliance, and mitigate information-related risk.

Cohasset has been described as *the only management consulting firm in its field with its feet in the trenches and its eye on the horizon*. This fusion of practical experience and vision, combined with a commitment to excellence, results in Cohasset's extraordinary record of accomplishments.

Education: Cohasset is distinguished through its delivery of exceptional and timely education and training on records and information lifecycle management and information governance.

For domestic and international clients, Cohasset:

- *Formulates information governance implementation strategies*
- *Develops policies and standards for records management and information governance*
- *Creates clear and streamlined retention schedules*
- *Prepares training and communications for executives, the RIM network and all employees*
- *Leverages content analytics to improve lifecycle controls for large volumes of eligible information, enabling clients to classify information, separate high-value information and delete what has expired*
- *Designs and assists with the implementation of information lifecycle practices that avoid the cost and risk associated with over-retention*
- *Defines technical and functional requirements and assists with the deployment of enterprise content management and collaboration tools*

Thought-leadership: Cohasset regularly publishes thought-leadership white papers and surveys to promote the continuous improvement of information lifecycle management practices.

Legal Research: Cohasset is nationally respected for its direction on information governance legal issues – from retention schedules to compliance with the regulatory requirements associated with the use of electronic or digital storage media.