



## **Audit messages**

### **StorageGRID**

NetApp  
March 01, 2022

This PDF was generated from <https://docs.netapp.com/us-en/storagegrid-116/audit/system-audit-messages.html> on March 01, 2022. Always check docs.netapp.com for the latest.

# Table of Contents

- Audit messages ..... 1
  - Audit message categories ..... 1
  - Audit message reference ..... 7

# Audit messages

Detailed descriptions of audit messages returned by the system are listed in the following sections. Each audit message is first listed in a table that groups related messages by the class of activity that the message represents. These groupings are useful both for understanding the types of activities that are audited, and for selecting the desired type of audit message filtering.

The audit messages are also listed alphabetically by their four-character codes. This alphabetic listing enables you to find information about specific messages.

The four-character codes used throughout this chapter are the ATYP values found in the audit messages as shown in the following sample message:

```
2014-07-17T03:50:47.484627
\[AUDT:[RSLT(FC32):VRGN][AVER(UI32):10][ATIM(UI64):1405569047484627][ATYP\
(FC32\):SYSU][ANID(UI32):11627225][AMID(FC32):ARNI][ATID(UI64):94457363265
00603516]]
```

For information on setting audit message levels, changing log destinations, and using an external syslog server for your audit information, see [Configure audit messages and log destinations](#)

## Audit message categories

You should be familiar with the various categories within which audit messages are grouped. These groups are organized based on the class of activity that the message represents.

### System audit messages

You should be familiar with audit messages belonging to the system audit category. These are events related to the auditing system itself, grid node states, system-wide task activity (grid tasks), and service backup operations, so that you can address potential issues.

Code	Message title and description	See
ECMC	Missing Erasure Coded Data Fragment: Indicates that a missing erasure coded data fragment has been detected.	<a href="#">ECMC: Missing Erasure Coded Data Fragment</a>
ECOC	Corrupt Erasure Coded Data Fragment: Indicates that a corrupt erasure coded data fragment has been detected.	<a href="#">ECOC: Corrupt Erasure Coded Data Fragment</a>

Code	Message title and description	See
ETAF	Security Authentication Failed: A connection attempt using Transport Layer Security (TLS) failed.	<a href="#">ETAF: Security Authentication Failed</a>
GNRG	GNDS Registration: A service updated or registered information about itself in the StorageGRID system.	<a href="#">GNRG: GNDS Registration</a>
GNUR	GNDS Unregistration: A service has unregistered itself from the StorageGRID system.	<a href="#">GNUR: GNDS Unregistration</a>
GTED	Grid Task Ended: The CMN service finished processing the grid task.	<a href="#">GTED: Grid Task Ended</a>
GTST	Grid Task Started: The CMN service started to process the grid task.	<a href="#">GTST: Grid Task Started</a>
GTSU	Grid Task Submitted: A grid task was submitted to the CMN service.	<a href="#">GTSU: Grid Task Submitted</a>
IDEL	ILM Initiated Delete: This audit message is generated when ILM starts the process of deleting an object.	<a href="#">IDEL: ILM Initiated Delete</a>
LKCU	Overwritten Object Cleanup. This audit message is generated when an overwritten object is automatically removed to free up storage space.	<a href="#">LKCU: Overwritten Object Cleanup</a>
LLST	Location Lost: This audit message is generated when a location is lost.	<a href="#">LLST: Location Lost</a>
OLST	Object Lost: A requested object cannot be located within the StorageGRID system.	<a href="#">OLST: System Detected Lost Object</a>
ORLM	Object Rules Met: Object data is stored as specified by the ILM rules.	<a href="#">ORLM: Object Rules Met</a>

Code	Message title and description	See
SADD	Security Audit Disable: Audit message logging was turned off.	<a href="#">SADD: Security Audit Disable</a>
SADE	Security Audit Enable: Audit message logging has been restored.	<a href="#">SADE: Security Audit Enable</a>
SVRF	Object Store Verify Fail: A content block failed verification checks.	<a href="#">SVRF: Object Store Verify Fail</a>
SVRU	Object Store Verify Unknown: Unexpected object data detected in the object store.	<a href="#">SVRU: Object Store Verify Unknown</a>
SYSD	Node Stop: A shutdown was requested.	<a href="#">SYSD: Node Stop</a>
SYST	Node Stopping: A service initiated a graceful stop.	<a href="#">SYST: Node Stopping</a>
SYSU	Node Start: A service started; the nature of the previous shutdown is indicated in the message.	<a href="#">SYSU: Node Start</a>
VLST	User Initiated Volume Lost: The <code>/proc/CMSI/Volume_Lost</code> command was run.	<a href="#">VLST: User Initiated Volume Lost</a>

#### Related information

[LKCU: Overwritten Object Cleanup](#)

## Object storage audit messages

You should be familiar with audit messages belonging to the object storage audit category. These are events related to the storage and management of objects within the StorageGRID system. These include object storage and retrievals, grid-node to grid-node transfers, and verifications.

Code	Description	See
APCT	Archive Purge from Cloud-Tier: Archived object data is deleted from an external archival storage system, which connects to the StorageGRID through the S3 API.	<a href="#">APCT: Archive Purge from Cloud-Tier</a>

Code	Description	See
ARCB	Archive Object Retrieve Begin: The ARC service begins the retrieval of object data from the external archival storage system.	<a href="#">ARCB: Archive Object Retrieve Begin</a>
ARCE	Archive Object Retrieve End: Object data has been retrieved from an external archival storage system, and the ARC service reports the status of the retrieval operation.	<a href="#">ARCE: Archive Object Retrieve End</a>
ARCT	Archive Retrieve from Cloud-Tier: Archived object data is retrieved from an external archival storage system, which connects to the StorageGRID through the S3 API.	<a href="#">ARCT: Archive Retrieve from Cloud-Tier</a>
AREM	Archive Object Remove: A content block was successfully or unsuccessfully deleted from the external archival storage system.	<a href="#">AREM: Archive Object Remove</a>
ASCE	Archive Object Store End: A content block has been written to the external archival storage system, and the ARC service reports the status of the write operation.	<a href="#">ASCE: Archive Object Store End</a>
ASCT	Archive Store Cloud-Tier: Object data is stored to an external archival storage system, which connects to the StorageGRID through the S3 API.	<a href="#">ASCT: Archive Store Cloud-Tier</a>
ATCE	Archive Object Store Begin: Writing a content block to an external archival storage has started.	<a href="#">ATCE: Archive Object Store Begin</a>
AVCC	Archive Validate Cloud-Tier Configuration: The account and bucket settings provided were successfully or unsuccessfully validated.	<a href="#">AVCC: Archive Validate Cloud-Tier Configuration</a>

Code	Description	See
CBSE	Object Send End: The source entity completed a grid-node to grid-node data transfer operation.	<a href="#">CBSE: Object Send End</a>
CBRE	Object Receive End: The destination entity completed a grid-node to grid-node data transfer operation.	<a href="#">CBRE: Object Receive End</a>
SCMT	Object Store Commit: A content block was completely stored and verified, and can now be requested.	<a href="#">SCMT: Object Store Commit</a>
SREM	Object Store Remove: A content block was deleted from a grid node, and can no longer be requested directly.	<a href="#">SREM: Object Store Remove</a>

## Client read audit messages

Client read audit messages are logged when an S3 or Swift client application makes a request to retrieve an object.

Code	Description	Used by	See
SGET	<p>S3 GET: Logs a successful transaction to retrieve an object or list the objects in a bucket.</p> <p><b>Note:</b> If the transaction operates on a subresource, the audit message will include the field S3SR.</p>	S3 client	<a href="#">SGET: S3 GET</a>
SHEA	S3 HEAD: Logs a successful transaction to check for the existence of an object or bucket.	S3 client	<a href="#">SHEA: S3 HEAD</a>
WGET	Swift GET: Logs a successful transaction to retrieve an object or list the objects in a container.	Swift client	<a href="#">WGET: Swift GET</a>

Code	Description	Used by	See
WHEA	Swift HEAD: Logs a successful transaction to check for the existence of an object or container.	Swift client	<a href="#">WHEA: Swift HEAD</a>

## Client write audit messages

Client write audit messages are logged when an S3 or Swift client application makes a request to create or modify an object.

Code	Description	Used by	See
OVWR	Object Overwrite: Logs a transaction to overwrite one object with another object.	S3 clients Swift clients	<a href="#">OVWR: Object Overwrite</a>
SDEL	S3 DELETE: Logs a successful transaction to delete an object or bucket.  <b>Note:</b> If the transaction operates on a subresource, the audit message will include the field S3SR.	S3 client	<a href="#">SDEL: S3 DELETE</a>
SPOS	S3 POST: Logs a successful transaction to restore an object from AWS Glacier storage to a Cloud Storage Pool.	S3 client	<a href="#">SPOS: S3 POST</a>
SPUT	S3 PUT: Logs a successful transaction to create a new object or bucket.  <b>Note:</b> If the transaction operates on a subresource, the audit message will include the field S3SR.	S3 client	<a href="#">SPUT: S3 PUT</a>



Code	Description	Used by	See
SUPD	S3 Metadata Updated: Logs a successful transaction to update the metadata for an existing object or bucket.	S3 client	<a href="#">SUPD: S3 Metadata Updated</a>
WDEL	Swift DELETE: Logs a successful transaction to delete an object or container.	Swift client	<a href="#">WDEL: Swift DELETE</a>
WPUT	Swift PUT: Logs a successful transaction to create a new object or container.	Swift client	<a href="#">WPUT: Swift PUT</a>

## Management audit message

The Management category logs user requests to the Management API.

Code	Message title and description	See
MGAU	Management API audit message: A log of user requests.	<a href="#">MGAU: Management audit message</a>

## Audit message reference

### APCT: Archive Purge from Cloud-Tier

This message is generated when archived object data is deleted from an external archival storage system, which connects to the StorageGRID through the S3 API.

Code	Field	Description
CBID	Content Block ID	The unique identifier for the content block that was deleted.
CSIZ	Content Size	The size of the object in bytes. Always returns 0.
RSLT	Result Code	Returns successful (SUCS) or the error reported by the backend.
SUID	Storage Unique Identifier	Unique identifier (UUID) of the cloud-tier from which the object was deleted.

## ARCB: Archive Object Retrieve Begin

This message is generated when a request is made to retrieve archived object data and the retrieval process begins. Retrieval requests are processed immediately, but can be reordered to improve efficiency of retrieval from linear media such as tape.

Code	Field	Description
CBID	Content Block ID	The unique identifier of the Content Block to be retrieved from the external archival storage system.
RSLT	Result	Indicates the result of starting the archive retrieval process. Currently defined value is:SUCS: The content request was received and queued for retrieval.

This audit message marks the time of an archive retrieval. It allows you to match the message with a corresponding ARCE end message to determine the duration of archive retrieval, and whether the operation was successful.

## ARCE: Archive Object Retrieve End

This message is generated when an attempt by the Archive Node to retrieve object data from an external archival storage system completes. If successful, the message indicates that the requested object data has been completely read from the archive location, and was successfully verified. After the object data has been retrieved and verified, it is delivered to the requesting service.

Code	Field	Description
CBID	Content Block ID	The unique identifier of the Content Block to be retrieved from the external archival storage system.
VLID	Volume Identifier	The identifier of the volume on which the data was archived.If an archive location for the content is not found, a Volume ID of 0 is returned.

Code	Field	Description
RSLT	Retrieval Result	<p>The completion status of the archive retrieval process:</p> <ul style="list-style-type: none"> <li>• SUCS: successful</li> <li>• VRFL: failed (object verification failure)</li> <li>• ARUN: failed (external archival storage system unavailable)</li> <li>• CANC: failed (retrieval operation canceled)</li> <li>• GERR: failed (general error)</li> </ul>

Matching this message with the corresponding ARCB message can indicate the time taken to perform the archive retrieval. This message indicates whether the retrieval was successful, and in the case of failure, the cause of the failure to retrieve the content block.

## ARCT: Archive Retrieve from Cloud-Tier

This message is generated when archived object data is retrieved from an external archival storage system, which connects to the StorageGRID through the S3 API.

Code	Field	Description
CBID	Content Block ID	The unique identifier for the content block that was retrieved.
CSIZ	Content Size	The size of the object in bytes. The value is only accurate for successful retrieves.
RSLT	Result Code	Returns successful (SUCS) or the error reported by the backend.
SUID	Storage Unique Identifier	Unique identifier (UUID) of the external archival storage system.
TIME	Time	Total processing time for the request in microseconds.

## AREM: Archive Object Remove

The Archive Object Remove audit message indicates that a content block was successfully or unsuccessfully deleted from an Archive Node. If the result is successful, the Archive Node has successfully informed the external archival storage system that StorageGRID has released an object location. Whether the object is removed from the

external archive storage system depends on the type of system and its configuration.

Code	Field	Description
CBID	Content Block ID	The unique identifier of the Content Block to be retrieved from the external archival media system.
VLID	Volume Identifier	The identifier of the volume on which the object data was archived.
RSLT	Result	The completion status of the archive removal process: <ul style="list-style-type: none"><li>• SUCS: successful</li><li>• ARUN: failed (external archival storage system unavailable)</li><li>• GERR: failed (general error)</li></ul>

## ASCE: Archive Object Store End

This message indicates that writing a content block to an external archival storage system has ended.

Code	Field	Description
CBID	Content Block Identifier	The identifier of the content block stored on the external archival storage system.
VLID	Volume Identifier	The unique identifier of the archive volume to which the object data is written.
VREN	Verification Enabled	Indicates if verification is performed for content blocks. Currently defined values are: <ul style="list-style-type: none"><li>• VENA: verification is enabled</li><li>• VDSA: verification is disabled</li></ul>
MCLS	Management Class	A string identifying the TSM Management Class to which the content block is assigned if applicable.

Code	Field	Description
RSLT	Result	<p>Indicates the result of the archive process. Currently defined values are:</p> <ul style="list-style-type: none"> <li>• SUCS: successful (archiving process succeeded)</li> <li>• OFFL: failed (archiving is offline)</li> <li>• VRFL: failed (object verification failed)</li> <li>• ARUN: failed (external archival storage system unavailable)</li> <li>• GERR: failed (general error)</li> </ul>

This audit message means that the specified content block has been written to the external archival storage system. If the write fails, the result provides basic troubleshooting information about where the failure occurred. More detailed information about archive failures can be found by examining Archive Node attributes in the StorageGRID system.

### ASCT: Archive Store Cloud-Tier

This message is generated when archived object data is stored to an external archival storage system, which connects to StorageGRID through the S3 API.

Code	Field	Description
CBID	Content Block ID	The unique identifier for the content block that was retrieved.
CSIZ	Content Size	The size of the object in bytes.
RSLT	Result Code	Returns successful (SUCS) or the error reported by the backend.
SUID	Storage Unique Identifier	Unique identifier (UUID) of the cloud-tier the content was stored to.
TIME	Time	Total processing time for the request in microseconds.

### ATCE: Archive Object Store Begin

This message indicates that writing a content block to an external archival storage has started.

Code	Field	Description
CBID	Content Block ID	The unique identifier of the content block to be archived.
VLID	Volume Identifier	The unique identifier of the volume to which the content block is written. If the operation fails, a volume ID of 0 is returned.
RSLT	Result	<p>Indicates the result of the transfer of the content block. Currently defined values are:</p> <ul style="list-style-type: none"> <li>• SUCS: success (content block stored successfully)</li> <li>• EXIS: ignored (content block was already stored)</li> <li>• ISFD: failed (insufficient disk space)</li> <li>• STER: failed (error storing the CBID)</li> <li>• OFFL: failed (archiving is offline)</li> <li>• GERR: failed (general error)</li> </ul>

### AVCC: Archive Validate Cloud-Tier Configuration

This message is generated when the configuration settings are validated for a Cloud Tiering - Simple Storage Service (S3) target type.

Code	Field	Description
RSLT	Result Code	Returns successful (SUCS) or the error reported by the backend.
SUID	Storage Unique Identifier	UUID associated with the external archival storage system being validated.

### CBRB: Object Receive Begin

During normal system operations, content blocks are continuously transferred between different nodes as data is accessed, replicated and retained. When transfer of a content block from one node to another is initiated, this message is issued by the destination entity.

Code	Field	Description
CNID	Connection Identifier	The unique identifier of the node-to-node session/connection.
CBID	Content Block Identifier	The unique identifier of the content block being transferred.
CTDR	Transfer Direction	Indicates if the CBID transfer was push-initiated or pull-initiated:  PUSH: The transfer operation was requested by the sending entity.  PULL: The transfer operation was requested by the receiving entity.
CTSR	Source Entity	The node ID of the source (sender) of the CBID transfer.
CTDS	Destination Entity	The node ID of the destination (receiver) of the CBID transfer.
CTSS	Start Sequence Count	Indicates the first sequence count requested. If successful, the transfer begins from this sequence count.
CTES	Expected End Sequence Count	Indicates the last sequence count requested. If successful, the transfer is considered complete when this sequence count has been received.
RSLT	Transfer Start Status	Status at the time the transfer was started:  SUCS: Transfer started successfully.

This audit message means a node-to-node data transfer operation was initiated on a single piece of content, as identified by its Content Block Identifier. The operation requests data from "Start Sequence Count" to "Expected End Sequence Count". Sending and receiving nodes are identified by their node IDs. This information can be used to track system data flow, and when combined with storage audit messages, to verify replica counts.

## CBRE: Object Receive End

When transfer of a content block from one node to another is completed, this message is issued by the destination entity.

<b>Code</b>	<b>Field</b>	<b>Description</b>
CNID	Connection Identifier	The unique identifier of the node-to-node session/connection.
CBID	Content Block Identifier	The unique identifier of the content block being transferred.
CTDR	Transfer Direction	Indicates if the CBID transfer was push-initiated or pull-initiated:  PUSH: The transfer operation was requested by the sending entity.  PULL: The transfer operation was requested by the receiving entity.
CTSR	Source Entity	The node ID of the source (sender) of the CBID transfer.
CTDS	Destination Entity	The node ID of the destination (receiver) of the CBID transfer.
CTSS	Start Sequence Count	Indicates the sequence count on which the transfer started.
CTAS	Actual End Sequence Count	Indicates the last sequence count successfully transferred. If the Actual End Sequence Count is the same as the Start Sequence Count, and the Transfer Result was not successful, no data was exchanged.



Code	Field	Description
RSLT	Transfer Result	<p>The result of the transfer operation (from the perspective of the sending entity):</p> <p>SUCS: transfer successfully completed; all requested sequence counts were sent.</p> <p>CONL: connection lost during transfer</p> <p>CTMO: connection timed-out during establishment or transfer</p> <p>UNRE: destination node ID unreachable</p> <p>CRPT: transfer ended due to reception of corrupt or invalid data (might indicate tampering)</p>

This audit message means a node-to-node data transfer operation was completed. If the Transfer Result was successful, the operation transferred data from "Start Sequence Count" to "Actual End Sequence Count". Sending and receiving nodes are identified by their node IDs. This information can be used to track system data flow and to locate, tabulate, and analyze errors. When combined with storage audit messages, it can also be used to verify replica counts.

## CBSB: Object Send Begin

During normal system operations, content blocks are continuously transferred between different nodes as data is accessed, replicated and retained. When transfer of a content block from one node to another is initiated, this message is issued by the source entity.

Code	Field	Description
CNID	Connection Identifier	The unique identifier of the node-to-node session/connection.
CBID	Content Block Identifier	The unique identifier of the content block being transferred.
CTDR	Transfer Direction	<p>Indicates if the CBID transfer was push-initiated or pull-initiated:</p> <p>PUSH: The transfer operation was requested by the sending entity.</p> <p>PULL: The transfer operation was requested by the receiving entity.</p>

Code	Field	Description
CTSR	Source Entity	The node ID of the source (sender) of the CBID transfer.
CTDS	Destination Entity	The node ID of the destination (receiver) of the CBID transfer.
CTSS	Start Sequence Count	Indicates the first sequence count requested. If successful, the transfer begins from this sequence count.
CTES	Expected End Sequence Count	Indicates the last sequence count requested. If successful, the transfer is considered complete when this sequence count has been received.
RSLT	Transfer Start Status	Status at the time the transfer was started:  SUCS: transfer started successfully.

This audit message means a node-to-node data transfer operation was initiated on a single piece of content, as identified by its Content Block Identifier. The operation requests data from "Start Sequence Count" to "Expected End Sequence Count". Sending and receiving nodes are identified by their node IDs. This information can be used to track system data flow, and when combined with storage audit messages, to verify replica counts.

## CBSE: Object Send End

When transfer of a content block from one node to another is completed, this message is issued by the source entity.

Code	Field	Description
CNID	Connection Identifier	The unique identifier of the node-to-node session/connection.
CBID	Content Block Identifier	The unique identifier of the content block being transferred.

Code	Field	Description
CTDR	Transfer Direction	<p>Indicates if the CBID transfer was push-initiated or pull-initiated:</p> <p>PUSH: The transfer operation was requested by the sending entity.</p> <p>PULL: The transfer operation was requested by the receiving entity.</p>
CTSR	Source Entity	The node ID of the source (sender) of the CBID transfer.
CTDS	Destination Entity	The node ID of the destination (receiver) of the CBID transfer.
CTSS	Start Sequence Count	Indicates the sequence count on which the transfer started.
CTAS	Actual End Sequence Count	Indicates the last sequence count successfully transferred. If the Actual End Sequence Count is the same as the Start Sequence Count, and the Transfer Result was not successful, no data was exchanged.
RSLT	Transfer Result	<p>The result of the transfer operation (from the perspective of the sending entity):</p> <p>SUCS: Transfer successfully completed; all requested sequence counts were sent.</p> <p>CONL: connection lost during transfer</p> <p>CTMO: connection timed-out during establishment or transfer</p> <p>UNRE: destination node ID unreachable</p> <p>CRPT: transfer ended due to reception of corrupt or invalid data (might indicate tampering)</p>

This audit message means a node-to-node data transfer operation was completed. If the Transfer Result was successful, the operation transferred data from "Start Sequence Count" to "Actual End Sequence Count". Sending and receiving nodes are identified by their node IDs. This information can be used to track system

data flow and to locate, tabulate, and analyze errors. When combined with storage audit messages, it can also be used to verify replica counts.

### ECMC: Missing Erasure Coded Data Fragment

This audit message indicates that the system has detected a missing erasure-coded data fragment.

Code	Field	Description
VCMC	VCS ID	The name of the VCS that contains the missing chunk.
MCID	Chunk ID	The identifier of the missing erasure-coded fragment.
RSLT	Result	This field has the value 'NONE'. RSLT is a mandatory message field, but is not relevant for this particular message. 'NONE' is used rather than 'SUCS' so that this message is not filtered.

### ECOC: Corrupt Erasure Coded Data Fragment

This audit message indicates that the system has detected a corrupt erasure-coded data fragment.

Code	Field	Description
VCCO	VCS ID	The name of the VCS that contains the corrupt chunk.
VLID	Volume ID	The RangeDB Volume that contains the corrupt erasure-coded fragment.
CCID	Chunk ID	The identifier of the corrupt erasure-coded fragment.
RSLT	Result	This field has the value 'NONE'. RSLT is a mandatory message field, but is not relevant for this particular message. 'NONE' is used rather than 'SUCS' so that this message is not filtered.

## ETAF: Security Authentication Failed

This message is generated when a connection attempt using Transport Layer Security (TLS) has failed.

Code	Field	Description
CNID	Connection Identifier	The unique system identifier for the TCP/IP connection over which the authentication failed.
RUID	User Identity	A service dependent identifier representing the identity of the remote user.
RSLT	Reason Code	<p>The reason for the failure:</p> <p>SCNI: Secure connection establishment failed.</p> <p>CERM: Certificate was missing.</p> <p>CERT: Certificate was invalid.</p> <p>CERE: Certificate was expired.</p> <p>CERR: Certificate was revoked.</p> <p>CSGN: Certificate signature was invalid.</p> <p>CSGU: Certificate signer was unknown.</p> <p>UCRM: User credentials were missing.</p> <p>UCRI: User credentials were invalid.</p> <p>UCRU: User credentials were disallowed.</p> <p>TOUT: Authentication timed out.</p>

When a connection is established to a secure service that uses TLS, the credentials of the remote entity are verified using the TLS profile and additional logic built into the service. If this authentication fails due to invalid, unexpected, or disallowed certificates or credentials, an audit message is logged. This enables queries for unauthorized access attempts and other security-related connection problems.

The message could result from a remote entity having an incorrect configuration, or from attempts to present invalid or disallowed credentials to the system. This audit message should be monitored to detect attempts to gain unauthorized access to the system.

## GNRG: GNDS Registration

The CMN service generates this audit message when a service has updated or registered information about itself in the StorageGRID system.

Code	Field	Description
RSLT	Result	The result of the update request: <ul style="list-style-type: none"><li>• SUCS: Successful</li><li>• SUNV: Service Unavailable</li><li>• GERR: Other failure</li></ul>
GNID	Node ID	The node ID of the service that initiated the update request.
GNTTP	Device Type	The grid node's device type (for example, BLDR for an LDR service).
GNDV	Device Model version	The string identifying the grid node's device model version in the DMDL bundle.
GNGP	Group	The group to which the grid node belongs (in the context of link costs and service-query ranking).
GNIA	IP Address	The grid node's IP address.

This message is generated whenever a grid node updates its entry in the Grid Nodes Bundle.

## GNUR: GNDS Unregistration

The CMN service generates this audit message when a service has unregistered information about itself from the StorageGRID system.

Code	Field	Description
RSLT	Result	The result of the update request: <ul style="list-style-type: none"><li>• SUCS: Successful</li><li>• SUNV: Service Unavailable</li><li>• GERR: Other failure</li></ul>
GNID	Node ID	The node ID of the service that initiated the update request.

## GTED: Grid Task Ended

This audit message indicates that the CMN service has finished processing the specified grid task and has moved the task to the Historical table. If the result is SUCS, ABRT, or ROLF, there will be a corresponding Grid Task Started audit message. The other results indicate that processing of this grid task never started.

Code	Field	Description
TSID	Task ID	<p>This field uniquely identifies a generated grid task and allows the grid task to be managed over its lifecycle.</p> <p><b>Note:</b> The Task ID is assigned at the time that a grid task is generated, not the time that it is submitted. It is possible for a given grid task to be submitted multiple times, and in this case the Task ID field is not sufficient to uniquely link the Submitted, Started, and Ended audit messages.</p>
RSLT	Result	<p>The final status result of the grid task:</p> <ul style="list-style-type: none"><li>• SUCS: The grid task completed successfully.</li><li>• ABRT: The grid task was aborted without a rollback error.</li><li>• ROLF: The grid task was aborted and was unable to complete the rollback process.</li><li>• CANC: The grid task was canceled by the user before it was started.</li><li>• EXPR: The grid task expired before it was started.</li><li>• IVLD: The grid task was invalid.</li><li>• AUTH: The grid task was unauthorized.</li><li>• DUPL: The grid task was rejected as a duplicate.</li></ul>

## GTST: Grid Task Started

This audit message indicates that the CMN service has started to process the specified

grid task. The audit message immediately follows the Grid Task Submitted message for grid tasks initiated by the internal Grid Task Submission service and selected for automatic activation. For grid tasks submitted into the Pending table, this message is generated when the user starts the grid task.

Code	Field	Description
TSID	Task ID	<p>This field uniquely identifies a generated grid task and allows the task to be managed over its lifecycle.</p> <p><b>Note:</b> The Task ID is assigned at the time that a grid task is generated, not the time that it is submitted. It is possible for a given grid task to be submitted multiple times, and in this case the Task ID field is not sufficient to uniquely link the Submitted, Started, and Ended audit messages.</p>
RSLT	Result	<p>The result. This field has only one value:</p> <ul style="list-style-type: none"> <li>• SUCS: The grid task was started successfully.</li> </ul>

## GTSU: Grid Task Submitted

This audit message indicates that a grid task has been submitted to the CMN service.

Code	Field	Description
TSID	Task ID	<p>Uniquely identifies a generated grid task and allows the task to be managed over its lifecycle.</p> <p><b>Note:</b> The Task ID is assigned at the time that a grid task is generated, not the time that it is submitted. It is possible for a given grid task to be submitted multiple times, and in this case the Task ID field is not sufficient to uniquely link the Submitted, Started, and Ended audit messages.</p>
TTYP	Task Type	The type of grid task.



Code	Field	Description
TVER	Task Version	A number indicating the version of the grid task.
TDSC	Task Description	A human-readable description of the grid task.
VATS	Valid After Timestamp	The earliest time (UINT64 microseconds from January 1, 1970 - UNIX time) at which the grid task is valid.
VBTS	Valid Before Timestamp	The latest time (UINT64 microseconds from January 1, 1970 - UNIX time) at which the grid task is valid.
TSRC	Source	<p>The source of the task:</p> <ul style="list-style-type: none"> <li>• TXTB: The grid task was submitted through the StorageGRID system as a signed text block.</li> <li>• GRID: The grid task was submitted through the internal Grid Task Submission Service.</li> </ul>
ACTV	Activation Type	<p>The type of activation:</p> <ul style="list-style-type: none"> <li>• AUTO: The grid task was submitted for automatic activation.</li> <li>• PEND: The grid task was submitted into the pending table. This is the only possibility for the TXTB source.</li> </ul>
RSLT	Result	<p>The result of the submission:</p> <ul style="list-style-type: none"> <li>• SUCS: The grid task was submitted successfully.</li> <li>• FAIL: The task has been moved directly to the historical table.</li> </ul>

## IDEL: ILM Initiated Delete

This message is generated when ILM starts the process of deleting an object.

The IDEL message is generated in either of these situations:

- **For objects in compliant S3 buckets:** This message is generated when ILM starts the process of auto-deleting an object because its retention period has expired (assuming the auto-delete setting is enabled and legal hold is off).
- **For objects in non-compliant S3 buckets or Swift containers.** This message is generated when ILM starts the process of deleting an object because no placement instructions in the active ILM policy currently apply to the object.

Code	Field	Description
CBID	Content Block Identifier	The CBID of the object.
CMPA	Compliance: Auto delete	For objects in compliant S3 buckets only. 0 (false) or 1 (true), indicating whether a compliant object should be deleted automatically when its retention period ends, unless the bucket is under a legal hold.
CMPL	Compliance: Legal hold	For objects in compliant S3 buckets only. 0 (false) or 1 (true), indicating whether the bucket is currently under a legal hold.
CMPR	Compliance: Retention period	For objects in compliant S3 buckets only. The length of the object's retention period in minutes.
CTME	Compliance: Ingest time	For objects in compliant S3 buckets only. The object's ingest time. You can add the retention period in minutes to this value to determine when the object can be deleted from the bucket.
DMRK	Delete Marker Version ID	The version ID of the delete marker created when deleting an object from a versioned bucket. Operations on buckets do not include this field.
CSIZ	Content size	The size of the object in bytes.
LOCS	Locations	<p>The storage location of object data within the StorageGRID system. The value for LOCS is "" if the object has no locations (for example, it has been deleted).</p> <p>CLEC: for erasure-coded objects, the erasure coding profile ID and the erasure coding group ID that is applied to the object's data.</p> <p>CLDI: for replicated objects, the LDR node ID and the volume ID of the object's location.</p> <p>CLNL: ARC node ID of the object's location if the object data is archived.</p>
PATH	S3 Bucket/Key or Swift Container/Object ID	The S3 bucket name and S3 key name, or the Swift container name and Swift object identifier.

Code	Field	Description
RSLT	Result	The result of the ILM operation.  SUCS: The ILM operation was successful.
RULE	Rules Label	<ul style="list-style-type: none"> <li>• If an object in a compliant S3 bucket is being deleted automatically because its retention period has expired, this field is blank.</li> <li>• If the object is being deleted because there are no more placement instructions that currently apply to the object, this field shows the human-readable label of the last ILM rule that applied to the object.</li> </ul>
SGRP	Site (Group)	If present, the object was deleted at the site specified, which is not the site where the object was ingested.
UUID	Universally Unique Identifier	The identifier of the object within the StorageGRID system.
VSID	Version ID	The version ID of the specific version of an object that was deleted. Operations on buckets and objects in unversioned buckets do not include this field.

## LKCU: Overwritten Object Cleanup

This message is generated when StorageGRID removes an overwritten object that previously required cleanup to free up storage space. An object is overwritten when an S3 or Swift client writes an object to a path already containing a object. The removal process occurs automatically and in the background.

Code	Field	Description
CSIZ	Content size	The size of the object in bytes.
LTyp	Type of cleanup	<i>Internal use only.</i>
LUID	Removed Object UUID	The identifier of the object that was removed.
PATH	S3 Bucket/Key or Swift Container/Object ID	The S3 bucket name and S3 key name, or the Swift container name and Swift object identifier.
SEGC	Container UUID	UUID of the container for the segmented object. This value is available only if the object is segmented.

Code	Field	Description
UUID	Universally Unique Identifier	The identifier of the object that still exists. This value is available only if the object has not been deleted.

## LLST: Location Lost

This message is generated whenever a location for an object copy (replicated or erasure coded) cannot be found.

Code	Field	Description
CBIL	CBID	The affected CBID.
NOID	Source Node ID	The node ID on which the locations were lost.
UUID	Universally Unique ID	The identifier of the affected object in the StorageGRID system.
ECPR	Erasure Coding Profile	For erasure-coded object data. The ID of the Erasure Coding profile used.
LTYP	Location Type	CLDI (Online): For replicated object data  CLEC (Online): For erasure-coded object data  CLNL (Nearline): For archived replicated object data
PCLD	Path to replicated object	The complete path to the disk location of the lost object data. Only returned when LTYP has a value of CLDI (that is, for replicated objects).  Takes the form /var/local/rangedb/2/p/13/13/00oJs6X%{h{U}SeUFxE@
RSLT	Result	Always NONE. RSLT is a mandatory message field, but is not relevant for this message. NONE is used rather than SUCS so that this message is not filtered.

Code	Field	Description
TSRC	Triggering Source	USER: User triggered SYST: System triggered

### **MGAU: Management audit message**

The Management category logs user requests to the Management API. Every request that is not a GET or HEAD request to the API logs a response with the username, IP, and type of request to the API.

Code	Field	Description
MDIP	Destination IP Address	The server (destination) IP address.
MDNA	Domain name	The host domain name.
MPAT	Request PATH	The request path.
MPQP	Request query parameters	The query parameters for the request.

Code	Field	Description
MRBD	Request body	<p>The content of the request body. While the response body is logged by default, the request body is logged in certain cases when the response body is empty. Because the following information is not available in the response body, it is taken from the request body for the following POST methods:</p> <ul style="list-style-type: none"> <li>• Username and account ID in <b>POST authorize</b></li> <li>• New subnets configuration in <b>POST /grid/grid-networks/update</b></li> <li>• New NTP servers in <b>POST /grid/ntp-servers/update</b></li> <li>• Decommissioned server IDs in <b>POST /grid/servers/decommission</b></li> </ul> <p><b>Note:</b> Sensitive information is either deleted (for example, an S3 access key) or masked with asterisks (for example, a password).</p>
MRMD	Request method	<p>The HTTP request method:</p> <ul style="list-style-type: none"> <li>• POST</li> <li>• PUT</li> <li>• DELETE</li> <li>• PATCH</li> </ul>
MRSC	Response code	The response code.
MRSP	Response body	<p>The content of the response (the response body) is logged by default.</p> <p><b>Note:</b> Sensitive information is either deleted (for example, an S3 access key) or masked with asterisks (for example, a password).</p>
MSIP	Source IP address	The client (source) IP address.

Code	Field	Description
MUUN	User URN	The URN (uniform resource name) of the user who sent the request.
RSLT	Result	Returns successful (SUCS) or the error reported by the backend.

### OLST: System Detected Lost Object

This message is generated when the DDS service cannot locate any copies of an object within the StorageGRID system.

Code	Field	Description
CBID	Content Block Identifier	The CBID of the lost object.
NOID	Node ID	If available, the last known direct or nearline location of the lost object. It is possible to have just the Node ID without a Volume ID if the volume information is not available.
PATH	S3 Bucket/Key or Swift Container/Object ID	If available, the S3 bucket name and S3 key name, or the Swift container name and Swift object identifier.
RSLT	Result	This field has the value NONE. RSLT is a mandatory message field, but is not relevant for this message. NONE is used rather than SUCS so that this message is not filtered.
UUID	Universally Unique ID	The identifier of the lost object within the StorageGRID system.
VOLI	Volume ID	If available, the Volume ID of the Storage Node or Archive Node for the last known location of the lost object.

### ORLM: Object Rules Met

This message is generated when the object is successfully stored and copied as specified by the ILM rules.



The ORLM message is not generated when an object is successfully stored by the default Make 2 Copies rule if another rule in the policy uses the Object Size advanced filter.

Code	Field	Description
BUID	Bucket Header	Bucket ID field. Used for internal operations. Appears only if STAT is PRGD.
CBID	Content Block Identifier	The CBID of the object.
CSIZ	Content size	The size of the object in bytes.
LOCS	Locations	<p>The storage location of object data within the StorageGRID system. The value for LOCS is "" if the object has no locations (for example, it has been deleted).</p> <p>CLEC: for erasure-coded objects, the erasure coding profile ID and the erasure coding group ID that is applied to the object's data.</p> <p>CLDI: for replicated objects, the LDR node ID and the volume ID of the object's location.</p> <p>CLNL: ARC node ID of the object's location if the object data is archived.</p>
PATH	S3 Bucket/Key or Swift Container/Object ID	The S3 bucket name and S3 key name, or the Swift container name and Swift object identifier.
RSLT	Result	<p>The result of the ILM operation.</p> <p>SUCS: The ILM operation was successful.</p>
RULE	Rules Label	The human-readable label given to the ILM rule applied to this object.
SEGC	Container UUID	UUID of the container for the segmented object. This value is available only if the object is segmented.
SGCB	Container CBID	CBID of the container for the segmented object. This value is available only for segmented and multipart objects.



Code	Field	Description
STAT	Status	<p>The status of ILM operation.</p> <p>DONE: ILM operations against the object have completed.</p> <p>DFER: The object has been marked for future ILM re-evaluation.</p> <p>PRGD: The object has been deleted from the StorageGRID system.</p> <p>NLOC: The object data can no longer be found in the StorageGRID system. This status might indicate that all copies of object data are missing or damaged.</p>
UUID	Universally Unique Identifier	The identifier of the object within the StorageGRID system.

The ORLM audit message can be issued a number of times for a single object. For instance, it is issued whenever one of the following events take place:

- ILM rules for the object are satisfied forever.
- ILM rules for the object are satisfied for this epoch.
- ILM rules have deleted the object.
- The background verification process detects that a copy of replicated object data is corrupt. The StorageGRID system performs an ILM evaluation to replace the corrupt object.

#### Related information

- [Object ingest transactions](#)
- [Object delete transactions](#)

## OVWR: Object Overwrite

This message is generated when an external (client-requested) operation causes one object to be overwritten by another object.

Code	Field	Description
CBID	Content Block Identifier (new)	The CBID for the new object.
CSIZ	Previous Object Size	The size, in bytes, of the object being overwritten.
OCBD	Content Block Identifier (previous)	The CBID for the previous object.

Code	Field	Description
UUID	Universally Unique ID (new)	The identifier of the new object within the StorageGRID system.
OUID	Universally Unique ID (previous)	The identifier for the previous object within the StorageGRID system.
PATH	S3 or Swift Object Path	The S3 or Swift object path used for both the previous and new object
RSLT	Result Code	Result of the Object Overwrite transaction. Result is always:  SUCS: Successful
SGRP	Site (Group)	If present, the overwritten object was deleted at the site specified, which is not the site where the overwritten object was ingested.

### **SADD: Security Audit Disable**

This message indicates that the originating service (node ID) has turned off audit message logging; audit messages are no longer being collected or delivered.

Code	Field	Description
AETM	Enable Method	The method used to disable the audit.
AEUN	User Name	The user name that executed the command to disable audit logging.
RSLT	Result	This field has the value NONE. RSLT is a mandatory message field, but is not relevant for this message. NONE is used rather than SUCS so that this message is not filtered.

The message implies that logging was previously enabled, but has now been disabled. This is typically used only during bulk ingest to improve system performance. Following the bulk activity, auditing is restored (SADE) and the capability to disable auditing is then permanently blocked.

### **SADE: Security Audit Enable**

This message indicates that the originating service (node ID) has restored audit message logging; audit messages are again being collected and delivered.

Code	Field	Description
AETM	Enable Method	The method used to enable the audit.
AEUN	User Name	The user name that executed the command to enable audit logging.
RSLT	Result	This field has the value NONE. RSLT is a mandatory message field, but is not relevant for this message. NONE is used rather than SUCS so that this message is not filtered.

The message implies that logging was previously disabled (SADD), but has now been restored. This is typically only used during bulk ingest to improve system performance. Following the bulk activity, auditing is restored and the capability to disable auditing is then permanently blocked.

## SCMT: Object Store Commit

Grid content is not made available or recognized as stored until it has been committed (meaning it has been stored persistently). Persistently stored content has been completely written to disk, and has passed related integrity checks. This message is issued when a content block is committed to storage.

Code	Field	Description
CBID	Content Block Identifier	The unique identifier of the content block committed to permanent storage.
RSLT	Result Code	Status at the time the object was stored to disk:  SUCS: Object successfully stored.

This message means a given content block has been completely stored and verified, and can now be requested. It can be used to track data flow within the system.

## SDEL: S3 DELETE

When an S3 client issues a DELETE transaction, a request is made to remove the specified object or bucket. This message is issued by the server if the transaction is successful.

Code	Field	Description
CBID	Content Block Identifier	The unique identifier of the content block requested. If the CBID is unknown, this field is set to 0. Operations on buckets do not include this field.
CNCH	Consistency Control Header	The value of the Consistency-Control HTTP request header, if present in the request.
CNID	Connection Identifier	The unique system identifier for the TCP/IP connection.
CSIZ	Content Size	The size of the deleted object in bytes. Operations on buckets do not include this field.
DMRK	Delete Marker Version ID	The version ID of the delete marker created when deleting an object from a versioned bucket. Operations on buckets do not include this field.
HTRH	HTTP Request Header	<p>List of logged HTTP request header names and values as selected during configuration.</p> <p><b>Note:</b> X-Forwarded-For is automatically included if it is present in the request and if the X-Forwarded-For value is different from the request sender IP address (SAIP audit field).</p>
MTME	Last Modified Time	The Unix timestamp, in microseconds, indicating when the object was last modified.
RSLT	Result Code	<p>Result of the DELETE transaction. Result is always:</p> <p>SUCS: Successful</p>
S3AI	S3 tenant account ID (request sender)	The tenant account ID of the user who sent the request. An empty value indicates anonymous access.
S3AK	S3 Access Key ID (request sender)	The hashed S3 access key ID for the user that sent the request. An empty value indicates anonymous access.
S3BK	S3 Bucket	The S3 bucket name.
S3KY	S3 Key	The S3 key name, not including the bucket name. Operations on buckets do not include this field.
S3SR	S3 Subresource	The bucket or object subresource being operated on, if applicable.

Code	Field	Description
SACC	S3 tenant account name (request sender)	The name of the tenant account for the user who sent the request. Empty for anonymous requests.
SAIP	IP address (request sender)	The IP address of the client application that made the request.
SBAC	S3 tenant account name (bucket owner)	The tenant account name for the bucket owner. Used to identify cross-account or anonymous access.
SBAI	S3 tenant account ID (bucket owner)	The tenant account ID of the owner of the target bucket. Used to identify cross-account or anonymous access.
SGRP	Site (Group)	If present, the object was deleted at the site specified, which is not the site where the object was ingested.
SUSR	S3 User URN (request sender)	The tenant account ID and the user name of the user making the request. The user can either be a local user or an LDAP user. For example: <code>urn:sgws:identity::03393893651506583485:root</code>  Empty for anonymous requests.
TIME	Time	Total processing time for the request in microseconds.
TLIP	Trusted Load Balancer IP Address	If the request was routed by a trusted Layer 7 load balancer, the IP address of the load balancer.
UUID	Universally Unique Identifier	The identifier of the object within the StorageGRID system.
VSID	Version ID	The version ID of the specific version of an object that was deleted. Operations on buckets and objects in unversioned buckets do not include this field.

## SGET: S3 GET

When an S3 client issues a GET transaction, a request is made to retrieve an object or list the objects in a bucket. This message is issued by the server if the transaction is successful.

Code	Field	Description
CBID	Content Block Identifier	The unique identifier of the content block requested. If the CBID is unknown, this field is set to 0. Operations on buckets do not include this field.
CNCH	Consistency Control Header	The value of the Consistency-Control HTTP request header, if present in the request.
CNID	Connection Identifier	The unique system identifier for the TCP/IP connection.
CSIZ	Content Size	The size of the retrieved object in bytes. Operations on buckets do not include this field.
HTRH	HTTP Request Header	<p>List of logged HTTP request header names and values as selected during configuration.</p> <p><b>Note:</b> X-Forwarded-For is automatically included if it is present in the request and if the X-Forwarded-For value is different from the request sender IP address (SAIP audit field).</p>
RANG	Range Read	For range read operations only. Indicates the range of bytes that was read by this request. The value after the slash (/) shows the size of the entire object.
RSLT	Result Code	<p>Result of the GET transaction. Result is always:</p> <p>SUCS: Successful</p>
S3AI	S3 tenant account ID (request sender)	The tenant account ID of the user who sent the request. An empty value indicates anonymous access.
S3AK	S3 Access Key ID (request sender)	The hashed S3 access key ID for the user that sent the request. An empty value indicates anonymous access.

Code	Field	Description
S3BK	S3 Bucket	The S3 bucket name.
S3KY	S3 Key	The S3 key name, not including the bucket name. Operations on buckets do not include this field.
S3SR	S3 Subresource	The bucket or object subresource being operated on, if applicable.
SACC	S3 tenant account name (request sender)	The name of the tenant account for the user who sent the request. Empty for anonymous requests.
SAIP	IP address (request sender)	The IP address of the client application that made the request.
SBAC	S3 tenant account name (bucket owner)	The tenant account name for the bucket owner. Used to identify cross-account or anonymous access.
SBAI	S3 tenant account ID (bucket owner)	The tenant account ID of the owner of the target bucket. Used to identify cross-account or anonymous access.
SUSR	S3 User URN (request sender)	<p>The tenant account ID and the user name of the user making the request. The user can either be a local user or an LDAP user. For example:</p> <pre>urn:sgws:identity::03393893651506583485:root</pre> <p>Empty for anonymous requests.</p>
TIME	Time	Total processing time for the request in microseconds.
TLIP	Trusted Load Balancer IP Address	If the request was routed by a trusted Layer 7 load balancer, the IP address of the load balancer.
UUID	Universally Unique Identifier	The identifier of the object within the StorageGRID system.

Code	Field	Description
VSID	Version ID	The version ID of the specific version of an object that was requested. Operations on buckets and objects in unversioned buckets do not include this field.

## SHEA: S3 HEAD

When an S3 client issues a HEAD transaction, a request is made to check for the existence of an object or bucket and retrieve the metadata about an object. This message is issued by the server if the transaction is successful.

Code	Field	Description
CBID	Content Block Identifier	The unique identifier of the content block requested. If the CBID is unknown, this field is set to 0. Operations on buckets do not include this field.
CNID	Connection Identifier	The unique system identifier for the TCP/IP connection.
CSIZ	Content Size	The size of the checked object in bytes. Operations on buckets do not include this field.
HTRH	HTTP Request Header	List of logged HTTP request header names and values as selected during configuration.  <b>Note:</b> X-Forwarded-For is automatically included if it is present in the request and if the X-Forwarded-For value is different from the request sender IP address (SAIP audit field).
RSLT	Result Code	Result of the GET transaction. Result is always:  SUCS: Successful
S3AI	S3 tenant account ID (request sender)	The tenant account ID of the user who sent the request. An empty value indicates anonymous access.



Code	Field	Description
S3AK	S3 Access Key ID (request sender)	The hashed S3 access key ID for the user that sent the request. An empty value indicates anonymous access.
S3BK	S3 Bucket	The S3 bucket name.
S3KY	S3 Key	The S3 key name, not including the bucket name. Operations on buckets do not include this field.
SACC	S3 tenant account name (request sender)	The name of the tenant account for the user who sent the request. Empty for anonymous requests.
SAIP	IP address (request sender)	The IP address of the client application that made the request.
SBAC	S3 tenant account name (bucket owner)	The tenant account name for the bucket owner. Used to identify cross-account or anonymous access.
SBAI	S3 tenant account ID (bucket owner)	The tenant account ID of the owner of the target bucket. Used to identify cross-account or anonymous access.
SUSR	S3 User URN (request sender)	<p>The tenant account ID and the user name of the user making the request. The user can either be a local user or an LDAP user. For example:</p> <p>urn:sgws:identity::03393893651506583485:root</p> <p>Empty for anonymous requests.</p>
TIME	Time	Total processing time for the request in microseconds.
TLIP	Trusted Load Balancer IP Address	If the request was routed by a trusted Layer 7 load balancer, the IP address of the load balancer.
UUID	Universally Unique Identifier	The identifier of the object within the StorageGRID system.

Code	Field	Description
VSID	Version ID	The version ID of the specific version of an object that was requested. Operations on buckets and objects in unversioned buckets do not include this field.

## SPOS: S3 POST

When an S3 client issues a POST Object request, this message is issued by the server if the transaction is successful.

Code	Field	Description
CBID	Content Block Identifier	The unique identifier of the content block requested. If the CBID is unknown, this field is set to 0.
CNCH	Consistency Control Header	The value of the Consistency-Control HTTP request header, if present in the request.
CNID	Connection Identifier	The unique system identifier for the TCP/IP connection.
CSIZ	Content Size	The size of the retrieved object in bytes.
HTRH	HTTP Request Header	List of logged HTTP request header names and values as selected during configuration.  <b>Note:</b> X-Forwarded-For is automatically included if it is present in the request and if the X-Forwarded-For value is different from the request sender IP address (SAIP audit field).
RSLT	Result Code	Result of the POST Object restore request. Result is always:  SUCS: Successful
S3AI	S3 tenant account ID (request sender)	The tenant account ID of the user who sent the request. An empty value indicates anonymous access.

Code	Field	Description
S3AK	S3 Access Key ID (request sender)	The hashed S3 access key ID for the user that sent the request. An empty value indicates anonymous access.
S3BK	S3 Bucket	The S3 bucket name.
S3KY	S3 Key	The S3 key name, not including the bucket name. Operations on buckets do not include this field.
S3SR	S3 Subresource	The bucket or object subresource being operated on, if applicable.  Set to "select" for an S3 Select operation.
SACC	S3 tenant account name (request sender)	The name of the tenant account for the user who sent the request. Empty for anonymous requests.
SAIP	IP address (request sender)	The IP address of the client application that made the request.
SBAC	S3 tenant account name (bucket owner)	The tenant account name for the bucket owner. Used to identify cross-account or anonymous access.
SBAI	S3 tenant account ID (bucket owner)	The tenant account ID of the owner of the target bucket. Used to identify cross-account or anonymous access.
SRCF	Subresource Configuration	Restore information.
SUSR	S3 User URN (request sender)	The tenant account ID and the user name of the user making the request. The user can either be a local user or an LDAP user. For example: <code>urn:sgws:identity::03393893651506583485:root</code>  Empty for anonymous requests.

Code	Field	Description
TIME	Time	Total processing time for the request in microseconds.
TLIP	Trusted Load Balancer IP Address	If the request was routed by a trusted Layer 7 load balancer, the IP address of the load balancer.
UUID	Universally Unique Identifier	The identifier of the object within the StorageGRID system.
VSID	Version ID	The version ID of the specific version of an object that was requested. Operations on buckets and objects in unversioned buckets do not include this field.

## SPUT: S3 PUT

When an S3 client issues a PUT transaction, a request is made to create a new object or bucket. This message is issued by the server if the transaction is successful.

Code	Field	Description
CBID	Content Block Identifier	The unique identifier of the content block requested. If the CBID is unknown, this field is set to 0. Operations on buckets do not include this field.
CMPS	Compliance Settings	The compliance settings used when creating the bucket, if present in the PUT Bucket request (truncated to the first 1024 characters)
CNCH	Consistency Control Header	The value of the Consistency-Control HTTP request header, if present in the request.
CNID	Connection Identifier	The unique system identifier for the TCP/IP connection.
CSIZ	Content Size	The size of the retrieved object in bytes. Operations on buckets do not include this field.

Code	Field	Description
HTRH	HTTP Request Header	<p>List of logged HTTP request header names and values as selected during configuration.</p> <p><b>Note:</b> X-Forwarded-For is automatically included if it is present in the request and if the X-Forwarded-For value is different from the request sender IP address (SAIP audit field).</p>
LKEN	Object Lock Enabled	Value of the request header x-amz-bucket-object-lock-enabled, if present in the PUT Bucket request.
LKLH	Object Lock Legal Hold	Value of the request header x-amz-object-lock-legal-hold, if present in the PUT Object request.
LKMD	Object Lock Retention Mode	Value of the request header x-amz-object-lock-mode, if present in the PUT Object request.
LKRU	Object Lock Retain Until Date	Value of the request header x-amz-object-lock-retain-until-date, if present in the PUT Object request.
MTME	Last Modified Time	The Unix timestamp, in microseconds, indicating when the object was last modified.
RSLT	Result Code	<p>Result of the PUT transaction. Result is always:</p> <p>SUCS: Successful</p>
S3AI	S3 tenant account ID (request sender)	The tenant account ID of the user who sent the request. An empty value indicates anonymous access.
S3AK	S3 Access Key ID (request sender)	The hashed S3 access key ID for the user that sent the request. An empty value indicates anonymous access.

Code	Field	Description
S3BK	S3 Bucket	The S3 bucket name.
S3KY	S3KY	The S3 key name, not including the bucket name. Operations on buckets do not include this field.
S3SR	S3 Subresource	The bucket or object subresource being operated on, if applicable.
SACC	S3 tenant account name (request sender)	The name of the tenant account for the user who sent the request. Empty for anonymous requests.
SAIP	IP address (request sender)	The IP address of the client application that made the request.
SBAC	S3 tenant account name (bucket owner)	The tenant account name for the bucket owner. Used to identify cross-account or anonymous access.
SBAI	S3 tenant account ID (bucket owner)	The tenant account ID of the owner of the target bucket. Used to identify cross-account or anonymous access.
SRCF	Subresource Configuration	The new subresource configuration (truncated to the first 1024 characters).
SUSR	S3 User URN (request sender)	The tenant account ID and the user name of the user making the request. The user can either be a local user or an LDAP user. For example: <code>urn:sgws:identity::03393893651506583485:root</code>  Empty for anonymous requests.
TIME	Time	Total processing time for the request in microseconds.
TLIP	Trusted Load Balancer IP Address	If the request was routed by a trusted Layer 7 load balancer, the IP address of the load balancer.

Code	Field	Description
ULID	Upload ID	Included only in SPUT messages for Complete Multipart Upload operations. Indicates that all parts have been uploaded and assembled.
UUID	Universally Unique Identifier	The identifier of the object within the StorageGRID system.
VSID	Version ID	The version ID of a new object created in a versioned bucket. Operations on buckets and objects in unversioned buckets do not include this field.
VSST	Versioning State	The new versioning state of a bucket. Two states are used: "enabled" or "suspended." Operations on objects do not include this field.

## SREM: Object Store Remove

This message is issued when content is removed from persistent storage and is no longer accessible through regular APIs.

Code	Field	Description
CBID	Content Block Identifier	The unique identifier of the content block deleted from permanent storage.
RSLT	Result Code	Indicates the result of the content removal operations. The only defined value is:  SUCS: Content removed from persistent storage

This audit message means a given content block has been deleted from a node and can no longer be requested directly. The message can be used to track the flow of deleted content within the system.

## SUPD: S3 Metadata Updated

This message is generated by the S3 API when an S3 client updates the metadata for an ingested object. The message is issued by the server if the metadata update is successful.

Code	Field	Description
CBID	Content Block Identifier	The unique identifier of the content block requested. If the CBID is unknown, this field is set to 0. Operations on buckets do not include this field.
CNCH	Consistency Control Header	The value of the Consistency-Control HTTP request header, if present in the request, when updating a bucket's compliance settings.
CNID	Connection Identifier	The unique system identifier for the TCP/IP connection.
CSIZ	Content Size	The size of the retrieved object in bytes. Operations on buckets do not include this field.
HTRH	HTTP Request Header	<p>List of logged HTTP request header names and values as selected during configuration.</p> <p><b>Note:</b> X-Forwarded-For is automatically included if it is present in the request and if the X-Forwarded-For value is different from the request sender IP address (SAIP audit field).</p>
RSLT	Result Code	<p>Result of the GET transaction. Result is always:</p> <p>SUCS: successful</p>
S3AI	S3 tenant account ID (request sender)	The tenant account ID of the user who sent the request. An empty value indicates anonymous access.
S3AK	S3 Access Key ID (request sender)	The hashed S3 access key ID for the user that sent the request. An empty value indicates anonymous access.
S3BK	S3 Bucket	The S3 bucket name.



Code	Field	Description
S3KY	S3 Key	The S3 key name, not including the bucket name. Operations on buckets do not include this field.
SACC	S3 tenant account name (request sender)	The name of the tenant account for the user who sent the request. Empty for anonymous requests.
SAIP	IP address (request sender)	The IP address of the client application that made the request.
SBAC	S3 tenant account name (bucket owner)	The tenant account name for the bucket owner. Used to identify cross-account or anonymous access.
SBAI	S3 tenant account ID (bucket owner)	The tenant account ID of the owner of the target bucket. Used to identify cross-account or anonymous access.
SUSR	S3 User URN (request sender)	<p>The tenant account ID and the user name of the user making the request. The user can either be a local user or an LDAP user. For example:</p> <p><code>urn:sgws:identity::03393893651506583485:root</code></p> <p>Empty for anonymous requests.</p>
TIME	Time	Total processing time for the request in microseconds.
TLIP	Trusted Load Balancer IP Address	If the request was routed by a trusted Layer 7 load balancer, the IP address of the load balancer.
UUID	Universally Unique Identifier	The identifier of the object within the StorageGRID system.
VSID	Version ID	The version ID of the specific version of an object whose metadata was updated. Operations on buckets and objects in unversioned buckets do not include this field.

## SVRF: Object Store Verify Fail

This message is issued whenever a content block fails the verification process. Each time replicated object data is read from or written to disk, several verification and integrity checks are performed to ensure the data sent to the requesting user is identical to the data originally ingested into the system. If any of these checks fail, the system automatically quarantines the corrupt replicated object data to prevent it from being retrieved again.

Code	Field	Description
CBID	Content Block Identifier	The unique identifier of the content block which failed verification.
RSLT	Result Code	Verification failure type:  CRCF: Cyclic redundancy check (CRC) failed.  HMAC: Hash-based message authentication code (HMAC) check failed.  EESH: Unexpected encrypted content hash.  PHSH: Unexpected original content hash.  SEQC: Incorrect data sequence on disk.  PERR: Invalid structure of disk file.  DERR: Disk error.  FNAM: Bad file name.

**Note:** This message should be monitored closely. Content verification failures can indicate attempts to tamper with content or impending hardware failures.

To determine what operation triggered the message, see the value of the AMID (Module ID) field. For example, an SVFY value indicates that the message was generated by the Storage Verifier module, that is, background verification, and STOR indicates that the message was triggered by content retrieval.

## SVRU: Object Store Verify Unknown

The LDR service's Storage component continuously scans all copies of replicated object data in the object store. This message is issued when an unknown or unexpected copy of replicated object data is detected in the object store and moved to the quarantine directory.

Code	Field	Description
FPTH	File Path	The file path of the unexpected object copy.
RSLT	Result	This field has the value 'NONE'. RSLT is a mandatory message field, but is not relevant for this message. 'NONE' is used rather than 'SUCS' so that this message is not filtered.

**Note:** The SVRU: Object Store Verify Unknown audit message should be monitored closely. It means unexpected copies of object data were detected in the object store. This situation should be investigated immediately to determine how these copies were created, because it can indicate attempts to tamper with content or impending hardware failures.

## SYSD: Node Stop

When a service is stopped gracefully, this message is generated to indicate the shutdown was requested. Typically this message is sent only after a subsequent restart, because the audit message queue is not cleared prior to shutdown. Look for the SYST message, sent at the beginning of the shutdown sequence, if the service has not restarted.

Code	Field	Description
RSLT	Clean Shutdown	The nature of the shutdown:  SUCS: System was cleanly shutdown.

The message does not indicate if the host server is being stopped, only the reporting service. The RSLT of a SYSD cannot indicate a "dirty" shutdown, because the message is generated only by "clean" shutdowns.

## SYST: Node Stopping

When a service is gracefully stopped, this message is generated to indicate the shutdown was requested and that the service has initiated its shutdown sequence. SYST can be used to determine if the shutdown was requested, before the service is restarted (unlike SYSD, which is typically sent after the service restarts.)

Code	Field	Description
RSLT	Clean Shutdown	The nature of the shutdown:  SUCS: System was cleanly shutdown.

The message does not indicate if the host server is being stopped, only the reporting service. The RSLT code

of a SYST message cannot indicate a "dirty" shutdown, because the message is generated only by "clean" shutdowns.

## SYSU: Node Start

When a service is restarted, this message is generated to indicate if the previous shutdown was clean (commanded) or disorderly (unexpected).

Code	Field	Description
RSLT	Clean Shutdown	The nature of the shutdown:  SUCS: System was cleanly shut down.  DSDN: System was not cleanly shut down.  VRGN: System was started for the first time after server installation (or re-installation).

The message does not indicate if the host server was started, only the reporting service. This message can be used to:

- Detect discontinuity in the audit trail.
- Determine if a service is failing during operation (as the distributed nature of the StorageGRID system can mask these failures). Server Manager restarts a failed service automatically.

## VLST: User Initiated Volume Lost

This message is issued whenever the `/proc/CMSI/Volume_Lost` command is run.

Code	Field	Description
VOLL	Volume Identifier Lower	The lower end of the affected volume range or a single volume.
VOLU	Volume Identifier Upper	The upper end of the affected volume range. Equal to VOLL if a single volume.
NOID	Source Node ID	The node ID on which the locations were lost.
LTyp	Location Type	'CLDI' (Online) or 'CLNL' (Nearline). If not specified, defaults to 'CLDI'.

Code	Field	Description
RSLT	Result	Always 'NONE'. RSLT is a mandatory message field, but is not relevant for this message. 'NONE' is used rather than 'SUCS' so that this message is not filtered.

## WDEL: Swift DELETE

When a Swift client issues a DELETE transaction, a request is made to remove the specified object or container. This message is issued by the server if the transaction is successful.

Code	Field	Description
CBID	Content Block Identifier	The unique identifier of the content block requested. If the CBID is unknown, this field is set to 0. Operations on containers do not include this field.
CSIZ	Content Size	The size of the deleted object in bytes. Operations on containers do not include this field.
HTRH	HTTP Request Header	List of logged HTTP request header names and values as selected during configuration.  <b>Note:</b> X-Forwarded-For is automatically included if it is present in the request and if the X-Forwarded-For value is different from the request sender IP address (SAIP audit field).
MTME	Last Modified Time	The Unix timestamp, in microseconds, indicating when the object was last modified.
RSLT	Result Code	Result of the DELETE transaction. Result is always:  SUCS: Successful
SAIP	IP address of requesting client	The IP address of the client application that made the request.
SGRP	Site (Group)	If present, the object was deleted at the site specified, which is not the site where the object was ingested.
TIME	Time	Total processing time for the request in microseconds.
TLIP	Trusted Load Balancer IP Address	If the request was routed by a trusted Layer 7 load balancer, the IP address of the load balancer.

Code	Field	Description
UUID	Universally Unique Identifier	The identifier of the object within the StorageGRID system.
WACC	Swift Account ID	The unique account ID as specified by the StorageGRID system.
WCON	Swift Container	The Swift container name.
WOBJ	Swift Object	The Swift object identifier. Operations on containers do not include this field.
WUSR	Swift Account User	The Swift account username that uniquely identifies the client performing the transaction.

## WGET: Swift GET

When a Swift client issues a GET transaction, a request is made to retrieve an object, list the objects in a container, or list the containers in an account. This message is issued by the server if the transaction is successful.

Code	Field	Description
CBID	Content Block Identifier	The unique identifier of the content block requested. If the CBID is unknown, this field is set to 0. Operations on accounts and containers do not include this field.
CSIZ	Content Size	The size of the retrieved object in bytes. Operations on accounts and containers do not include this field.
HTRH	HTTP Request Header	List of logged HTTP request header names and values as selected during configuration.  <b>Note:</b> X-Forwarded-For is automatically included if it is present in the request and if the X-Forwarded-For value is different from the request sender IP address (SAIP audit field).
RSLT	Result Code	Result of the GET transaction. Result is always  SUCS: successful

Code	Field	Description
SAIP	IP address of requesting client	The IP address of the client application that made the request.
TIME	Time	Total processing time for the request in microseconds.
TLIP	Trusted Load Balancer IP Address	If the request was routed by a trusted Layer 7 load balancer, the IP address of the load balancer.
UUID	Universally Unique Identifier	The identifier of the object within the StorageGRID system.
WACC	Swift Account ID	The unique account ID as specified by the StorageGRID system.
WCON	Swift Container	The Swift container name. Operations on accounts do not include this field.
WOBJ	Swift Object	The Swift object identifier. Operations on accounts and containers do not include this field.
WUSR	Swift Account User	The Swift account username that uniquely identifies the client performing the transaction.

## WHEA: Swift HEAD

When a Swift client issues a HEAD transaction, a request is made to check for the existence of an account, container, or object, and retrieve any relevant metadata. This message is issued by the server if the transaction is successful.

Code	Field	Description
CBID	Content Block Identifier	The unique identifier of the content block requested. If the CBID is unknown, this field is set to 0. Operations on accounts and containers do not include this field.
CSIZ	Content Size	The size of the retrieved object in bytes. Operations on accounts and containers do not include this field.

Code	Field	Description
HTRH	HTTP Request Header	<p>List of logged HTTP request header names and values as selected during configuration.</p> <p><b>Note:</b> X-Forwarded-For is automatically included if it is present in the request and if the X-Forwarded-For value is different from the request sender IP address (SAIP audit field).</p>
RSLT	Result Code	<p>Result of the HEAD transaction. Result is always:</p> <p>SUCS: successful</p>
SAIP	IP address of requesting client	The IP address of the client application that made the request.
TIME	Time	Total processing time for the request in microseconds.
TLIP	Trusted Load Balancer IP Address	If the request was routed by a trusted Layer 7 load balancer, the IP address of the load balancer.
UUID	Universally Unique Identifier	The identifier of the object within the StorageGRID system.
WACC	Swift Account ID	The unique account ID as specified by the StorageGRID system.
WCON	Swift Container	The Swift container name. Operations on accounts do not include this field.
WOBJ	Swift Object	The Swift object identifier. Operations on accounts and containers do not include this field.
WUSR	Swift Account User	The Swift account username that uniquely identifies the client performing the transaction.

## WPUT: Swift PUT

When a Swift client issues a PUT transaction, a request is made to create a new object or



container. This message is issued by the server if the transaction is successful.

Code	Field	Description
CBID	Content Block Identifier	The unique identifier of the content block requested. If the CBID is unknown, this field is set to 0. Operations on containers do not include this field.
CSIZ	Content Size	The size of the retrieved object in bytes. Operations on containers do not include this field.
HTRH	HTTP Request Header	List of logged HTTP request header names and values as selected during configuration.  <b>Note:</b> X-Forwarded-For is automatically included if it is present in the request and if the X-Forwarded-For value is different from the request sender IP address (SAIP audit field).
MTME	Last Modified Time	The Unix timestamp, in microseconds, indicating when the object was last modified.
RSLT	Result Code	Result of the PUT transaction. Result is always:  SUCS: successful
SAIP	IP address of requesting client	The IP address of the client application that made the request.
TIME	Time	Total processing time for the request in microseconds.
TLIP	Trusted Load Balancer IP Address	If the request was routed by a trusted Layer 7 load balancer, the IP address of the load balancer.
UUID	Universally Unique Identifier	The identifier of the object within the StorageGRID system.
WACC	Swift Account ID	The unique account ID as specified by the StorageGRID system.

Code	Field	Description
WCON	Swift Container	The Swift container name.
WOBJ	Swift Object	The Swift object identifier. Operations on containers do not include this field.
WUSR	Swift Account User	The Swift account username that uniquely identifies the client performing the transaction.

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