



## **Audit message reference**

### **StorageGRID**

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# 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.  |
| RSLT | Retrieval Result  | The completion status of the archive retrieval process: <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. |

| Code | Field                     | Description   |
|------|---------------------------|---|
| 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. |

| Code | Field                | Description  |
|------|----------------------|--|
| 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.  |
| RSLT | Result               | Indicates the result of the archive process. Currently defined values are: <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.                                |

| Code | Field                     | Description   |
|------|---------------------------|---|
| 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:<br><br>PUSH: The transfer operation was requested by the sending entity.<br><br>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.   |

| Code | Field                       | Description   |
|------|-----------------------------|---|
| 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:<br><br>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.

| 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:<br><br>PUSH: The transfer operation was requested by the sending entity.<br><br>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.  |

| Code | Field                     | Description  |
|------|---------------------------|--|
| 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.

## 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. |

| Code | Field                       | Description  |
|------|-----------------------------|--|
| 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:<br><br>PUSH: The transfer operation was requested by the sending entity.<br><br>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:<br><br>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.  |
| CTDR | Transfer Direction        | Indicates if the CBID transfer was push-initiated or pull-initiated:<br><br>PUSH: The transfer operation was requested by the sending entity.<br><br>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.

## 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   | <p>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.</p> |

## 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.                 |

| Code | Field       | Description  |
|------|-------------|--|
| 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.  |
| TVER | Task Version | A number indicating the version of the grid task.   |

| Code | Field                  | Description   |
|------|------------------------|---|
| 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.<br><br>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<br><br>CLEC (Online): For erasure-coded object data<br><br>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).<br><br>Takes the form<br><code>/var/local/rangedb/2/p/13/13/00oJs6X%{h{U}SeUFxE@</code> |
| 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<br>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. |

| Code | Field                               | Description  |
|------|-------------------------------------|--|
| OCBD | Content Block Identifier (previous) | The CBID for the previous object.  |
| 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:<br><br>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:<br><br>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                   | List of logged HTTP request header names and values as selected during configuration.<br><br><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:<br><br>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.   |
| 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.   |

| Code | Field                                   | Description  |
|------|---|--|
| 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.   |
| 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><br><br>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.<br><br><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:<br><br>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                   | <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 POST Object restore request. 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.  |

| 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.<br><br>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:<br><code>urn:sgws:identity::03393893651506583485:root</code><br><br>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:<br><code>urn:sgws:identity::03393893651506583485:root</code><br>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:<br><br>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:<br><br>CRCF: Cyclic redundancy check (CRC) failed.<br><br>HMAC: Hash-based message authentication code (HMAC) check failed.<br><br>EESH: Unexpected encrypted content hash.<br><br>PHSH: Unexpected original content hash.<br><br>SEQC: Incorrect data sequence on disk.<br><br>PERR: Invalid structure of disk file.<br><br>DERR: Disk error.<br><br>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:<br><br>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:<br><br>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:<br><br>SUCS: System was cleanly shut down.<br><br>DSDN: System was not cleanly shut down.<br><br>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. |

| Code | Field          | Description   |
|------|----------------|---|
| 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'.   |
| 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.<br><br><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:<br><br>SUCS: Successful  |
| SAIP | IP address of requesting client | The IP address of the client application that made the request.  |



| Code | Field                            | Description  |
|------|----------------------------------|--|
| 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.             |
| 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.  |

| 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 GET 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.  |

## 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.  |
| HTRH | HTTP Request Header              | List of logged HTTP request header names and values as selected during configuration.<br><br><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 HEAD transaction. Result is always:<br><br>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.  |
| WCON | Swift Container                  | The Swift container name. Operations on accounts do not include this field.  |

| Code | Field              | Description   |
|------|--------------------|---|
| 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.<br><br><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:<br><br>SUCS: successful   |
| SAIP | IP address of requesting client | The IP address of the client application that made the request.  |

| <b>Code</b> | <b>Field</b>                     | <b>Description</b>   |
|-------------|----------------------------------|--|
| 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.  |
| 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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