# Ultra Cloud Core Common Data Layer, Release 1.5 - Release Change Reference

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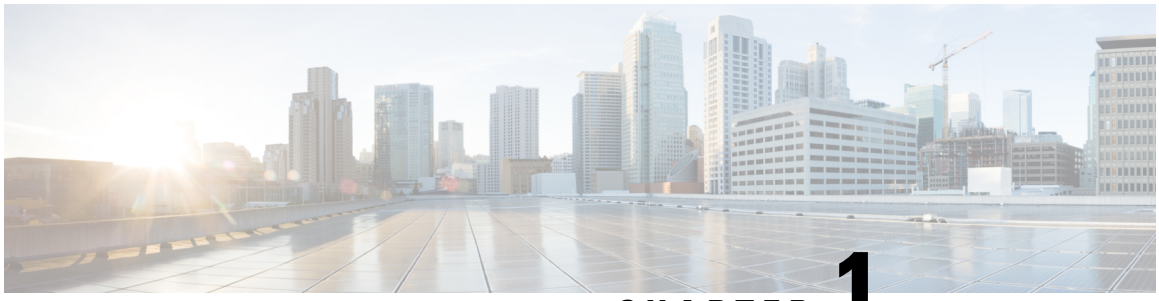


CHAPTER 1

# About this Guide

**Note** The documentation set for this product strives to use bias-free language. For purposes of this documentation set, bias-free is defined as language that does not imply discrimination based on age, disability, gender, racial identity, ethnic identity, sexual orientation, socioeconomic status, and intersectionality. While any existing biased terms are being substituted, exceptions may be present in the documentation due to language that is hardcoded in the user interfaces of the product software, language used based on RFP documentation, or language that is used by a referenced third-party product.

This RCR is applicable to the Common Data Layer (CDL). It provides information on new and modified features and behavior changes added in this release branch.

This Release Change Reference (RCR) describes new and modified feature and behavior change information for the applicable CDL release(s).



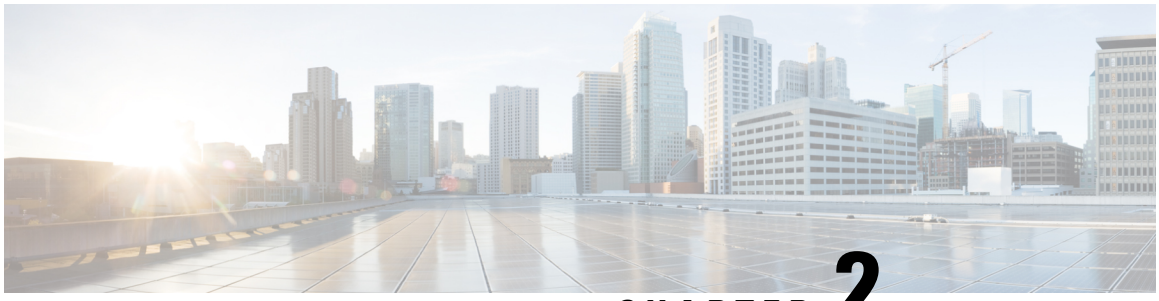
# Conventions Used

The following tables describe the conventions used throughout this documentation.

| Notice Type | Description |
|---|---|
| Information Note | Provides information about important features or instructions. |
| Caution | Alerts you of potential damage to a program, device, or system. |
| Warning | Alerts you of potential personal injury or fatality. May also alert you of potential electrical hazards. |

| Typeface Conventions | Description |
|---|---|
| Text represented as a `screen display` | This typeface represents displays that appear on your terminal screen, for example:<br>`Login:` |

| Typeface Conventions | Description |
|---|---|
| Text represented as **commands** | This typeface represents commands that you enter, for example:<br>**show ip access-list**<br>This document always gives the full form of a command in lowercase letters. Commands are not case sensitive. |
| Text represented as a **command** *variable* | This typeface represents a variable that is part of a command, for example:<br>**show card** *slot_number*<br>*slot_number* is a variable representing the desired chassis slot number. |
| Text represented as menu or sub-menu names | This typeface represents menus and sub-menus that you access within a software application, for example:<br>Click the **File** menu, then click **New** |



CHAPTER 2

# UCC CDL, Release 1.5 - Release Change Reference

For more information on Common Data Layer (CDL) versions prior to 1.5, refer to the *UCC SMI Release Change Reference*.



## Feature and Behavior Changes Quick Reference

| Feature/Behavior Changes | Introduced/Modified |
|---|---|
| GR Failover Notification Records of Peer Site, on page 4 | 1.5 |
| Identifying Stale Index Records, on page 5 | 1.5 |
| Triggering Remote Index Sync, on page 7 | 1.5 |

## Feature Defaults Quick Reference

The following table indicates what features are enabled or disabled by default.

| Feature | Default |
|---|---|
| GR Failover Notification Records of Peer Site | Disabled – Configuration Required |
| Identifying Stale Index Records | Disabled – Configuration Required |
| Triggering Remote Index Sync | Disabled – Configuration Required |

# GR Failover Notification Records of Peer Site

## Feature Summary and Revision History

### Summary Data

| | |
|---|---|
| Applicable Product (s) or Functional Area | • KVM-based application deployment support<br>• AMF 2021.04.0 and later |
| Applicable Platforms | Bare Metal, OpenStack, VMware |
| Feature Default Setting | Disabled – Configuration Required |
| Related Changes in this Release | Not Applicable |
| Related Documentation | *UCC CDL Configuration and Administration Guide* |

### Revision History

| **Revision Details** | **Release** |
|---|---|
| First introduced. | CDL 1.5 |

## GR Failover Notification Records of Peer Site

The CDL sends notification about records only to its local application. The notification is based on the system-id and Timer Expiry parameters of the records. In a GR setup, when a site is isolated for maintenance, the records of that site are not sent to its peer site.

With the **remote-system-id** parameter, CDL allows the peer site to process notifications of the isolated site. The **remote-system-id** of the peer site is configured with the site ID of the isolated site. The CDL processes records when the system-id of any record matches the remote-system-id. The notifications are sent based on the Timer Expiry, or for the records that have the **notifyOnPurge** enabled.

**Note** The remote-system-id must be removed from the CDL configuration after the isolated site resumes its function.

The following procedure explains the configuration of remote-system-id with an example:

In the example below, the GR setup has 2 sites: site-1 and site-2. The site-1 is disconnected for an upgrade, and the remote-system-id of site-2 is configured with the site ID of site-1.

1. Shutdown or disconnect the site-1.
2. To configure the **remote-system-id** of site-2 with site ID of site-1, run the following command:

```
cdl datastore session
```

```
    slot notification remote-system-id [ 1 ]
exit
```

Note that the value [1] for **remote-system-id** in the above command is the site ID of site-1, which is isolated.

3. The site-2 starts notifying records of site-1 to the local application.
4. Before bringing up site-1, remove the site ID of site-1 from the remote-system-id list of site-2.

The **remote-system-id** is mutually exclusive with the **instance-aware-notification-system-id**. For more information, refer to the *Geo Replication (GR) Failover Notification* topic.

# Identifying Stale Index Records

## Feature Summary and Revision History

### Summary Data

| | |
|---|---|
| Applicable Product (s) or Functional Area | KVM-based application deployment support |
| Applicable Platforms | Bare Metal, OpenStack, VMware |
| Feature Default Setting | Disabled – Configuration Required |
| Related Changes in this Release | Not Applicable |
| Related Documentation | *UCC CDL Configuration and Administration Guide* |

### Revision History

| **Revision Details** | **Release** |
|---|---|
| First introduced. | CDL 1.5 |

## Identifying Stale Index Records

In certain scenarios, the unique keys in index pods of the CDL are stale (presumed to be deleted). The NFs may try to use these unique keys for another record, as the CDL does not show the stale record details to the NFs.

The CDL allows the operator to enable a parameter to detect the stale records and perform the necessary action on such stale records.

To detect the stale records and perform actions:

1. Identify the stale records. When a new record is created, the unique key is overwritten. To identify such records, enable the **index-overwrite-detection** parameter, and ensure that the *unique-keys-prefix* matches the prefix pattern.

2. Perform the necessary **action** (notify, delete or log) on the identified stale records.

   The CDL detects any unique key that is overwritten and performs one of the following actions:

   - Deletes the stale record or the entire record. The delete action is triggered only if the **PurgeOnEval** flag is set to false for the stale record.
   - Notifies the NF about the stale record. The notify action sends the **STALE_INDEX_NOTIFICATION** to the NF.
   - Logs the overwritten unique key. For the log action, the stale record is logged with the WARN log level.

**Note** If there are two different unique keys pointing to the same primary key; one with notify action and the other with delete action, then the notify action is performed.

Use the following configuration:

```
features index-overwrite-detection max-tps variable
features index-overwrite-detection queue-size variable
features index-overwrite-detection unique-keys-prefix uk
  action [delete-record, notify-record, log-record]
```

where,

- **max-tps**: Controls the rate of notification for stale records. The default is 200.
- **queue-size**: Controls the processing queue size of the stale records. The default is 1000.

  **Note** The **queue-size** parameter is for both delete and notify actions. The **max-tps** parameter is only for the notify action.

- **unique-keys-prefix**: Specifies the unique-key prefix pattern along with the action that needs to be performed.

Example:

```
cdl datastore session
features index-overwrite-detection max-tps 250
 features index-overwrite-detection queue-size 2000
 features index-overwrite-detection unique-keys-prefix uk
 action notify-record
 exit
  exit
```

### Troubleshooting

To troubleshoot the stale index records, set the **index.overwrite.session** logger to INFO level. The logs from the endpoint pods as well as the index pods help in troubleshooting.

CDL configuration:

```
cdl logging logger index.overwrite.session
 level info
exit
```

The following metrics are introduced:

- **overwritten_index_records_deleted**–maintains the total number of records deleted due to stale records identified at index.
- **overwritten_index_records_skipped**–maintains the total number of records detected as stale, but dropped when the queue is full while processing the records for notify or delete.

# Triggering Remote Index Sync

## Feature Summary and Revision History

### Summary Data

| | |
|---|---|
| Applicable Product (s) or Functional Area | KVM-based application deployment support |
| Applicable Platforms | Bare Metal, OpenStack, VMware |
| Feature Default Setting | Disabled – Configuration Required |
| Related Changes in this Release | Not Applicable |
| Related Documentation | *UCC CDL Configuration and Administration Guide* |

### Revision History

| **Revision Details** | **Release** |
|---|---|
| First introduced. | CDL 1.5 |

## Triggering Remote Index Sync

The CDL provides a utility to sync the indexes with its remote peers. The utility can be used in the scenarios such as post site isolation, where there is a huge difference in the number of index records between the sites. The CDL also supports a command to check the status of the remote index sync.

**Note**

- It is recommended to use the remote sync only if there is a huge difference in the index records between the sites as this might impact the performance.
- The geo-remote-site should be configured to view the commands.

Trigger remote index sync for,

- a list of index mapIDs or all mapIDs from the cli.
- a list of sliceNames or all the sliceNames.

Note the following:

- Ensure the conditions below are met to avoid errors while triggering a remote sync for index with its peers.
  - The custom map-ids and slice-names should be unique.
  - Only valid index map-ids and slice-names are allowed.
  - Remote site is reachable.
- Internally, CDL retries a maximum of 3 times to sync with its remote peer.
- The remote index sync skips the index instance if the sync is already ongoing for that instance.

| **Command** | **Output Parameter** |
|---|---|
| **`cdl actions remote-index-sync start`** *`[options]`*<br>**Options**<br>• **map-id**<br>Index map-id for which the remote index sync should start. The map-id is optional. If included, triggers remote index sync for all the instances of that index map-id. A maximum of 5 map-ids can be given using this option.<br>• **slice-name**<br>The slice-name for which the remote index sync starts. The slice-name is optional. If included, triggers remote index sync for all the slice-names. There is no limit for the number of slice-names. | **triggered-instances**<br>Shows the list of index instances for which the remote index sync has been started. |
| **Example** | **Output** |
| **`cdl actions remote-index-sync start map-id { 1 } map-id { 2 } slice-name { session-1 } slice-name { session-2 }`** | **`triggered-instances 'index-mapID-1-instanceID-1, index-mapID-1-instanceID-2, index-mapID-2-instanceID-1, index-m`** |

### Check the Remote Sync Status

The remote sync status shows the index instances for which the remote index sync is in progress.

**Note** The remote sync status does not show the sync status per sliceName. If the sync status shows that a particular index instance is syncing with the remote site, it means all the sliceNames or the listed sliceNames are syncing one after the other.

| **Command** | **Output parameter** |
|---|---|
| **cdl actions remote-index-sync status** | **syncing-instances**<br>List of index instances for which the remote index sync is in progress. |
| **Example** | **Output** |
| **cdl actions remote-index-sync status** | **syncing-instances 'index-mapID-1-instanceID-1, index-mapID-1-instanceID-2, index-mapID-2-instanceID-1, index-mapID-2-instanceID-2'** |

### Troubleshooting

The following warning or error logs in Index pods show the status of the remote index sync.

- The sync is successful with the following:

  Log:

  **Bulk Sync done from Remote Indexes(s) for isInitSync = false**

  Example:

  ```
  [datastore.index.session] Bulk Sync done from Remote Indexes(s) for isInitSync = false
   sliceName = session via DBApp
  ```

  Log:

  **Sync finished successfully with Remote MemoryMap App isInitSync: false**

  Example:

  ```
  [datastore.index.session] Sync finished successfully with Remote MemoryMap App isInitSync:
   false count: 100 Time taken: 16.699031ms sliceName: session
  ```

- The sync fails with the following error log:

  Example:

  ```
  Error! Remote Bulk Read failed 3 times for isInitSync = false
  ```