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Interaction Concentrator User's Guide

Resynchronizing Configuration Changes

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Resynchronizing Configuration Changes

Under certain conditions, Interaction Database (IDB) data can fall out of synchronization with Configuration Server data. If this happens, Interaction Concentrator (ICON) instances and downstream reporting applications that rely on ICON data can produce results that are difficult to interpret. Under such conditions, you might consider resynchronizing IDB with the current configuration data.

> **Important**
>
> If you configure ICON to store configuration changes, it is important to ensure that ICON runs continually (without stopping). This will limit the chance of IDB losing synchronization with Configuration Server data.

This page describes the conditions under which you might consider invoking a forced resynchronization of IDB data, and the steps required to resynchronize your IDB. This chapter also describes how to restore Configuration Database should you need to recover its data from a crash. It includes the following sections:

How Resynchronization Works

ICON stores configuration data in two types of tables, one for configuration objects and the other for configuration object relationships. Each configuration data record is therefore defined by a pair of attributes: configuration object type and database identifier (DBID).

During resynchronization, ICON requests all configuration data from Configuration Server and stores it to the local cache. For each pair of attributes (object type and DBID), ICON checks whether it exists in the IDB:

- If it does not exist, a new record is added to the IDB.
- If it does exist, ICON checks if any stored properties are different for this object, and if so, the IDB record is updated.

Important

Any active objects that exist in the IDB but not in the Configuration Database are marked for deletion.

During resynchronization, ICON suspends receipt of real-time notifications about new configuration object updates from Configuration Server. Configuration Server queues the notifications and delivers them after synchronization completes.

The following table shows some of the information that ICON records in IDB for new, updated, and deleted configuration objects when resynchronization occurs:

- The Field column indicates the column in the targeted GC_* IDB table that ICON will write to when ICON transfers data to IDB.
- Values in the GSYS_EXT_INT1 field indicate the reliability of the timestamps flag (see Reliability Flag for a description of the values).

IDB Stores Object Changes

Field	New Object	Updated Object	Deleted Object
STATUS	1 (for active)	1 (for active)	2 (for inactive)
CREATED	sync time		
DELETED	null	null	sync time
LASTCHANGED	sync time	sync time	sync time
GSYS_EXT_INT1	1		2 or 3

Where no value is provided in the table above, ICON makes no change to the pre-existing value for the associated field.

The following table shows some information that ICON records in IDB for new, updated, and deleted object relationships when resynchronization is run. LASTCHANGED information does not pertain to relationships and thus is not included in the table.

IDB Stores Object Relationship Changes

Field	New Object Relationship	Updated Object Relationship	Deleted Object Relationship
STATUS	1 (for active)	1 (for active)	2 (for inactive)
CREATED	sync time		
DELETED	null	null	sync time
GSYS_EXT_INT1	1		2 or 3

Reliability Flag

ICON uses a reliability flag to provide downstream reporting applications (such as Genesys Info Mart) the ability to extract the most reliable data from two separate instances of IDB. The GSYS_EXT_INT1 field stores a value, in all IDB configuration records, which indicates the reliability of the data , as shown in the following table.

Reliability Flag Values

Value	What Value Indicates
0	The creation or deletion timestamp is reliable. The timestamp was provided by either real-time Configuration Server notifications or the configuration history log.
1	The creation timestamp is not reliable. The timestamp corresponds to the initial data load or resynchronization time.
2	The deletion timestamp is not reliable. The timestamp corresponds to the initial data load or resynchronization time.
3	Neither the creation nor the deletion timestamp is reliable. Both timestamps correspond to the time of the initial data load or resynchronization.

How Long Does Resynchronization Take

The amount of time required for the synchronization process to complete depends on a number of factors including:

- Performance of Configuration Server
- Network performance
- Size of the Configuration Database
- Performance of the database that hosts the IDB.

Under normal conditions, synchronization should take several minutes.

When to Resynchronize IDB

In some cases, ICON recognizes that the configuration data in the IDB is suspect and produces a special log message (09-25131) to that effect. In most cases, however, no such message will be generated and the decision to resynchronize configuration data is left to your discretion.

> Important

> If ICON generates this special log message, it will stop monitoring configuration changes, and move to a waiting state where it will remain until it receives the user command to start resynchronization. To avoid any loss of configuration data changes, Genesys strongly recommends setting an alarm condition (see Setting an Alarm Condition). ICON immediately resumes monitoring configuration changes upon completion of resynchronization.

The following exceptional circumstances are guidelines you can use to determine if resynchronization is required:

- The RDBMS for the Configuration Database has crashed and you must recover it from backup. See Restoring the Configuration Database from Backup.
- Unavoidable events have prevented ICON from running for a period of time, while Configuration Server was operating and changes were made to configuration objects or their relationships to other objects.
- Configuration tracking for ICON was mistakenly turned off for a period of time while changes were made to configuration-related data.
- ICON ran configuration tracking against the wrong Configuration Database. (This is a user-driven error.)
- ICON has detected an inconsistency in configuration data and logged a message accordingly. (However, the first inconsistency message logged following IDB upgrade is normal and should be ignored.)
- Your downstream reporting application (such as Genesys Info Mart) has detected missing or inconsistent configuration data in IDB. For Genesys Info Mart users, refer to the Genesys Info Mart documentation for more information on this exceptional circumstance.

Setting an Alarm Condition

ICON generates the following Standard-level log event if it suspects that the configuration data in the IDB is inconsistent:

- `09-25131: Configuration data inconsistency is detected; reason: [reason]. Waiting for customer command...`

ICON will then stop monitoring configuration changes and move to a waiting state where it will remain until it receives the user command to start resynchronization.

To avoid any loss of data, Genesys strongly recommends that you set an alarm condition using Genesys Administrator Extension. For information about alarm conditions and how to set them, see Alarm Conditions in the Genesys Administrator Extension Help.

Although there is no corresponding Cancel (or clearing) event, ICON generates log event 09-25017 when all the data necessary for resynchronization has been retrieved. This log event can be used as a clearance event (Recommendations for Resynchronization). You can also set an alarm Clearance Timeout which will clear the alarm condition after the specified time (in hours) has expired.

How to Resynchronize Configuration Data

By default, Interaction Concentrator resynchronizes with Configuration Server every time it starts. However, you may need to manually resynchronize ICON and Configuration Server, as discussed in the following section.

If you must resynchronize your configuration data in IDB, do the following while ICON is running:

1. Verify that the ICON application with the role configuration option set to `cfg`, is started.
2. In Genesys Administrator Extension, open the ICON `Application` and set the start-cfg-sync option to `0` on the **Options** tab.
3. Save your update.
4. Now change the option value set for the start-cfg-sync option to 1 on the **Options** tab.
5. Apply this new setting.

This action prompts Interaction Concentrator to start the resynchronization process. Once started, the resynchronization process continues until completion regardless of any subsequent changes to the option value. ICON logs a message when synchronization begins and when it completes.

> **Important**
>
> It does not suffice to pre-set the value of the **start-cfg-sync** option to 1 or to set it to any other nonzero value and then to 1. ICON starts synchronization only when it detects the change from `0` to 1.

Recommendations for Resynchronization

Consider changing the Configuration Server operation mode to Read-only for the time period during which data resynchronization is performed.

After ICON has retrieved all the data necessary for resynchronization from Configuration Server, ICON generates the following Standard-level log event:

- `09-25017 Configuration objects are reloaded in IDB`

At this point, you can change the Configuration Server operation mode back to normal. Consider using this log event as a clearance event when configuring the alarm condition for resynchronization (see Setting an Alarm Condition).

If you are using downstream reporting applications that rely on Interaction Concentrator as their data source, do the following to verify that the data in IDB is ready before you start your ETL engine for the first time after the resynchronization process:

1. Check ICON logs for log event: `09-25017, Configuration objects are reloaded in IDB`.

2. Execute the following SQL statement against IDB:

   ```
   select eventid from G_SYNC_CONTROL where providertag = 5
   ```

   - If the SQL statement returns no records or eventID = `0`, the resynchronization is still in progress.
   - If the above statement returns a non-zero value for eventID, the resynchronization is completed, and it is safe to run your ETL engine.

If you are restoring data from a backup Configuration Database (after your primary Configuration Database is corrupted, for example), perform the following steps:

1. Restore the Configuration Database from a backup copy (see Restoring the Configuration Database from Backup).
2. Restart Interaction Concentrator.
3. Perform manual resynchronization of configuration data in IDB as described in How to Resynchronize Configuration Data.

Restoring the Configuration Database from Backup

To restore your Configuration Database from backup, do the following:

1. Stop Configuration Server.
2. Stop the Interaction Concentrator instance that is tracking configuration data changes (`role = cfg`).
3. Restore the Configuration database from backup.
4. Make modifications in the Configuration Database to prevent Configuration Server from reusing the same DBID previously reported to ICON (see Modifying the Configuration Database, below).
5. Start Configuration Server.

Modifying the Configuration Database

To prevent Configuration Server from reusing the same (already reported) DBIDs, make the following modifications to the Configuration Database.

> **Important**
>
> These steps must be repeated for each type of configuration object stored by ICON (see the Configuration Server Object Types and IDB table.

1. Check the last object DBID reported to ICON by Configuration Server by executing the following SQL statement against the IDB (and saving the result):

   ```
   select max(id) from IDB_TABLE_NAME
   ```

   - Replace *IDB_TABLE_NAME* in the SQL statement with the correct table name (see the Configuration Server Object Types and IDB table).

2. If the result of the statement is *not* `Null`—that is to say, some records exist in the IDB table—go to Step 3. If the result is `Null`, repeat Step 1 for the next type of configuration object in the Configuration Server Object Types and IDB table.
3. Check the maximum value of the last object DBID by executing the following SQL statement against the Configuration Database:
   ```
   select MAX_DBID from CFG_MAX_DBID where object_type = cfg_object_type
   ```
   - Replace *cfg_object_type* in the SQL statement with the integer code of the Configuration Server object type (see the Configuration Server Object Types and IDB table).
4. If the result of the statement executed in Step 3 is any value—that is to say, *not* `Null`—go to Step 6. If the result is `Null`, go to Step 5.
5. Insert a record in the CFG_MAX_DBID Configuration Database table by executing the following SQL statement against the Configuration Database:
   ```
   insert into CFG_MAX_DBID (object_type,max_dbid) values (cfg_object_type, max_id +
   1)
   ```
   - Replace *cfg_object_type* in the SQL statement with the integer code of the Configuration Server object type (see the Configuration Server Object Types and IDB table).
   - Replace *max_id* in the SQL statement with the value of max(id) from Step 1.
6. Update the record in the CFG_MAX_DBID Configuration Database table by executing the following SQL statement against the Configuration Database:
   ```
   update CFG_MAX_DBID set max_dbid = max_id + 1 where object_type = cfg_object_type
   ```
   - Replace *cfg_object_type* in the SQL statement with the integer code of the Configuration Server object type (see the Configuration Server Object Types and IDB table).
   - Replace *max_id* in the SQL statement with the value of max(id) from Step 1.
7. Repeat Steps 1 through 6 for each configuration object type stored by ICON.

Configuration Server Object Types and IDB Tables

Object Type	IDB Table Name: *IDB_TABLE_NAME*	Config Server Object Type: *cfg_object_type*
Switch	GC_SWITCH	1
Endpoint (DN)	GC_ENDPOINT	2
Person (Agent)	GC_AGENT	3
Place	GC_PLACE	4
Groups	GC_GROUP	5
Tenant	GC_TENANT	7
Application	GC_APPLICATION	9
Scripts	GC_SCRIPT	12
Skills	GC_SKILL	13
Action Codes	GC_ACTION_CODE	14
Agent Login	GC_LOGIN	15
Folder	GC_FOLDER	22
Table Field	GC_FIELD	23

Object Type	IDB Table Name: *IDB_TABLE_NAME*	Config Server Object Type: *cfg_object_type*
Table Formats	GC_FORMAT	24
Table Access	GC_TABLE_ACCESS	25
Calling List	GC_CALLING_LIST	26
Campaigns	GC_CAMPAIGN	27
Treatments	GC_TREATMENT	28
Filters	GC_FILTER	29
Time Zones	GC_TIME_ZONE	30
Voice Prompts	GC_VOICE_PROMPT	31
IVR Ports	GC_IVRPORT	32
IVRs	GC_IVR	33
Business Attributes	GC_BUS_ATTRIBUTE	35
Attribute Values	GC_ATTR_VALUE	36
Objective Table	GC_OBJ_TABLE	37