



INTERSYSTEMS LEARNING SERVICES

InterSystems Change Control



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ICC 615: CCR Tier 2 – Debugging Basics



Objectives

- Undo changes.
- Cancel Tier 2 CCR.
- Anatomy of GUIDs and ElementXML.
- Introduction to debugging Tier 2 CCRs.
- Understand meaning and resolution for:
 - Uploading to incorrect system.
 - Missing GUID.
 - GUID Conflict.



Objectives (cont.)

- Recreate ItemSet for server.
- iService guidelines.



Part 1: Undo Change Not Bundled and Uploaded



Undo a Change Not Bundled and Uploaded

- Useful for unintentional changes in BASE.
- Irreversible actions.
- Undo will:
 - Revert all changes to affected item.
 - Added items are deleted.
 - Remove item from uncommitted queue.
 - Remove check-out status on item.



Undo a Change Not Bundled and Uploaded (cont.)

- Careful – may cause broken pointers. For example:
 - Add 2 items where item A references item B.
 - Perform undo on item B.
 - Item A still references item B and the undo on B might not throw an error.
 - Solution: make dummy change to item A to force re-export.



How To: Undo a Change Not Bundled and Uploaded

- 1. If not in active change session, start change session.
- 2. Go to Tools > Change Control > Bundle & Upload ItemSet.
- 3. Click Undo for appropriate Item.
- 4. Click OK to confirm Undo.

Select	Updated Time	CCR	Changed By	Action	Given Name	Internal Name	View	Diff	Undo
<input type="checkbox"/>	2019-07-22 12:38:32	ISCU0001	TrakLogon01	edit	/User/CTCareProv/DrAinsleyRivers F1A3D4B4-9743-11E6-85CE-560C79E68DF5	\$lb("2224","User.CTCareProv")	View	Diff	Undo
<input type="checkbox"/>	2019-07-22 12:28:33	ISCU0001	TrakLogon01	add	/User/CTCareProv/test 002C9A2C-1C8A-42CD-8B0B-95DA35EA06EF	\$lb("2291","User.CTCareProv")	View	Diff	Undo



Part 2: Cancel Transition for Tier 2



Review: Note on Cancelling CCRs Properly

- Only cancel CCRs that you no longer wish to have in any environment.
 - For example, started creating a care provider and received noticed that they don't need to be added.
- Make sure that cancelled CCRs are properly backed out.
 - Backed out of the Perforce branch.
 - Backed out of the environments.



Notes on Backing Out Tier 2 Change

- Verify no add actions under [show Submitted changes] in CCR.
 - New items should be end dated rather than backed out from Perforce.
 - A Perforce backout will cause item deletion!
- If all items in BASE have add action:
 - Backout plan is to end date those added items.
 - Do not use the Perforce backout tools.



Notes on Backing Out Tier 2 Change (cont.)

- If all actions are edit, use Perforce backout tools as described in ICC450.
- If there is a mix of add and edit actions for BASE:
 - Contact InterSystems Support for help.
 - Added items need to be end dated.
 - Edited items need to be backed using P4V (an InterSystems task).



Part 3: GUIDs and ElementXML



Review: GUIDs and Elements

- Assigned to TrakCare elements.
 - Code Table entries.
 - Configuration.
 - New objects are assigned a GUID on creation.
 - Not patient or operational data.
 - Only config data can be associated with a change session.
 - Patient and operational data can not be moved by CCR.



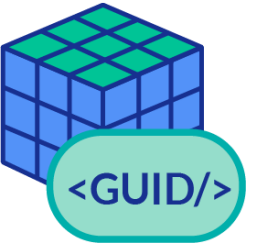
GUIDs and ElementXML

- GUID form basis of ElementXML export filenames.
- ElementXML files use GUIDs, not embedded row IDs.
- Cannot use row IDs because they may differ between environments.
- Cannot use Code or Desc because those values may be subject to change.
- Deleting and recreating a configuration item creates new object with new GUID.



Anatomy of a GUID

- Assigned on object creation.
 - format 09290496-0BAD-11E2-9090-F403C32D8A93.
- Queryable with the %GUID SQL property.
- No relation to content of TrakCare configuration.
- Composed of 2 data elements; ^OBJ.GUID is split into 2 branches.
 - 0 subscript maps GUID to OID (Object Identity).
 - 1 subscript maps OID to GUID.
 - These should always match. Mismatches can cause strange behaviour.



GUID Integrity (cont.)

- Question: If I deleted ^OBJ.GUID, what effect would a TrakCare user see?
 - No effect to running TrakCare application.
 - Can no longer make any changes through change control.
 - GUIDs only used when importing and exporting config.
 - They are not used for any functional purpose in TrakCare, all references are decoded when loading configuration.



Find GUID

- GUIDs are random; they do not contain any information about configuration.
- Tools > Change Control > Find GUID.
- Relates the GUID back to the configuration item.
- Provides change history for configuration item.

Find GUID

GUID

07638230-7B58-4F74-BB2D-82AA5991416D

Find

Change Information

GUID	OID	Code	Description	Owner
07638230-7B58-4F74-BB2D-82AA5991416D	\$lb("485","User.CTLoc")	ICCLOC14	ICC Training Location 14	Location owned by XXXXXXXXXXXXXXXXXXXX >



Find GUID (cont.)

- This screen will provide all information about the referenced object.
 1. Class and ID (OID).
 2. Code value (where available).
 3. Description.
 4. Owner.
 5. Change history (note no Committed Time on this one).

▼ Change Control ▲ Find GUID

GUID

OID \$lb("51647","websys.Component")
Code questionnaire.QELEXML.Edit
Description Element XML Demo
Owner SITE

Change Information

Committed Time	Updated Time	CCR	Changed By	Action	Name	Internal Name
	2017-10-25 19:49:39	TRAK1404	demo	add	/websys/Component/ElementXMLDemo	\$lb("51647","websys.Component")

CCRGUID.FindList: 0.003119 (secs), 11356 (lines), 711 (globals)



Part 4: Basic Debugging: TCC Errors



“CCR is Broken”

- This is the most common misused phrase in TrakCare Implementation/Support.
- CCR is an exceptional stable codebase.
 - Bug in the CCR server or CCR Client Tools code very rare.
- Change control bugs are almost certainly TrakCare Change Control (TCC) issues.
- Improper use of CCR can lead to unexpected (but not technically erroneous) behaviours.



General Error Notes (cont.)

- Most error messages include how to successfully progress the change.
- If you think you've found a CCR bug report it immediately to Support.



Incorrect System Area

- When uploading an Itemset from BASE the below error is displayed.
 - Users may select the incorrect system, for example they have selected T2016 instead of T2018 during an upgrade project.
- Resolution.
 - Create a new CCR with the correct system, change list needs to be moved to the new CCR and the Itemset needs to be re-submitted. It may require you to email CCR users and CCR dev to request for the change lists to be moved across to the new CCR or to make changes to the ItemSet status to enable re-uploading.
 - NOTE: This must be done ASAP as there is risk that future changes will step over the failed upload and therefore configuration could potentially be reverted.

```
2016-07-11 11:07:15: UPLOAD returned an Error: ERROR #5001: The Imported ItemSet is for the wrong System. Aborting Imported ItemSet 432396. Imported ItemSet successfully aborted.
```



Part 5: Missing GUID

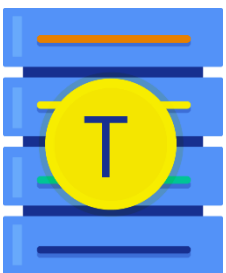
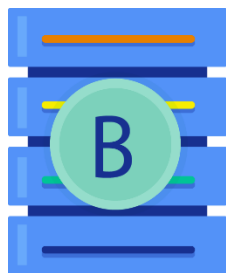


Missing GUID

- This error occurs on download of TrakCare configuration.
- TCC will not load incomplete configuration by default.
 - A missing GUID error means that the GUID lookup did not return a match.
 - TCC cannot link to a non-existent object.
- This will cause the load to fail and the whole transaction to roll back.



Missing GUID Example



Location
GUID: ABC
Hospital:
XYZ



Hospital
GUID: XYZ



Example Missing GUID Error

```
ERROR #5001: GUID reference(s) missing from stream /trax/enyhTEST/tc2016/perforce_tc2017/custom_ccrs/enx/ENYH/T2017/TEST/misc/User/ARCItnMast
/2D628C42-4711-11E8-B437-7F0F75D06854.xml: 84F406D0-4710-11E8-BD45-7F0F75D06854

ERROR #5001: GUID reference(s) missing from stream /trax/enyhTEST/tc2016/perforce_tc2017/custom_ccrs/enx/ENYH/T2017/TEST/misc/User/ARCItnMast
/D88B2B50-47C1-11E8-8362-7F0F75D06854.xml: 84F406D0-4710-11E8-BD45-7F0F75D06854

ERROR #5001: GUID reference(s) missing from stream /trax/enyhTEST/tc2016/perforce_tc2017/custom_ccrs/enx/ENYH/T2017/TEST/misc/User/PHCDroMast/A96B506C-
138D-11E6-9B4B-7F0F75D06854.xml: 84F406D0-4710-11E8-BD45-7F0F75D06854, E1BA32FE-4710-11E8-92A4-7F0F75D06854, 8F61254E-4710-11E8-9FEE-7F0F75D06854,
D138B344-4711-11E8-8D9F-7F0F75D06854, 99D522AA-4710-11E8-A689-7F0F75D06854, 89866416-4712-11E8-8D65-7F0F75D06854, A2E3F4A2-4710-11E8-B914-7F0F75D06854,
16C30424-4713-11E8-8D9B-7F0F75D06854

Load detected 3 errors in 11.455s.

Transaction rolled back
```

Configuration Files with
missing GUID
references

GUIDS that are missing
from the target
environment

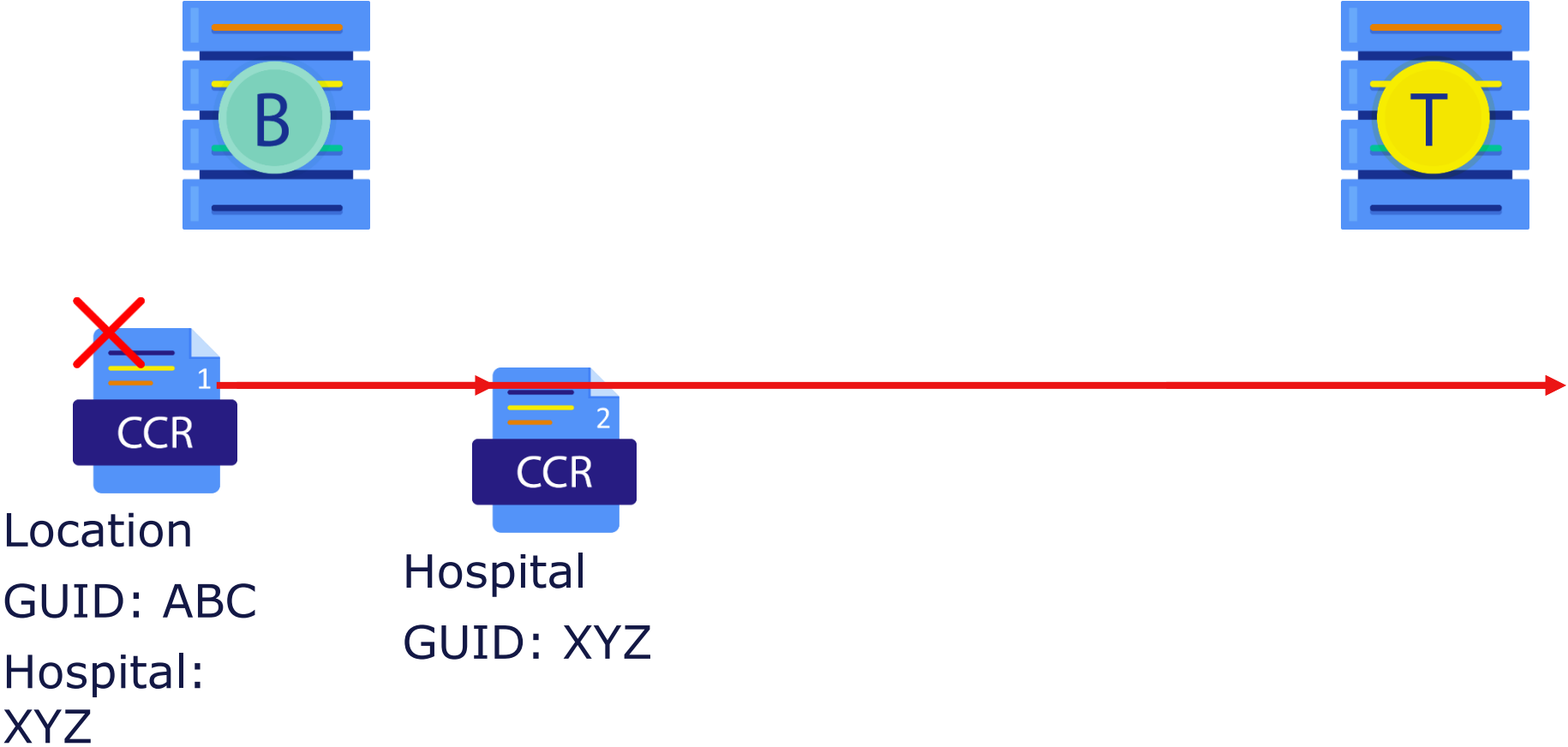


Resolve Missing GUID

- Steps below assume BASE-TEST-LIVE workflow and error occurred deploying to TEST.
 1. Use Find GUID in BASE to find object associated with missing GUID.
 - If object missing in TEST added by this CCR, most likely a different error is causing ItemSet load to fail. See Secondary Error discussion later.
 - If object missing in TEST added by different CCR still in BASE phase, continue to step 2.
 2. Specify CCR adding missing object as prerequisite CCR on CCR showing error.
 3. Progress CCR adding missing object to TEST.
 4. Deploy ItemSet that originally errored out.
 5. Progress both CCRs through normal workflow to Closed.



Missing GUID Example: Resolution



Circular Reference

- CCR1 adds configuration that depends on configuration added by CCR2.
- CCR2 adds configuration that depends on configuration added by CCR1.
- Solution: merge the 2 CCRs.
- Avoid situation by:
 - Keeping change small and discrete.
 - Progressing changes quickly.



Secondary Errors

- Missing GUIDs are the easiest warning to resolve.
- If multiple errors, most likely want to resolve missing GUID last.
- Example:
 - If 3 items are loaded in 1 ItemSet:
 - GUID A is OK.
 - GUID B fails with a data validation issue.
 - GUID C fails as it refers to B.
 - If B is resolved, then the missing GUID warning will resolve.
- Remember to check if your GUID is in the current download.



Quiz: Missing GUIDs

Question:

Preview integrations will catch missing GUID errors.

True or False?

Answer:

False. Perforce treats files as plain text. Perforce cannot interpret GUIDs.



Part 6: GUID Conflict



GUID Conflict

- The XML Load uses the GUID to determine what to do when loading configuration.
 - GUID found – Update that object with the contents of the XML.
 - GUID not present – Insert a new record.
- GUIDs must be unique over the whole system.
- In most tables, configuration must also be unique based on code and description.
- GUID assigned on creation, and NOT linked to the object content.



GUID Conflict Example



Location
GUID: XYZ



Location
GUID: ABC



+



Part 7: Wrong GUID



Wrong GUID on Object

- There will be a conflict on Code and Description (or other unique keys) if cannot find GUID.
- Recent TrakCare versions will report which Row ID is conflicting.
 - Older versions require the user to decode the key and determine the source of the conflict.

```
Load started at 2018-06-14 09:52:50
WARNING: Unique Index conflict. User.CTLoc ICCLOC01 ICC Training Location 01 0AC352C7-A85B-4F56-9A71-6E20841523D8
Conflict with: User.CTLoc 470 ICCLOC01 ICC Training Location 01 15666461-80D8-4C71-A506-490E593C9D4E
WARNING: Unique Index conflict. User.CTLoc ICCLOC01 ICC Training Location 01 0AC352C7-A85B-4F56-9A71-6E20841523D8
Conflict with: User.CTLoc 470 ICCLOC01 ICC Training Location 01 15666461-80D8-4C71-A506-490E593C9D4E
ERROR #5001: Unable to load stream C:\TrakCare\Perforce\custom_ccrs\us\ISCU\TRAK\TEST\misc\User\CTLoc\0AC352C7-A85B-4F56-9A71-6E20841523D8.xml
> ERROR #5001: Unable to save item $lb("", "User.CTLoc"), 0AC352C7-A85B-4F56-9A71-6E20841523D8
> ERROR #5521: SQLError: SQLCODE=-119 $msg=Table 'SQLUser.CT_Loc', Constraint 'IndexUniqueCodeHospIdx', Field(s) CTLOC_Code="ICCLOC01",CTLOC_Hospital_DR=12; failed unique check
> ERROR #5001: Unique Index conflict. User.CTLoc ICCLOC01 ICC Training Location 01 0AC352C7-A85B-4F56-9A71-6E20841523D8
> ERROR #5001: Conflict with: User.CTLoc 470 ICCLOC01 ICC Training Location 01 15666461-80D8-4C71-A506-490E593C9D4E
Load detected 1 errors in .296s.
```



How do we get these conflicts?

- Remember, a GUID is assigned on creation, and is NOT linked to the object content.
- Deleting a layout and recreating the “same” layout does not result in the export of the same object.
 - This will create a new object (with a new GUID), having the same key as an existing one.
- If the delete doesn’t progress through, this will cause a conflict.
 - This happens a lot in Edition.
- **Fix instead of delete and recreate.**



Resolution: Wrong GUID on Object

- This will require a GUID reassign.
- Remember, the GUID is not used for anything other than referencing elements in XML.
- Always update the target environment, to match the export from BASE.



Resolution: Wrong GUID on Object (cont.)

- GUID reassign cheatsheet:
 - `Set GUID = "correct GUID".`
 - `Set OID = $lb("id", "class").`
 - `Set wrongGUID = ^OBJ.GUID(1,oid) .`
 - `Kill ^OBJ.GUID(0, wrongGUID) .`
 - `Set ^OBJ.GUID(0,GUID) =OID.`
 - `Set ^OBJ.GUID(1,OID) =GUID.`
- Or use ^SSADMIN, Option 5 – Change Control, then Option 7 – Replace GUID.



Quiz: GUID conflicts

Question:

Deleting and recreating an object is a likely cause of GUID conflict when moving between environments. True or False?

Answer:

True. This will create a new object (with a new GUID), having the same key as an existing one.



Part 10: iService Guidelines



Change Control Related Incidents within iService (cont.)

- iService contains Application Areas and Closure Types for incidents which are designed to capture both the respective change control area as well as the root cause.
 - It is important to understand the classifications and make sure they are used properly.
 - An accurate capture of the data will result in better reporting and actionable analysis.
 - This is especially important when a new site goes LIVE with CCR for the first time; we want to catch training or understanding gaps as quickly as possible.



Change Related Incident Classification within iService

- Application Areas:
 - CCR – CCR Online.
 - CCR – TrakCare Change Control.



Change Related Incident Classification within iService (cont.)

- Closure Types:
 - GUID Fix.
 - Perforce Intervention.
 - User Training Required.
 - Documentation Deficiency.
 - User Error.
 - Product Fix.



Summary

- What are the key points for this module?

