



INTERSYSTEMS LEARNING SERVICES

InterSystems Change Control



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For Support questions about any InterSystems products, contact:

InterSystems WorldWide Response Center

Telephone: +1-617-621-0700

Tel: +44 (0) 844 854 2917

Email: support@InterSystems.com

ICC 610: CCR Tier 2 – Usage Basics



Objectives

- Configure a TrakCare environment for change control.
- Create Tier 2 CCR.
- Progress basic Tier 2 CCR through BASE, TEST, LIVE workflow.



Review: CCR Usage Tiers

- Tiered usage is progressive in terms of complexity as well as benefit.

This series of courses focuses on CCR Tier 2



CCR Tier 0

- Documentation and Workflow Tool.



CCR Tier 1

- Source Control Automation and Code Deployment (source stored in Perforce).



CCR Tier 2

- TrakCare configuration Transport and Deployment (configuration stored in Perforce).



CCR & TrakCare (CCR Tier 2)

- Can use CCR to track ALL TrakCare changes, such as:
 - Layouts.
 - Security groups.
 - Code table changes.
 - Interface Workbench settings.
 - Order favorites.
- General rule:
 - Can export anything touched to change configuration.
 - Care providers.
 - Cannot (or should not) export transactional data.
 - Patient data.

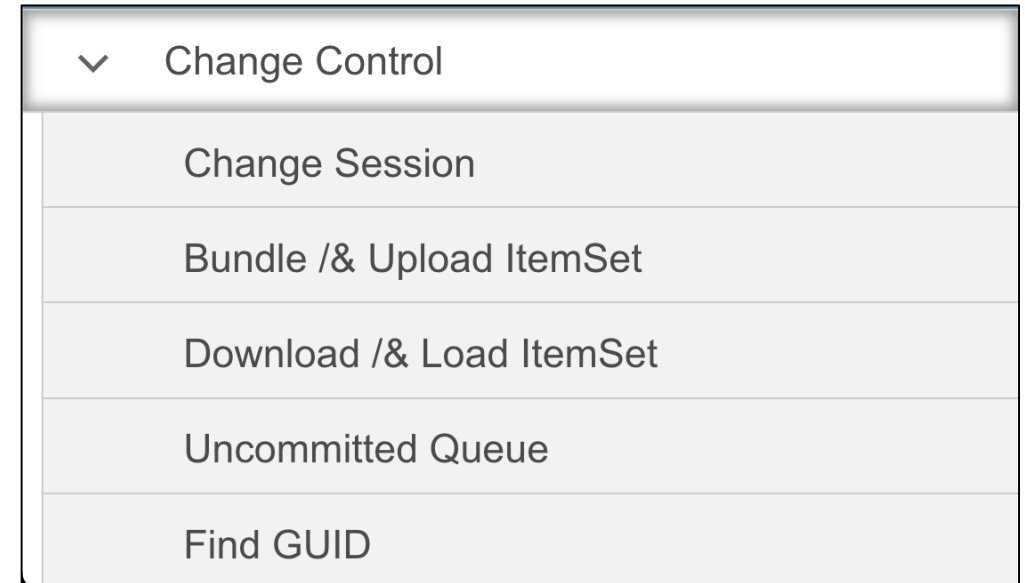


Part 1: Change Control Configuration



Change Control Submenu

- CCR functionality available using Change Control submenu.
 - Tools > Change Control.
- Depending on privileges, menu links to:
 - Change Session.
 - Bundle & Upload ItemSet.
 - Download & Load ItemSet.
 - Recreate ItemSet.
 - Find GUID.
 - Configure.



TrakCare Exclusion Lists

- Exclusion lists disable change control for specific classes.
 - Tier 2 CCRs will NEVER be used for these items.
 - Need to change outside of CCR process.
 - Examples may include clinics, users, and local printers.
 - Strict CCR procedure would not permit timely and efficient changes.
- Exclusion list specific to each TrakCare environment.
- Recommend using Tier 0 CCR and standard changes to put control on changing excluded items.



TrakCare Exclusion Lists (cont.)

- No class should be added to the exclusion list without careful consideration being given to its dependencies.
 - Consult experts when considering changes to exclusion list.



TrakCare Exclusion Lists (cont.)

- Why do we want to do this?
 - Some tables contain generated data such as keywords.
 - Generated data should never be in source control.
 - Some classes have environment specific configuration such as printers.
 - CCR process depends on identical environments for changes progressed by a CCR.
 - Development may exclude some tables that should never be included in source control.



Possible TrakCare Exclusion List

- Please contact InterSystems for the most up to date exclusion list.

User.ARCItemKeywords	User.CTZip	User.PACNonGovOrg
epr.CannedText	User.CTZipKeywords	User.PACNonGovOrgKeywords
User.ARCItemKeywords	User.INCSysCounter	User.PACRefDoctorClinic
User.CFSM	User.LBCSystemCounter	User.PACRefDoctorKeywords
User.CFSystemFileDefinition	User.LBCTestSetRevisionReagent	User.PACWardAvailRestriction
User.CFSystemFilePath	User.MHCAgent	User.RBResource
User.CTCareProv (Maybe)	User.MRCICDDx	User.SSHL7
User.CTCity	User.MRCICDkeyw	User.SSUser
User.CTCityHCA	User.ORCOperation	websys.Configuration
User.CTHealthCareArea	User.PACClinic	websys.Print
User.CTHealthCareRegion	User.PACCounterType	websys.Printer
User.CTProvince	User.PACInstrText	websys.PrintService



Possible Pharmacy Exclusion List

- Please contact InterSystems for the most up to date exclusion list.

User.INCItm	User.INCItmLcDailyTotal	User.INCSterileCategory
User.INCItmBat	User.INCItmLoc	User.INCSterileItems
User.INCItmHosp	User.INCItmRcp	User.INCSterilePriority
User.INCItmHospVen	User.INCItmRecIngr	User.INCStorageBinGroup
User.INCItmHospVenCommItems	User.INCItmStockLocations	User.INCStorageBinType
User.INCItmHospVenDiscount	User.INCItmVen	User.INCStorageBinTypeStockItem
User.INCItmLcBt	User.INCItmVenCommItems	User.INCSysCounter
User.INCItmLcBtBin	User.INCItmVenDiscount	



Part 2: Change Session Usage



Change Sessions

- Use change session to mark changed items with CCR ID to simplify change identification.
- Start a change session prior to making any configuration changes in TrakCare.
- Change session terminates:
 - When you log out of TrakCare.
 - After upload changes to Perforce (optional flag).
 - When click termination button on Change Session Menu.



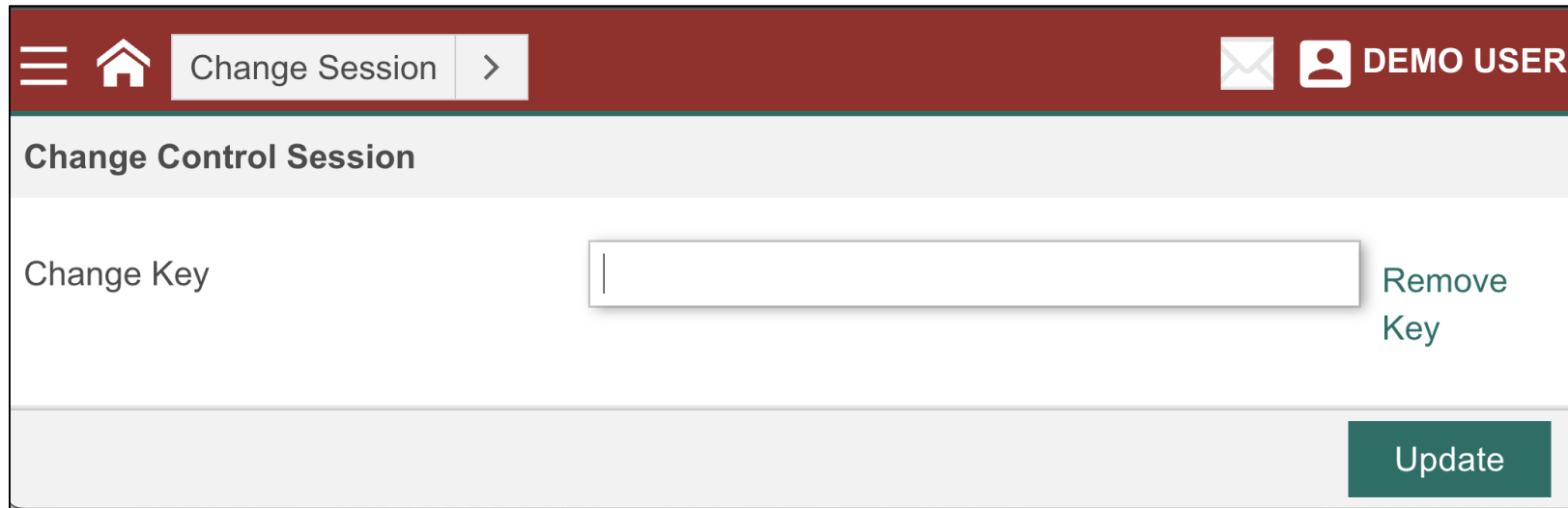
Change Sessions (cont.)

- When change session active, all TrakCare Application changes are:
 - Exported via TCC to XML documents.
 - Added to the uncommitted queue.
 - Checked out to current user.



How To: Open a Change Session

1. CCR should already exist and be in In_BASE state.
2. Tools > Change Control > Change Session.
3. Enter CCR ID for Change Key.
4. Click Update.

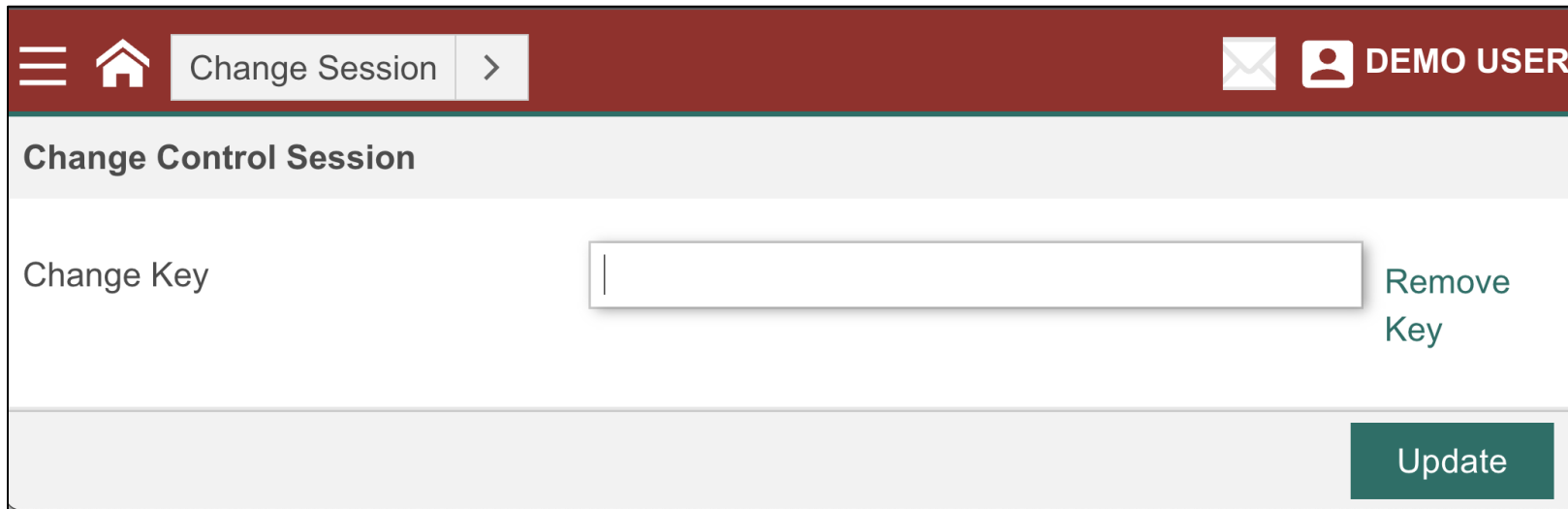


The screenshot shows the 'Change Session' interface in the InterSystems Change Control application. The top navigation bar is dark red and contains a menu icon, a home icon, a breadcrumb trail 'Change Session >', a mail icon, and a user profile icon labeled 'DEMO USER'. Below the navigation bar, the main content area has a light gray header 'Change Control Session'. The main form area is white and contains a label 'Change Key' next to a text input field. To the right of the input field is a link labeled 'Remove Key'. At the bottom right of the form is a green button labeled 'Update'.



How To: Manually End Change Session

1. Tools > Change Control > Change Session.
2. Click Remove Key.



The screenshot shows the 'Change Session' interface in InterSystems Change Control. The top navigation bar is dark red and contains a menu icon, a home icon, a 'Change Session' button with a right arrow, a mail icon, and a user profile icon labeled 'DEMO USER'. Below the navigation bar is a light gray header section titled 'Change Control Session'. The main content area has a light gray background and contains the text 'Change Key' followed by a text input field. To the right of the input field is a green button labeled 'Remove Key'. At the bottom right of the main content area is a dark green button labeled 'Update'.



Exercise ICC610-1 through ICC610-2

Create a CCR and open a change session



Quiz: Change Session

Question:

What is the purpose of a change session? Select all that apply.

- A. To ensure that a CCR has been created for the configuration that is taking place.
- B. To prevent accidental changes from being made in the environment that can't be accounted for.
- C. To automate the tracking of changes made for a specific CCR and make it easier to upload those changes to CCR once the work is complete.



Quiz: Change Session

Answer:

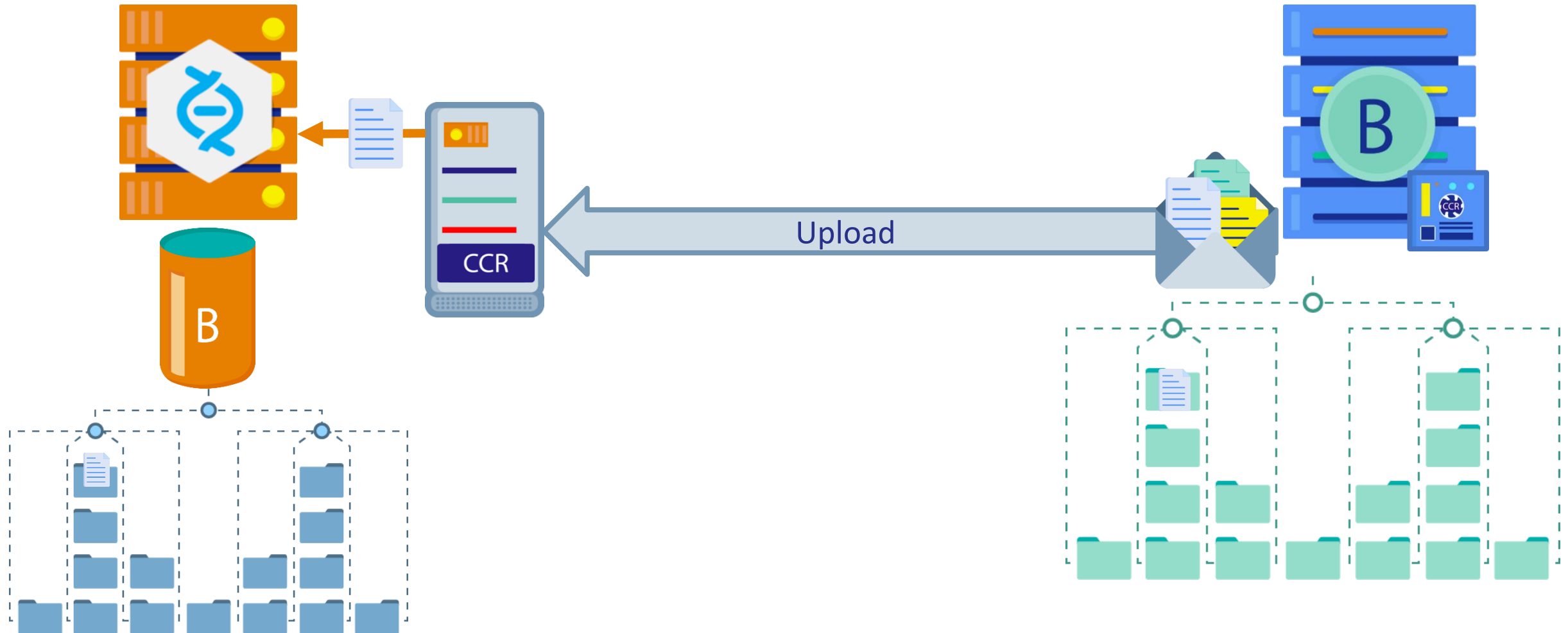
All of the above.



Part 3: TrakCare Bundle & Upload ItemSet



Review: Sending Items from **Disconnected** BASE



How To: Bundle & Upload ItemSet

- Generate and copy access token.
 - From Perforce Details section of your CCR, click Generate Token > copy.
- Complete Bundle and Upload form in TrakCare:
 - Tools > Change Control > Bundle & Upload ItemSet.
 - Select changed items.
 - Enter CCR ID.
 - Paste access token.
 - Select End Change Session.
- Click Upload.



Bundle & Upload ItemSet Restrictions (Client tools 2019-Dec-12)

- CCR validates ItemSet against following restrictions.
 - CCR state must either:
 - In_BASE.
 - BASE_Pending_Peer_Review.
 - System for CCR record and TrakCare environment must match.
- Returns error after clicking upload button and ItemSet fails to upload.
- Solve issue and redo bundle and upload process.

```
Bundle/Upload ItemSet

-----
Processing list of changes to Bundle into an ItemSet
    Including /User/CTHospital/test 0816C8DD-7853-4C52-955C-532C
    1 changed items selected for inclusion
=====
Creating new Itemset ...

Start-Levl-----
LOG_BEGIN: Create() at 2020-07-06 11:29:07

Confirming that ISCU0219 is in a State that will accept ItemSets...
    Org = ISCU
    Sys = TRAK
    CCR = ISCU0219
ERROR #5001: Upload not allowed, record is in state In_PREP
LOG_END: Create() at 2020-07-06 11:29:07
--End-Levl-----

ERROR #5001: Upload not allowed, record is in state In_PREP
=====
ItemSet Summary:
    ItemSet Created:
    ItemSet File:
    Number of Items:      1
    Upload Status:
```

[View CCR](#)




Verify Submitted Changes

- After submit changes, always verify correct items listed in CCR.
 - Under Performe Details of CCR, click Submitted Changes tab.

Perforce Details

logged into Perforce as sschafer

Perforce Branch ⓘ //custom_ccrs/us/BEST/INTEROP2020/

Perforce Job ⓘ BEST0004 **Access Token** ⓘ 6DHnMd1MC1 

Transport Log [View](#) [Download](#)

Itemset Details

Submitted Changes (1)




Create Itemset

Perforce Integration




Perforce Backout

[Changelist 818](#) Check in: sschafer 2023-08-22 11:17:28 -04:00

Autosubmit to Perforce from ItemSet-BEST0004_BASE_icc-base_5.xml; ItemSet originally created by sschafer on icc-base at 2023-08-22 11:17:25

 edit //custom_ccrs/us/BEST/INTEROP2020/BASE/cls/PersonDetails/ClassList.xml#2

 add //custom_ccrs/us/BEST/INTEROP2020/BASE/cls/PersonDetails/Example.xml#1



Quiz: Bundle & Upload ItemSet

Question:

What happens when items are bundled and uploaded? Select all that apply.

- A. They are removed from the Uncommitted Queue.
- B. Changes are integrated to the TEST branch of Perforce.
- C. They become available for others to edit.
- D. They are put into an ItemSet and sent to the CCR server.
- E. The CCR server unpacks them from the ItemSet and checks them into Perforce.



Quiz: Bundle & Upload ItemSet (cont.)

Answer:

- A. They are removed from the Uncommitted Queue.
- C. They become available for others to edit.
- D. They are put into an ItemSet and sent to the CCR server.
- E. The CCR server unpacks them from the ItemSet and checks them into Perforce.

Note that E only occurs if a Perforce user does the upload; otherwise, the ItemSet sits on the CCR server in an uncommitted queue and are checked into Perforce by the next upload performed by a Perforce user.



Quiz: Bundle & Upload ItemSet

Question:

Different types of changes cannot be bundled into the same ItemSet. Different ItemSets must be used for each change type (config, layout, code tables, questionnaires, etc).

True or False?

Answer:

False. ItemSets can contain any type of changes desired (even Tier 1 and Tier 2 changes at the same time).



Quiz: Bundle & Upload ItemSet

Question:

The access token requested by the upload screen is obtained from Support. True or False?

Answer:

False. Access tokens are retrieved from the CCR to which the changes are to be uploaded via the [generate token] link in the Perforce Details pane.



Part 4: Predicting GUID Loads



Review: GUIDs

- Globally Unique Identifiers.
- Central to TCC's ability to uniquely identify configuration items across different environments.
- Derived from current system time on server when new object is created.
- Does not change when object updated.
- Not based on row id.



Review: GUIDs (cont.)

- Not based on TrakCare data.
- Random, unique and system independent.
- “Fingerprint” or address of the object.
- `<User.INCStkBin GUID="EF0832ED-770F-4AF2-8FB9-9DF8F6798005">`



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.



Quiz: GUIDs and Elements

Question:

When are GUIDs assigned to new objects?

- A. At creation time.
- B. After the initial edit under a change session.
- C. After every edit.

Answer:

- A. At creation time.



Quiz: Operational and Patient Data

Question:

ElementXML is never used to move operational or patient data
True or False?


Answer:

True. Transactional data (including operational or patient data) is not managed by TCC and should never be under change control (if it is, then it is a bug which should be reported).



GUID Predictions

- Verifies necessary GUIDs exist in target environment.
- TrakCare GUID Prediction section of CCR displayed when:
 - At least 1 item submitted.
 - At least 1 GUID service reachable from browser.
- Always predict GUID loads before performing authorizeAndStartMoveToXXXX

TrakCare GUID Prediction 

BASE environment at <https://icc.base.intersystems.com/trakcare/base/web/TC.ChangeControl.API.cls>

Predict GUID Load


TEST environment at <https://icc.test.intersystems.com/trakcare/test/web/TC.ChangeControl.API.cls>

Predict GUID Load



GUID Prediction Messages

- See ICC615 for how to resolve missing GUIDs.

TrakCare GUID Prediction 

BASE environment at <https://honeyeater.iscinternal.com/trakcare/test-base/app/web/TC.ChangeControl.API.cls>

Predict GUID Load

All required GUIDs were found on the BASE server.


TEST environment at <http://echidna/t2019/test/app/web/TC.ChangeControl.API.cls>

Predict GUID Load

LIVE environment at <https://honeyeater.iscinternal.com/trakcare/test-live/app/web/TC.ChangeControl.API.cls>

Predict GUID Load

Some GUIDs required by this CCR are missing from the LIVE environment.

 71D58DC2-0268-4415-887F-4329D4A7D67A



Quiz: GUID Predictions

Question:

How can a user determine whether missing GUID errors are likely to occur during an ItemSet load into the TEST environment?

- A. Upon transitioning into BASE_Complete state, CCR will perform a preview check for missing GUIDs in TEST.
 - B. The user must click the Predict GUID Load button for TEST after uploading all changes to their CCR.
 - C. After the ItemSet has been created, the user must click Predict ItemSet Load to see any anticipated errors exist.
-



Quiz: GUID Predictions (cont.)

Answer:

B. The user must click the Predict GUID Load button for TEST after uploading all changes to their CCR.

A is wrong because CCR only checks for merge conflicts.

C is wrong because a Predict ItemSet Load button does not exist.



Exercise ICC610-3

Upload Changes; Run GUID Predictions; Peer Review



Part 5: TrakCare ItemSet Deployment



Deploy ItemSet to TrakCare

- 3 options:
 - Deploy links from CCR.
 - Easiest, least error prone, and most common.
 - Download and from TrakCare environment UI.
 - Download from TrakCare Terminal.



How To: Use CCR ItemSet Deploy Links

1. Log into TrakCare target environment.
2. Click deploy to XXXX link.



How To: Download & Load Itemset Via TrakCare

1. Open your CCR.
2. Ensure there is an ItemSet ready to download and marked as undeployed.
3. Generate and copy access token.



How To: Download & Load Itemset Via TrakCare (cont.)

4. Log into target TrakCare environment.
5. Go to Tools > Change Control > Download & Load ItemSet.
6. Enter CCR details.
 - CCR number.
 - Access token.
7. Click List ItemSets.
8. Select the Itemset and click Download.
 - All ItemSets for this namespace for this CCR shown.
 - Choose ItemSet with most recent TimeStamp if multiple.



Exercise ICC610-4 & ICC610-5

Downloading changes and Finishing off



Quiz: Download & Load ItemSet

Question:

Into which environment would you typically download ItemSets if the environment exists? Select all that apply.

- A. BASE.
- B. TEST.
- C. UAT.
- D. LIVE.



Quiz: Download & Load ItemSet (cont.)

Answer:

B. TEST.

C. UAT.

D. LIVE.



Part 6: CCR Best Practice Guidelines



CCR Best Practice Guidelines

- Never disable change control once baseline complete.
- Use separate CCR disabled environment as playground for experimental changes.
 - Use BASE for changes that you intend to progress.



Summary

- What are the key points for this module?

