INTERSYSTEMS LEARNING SERVICES

InterSystems Change Control

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ICC 440: CCR Transport – System Topology

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Objectives

- Deploy changes to secondary Environments.
- Identify Environment workflow options.
- Discuss private, connected BASE Environments.

Part 1: Changing System Workflow

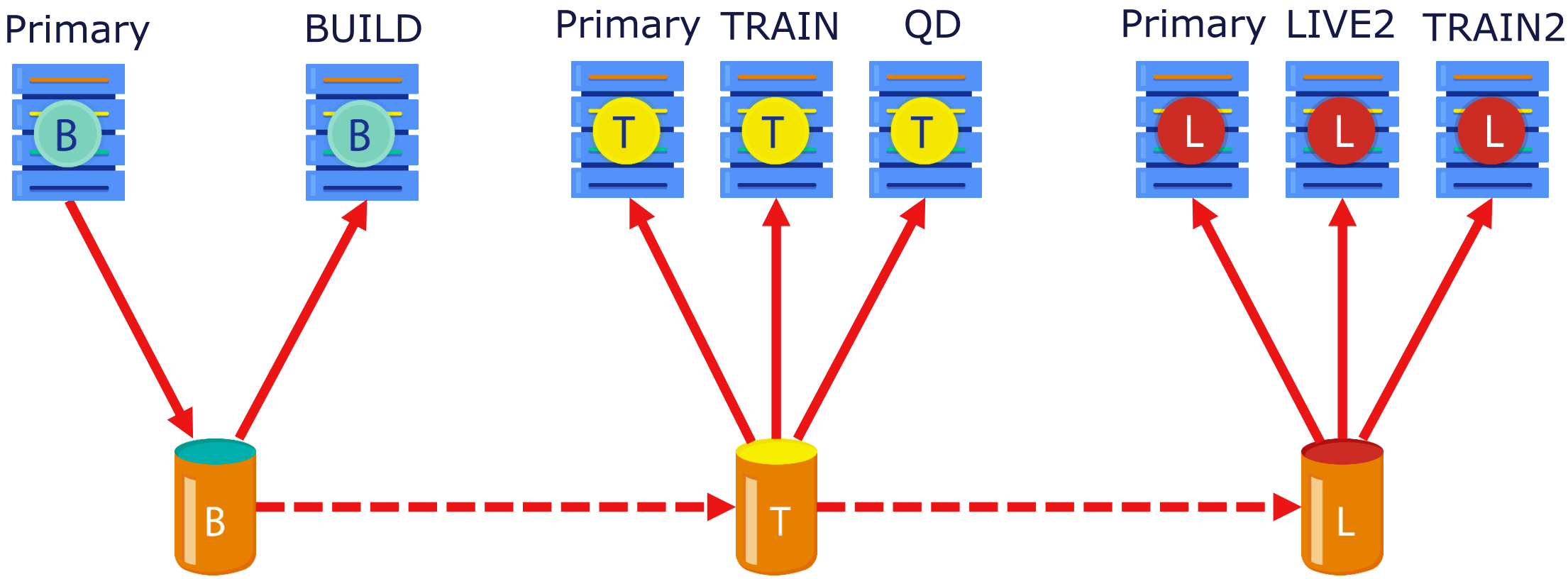
Review: Environment Workflow Options

- System workflow can be tailored to include only the Relevant environments.
- BASE-only or LIVE-only workflows are supported.
- Workflows with 2 or more environments must include BASE.
- Must update Perforce branches when changing included environments for Tier 1 and Tier 2 Systems.
  - Create new Perforce branch for new environments via integration.
    - This must be handled by an InterSystems employee.
  - Clone new environments from an existing environment.

Secondary Environments

- Additional environments to receive changes at same time as corresponding primary environment.
  - Any primary environment can have 1+ secondary environments.
- Secondary environments for BASE require deployment of ItemSet during In_BASE state.
  - Automatically created when submit changes if require ItemSet setting true.

Secondary Environments (cont.)



Secondary BASE Options

- Secondary BASE environments cannot identify whether items checked out on primary.
- Secondary environments should be either:
  - Read-only.
  - Disabled for upload.
    - Can checkout items but cannot upload changes.
  - See ICC430 for how to configure.

Secondary BASE Upload Disabled Workflow

1. Checkout item in secondary BASE to test possible change.
2. Use Undo Checkout action in secondary BASE.
   - Cannot deploy ItemSets containing items checked out in target environment.
3. Make and upload change in primary BASE.
4. Deploy ItemSet to all BASE environments.
5. Test in other BASE environments.
6. Progress CCR normally.

Deploying to Secondary Environments

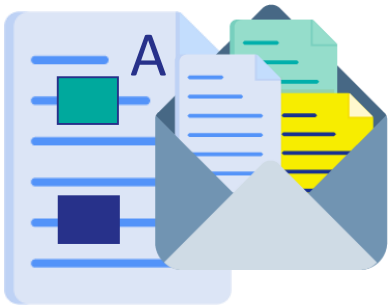
1. Make sure popups allowed by browser.
2. Log into Management Portal of all environments.
3. Click [Deploy to All Rqd] ItemSet deployment link.
   - New browser tab for primary environment and each secondary.
   - All tabs automatically close if deployment successful.
   - If not logged into environment, tab stays open with login page.
   - Error in deployment causes tab to remain open and turn red.

Secondary Environment Require ItemSet

- Be very careful if Require ItemSet system configuration setting cleared.
- Example of what could go wrong with Require ItemSet false (cleared):
  - Tier 1 CCR changes 1 line of code.
    - User accidentally does not deploy class to secondary environment because Require ItemSets is false.
  - Later, Tier 1 CCR changes a different line of code, unrelated.
    - Unknowingly deploys both changed lines to secondary environment.

Secondary Environment Require ItemSet

Primary environment



Secondary environment

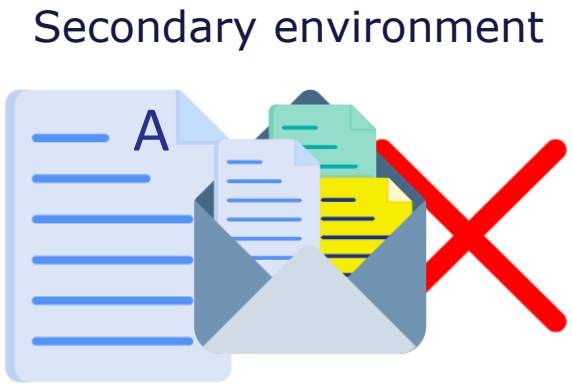
Secondary Environment Require ItemSet (cont.)

- Example of what could go wrong with Require ItemSet false (cleared):
  - Tier 1 CCR adds class definition B and edits preexisting class A to be dependent on B.
    - User accidentally does not deploy class to secondary environment because Require ItemSets is false.

Primary environment

Secondary Environment Require ItemSet (cont.)

- Example of what could go wrong with Require ItemSet false (cleared):
  - Later, Tier 1 CCR edits class definition A (unrelated to previous change).
    - Can’t deploy this change to secondary environment because class A still dependent on class B.



TRAIN Environments

- Often a project will require a TRAIN environment dedicated for End User Training.
  - This is separate from TEST to avoid collisions between testers and trainers.
  - Normally it is desirable for the configuration on TRAIN to mirror that of TEST.
- Option 1: Periodically refresh TRAIN from TEST (or LIVE).
  - Pros: Precise control over TRAIN contents and timing of updates.
  - Cons: Time intensive and long delay before new configuration available for training; requires Tech resource for refresh.

TRAIN Environments (cont.)

- Option 2: Configure TRAIN as a secondary environment for TEST.
  - Pros: TRAIN always up to date (ItemSets pushed to TRAIN and TEST simultaneously); does not require Tech resource.
  - Cons: Manual changes must be done in TEST and TRAIN; Configuration not ready for training use will be in TRAIN.

Quiz: Changing System Workflow

Question:

A system can be configured to only use TEST and LIVE environments. True or False?

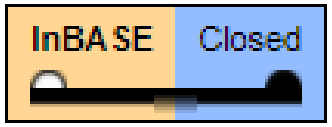
Answer: False.

Any system with 2 or more environments must include BASE.

Part 2: Implementation-Specific Workflows

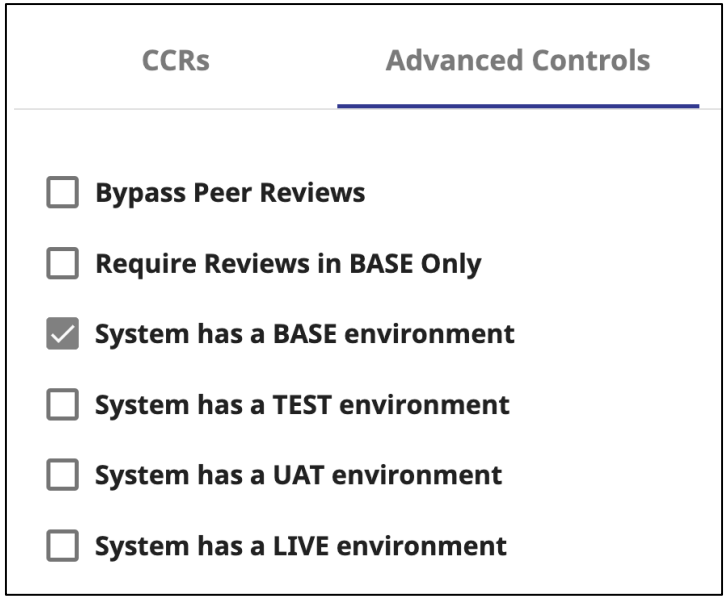
BASE-Only Workflows

- Early in implementation projects, only use BASE environment.
  - No need to promote changes to a LIVE environment.
- Allows use of:
  - CCR to document changes.
  - Perforce for roll-back or recovery.
  - An abbreviated workflow to speed up CCR lifecycle without significant risk.
    - Can be as short as only In_BASE state.
    - With peer reviews enabled, CCR progresses through BASE_Pending_Peer_Review prior to Closed.



Configure BASE-Only Workflows

- Only select BASE under Advanced Controls on System Details page.
  - Controls which Phases included in CCR progression.
  - Does not automatically configure BASE environment.



BASE/TEST Workflows

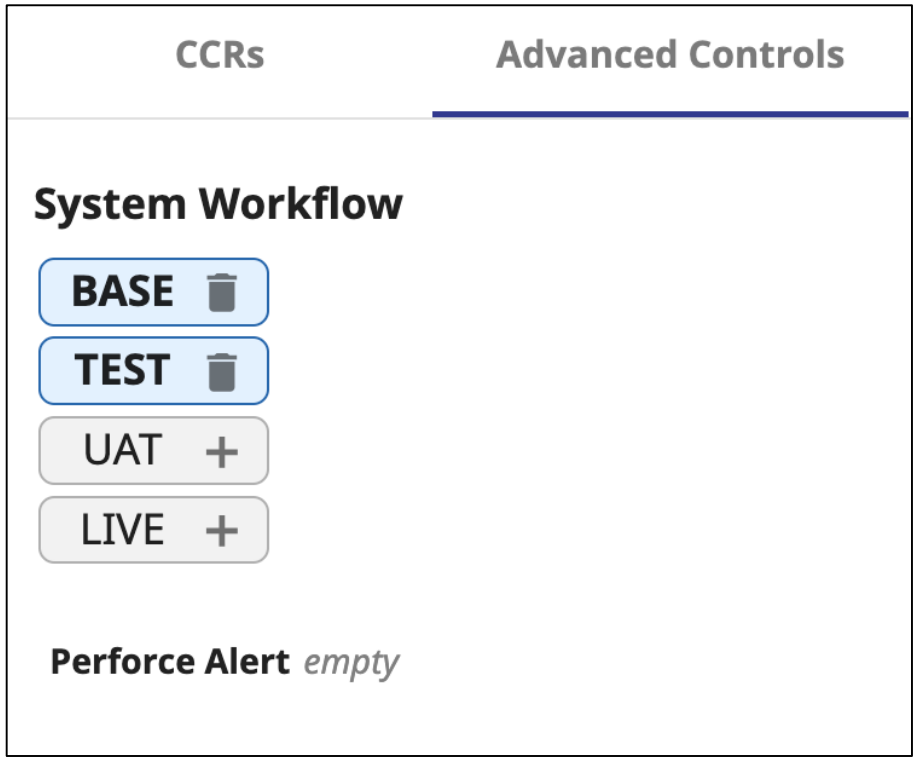
- Add TEST environment prior to project entering validation.
  - Clone BASE environment and Perforce branch.
- Promotion of changes via CCR Transport during validation steps prepares for smooth go-LIVE.

Adding Environment to Workflow

1. Progress active CCRs out of Environment prior to Environment to be added.
   - Example: When adding UAT to existing BASE > TEST > LIVE workflow, can have active CCRs in BASE and LIVE but not TEST.
2. Clone latest Environment in workflow.
   - Example: Clone TEST when adding LIVE to existing BASE > TEST workflow.
3. Add new Environment to CCR System.
   - Tier 1 & 2: have CCR automatically populate Perforce branch.
     - Must populate Perforce branch to prevent merge conflicts in future!

Adding Environment to CCR System Details

1. Go to Advanced Controls tab of System.
2. Click add icon for Environment add.
3. For Tier 1 & 2 Systems: Choose branch to copy from.
   - Default = latest in workflow.
     - Usually appropriate.
   - Note: Deletes existing items in branch.
   - Can choose Do Not Initialize Branch.
     - You must manually initialize branch in P4V.
   - Status of intialization indicated in Perforce Alert field.

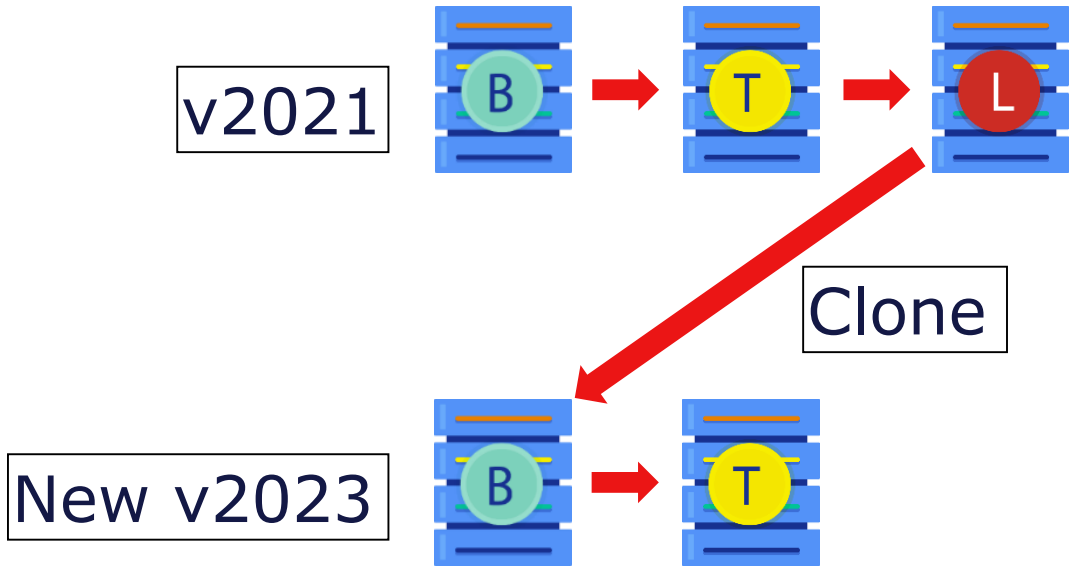


CCR for Multi-Phase Implementations

- Multi-phase implementations need to allow next phase configuration changes separately from required Business As Usual (BAU) changes.
  - Example: Upgrades.
- Next phase work should be done in its own system to reduce collisions.

CCR for Multi-Phase Implementations (cont.)

- Example change flow for an upgrade.



Quiz: Implementation-Specific Workflows

Use secondary environments for multi-phase projects.

True or False?

Answer: False.

Secondary environments contain the same code as their primary environments and only receive code pushed to the primary.

Multi-phased projects can clone a 2nd System from the BAU System in order to keep the new phase isolated.

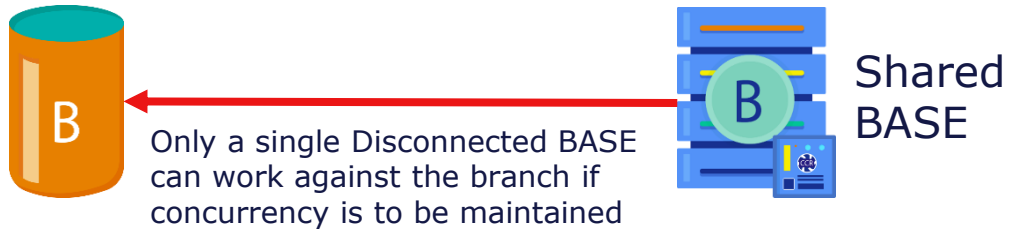
Part 3: Selecting a BASE Topology

Supported Strategies for BASE

- Concurrency of source must always be considered.
- Concurrency differs whether working in Disconnected or Connected mode.

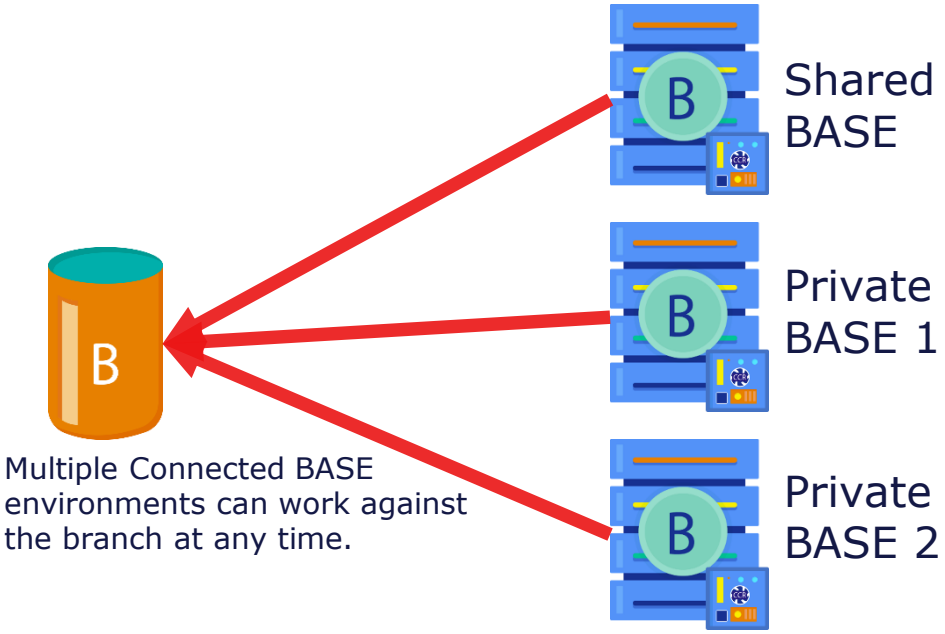
Supported Strategies for BASE (cont.)

- **Disconnected** clients manage concurrency locally via CCR Client Tools.
  - Check-out is recorded as item being Read/Write, and owner recorded in %Studio_SourceControl.Change.
  - Only **one** Disconnected BASE can be used to submit changes against the branch.
  - No way to control concurrency between multiple instances.
  - If require multiple BASE environments for functional testing (e.g., several HS Edge servers):
    - Designate one as Master for all editing.
    - Lock others to only accept changes via BASE ItemSets.



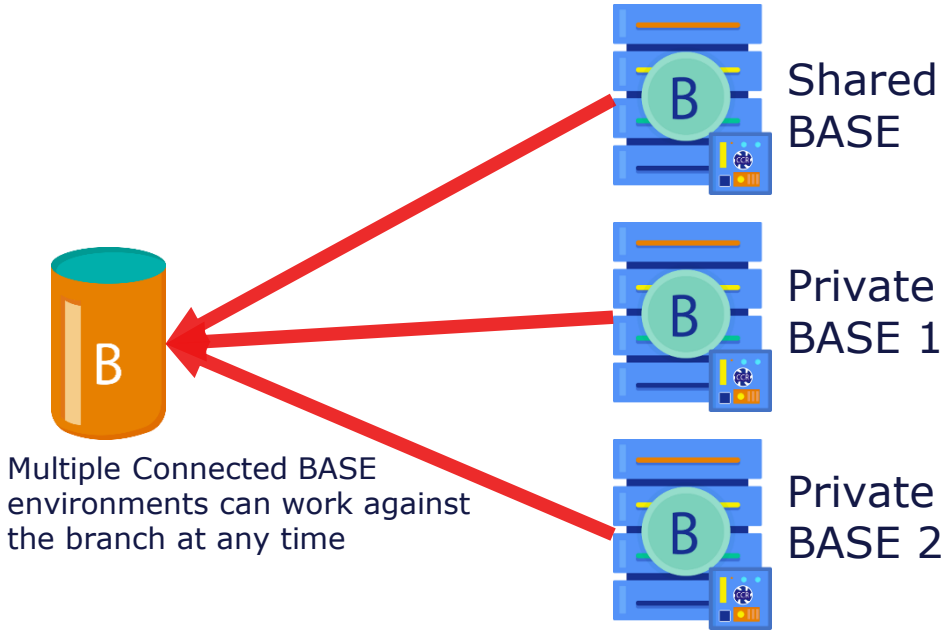
Connected Clients for BASE

- Perforce server manages concurrency.
  - Perforce tracks what version has been checked out by whom.
  - Requires merging before check-in if a newer version submitted by another user.
- Any combination of the following is supported:
  - Shared BASE used by multiple developers.
    - Only one user can check out a file on shared BASE at a time.
    - That file can be checked out by other Connected BASEs.
  - Private BASE used by a single developer.



Connected Clients for BASE (cont.)

- If multiple Connected BASE environments, ensure all BASEs receive all changes.
  - Scripted CCR Refresh can be used, or…
  - ItemSet deployment to all BASE environments.



Quiz: Selecting a BASE Topology

Question:

To protect data integrity in Connected mode, you should only have 1 shared BASE environment. True or False?

Answer: False.

In Connected mode you can safely have more than 1 BASE environment because the Perforce server can maintain concurrency.

In Disconnected mode, you should only have 1 shared BASE environment.

Summary

- What are they key points for this module?