



***Upgrading to Central Server Mode
Telelogic Change 5.1-02***

Before using this information, be sure to read the general information under Appendix: Notices on page 12.

This edition applies to version 5.1-02, Telelogic Change, and to all subsequent releases and modifications until otherwise indicated in new editions.

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This document describes how to upgrade from a Telelogic® Change™ stand-alone server to a Telelogic Change Central Server™. This includes selecting a central CR database, and migrating your existing CRs into the central CR database.

A central server offers many benefits, but is not right for all users. Make sure you understand all the caveats under the *Who Should Not Use Central Server* section before committing to a central server. If you do decide to upgrade to a central server, know that there is no way to revert to a stand-alone server.

2 Who Should Not Use Central Server

2.1 Users of Certain Nested Queries

In central server mode, CRs and tasks are stored in separate databases, which impact the types of queries you can run on the different databases. Knowing which objects are created where will help you understand what queries you can still rely on.

Your central CR database contains only CRs. As a result, you cannot use query strings that bridge the relationship from CRs to tasks. For example, the following query string would not return accurate results there: `has_associated_task(cvtype='task' and release='1.0')`.

Queries in your development databases are not as limited. Though CRs are not created in development databases, ghost CRs are. Ghost CRs primarily exist to allow CR-based Update Members queries from Telelogic Synergy. When a task is associated to a CR, a ghost CR is created in all the development databases where that task is found; the ghost is directly related to the task to support most nested queries in those databases.

A ghost CR is a non-modifiable copy of a CR, with a subset of its real CR's attributes, which act as a stand-in for the real CR. Telelogic Change automatically maintains ghost CRs so that ghost CRs always reflect their corresponding real CRs. The attributes that are created on them can be controlled through the Telelogic Change Admin interface and should normally be agreed upon with your Telelogic Synergy build managers. With ghost CRs, a Telelogic Synergy Task Folder, in a development database, could still rely on a query like `is_associated_task_of(cvtype='problem' and release='1.0' and crstatus='resolved')`. Ghost CRs allow you to continue to use most CR-to-task nested query strings for CR-based Update Members, but be aware of their limitations: ghost CRs only maintain the attributes they have been told to sync, though you can sync as many attributes as your need for your queries; they do not maintain any relationships beyond `associated_task`; they only exist for CRs that have associated tasks. Besides their use in Update Members, ghost CRs can also be queried for through the Telelogic® Synergy™ CLI, though not edited there.

Most other ways of traversing between CRs and associated tasks will continue to work as always, including Queries and Reports using report formats with associated tasks, Relationship Reports to associated tasks, the associated tasks control on Show Forms, and the Change Requests Explorer in Telelogic Synergy.

2.2 Existing Users of Telelogic Change for DOORS Interface

Telelogic Change for DOORS Interface™ does not support transferring CRs between databases. If you are already using this product, you will *not* be able to migrate your existing CRs to a central CR database. If you do not currently use it, you can start using it after moving to a central server.

2.3 Users of the CreateMiscObject API

The misc objects created by this API cannot be transferred to other databases. If you have used this API to create misc objects related to CRs then you must first delete those objects or unrelate them from your CRs, otherwise you will *not* be able to migrate your existing CRs to a central CR database.

2.4 Users with Uncommon CR Relationships

When you migrate your existing CRs, the CRs *and* their directly related objects will all be transferred to your central CR database. If any of those objects need to remain in their current development databases, you must *not* migrate. Normally, CRs are only directly related to other CRs, attachments, and tasks; this setup is perfectly safe to migrate. But, if you have created any direct relationships from CRs to other objects, those objects would be incorrectly transferred. Examples of *unsupported* relationships that will not work in a central server include:

- CRs directly related to source files (e.g., Java, C++, Perl, etc.). Source files should only be related to tasks.
- CRs directly related to projects or directories.
- CRs directly related to baselines. (Note that Telelogic Synergy has features to show which CRs are included in a baseline. These features do not rely on relationships and will continue to work in central server mode.)
- Relationships from non-CRs to CRs.

3 Selecting a Central CR Database

In a central server, all your CRs will live in a single, central CR database. This lets you view, modify and report on CRs without needing to switch databases. This database will be completely dedicated to CRs. Your tasks and objects will be kept in separate development databases, but Telelogic Change will still allow you to associate CRs in your central CR database to tasks in any of the your development databases. Before installing Telelogic Change, you should decide which database will be your central CR database. You will pick it during the installation process and cannot change it later.

In most cases you will want to unpack a new, empty database to be your central CR database. This ensures that there are no development objects—like tasks or source files—in the database. You can then transfer all your existing CRs into that database with the CR migrate feature described below.

Alternatively, you can designate an existing, non-empty database as your central CR database. This is recommended only if you already have a database *completely* dedicated to CRs, e.g., if you initially

submit all CRs into one database and use Telelogic Synergy Distributed (also called DCM) to transfer them to other databases before associating tasks. If you have any tasks or objects—anything other than CRs and their attachments—in that initial database, they may become inaccessible or damaged in a central server. The advantage of using an existing database is that it may speed up migration if most of your CRs are already modifiable in that database.

4 How Using a Central Server Changes Your Data

4.1 Database Specific Reports, Queries and Preferences

Queries, reports, report formats, and preferences are no longer database specific. You will see the same sets of these items no matter which development database you log in to. Existing items in your development databases will automatically be transferred to your central CR database; you do not need to explicitly migrate them.

If there are name conflicts between items in different databases, the conflicting items will automatically be renamed. For example, if one development database used to contain Report A and Report B, and another contained Report B and Report C, after upgrading to a central server your central CR database will contain Report A, Report B, Report B (2), and Report C.

4.2 Change Requests

If you are converting an existing database into to your central CR database, nothing will happen to the CRs there.

CRs in your development databases will not initially be visible in a central server. To make them visible, you will need to migrate them to the central CR database, as described later in this document. Migrating CRs from a development database has the following effects:

- *Transfers all CRs from a development database to the central CR database.* All CRs that are local to the development database will be transferred to the central CR database and made local there (their `modifiable_in` attributes will be changed). In some cases, non-modifiable copies of the CRs will remain in the development database, but you should generally assume that CRs will be deleted from that development database. Non-local CRs are skipped; you must migrate their development databases separately to also transfer them.
- *Transfers all CR attachments and other directly related objects to the central CR database.* If you have any objects associated to CRs that should not be transferred to the central CR database, you should not migrate (see *Who Should Not Use Central Server* above).
- *Preserves your CR-to-CR relationships.* These relationships will remain intact in your central CR database. If you have CRs related to non-local CRs—because you previously used DCM them—the non-local CRs will not be migrated yet and they will not yet show up as related CRs. These CRs and relationships will show up if you later migrate the development databases that they are local to.

- *Preserves CR-to-task associations.* Associated tasks and their associated objects will remain in the development database, but the relationships from CRs to tasks are preserved. After a CR with associated tasks has been migrated you will still be able to see its original associated tasks.

5 Planning Your Upgrade

5.1 Remote Servers

A Telelogic Change remote server acts as a proxy between a central server and remote development databases. A remote server is needed when you want databases that are hosted by different Telelogic Synergy servers to be available to your central server—each remote server can potentially be paired with a different Telelogic Synergy server. By registering your remote servers with your central server, you give it access to all of the development databases those remote servers can access. Remote servers are only a way for Telelogic Change to access more development databases; users will still only need to log in to the central server, and all your CRs will still be stored in your central CR database.

When planning your upgrade, you should assume that you will need a remote server for each additional Telelogic Synergy server you have. Remote servers can be installed on any host that can be reached from the central server over HTTP or HTTPS.

5.2 Space for Your CRs

Before you upgrade, run the `ccm cr_summary` Telelogic Synergy command for each development database you will be migrating into your central CR database. This command shows you how many objects will be migrated to your central CR database, and about how much space that database will require. Knowing this, ensure there is enough free space in the following locations:

- *The Telelogic Change installation area.*
While migrating CRs, each of your Telelogic Changes installations will need a minimum of 500 MB of free space. If the underlying Telelogic Synergy installations are on different file systems, there should be 500 MB of free space on those as well. This space is used to hold temporary copies of CRs while migrating and should be big enough to accommodate about one hundred CRs, plus their tasks and attachments, at once.
- *Database server space.*
Your database server holds information about CRs and their related objects. To figure out how much space is needed, look at the total object count from your `cr_summary` output. If you are migrating multiple databases, sum the totals from each database. For every 1,000 objects in your total, you will need about 5 MB of database server space. For example, if your total is 11,500 objects, round up to 12,000; you will need about 60 MB ($12,000/1000 \times 5 \text{ MB} = 60 \text{ MB}$). You can increase your database server space with the `ccmsrv expand` command in your Telelogic Synergy installation.
- *File system space.*
The file system where your central CR database is located (e.g.,

/vol/ccmdb/central_cr_db) needs enough free space to accommodate all the attachments you will be migrating. The total size (MB) of your attachments is listed in your `cm_summary` output. If you are migrating multiple databases, sum the sizes from each database.

It is best to overestimate how much space you will need to ensure the CR migrate will complete and also to allow for future growth of your central CR database.

5.3 Existing DCM Transfer Sets

In central server mode, you should not use DCM to transfer CRs between databases. Remove CRs from all of your DCM transfer sets in Telelogic Synergy by setting the **CR Scope** of your transfer sets to **None** and deleting their **CR Query** strings. You may want to also remove the `modifiable_in` attribute (Work In DB) from the show and transition forms of your existing, stand-alone Telelogic Change servers to prevent users from trying to transfer CRs before a CR migrate; or simply remove the databases-to-be-migrated from those servers.

It is best to receive any outstanding DCM transfer packages before you migrate your CRs to ensure that no CRs are in transit between databases when you perform a CR migrate. If you later realize that you missed some CRs that were in transit, you can always migrate the database again to pick up the remaining CRs.

6 Upgrading to a Telelogic Change Central Server

To upgrade to a central server you will need to install a new copy of Telelogic Change. If you will continue to run your previous server in stand-alone mode, remember to remove any databases from that server before adding them to your central server. This document gives you an overview of the steps necessary to install and setup a central server cluster. For more detailed installation instructions, consult the standard Telelogic Change Help.

6.1 Prerequisites

- *Telelogic Synergy 7.0-01*
Upgrade is supported only when running on top of Telelogic Synergy 7.0-01 or newer. If you will be running remote Telelogic Change servers, they all must be running against this version of Telelogic Synergy as well.
- *Databases are DCM initialized and DCM compatible with each other.*
Your central CR database and the development databases you will be using with it must all be DCM initialized with unique database IDs. Additionally, you can only migrate databases that are DCM compatible with your central CR database. For example, your development databases must have the same case setting, i.e., LOWER or PRESERVE. See the Telelogic Synergy DCM help for more details.

- *System clocks are synchronized.* If you are migrating from a remote Telelogic Change server on a different host than the central server, the system clocks of the two hosts must be synchronized.

6.2 Installation and Setup

1. *Install Telelogic Change 5.1 or newer.*
During installation, select **Central Server** when prompted.
For your database, enter the path to the central CR database you selected in the *Selecting a Central CR Database* section above. You will not be able to change this database later.
2. *Optionally install Telelogic Change Remote Servers.*
If you will be accessing any of your development databases via remote servers, install them as well. If not, skip to step 4.
3. *Connect your central server and remote servers.*
On each remote server, log in to the Admin interface. Click the **Administration** link in the panel. Navigate to the **Server** tab, then the **Central Server** sub-tab. Click **Register** and enter the HTTP or HTTPS address of your central server.
4. *Install patch 5.1-02.*
Patch 5.1-02 is required for all upgrade and CR migrate features. Install this patch on your central server and any remote servers. Be sure to restart each server after the patch is installed.
5. *Add development databases.*
Log in to your central server. Click the **Administration** link in the panel, then navigate to the **Server** tab. Add your development databases that are local to the central server. Repeat this for each remote server and the development databases that are local to them.

At this point, you will have a functional central server connected to its development databases, and, optionally, the development databases of your remote servers. You will be able to submit new CRs and associate them to tasks in any of the development servers, but you will not yet see any pre-existing CRs from those development databases. If you want to access those CRs, migrate them into your central CR database using the steps below.

7 Performing a CR Migrate

Before starting this procedure, note that CR migrate can take a very long time to complete; hours or even days for very large databases. Also, any DCM packages received while CR migrate is in-progress can dramatically extend this time.

1. *Back up your databases.*
Be sure to have a full backup of your central CR database and the development database you want to migrate.
2. *Log in to the Admin interface.*
If you have one or more remote servers, log in to the server that manages the development database you wish to migrate from.

3. *Open the CR Migrate window.*
Click the **Administration** link in the panel. Click the **General** tab. In the **Properties** sub-tab, click the **CR Migrate** button.
4. *Select the database to migrate.*
All of your development databases managed by this server are listed in a drop-down menu. Select the database containing the CRs you want to migrate.
5. *Optionally enter an e-mail address.*
Since migration can take a long time, you can request notification of its completion. If your central server is configured to send email through an SMTP server, you can have Telelogic Change e-mail you when the migrate finishes. Check **E-Mail When Done**. Type your e-mail address if it is not already correct.
6. *Start the migrate.*
Click **Migrate**. If no errors occur, the CR migrate will continue on its own without any further intervention.

During the migrate, you can see its progress in the CR Migrate window. Closing the window will not stop the migrate. You can reopen the CR Migrate window at any time to check its current progress. If you do wish to stop the migrate, click **Stop**. You can continue the migrate later by migrating the same database again—Telelogic Change will resume from where you last stopped. A migrate can also be resumed again if it fails midway due to a network problem or other error.

Users can continue to use Telelogic Change as usual during a CR migrate. Both the central CR database and the development database can remain enabled. As CRs are migrated into the central CR database, they will immediately be available for users to view and edit—even before the entire migrate is complete. The newest CRs are transferred first.

After a CR migrate has finished, you should optimize your central CR database by running the `ccmdb update_statistics` command. You can also run this command in the middle of a CR migrate: if you suspect the migrate is getting slower as it progresses, running this command in the background may improve performance.

8 Troubleshooting

8.1 What If CR Migrate Fails?

If CR migrate fails because of a transient problem (e.g., a network failure, a server being restarted, etc.) then you can simply re-migrate the failed database. Telelogic Change will pick up from where the failure occurred. CRs that were already migrated will be preserved.

If you encounter a failure that is not self-correcting then you can consult your log files for more details. CR migrate uses Telelogic Synergy DCM technology to migrate your CRs, and the Synergy and DCM related logs will contain the most detailed information in many cases. The `ccm_ui.log` files for your Telelogic Change servers will often describe failures in enough detail to resolve them. For even more details, including listings of every migrated CR, see the detailed DCM logs normally

stored in the `dcm/log` directories of your databases. Depending on when the failure occurred, you may need to consult the logs in either your development or central CR database.

8.2 What If Not All My Databases Are DCM Compatible?

A few DCM compatibility checks can be disabled during CR migrate, specifically the checks for compatible version delimiters and release delimiters. If you are already running in a DCM environment where you know these checks can be safely ignored, you can disable them by creating the following file in your Telelogic Change central server installation area:

```
cs_app/synergy/WEB-INF/wsconfig/system/app.user.properties
```

Then add the following lines as necessary:

```
migrate_ignore_version_delimiter = true  
migrate_ignore_release_delimiter = true
```

You must restart Telelogic Change for these changes to take affect.

9 Appendix: Notices

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