



Dimensions CM

Git Client User's Guide

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Chapter 1

Overview

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About the Dimensions CM Git Client

The Dimensions CM Git Client brings central control and security to teams using Git, allowing them to store code in a CM stream while enjoying the familiar Git user experience. Streams can be shared by developers using Git or Dimensions CM.

The Dimensions CM Git Client is an extension to Git allowing the use of the standard Git command line, Integrated Development Environments (IDEs), and other tools using Dimensions CM as the remote repository. For example, you can:

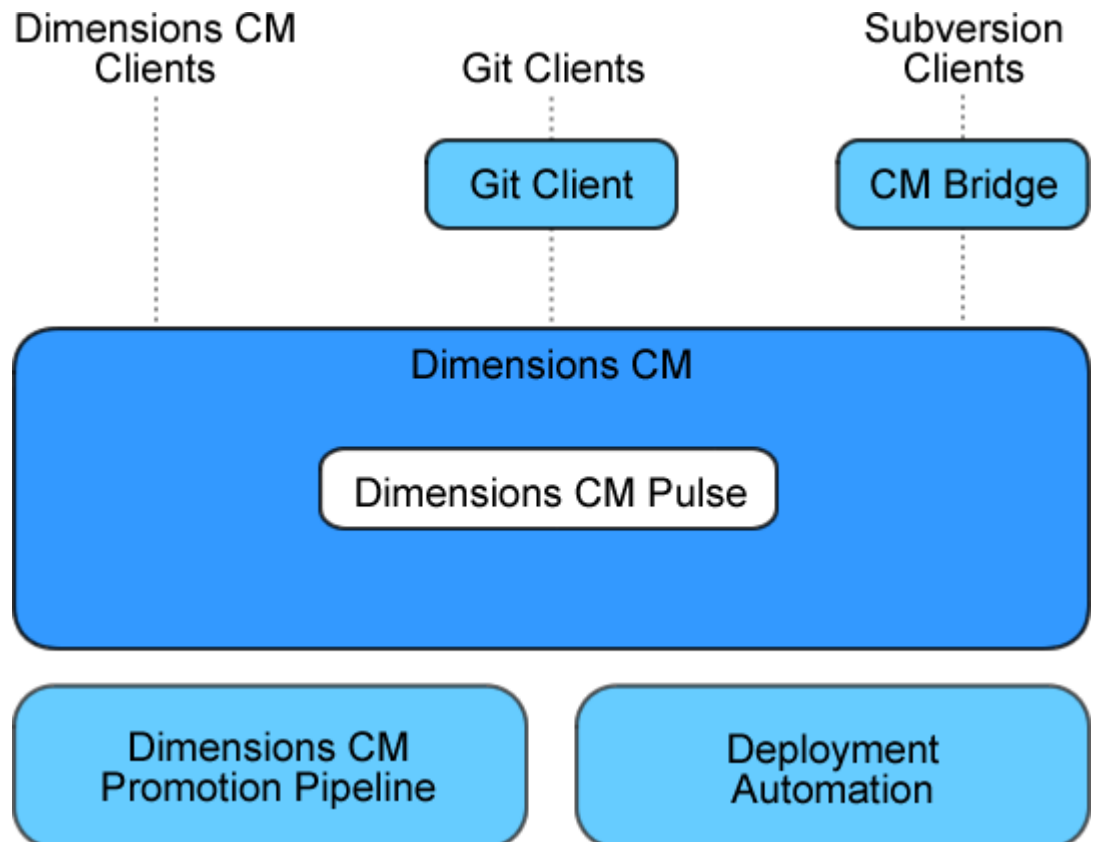
- Use the `clone` command to clone streams from Dimensions CM and populate a local Git repository.
- Use the `fetch` and `pull` commands to update a local Git repository with changes from Dimensions CM. When you pull changes, each CM changeset becomes a Git commit.
- Use Git to branch, commit, and merge.
- Use the `push` command to push the changes from a Git repository back into Dimensions CM. Each Git commit becomes a Dimensions CM changeset including the user ID and timestamp.

Git users are automatically registered as Dimensions CM users when their commits are pushed.

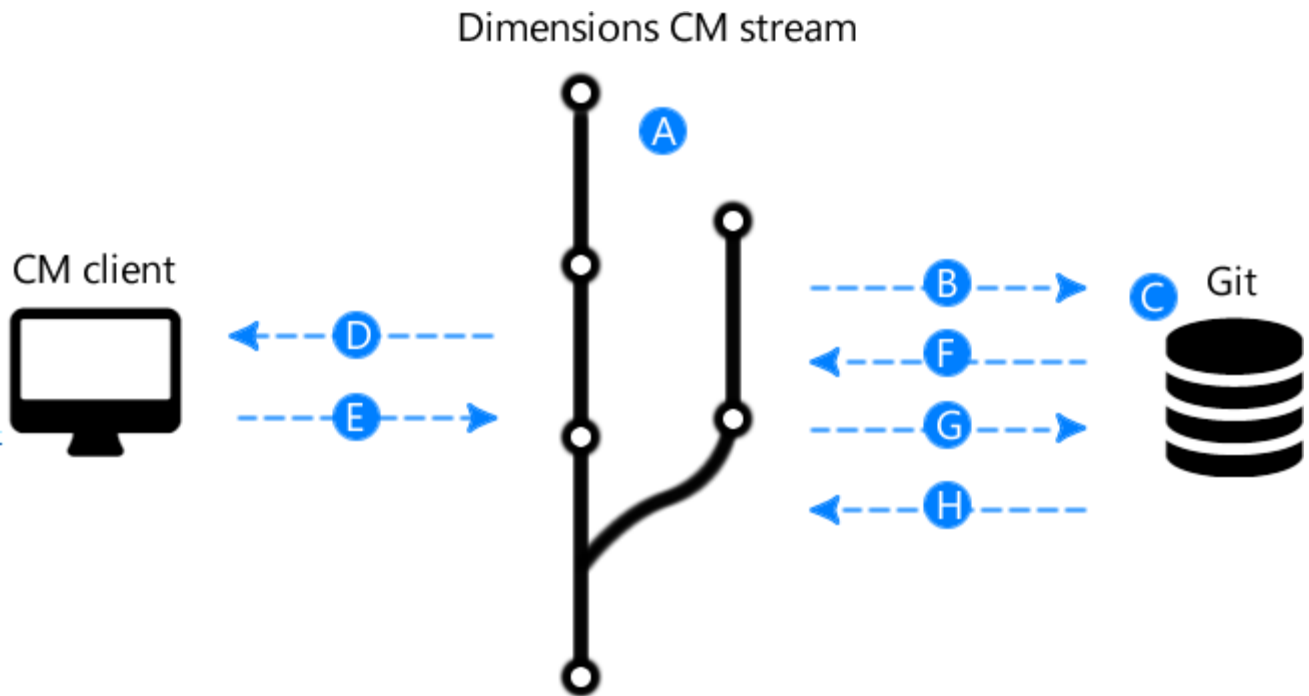
Architecture

Dimensions CM is an enterprise SCCM (Software Configuration and Change Management) repository that securely stores code and artifacts from teams using Git, Subversion, and Dimensions CM. Additional features include:

- Peer review and continuous inspection with Micro Focus Pulse.
- Automation of the path to production using the Promotion Pipeline and Deployment Automation.



Typical Workflow



- A** A development stream is under the central control of Dimensions CM.
- B** A Git developer clones the stream into their local Git repository.
- C** The Git developer branches, commits, and works as normal with their Git repository.
- D** Another developer is using a Dimensions CM client. They update their local CM controlled work area from the same stream.
- E** The second developer works on the code and delivers their changes to Dimensions CM.
- F** The Git developer tries to deliver their changes. The deliver fails as there are changes in the stream that they need to merge.
- G** The Git developer pulls the changes and merges them into their local Git repository.
- H** The Git developer can now successfully deliver their changes to Dimensions CM.

Chapter 2

Using the Git Client

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Storing Credentials

The Dimensions CM Git Client requires user credentials to perform some operations, for example, to log into a CM server. Optionally, use one of the following methods to securely store your credentials so that you do not have to re-enter them:

- Short term: cache credentials in memory.
- Long term: store credentials using a configurable third-party application that integrates with the secure storage provided by your operating system.

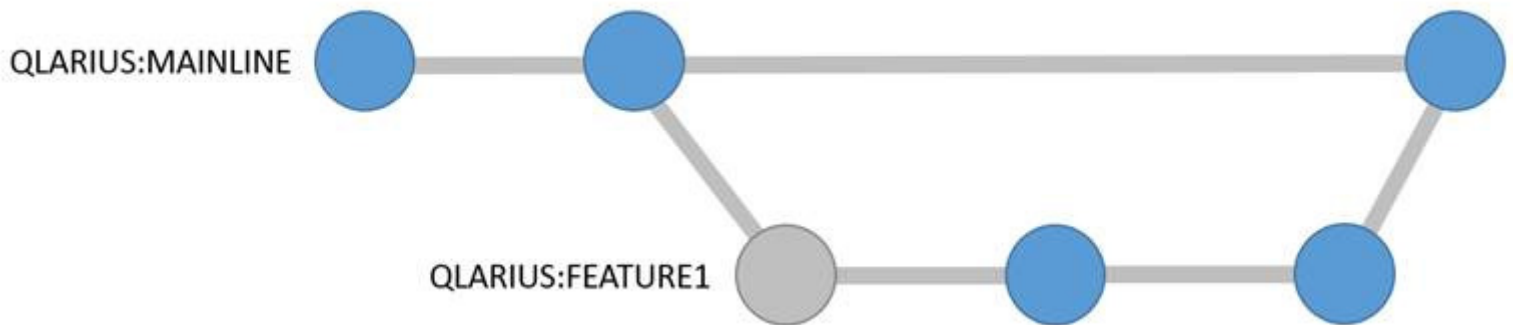
For details see this Git web page: <https://git-scm.com/docs/gitcredentials>

Branch and Merging

The Git Client allows you to branch and merge using standard Git functionality. Git supports many different [branching models and types of merge](#).

Branching

When a stream is cloned from Dimensions CM it becomes a branch in your local git repository. New local branches pushed back into Dimensions CM become new streams. For example, assume you have the stream QLARIUS:MAINLINE with another stream branched from it, QLARIUS:FEATURE1.



You can clone these streams into your local git repository using this command:

```
git clone dimensions://servername/cm_typical@dim14/qlarius/mainline/* .
```

The master branch in Git contains the files from the stream QLARIUS:MAINLINE stream. There is also a branch called feature1 containing the files from QLARIUS:FEATURE1. You can work on these branches in Git just like any other Git repository. For example, switch to the feature1 branch:

```
git checkout feature1
```

Make code changes, such as edit files and add new files, and commit them locally:

```
git commit -m "made some local changes"
```

Push that commit to Dimensions CM into the QLARIUS:FEATURE1 stream:

```
git push
```

Creating New Streams

You can create branches locally and push them as new streams to Dimensions CM. Continuing from the example above, assume that you want to create a new branch from the mainline called feature2. First, switch to the master branch:

```
git checkout master
```

Next, create the new local branch:

```
git checkout -b feature2
```

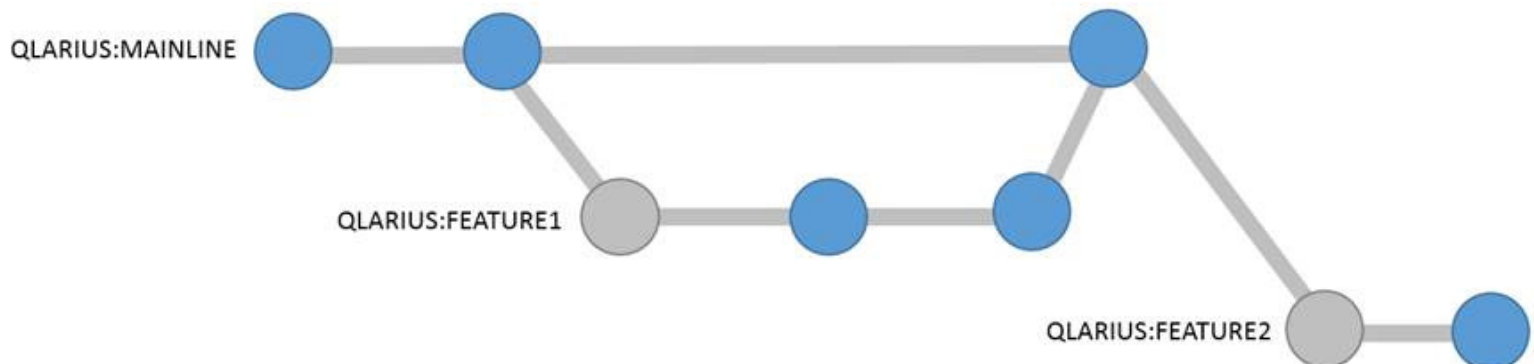
Make changes in the new local branch and commit them:

```
git commit -m "made some changes in a new branch"
```

Push the new branch to Dimensions CM, which creates a new stream. You must push and set the upstream reference to the name of the new stream:

```
git push --set-upstream origin feature2
```

This creates a new stream QLARIUS:FEATURE2 and delivers the changes to it. The streams in Dimensions CM now look like this:



NOTE Streams created by the Dimensions CM Git Client are topic streams, which use pull requests for reviewing and merging changes. For details about topic streams see the *Dimensions CM User's Guide*.

Merging

You can merge branches in your local Git repository and push the results of the merge back to Dimensions CM. Continuing from the example above, make changes on the master branch and feature2 branch, merge, and push. First, switch to the feature2 branch:

```
git checkout feature2
```

Make changes and commit them:

```
git commit -m "made feature2 changes"
```

Switch to the master branch:

```
git checkout master
```

Make changes and commit them:

```
git commit -m "made mainline changes"
```

Merge feature2 into the mainline using Git:

```
git merge feature2
```

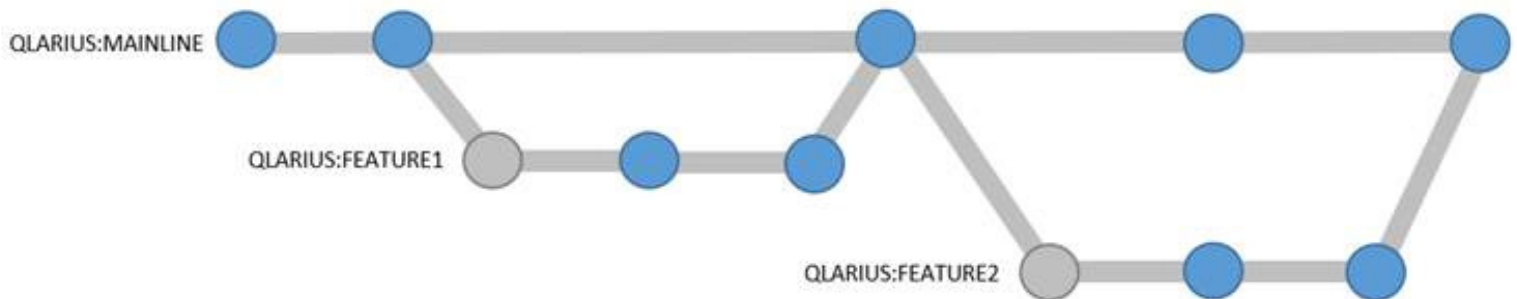
Resolve any merge conflicts and commit:

```
git commit -m "merged feature2 into mainline"
```

Push all the branches back to Dimensions CM:

```
git push --all origin
```

The new changes are delivered to both streams and the streams are merged. The streams in Dimensions CM now look this:



NOTE If you perform the merge in Dimensions CM it will be recorded in Git next time you pull or clone the streams.

Managing Requests

You can specify one or more Dimensions CM requests when you commit changes to your local Git repository. Specify the requests IDs in the following format in the commit comment (separate request IDs with a comma):

```
git commit -m "[<request ID>,<request ID>] <your commit message>"
```

Command Reference

Git Client Command Line

The Dimensions CM Git Client uses the standard Git command line:

```
git <command> <URL>
```

where:

<command>

Specifies a Git command, see the online reference: <https://git-scm.com/docs>

<URL>

Specifies the Dimensions CM server and database connection in this format:

```
dimensions://username:password@hostname/database@connection/product  
/stream/[directory]
```

[directory] specifies an optional path to a directory.

If you are cloning a specific stream version on Linux or using Git Bash, add quotes to the URL, for example:

```
git clone 'dimensions://dmsys:dmsys_test@myserver/cm_typical@dim12  
/PROD/ST1;0'
```

clone

```
git clone <URL> [directory]
```

Description

Creates a new Git repository from a Dimensions CM stream.

Examples

```
git clone dimensions://cmserver/cm_typical@dim14/qlarius/savings  
C:\temp\savings
```

This example clones the stream SAVINGS in the product QLARIUS from the Dimensions CM server cmserver and the base database cm_typical@DIM14. The content of the stream is cloned into a new Git repository in the folder C:\temp\savings. The command should prompt for credentials when first used.

```
git clone dimensions://dinesh:<password>@cmserver/cm_typical@dim14/  
qlarius/savings/Documents C:\temp\savings
```

This example clones the folder Documents from the stream SAVINGS in the product QLARIUS using the Dimensions CM server cmserver and the base database cm_typical@DIM14. The contents of the folder in the stream are cloned into a new Git repository in the local folder C:\temp\savings. The command is performed as the user dinesh.

```
git clone dimensions://cmserver/cm_typical@dim14/qlarius/  
mainline_java_str/* C:\temp\work
```

This example clones the stream MAINLINE_JAVA_STR and all of its child streams in the product QLARIUS using the Dimensions CM server cmserver and the base database cm_typical@DIM14. The contents of the stream MAINLINE_JAVA_STR are cloned into a new Git repository in the local folder C:\temp\work. Each child stream is cloned into a separate branch in the Git repository.

fetch

```
git fetch
```

Description

Fetches the latest code from a Dimensions CM stream into the FETCH_HEAD in the local Git repository.

Example

```
git fetch --all
```

This example fetches any changes made in Dimensions CM into the corresponding branches of the local Git repository. The `--all` option performs the fetch in all branches that correspond to Dimensions CM Streams rather than just the current branch. Each new changeset that is fetched becomes a commit in the local Git repository.

pull

```
git pull
```

Description

Pulls the latest code from a Dimensions CM stream and merges the changes into the Git master branch.

Example

```
git pull --strategy=ours
```

This example pulls any changes made in Dimensions CM and merges them into the local Git repository. If conflicts are found during the pull, the `--strategy=ours` option ensures that the local changes are preserved and not merged or overwritten by the remote changes.

push

```
git push
```

Description

Pushes changes to a Dimensions CM stream from a Git repository.

NOTE Only the tip changeset generated by a `git push` operation has a peer review and executes expert chains.

Examples

```
git push
```

This example pushes changes from the current branch of the local Git repository into Dimensions CM. Each commit that is pushed becomes a Dimensions CM changeset in the corresponding stream.

```
git push --set-upstream origin newstream
```

This example creates a new Dimensions CM topic stream called `newstream` and pushes changes from the current branch of the local Git repository into that stream.