



HelixCore

P4Merge User Guide

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How to use this guide

This guide tells you how to use P4Merge, the Perforce visual diff tool. It is intended for anyone using P4Merge to view the differences between files across time and across codelines. P4Merge, as its name implies, also enables you to merge differing files into one.

Feedback

How can we improve this manual? Email us at manual@perforce.com.

Other documentation

See <https://www.perforce.com/support/self-service-resources/documentation>.

Syntax conventions

Helix documentation uses the following syntax conventions to describe command line syntax.

Notation	Meaning
literal	Must be used in the command exactly as shown.
<i>italics</i>	A parameter for which you must supply specific information. For example, for a <i>serverid</i> parameter, supply the ID of the server.
[-f]	The enclosed elements are optional. Omit the brackets when you compose the command.
...	<ul style="list-style-type: none">Repeats as much as needed:<ul style="list-style-type: none">alias-name[[\$(arg1)... \$(argn)]=transformationRecursive for all directory levels:<ul style="list-style-type: none">clone perforce:1666 //depot/main/p4... ~/local-repos/mainp4 repos -e //gra.../rep...
<i>element1</i> <i>element2</i>	Either <i>element1</i> or <i>element2</i> is required.

Diffing and merging files with P4Merge



P4Merge is a visual diff tool that displays the differences between file versions and helps you to resolve conflicts and merge competing versions into one.

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Diffing text files

In its diff mode, P4Merge enables you to compare two text files to locate differences. (P4Merge can also [diff image files](#) and, if your Helix Server administrator has enabled it, [Microsoft Word .docx files](#).)




The purple icon () is associated with the first file you selected, and purple bands highlight text that is in the first file but not the second file. The green icon () is associated with the second file you selected, and green bands highlight text that is in the second file but not the first file.

To display diffs in a single pane, go to **View > Single Pane Diff Layout**. In single-pane mode, deleted text is shown using strikethrough text. By default, P4Merge displays diffs in a side-by-side layout.


To toggle the display of line numbers, click .

Navigate Diffs

To move forward and back through individual differences, or to locate specific text or lines, click the toolbar buttons listed below.

Go to next/previous diff	
Find text	
Go to line number	

Set Preferences

To configure P4Merge settings to display or suppress differences in white space and line endings, click  or choose **File > Comparison Method**. To configure other settings, go to **Edit > Preferences** (Windows) or **P4Merge > Preferences** (Mac).

Note

If you are comparing Unicode files, selection of the correct character set is essential. If you select the wrong character set, P4Merge cannot correctly diff files.

Diffing images

To diff two different image files: Right-click an image file, choose **Diff Against** and specify the other image, or (in the Depot, Workspace, or Files pane,) drop one image file's icon on another.

To diff two revisions of the same image file: Right-click the image file and choose **File History**. In the File History pane, drop one of the desired revisions on the other revision.

P4V launches P4Merge, displaying the differences between the specified images. You can display image diffs side by side or overlaid.

To enlarge or reduce the displayed images, use the zoom sliders or choose the desired display option from the **View** menu.

To highlight differences, check **Highlight Differences** and use the adjacent slider to increase or decrease sensitivity. P4Merge highlights identical areas in gray and differences in yellow.

To blend or separate overlaid images, use the vertical slider: to blend the images equally, center the slider. **To increase the amount of an image used in the composite,** move the slider toward that image.

You can also view image revisions sequentially in Time-lapse View. For more information, see [Viewing Image File History with Time-lapse View](#) in the *P4V User Guide*.

You can diff the following image file types:

- BMP
- GIF
- JPG, JPEG
- PNG
- PBM
- PGM
- PPM
- TIFF

- XBM
- XPM

Diffing Microsoft Word files

If your Helix Server administrator has enabled it, you can diff Microsoft Word **.docx** files in a P4Merge window using a rich comparison tool that shows differences in text, images, formats, styles, tables, headers, footers, and many other objects.

There are two **.docx** compare modes, **Parent-Child** and **Sibling**:

- **Parent-Child** mode is used to show how a file has changed from one version to another; this mode is set when you select **Diff Against Have Revision** in P4V.
- **Sibling** mode is used when there is no direct relationship between the files being compared; it is set, for example, when you drag and drop **.docx** files.

For more information about how to select files in P4V for diffing, see [Diffing Files and Folders](#) in the *P4V User Guide*.

Merging files

If you and another user have edited the same file, Helix Server requires you to resolve those changes. One way of resolving is by merging your changes with the other changes using P4Merge. P4Merge enables you to compare two text files with a common base file to locate differences and to select the text that you want in the merged result file. The purple icon (🟡) is associated with the file that another user edited (*[italic] their file*), and purple bands highlight text that unique to that file. The green icon (🟢) is associated with file that you edited (*[italic] your file*), and green bands highlight text that is in the second file but not the first file. The *[italic] base file* is indicated by the yellow icon (🟡) and yellow highlighting indicates text that is in the base file but not in the other files.

In the top half of the window, P4Merge displays the base file surrounded by the two changed versions of the revision being merged. In the bottom half of the window, P4Merge displays the merge results file, where you select or enter the text that you want to check in. Make your changes as described below, and be sure to save them before exiting P4Merge.

Navigate Diffs

To move forward and back through individual differences, or to locate specific text or lines, click the toolbar buttons listed below.

Go to next/previous diff



Find text



Go to line number

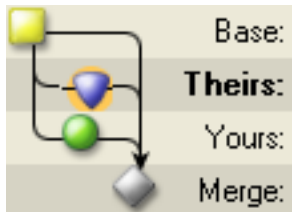


Merge Text

To merge files, you can either choose text from one of the files or enter changes directly into the merge results file.

Choose Text Chunks

To choose the entire contents of a file, click the corresponding icon in the merge diagram, as shown below.






To choose a single chunk of text from a set of diffs, click the corresponding button to the right of the chunk, as shown below.

```
# if defined(_SEQUENT_) || defined(__DGUX__) || defined(M_XENIX)
# define PORTAR 1
# endif
# if defined(_SEQUENT_) || defined(__DGUX__) || \
    defined(M_XENIX) || defined(__ISC)
# define PORTAR 1
# endif
# if defined(_SEQUENT_) || defined(__DGUX__) || defined(M_XENIX)
# define PORTAR 1
# endif
```


The buttons indicate the origin of the text and the way it was changed, as follows:

	Base file text
	Same in theirs and base.
	Same in yours and base.
	Text added to their file. Not in yours or base.
	Text added to your file. Not in theirs or base.
	Text deleted from their file.
	Text deleted from your file.

	Same in yours and theirs, different from base.
	Added to both yours and theirs.
	Deleted from both yours and theirs.

Note that these are toggle buttons: Click once to select the corresponding text, click again to deselect it.

If P4Merge encounters too many changes to display all the required buttons, it displays this button:

 ***. Click it to view the details.

Edit Text

To edit the text in the merge result file, click on the text in the bottom pane and enter your changes.

Manually-edited text is displayed with a gray highlight, like the middle chunk in the following example:

```


}
# else /* AIAMAG - RS6000 A
void
file_archscan( archive, func
char *archive;
void (*func) ();
{
    struct fl_hdr fl_hdr;

    struct {
        struct arx_hdr hdr;
        char pad[ 256 ];
    } ar_hdr ;

char buf[ MAXJPATH ];

```

Set Preferences

To configure **P4Merge settings** to display or suppress differences in white space and line endings, click  or choose **File > Comparison Method**. To configure other settings, choose **Edit > Preferences** (Windows) or **P4Merge > Preferences** (Mac).

To toggle the display of line numbers, click .

Note

If you are comparing Unicode files, selection of the correct character set is essential. If you select the

wrong character set, P4Merge cannot correctly compare files.

Glossary

A

access level

A permission assigned to a user to control which commands the user can execute. See also the 'protections' entry in this glossary and the 'p4 protect' command in the P4 Command Reference.

admin access

An access level that gives the user permission to privileged commands, usually super privileges.

APC

The Alternative PHP Cache, a free, open, and robust framework for caching and optimizing PHP intermediate code.

archive

1. For replication, versioned files (as opposed to database metadata). 2. For the 'p4 archive' command, a special depot in which to copy the server data (ersioned files and metadata).

atomic change transaction

Grouping operations affecting a number of files in a single transaction. If all operations in the transaction succeed, all the files are updated. If any operation in the transaction fails, none of the files are updated.

avatar

A visual representation of a Swarm user or group. Avatars are used in Swarm to show involvement in or ownership of projects, groups, changelists, reviews, comments, etc. See also the "Gravatar" entry in this glossary.

B

base

The file revision, in conjunction with the source revision, used to help determine what integration changes should be applied to the target revision.

binary file type

A Helix Server file type assigned to a non-text file. By default, the contents of each revision are stored in full, and file revision is stored in compressed format.

branch

(noun) A set of related files that exist at a specific location in the Perforce depot as a result of being copied to that location, as opposed to being added to that location. A group of related files is often referred to as a codeline. (verb) To create a codeline by copying another codeline with the 'p4 integrate', 'p4 copy', or 'p4 populate' command.

branch form

The form that appears when you use the 'p4 branch' command to create or modify a branch specification.

branch mapping

Specifies how a branch is to be created or integrated by defining the location, the files, and the exclusions of the original codeline and the target codeline. The branch mapping is used by the integration process to create and update branches.

branch view

A specification of the branching relationship between two codelines in the depot. Each branch view has a unique name and defines how files are mapped from the originating codeline to the target codeline. This is the same as branch mapping.

broker

Helix Broker, a server process that intercepts commands to the Helix Server and is able to run scripts on the commands before sending them to the Helix Server.

C

change review

The process of sending email to users who have registered their interest in changelists that include specified files in the depot.

changelist

A list of files, their version numbers, the changes made to the files, and a description of the changes made. A changelist is the basic unit of versioned work in Helix Server. The changes specified in the

changelist are not stored in the depot until the changelist is submitted to the depot. See also atomic change transaction.

changelist form

The form that appears when you modify a changelist using the 'p4 change' command.

changelist number

The unique numeric identifier of a changelist. By default, changelists are sequential.

check in

To submit a file to the Helix Server depot.

check out

To designate one or more files for edit.

checkpoint

A backup copy of the underlying metadata at a particular moment in time. A checkpoint can recreate db.user, db.protect, and other db.* files. See also metadata.

classic depot

A repository of Helix Server files that is not streams-based. The default depot name is depot. See also default depot and stream depot.

client form

The form you use to define a client workspace, such as with the 'p4 client' or 'p4 workspace' commands.

client name

A name that uniquely identifies the current client workspace. Client workspaces, labels, and branch specifications cannot share the same name.

client root

The topmost (root) directory of a client workspace. If two or more client workspaces are located on one machine, they should not share a client root directory.

client side

The right-hand side of a mapping within a client view, specifying where the corresponding depot files are located in the client workspace.

client workspace

Directories on your machine where you work on file revisions that are managed by Helix Server. By default, this name is set to the name of the machine on which your client workspace is located, but it can be overridden. Client workspaces, labels, and branch specifications cannot share the same name.

code review

A process in Helix Swarm by which other developers can see your code, provide feedback, and approve or reject your changes.

codeline

A set of files that evolve collectively. One codeline can be branched from another, allowing each set of files to evolve separately.

comment

Feedback provided in Helix Swarm on a changelist, review, job, or a file within a changelist or review.

commit server

A server that is part of an edge/commit system that processes submitted files (checkins), global workspaces, and promoted shelves.

conflict

1. A situation where two users open the same file for edit. One user submits the file, after which the other user cannot submit unless the file is resolved. 2. A resolve where the same line is changed when merging one file into another. This type of conflict occurs when the comparison of two files to a base yields different results, indicating that the files have been changed in different ways. In this case, the merge cannot be done automatically and must be resolved manually. See file conflict.

copy up

A Helix Server best practice to copy (and not merge) changes from less stable lines to more stable lines. See also merge.

counter

A numeric variable used to track variables such as changelists, checkpoints, and reviews.

CSRF

Cross-Site Request Forgery, a form of web-based attack that exploits the trust that a site has in a user's web browser.

D

default changelist

The changelist used by a file add, edit, or delete, unless a numbered changelist is specified. A default pending changelist is created automatically when a file is opened for edit.

deleted file

In Helix Server, a file with its head revision marked as deleted. Older revisions of the file are still available. In Helix Server, a deleted file is simply another revision of the file.

delta

The differences between two files.

depot

A file repository hosted on the server. A depot is the top-level unit of storage for versioned files (depot files or source files) within a Helix Versioning Engine. It contains all versions of all files ever submitted to the depot. There can be multiple depots on a single installation.

depot root

The topmost (root) directory for a depot.

depot side

The left side of any client view mapping, specifying the location of files in a depot.

depot syntax

Helix Server syntax for specifying the location of files in the depot. Depot syntax begins with: `//depot/`

diff

(noun) A set of lines that do not match when two files are compared. A conflict is a pair of unequal diffs between each of two files and a base. (verb) To compare the contents of files or file revisions. See also conflict.

donor file

The file from which changes are taken when propagating changes from one file to another.

E

edge server

A replica server that is part of an edge/commit system that is able to process most read/write commands, including 'p4 integrate', and also deliver versioned files (depot files).

exclusionary access

A permission that denies access to the specified files.

exclusionary mapping

A view mapping that excludes specific files or directories.

F

file conflict

In a three-way file merge, a situation in which two revisions of a file differ from each other and from their base file. Also, an attempt to submit a file that is not an edit of the head revision of the file in the depot, which typically occurs when another user opens the file for edit after you have opened the file for edit.

file pattern

Helix Server command line syntax that enables you to specify files using wildcards.

file repository

The master copy of all files, which is shared by all users. In Helix Server, this is called the depot.

file revision

A specific version of a file within the depot. Each revision is assigned a number, in sequence. Any revision can be accessed in the depot by its revision number, preceded by a pound sign (#), for example testfile#3.

file tree

All the subdirectories and files under a given root directory.

file type

An attribute that determines how Helix Server stores and diffs a particular file. Examples of file types are text and binary.

fix

A job that has been closed in a changelist.

form

A screen displayed by certain Helix Server commands. For example, you use the change form to enter comments about a particular changelist to verify the affected files.

forwarding replica

A replica server that can process read-only commands and deliver versioned files (depot files). One or more replicat servers can significantly improve performance by offloading some of the master server load. In many cases, a forwarding replica can become a disaster recovery server.

G

Git Fusion

A Perforce product that integrates Git with Helix, offering enterprise-ready Git repository management, and workflows that allow Git and Helix Server users to collaborate on the same projects using their preferred tools.

graph depot

A depot of type graph that is used to store Git repos in the Helix Server. See also Helix4Git.

Gravatar

gravatar.com is a third party service that you can subscribe to, gravatar enables you to upload an image that you can use in Swarm. When configured, Swarm will attempt to fetch your avatar from gravatar.com and use it within Swarm. If your avatar is not found on gravatar.com, Swarm will use one of its own default avatars to represent your activity. See also the "avatar" entry in this glossary.

group

A feature in Helix Server that makes it easier to manage permissions for multiple users.

H

have list

The list of file revisions currently in the client workspace.

head revision

The most recent revision of a file within the depot. Because file revisions are numbered sequentially, this revision is the highest-numbered revision of that file.

Helix Server

The Helix Server depot and metadata; also, the program that manages the depot and metadata, also called Helix Versioning Engine.

Helix TeamHub

A Perforce management platform for code and artifact repository. TeamHub offers built-in support for Git, SVN, Mercurial, Maven, and more.

Helix4Git

Perforce solution for teams using Git. Helix4Git offers both speed and scalability and supports hybrid environments consisting of Git repositories and 'classic' Helix Server depots.

I

iconv

iconv is a PHP extension that performs character set conversion, and is an interface to the GNU libiconv library.

integrate

To compare two sets of files (for example, two codeline branches) and determine which changes in one set apply to the other, determine if the changes have already been propagated, and propagate any outstanding changes from one set to another.

J

job

A user-defined unit of work tracked by Helix Server. The job template determines what information is tracked. The template can be modified by the Helix Server system administrator. A job describes work to be done, such as a bug fix. Associating a job with a changelist records which changes fixed the bug.

job daemon

A job daemon is a program that checks the Helix Server machine daily to determine if any jobs are open. If so, the daemon sends an email message to interested users, informing them the number of jobs in each category, the severity of each job, and more.

job specification

A form describing the fields and possible values for each job stored in the Helix Server machine.

job view

A syntax used for searching Helix Server jobs.

journal

A file containing a record of every change made to the Helix Server's metadata since the time of the last checkpoint. This file grows as each Helix Server transaction is logged. The file should be automatically truncated and renamed into a numbered journal when a checkpoint is taken.

journal rotation

The process of renaming the current journal to a numbered journal file.

journaling

The process of recording changes made to the Helix Server's metadata.

L

label

A named list of user-specified file revisions.

label view

The view that specifies which filenames in the depot can be stored in a particular label.

lazy copy

A method used by Helix Server to make internal copies of files without duplicating file content in the depot. A lazy copy points to the original versioned file (depot file). Lazy copies minimize the consumption of disk space by storing references to the original file instead of copies of the file.

license file

A file that ensures that the number of Helix Server users on your site does not exceed the number for which you have paid.

list access

A protection level that enables you to run reporting commands but prevents access to the contents of files.

local depot

Any depot located on the currently specified Helix Server.

local syntax

The syntax for specifying a filename that is specific to an operating system.

lock

1. A file lock that prevents other clients from submitting the locked file. Files are unlocked with the 'p4 unlock' command or by submitting the changelist that contains the locked file. 2. A database lock that prevents another process from modifying the database db.* file.

log

Error output from the Helix Server. To specify a log file, set the P4LOG environment variable or use the p4d -L flag when starting the service.

M

mapping

A single line in a view, consisting of a left side and a right side that specify the correspondences between files in the depot and files in a client, label, or branch. See also workspace view, branch view, and label view.

MDS checksum

The method used by Helix Server to verify the integrity of versioned files (depot files).

merge

1. To create new files from existing files, preserving their ancestry (branching). 2. To propagate changes from one set of files to another. 3. The process of combining the contents of two conflicting file revisions into a single file, typically using a merge tool like P4Merge.

merge file

A file generated by the Helix Server from two conflicting file revisions.

metadata

The data stored by the Helix Server that describes the files in the depot, the current state of client workspaces, protections, users, labels, and branches. Metadata includes all the data stored in the Perforce service except for the actual contents of the files.

modification time or modtime

The time a file was last changed.

MPM

Multi-Processing Module, a component of the Apache web server that is responsible for binding to network ports, accepting requests, and dispatch operations to handle the request.

N

nonexistent revision

A completely empty revision of any file. Syncing to a nonexistent revision of a file removes it from your workspace. An empty file revision created by deleting a file and the #none revision specifier are examples of nonexistent file revisions.

numbered changelist

A pending changelist to which Helix Server has assigned a number.

O

opened file

A file that you are changing in your client workspace that is checked out. If the file is not checked out, opening it in the file system does not mean anything to the versioning engineer.

owner

The Helix Server user who created a particular client, branch, or label.

P

p4

1. The Helix Versioning Engine command line program. 2. The command you issue to execute commands from the operating system command line.

p4d

The program that runs the Helix Server; p4d manages depot files and metadata.

P4PHP

The PHP interface to the Helix API, which enables you to write PHP code that interacts with a Helix Server machine.

PECL

PHP Extension Community Library, a library of extensions that can be added to PHP to improve and extend its functionality.

pending changelist

A changelist that has not been submitted.

project

In Helix Swarm, a group of Helix Server users who are working together on a specific codebase, defined by one or more branches of code, along with options for a job filter, automated test

integration, and automated deployment.

protections

The permissions stored in the Helix Server's protections table.

proxy server

A Helix Server that stores versioned files. A proxy server does not perform any commands. It serves versioned files to Helix Server clients.

R

RCS format

Revision Control System format. Used for storing revisions of text files in versioned files (depot files). RCS format uses reverse delta encoding for file storage. Helix Server uses RCS format to store text files. See also reverse delta storage.

read access

A protection level that enables you to read the contents of files managed by Helix Server but not make any changes.

remote depot

A depot located on another Helix Server accessed by the current Helix Server.

replica

A Helix Server that contains a full or partial copy of metadata from a master Helix Server. Replica servers are typically updated every second to stay synchronized with the master server.

repo

A graph depot contains one or more repos, and each repo contains files from Git users.

resolve

The process of resolving a file after the file is resolved and before it is submitted.

resolve

The process you use to manage the differences between two revisions of a file. You can choose to resolve conflicts by selecting the source or target file to be submitted, by merging the contents of

conflicting files, or by making additional changes.

reverse delta storage

The method that Helix Server uses to store revisions of text files. Helix Server stores the changes between each revision and its previous revision, plus the full text of the head revision.

revert

To discard the changes you have made to a file in the client workspace before a submit.

review access

A special protections level that includes read and list accesses and grants permission to run the p4 review command.

review daemon

A review daemon is a program that periodically checks the Helix Server machine to determine if any changelists have been submitted. If so, the daemon sends an email message to users who have subscribed to any of the files included in those changelists, informing them of changes in files they are interested in.

revision number

A number indicating which revision of the file is being referred to, typically designated with a pound sign (#).

revision range

A range of revision numbers for a specified file, specified as the low and high end of the range. For example, myfile#5,7 specifies revisions 5 through 7 of myfile.

revision specification

A suffix to a filename that specifies a particular revision of that file. Revision specifiers can be revision numbers, a revision range, change numbers, label names, date/time specifications, or client names.

RPM

RPM Package Manager is a tool, and package format, for managing the installation, updates, and removal of software packages for Linux distributions such as Red Hat Enterprise Linux, the Fedora Project, and the CentOS Project.

S

server data

The combination of server metadata (the Helix Server database) and the depot files (your organization's versioned source code and binary assets).

server root

The topmost directory in which p4d stores its metadata (db.* files) and all versioned files (depot files or source files). To specify the server root, set the P4ROOT environment variable or use the p4d -r flag.

service

In the Helix Versioning Engine, the shared versioning service that responds to requests from Helix Server client applications. The Helix Server (p4d) maintains depot files and metadata describing the files and also tracks the state of client workspaces.

shelve

The process of temporarily storing files in the Helix Server without checking in a changelist.

status

For a changelist, a value that indicates whether the changelist is new, pending, or submitted. For a job, a value that indicates whether the job is open, closed, or suspended. You can customize job statuses. For the 'p4 status' command, by default the files opened and the files that need to be reconciled.

stream

A branch with additional intelligence that determines what changes should be propagated and in what order they should be propagated.

stream depot

A depot used with streams and stream clients.

submit

To send a pending changelist into the Helix Server depot for processing.

super access

An access level that gives the user permission to run every Helix Server command, including commands that set protections, install triggers, or shut down the service for maintenance.

symlink file type

A Helix Server file type assigned to symbolic links. On platforms that do not support symbolic links, symlink files appear as small text files.

sync

To copy a file revision (or set of file revisions) from the Helix Server depot to a client workspace.

T

target file

The file that receives the changes from the donor file when you integrate changes between two codelines.

text file type

Helix Server file type assigned to a file that contains only ASCII text, including Unicode text. See also binary file type.

theirs

The revision in the depot with which the client file (your file) is merged when you resolve a file conflict. When you are working with branched files, theirs is the donor file.

three-way merge

The process of combining three file revisions. During a three-way merge, you can identify where conflicting changes have occurred and specify how you want to resolve the conflicts.

trigger

A script automatically invoked by Helix Server when various conditions are met. (See "Helix Versioning Engine Administrator Guide: Fundamentals" on "Using triggers to customize behavior")

two-way merge

The process of combining two file revisions. In a two-way merge, you can see differences between the files.

typemap

A table in Helix Server in which you assign file types to files.

U

user

The identifier that Helix Server uses to determine who is performing an operation.

V

versioned file

Source files stored in the Helix Server depot, including one or more revisions. Also known as a depot file or source file. Versioned files typically use the naming convention 'filenamev' or '1.changelist.gz'.

view

A description of the relationship between two sets of files. See workspace view, label view, branch view.

W

wildcard

A special character used to match other characters in strings. The following wildcards are available in Helix Server: * matches anything except a slash; ... matches anything including slashes; %%0 through %%9 is used for parameter substitution in views.

workspace

See client workspace.

workspace view

A set of mappings that specifies the correspondence between file locations in the depot and the client workspace.

write access

A protection level that enables you to run commands that alter the contents of files in the depot. Write access includes read and list accesses.

X

XSS

Cross-Site Scripting, a form of web-based attack that injects malicious code into a user's web browser.

Y

yours

The edited version of a file in your client workspace when you resolve a file. Also, the target file when you integrate a branched file.

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