

Helix GitSwarm vs. Atlassian Bitbucket



Why Switch to GitSwarm Now?

Git has been a remarkable success in many ways, but users often have to augment its command line tools to make their workflows more productive. With no formal standards available, organizations have a variety of tools, each with their own specialties and limitations.

Atlassian Bitbucket Server (formerly known as “Stash” – Atlassian recently merged their repository management tools and it is unclear what effect this will have on their users) is one of several “Git management” tools available, although it is not a complete toolset. Additional tools need to be purchased to achieve a reasonable level of capability. Even then, however Bitbucket does not address the fundamental issues with Git for anything beyond relatively small or simple projects.

Any user of Bitbucket, or anyone considering it, should evaluate their workflows and toolset needs – now and for the next several years. After all, products under development may be the most valuable intellectual property an organization possesses, and its designers and developers are the most valuable personnel. Teams would be advised to not “make do” or compromise with such crucial assets.

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Summary

Atlassian Bitbucket provides a subset of the tools needed to address some of the limitations of Git; however, it does not address important needs for modern, high-performance, high-quality development, including:

- Lack of integrated work item tracking (separately purchased add-on tool needed)
- Lack of analytics/visualizations (separately purchased add-on tool needed)
- No file-level access control
- Cannot store large assets in the repository
- Limited options for deployment for large or distributed teams

Perforce Helix offers a compelling solution that is a more complete Git management toolset, including support for the largest files, security down to the individual file level, immutable audit trails, hugely scalable repositories and much more. Legendary support is available for Git users as well as those using Helix clients. Our Professional Services teams was decades of experience deploying version management solutions in the most demanding environments, and are available to ensure your switch to Perforce Helix is as smooth as possible.

Comparison Matrix

| Basic Capabilities | Atlassian Bitbucket | GitSwarm + Helix |
|--------------------|---|--|
| Repository | Git repos only with the standard limitations on file and repo size, limited security options, and rewritable history. | Git or Helix for local repositories, Helix for shared repositories with unlimited scalability and rich security. |
| Workflow | Clone, fork, and collaborate via merge requests. | Clone, fork, and collaborate via merge requests alongside file locking for digital assets that cannot be merged. |
| Visualizations | Limited and only with commercial add-ons | Progress graphs, branching diagrams, unified activity feed, revision graph, and timeline view. |

| Advanced Capabilities | Atlassian Bitbucket | GitSwarm + Helix |
|-----------------------|---|---|
| Narrow Cloning | N/A | Clone tiny, Git-sized slices of huge, Helix-sized assets. |
| Synchronization | N/A | Automated mirroring from GitSwarm to Helix, whose federated architecture synchronizes around the world. |
| Scalability | Bitbucket Data Center clustering at additional cost. No federation options. | Helix is highly scalable with clustering and federated server options. |
| Reliability | Bitbucket Data Center at additional cost | Helix clusters have a free high-availability option. |
| Traceability | Destructible history | Immutable history, full auditing and regulatory compliance. |
| Threat Detection | N/A | Behavioral analytics to detect if intellectual property is at risk (add-on option). |

Repository

GitSwarm

Depending on your project needs you can use Git or Helix for your master repository. With a Helix master, you have unlimited scalability, file-level access control, immutable history and more. Automatic mirroring between Git and Helix masters ensures all contributors can access all the assets using their preferred workflows and tools.

Bitbucket

Can use Git only as a repository format, which imposes limits on the practical sizes of repos, file sizes and limited security options.

Why Should I Care?

Git has practical limitations in size and scope: Repositories that exceed 1GB tend to take a long time to clone and determine the status of local files, which slows developers. Repositories grow because of the depth of history, the number of files in the project and the size of the files. A Git management system that stores only Git repositories cannot change these limitations.

Git has no built-in security, authorization and protection against destructive history rewrite. Instead, this must be provided by the Git management system.

Workflow

GitSwarm

Clone, fork and merge request workflows. Optional file locking for content that can't easily be merged.

Bitbucket

Clone, fork and merge request workflows.

Why Should I Care?

Modern development often includes digital assets in form of binary files such as graphics, media or output from a continuous integration system as well as plain text such as source code. These binary files often cannot be merged and therefore require a different workflow than DVCS; a centralized approach with file locking is a better choice for these files. The result is a hybrid approach suited to contributors' needs.

A solution that can offer a hybrid approach without sacrificing a unified single repository with global visibility and security is best suited to the task.

Visualizations

GitSwarm

Graphical overviews of progress including progress graphs, branching diagrams, unified activity feed, revision graph, and timeline view.

Bitbucket

Add-on products required.

Why Should I Care?

Visual tools help project managers and team leads to determine the state of the project, and developers to track changes to individual contributions. This can greatly speed up bug fixes and resource management, and will help to determine the readiness of a project towards the next milestone.

Narrow Cloning

GitSwarm

Clone tiny, Git-sized slices of huge, Helix-sized assets. Let contributors concentrate on just the files they need.

Bitbucket

Not available.

Why Should I Care?

Large Git repositories (especially so-called “monorepos”) are very successful for allowing easy sharing and code reuse. However, they become unmanageable with the limits of Git repositories and hinder productivity through large cloning and status-update wait times. In the majority of cases users do not actually need access to the whole repository – only a subset to accomplish their work. The ability to clone narrowly is not available in native Git, which makes it impossible to work on a small subset of the total repository without losing the ability to see global changes and assess their impact on the whole project.

Synchronization

GitSwarm

Automated mirroring from GitSwarm to Helix, whose federated architecture synchronizes around the world.

Bitbucket

Not available.

Why Should I Care?

Federating Helix servers allows for intelligent distribution of content. For example, a remote team that mostly performs “pulls” from the master to perform QA tasks would benefit from a different configuration to a remote development team. Combining the power of Perforce Helix with the flexibility and ubiquity of Git gives developers the best of both worlds.

Scalability

GitSwarm

Helix is highly scalable with clustering and federated server options built into the server platform.

Bitbucket

Bitbucket Data Center clustering as an extra cost option. No federation options.

Why Should I Care?

In addition to needing the flexibility to manage how assets are distributed across a global WAN scalability within a data center is used to ensure high performance as projects and teams become larger and more complex. If this is provided only as an add-on option cost and complexity increases.

Reliability

GitSwarm

Helix clusters have a free high-availability option enabling automated failover if a server should suffer an outage.

Bitbucket

Bitbucket Data Center clustering as an extra cost option.

Why Should I Care?

The central repository contains the intellectual property of the entire enterprise. If that repository cannot be accessed because of a failure, developers cannot push and share their changes anymore, and Continuous Integration engines cease to work, delaying projects.

Traceability

GitSwarm

Immutable history, full auditing and regulatory compliance held within the repository.

Bitbucket

Destructible history.

Why Should I Care?

For most enterprises, auditing and regulatory burdens require that the file history be immutable and all access be logged. Git is inherently open and fragile, prone to overwriting through pushed changes. Some Git management solutions offer optional protection for production branches, but are very limited with respect to access control, logging and auditing.

Threat Detection

GitSwarm

Behavioral analytics learn normal behavior and detect if intellectual property is at risk from insiders that have access to the repository but may be causing risks deliberately or accidentally. (Add-on option)

Bitbucket

Not available.

Why Should I Care?

IP theft is a growing problem in the knowledge-based industry. The greatest danger often comes not from the outside, where access is restricted by firewalls and other security measures, but from the inside. A careless or even malicious user who has access to sensitive content can cause tremendous harm to the enterprise, which is often not even aware that intellectual property has left the premises or has no way of proving it.

Conclusion

Helix GitSwarm provides a compelling alternative to Atlassian Bitbucket. Even if projects appear to be small or simple today, over time they will no doubt grow and become more complicated. At that point, it's hard to switch tools, and thus tools with limitations force artificial decisions about repository organization and/or workflow. It is recommended you take a close look at the tools you have in place and ensure they are fit for your purposes today and for the next five years. Perforce Helix provides just such an environment.

Perforce Helix, including GitSwarm, is available free of charge for personal or professional use by small teams, for open source projects and for educational organizations. For more information and downloads, visit perforce.com.

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