

-Duser.timezone considered harmful, and why your Atlassian server shouldn't be on UTC

If you have a server hosting Jira and Confluence, what timezone do you set it to? UTC, or the timezone your users are in?

There is a [serverfault discussion](#) about this, and on the face of it, the question is why *wouldn't* you use UTC? Timezones are messy, ugly, human things. Why complicate your nice clean server with them?



In this post I'll outline why I think you should set your server to the timezone of the bulk of your users, rather than nice clean UTC, and specifically why, if you find yourself setting the `-Duser.timezone=...` parameter, you're probably making life harder for yourself than necessary.

Keeping the same timezone within a server

First, I think we can all agree, log files on the *same server* should all use the same time zone.

There are at least 3 log-generating things you'll be concerned with:

- The app (Jira, Confluence), and its log files (atlassian-jira.log, atlassian-confluence.log)
- The web server (Apache, nginx) and its log files (access.log, error.log)
- The operating system and its logs (`/var/log/*`) and persistent performance stats (e.g. `/var/log/atop/*`)

Events across these often need to be correlated - for instance, a spike in requests (access.log) triggers high server load (operating system), and eventually application errors (atlassian-jira.log). For your debugging sanity, these log files must have the same timezone.

The web server and OS logs are all in the OS timezone, obviously. How about app server logs, atlassian-jira.log and atlassian-confluence.log?

App server log timestamps will also be in the OS timezone, unless you've told Java otherwise by explicitly setting `-Duser.timezone`. To spell it out: if you've set `-Duser.timezone`, you can no longer correlate timestamps between atlassian-jira.log, access.log and the rest of the system.

So don't do that. Don't ever set `-Duser.timezone`. Leave Java in the same timezone as your OS.

Why not UTC?

There are two arguments against setting your server timezone to UTC.

The argument from ease-of-debugging

Users report problems relative to their timezone. Screenshots might be saved with timestamped filenames. "Things got really slow around 4pm" they'll say, and your job is to find what was happening on the server at 4pm.

~~I work on Linux, and my tooling hasn't evolved much since the 1970s. I don't know an easy way to convert log timestamps from UTC to something else, on the fly. If the log's timezone is that of the user, life is just easier.~~



2023 Update

The [lnav](#) log file utility now reinterprets timestamps using the system timezone and TZ environment variable (as of [ticket #703](#), 15 Aug 2023). This means if you're on a UTC server but want to see timestamps in your native timezone, just export `TZ=Australia/Sydney` or whatever before running `lnav`.

The argument from Confluence developer laziness

"But", our administrator says, "I want UTC on the server for *<insert sane, excellent reasons>*, and I use *<insert names of tool that let me view logs in any timezone, which I shall share with you in the comments>*. Why can't the OS and Java be set to UTC, and the apps be told only to display dates in a specific format?"

The answer is that this would be possible, except that Confluence developers failed to implement a default user timezone setting (

[CONFSERVER-16057](#) - Allow Confluence timezone to be set as a global preference NOT BEING CONSIDERED).

To review, the timezone users see in Jira and Confluence comes from one of various levels:

1) User preference	Users can explicitly set their timezone in their profile: <table><tr><th>Jira</th><th>Confluence</th></tr><tr><td> Preferences Page Size: 50 Email Type: HTML Language: English (Australia) [Default] Time Zone: (GMT+10:00) Sydney My Changes: Do not notify me Filter and Dashboard Unshared Sharing: Keyboard shortcuts: Enabled External links: Open in new tab </td><td> Settings Site Homepage Site Default (Dashboard) Language Automatically detected Find more language packs Time zone Site Default ((GMT-08:00) Los Angeles) Keyboard Shortcuts ☒ Enable Enable keyboard shortcuts menu. Text select ☒ Show option panel Edit </td></tr></table> <tr><td>2) Default user preference</td><td> If your user preference isn't set, the default user preference will be in effect. <table><tr><th>Jira</th></tr><tr><td> Jira conveniently lets you edit the default user timezone in General Configuration: Default user time zone Region System default Time Zone (GMT-08:00) Los Angeles Determines the default time zone used when displaying time and date information. Users can override the default time zone and use a different time zone than this global default. </td></tr><tr><th>Confluence</th></tr><tr><td> Confluence does not let you edit the default timezone (CONFSERVER-16057 - Allow Confluence timezone to be set as a global preference) have to resort to editing XML files inside jars. </td></tr></table></td></tr> <tr><td>3) Java user . timezone</td><td> The default user timezone preference inherits its value from the Java user . timezone Java property. You can set this user . timezone Java flag in bin/setenv . sh, e.g. to -Duser . timezone=America/Los_Angeles . </td></tr> <tr><td>4) OS timezone</td><td> Finally, Java sets its user . timezone property default to the operating system's timezone: <pre>\$ cat /etc/timezone Australia/Sydney</pre></td></tr>	Jira	Confluence	Preferences Page Size: 50 Email Type: HTML Language: English (Australia) [Default] Time Zone: (GMT+10:00) Sydney My Changes: Do not notify me Filter and Dashboard Unshared Sharing: Keyboard shortcuts: Enabled External links: Open in new tab	Settings Site Homepage Site Default (Dashboard) Language Automatically detected Find more language packs Time zone Site Default ((GMT-08:00) Los Angeles) Keyboard Shortcuts ☒ Enable Enable keyboard shortcuts menu. Text select ☒ Show option panel Edit	2) Default user preference	If your user preference isn't set, the default user preference will be in effect. <table><tr><th>Jira</th></tr><tr><td> Jira conveniently lets you edit the default user timezone in General Configuration: Default user time zone Region System default Time Zone (GMT-08:00) Los Angeles Determines the default time zone used when displaying time and date information. Users can override the default time zone and use a different time zone than this global default. </td></tr><tr><th>Confluence</th></tr><tr><td> Confluence does not let you edit the default timezone (CONFSERVER-16057 - Allow Confluence timezone to be set as a global preference) have to resort to editing XML files inside jars. </td></tr></table>	Jira	Jira conveniently lets you edit the default user timezone in General Configuration: Default user time zone Region System default Time Zone (GMT-08:00) Los Angeles Determines the default time zone used when displaying time and date information. Users can override the default time zone and use a different time zone than this global default.	Confluence	Confluence does not let you edit the default timezone (CONFSERVER-16057 - Allow Confluence timezone to be set as a global preference) have to resort to editing XML files inside jars.	3) Java user . timezone	The default user timezone preference inherits its value from the Java user . timezone Java property. You can set this user . timezone Java flag in bin/setenv . sh, e.g. to -Duser . timezone=America/Los_Angeles .	4) OS timezone	Finally, Java sets its user . timezone property default to the operating system's timezone: <pre>\$ cat /etc/timezone Australia/Sydney</pre>
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So in Jira, everything is great. You can have `atlassian-jira.log` use a timezone that's good for debugging (UTC if that's your preference), while the default timezone used to render dates can be something appropriate for the majority of users.

In Confluence, sadly there is only one default timezone (Java's `user . timezone`). It will have to be set to the timezone that makes sense for most users. This means `atlassian-confluence.log` will also use that timezone, and for consistency, so should the rest of the OS.

Conclusion

The conclusions are:

- Don't ever use `-Duser . timezone` as it leads to inconsistent timezones across local log files.
- Vote for [CONFSERVER-16057](#) - Allow Confluence timezone to be set as a global preference NOT BEING CONSIDERED (bitter laughter).
- If you running Confluence, your OS timezone should be set to what you want your default user timezone for users to be.
- If you running only Jira, I still suggest setting your OS timezone to what you want the default user timezone to be, just to make debugging simpler. However you have the option to use UTC as your OS and Java timezone, as long as you set Jira's default user timezone explicitly.

