

ZFILE sort command support

Database / TPFDF subcommittee

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Charts courtesy of Austin Frank

2025 TPF Users Group Conference
May 05-07, Austin, Texas

IBM Z



Problem Statement

The z/TPF system lacks the ability to sort a file, or the output of a ZFILE command. In order to sort, you must transfer the file offline or copy the console output to an offline editor.

- Requires a multi-step process for file sorting.
- Your organization might have restrictions on who can transfer files on and off a z/TPF system.

Users

Andres
Database
admin



Andres monitors pool usage on his z/TPF system to ensure it runs smoothly. The z/TPF file system is one of many areas that uses pool records, so large files could use a significant number of pools.

As-Is User Story

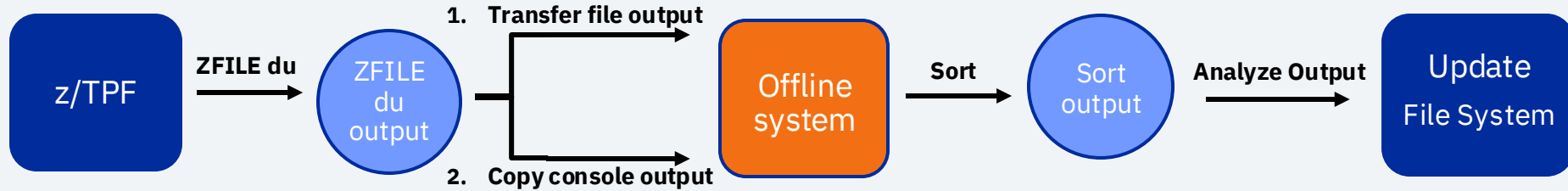


Using the output of the recoup utility, Andres notices an unusually large amount of pool usage by his z/TPF file system.

Andres uses the ZFILE du command to investigate what file or files are using up a large amount of pools. The ZFILE du command displays the disk usage of files on his z/TPF file system.

The output of this command is fairly large and not sorted, making it difficult to identify the files with the largest disk usage.

As-Is User Story



He has 2 options to sort the output of the ZFILE du command on an offline system:



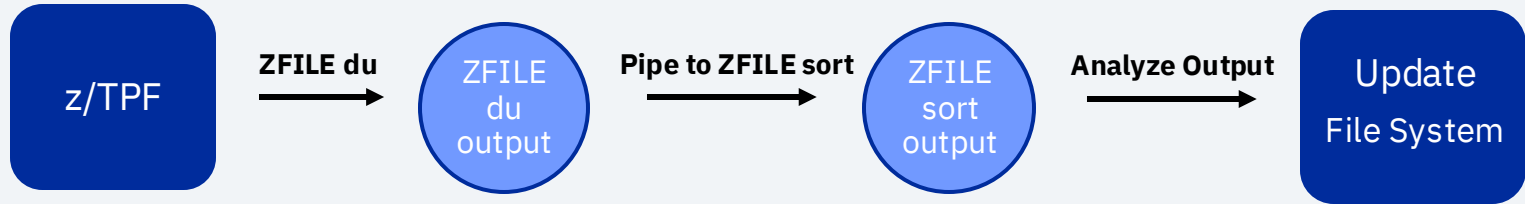
1. Store the output in a file and transfer it offline.
 - His organization's security requirements don't allow him to transfer files offline without an approval process.
2. Manually copy the console output offline.
 - This approach is prone to error and might not contain the complete data set if the output spans multiple ZPAGES.

Value Statement

Andres can leverage the [ZFILE sort](#) command on his z/TPF system to sort file system files and ZFILE command output in a single step. He is no longer limited by his organization's file transfer restrictions or manual data transferring. This allows Andres to easily work with his data directly on his z/TPF system.

APAR [PJ48050](#) (SEP 2024)

To-Be User Story



Andres
Database
admin



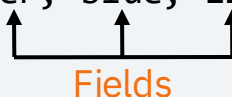
Andres can sort the output of ZFILE du directly on his z/TPF system. This eliminates the complications associated with moving data to an offline system.

Technical Details – Records and Fields

The ZFILE sort command uses two attributes to sort on, records and fields.

A record is comprised of fields.

Record: user, blue, 123



Fields

You can use the following parameters to define values:

- -R: A record separator character (*default*: newline character).
- -t: A field separator character (*default*: space character).
- -k: A field to be used as a sort key (*default*: first field of each record)
 - If multiple k parameters are specified, sort keys will be used in the order listed.

Technical Details – Scope

Depending on how the -k parameter is applied, certain options may have either a local or global scope.

1. **Global Scope:** Sort every key field, in the order specified, in **reverse** order.

```
ZFILE sort -r -k 2,2 -k 1,1 example.txt
```

2. **Local Scope:** Sort the key at position 2 in forward order and the key at position 1 in **reverse** order

```
ZFILE sort -k 2,2 -k 1r,1r example.txt
```

Technical Details – Piping Output

You can pipe the output of any ZFILE command into the ZFILE sort command.

Example: Andres wants to identify the 10 largest files on his z/TPF system.

```
ZFILE du / | sort -n -r | head -10
```

Display file
system usage
information.

Sort the output
by **file size** in
descending
order.

Display the first
10 files of the
sorted output.

Technical Details – Filter ZFILE du Output

ZFILE du /schedules

```
16005./schedules/mar2023.txt
85482./schedules/dec2023.txt
509648./schedules/jun2024.txt
16618./schedules/oct2023.txt
4805./schedules/feb2025.txt
10428./schedules/nov2022.txt
781116./schedules/jan2024.txt
5458904./schedules/feb2024.txt
471816./schedules/apr2025.txt
4790/schedules/jan2023.txt
64152./schedules/nov2023.txt
...
```

Long, not ordered,
difficult to parse

Filtered, ordered,
easy to parse

ZFILE du /schedules | sort -n -r | head -10

```
5458904./schedules/feb2024.txt
4952832./schedules/oct2024.txt
869416./schedules/nov2025.txt
781116./schedules/jan2024.txt
781005./schedules/jul2024.txt
780992./schedules/aug2024.txt
770832./schedules/dec2025.txt
END OF DISPLAY
```

Each of these files contain the flight schedule for that month. To free up pools, Andres decides to delete large records older than 8 months.

Technical Details – Flight Example

feb2024.txt:

1	2	3	4	5
Flight	Route	Departure	Arrival	Frequency
XZ123,	JFK-LAX,	2024-02-10 08:30,	2024-02-10 11:30,	Daily
XZ456,	AUS-ATL,	2024-02-28 14:00,	2024-02-11 11:20,	Mon Wed Fri
XZ789,	JFK-MIA,	2024-02-12 03:45,	2024-02-12 05:45,	Daily
XZ890,	JFK-BER,	2024-02-13 07:15,	2024-02-13 08:35,	Tue Thu
XZ567,	DOH-DXB,	2024-02-28 14:00,	2024-02-14 13:30,	Mon Wed
XZ123,	AUS-ATL,	2024-02-28 14:00,	2024-02-15 19:20,	Daily

Before deleting a month's flight schedule file, Andres wants to make note of the most common route for each day, starting from the end of the month. By grouping the file by departure date and route, Andres will be able to visually identify each day's most frequent route.

Technical Details – Flight Example

Exclude column headers

Sort flight specific data

```
ZFILE tail +3 feb2024.txt | sort -t , -k 3rb,3rb -k 2b,2b
```

Sort keys, Route and Departure, specify different sorting orders, Andres uses local parameters to meet each field's condition

feb2024.txt sorted output:

XZ123,	AUS-ATL,	2024-02-28	14:00,	2024-02-28	12:20,	Daily
XZ567,	DOH-DXB,	2024-02-28	14:00,	2024-02-28	22:30,	Mon Wed
XZ456,	AUS-ATL,	2024-02-28	08:00,	2024-02-28	10:20,	Mon Wed Fri
XZ890,	JFK-BER,	2024-02-13	07:15,	2024-02-13	08:35,	Tue Thu
XZ789,	JFK-MIA,	2024-02-12	03:45,	2024-02-12	05:45,	Daily
XZ123,	JFK-LAX,	2024-02-10	08:30,	2024-02-10	11:30,	Daily
^		^				
Sorted Second		Sorted First				

Conclusion

The ZFILE sort command allows files, and the output of ZFILE commands, to be sorted directly on a z/TPF system. This feature reduces the complexity of data retrieval and organization and is beneficial for all users managing data on their z/TPF system.

Thank you

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