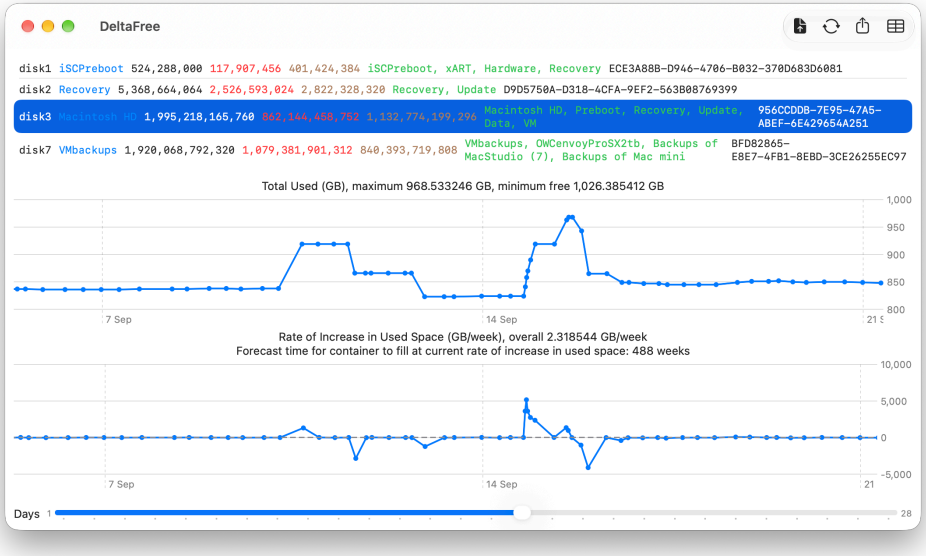
Start



DeltaFree introduces a novel way to forecast how long it might take before storage becomes full, by measuring how fast its space is being used. Although it's aimed mainly at backup storage, it can be used for any APFS container or partition your Mac has access to, including its Data volume.

The principle is simple: each time you want to add a set of use data to its database, open the app, read the file you're storing its data in, get a new set of measurements, and save them to its database file.

When it has gathered sufficient data over a period of days or weeks, you can then view plots showing how used data has changed over time, and the rates of change. You can then use those to forecast when its free space will be used up in the future.

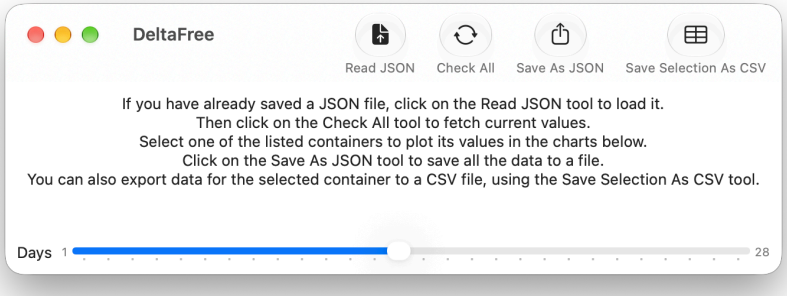
This version adds a tool to export data for a single container in CSV format, and improves onboarding.

To get started, read how to ➜ Add points first.

➜ Tools ➜ Plot ➜ Forecasts ➜ Data formats ➜ Technical information

➜ Start

Add points



Click on the **Check All** tool to get a set of fresh measurements on all the APFS containers accessible to your Mac at that moment.

If you want to add those to your database, *before* doing that click on the **Read JSON** tool to access the data stored there, then **Check All** after that.

Click on the **Save As JSON** tool to write all previous and fresh data to a file for future use.

For each APFS container found, this list shows:

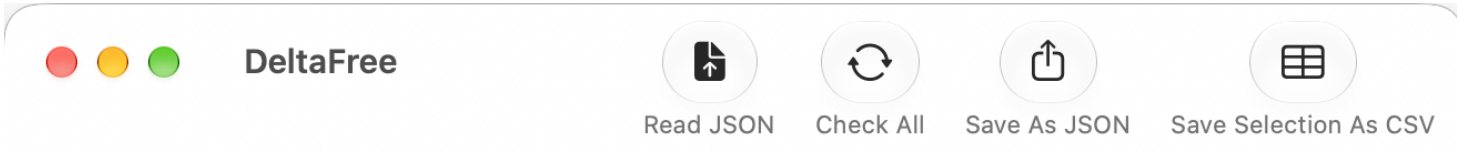
- the **device name** of the container, e.g. disk3, in *black/white;*
- the **name of the first volume** in that container, in *blue;*
- the **total capacity** of that container in bytes, in *black/white;*
- the **total size used** in that container in bytes, in *red;*
- the **free space available** in that container in bytes, in *brown;*
- the **names of all volumes** in that container, in *green;*
- the **UUID** of the container, in *black/white.*

disk1	iSCPreboot	524,288,000	111,841,280	407,490,560	iSCPreboot, xART, Hardware, Recovery	ECE3A88B-D946-4706-B032-370D683D6081
disk2	Recovery	5,368,664,064	2,274,967,552	3,073,949,696	Recovery, Update	D9D5750A-D318-4CFA-9EF2-563B08769399
disk3	Macintosh HD	1,995,218,165,760	838,417,715,200	1,156,500,942,848	Macintosh HD, Preboot, Recovery, Update, Data, VM	956CCDDB-7E95-47A5-ABEF-6E429654A251
disk7	VMbackups	1,920,068,792,320	1,030,838,124,544	888,937,525,248	VMbackups, OWCenvoyProSX2tb, Backups of MacStudio (7), Backups of Mac mini	BFD82865-E8E7-4FB1-8EBD-3CE26255EC97

To copy the data for one of the listed containers, select it and use the **Copy** command, or Command-C shortcut. This copies its contents, except the list volume names, in CSV format.

➜ Tools ➜ Plot ➜ Forecasts ➜ Data formats ➜ Technical information

Tools



When you're gathering data to use in a forecast, use the four tools:

- **Read JSON** invites you to open an existing database containing DeltaFree measurements, and should be your first action when you want to add new data.
- **Check All** obtains a fresh set of measurements, which are then listed in the scrolling list view at the top of the window, and added to the existing data;
- **Save As JSON** invites you to save all current data to a new file, or to overwrite an existing file;
- **Save Selection As CSV** invites you to export current data for the selected container to a text file in CSV format.

When you want to plot current results for one container, select it in the scrolling list at the top of the window and it will automatically be displayed in the ➜ **Plot** views below.

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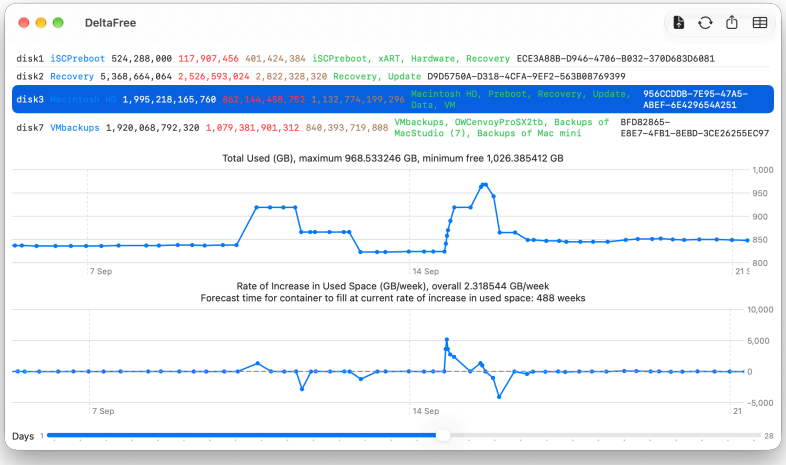
Plot



To plot a set of measurements for one of the listed containers, simply click on its entry in the list at the top. It will then be analysed and its measurements displayed in the two plots below.

The title of the **upper plot** also gives the maximum total space used in the container over the period covered by the data, and the minimum free space, both in GB.

The title of the **lower plot** gives the overall net change in used space between the first and last measurements in GB per week. When positive, that means the amount of used space grew over that period; when negative it means the amount of used space fell over time. A second line forecasts when free space would run out at that rate of use.

Points shown on the lower plot are for the rate of change since the previous measurement, a period ending with the second measurement. In addition, a broken grey line shows the overall rate of increase in used space over the whole period, as a reference.

A **slider** at the foot lets you adjust the time period shown in the two plots, between 1 and 28 days. When the length of data collected is longer than the period set, you can scroll horizontally through each of the plots. The two scrollers don't synchronise automatically (that appears to be a major challenge to implement), but the single slider controls them both.

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Forecasts

Unless a disk's partitions are remapped, each APFS container has a fixed size which is shared out between the volumes it contains. Change in total data used in a container follows a conservation rule of:

change = sum *[dataAdded – dataRemoved]* over all volumes in the container

Specifically, for a Time Machine backup volume as the only volume within a container:

dataUsed = *initialBackupSize* + (sum *[eachIncrementalBackup]* – sum *[eachBackupThinned])*

You can estimate the period before the backup volume's container will become full as:

period = *(containerCapacity – initialBackupSize)/averageRateOfGrowth*

DeltaFree provides you with a value for *averageRateOfGrowth* in GB/week, and calculates how long it would take in weeks for the current free space in that container to run out, at that average rate of growth..

For example, your backup drive is divided into two containers of 1 TB each. That containing your Time Machine backups starts its period of analysis using DeltaFree with 300 GB used (which could either be its initial backup, or later) and 700 GB free space. Over a couple of weeks of measurements using DeltaFree, it indicates a steady 14 GB/week rate of increase in used space in that container.

Thus, the number of weeks you can expect to continue backing up to that container is 700/14 = 50 weeks from the date of DeltaFree's first set of measurements. You can then continue to monitor less frequently to look for any change in rate that might affect that forecast.

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Data formats

To export all the data from the main window's listing of log files, click on the **Save as JSON** tool at the top right. This exports the following fields for each click of the **Check All** button:

- **id** – the UUID of that set of measurements, as a String
- **date** – the date the measurements were made, as a floating point number in macOS Date format
- **containers** – an array of measurements for each container, containing
  - **capacity** – the size in bytes of that container, as a floating point number
  - **id** – the UUID of the container data (an internal identifier unique to each record, not APFS), as a String
  - **free** – the size in bytes of free space in that container, as a floating point number
  - **firstVolName** – the name of the first volume, as a String
  - **totalUsed** – the number of bytes used to store data, as the sum of the bytes used in each volume, as a floating point number
  - **conUUID** – the UUID of that APFS container (a constant for that container), as a String
  - **volNames** – a String containing the names of all the volumes in that container, separated by commas
  - **conRef** – the standard device name of that container, as a String.

Save Selection As CSV is different, as it exports data for just the selected container, into a text file in CSV format, ready to import into a spreadsheet or similar. Each row contains

date,**size**,**sizeTotal**,**rate**

where date is given as `dd/MM/yyyy HH:mm:ss`, size and sizeTotal in bytes, and rate in bytes/second. At the end of the file are the list of volumes in that container, and the container's total capacity.

Container information copied as CSV contains the following fields in order**:**

conRef,**firstVolName**,**capacity**,**free**,**totalUsed**,**conUUID**

Technical Information

DeltaFree obtains information about APFS containers and their volumes from the `diskutil apfs list` command by parsing its output as a property list. Internally, the container UUID is used for identification.

DeltaFree obtains and saves two estimates of space used in each container, one from that container's free space and the total size of the container, the other by totalling the space used by each of the volumes in that container. There is a small and systematic difference between those, and this version uses the latter as the more accurate of the two estimates.

The overall rate of increase in used space is calculated as the change from the first to the last measurements divided by the time period between them. It thus accounts for all reductions in used space (increase in free space) made by thinning backups or deleting files over that period.

Swift Charts code used has benefited greatly from the published work of Natalia Panferova & Matthaus Woolard of Nil Coalescing Limited.

➜ Add points ➜ Tools ➜ Plot ➜ Forecasts ➜ Data formats

Change list

1.2 (12):
- added CSV export
- added onboarding text.

1.1 (9):
- enhanced plots and removed plot tool
- added variable plot window and scrolling
- added info to plot titles.

1.0 (6):
- first release.

24 October 2026.