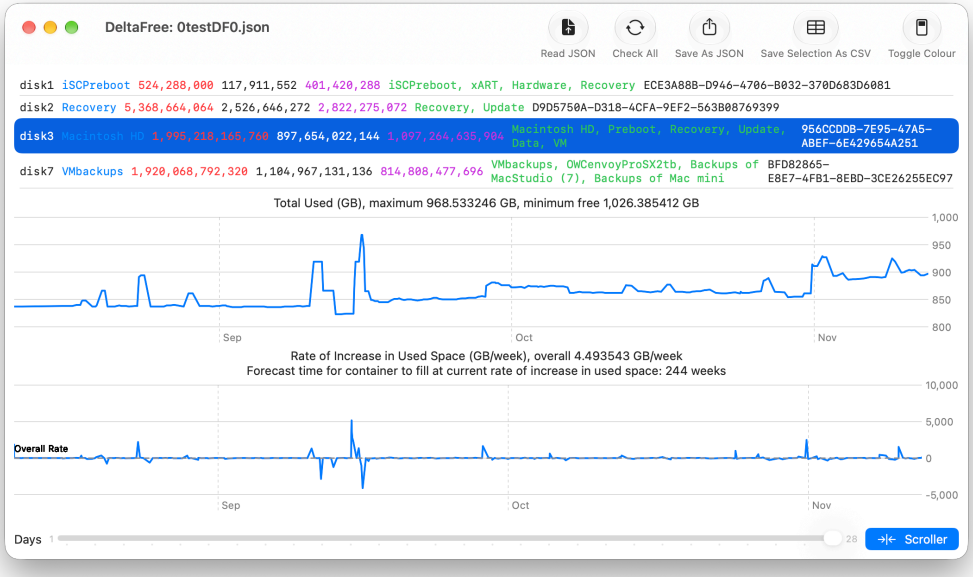
Start



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.

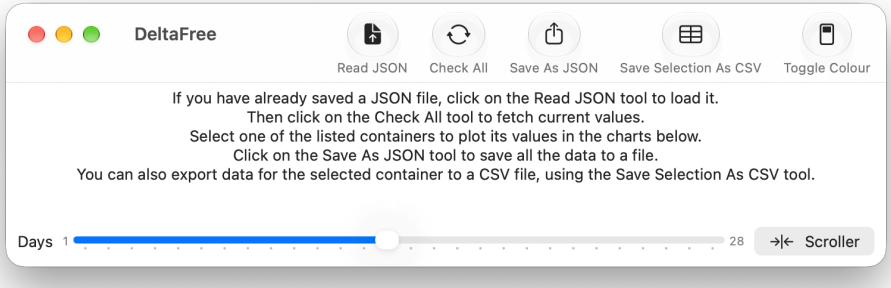
This version adds the **Toggle Colour** tool to see containers listed in monochrome rather than colour, to improve their readability, and a condensed plot format for long data series.

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

➜ Tools ➜ Plot ➜ Condensed 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 *red;*
- the **total size used** in that container in bytes, in *black/white;*
- the **free space available** in that container in bytes, in *purple;*
- the **names of all volumes** in that container, in *green;*
- the **UUID** of the container, in *black/white.*

```
disk1 iSCPreboot 524,288,000 117,911,552 401,420,288 iSCPreboot, xART, Hardware, Recovery ECE3A88B-D946-4706-B032-370D683D6081
disk2 Recovery 5,368,664,064 2,526,646,272 2,822,275,072 Recovery, Update D9D5750A-D318-4CFA-9EF2-563B08769399
disk3 Macintosh HD 1,995,218,165,760 897,654,022,144 1,097,264,635,904 Macintosh HD, Preboot, Recovery, Update, Data, VM 956CCDDB-7E95-47A5-ABEF-6E429654A251
disk7 VMbackups 1,920,068,792,320 1,104,967,131,136 814,808,477,696 VMbackups, OWCenvoyProSX2tb, Backups of MacStudio (7), Backups of Mac mini BFD82865-E8E7-4FB1-8EBD-3CE26255EC97
```

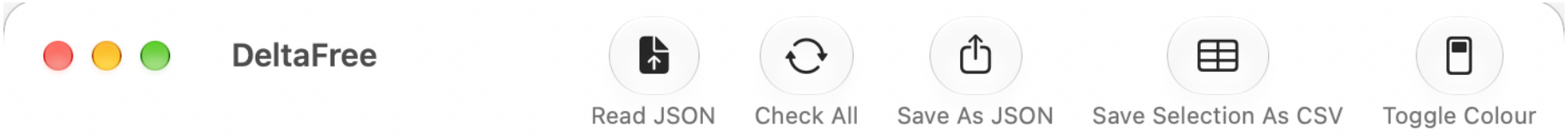
When you select a container, its text can be hard to read. To toggle the list into monochrome format, click on the **Toggle Colour** tool. Click on that again to return the list to its coloured format.

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 ➜ Condensed plot ➜ Forecasts ➜ Data formats ➜ Technical information

➜ Start

Tools



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

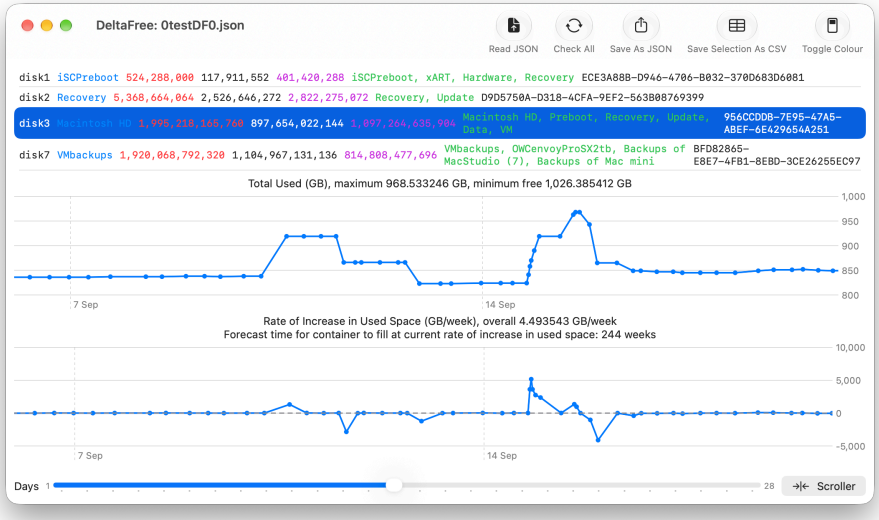
- **Read JSON** invites you to open an existing database containing DeltaFree measurements, and should be your first action when you want to add new data. To remind you of the file you opened, its name is added to the window title when it has been opened.
- **Check All** obtains a fresh set of measurements, 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.
- **Toggle Colour** switches the list of containers between colour and monochrome display 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.

➜ Add points ➜ Forecasts ➜ Data formats ➜ Technical information

➜ Start

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.

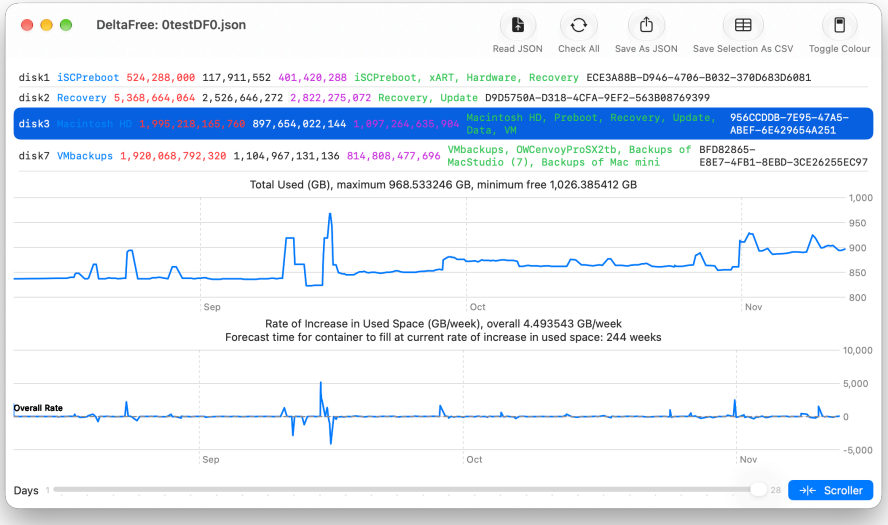
A **slider** at the foot lets you adjust the time period shown in the two plots, between 1 and 28 days. When the length of data collected is longer than the period set, you can scroll horizontally through each of the plots. The two scrollers don't synchronise automatically (that appears to be a major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

When your data covers significantly longer periods, click on the **Scroller** button at the bottom right to switch the current plot to Condensed mode, which fits all the data into the view.

➜ Add points ➜ Tools ➜ Condensed plot ➜ Forecasts ➜ Data formats ➜ Technical information

➜ Start

Condensed plot



When DeltaFree accumulates data for significantly more than the maximum that can be shown in its 28-day plot view, click on the **Scroller** button at the bottom right for a condensed plot instead.

This rescales the two regular plots to squeeze the whole timeline into a single, non-scrolling overview. To remind you this is condensed, the **Scroller** button remains blue while it remains in this mode, and the scroller control is disabled.

No points are shown when condensed, as they would only clutter the lines.

To return to a regular scrolling plot and zoom in on a shorter period, click on the **Scroller** button again.

If the data used includes some containers with different periods of observations, these may rescale using the period for the previous container. In that case you can force them to be rescaled appropriately by clicking on the **Scroller** button twice, to put the view into scrolling mode and back into condensed mode.

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

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.

➜ Add points ➜ Tools ➜ Plot ➜ Condensed plot ➜ Data formats ➜ Technical information

➜ Start

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**

➜ Add points ➜ Tools ➜ Plot ➜ Condensed plot ➜ Forecasts ➜ Technical information

➜ Start

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 ➜ Condensed plot ➜ Forecasts ➜ Data formats

Change list

1.3 (16):
- added mono list option, tweaked colours, and added filename to title bar
- added condensed plot.

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.

12 November 2026.