Fixing a Synology DS1618+

Anthony Sorace
a.9srv.net

Strand 1 Technologies

ABSTRACT

Alexandria, a Synology DS1618+, had been inoperable for several months. The troubleshooting and repair process was frustrating, involving false, misleading, and vague error messages, incomplete instructions, an AI agent that provided incomplete and misleading information, and bad interactions between their web UI and a password manager. Nevertheless, the system is now functioning normally again. This report describes how the repair was accomplished.

1. Introduction

Alexandria is a Synology DiskStation DS1618+. Prior to the failure, it was running DSM 7.1.1 and was used primarily for Time Machine backups of two macOS laptops and as a Plex server. It also got light use as a generic SMB file server and had three virtual machines configured which were infrequently used. It had been in operation for approximately 6 years without issue; it had completed several firmware upgrades during that time. It has five drives installed, with two in each of two storage pools and one warm spare. The first storage pool contains two volumes; the second contains one. It is connected to two networks, each behind NAT; it is not on the public Internet.

Some time in early 2025 Alexandria became unresponsive on the network. Time Machine backups, on both hosts targeting Alexandria from both networks, began to fail and the shared volumes were not reachable. The host was not found at the network at the normal name, `alexandria.local`, for the web UI or other services like ssh. Physical inspection of the hardware seemed to indicate it was operating normally.

2. Troubleshooting

To start, we need to find the DiskStation, since it's no longer responding to its name. Synology offers a page `https://finds.synology.com` which manages to do this well (they also offer a *Synology Assistant* application which seems to do the same thing; it is slightly clunker, but does seem like it would be useful in doing this without a public internet connection). That tool returns an IP on the local network for the Synology. [1]

The DiskStation is running a web server on port 80 (which seems to only forward requests to port 5000[2]), that web server on port 5000, and telnet on the standard port. The web UI has been displaying the same message since initial investigation: that it has detected my disks were moved from a different DiskStation and my DSM version needs

[1] Interestingly, the web application returns the IP for each of the two networks the DiskStation is connected to, while the Synology Assistant application returns only the IP on the network the host running it is connected to. It is unclear how the web application is able to discover both.
[2] This is unverified; it might have other roles, such as for discovery.

to be upgraded.

That error message is false. All the disks in this DiskStation were installed from new; all were installed while the system was operating properly, it continued to operate properly for several months after they were each installed, and this is the only Synology product we've owned. All the installed disks except the hot spare were formatted by DSM upon installation.

The web UI only offers one path forward (in multiple flavors): update the firmware.

3. Attempting to Update DSM

The web UI offers two options for how much of a reset to do in order to do the install, but not much detail. It does say that in either case, data on your drives is preserved. I took the less intrusive option first. You're then presented with the option to let the DiskStation download the needed firmware directly from Synology's Download Center or to give it a file you've already downloaded. Again, I first let it try on its own. This results in the following message:

> This process will only take a few minutes to complete. Do not turn off the power during this process.

It jumps to 42% complete immediately, then inches up to 54% before failing with a pseudo-popup saying:

> Failed to install DSM
> Failed to download the DSM installation file. Please check the network connection and try again.

The network is known to be stable (if slow) throughout this operation. I then tried to provide DSM a firmware file I'd download previously. This resulted in an immediate error at 0% complete:

> Failed to install DSM
> Available system space is insufficient.

That's new information, but doesn't match my memory. I recalled two of the three storage pools being in a "warning" state for space in Synology's resource monitor, but still having ample space. Still, it's possible both that my memory of the situation was wrong or that space had filled up unexpectedly quickly, so it seemed worth investigating.

Unfortunately, it wasn't clear how to do so. Still lacking the ability to log in, I had no way to check disk capacity, let alone remove any files. So I turned to Synology's support channels. I have no support contract with Synology, so I was left with public resources only. After spending a lot of time on various forums and not finding a problem report with symptoms similar to mine, I went with the desperation path: I asked Synology's AI support agent.

4. AI Agents are Mostly Bad

Synology offers an AI support agent of the kind common to many web sites. I provided a summary of the situation, complete with exact error messages, software versions, and noting that the initial error message was not correct. The agent responded with a better-than-average answer for an AI: while it did not understand the root problem at all overlooked the parts of my error report most directly linked to that, and responded with a confidence belying those facts, it did contain some useful information: specifically, instructions, with links[3], to two different *modes* of resetting the authentication information on the device. This did not address my issues with the firmware failing to install, but would prove useful later. I went back to guesswork for solving the immediate problem at hand.

[3] https://kb.synology.com/en-global/DSM/tutorial/How_to_reset_my_Synology_NAS_7

5. Attempting to Update DSM, Take II

This time I tried the more aggressive version of the reset. Since I already had the file downloaded, I opted to provide it directly. The progress meter ramped up to ~40% in about a second, then inched up to about 60%, then said it's doing a restart, with a countdown timer at 10 minutes. At about 7:20 remaining, it moved on to other install steps for about two minutes before giving me the initial setup screen. We now have a successful firmware re-installation.

The setup asks for an "administrator account", which is always a little frustrating as it's ambiguous whether they're asking for a real user account with an admin role, or a username to run system services as. Since "admin" is explicitly disallowed (and was what the previous DSM installation was using for running services), I assumed the former and created an account for myself, using the same username I'd had under the previous installation; this assumption was correct.

Since I last set up the DiskStation, DSM has picked up a really irritating password restriction[4]: your password cannot contain your username. My username is "a" in most places, including here. This means my existing password (retrieved from my password manager) is now disallowed. I've seen this restriction in a few other places (notably Microsoft's online services) and it's a real pain. This "feature" should be uniformly abandoned everywhere; at a minimum, it should only trigger with a certain length match.

Possibly because of how Synology's Web Admin tool provides a pseudo-VNC, when I entered my password Safari's built-in password manager didn't recognize it as a password entry and didn't save it... and I didn't have it saved otherwise. Here I performed the do the "mode 1" reset, as previously described by Synology's AI Agent. Now, on login, I had to log in as "admin" (*there* it is!), with a blank password, and it then prompted me to reset the password for user 'a'.

After this, basic service was restored and I could log in normally. I found that all applications, aside from those which ship pre-installed, had to be re-installed, and most of the important configuration options, including those which enable Time Machine backups,[5] had to be re-configured. In all cases, though, aside from configuration and metadata, user data was preserved.

6. Root Cause Analysis

True root cause analysis was hampered by the inability to access the system via telnet/ssh until after various settings were wiped out and a new firmware installed. We can rule out certain causes, including the two stated by DSM's error messages, and make an educated guess as to the real root cause.

First, aside from normal services being absent, the first notice of a problem came with the web UI's incorrect assertion that the drives in the system had come from another DiskStation. All drives in the system had been installed into Alexandria from new. Second, the firmware update process asserted the device was out of space. This is harder to concretely refute, since access to the device was restricted until after the network and authentication configuration had been reset (twice) and the firmware updated. However, we can say that the three configured volumes all had at least 1TB free and that the root volume, /dev/md0, was at 61% utilization once we regained access, after the new firmware had been installed, with 878 MB available; just under double the size of the firmware download. Details of Synology's "not enough free space" calculation are

[4] The next day I discovered this is configurable. In Control Panel, go to Users & Groups -> Advanced, and select the password rules you'd like enforced. This doesn't help for the initial setup, but is better than nothing.

[5] https://kb.synology.com/en-global/DSM/tutorial/How_to_back_up_files_from_Mac_to_Synology_NAS_with_Time_Machine

opaque, but this would be a rather unusually large margin to require. It is also notable that nothing had been installed on the root volume outside DSM's direct control.

My working theory is that the initial failure was that a firmware upgrade went wrong in an unexpected way, leaving various on-disk structures as expected for a newer version but with an older version of the base system running (or perhaps in a recovery partition?), and when the upgrade went wrong and the system restarted, it failed a sanity check which normally indicates the drive migration.

7. Conclusion

This was a very bad experience with Synology.

- The initial failure message—about my drives being from an older Synology— was simply false. That's a bad start.
- The easiest installation path from their web UI produced a very generic error with no guidance for follow-up or where to get more information. Now I'm in guessing territory.
- The next most obvious guess, feeding the web UI a file from my laptop, produced a more descriptive error... that happened to be false. That wasted a bunch of time.
- Their online AI support bot produced answers that had useful information in them, but didn't understand the root problem. The conversation also timed out too quickly.
- Not saving my initial password is bad, but probably split blame with Apple for Safari's password manage not picking it up (even though it knew to suggest a password).
- Finally, all applications and user accounts had to be reloaded.

The main win, aside from having a functional box again, is that all user data (excluding configuration information and similar metadata) was preserved, including the Time Machine backups and Plex libraries.

While this has only happened once in approximately six years of running the system, this Recovery took several hours, including a lot of guesswork. Notably, I was able to recover user accounts from memory, which was only practical because there were only two users. This would have been a much worse outcome in a workgroup setting. Overall, this makes me question the suitability of Synology's DSM for more than casual use, when compared to a "build your own" option running a more conventional software stack.

8. References

DSM 7.2 User's Guide:

https://kb.synology.com/en-us/UG/Syno_UsersGuide_NAServer_7_2/1

DiskStation Users Guide:

https://global.download.synology.com/download/Document/Software/UserGuide/Firmware/DSM/4.2/en