S4 + Gridsync

RightsCon 2018 user testing: findings and suggestions

Least Authority with Allon Bar, May/June 2018

Table of contents

Highlights 3
Methodology 5
    Methodology lessons learned 6
Artefacts from the study 7
Where to sign up 8
Sign up form 10
Sign up confirmation / Next steps 13
Installing the program 16
Tor 21
Recovery key export 24
Adding folder to grid 29
Sharing a folder 34
Shared folder status 38
Receiving a shared folder 41
Removing a folder from the grid 44
Storage space status 47
Using recovery key 48
Preferences/Settings 51
Other issues that came up 54

Highlights

The diversity of participants at the conference helped to bring forward a broad range of issues (hence this document having become rather lengthy!). Many things seemed to work well. People mostly had little trouble signing up, adding folders to the grid, exporting and, when necessary, using a recovery key. It was nice to see that people had fun seeing how instantly the sharing and receiving of folders works. Also great was to see a 'click' in people's heads as they realized how little information they had shared about themselves in order to use S4; a victory for the privacy-conscious. While several key tasks were easily executed by the testers, the testing, fortunately, also surfaced many small and large issues that should be addressed. Some highlights:

Overall approach
People were frequently unclear about what is local, what is in the cloud, and how both sides interact. For example, when one participant clicked on a folder in the Gridsync window, they expected to see the content of the folder 'in the cloud', rather than on their own computer. When another participant deleted files from their local folder, they expected the files to still be present on S4. The term 'stored remotely' made some people think a folder was on their computer, while others thought it was in the cloud.

As Chris notes in his observations, the two models that people seem to be most familiar with are the traditional Google Drive approach (browser-based, uploading to the cloud) and the Dropbox approach (a centralized folder, integrated in the local file system, which continuously synchronizes with a central server).

S4+Gridsync works a bit differently, with decentralized folders on a local computer that continuously synchronize. In this way, it *works* more like Dropbox (keeping local folders in sync with remote servers), but it *looks* more like Google Drive (dragging and dropping specific folders into a window that feels like 'the cloud'). Perhaps as a consequence of that, people were sometimes surprised or unclear about what happened when they used the program.

The two clearest paths forward are to either, (1) meet people's expectations by aligning with a storage model that they are generally more familiar with. They will then hopefully have an easier time operating the system; or: (2) to keep following the current distinct model, but to adapt it based on user research, and to better guide people about how it works. This path may be more challenging, but has a higher potential for reward: rather than mimicking existing software, it plays into Gridsync's unique strengths.

If, as is the current approach, Least Authority chooses the second path, some further usability opportunities come to mind (covered in more detail in the sections below). These include providing clearer explanations to first-time users, a synchronization- and Gridsync-status in the File explorer, adding the local folders' file paths in the main Gridsync window, to make it clear that it's a local that is being watched, and prompts to download to the right location.

Communicating privacy

There is one issue that peeks through in a more limited fashion in participant's questions, like what happens with synced files after the trial ends, what happens when a file is removed, but not permanently deleted, and what happens when someone wants to 'unshare' a folder'. The overarching question this points to is what happens with users' data, and what information others can access. The core principle of the company and product is to know as least as is necessary, but that may not be as self-evident to end-users.

The kind of data the company can access and how it handles this data should be clearly communicated, both in a privacy policy and in the way the product presents itself. To this end it may be worthwhile to do a GDPR or RDR-like review of S4/Gridsync, to examine the extent to which general users can understand the company's privacy policy. On top of these frameworks, which focus more on company-wide policies, a review of the privacy/security dimensions of the S4+Gridsync design would help. The Digital Security and Privacy Protection UX Checklist (DSPPUX-Checklist) can assist with that.

Visual explanations

While a main goal in the design process should be to enhance users' ability to use the program without special guidance, it may be inevitable that there are areas that require further explanation. The feedback we received indicated that a more visual rather than strictly text-based approach to explaining how the program works, could enhance people's understanding of it.

Easy wins

While some of the issues touched on above and in the detailed notes below require substantial deliberations and efforts, the user research also brought to light a broad range of 'easy wins': small changes that can make big gains for the user experience. These include:

- When installing most participants could not find the necessary invite code; changing around the order of steps to take on the sign up confirmation page could better sensitize people to the code.
- The grid selection and especially the 'connect another device' buttons on the toolbar seemed to confuse people, yet didn't seem to draw much functional interest: they can be moved to the preferences window or removed altogether.
- And perhaps not with as direct an answer, but still a nice and important 'unexpected find', was that the variety of names (Least Authority, Gridsync, S4, Tahoe-LAFS) that participants came across, raised questions. When involved with a product on a day-to-day basis these sort of things can easily be overlooked, but user research is excellent in bringing it to the surface.

Finally, there were a number of things that we got limited feedback on and that raise wider questions, worthy of further research. These included preferences for application launch at startup, whether people desire to 'sign out', and if and how people wish to log whom they shared folders with. While further research would be beneficial on every issue flagged in this document, the ones standing out in particular have been highlighted in light magenta.

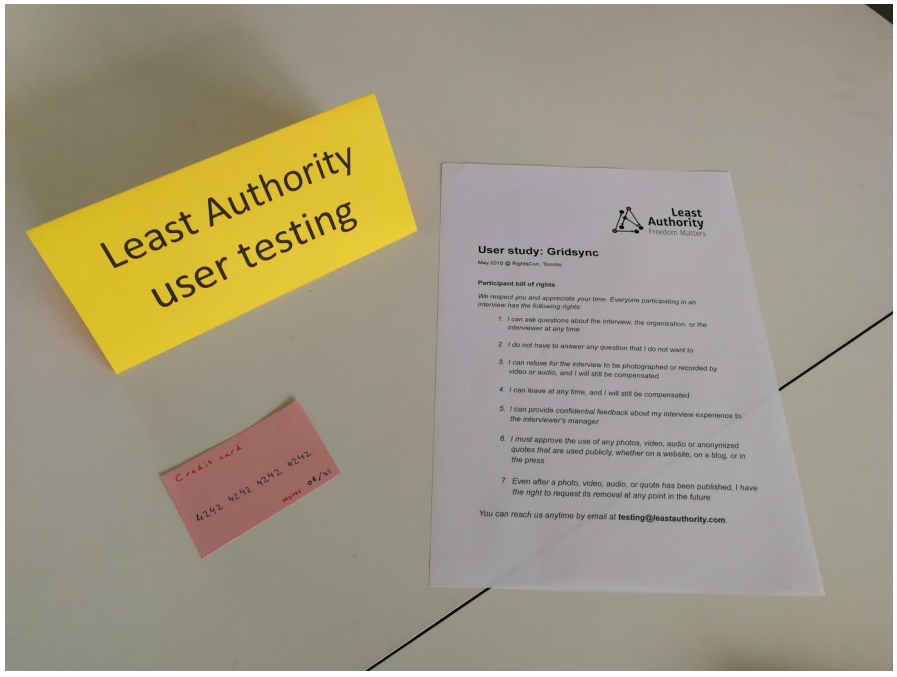
Methodology

- The testing was conducted from May 16-18, 2018 in Toronto, Canada.
- The setting was RightsCon 2018, an annual digital human rights focused conference.
- Ten people at the conference (one of which was Least Authority staff), participated in the user testing.
- The testing was done 'live', with Internet-connected computers, with three different operating systems (Windows, Mac, Linux). Each participant could choose a computer with the operating system they were most comfortable with.
- Participants were asked to perform a set of basic tasks related to S4 and Gridsync, including signing up, installing, initializing, and adding and sharing folders.
- A facilitator (Allon) guided them through the session, and a co-facilitator (Chris) addressed technical questions and collaborated ('role-played') with certain tasks, such as folder sharing. The co-facilitator and a dedicated note-taker (Lauri and Liz) took notes on paper.
- Each user testing session lasted 45 minutes.
- Participants received a gift card as an incentive for participating.
- They were all offered a participant bill of rights, which they read before starting the test.

Methodology lessons learned

- Being consistent about questions asked helped compare how different people reacted to the tasks assigned. At the same time, it was helpful that we sometimes deviated to go with the flow of the conversation, also to be able to learn about specific aspects that were not yet covered or already covered extensively by previous participants.
- Being able to change questions and even adapt the software between days 1 and 2 helped to discover new issues and to get feedback on the quickly implemented fixes.
- Table setup: we first only used a big round table. As we only had one screen, the laptop computer used by the test participant, it made it difficult for all four people to see what was happening on that screen at the same time. When we used a long rectangular table later it was easier for everyone to observe the screen, but it was still not ideal. If the setting allows for it, adding a mirrored second screen for the note-taker may be helpful, though at the risk of creating a more uncomfortable 'being observed' feeling.
- The high noise level in the community space where we did the testing made it difficult for the facilitator and the notes takers to understand everything the participant said.
- Asking participants to think out loud as they were performing the task generated very important feedback. At the same time, people had to be reminded frequently to think out loud. Maybe a longer introduction about what kind of feedback is helpful could improve this process.
- The interview time of 45 minutes was OK for most people, and maybe even at the long end of people's concentration time. For some people it would have been helpful if we could have spoken to them for 15 minutes longer.
- The gift cards we offered did not seem a main incentive for most people we spoke to, and may have created an awkwardness. For future user testing we should consider if we can treat people to something to drink or lunch if the setting allows for it, especially when it involves people we know or people in this specific community.
- The personal details that people filled in by hand to receive their gift card were hard to read, we may have to think about a different approach for that in the future.
- As the participant bill of rights referenced the possibility of audio/video/photos, which we did not take, participants asked about this. If we already know in advance that we won't record then it may be better to leave it out of the bill of rights, to avoid confusion.

- While we avoided taking pictures to not make anyone in that setting uncomfortable, we could have taken a picture of the (empty) test set-up table.

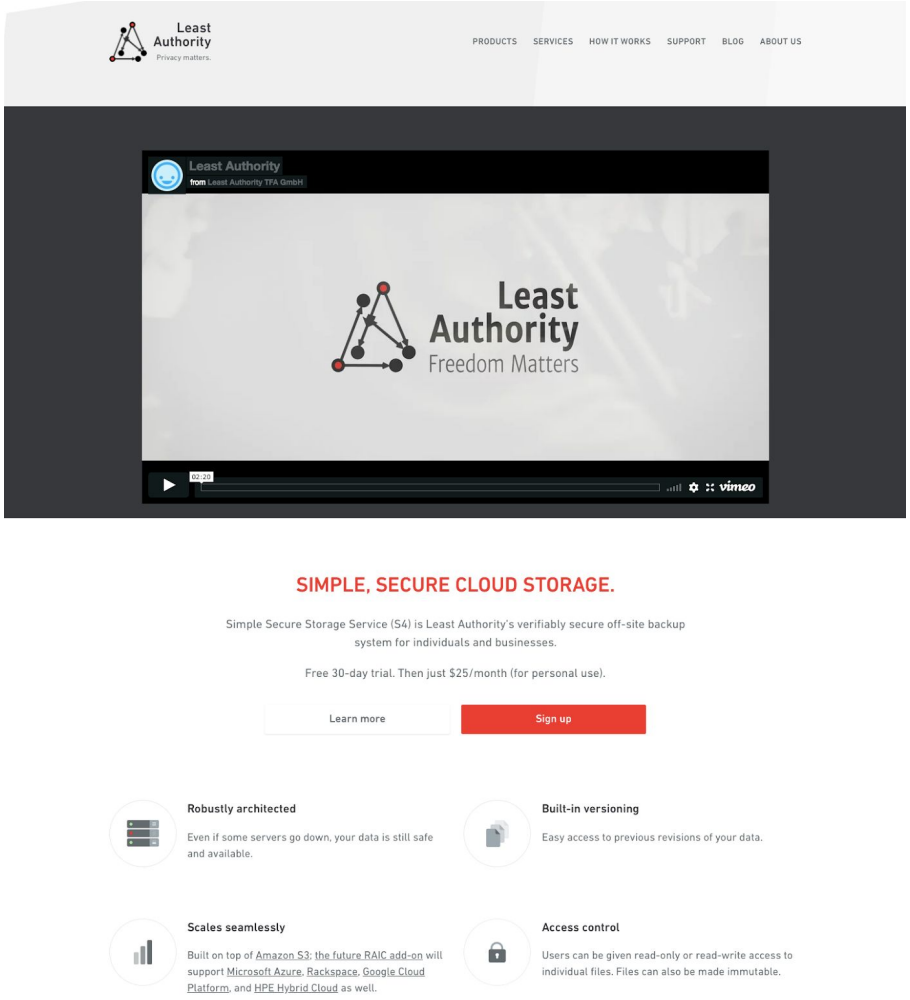


Artefacts from the study

Where to sign up

[On website: can people find how to sign up?]

1. Go to the S4 sign-up page



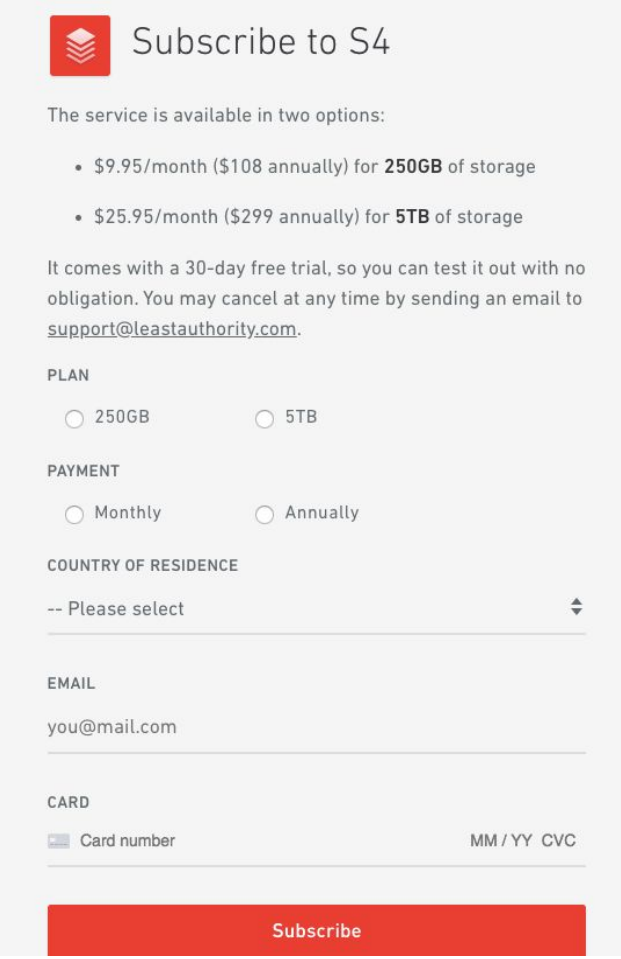
Issue	Suggestion
The issues and suggestions below will be further addressed in a separate website usability review.	
Several people had difficulty finding the sign-up page when starting from the homepage. Once they found the S4 page they did easily find where to sign up.	Create a direct link to S4 info in the top-menu (renaming 'Products'). Consider creating a separate S4 website. Hold off on a a direct 'Sign up for S4' link, as generally people do find how to sign up once they find 'S4', and it may be fruitful to first make people aware of what S4 is before they sign up for it.
Several people were expecting to find 'Sign up' links on pages with 'read more' info about S4.	Add those in where they are missing from the subpages under 'Products'.
Some people were not sure whether to find something like S4 under Products or under Services	Creating a more prominent separate link to S4 avoids this choice.
One person found the product carousel on the product page moving too quickly to read.	Consider removing the carousel, it aims to mimic a lot of the information already presented below but is harder to read, and can cause frustration as people have to click back to information they haven't yet finished reading or digesting. If not: Make the text on the carousel more easily readable by using hard line breaks. Slightly slow down the carousel items' changing time.

back to top

Sign up form

[Is the sign up form clear? Are there questions that cause confusion? Are there barriers that we aren't thinking of that prevent people from signing up/wanting to sign up?]

2. Sign up, using: The monthly plan with 250GB; A country of residence and email address of choice (can be fake); With this credit card info [fake card supplied]



Issue	Suggestion
Most people did not have major difficulties with filling out this form.	
One person mentioned that in some countries credit cards are rare to use, would maybe need to use a friend's card	Consider using other payment options, including Paypal, virtual currency, and direct banking links in countries supporting it.
Several people did not see the CVC field or did not understand that they had to fill it out, and wanted to continue without it. Some did not understand what it was.	Change the wording to 'card security code', and put it on a separate line.
The configuration of choices may be confusing. One participant suggested that it would be helpful to know which option is the recommended or most popular. Many people seemed to assume that the annual plan would be cheaper.	- Consolidate the information about the plan's prices next to the radio button selection, so that people don't need to look back to the top of the page - Highlight which option is the recommended/most popular. - Change the visualization from having to choose twice between 2 options, to choosing once between 4 options. - Consider showing the percentage discount when paying annually, if the discount rates are made consistent (they're now 11% for the smaller plan and 4% for the larger plan).

After signing up, several people expected to receive a confirmation e-mail with invite code.
(See comments under *Sign up confirmation / Next steps*)
	- Explain what the e-mail address is used for. [For billing purposes only?]
	- Consider giving the option to send the invitation code by email:
	  - For example, adding this choice to the bottom of the screen, can already sensitize people to the invitation code:
	  "You will see the one-time invitation* code on the next page.
	  [ ] Check this box if you would like to receive it by e-mail as well."

30-day free trial: unclear how it works payment-wise	Add explanation underneath credit card info: “Your card will only be charged after the 30-day free trial ends.” Offer option to cancel via link instead of sending an email (making it a smaller barrier to do so).
30-day free trial: one person wanted to know what happens with their data after the trial	Clarify. [Question: Can we even delete access then?] To not make this page not overwhelming best to do so in a FAQ.

Other issues mentioned:

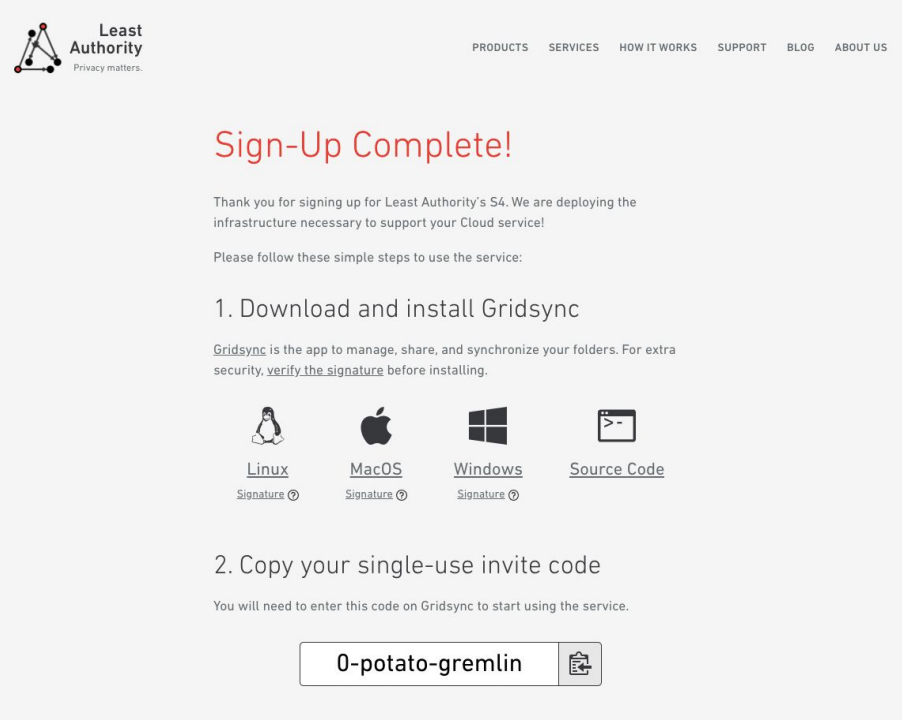
- One person commented that the offerings seem expensive, they get 150GB for $3 at Google Drive.

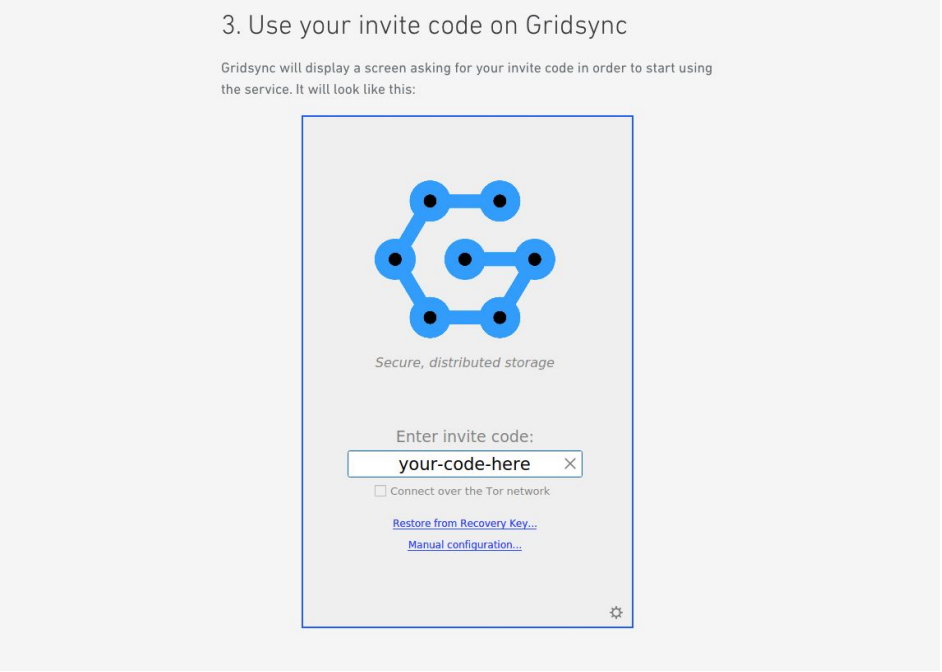
back to top

Sign up confirmation / Next steps

[Are the next steps for installing communicated clearly enough? Do people see that they need to copy the invite code? Do people understand that this code does not work the same way as an account? Is it important that they understand that? Do users verify the PGP signatures provided (or even care)?]

3. With the information provided after signing up, what would you do next to start using the program?





Issue	Suggestion
Most people easily found that they had to download the program, and how to download it.	
Several participants were unaware that that there was an invite code on this page. They simply thought that with clicking on 'Download' they had finished what they needed to do on this page. Several participants first installed the program, then went back to the browser to copy the invite code, and then had to go back to the program to paste the invite code.	Reverse the order between 1 and 2. Putting the invite code first will (a) make sure people understand that they need a code and what it's supposed to do; (b) offer them the opportunity to copy it directly instead of having to go back to it later (it's unlikely they'll use the clipboard for other things in the meantime if they install the program right away).
Sign up Complete! text gives people the feeling that they're done.	Consider making the title "You're signed up. Here is what to do next:", to make it clear that there's a path to follow and that they are not done yet.
Several people were expecting to receive the invite code by email, since they had to fill out their email address on the previous page *(see comments under 'Sign up form')*	Manage expectations as to how the email address on the sign-up page is used *(see comments under 'Sign up form')*
The screen shot from the software under step 3 may seem like it's an actual form on this page. One person thought they had to somehow paste the code into the screen shot on the webpage.	Make it clearer that it's not an actual screen, possibly by adding the window title bar from the operating system (but there's a risk that people who use a different OS would get confused).
While no tester used the signature verification option, several did check out the more info link. One person who skimmed the text got confused as to whether verifying the signature is a prerequisite to installing the program.	- Add "(optional)" at the end of: "For extra security, verify the signature before installing." - Put this sentence underneath the Mac/Windows/Linux links, above the signature. This way it will limit confusion with people and reduce the chance that people think it's compulsory; yet for people who are looking for this they can still easily find it. - Consider: do we need this? May be useful to test whether this actually gives people a better sense of security.

Windows: The ZIP file download causes many issues, people don't where to save it, how to find, how to open it	Create a setup.exe installer for Windows
One person would like a Debian package for the Linux install	Provide ".deb" package
This is the first place where people noticed / started getting confused about having to download something called Gridsync after having signed up for S4	*See under Other issues that came up.*
One person found the language on this page too technical "We are deploying the infrastructure necessary to support your Cloud service!"	Delete this sentence. It seems unnecessary and the sooner people get to the next 3 steps to follow, the better.

Other issues that came up:

- One person expected the code to be numbers

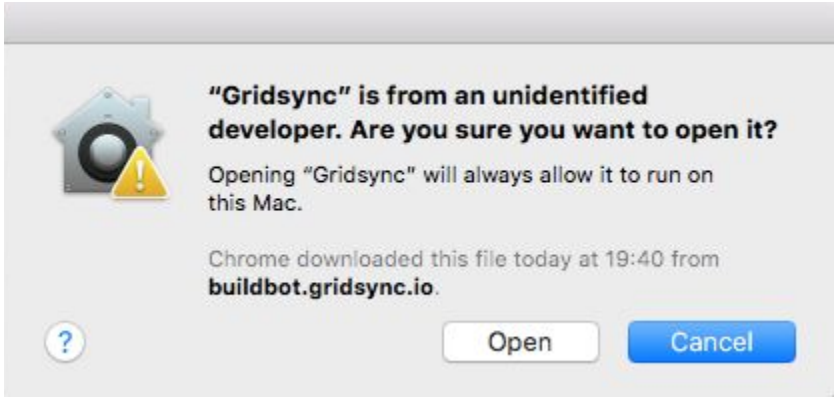
back to top

Installing the program

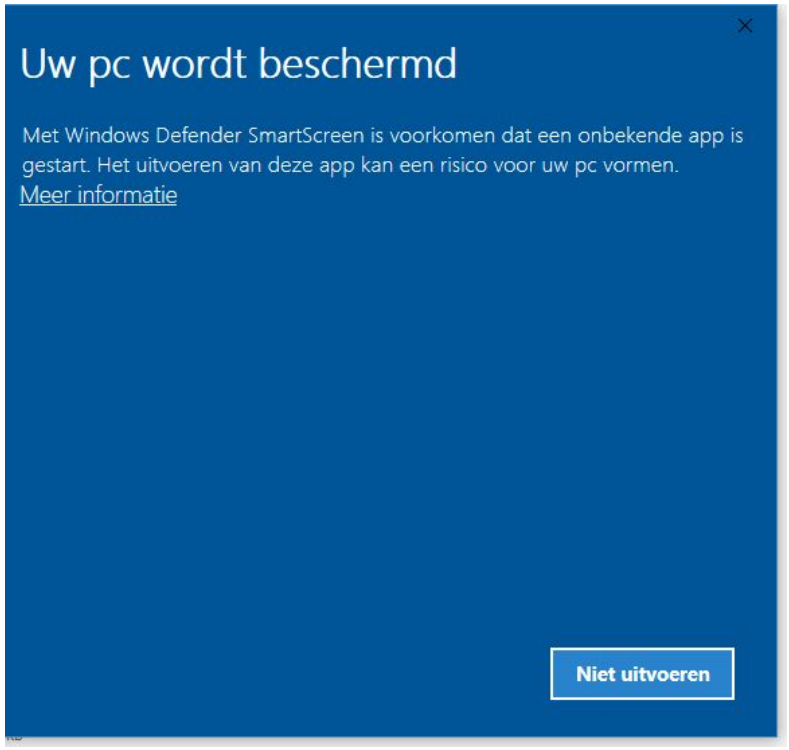
[When installing: How do they respond to the "unidentified developer" warning, if it comes? Do people use the Tor connection? Do they check to see which preferences are available to them? From the initial welcome screen? After joining the grid? Never?]

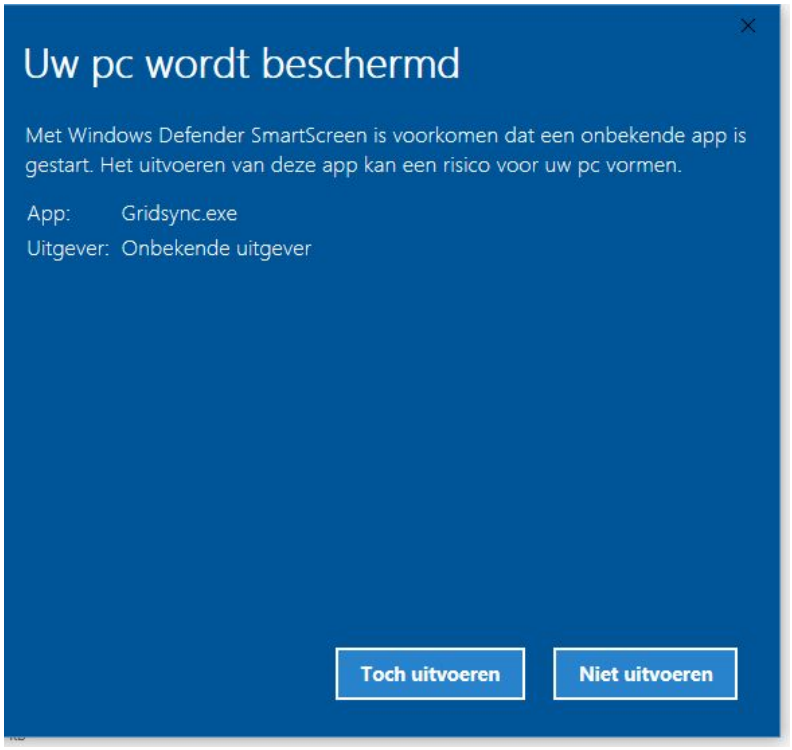
4. Start using Gridsync

[Mac: unidentified developer warning. Right: after control+execute the option appears to open it anyway]

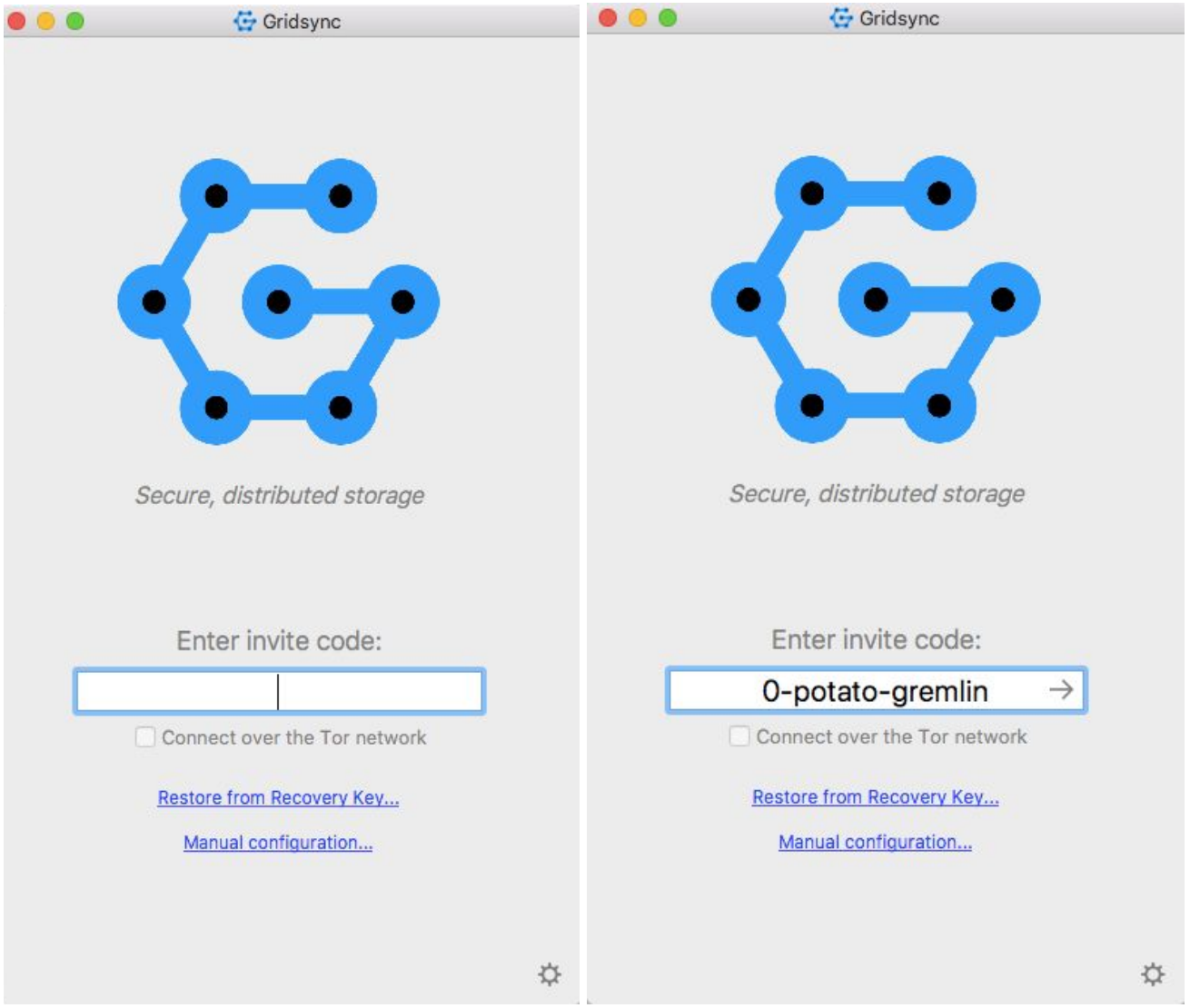


[Windows: unidentified developer warning. "*Your pc is being protected. Windows Defender SmartScreen prevented an unknown app from starting. Executing this app can pose a risk to your pc*." Right: after clicking 'More information' the option appears to run it anyway] [In Dutch]

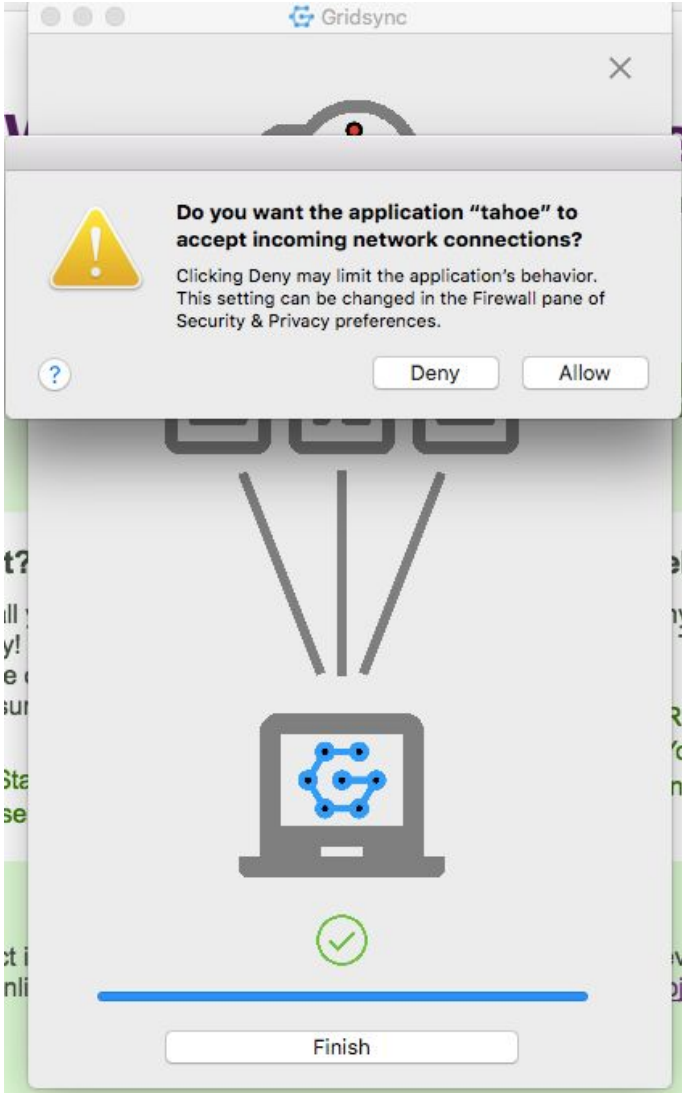




[Initialization screen]



[Firewall warnings on Mac and Windows after clicking the '-->' button.
Whether choosing to deny or allow does not seem to affect the software's operations]



Issue	Suggestion
Unidentified developer warnings on Mac and Windows slows down installation process and gives users pause. People sought for ways to continue. One person had a hard time finding what to do (had to look in Windows under More info to be able to say Run anyway).	We should keep in mind that testers using our clean machines may feel less inhibition about bypassing security warnings than they would on their own computer. - Mac: Sign app with Apple Developer ID / enroll in Apple Developer Program - Windows: certify the app?
Initialization screen with input line for invite code: Several people didn't know what to do next. Several didn't remember having seen anything about a code before.	Insert a default grey text: "Paste invite code from confirmation page here" in the blank form field. *(See also other suggestions for the confirmation webpage).*
The absence of a continue/go button (before a code is pasted) obscures next steps.	Make the arrow that appears in the form field a button outside of the form field, grey it out until an invite code is entered
The manual configuration did not seem to generate interest.	Consider whether these need to be kept in at all, or whether they can be placed under a 'Manual configuration' or 'Advances settings' tab under preferences.
After having entered invite code and giving it a start: Firewall warning on Mac and Windows interferes with the process. One person thought the name of the file (tahoe) looked like a virus.	Since whether the user chooses to allow or not does not seem to affect syncing behavior: can this dialogue be avoided? Is it a bug? Is it tied to the developer certificate?
Finish click seems redundant	Consider presenting information about the recovery key already here, to sensitize people to what's coming next. Consider using the waiting time to instead show a quick tutorial about the program. (→ *See the visualization suggestions under 'Recovery key export'*)

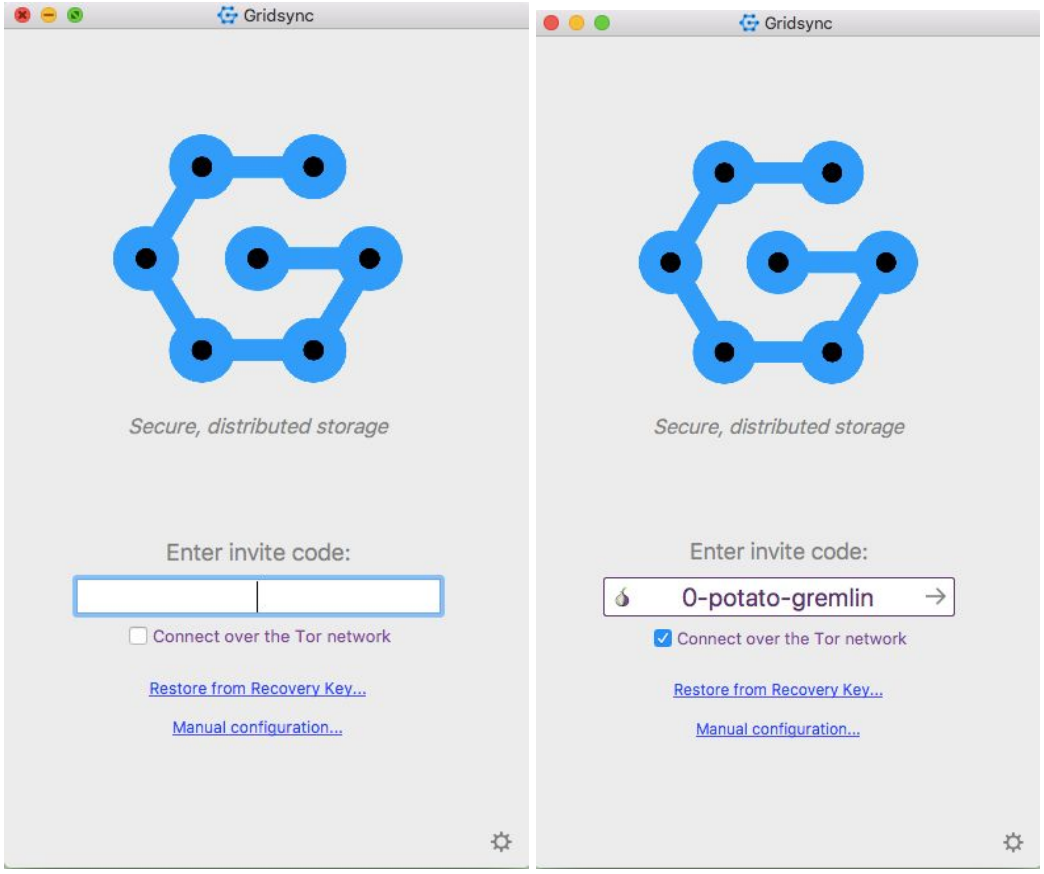
back to top

Tor

[Do people want to use Tor? If they do, do they understand how to use Tor for Gridsync? Do they understand they need to have the TorBrowser open? If people once choose to use Tor, should they always be required to use it?]

5. [Back to initialization screen] *Using Tor:* You would like to use Tor for your connection with Least Authority, please connect to the grid using Tor.

[Initialization screen with Tor running in the background]



Issue	Suggestion
Several people were confused or frustrated with the greyed out Tor checkbox: “If I see an option, I want it to be usable”. For one person it was self-evident that they had to run the program first.	- Clarify that this option can only be used when Tor running is in the background) - Distance it physically from the invite code field, so that it does not seem a requirement to run it. - Consider creating a separate dialogue box. Since Tor use is seemingly less common that is fine. That would also give more space to explain what Tor is and what the consequences of Tor use are. - Proposed text: Tor connectivity provides for better anonymity protection*. For more information and to download Tor, go to www.torproject.org. Connecting to Gridsync over Tor may be slower or less consistent than connecting normally. In order to connect over the Tor network, Tor must be running in the background. [ ] Check this box to connect over the Tor network. **we may need to explain more specifically how it would complement the privacy and security offered by S4, in order to not give the impression that connecting without Tor is particularly risky.* - Create a text link underneath ‘Restore from recovery key’: “Connect via Tor… (disabled)”. When the checkbox in the separate dialogue window is checked, change this text into “Connect via Tor… (enabled)”.
One person thought that this was a box that needed to be clicked before they could continue. (Make it clearer that it’s optional “If you want to connect over the Tor network.”) The purple text when Tor was active made one person think they couldn’t click on it.	
Several people who were familiar with Tor consciously avoided it because they feared the connection might be slow or bad	
Several people were looking for more explanation about Tor, how to use the program with Tor	

There were connection issues while using Tor; syncing took a long time sometimes, and there were also connection errors indicated.	Do more testing to investigate under what circumstances Tor will and will not work.
“There should be a way to change mind about using Tor. Selecting to change the setting/default”. "I want to turn off Tor" - Chris: This jeopardizes anonymity from previous sessions - Suggestion from participant: "warn users when turning off Tor, but still allow"	Letting people to connect without Tor where they previously connected over Tor may pose a security risk to them. Nevertheless, there may be circumstances that people would like to do that anyway, such as when using Gridsync using Tor brings connection problems at critical moments. When people first connect with Tor and then connect without it, they could be served with the warning “You previously connected using Tor. Are you sure you would like to connect without Tor this time? You would not have the same anonymity protection as you had before.” If this setting remains the same [People cannot undo their choice for Tor], then they should know about that in advance.

back to top

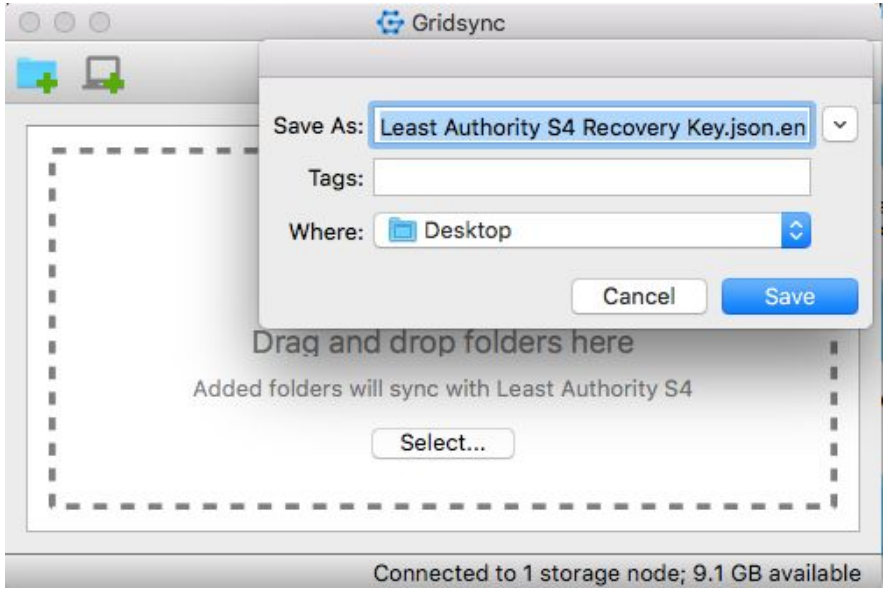
Recovery key export

[Recovery Key dialogue box: Does it convey the importance of exporting such a key? How do people respond to the dialogue box? Given that it's strongly recommended to export, there is a risk their response will be biased while being observed. Let them say out loud what they're thinking. Note where they store the key if they do.]

6. *Recovery key:* Proceed as you would like.

Gridsync
Encryption passphrase (optional):
A long passphrase will help keep your files safe in the event that your Recovery Key is ever compromised.
Connected to 1 storage node; 9.1 GB available

Gridsync
Encryption passphrase (optional):
Time to crack: centuries
Excellent
A long passphrase will help keep your files safe in the event that your Recovery Key is ever compromised.
Connected to 1 storage node; 9.1 GB available


Gridsync
Save As: Least Authority S4 Recovery Key.json.en
Tags:
Where: Desktop
Cancel
Save
Drag and drop folders here
Added folders will sync with Least Authority S4
Select...
Connected to 1 storage node; 9.1 GB available

Gridsync
Least Authority S4
Recovery Key successfully exported to / Desktop/Least Authority S4 Recovery Key6.json.encrypted
OK
Select...
Connected to 1 storage node; 9.1 GB available

Issue	Suggestion
Most people seemed to understand from this dialogue box what the recovery key is, and why it could be important to them.	
Several people did not know where they could safely store the key. Several people said they would use their password manager if they had the chance. One person would want to print the code. The text “store it in a safe location” seemed to get lost as people quickly skimmed the text.	Put the text “store it in a safe location” in a separate paragraph. As in the pre-September 2017 of Gridsync, provide concrete options for where people can store the recovery key (encrypted drive, or password manager). Also add these suggestions to the ‘Export successful’ dialogue box (“Remember to put the file [link] in a safe location, such as an encrypted drive or a password manager”). Can integration with password manager be facilitated? Consider giving an option to copy recovery key to clipboard rather than save to file? (As a third option beside ‘saving’ and ‘skipping’.) Can there be a print option? Or print a QR code? (But how could it be converted back in from the QR code, especially as there is no mobile application, now.)
One person didn’t read the instructions; they were too long. They skipped the exporting a recovery key process altogether. One person felt it would be useful to show the steps more visually, like an infographic: showing the key, showing where it can be saved	Make the recovery key creation visual. Idea: short storyboard at the moment that user connects to grid (instead of image with ‘finish’ button) Headline: Before we start… Drawings: [1] [2] [3] [4] [5] [1] Newly minted unique key [2] Ambulance with a key in it [3] Key next to folders [4] Image of key going into a safe [5] Single stick figure smilingly embracing themselves Text underneath each drawing:

	[1] Create your very own recovery key [2] In case something goes wrong (e.g., hardware failure, accidental data-loss).... [3] ... this key will help you restore uploaded folders [4] Put it in a safe place, like an encrypted USB drive, or in your password manager. [5] Be selfish: don't give this key to anyone.
Many people did not know how to continue from the encryption passphrase dialogue box, they were looking for a button (Go/Next/Continue/OK) and did not realize that they could press Enter. Several people thought they had to keep typing a longer passphrase because it was a weak or OK password, and that that's why there was no Continue button.	Depending on the above, add button 'Next'/ 'Save recovery key', etc.
One participant seemed shocked that they would need both a recovery key AND a password to get into their files. One participant felt less secure because the passphrase was optional ("If it's safer, why make it an option?"). Made them doubt if the recovery key is good. If the recovery key is being exported to a password manager, then the passphrase may be redundant.	Consider making the passphrase an optional checkmark in the initial dialogue: "Create additional passphrase (recommended when storing the key in an unencrypted location). You will need both the passphrase and the key file to restore."
One person tried to paste the invite code into the passphrase form	Make it clearer, with the text/visualizations above, that it's about *creating* a recovery key, rather than using an existing code.
One person would want to confirm the passphrase, because it can be rather long	Good suggestion.
One person wanted to look at what the key looks like and to verify that it's there, had to navigate to find it	Can there be a link in the export successful dialogue (either underlining the path, or a separate button, go to recovery key; the

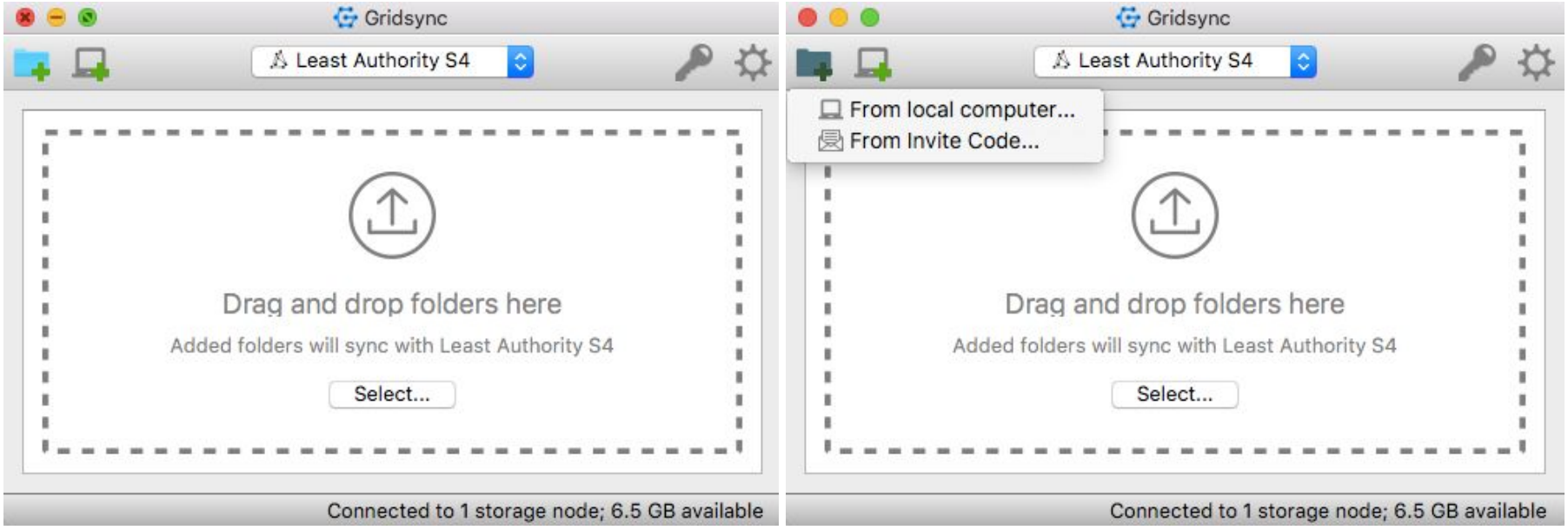
	other button would then have to be ‘Done’ instead of OK)? Can the file type be different (for example .txt), so that people can more easily view the file?
One person would skip the recovery key creation, for the sake of convenience. (“Security always comes with a trade-off”).	When people press Skip, there can be a dialogue box reading: “You can always create a recovery key using the [ ] icon in the toolbar. Are you sure you want to skip?” [Yes] [Go back]

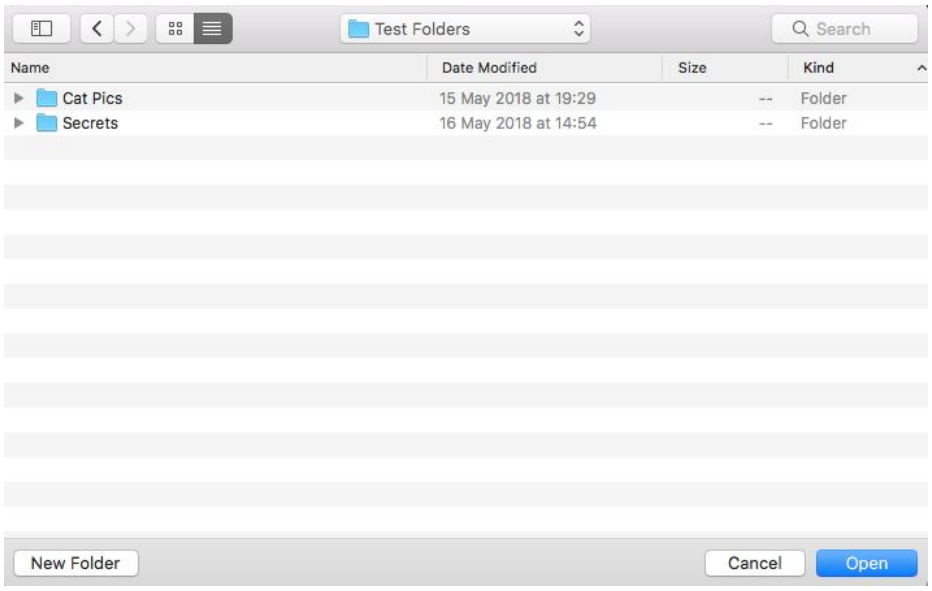
back to top

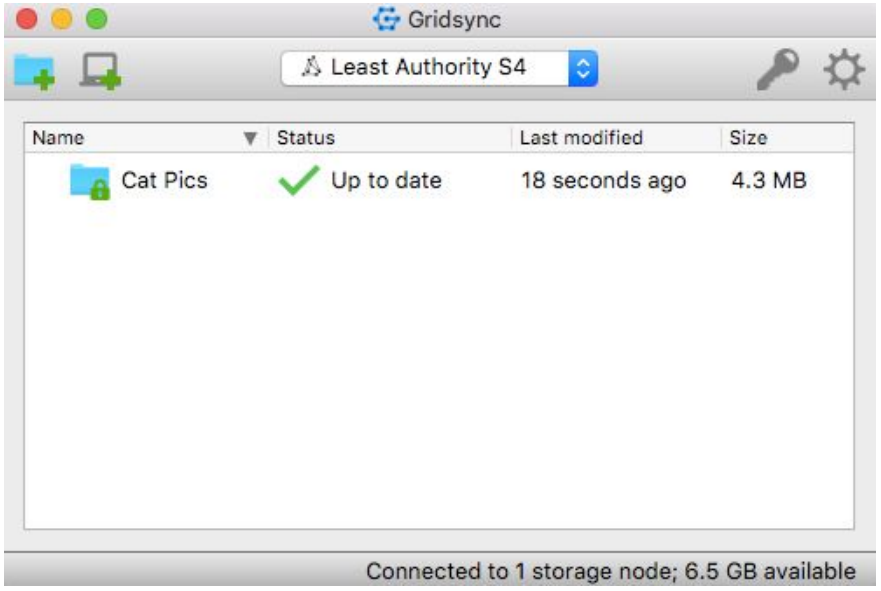
Adding folder to grid

[Do people understand how to use the basic functionality of adding a folder for synchronization?]

7. *Add folder to grid:* Add the ‘Cat pics’ folder to the grid.







Issue	**Suggestion**
From this initial screen most people succeeded in either using the 'Select folders' or drag & drop functionality to add folders.	
Nevertheless, several participants had trouble finding how to add folders to the grid.	Make the icons in the toolbar bigger, put text next to them to explain what they do. Separate out Adding folder from computer, and Receiving shared folder (Adding folder from Invite code)
When adding folders to the grid, the expected behavior was not clear to several testers: is the folder now in the cloud? One person asked whether it was safe to delete the test folder on the desktop now that it's in the cloud (that's what they would want). Some people were confused by the files in the cloud changing when things are changed locally. And when they were double clicking on	*Quick fix suggestions:* Suggested text for above the sorting row: - Folders being synchronized; or - Folders being watched; or - Local folders being watched/synchronized (but that does not apply when it's stored remotely)

a folder in the Gridsync window they were expecting to see what's in the cloud, not what's on the computer.	Add a folder path column, to make clear that it's not a folder being uploaded, but a local folder that continues to be watched in its current location. *Farther-reaching idea for brainstorming (see the Highlights):* Given that throughout the use cycle of Gridsync, people seemed confused as to how it fundamentally operates, it may make sense to more drastically re-think Gridsync's design approach. The following suggestion plays into some of Gridsync's uniques value propositions that includes continuously syncing a decentralized folder structure: - Focus on selecting folders. This can be done via the current 'Select folders...' button, but also via a separate dialogue box on start-up that allows people to select which folders they wish to synchronize and keep synchronized. - Another option is a split screen between folders that are selected, and the local directory structure (with check boxes to choose which folders to synchronize) - Consider removing drag & drop functionality. This will reduce the chance that people experience the software to work as 'upload' software, and also avoids the possibility that people will try to synchronize individual files.
When double clicking on a folder, one person expected a browser window to open rather than file explorer [This may mean that when people see the folder list in the Gridsync window they may think that the folders displayed are the folders on the server, rather than the folders that are being watched locally]	
Several people were looking for a dedicated Gridsync folder in the home folder, the same way as Dropbox works.	
If you create a folder, where does it go? Can you create a directory structure in the Gridsync window?	
One person was also missing indication as to whether folder was syncing when browsing through folders in file explorer	Dropbox does this / used to do this in Windows, but not in Mac. Chris suggested that this would require admin privileges in the computer. Given the decentralized folder selection that would help reinforce clarity for people how it works but also make it a lot easier for them to use Gridsync. Consider doing more user testing around this option.
Several people were looking for a status indication of how an upload/sync is progressing.	Add information about 'time remaining' to the status in the main window.

One person would also like to see status indication (if it's syncing) in system tray.	Add information about status to the system tray dropdown menu, so that one needn't open the main window to see the status and don't need to enable desktop notifications.
One person was looking for indication whether there is an Internet/connection issue to the grid, it should warn about that.	Add 'not syncing' as a status indicator (instead of showing 'Up to date' when there is no Internet connection).
People would like to have a way to stop synchronizing if it takes too long (for example as with Tor having connection issues).	Add pause syncing option (as a right mouse click and in the system tray dropdown).
When adding a second folder, unclear why the first folder's status briefly changes to 'Loading' again.	[Chris: **TODO**: Ensure "Loading..." state only shown for newly-added/starting folders; keep existing folders' status displayed in between tahoe client restarts]
The dialogue box where a folder can be selected says 'Open', a term not clearly aligned with the 'select folder to add to grid' action expected	Make this 'Save'.
After having successfully added a folder, the text 'Drag and drop folders here' is gone, leaving a tester looking for it. Another one explicitly didn't feel bothered about that indication disappearing, they knew how to do it after having done so the first time.	If keeping the drag & drop functionality, consider keeping a semblance of the drag & drop text in the background even after a first folder has been uploaded.
Several people uploaded a folder using "Select..." rather than drag & drop. However, when doing so, they were unable to select multiple folders at the same time.	Enable selecting multiple folders Consider adding a checklist dialogue box to show a complete folder list that people can check for syncing, and to make people better aware about how the system works.
Bug: Systray icon animation did not stop when a second folder was added while the first was still syncing.	Should be fixed.
One person did not understand why it is syncing, when the folder is empty (it took a while for the content in the folder to show?)	Can this be checked?

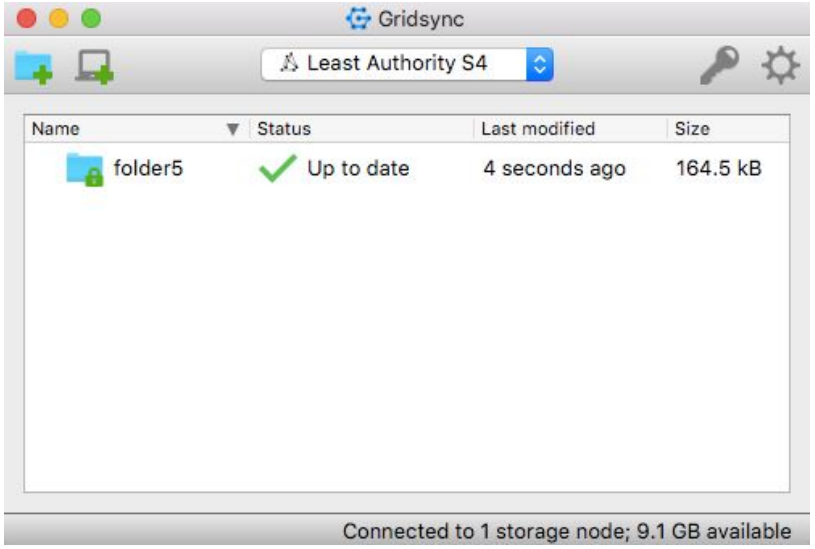
Several people tried to add files instead of folders, which didn't work. - Tried dragging single file, got error saying "currently only supports uploading and syncing folders, and not individual files. Please try again" - Suggestion from participant: "Move word 'only' to later in sentence" - Suggestion from participant: "Don't need to say 'try again'"	Rewording suggestion: "Currently supports uploading and syncing folders only, not individual files." Consider disabling drag & drop functionality, along the lines of the suggestion higher up in this section.
Unclear to people what happens to the folder in the grid after deleting the local folder	Note Chris: - [Note: This was requested previously. See https://github.com/gridsync/gridsync/issues/27] Also this means more an uploading than a syncing behavior After discussion with Chris: grey out in Gridsync after deleting locally, offer the option to download from grid

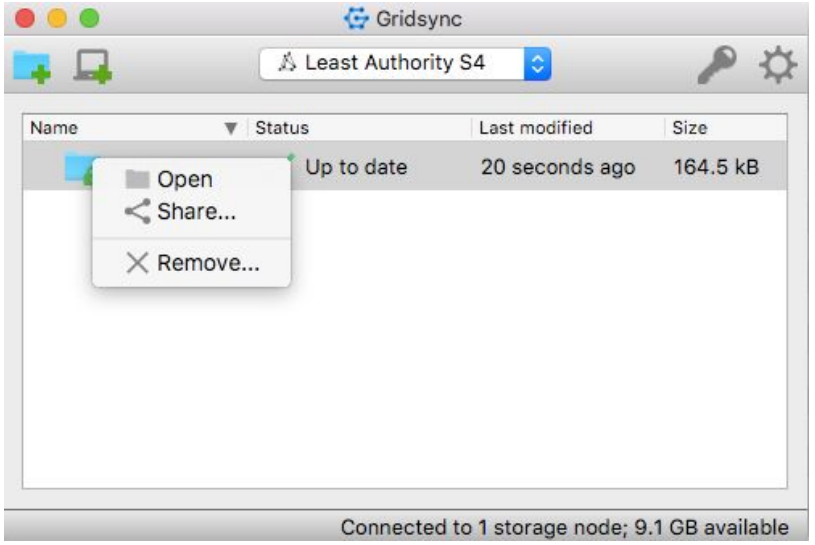
back to top

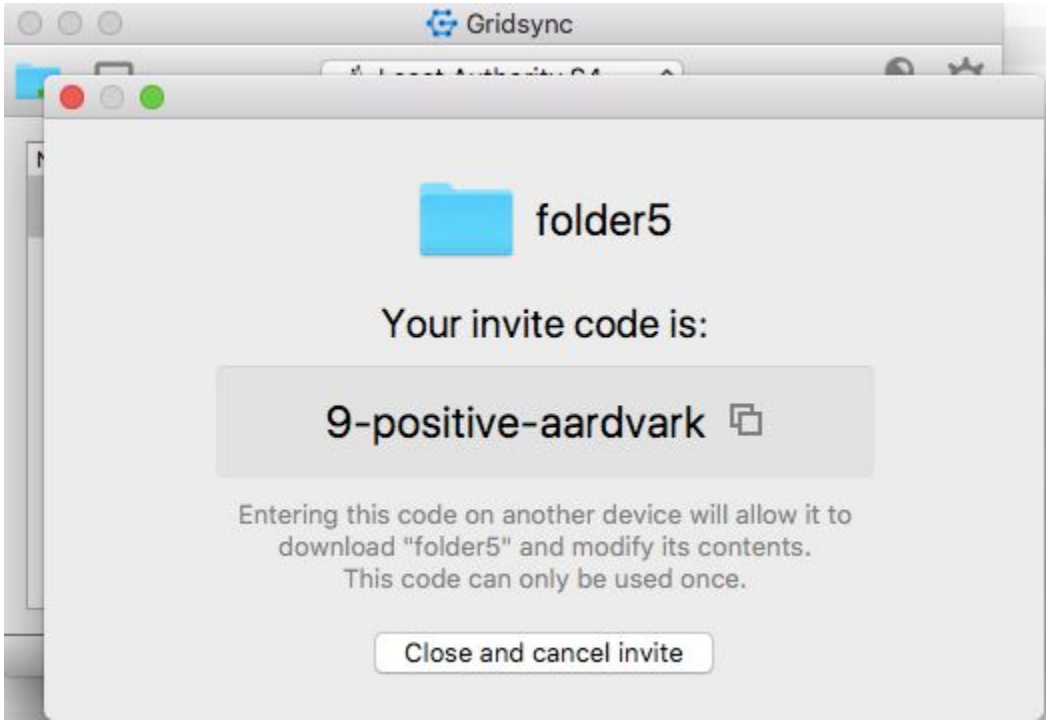
Sharing a folder

[Do people understand how to share folders?]

8. *Share:* Share this folder with Chris. What are all the steps you should take for Chris to be able to open that folder?







Issue	Suggestion
The sharing process seemed to cause less friction with testers than in the previous (paper-based) testing round (September 2017). The instantaneous sharing experience itself gave several people joy.	
Several testers were (unsuccessfully) looking for a share button on the main toolbar, several testers instinctively right-clicked and pressed share	Add a share button on the main toolbar Also: (Chris) - [**TODO**: Add triple-dot/hamburger icon next to each folder which, when clicked, shows the context menu]

	→ Triple dot may make more sense than hamburger menu which tend to be used more for overall menus rather than for per-item menus. Hamburger menus next to individual items are sometimes used to shift order, which is not relevant here.
While some people had some idea how they'd like to share this code with someone (several mentioned Signal, one person wanted to take a picture, or embed in email to friend), many seemed lost as to how to get the code to the recipient. Several people were expecting a field to enter an email address to send it to, or a way to embed the information in an email. One person wanted to share an invite code in a link that sends them to the website.	Provide concrete suggestions. For example: "You can share folder **'X'** with another person who has Gridsync. They do not need to sign up for S4.* You can pass on this code to a recipient by using any medium you find safe, such as a secure messaging app. The code can be used only once. Once another person has access to the folder, they can modify its contents, and the folder cannot be unshared." **[Is this an accurate way to frame it?]*.
Several people asked whether the recipient will need to have Gridsync	Clarify this in the dialogue text. Explain also that people don't need to pay for Gridsync if they don't need their own space?
People were pleasantly surprised at the realtime accepting of the share, they like knowing that the other person accepted right away. And if they haven't accepted, they can tell something may have happened to that person.	Consider emphasizing instantaneous sharing and knowing when someone's received your files in website materials about S4.
One person thought they needed to share the recovery key	Communicate more clearly that the recovery key is not to be shared. (*See section on Recovery key export*.)
One person asked if they can send the code to multiple other people.	Emphasize that it's a one-time use code by adding a line break between the two explanatory sentences.
Several people were unsure how to handle situations where the recipient could not right away receive the shared file; would they	Suggestion from participant: "background the invite codes so window doesn't need to stay open".

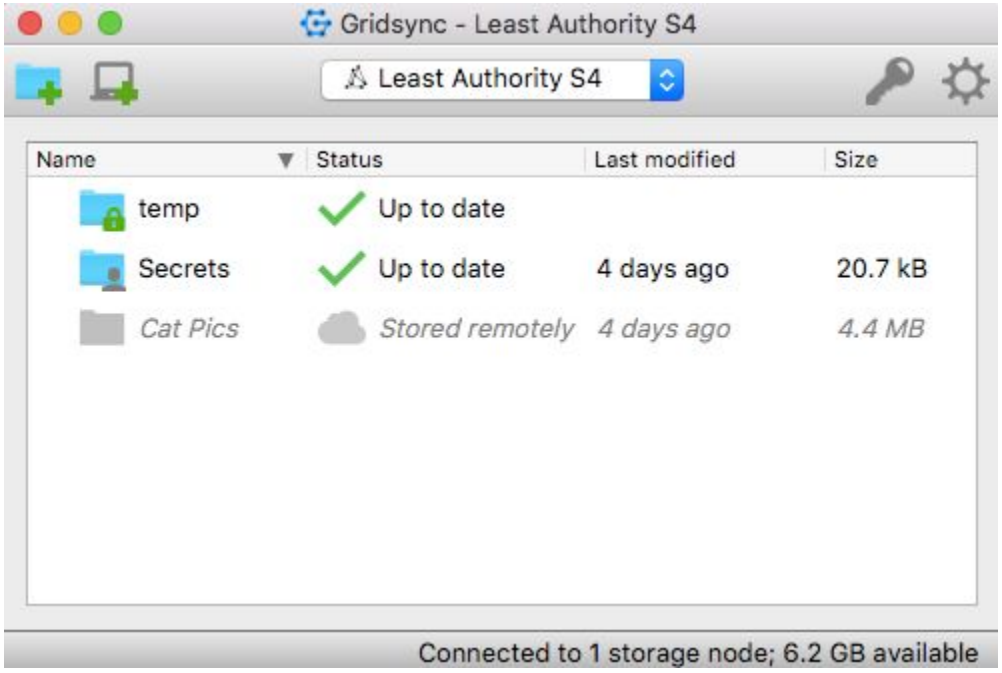
need to keep the window open for several days? One person would prefer to select a time period for the code to be valid rather than to keep it open	(This also came back from the September 2017 user testing: Consider a way to keep the invite code active without it having to be in an active window, for example through a notification pane (including (X) cancel button) in the main Gridsync window + system tray dropdown)
One person wanted the option to share one-directionally: they can share something with a recipient, but the recipient can't put things in the folder themselves or otherwise make changes to the contents of the folder.	Question: Is this technically feasible?
One person wanted the option to just share a single file instead of needing to share a full folder.	Question: Will this be technically feasible?
The word 'invite code' may cause confusion, especially since it says "Your invite code is...". It may sound like the invitation is for yourself. Invite code also overlaps with the code people receive when signing up. When sharing it could say "code" or "passcode".	Consider saying 'The code you can share is:'
Is it clear enough that it's only a particular folder being shared?	Emphasized the folder's name by making it bold in the text above.
Several people wanted to have a time limit on sharing	Question: Is this technically feasible?
One person asked for an explanation that it's peer-to-peer	It did not seem a widely shared question, and it is unclear how understanding this will easily enhance people's understanding of how to operate the software. Perhaps it's better suited for a 'More info' document.
After sharing, the dialogue says "succeeded".	Make this "successfully shared".
Several people wanted to have an explanation that said that folders couldn't be removed from the other party's system / that it can't be unshared	See the suggested text above.

back to top

Shared folder status

[Do people understand how to see whether a folder is shared?]

9. *Share status:* Please check whether the Cat pics folder has been shared.



Issue	Suggestion
Most people seemed pretty clear about distinguishing a shared folder (showing a person in it) from a not-shared folder.	At the same time, it is not certain if they would be equally clear if the shared folder would be the only folder there. Useful to assess in a next round of testing.
The lock icon on the not-shared folder (indicating that it's	Remove the lock from the icon.

private) was interpreted by several respondents as meaning something else than was intended; namely, that it is secure or encrypted, or even that it's locked in the sense of inaccessible, requiring some key. The lack of a lock on the shared folder adds to the confusion	
People were looking for info on whom a folder was shared with, or a log book of accepted invites, for example by right clicking the folder or by expanding a folder. When explained that it's a security feature that there are no IDs, usernames, etc., that made one person feel pretty safe.	Notes Chris: Gridsync used to do this, but it was removed with the requirement to specify a recipient name when sharing a folder (as suggested by the previous user-testing session in Fall of 2017). Longer-term, I'd like to implement a "profile" system to securely handle membership/names; see https://github.com/gridsync/gridsync/issues/52 It was determined last time that asking users to specify a "recipient name" for sharing activities constituted a cumbersome and confusing step, and it was suggested, accordingly, that such a step be removed entirely in favor of more direct (i.e., nameless) sharing. After doing this, however, several participants in this round wished to know _who_ their folders were shared with (which is, of course, information that the UI cannot provide _unless_ we adhere to a some sort of naming/profiling/identity system). This is not to say, of course, that these past suggestions were bad or misguided, but rather it suggests that past solutions/fixes may have been too extreme or otherwise insufficient and that, more generally, it is very difficult to strike an appropriate balance between providing too much information/steps/warnings and too little (and that this is something we/I should continuously strive to refine and improve upon).

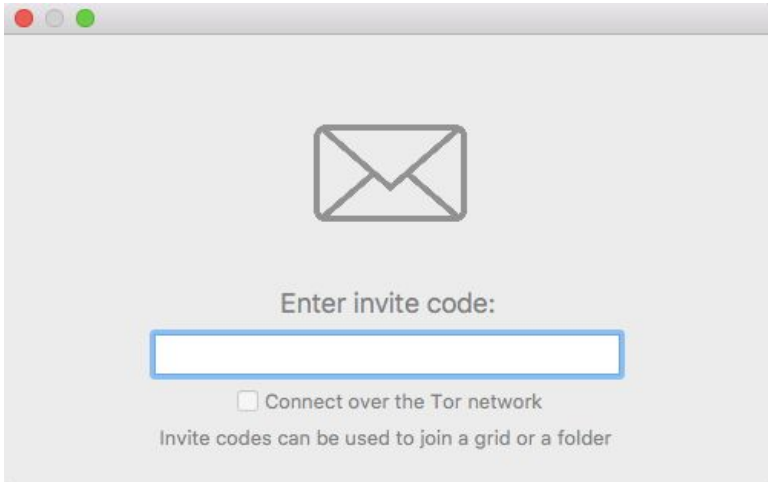
	→ It makes sense to brainstorm further about a profile-based system or considering adding a name back in as an optional de-emphasized feature, making it clear that it's for people own logging. Not needing to enter a name or email address also offers clear privacy/security benefits, and it's unclear how important it is to people to have names listed if it costs them extra work. After all, usually this kind of logging happens automatically when people share with a specific contact person, such as by having the system send out a shared link to an email address). It may be worth doing more user research on this.

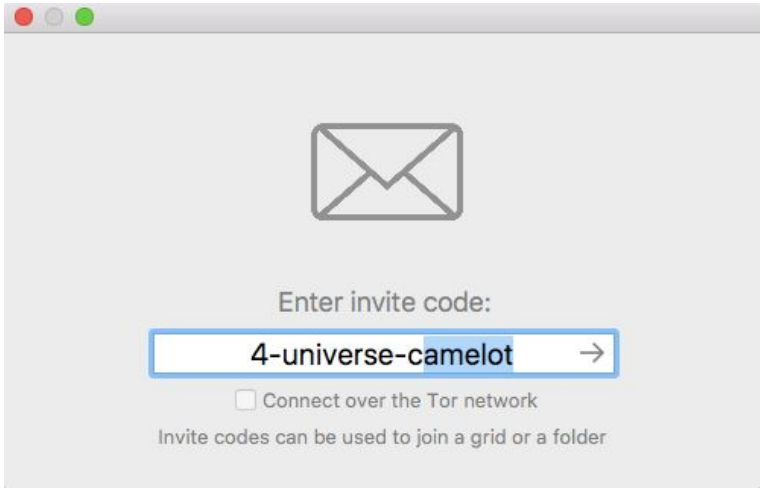
back to top

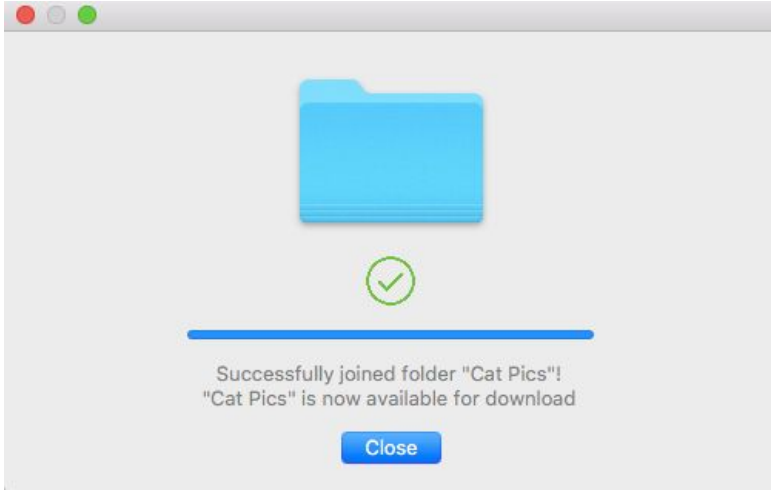
Receiving a shared folder

[Do people understand how to open a shared folder?]

10. *Receiving a shared folder:* Chris wants to share a folder with you. After he does so, go ahead and open a picture in the folder.







Issue	Suggestion
Most people did not know what they should do with the code / how to receive a shared folder, looked for it under the Connect another device button, under Preferences, under 'Key > Import…' One person didn't know what to make of the text "Add folder from invite code", what does that mean?	Create a separate button for receiving a code. Add text underneath 'Access shared folder'.
Entering invite code: one person was confused why this is also called invite code…	Consistency in language, see also under section Sharing a folder.
There is no button to continue.	Make the arrow that later appears in the form field a button outside of the form field, grey it out until an invite code is entered [As in initialization screen]. Or, see the row below:
Several people felt unclear about what would happen after accepting the invite code. A few expected the folders to have already been downloaded to their computer, possibly to a Gridsync folder, and now they were not sure where to find them.	This again relates to the overall file structure choice. If a Dropbox approach is used then it would make sense to by default download to a central Gridsync folder. In the current set-up, however, it may be useful to facilitate the process to download the folders to the person's local drive. - The dialogue window can be used to explain more clearly what people are supposed to do here. (Make the receive invite window different from joining a grid.) - Consider immediately prompting a dialogue box with selecting a download location, and the option to 'Save here' or 'Download later' - Or another option could be to tweak the confirmation screen where one enters the invite code, and adding a button 'Download now…' next to the 'Close' button (it would prompt dialogue box for selecting a download location.)
One person received a "Could not connect to invite server" error	Provide more explanation "Check your Internet connection"?

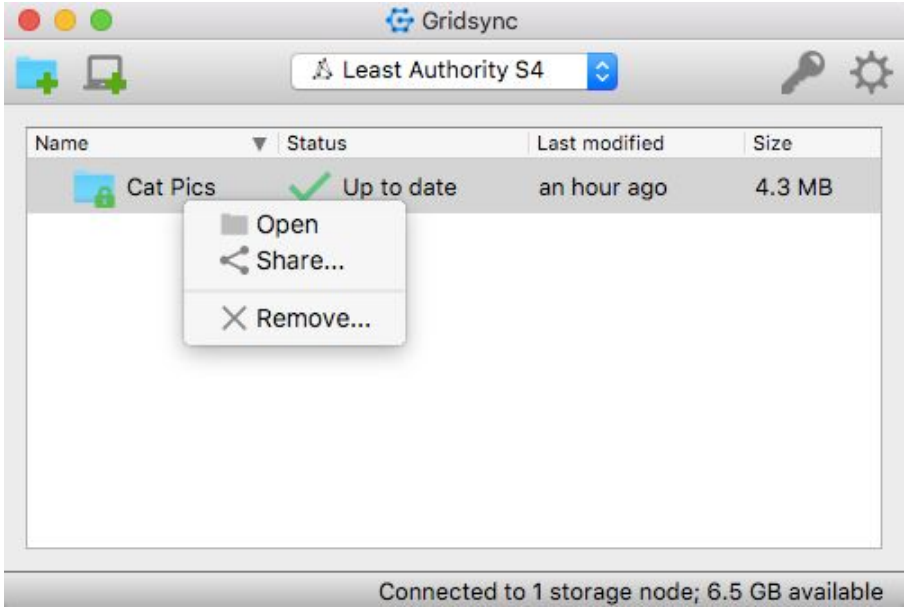
(due to spotty wifi/Tor), did not know what to do with it.	[Should we also account for Tor here and say there's that risk with Tor?"]
The auto-filling form did not work for everyone "I think I would get stressed with all of these [autocompleting] options"	→ more testing to whether people find it easier or rather stressing them out
When wishing to select the folder to download to, the file system dialogue button says "Open", making it unclear about whether this is to open a selected folder, or to save something there.	Make this button 'Save' or 'Save here'..
When downloading the received folder, the status says "synchronizing", where one person expected "Downloading".	[**TODO**: Change status label to say "Downloading", not "Synchronizing" when initially synchronizing a newly-received folder?]
"I want to know the folder size before downloading." It will help me decide to do it now or later."	It already says this in the last column, though perhaps it is not clear enough. If the download options will be moved to earlier in the process (see the suggestions above) then that could also mean people would have to be made aware of download sizes before. (The confirmation screen could also show that information already.)
Is there a way to stop the download? (For example if it turns out the connection is slow.) "I want to pause or cancel a download if it takes too long"	Provide a pause function, see also under Adding folder to grid.
"I want to double-click to download" (is that not possible) To download it is possible to click on the folder (that has a star in front), it's not possible to click on the Stored remotely status indicator (which might make sense as you'd like to do something about that status)	This is now made possible in the meantime (for the entire row).

back to top

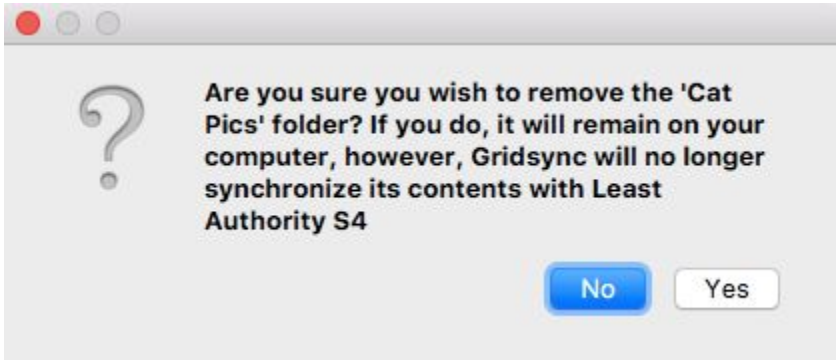
Removing a folder from the grid

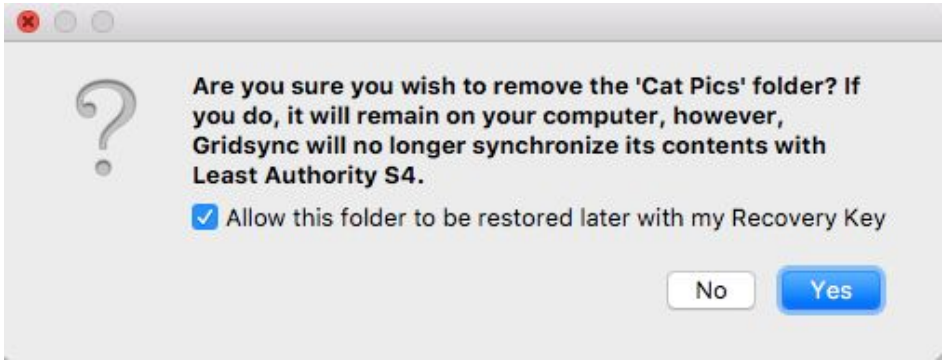
[Do people know how to remove a folder from the grid? How do they respond to the "Stored remotely" text? Do they question whether something is really deleted?]

11. *Delete a folder*: Remove the 'Cat pics' folder that you shared with Chris from your grid.



Before (left) and after (right) change halfway through the testing, to give people option to 'permanently' delete folders:





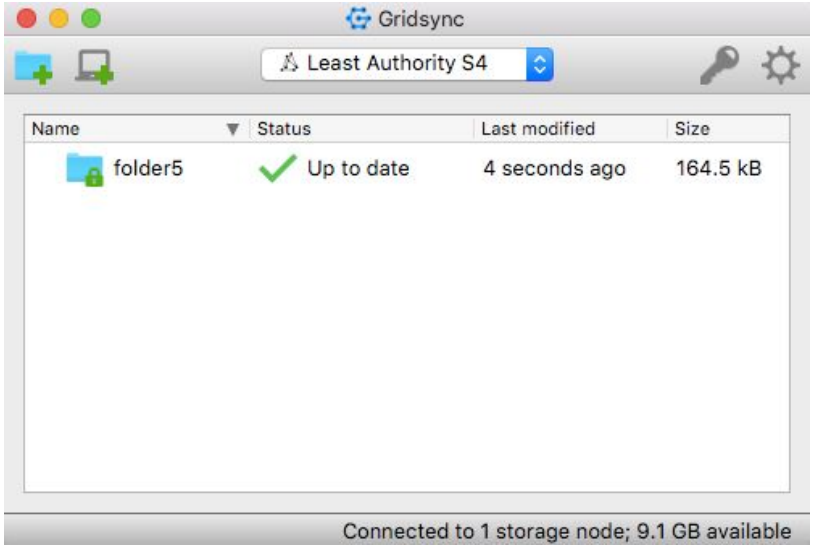
Issue	Suggestion
Most people instinctively understood that they could right-mouse click to delete a folder.	
Some people tried to select the folder and press the keyboard's delete button, to no avail.	Chris - [**TODO**: Allow "Delete"/"Backspace" key to remove folders]
Several people were confused about what happens when they delete a folder. The "Stored remotely" text did not help. Will it stay on their computer? Will it stay on the server? Will it be deleted from the computer of the person who a folder was shared with?	This also relates to enhancing people's understanding of how Gridsync fundamentally operates. Consider replacing "Stored remotely" by "Downloadable from grid*". * It would be useful to brainstorm and/or research what people understand under 'grid', 'cloud', etc.
[Prior to Chris's changes] Several people were unhappy with the notion that you can't fully delete a folder. Several people would like to have the option to immediately permanently delete it. [After Chris's changes]: several people unchecked the box, some still felt it was unclear what happened with the folder	With Chris's changes it should now be more clearly framed as having a way to prevent future access to the folder. Consider "Stop synchronizing with the local folder, but keep folder on the grid"* * see above Suggest to uncheck by default. Or checkbox: "Also permanently remove access to folder on the grid"
(+possible bug: deleted folder, double clicked in Gridsync, and window disappeared)	Something to check out.

back to top

Storage space status

[Do people know how to find this information?]

12. *Storage space:* Please check how much storage space you have available on the grid.



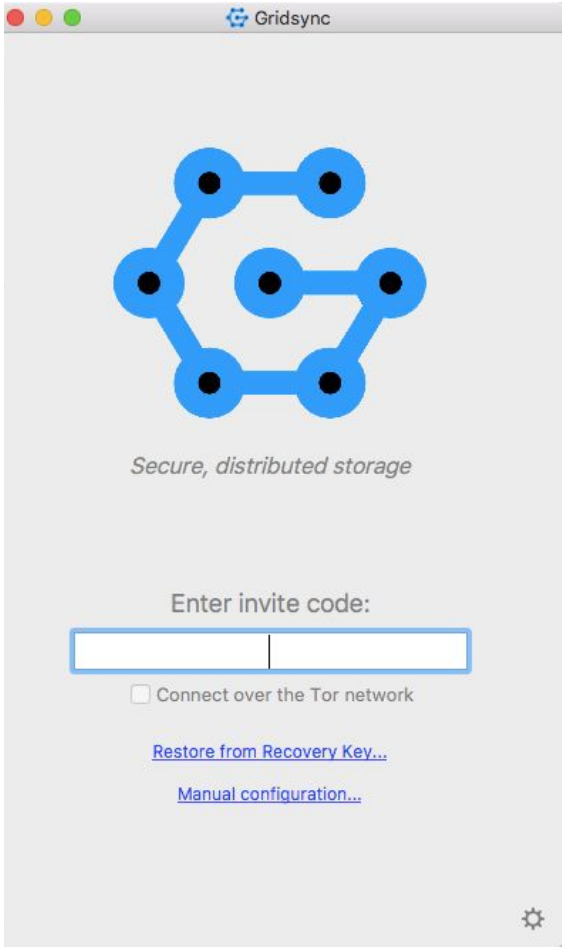
Issue	Suggestion
People were easily able to find this in the right bottom. One person preferred knowing what's available (over what's used)	Makes sense to keep it as is. There has been no indication so far that people prefer knowing a summary of how much they're using instead.

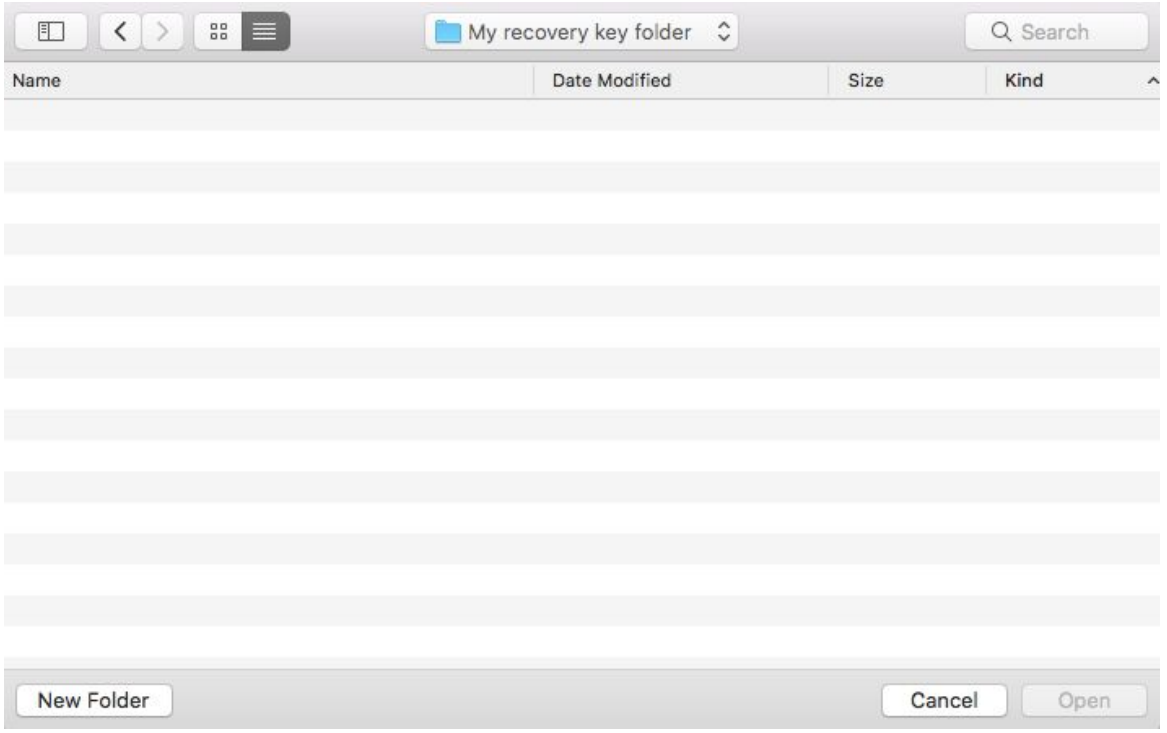
back to top

Using recovery key

[Do people understand how they can recover their connection/folders on Gridsync?]

13. [Back to initialization screen] *Using recovery key:* Imagine your computer crashed, and you wish to re-install Gridsync, and regain access to your files in the cloud. How do you do that?





Issue	Suggestion
For most people the process of finding the button in the screen and using the stored recovery seemed to work fine.	
Some people struggled to remember the passphrase that they had used for the recovery key.	May need to note that they need both the recovery key and passphrase to restore. Added a suggested line that people need both in the Recovery key export dialogue.
After restoring from recovery key, one participant expected to be able to drag the folders (stored remotely) to the desktop	Enable this as a general mechanism to drag & drop to the desired download location
One person wanted to disallow recovery.	Unclear to what end, or whether the person understood that if they would not create a recovery key that recovery would be impossible. Something to stay attentive to if others provide such feedback in the future.
"Did I type the wrong password?" [In reference to "ciphertext decryption failed" error message]	[**TODO**: Provide a clearer/human-friendly error message] → also this says ciphertext instead of passphrase → be consistent. Suggestion: “The passphrase entered is incorrect. Please use the passphrase you created when you exported the recovery key.”
(After entering correct password and restore process completes) "Why do I have to click 'Finish'?"	Consider using the ‘finish’ screen to instead explain what’s going to happen next. (“Now you can download the folders you have in the grid back to your computer, by pressing…”)
Several people wanted to use a password manager when exporting recovery key. This begs the question whether they’d be using it by copy-pasting *the content* of the recovery key, or whether they’d be saving the actual key file.	Provide an option to restore by using text (pasted from password manager) instead of a file. (→ Potentially do more user research on how people would interact with their password manager, using file or clipboard)

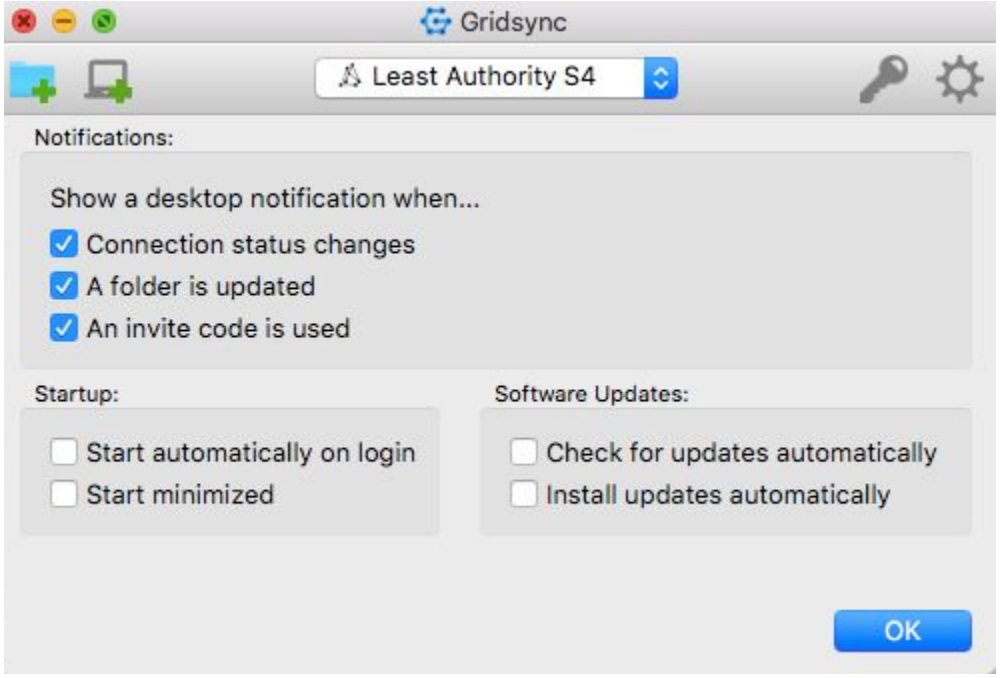
One person expected folders to sync automatically after restore - Chris: What if you're using a different username (i.e., have a different home folder), or such folders are already present? - Answer: "Check for conflicts"	This may be less of an issue if a person only has one folder on S4, but if you have a complete folder structure, then it would become rather cumbersome to select all appropriate folders and folder locations for downloading. Is there a possibility to ask whether to sync to original location if present, and then ask to confirm ("This folder already exists, are you sure you want to sync it?") (What would it do if there are conflicts? Would it delete local files if they aren't present on the grid? Would it always revert to newest files?)
Several people weren't sure about what's online and local after restoring.	This may be related to the "Stored remotely text'. See the discussion under "Removing a folder from the grid".

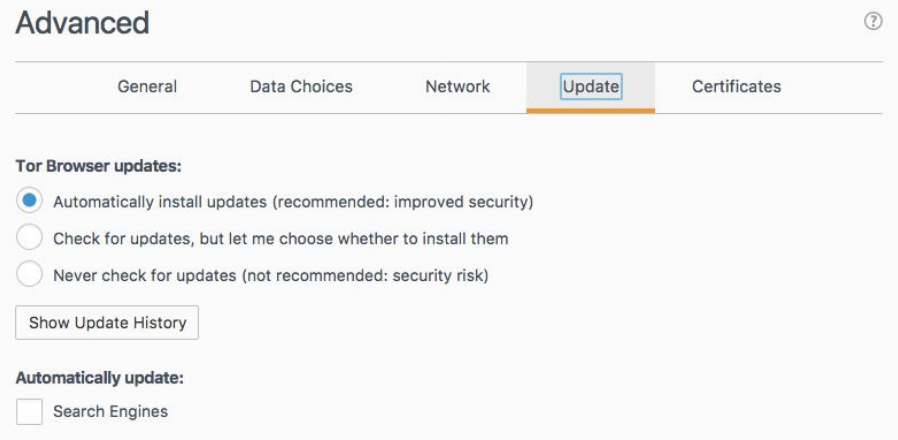
back to top

Preferences/Settings

[What preferences would people prefer? Should Gridsync start automatically (on login) by default? Should we force them to choose at some point during setup, or keep it as-is (i.e., "off" by default) Should Gridsync automatically check for updates/new versions on startup? Should this be a manual thing instead? (Or, again, should this be something we possibly ask during setup?)]

14. Question: Say you downloaded and started using this program a month ago, how would you make sure you have the latest version? Would you expect it to always be the latest version?
15. Question: When you use a cloud storage program, do you want to have it on all the time, or rather just turn it on incidentally when you want to actively use it?



Issue	Suggestion
When the window is maximized it's difficult to find how to exit this screen. "I can't exit [when it was maximized]. This is ridiculous."	Provide clearer ways to return to main interface when maximized: - Make sure that 'OK' doesn't align to screen bottom, but remains aligned higher in the screen. - Consider adding a Home button in the toolbar.
Several people said they did not want it to run automatically: - "Because my husband complains. I personally don't care" - "feels less safe" Several people did want it to run automatically.	Inconsistent feedback. Suggest to do more testing on this.
One person did not understand what was meant with starting minimized.	Reframe it as "main window minimized".
Several people want it to check for updates automatically. One person would also want to install updates automatically	This seems to generate more consistent feedback. Consider using a similar approach to the Tor Browser update settings: 

	Instead of two check buttons (=4 options), they use a radio button approach with three options. This simplifies the choice, and gives a clear sliding scale of security.
One person did not want status update notifications about when when a folder is updated. Another person would keep all notifications on.	Would suggest to keep notifications on as is, so that people are in the first instance aware of what is happening as they are using Gridsync. They can turn it off if it is too much.
Some people expected the program to indicate what is recommended (and to already check those options).	Consider adding 'recommended' for checking for updates and for installing updates, because security-wise that would be best practice. For the other settings it is about personal preferences, not about protecting users, so it seems less sensible to provide recommendations. However, one participant felt that the preferences setting was a checkmark, if some things weren't checked it felt less safe. Suggest to keep an eye out for such feedback. Possibly add a restore to defaults option.
One person was looking to disable connecting via Tor on the preferences screen - "I want to turn off Tor" - Chris: This jeopardizes anonymity from previous sessions - Suggestion from participant: "warn users when turning off Tor, but still allow"	If there is a choice possible to disable Tor after having used it a first time (see the section on Tor), then it makes sense to look for toggling the connection mode here.

Other issues mentioned:

- "These are useless to me". (Not clear what kind of settings they were looking for)

back to top

Other issues that came up

Issue	Suggestion
Several people were confused about the different names that they came across: the product name, the company name, the software name, and the underlying technology: “Is Least Authority the product?” “If I choose S4, then why am I asked to suddenly download Gridsync?” (And “What is Tahoe-LAFS?”, which comes up as a firewall warning)	Consolidate names, differentiate website; make S4 the product name (whitelabel, you can say ‘powered by Gridsync’, even though that might actually also be confusing). Warrants further discussion.
One person was expecting a browser-based experience. Others were expecting a Dropbox-like experience (integration using a central folder).	See comments under Highlights.
The Gridsync icon is not always visible in the operating system’s toolbar (Windows), making it difficult for people to find it.	As long as there is no file system integration, and Gridsync functions using buttons in a main window, then it remains important that people can easily find the main window. In Windows, the system tray by default hides certain apps. It may thus make sense to keep the application window accessible in the general taskbar area (not the system tray) even when minimized.
Unclear what happens if Internet connection stops Several people were struggling to find a way to exit the program (“It’s not safe to leave it logged in”), and to figure out what exiting does. Also related to visibility in system tray.	These issues relate to the fundamental unclarity to people about how the program operates / what it does. Needs to be addressed accordingly.
One person expected to have to re-enter a code when starting up program again.	If it’s clearer that Gridsync is not about ‘accessing files that are in the cloud’ but about setting which folders are being synced, this may be less of an issue. At the same time, this may also relate to a desire to sign out, see

	the item below:
One person wanted to to have a sign-out option.	Should there be a sign-out (=easy deletion of initialization), that can only be re-entered with recovery key? For example for shared computers, or for feeling safer? Worth doing more user research around this.
Several people asked about the availability of the software in other language	Explain our goals in this regard. Ideally offer localization programs.
One person said the design looked like “old-school computer”, or “unpolished”.	Another person mentioned such feedback in the September 2017. This is worth researching and discussing further, perhaps alongside the question of creating visualizations/drawings/tutorials.
Several people clicked on the combobox/dropdown that says “Least Authority S4”, one person figured it is meant for having multiple accounts. “Why would join another [grid] if I have the autonomy to share folders [from this one]?]	Consider deleting this function completely, or providing it through the preferences, as it takes up prominent screen real estate but doesn’t seem to elicit much interest of using the feature at this stage.
Some people had a hard time finding the main window again	Create a home icon/button.
The ‘Connect another device’ button seemed to cause a lot of confusion, people sometimes thought it was for syncing the exact grid content with another person; or they thought it should be used to receive or share a folder.	Consider deleting this function completely, or providing it through the preferences.
One person wanted a keyword search of a help manual	Need to first create succinct help documentation, and then provide easy ways to access this info.
[BUG?: After opening Gridsync from the systray icon/menu, the window was maximized but the content/layout was not (remaining packed into one corner of the window)]	Chris: [**TODO**: Add triggers to ensure proper placement/scale/layout of UI elements when maximized]
General observations:	

- One person scared of cloud, trusts personal hard drives - One person very hesitant about signing up with the service - One person willing to forego passphrase-securing the recovery key: “Security always comes with a trade-off” - One person felt safer to distribute their files across multiple cloud providers. - (After struggling to exit the program:) “This is more of a prototype. Are you sure the product is ready? It’s a bad product. I won’t use it. They don’t think about me.”	
Other feature requests: - One person how Google Drive offers limits on sharing documents (expiration) - One person asked if there’s a mobile client	

back to top

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