An Overview of Self-Hosting Services and Technologies

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Abstract—Self-hosting is the practice of providing software services from a server maintained by a private individual for personal use, traditionally from a server in their home. These services may form an alternative to more common cloud-based services, or be entirely unique to self-hosting. This paper details what services are commonly provided through self-hosting and what technology is used, by detailing the results of a survey posted on several subreddits in October of 2021, with 2078 respondents.

CONTENTS

1 Introduction

Self-hosting is the practice of hosting software services for personal use, from a server maintained by a private individual. Traditionally these servers would be in a residential home, although this is not a necessary condition. These services function as an alternative to now more common cloud-based services. Examples of self-hosted services include cloud storage, media streaming, messenging, and web utilities.

Despite the wide variety of self-hosted software, there have, to the best of my knowledge, been no academic papers published on the practice. This paper aims to provide insight into the practice, by answering the following questions:

- Why do people self-host?
- What services do people self-host?
- What technologies to people use to self-host these services?
- Who uses self-hosted services?

1.1 Motivation

The author of this paper wants to make self-hosting more accessible by automating those actions that require technical skills. The core of the idea is to develop an operating system ISO for existing x86 and ARM hardware, which will automatically configure the device for server networking and allow server applications to be installed and managed via a companion app. Development would be aided by a short paper describing what sort of services and technologies would have to be supported by such a system. It was during the writing of this short paper that it was discovered that, to the best of my ability to find out otherwise, the practice of self-hosting has received no academic attention as of the date of writing. This survey paper aims to remedy this situation, so the short paper describing what systems and technologies are to be supported can have a properly researched source.

2 Background

2.1 Self-Hosting

This section offers a brief description of self-hosting. Claims in this section are roughly based on the survey results, but are solely intended to provide context to the rest of the paper, and not as hard facts.

Self-hosting can be defined as the practice of maintaining a server which provides software services for personal use. Unlike other forms of hosting, the operator of a self-hosted system will always be one of the primary users. This paper focusses on systems which are primarily for non-commercial use, although some commercial hosting can still be considered self-hosting, e.g. a small company hosting their website from a server on their own premises.

Often, self-hosting servers are physically located in a private residence, and have to deal with the limitations of consumer internet. The hardware that can be used by self-hosting servers can range from small, low-power devices such as the Raspberry Pi to enterprise-grade server racks. Older hardware, ranging from discarded desktops to deprecated enterprise hardware, is quite commonly used. Virtual servers or other commercial hosting solutions are an option as well. Note that it is not the hardware or the location that determines whether a server is considered to be used for self-hosting or not, but the overlap between the administrator and the users.

There is a wide variety of reasons why an individual might choose to self-host, and there is an even wider variety of services that can be self-hosted. Examples of services that are commonly self-hosted include email, personal websites, cloud storage, instant messenging, and media streaming. Self-hosting brings a greater degree of control over the software one uses, by providing the same degree of control over the server side of software that one normally has over the client side. This also gives one greater control over ones data. The software is often open-source or shareware, which could reduce costs, especially for applications which require large amounts of personal storage. Of course, greater control also means greater responsibility, as one will have to solve any issues with the server by themselves. There is obviously very little professional support available for self-hosted systems, although online communities may offer some help.

Self-hosting requires some degree of technical knowledge. At the very basics, a rudimentary understanding of server-client architectures is required. Basic networking knowledge is also required, including some knowledge on IP addresses, DNS, and firewalls. Working from behind a

residential connection requires port forwarding, and sometimes also assigning a static IP address. Some server management skills are also required, as many users configure the software they host manually. Most projects which aim to simplify self-hosting focus on simplifying server management tasks.

2.2 Reddit

This section will provide a brief description of what Reddit is, in order to support understanding of section 3.2. For a more elaborate (if slightly dated) explanation of Reddit, refer to Anderson (2015) [3].

Reddit is a platform which functions as something of a mix between a social media platform and a content aggregator. Content is supplied and ranked by users. A piece of content on Reddit is called a post. A post can consist of text, images, video, or a link to an external website. Each post is voted upon by the users, who may choose to either "upvote" or "downvote" the post, where an upvote adds a point to the posts score and a downvote removes a point. The score resulting from this is used by the ranking algorithm; posts with a higher score are generally shown to more users. Users may also comment on a post, and these comments use the same voting system as posts. The front page of Reddit normally consists of recent posts with high scores.

An account is not necessary to view content on Reddit, but it is necessary to vote on content, post new content, and customise Reddit. An account is completely free, and requires no more information than a username and a password. Users are not in any way prevented from making multiple accounts, and in some cases, it is even encouraged.

Each post must belong to a "subreddit", which is a vertical separation between content. Subreddits are focused on a specific topic, which can range from the extremely generic, e.g. "things that are mildly interesting", to the extremely specific, e.g. mechanical keyboards. Most hobbies have one or multiple subreddits dedicated to them. For logged in users, the front page will not contain the most popular posts on all of Reddit, but only the most popular posts from the subreddits which they have "joined".

To the best of my awareness, the three reddit pages mentioned are the only communinities specifically dedicated to the practice of self-hosting that currently show significant activity.

3 Methodology

In order to answer these questions, a survey was posted to the three most prominent Reddit forums dedicated to the practice: r/homeserver[9], r/selfhosted[10], and r/homelab[11]. The survey asked questions about hardware, operating system, containers, self-programmed software, version control, ci/cd systems, the services hosted, the technologies used, centralised authentication mechanisms, the reason for self hosting, and concluded with a free text field. 2078 responses were collected.

This section will describe in detail the survey, the Reddit posts, and the data normalisation procedure.

3.1 The Survey

The survey contains several sections, each of which were designed to answer a particular category of question. The survey asks mainly about technical details, and was intended to be filled in on a per-server basis; that is, if a respondent has two servers, they could fill in the survey twice. Because the original aim of this survey is to figure out what should be supported on by a system automating self-hosting, it makes more sense to look at the individual server than combining multiple servers any respondent may have. This decision also makes it easier to process results about e.g. operating systems, as it can now be concluded that a certain percentage of self-hosting servers run a certain operating system, instead of simply concluding that a certain fraction of people who self-host use an operating system for one or multiple of their servers. A full copy of the survey can be found in appendix A.

The survey can be split into seven sections, which ask about the following:

1) The type of hardware that a server runs on and its family of operating system.
2) Whether containers are used, and if so, which container system and which container manager (if any).
3) If the respondent also programs, and if so, how much time they spend on programming and how much of their software they host themselves. It also asks which version control and ci/cd systems a respondent hosts, if any.
4) How many users a respondent has, and, if more than just themselves, the types of additional users, whether the additional users have any extra access rights, and if so, what sort of access rights.
5) The fifth section is the main focus of the survey. It contains two questions: "What end-user services do you host?" and "What backend technologies power your end-user services". Unlike in previous sections, these questions are not multiple select fields, but open text fields. The questions specify to list items separated by newlines, and list some examples.
6) Whether respondents have a centralised authentication service, and if so, which mechanisms this service uses.
7) Why respondents self-host. This section also contains an open space allowing respondents to share any additional information.

The "anonimise responses" option was enabled for this survey; that means that the only information available about respondents is when they filled in the survey and the information they filled in themselves. This option was enabled partially for ethical reasons, but also because the added privacy was thought to make it more likely that often privacy-conscious self-hosters fill in the survey.

The survey was initially published on 2021-10-14, at about 15:30 UTC. Responses were collected on 2021-11-09, at about 13:30 UTC. A total of 2078 responses were collected.

3.1.1 Issues with the survey

Shortly after posting the survey, it was discovered that the question "Which CI/CD systems do you host" did not have

a "none" option; instead, the text for the option read "click to write choice 5". This was corrected in the same day the post was made, and I have no reason to believe any results were invalidated because of this. Some answers to this question did remark on this fact, and these have been normalised to the "none" option that was later added.

The "Who are you additional users" question contains many options, none of which was "friends". There is an other field which allows respondents to fill this option in themselves, and many did. The answer may be underrepresented regardless.

The "Do you have a centralised authentication service" question erroneously skipped to the end of survey when "no" was answered; it should have skipped to the end of the block instead. Because of this, respondents who did not have a centralised authentication service did not get to see the "Why do you self-host" question. This may have altered the results of the latter question, as the users which did get to see the question could be generally more experienced, which might affect the results. As such, further research needs to be performed in order to obtain conclusive evidence as to the reasons for self-hosting. Nevertheless, the results have been processed and published, as they do contain some indication for why people self-host.

3.2 The Posts

Three posts were made, to the three most prominent subreddits on the question: r/homeserver[9], r/selfhosted[10], and r/homelab[11]. The posts were created with a new Reddit account. Before posting, permission was asked from the moderators of the subreddits. For r/homeserver, no response was received. For r/selfhosted, permission was granted. For r/homelab, permission was granted under the condition that results be posted back to the subreddit, and that this be specified clearly. This condition will be met; this document will be shared on all three subreddits upon completion, along with a short infographic summary. The posts for r/homeserver and r/selfhosted were posted on 2021-10-14, with 15 minutes between the two posts due to limitations on how many posts a Reddit account may make. The post for r/homelab was posted on 2021-10-15.

What share of the users came from which subreddit could be relevant for scientific integrity. Unfortunately, the survey did not record which of the three posts directed a user to the survey, nor does Reddit show how many views a post has. The only information available are the amount of upvotes, the upvote percentage, and the amount of comments. If we assume a linear relationship between the total amount of user interaction on a post, and the amount of respondents that filled out the survey because of the post, we can derive a distribution of responses per subreddit. User interaction consists of voting or commenting on a post. The derivation can be found in table 1. This table lists the upvote count, the upvote percentage, and the comment count. It computes the total amount of votes from the upvote count and the upvote percentage (see next paragraph). It divides the amount of votes and comments per post by the amount of votes and comments across all posts to create the fraction of total votes or comments resulting from a particular post. It then averages these fractions into a combined metric.

The amount of total votes can be computed from the post score and the upvote percentage. Define s as the post score as shown on by Reddit, v as the total amount of votes, p as the upvote percentage (divided by 100), u as the amount of upvotes, and d as the amount of downvotes. Obviously, $s = u - d$; Furthermore, $u = v \cdot p$, and $d = v \cdot (1 - p)$. It follows that $s = v \cdot p - v \cdot (1 - p) \implies v = \frac{s}{2p-1}$.

Assuming this metric is a good predictor of the amount of views per post and thereby the amount of respondents that found the survey through each post, we can conclude that approximately 68% of the respondents came from r/selfhosted, 22% came from r/homeserver, and 10% came from r/homelab.

3.3 Data Normalisation

Collected responses were downloaded from Qualtrics and put into an object-relational database. This database is structured such that for each question with text answers, there is a separate table; this table links the string value of the answer to a numerical identifier. The responses themselves only linked these numerical identifiers. As a result of this, a change in a string value propagates to all responses which originally contained the same string. All string values were put into lower case before insertion into the database.

The survey itself contains very little options, and relies heavily on "other" fields, as well as two questions which are completely free text. This allows for collecting much more detailed results, as respondents with an unconventional setup are not constrained to a preset option. Unfortunately, it also introduces several types of anomalies in the data:

- **Typos and Misspellings:** In open text fields, respondents may make typing or spelling errors. This is results in two similar string values, one of which is misspelled.
- **Spelling Differences:** Some values can be spelled in various different ways, with all spelling referring to the same effective entity; for example, "Node.js" can also be spelled as "Nodejs" or "Node".
- **Additional Information:** Some respondents include additional data in their text fields, such as indicating the reason a technology was used. These new strings, which include the reason, will be intepreted as their own value during database insertion.
- **Insufficient Responses** Some answer indicate a semantic mismatch with their corresponding questions. Possible explanations include misunderstanding the question or not having the technical knowledge required to answer it. For example, in the question "Which container systems do you use", some respondents used the text field to answer "Kubernetes".
- **Unsupported Splitting:** The survey contains several multiple-select fields, in which respondents can choose any amount of provided options. One of the provided options is the "other" fields, which contains a text field allowing respondents to enter their own value. Unfortunately, there can only be 1 "other" field at a time. Because of this, some respondents filled in what are effectively multiple values into the one other field.

Subreddit	Upvotes	Upvote Percentage	Total Votes	Vote Fraction	Comments	Comment Fraction	Combined
r/homeserver	47	81%	76	0.20	30	0.24	0.22
r/selfhosted	232	92%	276	0.70	82	0.67	0.68
r/homelab	26	82%	41	0.10	11	0.09	0.10
Combined	305	n/a	393	1.00	123	1.00	1.00

TABLE 1
Comparison of the Reddit posts. All fractions have been rounded to three digits.

- **Incorrect Splitting:** The two main questions in the survey rely on open text fields where respondents are asked to fill in multiple values, separated by newlines. Some respondents separated these values by other separators, such as commas.

In order to extract useful information from responses which exhibited one of these anomalies, the responses were linked to one or multiple existing string values which did not exhibit the anomaly. The changes that were made to the dataset can be found in appendix B. Two new values were introduced into the dataset: "uncategorised" to indicate that the original value was not a sufficient response to the question, and "miscellaneous", to indicate that the response was too specific to be significant on its own. "uncategorised" shows up as a significant value for some questions, but "miscelleanous" does not. The rest of this section will discuss the rules which were followed in normalising the dataset, per type of anomaly.

For typing and spelling errors, the answer was reassigned to the correctly spelled answer. For some cases, this was obvious, e.g. "ngninx" to "nginx". Ambiguity was resolved by typing the value into the DuckDuckGo search engine, combined with the term "software". If the first five results contained a software package with the same name as the entry, the entry was left unchanged; otherwise, the entry was changed to the first software package that was found, or, if none were found, the most closely matching string. For example, "duplicato" was changed to "duplicati", but "duplicacy" was not changed.

For values with different spellings, all spellings were reassigned to the first occurrence of the value that they refer to. Note that the descriptions used for values in this document not necessarily equal to those that occur in the database.

If an entry contained additional information, e.g. a reason for using a technology, or some information on its implementation, it was reassigned to a value describing the same entity, but without this additional information. If no such value existed, no change was made, as it was assumed the value did not occur often enough to be significant in the results. This rule does not apply in cases where the extra information indicated that the value was not currently relevant, e.g. indicating that a respondent was planning to install a service in the future; in these cases, the value was reassigned to uncategorised.

For entries which were not a sufficient response to the question, several reassignment possibilities were available. For some values, an sufficient response could be inferred; for example, if a respondent filled in "Kubernetes" to the question "Which container system do you use", it follows this respondent uses Docker, as Kubernetes is a management system for Docker. In these cases, the value was reassigned to the value that could be inferred. In cases where no sufficient response could be inferred, the value was specifically tagged as such, by reassigning it to the "uncategorised" value. responses which were acceptable, but too specific to be significant, e.g. "custom solution", were reassigned to "miscellanous".

For values which clearly reference multiple entities, the response got assigned all values which could be inferred by the original value. Note that instances of this anomaly can contain obvious markers that the value references multiple entities, e.g. ""nextcloud and plex", but that this is not always as obvious, e.g. "*arr stack".

4 Results

This section will list the results of the questions in the survey. Single select questions have been visualised with a pie chart, where the size of the slice represents the percentage of respondents that chose the corresponding answer. Multiple select questions have been visualised with a bar chart, where the height of the bar represents the percetange fo respondents that chose the corresponding answer. Note that the sum of the height of these bars may exceed 100%, as a respondent could have chosen multiple. Questions which have been answered on an ordinal scale are also visualised with bar graphs, despite being single-select.

For question which contained a text field in addition to one or multiple selects, the values entered into this text field have been visualised in a separate graph. For text entry, this section only discusses responses which represent more than 2.0% of respondents. Other text entry responses have been grouped together as "miscellaneous". The questions "What end-user services do you host?" and "What backend technolo- gies power your end-user services?", which could only be answered with text entry, have not been visualised at all; responses which represent more than 2.

Note that the answer text has been shortened by removing explanations for answers that were present in the survey, in order to reduce visual clutter.

4.1 Results for question: "What kind of hardware do you use?"

The results for question "What kind of hardware do you use?" are visualised in figure 1. 1751 respondents answered this question.

20.8% of respondents (N=364) answered "used enterprise hardware " for this question. 20.4% of respondents (N=358) answered "used desktop pc " for this question. 18.7% of respondents (N=328) answered "new desktop pc " for this question. 11.4% of respondents (N=199) answered "low-power arm device " for this question. 9.6% of respondents (N=168) answered "low-power x86 device " for this

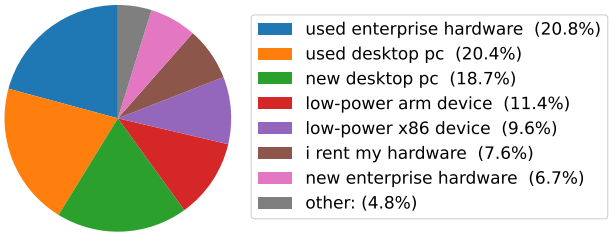

Fig. 1. Results for question “What kind of hardware do you use?”

question. 7.6% of respondents (N=133) answered “i rent my hardware ” for this question. 6.7% of respondents (N=117) answered “new enterprise hardware ” for this question. 4.8% of respondents (N=84) answered “other:” for this question.

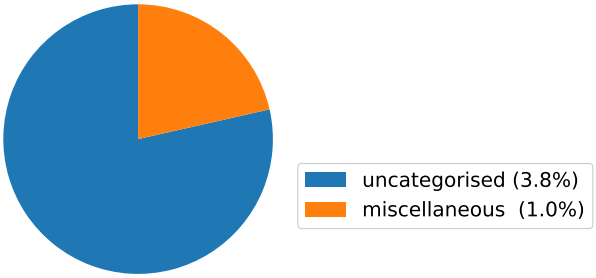

Fig. 2. Values entered into the text field of question “What kind of hardware do you use?”. Note that the percentages are for the question in total, and not just for the other values.

This question has a text field, which was labelled “other:”. The values filled into this text field are visualised in figure 2. This section only discusses answers which represent at least 2.0% of respondents. For the full results, see table C1. 3.8% of respondents (N=66) filled in an uncategorised response. 1.0% of respondents (N=18) filled in a value that represents less than 2.0% of respondents.

4.2 Results for question: “What operating system does your server use?”

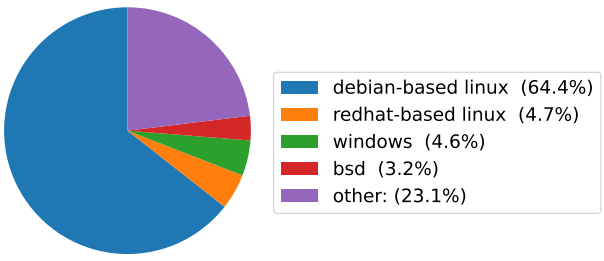

Fig. 3. Results for question “What operating system does your server use?”

The results for question “What operating system does your server use?” are visualised in figure 3. 1751 respondents answered this question.

64.4% of respondents (N=1128) answered “debian-based linux ” for this question. 4.7% of respondents (N=82) answered “redhat-based linux ” for this question. 4.6% of respondents (N=81) answered “windows ” for this question. 3.2% of respondents (N=56) answered “bsd ” for this question. 23.1% of respondents (N=404) answered “other:” for this question.

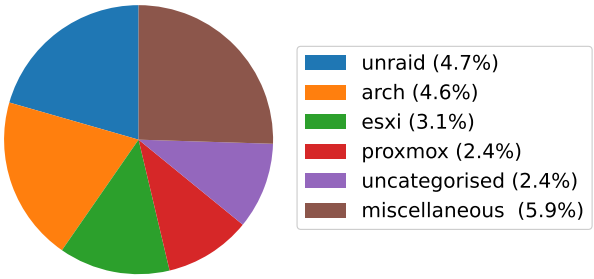

Fig. 4. Values entered into the text field of question “What operating system does your server use?”. Note that the percentages are for the question in total, and not just for the other values.

This question has a text field, which was labelled “other:”. The values filled into this text field are visualised in figure 4. This section only discusses answers which represent at least 2.0% of respondents. For the full results, see table C2. 4.7% of respondents (N=83) filled “unraid”, or some response that got normalised to “unraid”, into the text field of this question. 4.6% of respondents (N=80) filled “arch”, or some response that got normalised to “arch”, into the text field of this question. 3.1% of respondents (N=54) filled “esxi”, or some response that got normalised to “esxi”, into the text field of this question. 2.4% of respondents (N=42) filled “proxmox”, or some response that got normalised to “proxmox”, into the text field of this question. 2.4% of respondents (N=42) filled in an uncategorised response. 5.9% of respondents (N=103) filled in a value that represents less than 2.0% of respondents.

4.3 Results for question: “Do you use containers?”

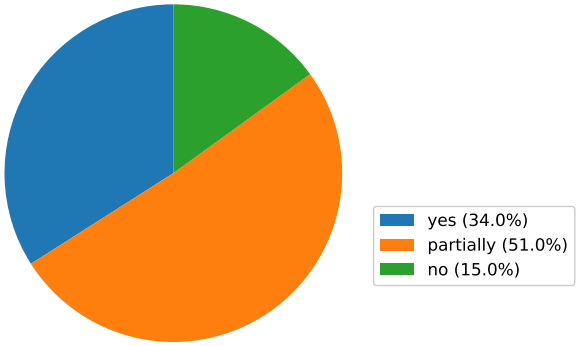

Fig. 5. Results for question “Do you use containers?”

The results for question “Do you use containers?” are visualised in figure 5. 1743 respondents answered this question.

34.0% of respondents (N=888) answered “yes” for this question. 51.0% of respondents (N=593) answered “partially” for this question. 15.0% of respondents (N=262) answered “no” for this question.

4.4 Results for question: “Which container systems do you use?”

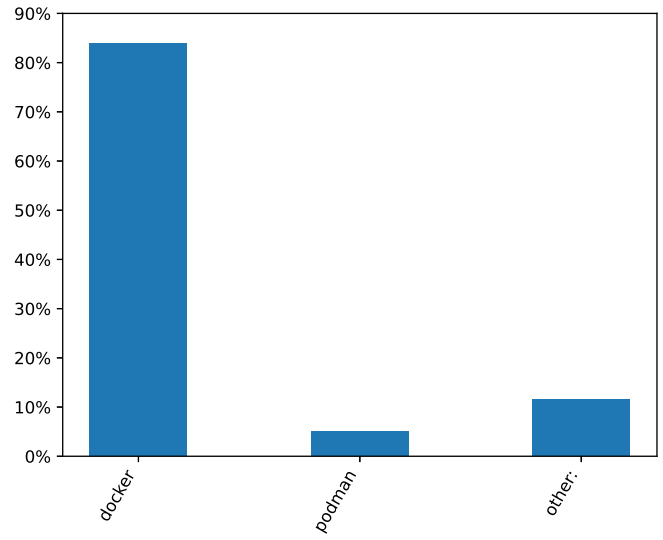

Fig. 6. Results for question “Which container systems do you use?”

The results for question “Which container systems do you use?” are visualised in figure 6. 1460 respondents answered this question.

83.8% of respondents (N=1224) answered “docker” for this question. 5.0% of respondents (N=73) answered “podman” for this question. 11.6% of respondents (N=169) answered “other:” for this question.

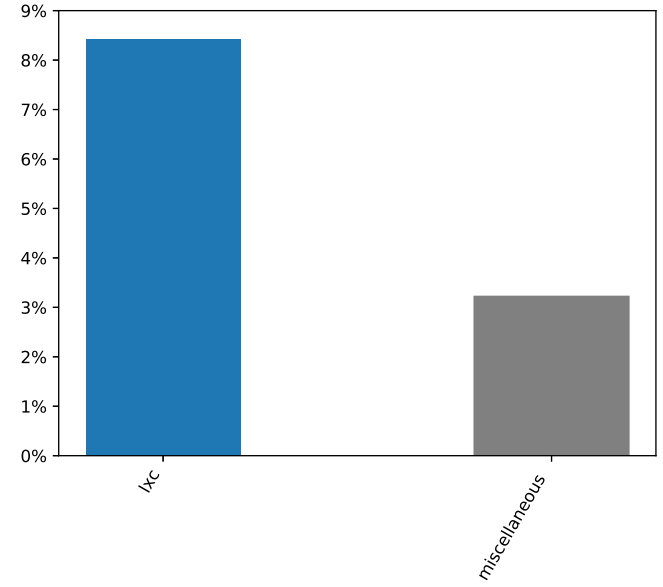

Fig. 7. Values entered into the text field of question “Which container systems do you use?”. Note that the percentages are for the question in total, and not just for the other values.

This question has a text field, which was labelled “other:”. The values filled into this text field are visualised in figure 7. This section only discusses answers which represent at least 2.0% of respondents. For the full results, see table C4. 8.4% of respondents (N=123) filled “lxc”, or some response that got normalised to “lxc”, into the text field of this question. 3.2% of respondents (N=47) filled in a value that represents less than 2.0% of respondents.

4.5 Results for question: “Do you use Kubernetes to manage your containers?”

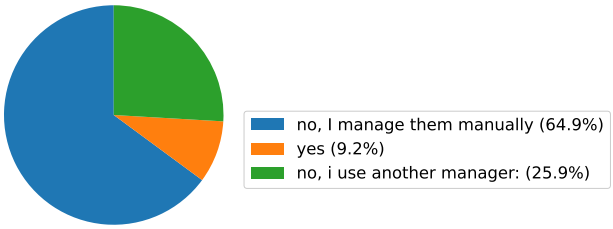

Fig. 8. Results for question “Do you use Kubernetes to manage your containers?”

The results for question “Do you use Kubernetes to manage your containers?” are visualised in figure 8. 1427 respondents answered this question.

64.9% of respondents (N=926) answered “no, I manage them manually” for this question. 9.2% of respondents (N=131) answered “yes” for this question. 25.9% of respondents (N=370) answered “no, i use another manager:” for this question.

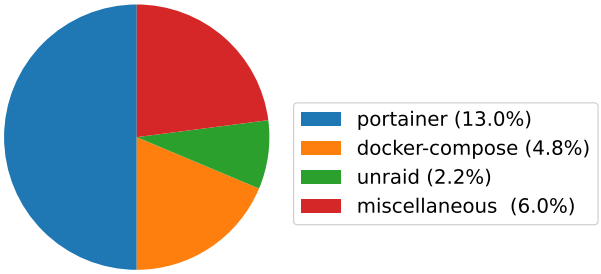

Fig. 9. Values entered into the text field of question “Do you use Kubernetes to manage your containers?”. Note that the percentages are for the question in total, and not just for the other values.

This question has a text field, which was labelled “no, i use another manager:”. The values filled into this text field are visualised in figure 9. This section only discusses answers which represent at least 2.0% of respondents. For the full results, see table C5. 13.0% of respondents (N=185) filled “portainer”, or some response that got normalised to “portainer”, into the text field of this question. 4.8% of respondents (N=69) filled “docker-compose”, or some response that got normalised to “docker-compose”, into the text field of this question. 2.2% of respondents (N=31) filled “unraid”, or some response that got normalised to “unraid”, into the text field of this question. 6.0% of respondents (N=85) filled in a value that represents less than 2.0% of respondents.

4.6 Results for question: “Do you also program?”

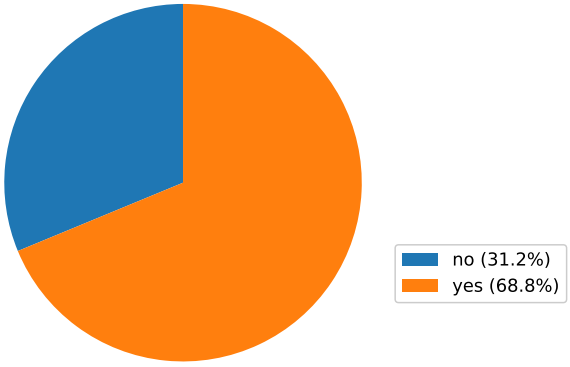

Fig. 10. Results for question “Do you also program?”

The results for question “Do you also program?” are visualised in figure 10. 1719 respondents answered this question.

31.2% of respondents (N=537) answered “no” for this question. 68.8% of respondents (N=1182) answered “yes” for this question.

4.7 Results for question: “On average, how many days a week do you sit down to program?”

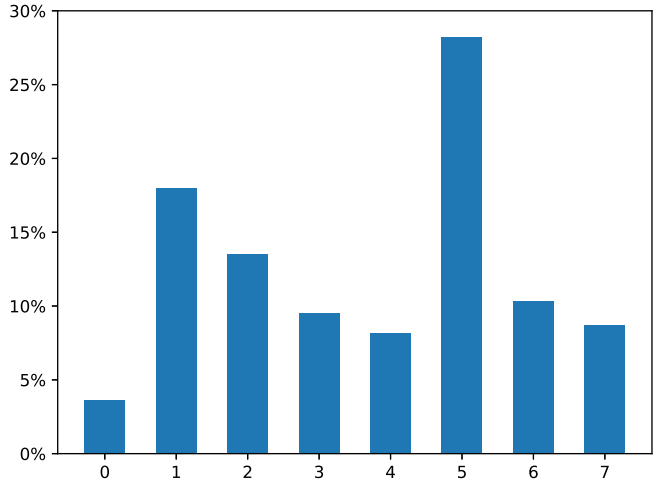

Fig. 11. Results for question “On average, how many days a week do you sit down to program?”

The results for question “On average, how many days a week do you sit down to program?” are visualised in figure 11. 1095 respondents answered this question.

3.6% of respondents (N=40) answered “0” for this question. 18.0% of respondents (N=197) answered “1” for this question. 13.5% of respondents (N=148) answered “2” for this question. 9.5% of respondents (N=104) answered “3” for this question. 8.1% of respondents (N=89) answered “4” for this question. 28.2% of respondents (N=309) answered “5” for this question. 10.3% of respondents (N=113) answered “6” for this question. 8.7% of respondents (N=95) answered “7” for this question.

4.8 Results for question: “how much of your software do you host yourself?”

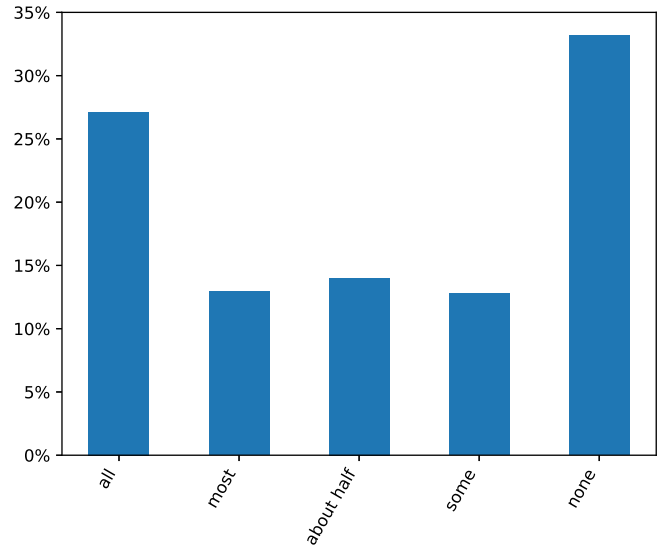

Fig. 12. Results for question “how much of your software do you host yourself?”

The results for question “how much of your software do you host yourself?” are visualised in figure 12. 1121 respondents answered this question.

27.1% of respondents (N=372) answered “all” for this question. 12.9% of respondents (N=304) answered “most” for this question. 14.0% of respondents (N=157) answered “about half” for this question. 12.8% of respondents (N=145) answered “some” for this question. 33.2% of respondents (N=143) answered “none” for this question.

4.9 Results for question: “Which version control systems do you host?”

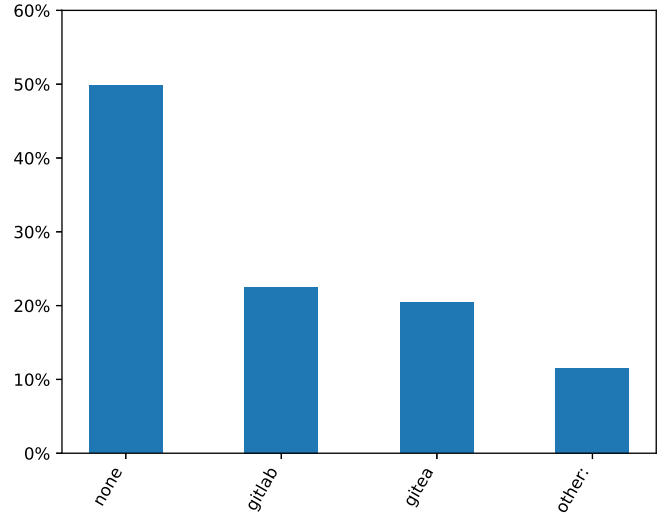

Fig. 13. Results for question “Which version control systems do you host?”

The results for question "Which version control systems do you host?" are visualised in figure 13. 1594 respondents answered this question.

49.8% of respondents (N=794) answered "none" for this question. 22.5% of respondents (N=359) answered "gitlab" for this question. 20.4% of respondents (N=325) answered "gitea" for this question. 11.5% of respondents (N=184) answered "other:" for this question.

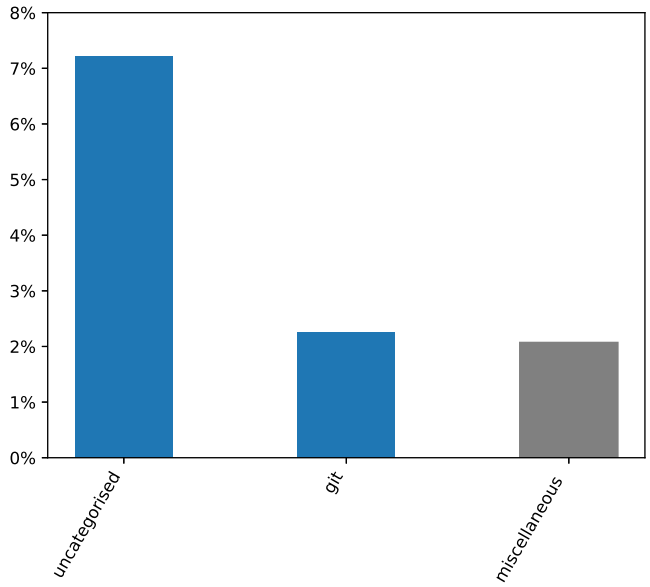

Fig. 14. Values entered into the text field of question "Which version control systems do you host?". Note that the percentages are for the question in total, and not just for the other values.

This question has a text field, which was labelled "other:". The values filled into this text field are visualised in figure 14. This section only discusses answers which represent at least 2.0% of respondents. For the full results, see table C9. 7.2% of respondents (N=115) filled in an uncategorised response. 2.3% of respondents (N=36) filled "git", or some response that got normalised to "git", into the text field of this question. 2.1% of respondents (N=33) filled in a value that represents less than 2.0% of respondents.

4.10 Results for question: "Which CI/CD systems do you host?"

The results for question "Which CI/CD systems do you host?" are visualised in figure 15. 939 respondents answered this question.

51.6% of respondents (N=485) answered "none" for this question. 28.9% of respondents (N=271) answered "gitlab" for this question. 13.6% of respondents (N=128) answered "jenkins" for this question. 0.8% of respondents (N=8) answered "circleci" for this question. 11.2% of respondents (N=105) answered "other:" for this question.

This question has a text field, which was labelled "other:". The values filled into this text field are visualised in figure 16. This section only discusses answers which represent at least 2.0% of respondents. For the full results, see table C10. 3.9% of respondents (N=37) filled in an uncategorised response. 3.8% of respondents (N=36) filled

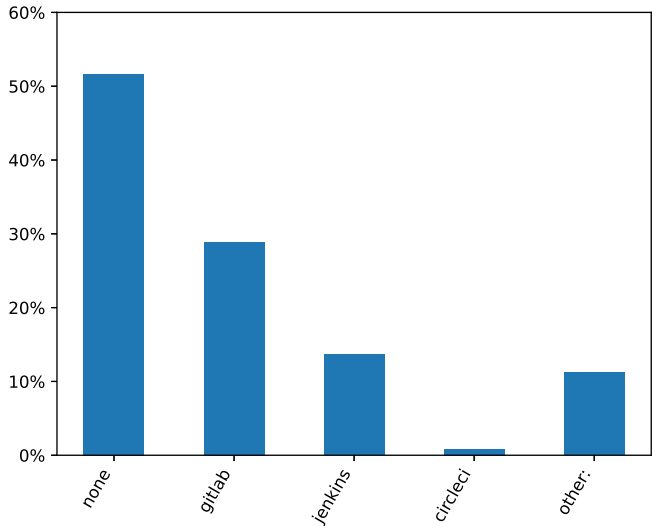

Fig. 15. Results for question "Which CI/CD systems do you host?"

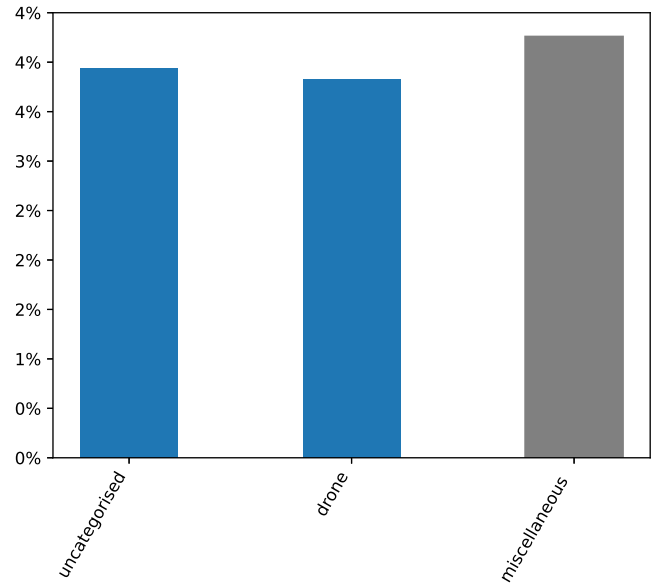

Fig. 16. Values entered into the text field of question "Which CI/CD systems do you host?". Note that the percentages are for the question in total, and not just for the other values.

"drone", or some response that got normalised to "drone", into the text field of this question. 4.3% of respondents (N=40) filled in a value that represents less than 2.0% of respondents.

4.11 Results for question: "How many users do you have (including yourself)"

The results for question "How many users do you have (including yourself)" are visualised in figure 17. 1584 respondents answered this question. This section only discusses answers from 1 to 9. For the full results, see table C11. The mean answer to this question was 7.96, the median was 3, and the standard deviation was 54.7.

24.4% of respondents (N=386) answered "1" for this question. 19.1% of respondents (N=302) answered "2" for

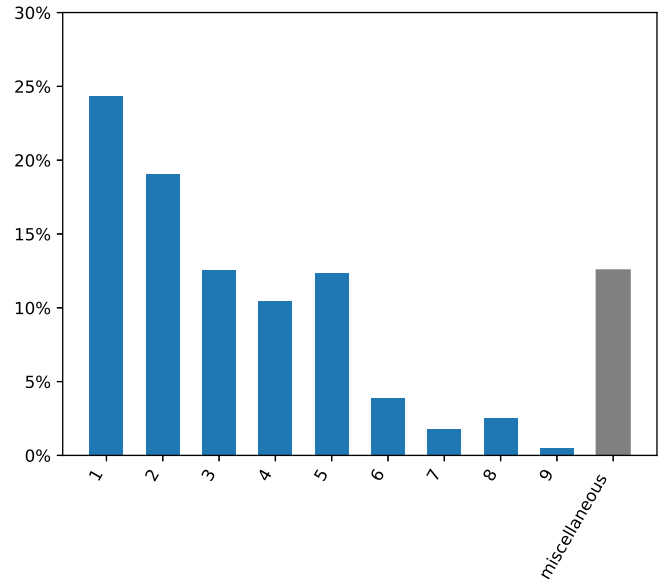

Fig. 17. Results for question “How many users do you have (including yourself)”

this question. 12.6% of respondents (N=199) answered “3” for this question. 10.4% of respondents (N=165) answered “4” for this question. 12.4% of respondents (N=196) answered “5” for this question. 3.8% of respondents (N=61) answered “6” for this question. 1.8% of respondents (N=28) answered “7” for this question. 2.5% of respondents (N=40) answered “8” for this question. 0.5% of respondents (N=8) answered “9” for this question. 12.6% (N=199) filled in a value that represents less than 2.0% of respondents.

4.12 Results for question: “Who are your additional users?”

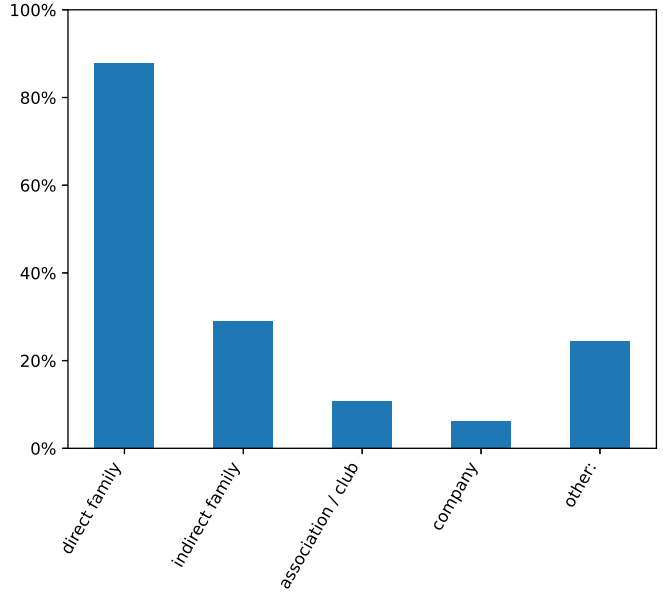

Fig. 18. Results for question “Who are your additional users?”

The results for question “Who are your additional users?” are visualised in figure 18. 1201 respondents answered this question.

87.9% of respondents (N=1056) answered “direct family” for this question. 29.1% of respondents (N=349) answered “indirect family” for this question. 10.8% of respondents (N=130) answered “association / club” for this question. 6.2% of respondents (N=74) answered “company” for this question. 24.4% of respondents (N=293) answered “other:” for this question.

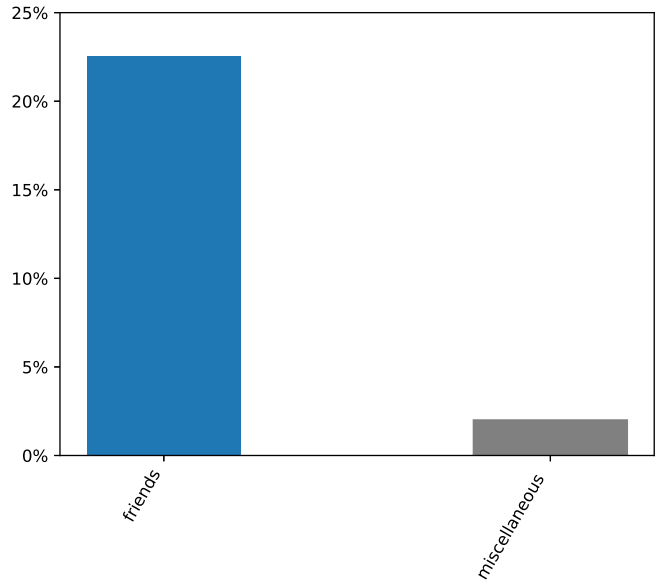

Fig. 19. Values entered into the text field of question “Who are your additional users?”. Note that the percentages are for the question in total, and not just for the other values.

This question has a text field, which was labelled “other:”. The values filled into this text field are visualised in figure 19. This section only discusses answers which represent at least 2.0% of respondents. For the full results, see table C12. 22.6% of respondents (N=271) filled “friends”, or some response that got normalised to “friends”, into the text field of this question. 2.0% of respondents (N=24) filled in a value that represents less than 2.0% of respondents.

4.13 Results for question: “Do any of your users have additional access rights? (e.g. ssh login, administrative panels)?”

The results for question “Do any of your users have additional access rights? (e.g. ssh login, administrative panels)?” are visualised in figure 20. 1205 respondents answered this question.

79.5% of respondents (N=958) answered “no” for this question. 20.5% of respondents (N=247) answered “yes” for this question.

4.14 Results for question: “What sort of additional access rights do your users have?”

The results for question “What sort of additional access rights do your users have?” are visualised in figure 21. 239 respondents answered this question.

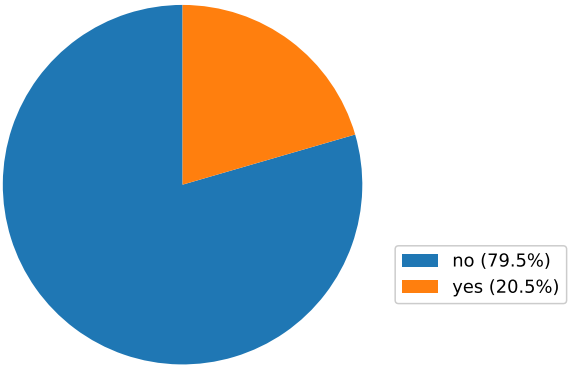

Fig. 20. Results for question “Do any of your users have additional access rights? (e.g. ssh login, administrative panels)?”

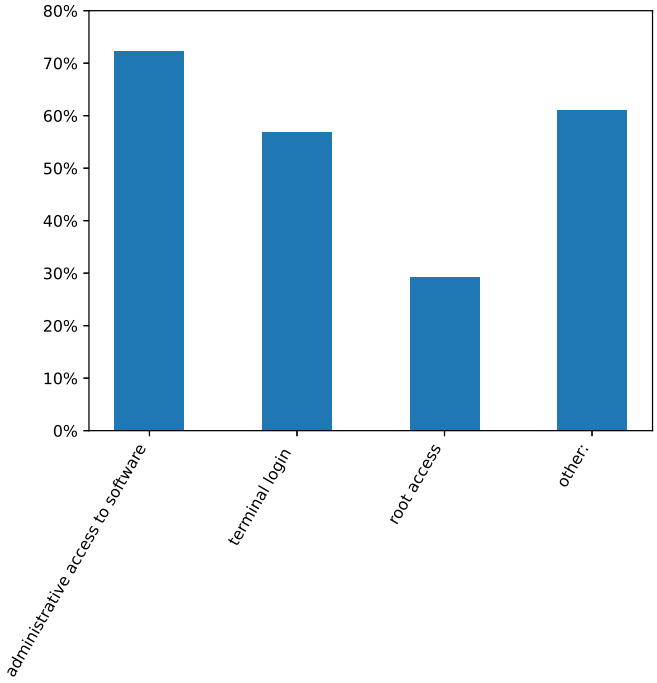

Fig. 21. Results for question “What sort of additional access rights do your users have?”

72.4% of respondents (N=173) answered “administrative access to software” for this question. 56.9% of respondents (N=136) answered “terminal login ” for this question. 29.3% of respondents (N=70) answered “root access” for this question. 61.1% of respondents (N=146) answered “other:” for this question.

This question has a text field, which was labelled “other:”. The values filled into this text field are visualised in figure 22. This section only discusses answers which represent at least 2.0% of respondents. For the full results, see table C14. 2.1% of respondents (N=5) filled “user access to shared media, documents”, or some response that got normalised to “user access to shared media, documents”, into the text field of this question. 3.8% of respondents (N=9) filled in a value that represents less than 2.0% of respondents.

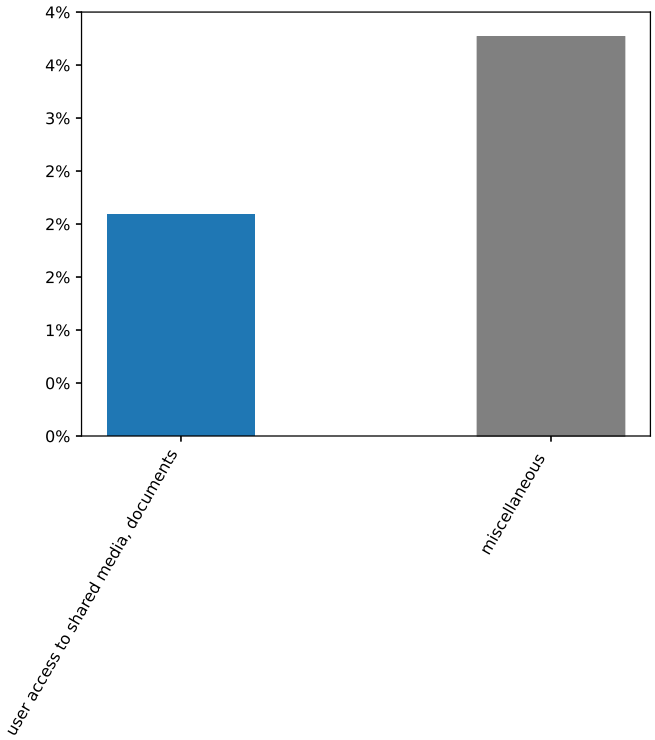

Fig. 22. Values entered into the text field of question “What sort of additional access rights do your users have?”. Note that the percentages are for the question in total, and not just for the other values.

4.15 Results for question: “Do all of your users have extra rights?”

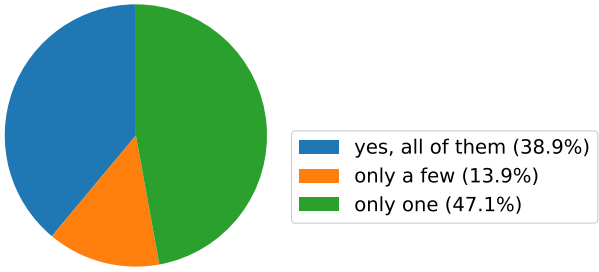

Fig. 23. Results for question “Do all of your users have extra rights?”

The results for question “Do all of your users have extra rights?” are visualised in figure 23. 244 respondents answered this question.

38.9% of respondents (N=115) answered “yes, all of them” for this question. 13.9% of respondents (N=95) answered “only a few” for this question. 47.1% of respondents (N=34) answered “only one” for this question.

4.16 Results for question: “What end-user services do you host?”

This subsection will list the results for the question “What end-user services do you host?”. 1065 respondents answered this question. This section only discusses answers which represent at least 2.0% of respondents. For the full results, see table C16.

46.8% of respondents (N=498) answered "nextcloud" or some response that got normalised to "nextcloud" for this question. 33.0% of respondents (N=352) answered "plex" or some response that got normalised to "plex" for this question. 26.6% of respondents (N=283) answered "samba" or some response that got normalised to "samba" for this question. 21.7% of respondents (N=231) answered "jellyfin" or some response that got normalised to "jellyfin" for this question. 15.9% of respondents (N=169) answered "home assistant" or some response that got normalised to "home assistant" for this question. 12.4% of respondents (N=132) answered "pihole" or some response that got normalised to "pihole" for this question. 11.4% of respondents (N=121) answered "sonarr" or some response that got normalised to "sonarr" for this question. 11.2% of respondents (N=119) answered "radarr" or some response that got normalised to "radarr" for this question. 10.7% of respondents (N=114) answered "email" or some response that got normalised to "email" for this question. 10.4% of respondents (N=111) answered "gitea" or some response that got normalised to "gitea" for this question. 8.4% of respondents (N=89) answered "matrix" or some response that got normalised to "matrix" for this question. 8.4% of respondents (N=89) answered "vaultwarden" or some response that got normalised to "vaultwarden" for this question. 8.2% of respondents (N=87) answered "bitwarden" or some response that got normalised to "bitwarden" for this question. 7.0% of respondents (N=75) answered "minecraft" or some response that got normalised to "minecraft" for this question. 6.5% of respondents (N=69) answered "grafana" or some response that got normalised to "grafana" for this question. 6.2% of respondents (N=66) answered "paperless-ng" or some response that got normalised to "paperless-ng" for this question. 6.1% of respondents (N=65) answered "wireguard" or some response that got normalised to "wireguard" for this question. 5.7% of respondents (N=61) answered "bookstack" or some response that got normalised to "bookstack" for this question. 5.3% of respondents (N=56) answered "photoprism" or some response that got normalised to "photoprism" for this question. 5.2% of respondents (N=55) answered "gitlab" or some response that got normalised to "gitlab" for this question. 4.9% of respondents (N=52) answered "calibre" or some response that got normalised to "calibre" for this question. 4.8% of respondents (N=51) answered "ombi" or some response that got normalised to "ombi" for this question. 4.8% of respondents (N=51) answered "emby" or some response that got normalised to "emby" for this question. 4.7% of respondents (N=50) answered "transmission" or some response that got normalised to "transmission" for this question. 4.3% of respondents (N=46) answered "wordpress" or some response that got normalised to "wordpress" for this question. 4.1% of respondents (N=44) answered "game servers" or some response that got normalised to "game servers" for this question. 4.0% of respondents (N=43) answered "custom applications" or some response that got normalised to "custom applications" for this question. 4.0% of respondents (N=43) answered "syncthing" or some response that got normalised to "syncthing" for this question. 4.0% of respondents (N=43) answered "vpn" or some response that got normalised to "vpn" for this question. 3.8% of respondents (N=40) answered "nfs" or some response that got normalised to "nfs" for this question. 3.7% of respondents (N=39) answered "website" or some response that got normalised to "website" for this question. 3.6% of respondents (N=38) answered "qbittorrent" or some response that got normalised to "qbittorrent" for this question. 3.5% of respondents (N=37) answered "portainer" or some response that got normalised to "portainer" for this question. 3.5% of respondents (N=37) answered "lidarr" or some response that got normalised to "lidarr" for this question. 3.4% of respondents (N=36) answered "openvpn" or some response that got normalised to "openvpn" for this question. 3.2% of respondents (N=34) answered "uptime kuma" or some response that got normalised to "uptime kuma" for this question. 3.2% of respondents (N=34) answered "freshrss" or some response that got normalised to "freshrss" for this question. 2.9% of respondents (N=31) answered "jackett" or some response that got normalised to "jackett" for this question. 2.8% of respondents (N=30) answered "mealie" or some response that got normalised to "mealie" for this question. 2.8% of respondents (N=30) answered "heimdall" or some response that got normalised to "heimdall" for this question. 2.7% of respondents (N=29) answered "wiki.js" or some response that got normalised to "wiki.js" for this question. 2.6% of respondents (N=28) answered "unifi controller" or some response that got normalised to "unifi controller" for this question. 2.6% of respondents (N=28) answered "seafile" or some response that got normalised to "seafile" for this question. 2.6% of respondents (N=28) answered "dokuwiki" or some response that got normalised to "dokuwiki" for this question. 2.6% of respondents (N=28) answered "overseerr" or some response that got normalised to "overseerr" for this question. 2.4% of respondents (N=26) answered "deluge" or some response that got normalised to "deluge" for this question. 2.4% of respondents (N=25) answered "ftp" or some response that got normalised to "ftp" for this question. 2.2% of respondents (N=24) answered "homer" or some response that got normalised to "homer" for this question. 2.2% of respondents (N=23) answered "firefly iii" or some response that got normalised to "firefly iii" for this question. 2.1% of respondents (N=22) answered "adguard" or some response that got normalised to "adguard" for this question. 71.5% (N=761) filled in a value that represents less than 2.0% of respondents.

4.17 Results for question: "What backend technologies power your end-user services?"

This subsection will list the results for the question "What backend technologies power your end-user services?". 880 respondents answered this question. This section only discusses answers which represent at least 2.0% of respondents. For the full results, see table C17.

45.0% of respondents (N=396) answered "nginx" or some response that got normalised to "nginx" for this question. 39.6% of respondents (N=348) answered "php" or some response that got normalised to "php" for this question. 32.6% of respondents (N=287) answered "mysql" or some response that got normalised to "mysql" for this question. 29.3% of respondents (N=258) answered "apache" or some response that got normalised to "apache" for this question.

27.4% of respondents (N=241) answered “postgresql” or some response that got normalised to “postgresql” for this question. 27.0% of respondents (N=238) answered “mariadb” or some response that got normalised to “mariadb” for this question. 25.4% of respondents (N=224) answered “uncategorised” or some response that got normalised to “uncategorised” for this question. 23.1% of respondents (N=203) answered “node.js” or some response that got normalised to “node.js” for this question. 14.9% of respondents (N=131) answered “python” or some response that got normalised to “python” for this question. 9.9% of respondents (N=87) answered “redis” or some response that got normalised to “redis” for this question. 8.0% of respondents (N=70) answered “docker” or some response that got normalised to “docker” for this question. 7.3% of respondents (N=64) answered “dovecot” or some response that got normalised to “dovecot” for this question. 6.2% of respondents (N=55) answered “traefik” or some response that got normalised to “traefik” for this question. 5.7% of respondents (N=50) answered “go” or some response that got normalised to “go” for this question. 5.7% of respondents (N=50) answered “postfix” or some response that got normalised to “postfix” for this question. 5.4% of respondents (N=48) answered “sqlite” or some response that got normalised to “sqlite” for this question. 5.2% of respondents (N=46) answered “caddy” or some response that got normalised to “caddy” for this question. 4.3% of respondents (N=38) answered “mongodb” or some response that got normalised to “mongodb” for this question. 3.4% of respondents (N=30) answered “java” or some response that got normalised to “java” for this question. 3.1% of respondents (N=27) answered “wireguard” or some response that got normalised to “wireguard” for this question. 3.1% of respondents (N=27) answered “.net” or some response that got normalised to “.net” for this question. 3.0% of respondents (N=26) answered “influxdb” or some response that got normalised to “influxdb” for this question. 2.4% of respondents (N=21) answered “pi-hole” or some response that got normalised to “pi-hole” for this question. 2.3% of respondents (N=20) answered “proxmox” or some response that got normalised to “proxmox” for this question. 2.2% of respondents (N=19) answered “samba” or some response that got normalised to “samba” for this question. 2.2% of respondents (N=19) answered “haproxy” or some response that got normalised to “haproxy” for this question. 2.0% of respondents (N=18) answered “bind” or some response that got normalised to “bind” for this question. 41.9% (N=369) filled in a value that represents less than 2.0% of respondents.

4.18 Results for question: “Do you have a centralised authentication service?”

The results for question “Do you have a centralised authentication service?” are visualised in figure 24. 1225 respondents answered this question.

11.7% of respondents (N=908) answered “yes” for this question. 14.2% of respondents (N=174) answered “yes, but it doesn’t work for everything[1]” for this question. 74.1% of respondents (N=143) answered “no” for this question.

1. In the graph displayed as “partially” to save space and maintain readibility.

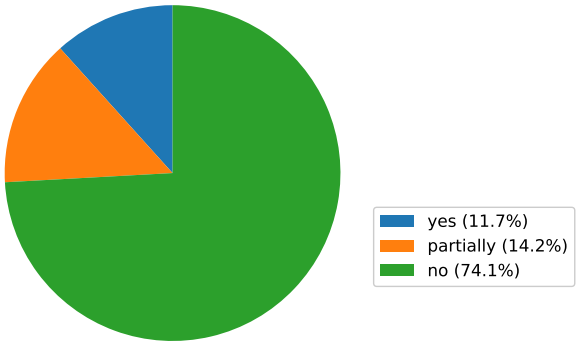

Fig. 24. Results for question “Do you have a centralised authentication service?”

4.19 Results for question: “Which mechanisms does your authentication service use?”

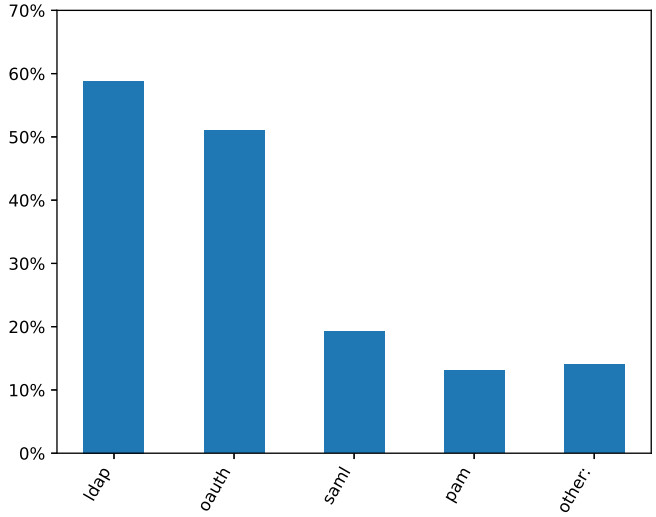

Fig. 25. Results for question “Which mechanisms does your authentication service use?”

The results for question “Which mechanisms does your authentication service use?” are visualised in figure 25. 306 respondents answered this question.

58.8% of respondents (N=180) answered “ldap” for this question. 51.0% of respondents (N=156) answered “oauth” for this question. 19.3% of respondents (N=59) answered “saml” for this question. 13.1% of respondents (N=40) answered “pam” for this question. 14.1% of respondents (N=43) answered “other:” for this question.

This question has a text field, which was labelled “other:”. The values filled into this text field are visualised in figure 26. This section only discusses answers which represent at least 2.0% of respondents. For the full results, see table C19. 5.6% of respondents (N=17) filled in an uncategorised response. 3.3% of respondents (N=10) filled “reverse proxy”, or some response that got normalised to “reverse proxy”, into the text field of this question. 5.9% of respondents (N=18) filled in a value that represents less than 2.0% of respondents.

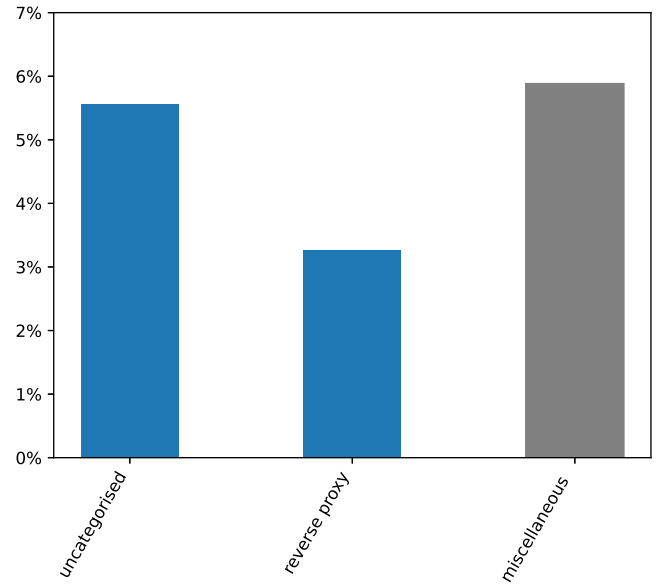

Fig. 26. Values entered into the text field of question “Which mechanisms does your authentication service use?”. Note that the percentages are for the question in total, and not just for the other values.

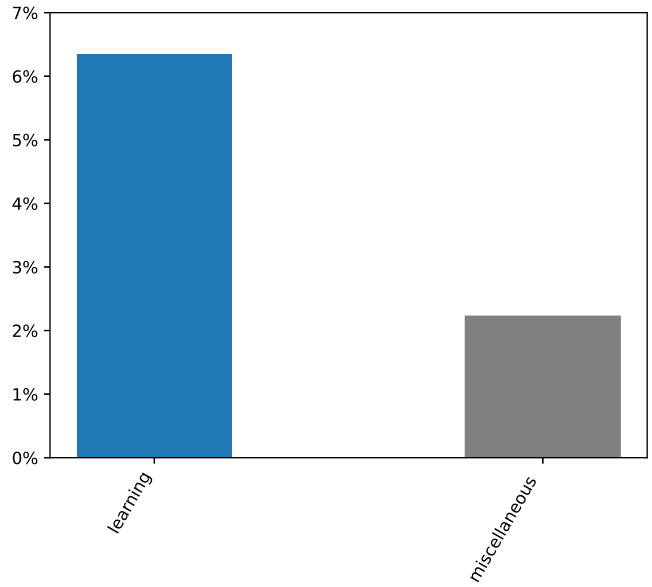

Fig. 28. Values entered into the text field of question “Why do you self-host?”. Note that the percentages are for the question in total, and not just for the other values.

4.20 Results for question: “Why do you self-host?”

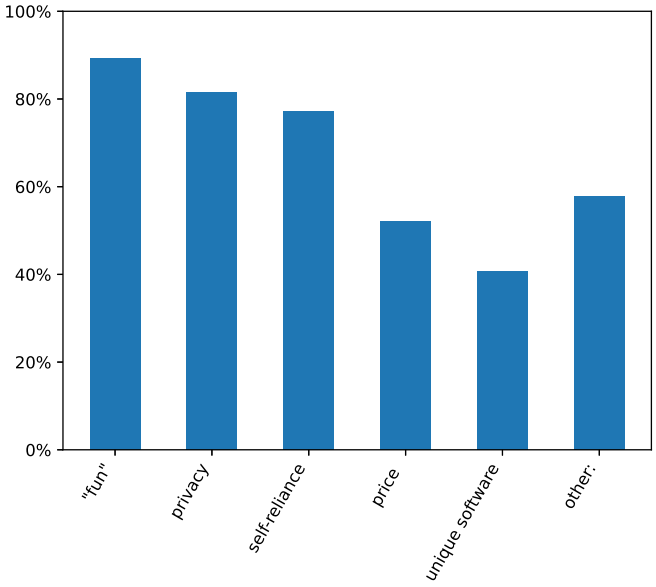

Fig. 27. Results for question “Why do you self-host?”

The results for question “Why do you self-host?” are visualised in figure 27. 315 respondents answered this question.

89.2% of respondents (N=281) answered ““fun”” for this question. 81.6% of respondents (N=257) answered “privacy” for this question. 77.1% of respondents (N=243) answered “self-reliance” for this question. 52.1% of respondents (N=164) answered “price ” for this question. 40.6% of respondents (N=128) answered “unique software” for this question. 57.8% of respondents (N=182) answered “other:” for this question.

This question has a text field, which was labelled “other:”. The values filled into this text field are visualised in figure 28. This section only discusses answers which represent at least 2.0% of respondents. For the full results, see table C20. 6.4% of respondents (N=20) filled “learning”, or some response that got normalised to “learning”, into the text field of this question. 2.2% of respondents (N=7) filled in a value that represents less than 2.0% of respondents.

5 Discussion

This section will discuss the results of the questions and their impact, by each subject of question. As in section 4, results are visualised using pie charts for single select questions, and bar charts for questions that allow for multiple answers. Questions that can be answered on an ordinal scale have been visualised with bar charts, despite being single-select. Unlike section 4, answer filled in via text fields have been merged together with answers that were already in the survey. These text-field answers have been demarcated with red colour; for bar charts, the bar is coloured red, and for pie charts, the text in the legend is coloured red. For questions where “none” was an option, results are split into two charts; the first chart details what share of respondents answered none, and the second graph describes the results of the rest of the respondents. This allows for making a separate comparison for the popularity of a type of entity in general, and the relative market share of different entities of that type. Any answers that represent less than 2% of respondents have been grouped together into the “miscellaneous” category.

For raw results, see appendix C

5.1 Hardware

As can be seen from figure 29, there is a good mix of hardware types used by respondents. Note that “desktop

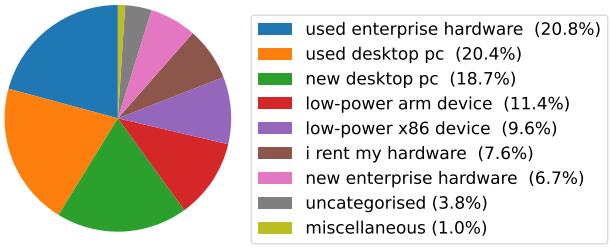

Fig. 29. Popularity of different hardware types

pc" is meant to refer to consumer hardware in general, and that the few answer referring to laptops have been reassigned to this category. Used hardware is the most popular type, with a combined 41.3% of the answers indicating some type of used hardware. Used enterprise hardware, at 20.8%, narrowly beats used consumer hardware, at 20.4%. New high-powered hardware comes second; however, new consumer hardware, at 18.7%, is significantly more popular than new enterprise hardware, at 6.7%. One possible explanation for the difference in popularity between new and used enterprise hardware could be the much larger price difference of consumer vs. enterprise hardware between the new and used markets. Low-powered devices as a category come third, with ARM, at 11.4%, being more popular than x86, at 9.6%, for this category. Finally, 7.6% of users do not own their hardware at all, but instead rent it. 3.8% of respondents filled in an uncategorised response, mostly referring to multiple servers. Miscellaneous answers form 1.0% of responses.

5.2 Operating System

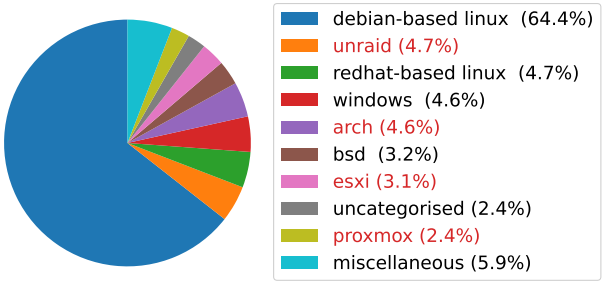

Fig. 30. Popularity of different operating systems

In contrast to hardware types, respondents seem to have an overwhelming preference for operating system. As figure 30 shows, 64.4% of respondents use a Debian-based Linux distribution, with no other Operating System reaching more than 5%.

Of note is the second most popular answer: Unraid, which is used by 4.7% of respondents.. Unraid is a Linux-based combination of a RAID controller, Application Server, and Virtualisation Host, which aims allow users to configure a Network Attached Storage (NAS) system on non-specific hardware[82], offering support for any Docker-based application using community configured packages, and also being capable of hosting virtual machines and allocating hardware. Unlike most other operating systems used in this question, Unraid uses a proprietary, paid licensing model. The popularity of Unraid is noteworthy because its aims are very similar to the project described in section 1.1, which is the primary motivation for this study.

4.7% of respondents indicate using a Redhat-based Linux version. 4.6% of respondents indicate using Windows. 4.6% of respondents indicate using Arch Linux. 3.2% of respondents indicate using some version of BSD.

ESXI represents VMWare virtualisation solutions, and is used by 3.1% of respondents. Proxmox[30], another virtualisation hypervisor, is used by 2.4% of respondents..

2.4% of respondents filled in an uncategorised response, mostly referring to multiple servers. The remaining 5.9% of the answers represent less than 2.0% of respondents, and are as such grouped together in the miscellaneous category.

Combining OS usage for ESXI and Proxmox, 4.8% of respondents have indicated using a hypervisor as their primary operating system.

Of the notable answers, only Windows, BSD, and the hypervisors do not use the Linux kernel. This means that when it comes to kernels, Linux effectively has an 87.4% marketshare amongst respondents (all significant "other" answers are also Linux-based).

5.3 Containers

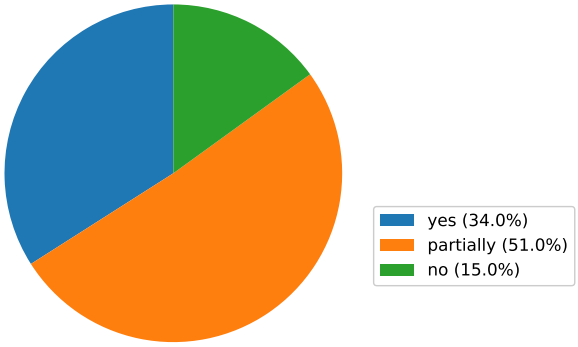

Fig. 31. Usage of container systems

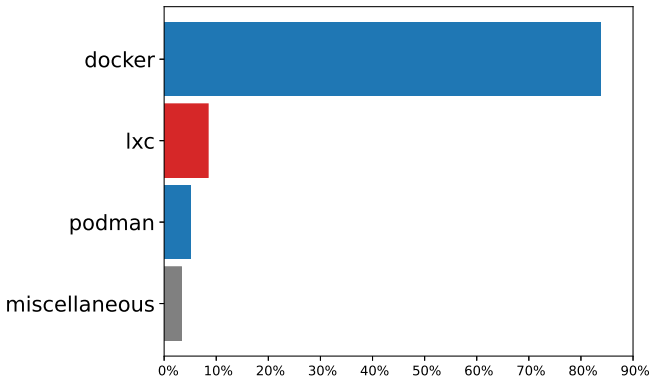

Fig. 32. Popularity of different container systems

As can be seen from figure 31, 85% of respondents indicate using containers. 34% has all of their services containerised, whereas 51% uses both containers and services

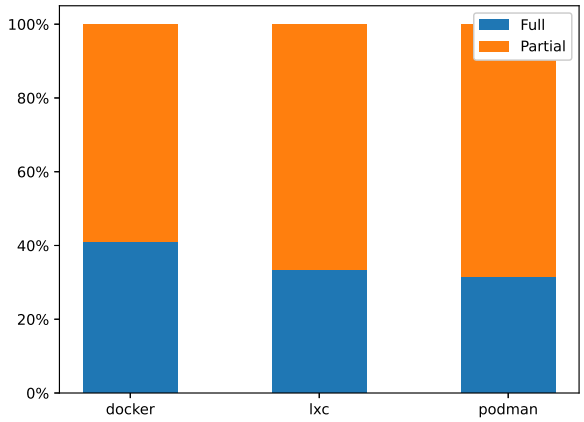

Fig. 33. Full vs. partial container use by container system

running outside containers. Only 15% of respondents do not use any containers at all.

Figure 32 shows that Docker is by far the most popular container system, with 84% marketshare. LXC comes a distant second, with about 8% of respondents indicating the use of LXC. Podman is also not too uncommon, with about 5% of answers. Miscellaneous answers mostly refer to container systems native to operating systems, such as BSD jails, but represent less than 3% of respondents combined.

Figure 33 shows the share of respondents that use full or partial containers for the three most popular container systems. Over all the users that use containers, 40% have all their services containerised[2]. Docker users are slightly more likely to run all their services containerised at 41%, whereas LXC and Podman users are less likely to do so at 33% and 32% full containerisation respectively.

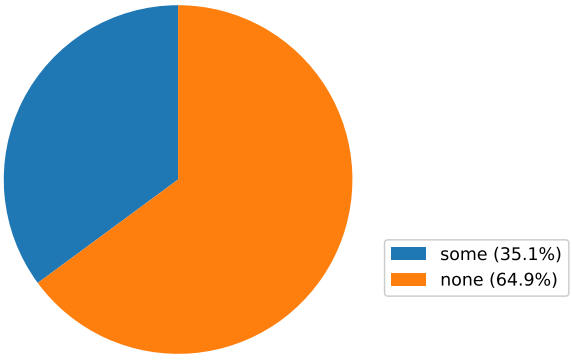

Fig. 34. Usage of container managers, over respondents who use containers

Figure 34 shows the percentage of respondents who (partially) use containers that answered "none" to the question "Do you use Kubernetes to manage your containers". This indicates that only 35% of respondents use a container manager.

2. $\frac{34\%}{85\%} = 40\%$

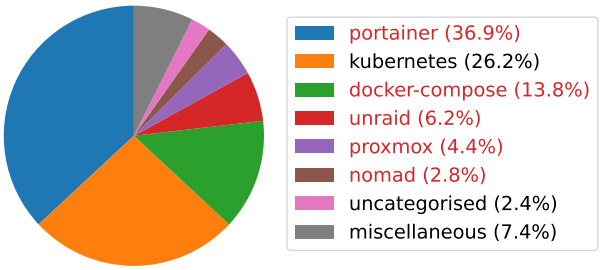

Fig. 35. Popularity of different container managers

The container managers that are used by this 35% are shown in figure 35. Only Kubernetes can be seen as a pre-suggested answer. Despite this, it is not the most popular option; instead, this is Portainer, representing 36.9% of respondents who use a container manager, whereas Kubernetes only represents 26.1%. Portainer is a GUI-based container software [69]. It can manage Docker directly, but it can also manage Kubernetes. Portainer comes in a paid enterprise version and an unpaid community edition; in the self-hosting sphere, it seems reasonable to assume that the community edition is far more popular.

Docker-compose was also listed as a popular container manager, at 13.8%. Docker-compose is a much simpler utility, which simply can create and resume sets of Docker containers from a configuration file. It has traditionally been intended to simplify development with Docker, and not necessarily to run as a server-side deployment system[62]. As such, it is debatable whether docker-compose can be seen as a proper alternative to Kubernetes, and it's therefore likely that many respondents who uses docker-compose answered "none" to this question.

Unraid is also listed as a container manager by 6.2% of respondents, and it does have container management functionality. Interestingly, all 83 respondents who indicated using Unraid indicated using containers (specifically Docker), but only 23 indicated using Unraid as a container manager as well. Furthermore, 8 respondents indicate using Unraid as a container manager, despite not indicating Unraid as an operating system. If all users which indicated using Unraid as an operating system, also indicated using it as a container manager, Unraid would have a 15% marketshare, putting it above docker-compose. There are 8 users who indicate using Unraid as a container manager, but not as an operating system. As these responses make up less than 1% of the OS data, this is considered insignificant.

A similar story applies to Proxmox, which is listed at a container manager by 4.4% of respondents. 22 respondents indicate using Proxmox as a container manager, but only 2 of those also indicate using it as an operating system. There are 38 respondents who indicate using Proxmox as an operating system, but not as a container manager, of which 27 indicate not using any container manager at all, 5 indicate using Portainer, 4 indicate using Kubernetes, with the remaining three responding Ansible, docker-compose, and one uncategorised response. There are also 20 respondents who indicate using Proxmox as a container manager, but not as an operating system; 18 of these responses indicate

Debian, 1 indicates Redhat, and 1 is uncategorised. If all of these respondents had indicated Proxmox for both questions, Proxmox would consist an 11.7% share of container managers and a 3.5% share of operating systems.

There are several explanations for the inconsistent data regarding Unraid and Proxmox. One is that respondents may use either system as a container/virtualisation host, but use another operating system inside their containers/virtual machines that they consider their primary operating system. Respondents may also have installed a separate container manager into Unraid or Proxmox, using that container manager as an alternative management interface; e.g. using Portainer to manage Proxmox. Finally, in the case of Unraid it is also possible to install Unraid components directly into a Slackware installation.

Hashicorp Nomad[36] is used by 2.8% of respondents. 2.4% of respondents entered an uncategorised response. Miscellaneous answers represent 7.4% of responses.

5.4 Programming

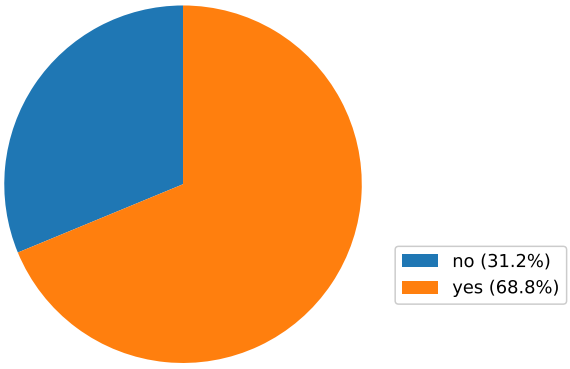

Fig. 36. Results for question “Do you also program?”

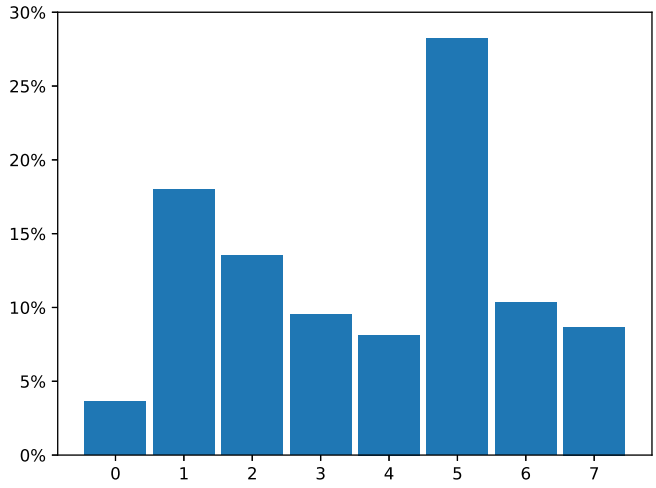

Fig. 37. Results for question “On average, how many days a week do you sit down to program?”

Figure 36 shows that 68.8% of respondents program besides their self-hosting.

Figure 37 shows an indication of how much time respondents who program spend on programming. The average time indicated is 3.70 days, with a median of 4, a mode of 5, and a standard deviation of 2.05.

4% of respondents program, but on average does so less than once a week. Then, a downward trend can be observed from 18% of respondents programming 1 day a week to only 8% programming 4 days a week. The mode is 5 days a week, representing 28% of respondents. 10% of respondents program 6 days a week, and 7% program 7 days a week;

The downward trend from 0-4 days a week spent programming could be explained by these respondents seeing programming as a hobby, with fewer people spending more time on their hobby. It seems reasonable to assume that the peak at 5 days a week is caused by respondents who program professionally, with a 5 day workweek. The group of respondents who program more than 5 days a week could be caused by respondents who program professionally and also program as a hobby. If indeed the amount of time spent by hobby programmers follows a downward trend, a small part of the respondents who program 5 days or more per week are hobby programmers as well. Of course, some of the respondents who program professionally may also have a work day with fewer than 5 days.

Combining the results from figures 36 and 37, the following groups of self-hosters can be identified based on programming:

- The first group does not program, and presumably does not have the technical knowledge. This group consists 31.2% of respondents.
- The second group programs as a hobby; they have the knowledge required to program and do so occasionally, but do not earn a living with it. This group consists approximately 36.3% of respondents.
- The third group programs professionally, and quite probably also as a hobby. This group consists the remaining 32.4% of respondents.

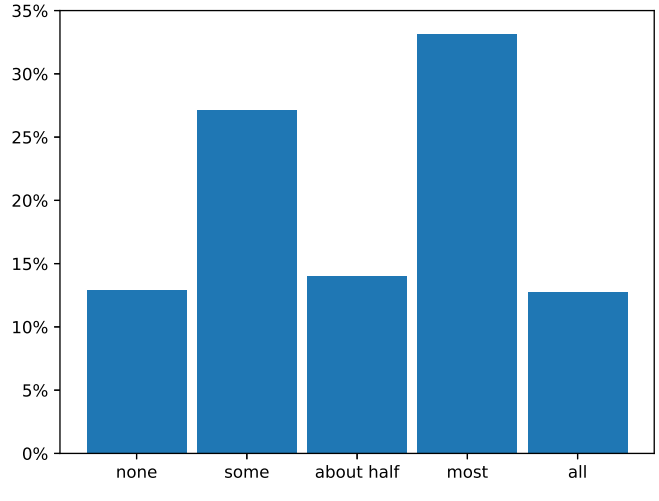

Fig. 38. Results for question “How much of your software do you host yourself?”

Figure 38 indicates what share of their software each respondent indicates they host themselves. 87% of respondents host some of the software they write, but only 13%

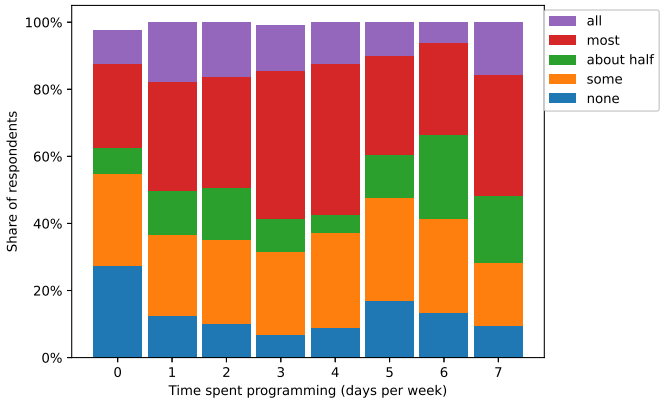

Fig. 39. What share of their self-written software a respondent host vs. how often they program

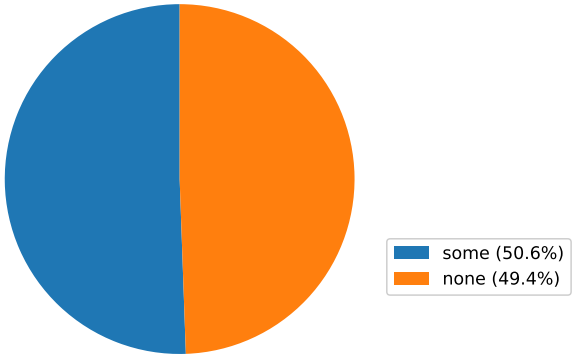

Fig. 40. Share of respondents that host a version control system

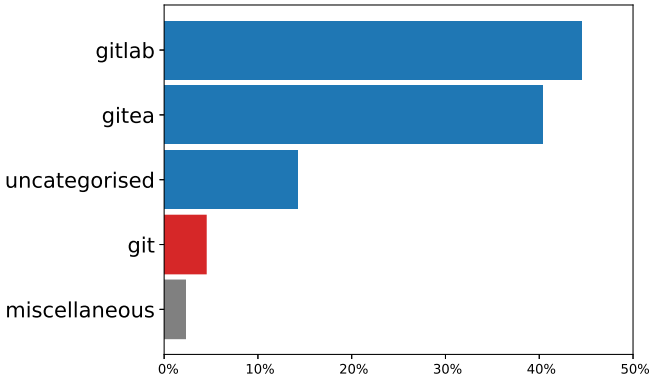

Fig. 41. Popularity of different version control systems

host all of it. Figure 39 compares the amount of time a respondent spends on programming to how much of their software they host themselves.

One explanation for the fact that most respondents did not host all of their software could be the aforementioned professional programmers. The possibility to write software that runs on the client device directly, and thus does not need to be "hosted" as such is another explanation.

Figure 39 indicates that respondents who sit down to program for 5 days a week on average are more likely to host a smaller share of their own software than respondents who program less; this seems to support the hypothesis that these respondents program in a professional environment. There is a small decrease in the tendency to host own software for respondents who program 4 days a week; this could be explained by professional programmers who program part-time.

Because of part-time professional programmers, and avid hobbyists who spend 5 days or more, there is some overlap in time spent on programming between professional and hobby programmers in time spent. This means that the percentages as listed above are probably not be entirely accurate. However, the distinction between the three groups can still be made, and it still seems likely that they are of approximately the same size.

5.5 Version Control and CI/CD

Figures 40 and 41 describe responses the question "Which version control system do you host?". Figure 40 describes the amount of respondents that host a version control system, and figure 41 describes the popularity of version control systems amongst those respondents that host one.

50.6% of respondents indicate hosting a version control system. Within this 50.6%, the two pre-suggested values, Gitlab and Gitea, are by far the most popular, at 44.8% and 40.6% respectively. Uncategorised values form the third most popular response, at 14.3% of responses. Most of these responses referred to Github[42], which is a version control system that can not be self-hosted; an explanation could be that these respondents interpreted the question as "which version control system do you use". 4.5% of respondents indicate using a raw git server, without any web front-ends. Miscellaneous values make up 4.1% of responses.

If we were to treat the uncategorised responses for version control as "none" instead, only 42.9% of respondents would host a version control system; this would change the relative popularity of each system to Gitlab at 52.4%, Gitea at 47.4%, and raw Git at 5.2%.

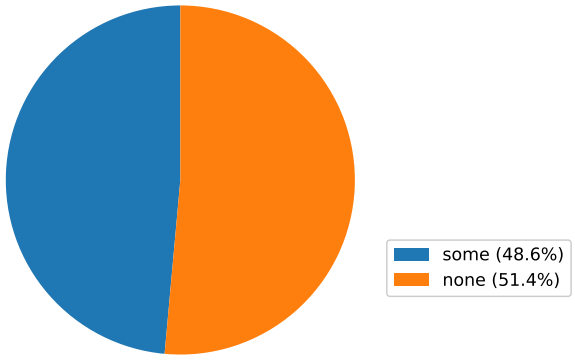

Fig. 42. Share of respondents that host a CI/CD system

Figure 42 shows that 48.6% of respondents host a CI/CD system. Figure 43 shows the popularity of different CI/CD systems amongst these users. Gitlab is by far the most popular, at 59.6% marketshare. Jenkins comes second, at 28.2%. The uncategorised responses make up for 8.1% of the category, closely followed by Drone at 7.9%. Miscellaneous

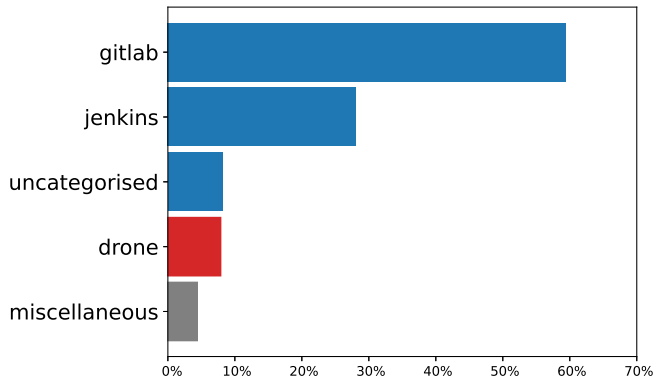

Fig. 43. Popularity of different CI/CD systems

responses make up 2.4% of responses; these are mostly custom solutions. Responses under 2% make up 6.6% of responses. The last pre-suggested response, circleci, came in at a low 1.5% of responses (and is therefore not shown).

The fact that several custom responses ranked higher than a pre-suggested response for CI/CD is an indicator for the willingness of respondents to use the other field, and could be used to argue that responses are not skewed by the pre-suggested values.

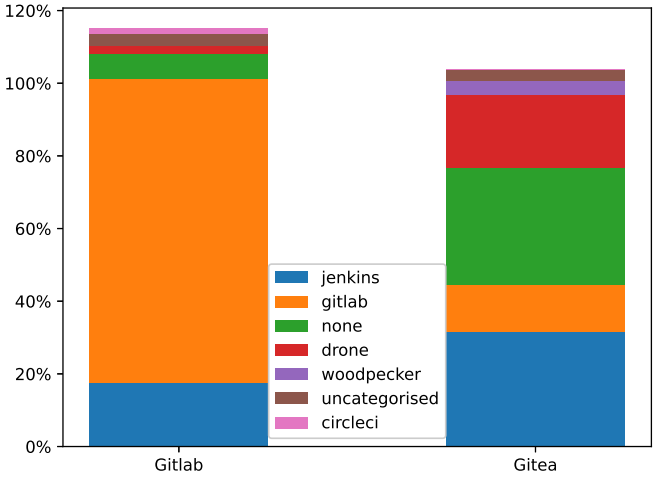

Fig. 44. Use of CI/CD systems split out over the two most popular version control systems.

Figure 44 shows the CI/CD systems used by respondents that used the two most popular version control systems. Note that the sum of usage is greater than 100%; this is because some respondents indicated hosting multiple CI/CD systems.

Unsurprisingly, most respondents that use Gitlab as a version control system also use it as a CI/CD system, with 83.6% of respondents who indicate using Gitlab as a version control system also using it as a CI/CD system. 17.4% of those who use Gitlab for version control use Jenkins for CI/CD, and 7.1% of respondents who indicate using Gitlab as version control do not use any CI/CD system at all. Drone and CircleCI make up a small number of CI/CD systems for Gitlab users at 2.1% and 1.4% respectively, and uncategorised responses make up for a further 3.2% of CI/CD systems in this group.

32.1% of Gitea users don't use any CI/CD system at all. The most popular CI/CD system under Gitea users is Jenkins, at 31.5%, followed by Drone, at 20%. Surprisingly, 13.2% of respondents who use Gitea as a version control system use Gitlab as a CI/CD; detailed inspection of the data reveals that all of these respondents indicate using both Gitea and Gitlab as version control. Finally, woodpecker makes up 3.7% of CI/CD systems for Gitea users, and 3.1% of the responses were uncategorised.

An explanation for the much larger variety of CI/CD systems in Gitea, as shown in figure 44 could be that Gitea can't function as a CI/CD system itself, and as such requires an external system.

5.6 Users

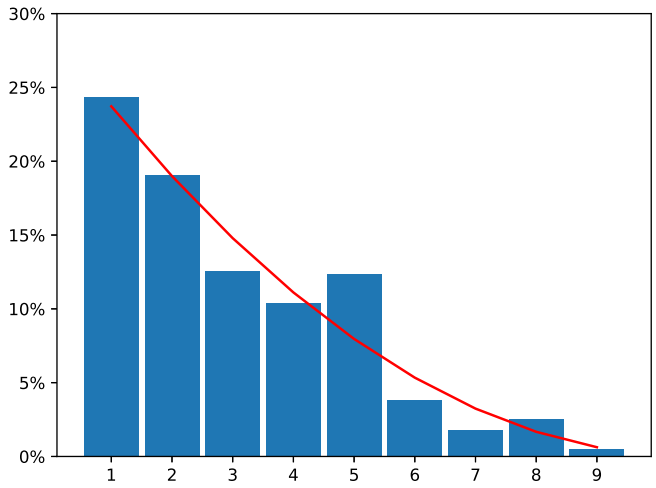

Fig. 45. Results for question "How many users do you have (including yourself)?"

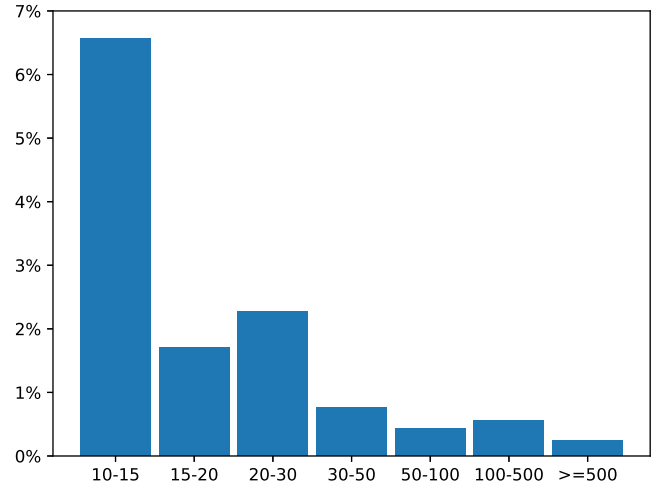

Fig. 46. Further results for question "How many users do you have?. Note the non-linear scale"

Figure 45 shows the amount of users respondents indicate to have, including the respondent themselves. A

second-order polynomial has been fitted over the graph. A clear downward trend in user quantity can be observed, with 24.4% of respondents only featuring themselves as a user, and only 0.5% of respondents indicating 9 users. For larger quantities of users, respondents seem to have a tendency to fill in round numbers; for example, 5.2% of respondents indicate having 10 users, while only 0.5% of respondents indicate having 9 users. To avoid the data being skewed by this, user quantities of 10 or greater have been grouped together in a non-linear scale, as can be seen in figure 46. This figure shows that when continuing the user count on a non-linear scale, the observed downward trend appears to continue.

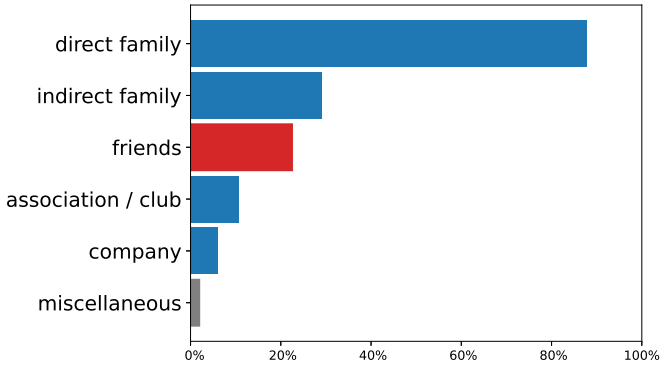

Fig. 47. Results for question “Who are your additional users?”

The 75.6% of respondents who have more users than just themselves were asked about who their additional users are. This data can be seen in figure 47. As described in section 3.1.1, the “friends” option was not pre-suggested, and may thus be underrepresented. Assuming it is not, direct family amount by far the greatest quantity of additional users, at 87.9% of users. Indirect family comes second, at 29.1% of respondents. The only significant value that wasn’t pre-suggested, friends, comes third, at 22.6% of responses. Associations and clubs are additional users for 10.8% of respondents, and 6.2% of respondents also serve their company with their self-hosted system. Miscellaneous answers represent 1.9% of respondents.

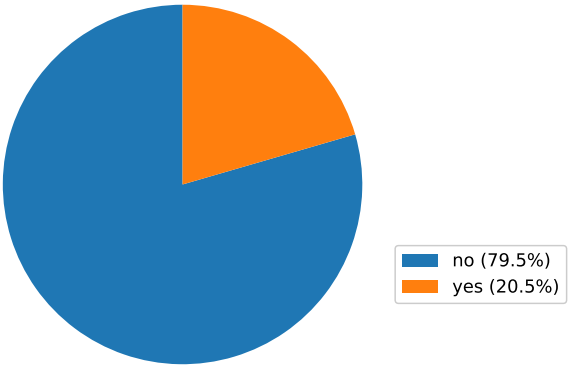

Fig. 48. Results for question “Do any of your users have additional access rights?”

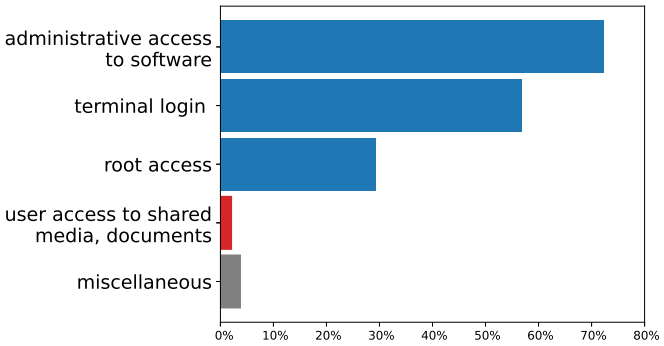

Fig. 49. Results for question “What sort of additional access rights do your users have?”

Figure 48 shows that only 20.5% of respondents have given their users additional access rights. Figure 49 shows the types of additional access that respondents have given their users. At 72.4%, administrative access to software is the most popular type of additional access right to give. Terminal login was also a popular response, at 56.9% of responses. 29.3% of respondents who give their users additional access rights have given their users root access. Finally, user access to shared media and documents comes in at 2.1% of responses.

When taking the amount of respondents who have not given their users access rights into account, we can compute the share of respondents that have given their users there access rights in total; this works out to 14.8% administrative access to software, 11.6% terminal login, 6.0% for root access, and 0.4% for access to shared media and documents.

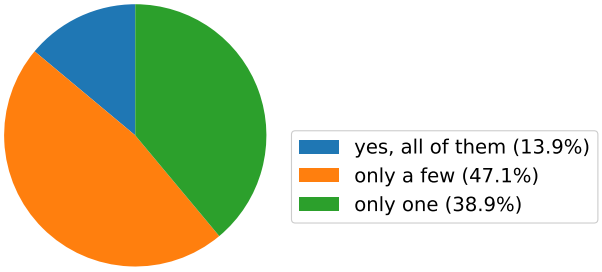

Fig. 50. Results for question “Do all of your users have extra rights?”

Figure 50 shows how many of their users respondents have given additional access rights. Only 13.9% of respondents that have granted additional access rights have granted these rights to all of their users; 47.1% have granted additional access rights to only some of their users, 38.9% have granted the additional access rights to only one user.

Figure 51 shows the correlation between user quantity and how many of the users have been given additional access. This graph uses the same scale as figure 46, except that the value “9” has been merged with “10-15” to generate the new value “9-15”, because the low amount of respondents with 9 users skewed the perception of the graph. Also, respondents with only 1 user (including themselves) can’t have any additional users that have access rights, and are as such not included in this graph. Note that for respondents

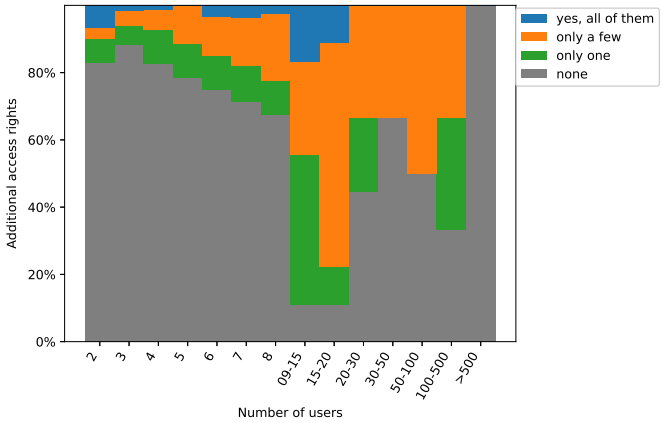

Fig. 51. Correlation between user quantity and additional user access. Note the scale.

with 2 users including themselves, all values except "none" are equivalent, as there is only one additional user. For the largest quantities of users, the sample size may not be large enough for a significant result.

Figure 51 seems to suggest that for 15 users or less, there is a positive correlation between having more users and sharing the access rights. For higher user quantities, this becomes somewhat less likely again. This lines up with expectations: the more users one has, the more likely it is some of these users can be trusted with access rights; however, once a certain number of users is reached, the server becomes too important for shared access rights. Of course, support for the second part of that hypothesis is more questionable due to the small sample size of respondents with many users.

5.7 Services

Table 2 shows the 50 most popular services that respondents filled in. The full range of responses can be found in table C16.

Nextcloud is the most popular service to host, with 46.8% of respondents indicating the use of Nextcloud. Nextcloud is a cloud platform, aiming to provide file hosting, browsing, and sharing comparable to e.g. Google Drive or OneDrive [57].

Both Plex[68] and Jellyfin[47], both media streaming services, are very popular at 33.1% and 21.7% respectively. Emby[23], another relatively well-known media server, is much less popular in this survey, at only 4.8%.

Samba (normalised to mean any implementation of the SMB protocol) is hosted by 26.6% of respondents. 3.8% of respondents indicate hosting some implementation of the Network File System[38], which can be seen as an alternative.

Home assistant[4], a home automation tool that integrates with third-party smart devices, is used by 15.9% of respondents.

Pi-hole[67] is a DNS server that blocks DNS requests to domains which serve advertising, in order to function as a network-based adblocker. 12.4% of respondents use Pi-hole. The similar service AdGuard (home)[2] is used by 2.1% of respondents.

Value	Percentage
nextcloud	46.8%
plex	33.1%
samba	26.6%
jellyfin	21.7%
home assistant	15.9%
pihole	12.4%
sonarr	11.4%
radarr	11.2%
email	10.7%
gitea	10.4%
vaultwarden	8.4%
matrix	8.4%
bitwarden	8.2%
minecraft	7.0%
grafana	6.5%
paperless-ng	6.2%
wireguard	6.1%
bookstack	5.7%
photoprism	5.3%
gitlab	5.2%
calibre	4.9%
emby	4.8%
ombi	4.8%
transmission	4.7%
wordpress	4.3%
game servers	4.1%
syncthing	4.0%
vpn	4.0%
custom applications	4.0%
nfs	3.8%
website	3.7%
qbittorrent	3.6%
portainer	3.5%
lidarr	3.5%
openvpn	3.4%
freshrss	3.2%
uptime kuma	3.2%
jackett	2.9%
heimdall	2.8%
mealie	2.8%
wiki.js	2.7%
dokuwiki	2.6%
unifi controller	2.6%
seafile	2.6%
overseerr	2.6%
deluge	2.4%
ftp	2.3%
homer	2.3%
firefly iii	2.2%
adguard	2.1%

TABLE 2
Top 50 results for question "What end-user services do you host?"

Sonarr and Radarr are parts of the Servarr[77] ecosystem, which is designed to automatically search for and download media from torrent indexers. Sonarr is for episodes of TV series, and is used by 11.4% of respondents, and the movie-oriented Radarr is used by 11.2% of respondents. Interestingly, Lidarr, part of the same stack but for music, is only used by 3.5% of respondents, and the book-based Readarr only hits 0.6%. The Indexing system Prowlarr is used by 1.6% of respondents.

10.7% of respondents host some sort of email solution. What exact type of setup they use will be discussed in section 5.10.

For this question, 10.4% of respondents answered Gitea[29], whereas 5.2% answered Gitlab[6]. There is a difference in Gitlab and Gitea usage between section 5.5, where 20.4% of respondents indicate using Gitea and 22.5% of respondents indicate using Gitlab, and section 5.7, where

10.4% of respondents indicate using Gitea and 5.2% of respondents indicate using Gitlab. Without looking at the data, one could come up with several hypothesis for why this is; it could be that Gitea users have a higher response rate for the services question, or that there are many respondents who did not fill in the version control question but consider Gitea a service nevertheless. A quick cross-correlation disproves both hypotheses; response rates for the services question are 68.3% for Gitea users and 63.5% for Gitlab users, and almost all respondents who filled in either value as a service also filled it in as a version control system. In practice, it just turns out that 49.5% of respondents who indicate using Gitea as a version control system indicate using it as a service, whereas this number is only 24.3% for those who indicate using Gitlab as a version control system. Both values are less common in the results for this question than they are in the question about version control; it seems probable that some respondents thought they should not fill in their version control system for two different questions, with Gitlab users being more likely to avoid this duplication.

Bitwarden[7] is a password manager with a self-hosted server, which also offers a variety of client applications. Vaultwarden[28] is an alternative server for Bitwarden, which is unrelated to the Bitwarden company, but is compatible with the same client applications. Vaultwarden is slightly more popular than the mainstream Bitwarden service, at 8.4% vs. 8.2% respectively.

Matrix[51] is a decentralised instant messaging and VoIP protocol. The word "Matrix" refers to the protocol, which, like email, can be supported by a variety of servers, although the choice of Matrix servers isn't quite as well-established as that of Email servers. 8.4% of respondents host some sort of Matrix server.

Minecraft[55] is a well-known video game. Minecraft offers a Java-based application to run private (or public) multiplayer servers. 7.0% of respondents run such a server.

6.5% of respondents indicate hosting an instance of Grafana[33]. Grafana can be used to visualise many different datasources, for example server performance, CoViD-19 cases, or home energy usage, into real-time graphs.

6.2% of respondents indicate hosting Paperless-ng[85], a program which performs OCR on and subsequently indexes scans of paper documents. Paperless-ng aims to serve as a replacement for working with paper documents, and provides search, organising, and exporting functionality for these processed scans. , organising, and exporting functionality for these processed scans.

6.1% of respondents indicate hosting Wireguard[86], a VPN server. 3.4% of respondents indicate hosting the competing OpenVPN[61]. 4.0% of respondents indicate hosting a non-specific VPN server; there is no overlap between these respondents and the respondents who indicate using the other VPN services.

5.7% of respondents indicate hosting BookStack[8], a program for the simple organising and storage of information, also known as a "wiki".

5.3% of respondents indicate hosting PhotoPrism[65], a photo organisation program. Bookstack also uses AI technology to automatically organise photographs.

Calibre is a program for reading and managing e-books. It also offers a content server[12], which allows users to read books on the server from a web browser. 4.9% of respondents indicate hosting such a content server.

Ombi[60] is a companion application for Plex and Emby, which allows users authorised via Plex or Emby to request new media, which is then automatically fetched via an *arr application, and pushed back to Plex/Emby when fetched. 4.8% of respondents indicate hosting Ombi, which is the same percentage as Emby; in fact, N=51 for both values. This does not mean that all respondents who indicate hosting Emby also indicate hosting Ombi; in fact, only 0.7% (N=7) indicate hosting both.

4.7% of respondents indicate hosting Transmision[81], a program for downloading torrents, as a service. Transmission also provides a web interface, and can thus be hosted on a headless server similarly to how it can be used as a desktop application. 3.6% of respondents indicate hosting the torrent client qBittorrent[19], which similarly has a web interface. The torrent client Deluge[18] is used by 2.4% of respondents.

4.3% of respondents indicate hosting Wordpress[88], a program that allows users to build website with limited technical knowledge.

4.1% of respondents indicate hosting game servers; this value mostly consists of respondents who filled in the literal value or some other indication of hosting non-specific game servers, as well as some of the less popular game servers.

4.0% of respondents indicate hosting Syncthing[79]. Syncthing is a file synchronisation program, which keeps files and directories synchronised across multiple devices, some of which may be servers. This functionality is also provided by NextCloud[57], although NextCloud is much more centralised and provides many additional features.

4.0% of respondents indicate hosting some sort of custom application; all values which refer to software which the respondent has written themselves have been normalised to this value. As per section 5.4, this number is probably underrepresented for this question.

3.7% of respondents indicate hosting some sort of non-specific website; answers which indicate any non-specific website, custom-built or otherwise, have been normalised to this answer.

3.5% of respondents indicate hosting portainer[69] as a service. Portainer has already been discussed in section 5.3. Portainer does not seem to offer any end-user functionality in the traditional sense; perhaps these respondents allow their users (possibly themselves) to submit and manage containers for other services upon request.

3.2% of respondents indicate hosting FreshRSS[27], an RSS aggregator. RSS[50] is a protocol for pushing small bits of news to those who are interested, and is a classic example of a publish-subscribe system. An RSS aggregator is a centralised subscriber in this architecture, which allows users to keep track of which pieces of RSS news they have read accross their multiple devices.

3.2% of respondents indicate hosting Uptime Kuma[49], a monitoring tool which provides a website with server management information.

2.8% of respondents indicate hosting Heimdall[40], an application dashboard which present an overview of available applications to users.

2.8% of respondents indicate hosting Mealie[37], a recipe manager and meal planner.

2.7% of respondents indicate hosting Wiki.js[84], a wiki system written in Node.js.

2.6% of respondents indicate hosting DokuWiki[20], a wiki system which has relatively few server-side dependencies.

2.6% of respondents indicate hosting the Unifi Controller[43], a program used to manage Ubiquiti's networking equipment.

2.6% of respondents indicate hosting Seafile[76], a file synchronisation program offering similar functionality to Nextcloud.

2.3% of respondents indicate hosting some implementation of an FTP[70] server, an older protocol used to transfers files between a server and a client.

2.3% of respondents indicate hosting Homer[87], a homepage that can be easily configured to offer redirects to other self-hosted applications[3].

2.2% of respondents indicate hosting Firefly III[13], a personal finance manager.

5.8 Services Count

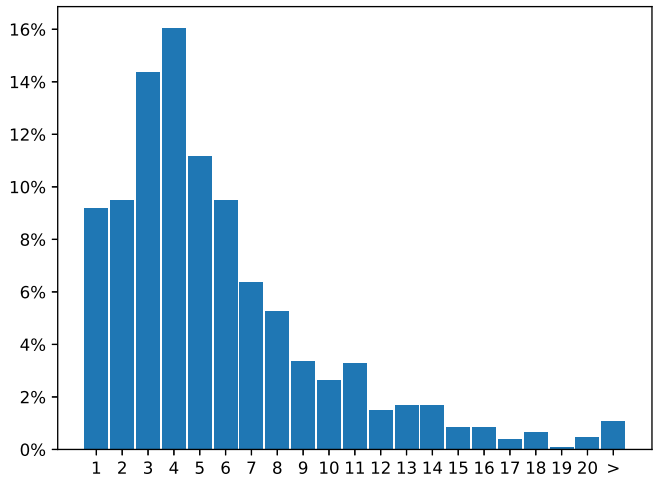

Fig. 52. Amount of services per user

Figure 52 shows the amount of services filled in per respondent. Note that the last bar represents all respondents who filled in more than 20 services combined. The mean amount of services per respondent is 5.77, median is 5, and mode is 4. The right-skew of the graph can be explained by the borders of the question; one could fill in infinite services, but not -1.

Figure 53 shows the average amount of services per hardware type. It is sorted by the popularity of the hardware types. The error bars represent one standard deviation, both below and above the mean.

Interestingly, respondents using enterprise hardware host, on average, more services than respondents using desktop hardware. Respondents using new enterprise hardware host more services than respondents using used enterprise hardware. For consumer hardware, respondents

3. There is also a software called Homer for professional management of energy grids, but this does not appear to be self-hostable

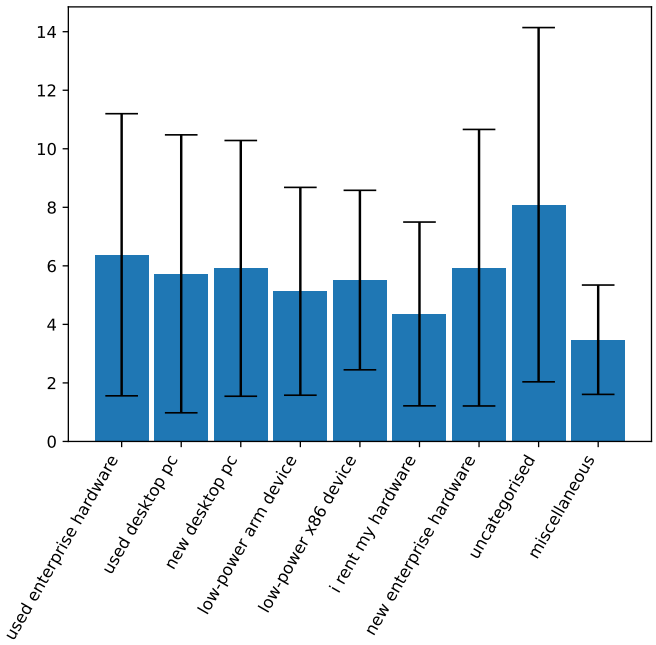

Fig. 53. Average amount of services by hardware type. Error bars represent one standard deviation, above and below.

using new hardware host slightly more services on average. Respondents using low-power hardware host fewer services than those on high-powered hardware, with x86-based low-power hardware hosting more services than ARM-based low-power hardware. The average respondent who uses a low-power ARM device hosts 1.25 fewer services than the average respondent on used enterprise hardware. Respondents on rented hardware host especially few services, with the average respondent on rented hardware hosting only 4.36 services, which is 1.41 below the global average. Respondents who host an uncategorised hardware type host much more services on average than other respondents; as most of these respondents filled the survey in for multiple devices, this is unsurprising. Finally, respondents who use miscellaneous hardware host much fewer services on average; this could be explained by this category being predominantly composed of NAS devices, which are designed for a much narrower function.

5.9 Services Categorised

In order to find out what users most commonly use their self-hosted servers for, each service was assigned to one of 23 categories. Table 3 shows the popularity of these categories; that is, for each category, what percentage of respondents host at least one service in that category. For information about which precise services have been assigned to which category, see appendix D. The rest of this section describe each category in more detail.

- **File Server**: Services that allow users to upload and download files, be it via a website or some other protocol. File servers are the most popular category, with 97.9% of respondents hosting a service in this category. The most popular file server is NextCloud[57],

Category	Percentage Hosting
File Server	97.9%
Media Streaming	82.6%
Miscellaneous	78.9%
Media Gathering	63.0%
Server Management	38.5%
Communication	37.0%
IoT	27.6%
DevOps	23.8%
Organisational Database	19.4%
Password Manager	17.9%
Games	17.2%
Adblocker	14.6%
VPN	14.1%
Photo Gallery	8.2%
Document Manager	7.7%
RSS reader	6.7%
ERP/CRM	6.2%
Team Collaboration	5.6%
Notetaking	3.4%
Office Tools	3.3%
Bookmarking	2.9%
URL shortener	1.1%
Cryptocurrency	0.7%

TABLE 3
What percentage of respondents host a service in a category

which is hosted by 46.8% of respondents, and by 47.7% of respondents who host a file server.

- **Media Streaming**: Services which allow the user to consume media that is on their server via a web interface and/or client application. 82.6% of respondents host a media streaming service. The most popular media streaming service is Plex[68], which is hosted by 33.0% of total respondents and 40% of respondents who host a media streaming service.
- **Media Gathering**: Services which download data, most notably media, onto the server. 63.0% of respondents host a media gathering service. The most popular media gathering service is Sonarr[77], which is hosted by 11.4% of respondents, and 18.0% of respondents who host a media gathering service.
- **Server Management**: Services which provide insight into the health of the server, or automate its management. 38.5% of respondents host a server management service. The most popular server management service is Grafana[33], which is hosted by 6.5% of total respondents and 16.8% of respondents who host a server management service.
- **Communication**: Services that can be used to communicate with other people, such as instant messengers or VoIP servers. 37.0% of respondents host some sort communication service. The most popular communication service is email (without any specific software package), which is hosted by 10.7% of total respondents and 28.9% of respondents who host a communication service.
- **IoT**: Services which obtain information from, control, or otherwise interact with devices that impact physical space. 27.6% of respondents host an IoT service. The most popular IoT service is Home Assistant[4], which is hosted by 15.9% of total respondents and 57.5% of respondents who host an IoT service.
- **DevOps**: Services that are specifically designed for the development and deployment of software, such as source code managers and CI/CD tools. 23.8% of respondents host some DevOps service; as described in section 5.7, this may be underrepresented due do the questions in section 5.5. The most popular DevOps service is Gitea[29], which is hosted by 10.4% of total respondents, and 43.7% of respondents who host a DevOps service.
- **Organisational Database**: Services which provide user-friendly ways to enter, store, and structure (mostly textual) information, such as Wiki's or Recipe Websites. The most popular organisational database is Bookstack[8], which is hosted by 5.7% of total respondents and 29.5% of respondents who host an organisational database.
- **Password Manager**: Services which store passwords, usually paired with client applications that can automatically provide the passwords to the appropriate login form. 17.9% of respondents indicate hosting a password manager. The most popular password manager is Vaultwarden[28], which is hosted by 8.4% of total respondents, and 46.6% of respondents who host a password manager.
- **Games**: Services related to gaming, mostly server application for multiplayer video games. 17.2% of respondents host a gaming service.. The most popular gaming service is Minecraft[55], which is hosted by 7.0% of total respondents, and 41.0% of respondents who host a gaming service.
- **Adblocker**: Services which block advertising or other internet content, predominantly by serving as a DNS server. 14.6% of respondents host an Adblocker. The most popular adblocker is Pi-Hole[67], which is hosted by 12.4% of total respondents and 85.2% of respondents who host an adblocker.
- **VPN**: Services which tunnel internet traffic from a client device to the server, effectively making requests from the client device appear to originate from the server. 14.1% of respondents host a VPN. The most popular VPN service is Wireguard[86], which is hosted by 6.1% of total respondents and 43.3% of respondents who host a VPN.
- **Photo Gallery**: Services specifically made to display and share images. 8.2% of respondents host a Photo Gallery. The most popular photo gallery is Photoprism[65], which is hosted by 5.3% of total respondents 64.4% of respondents who host a Photo Gallery.
- **Document Manager**: Services for the scanning, indexing, managing, and/or searching of documents. 7.7% of respondents host a document manager. The most popular document manager is Paperless-ng[85], which is hosted by 6.2% of total respondents and 80.5% of respondents who host a document manager.
- **RSS Reader**: Services which subscribe to RSS sources and fetch their content, which can then be read by a client and/or web application. 6.7% of respondents host an RSS reader. The most popular RSS reader is FreshRSS[27], which is hosted by 3.2% of total respondents, and 47.9% of respondents who host an RSS reader.

- **ERP/CRM**: Services which focus on the management of resources in a business and/or financial context. 6.2% of respondents host an ERP/CRM service. The most popular ERP/CRM service is Firefly III, which is hosted by 2.2% of total respondents and 34.8% of respondents who host an ERP/CRM service.
- **Team Collaboration**: Services which focus on improving the collaboration within members of a team, such as shared task lists or ticketing applications. 5.6% of respondents host a team collaboration service. The most popular team collaboration service is Vikunja[5], which is hosted by 1.0% of total respondents and 18.3% of respondents who host a team collaboration service.
- **Notetaking**: Services which focus on simple editing and storage of text-documents. 3.4% of respondents host a notetaking service. The most popular notetaking application is Joplin[17], which is hosted by 1.4% of total respondents and 41.7% of respondents who host a notetaking service.
- **Office Tools**: Services which provide text editors, presentation makers, and/or spreadsheets software, usually allowing real-time collaboration. 3.3% of respondents host office tools. The most popular Office Tool is Hedgedoc[39], which is hosted by 0.8% of total respondents and 22.9% of respondents which host office tools.
- **Bookmarking**: Services which organise and store (links to) web pages. 2.9% of respondents host a bookmarking service. The most popular bookmarking service is Wallabag[83], which is hosted by 0.8% of total respondents and 29.0% of respondents who host a bookmarking service.
- **URL Shortener**: Services which create short URLs that redirect to longer URLs. 1.1% of respondents host a URL shortener. The most popular URL shortener is yourls[64], which is hosted by 0.4% of total respondents and 33.3% of respondents which host a URL shortener.
- **Cryptocurrency**: Services which mine, manage, or otherwise interact with cryptocurrencies. 0.7% of respondents host a cryptocurrency service. The most popular cryptocurrency service is Chia[41], which is hosted by 0.2% of total respondents and 28.6% of respondents which host a cryptocurrency service.
- **Miscellaneous**: Services which do not fit any of the above categories. 78.9% of respondents host a miscellaneous service. The most popular miscellaneous service is Wordpress, which is hosted by 4.3% of total respondents and 5.5% of respondents who host a miscellaneous service.

5.10 Technologies

Table 4 shows what back-end technologies respondents indicate using. Answers that represent less than 1% of respondents (i.e. 9 individuals) have been cut off from this table; see table C17.

The most popular answer was Nginx[58], an HTTP server, reverse proxy, and load balancer, with 45.0% of respondents indicating its use. Apache httpd[24], a similar program, reached 29.3%. Apache itself refers to the software foundation; however, their most popular program, the Apache HTTP server (also called httpd) is often referred to by "Apache", as is done in here, and it's assumed this is the case for any respondent that filled in Apache without any other qualifiers. Traefik[80], a newer alternative, obtained 6.2% popularity. Caddy[31] is a reverse proxy with more integrated functionality, and is used by 5.2% of respondents. HAProxy[35], a reverse proxy with a focus on load-balancing, is used by 2.2% of respondents.

Value	Percentage
nginx	45.0%
php	39.5%
mysql	32.6%
apache	29.3%
postgresql	27.4%
mariadb	27.0%
uncategorised	25.5%
node.js	23.1%
python	14.9%
redis	9.9%
docker	8.0%
dovecot	7.3%
traefik	6.2%
postfix	5.7%
go	5.7%
sqlite	5.5%
caddy	5.2%
mongodb	4.3%
java	3.4%
.net	3.1%
wireguard	3.1%
influxdb	3.0%
pi-hole	2.4%
proxmox	2.3%
haproxy	2.2%
samba	2.2%
bind	2.0%
nginx proxy manager	1.9%
flask	1.9%
portainer	1.7%
openvpn	1.6%
rust	1.4%
zfs	1.4%
ruby	1.2%
sonarr	1.2%
radarr	1.2%
elasticsearch	1.2%
c#	1.1%
nfs	1.1%
authelia	1.0%
kvm	1.0%
django	1.0%
microsoft sql server	1.0%
miscellaneous	6.0%

TABLE 4
Results for question "What backend technologies power your end-user services?" greater than 1%

Programming languages are somewhat difficult to compare, as there is an important distinction between those that require a separate runtime and those that don't; if a separate runtime is required, the use of the language is much more apparent to the administrator of the server. For example, installing NextCloud requires a PHP runtime to be present and configured, whereas installing nginx does not require a C++ runtime. As such, programming languages which have their own runtime will be discussed in the next paragraph, whereas programming languages that don't will

be discussed in the paragraph after that.

The most popular language answered to this question is PHP[66], a scripting language especially suited to web development, with 39.5% of respondents. Node.js[59], a runtime for javascript, is hosted by 23.1% of respondents. Some runtime for the Python scripting language[72] is hosted by 14.9% of respondents. 3.4% of respondents host some Java[15] runtime. 1.2% of respondents indicate using the Ruby[74] language to power their services.

The most popular runtime-less language listed is Go[32], a language focussed on speed and safety especially in concurrent environments, at 5.7% of respondents. Rust[75], a language with very similar focusses, is used by 1.4% of respondents. Microsoft's C#[53] is used by 1.1% of respondents.

MySQL[14] is the most popular of the databases listed as answers to this question, with 32.6% of respondents indicating hosting it. PostgreSQL[34], an alternative relational database, is used by 27.1% of respondents. 27.0% of respondents indicate hosting MariaDB[26], a database made by the original developers of MySQL, which is compatible with the MySQL interface but focusses on independent funding. Redis[73] is a less structured datastore often used for caching. 9.9% of respondents indicate using it. SQLite[78], a C library which can create a self-contained database file and run SQL queries on it, is used by 5.5% of respondents. As many programs contain SQLite without mentioning this explicitly, it could be that the actual number of users amongst respondents is much higher; however 5.5% of respondents are actively aware of their SQLite use. 4.3% of respondents indicate using MongoDB[56], a non-SQL based database. 3.0% of respondents indicate using InfluxDB[44], a time-series database. Microsoft's SQL server[54] is used by 1.0% of respondents.

25.5% of respondents answered with an uncategorised response. Most of these responses indicated the respondent does not know what technologies they use. For details, see section B.12.

8.0% of respondents indicate using Docker as a technology. This is in conflict with section 5.3, which suggests that 71% of respondents use docker; it seems likely that respondents did not think to include Docker as a technology, as they had already answered that in a separate question. A similar story applies to Portainer, which 1.7% of respondents list as a technology, while 20.3% of respondents in section 5.3 indicate using it.

7.3% of respondents indicate using Dovecot[21], an IMAP server. 5.7% of respondents indicate using Postfix[71], a server for sending and receiving mail over most notably SMTP.

Wireguard[86] is a VPN server, which 3.1% of respondents listed as a technology; 6.1% of respondents list it a service. Only 3 respondents list it as both, which represents approximately 0.2% of respondents for both questions. A similar situation occurs for the DNS-based adblocker pihole[67], which is listed as a technology by 2.4% of respondents and as a service by 12.4% of respondents. No respondents listed it as both a technology and a service. The other VPN provider OpenVPN[61] has 1.6% of respondents listing it as a technology, whereas 3.4% of respondents indicate using it as a service. Again 3 respondents list it as both.

Proxmox[30], which as been discussed in section 5.2 is listed as a technology by 2.3% of respondents.

Samba[1], which has here been normalised to include references to the relevant smbd program, is listed as a technology by 2.2% of respondents, although it has been listed as a service by 26.6% of respondents. 12 respondents listed it as both, which make up for 63.1% of respondents that listed samba as a technology.

Bind 9[45], a DNS server, is used by 2.0% of respondents.

1.9% of respondents indicate using Nginx Proxy Manager[46], a program to automatically manage Nginx.

1.9% of respondents indicate using the Python web development framework Flask[63] as a technology. For the similar Python framework Django[25], this is 1.0%.

1.4% of respondents indicate using ZFS[16], an alternative filesystem with enhanced scalability, integrity, and transactional capabilities.

1.2% of respondents indicate using Sonarr and Radarr[77] as technologies, contrasted to the 11.4% and 11.2% of respondents (respectively) who indicate using it as a service. No respondents listed either Sonarr or Radarr as both.

1.2% of respondents indicate using Elasticsearch[22], a distributed search engine which can be used to search custom data.

1.1% of respondents indicate using NFS[38], a technology to data on a networked machine over an interface similar to a traditional file system.

1.0% of respondents indicate using Authelia[52], a single sign-on provider.

1.0% of respondents indicate using KVM[48], a virtualisation technology integrated into the Linux kernel.

5.11 Authentication

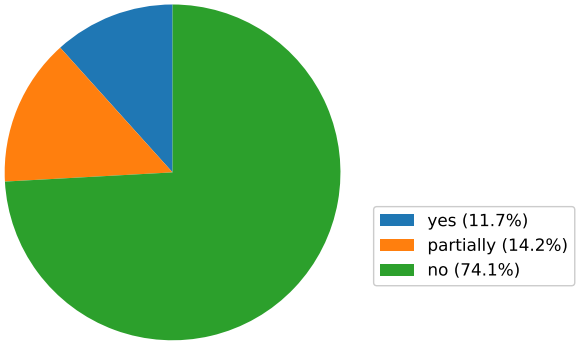

Fig. 54. Results for question "Do you host a centralised authentication service?"

Figure 54 shows that 25.9% of respondents host a centralised authentication service, and that 11.7% of respondents apply it to all their services (45.7% of those with a centralised authentication service). Which mechanisms these authentication mechanisms use are detailed in figure 55. Of the authentication services used by respondents, LDAP is the most popular, at 58.8% of respondents. Oauth

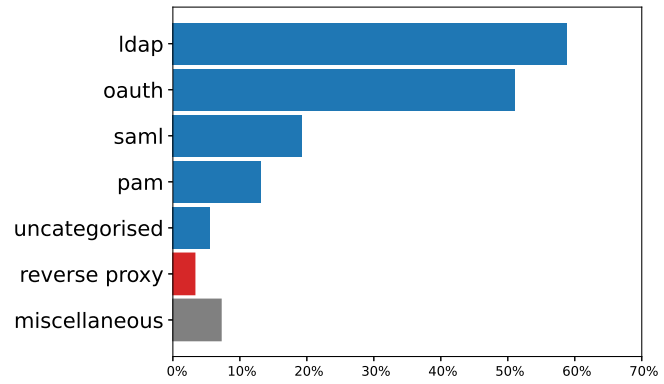

Fig. 55. Results for question "Which mechanisms does your authentication service use?"

is slightly less popular, at 51%. SAML is used by 19.3% of respondents, and PAM (Linux authentication) is used by 13.1% of respondents. Uncategorised answers make up 5.6% of responses. Finally, the only answer that was not suggested by the form to make it above 2% is reverse proxy, which has been normalised to refer to any solution where a reverse proxy is responsible for the authentication for the services it proxies to. Miscellaneous values make up for 5.8% of responses.

5.12 Reason

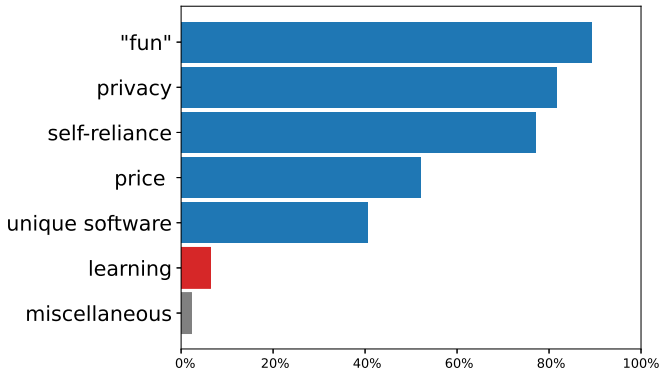

Fig. 56. Results for question "Why do you self-host?"

The final question in the survey asked why people self-host. As discussed in section 3.1.1, this question was not shown to people who answered "no" to the question "Do you have a centralised authentication service" due to an error in survey logic.

The results of this question are visualised in figure 56. "Fun"[4] was the most popular response at 89.2% of respondents. Privacy was also a highly popular reason, with 81.6% of respondents citing it as one of their reasons. Self-reliance was listed as a reason to self-host by 77.1% of respondents. Price (or the lack of it) represents a reason to self-host for 52.1% of respondents. 40.6% indicate that the ability to use unique software is a reason why they self-host. There is one significant answer from the "other" field: 6.3% of respondents indicated they were into self-hosting for the educational value. Miscellaneous values account for 2.2% of responses.

4. this answer was intentionally parenthesised, as a reference to the hobby often being perceived as frustrating

6 Conclusion

Section 1 stated the goal of gaining insight into the practice of self-hosting, asking the following 4 questions:

- Why do people self-host?
- What services do people self-host?
- What technologies do people use to self-host these services
- Who uses self-hosted services

Why do people self-host?: This question can be answered in two ways. Firstly, we could look at why people indicate they self-host (note that this data might be flawed, as per section 3.1.1). This data is explained in section 5.12. Looking at this data, it seems that while the hobby aspect is the biggest factor, the aspects related to ideological or political statements - privacy and self-reliance - are the second most common. More practical reasons, price and unique software, are the least common reason.

Another way to find an answer to this question is asking which types of services are hosted commonly. This reveals a similar picture: the most popular categories of services, file servers and media streaming, have alternatives outside of the self-hosting sphere, which in both cases consist of large, centralised services. This would support the data from above that, apart from a way to spend free time, self-hosting is primarily a way to gain independence from large corporations. The same could be said for the IoT category, where many alternative IoT services are centralised; although in this case the extended functionality of having multiple devices controlled by a single piece of software, over which the user has more control than a centralised service, could also contribute to the popularity of this category.

Of course, unique and free software should not be discounted as a reason entirely, as about half of respondents still indicates one or both as a reason to self-host. As previously discussed IoT could fall into this category, as could the somewhat popular DevOps, organisational database, Games, and Adblocker.

It should be noted that many services in the media gathering category are commonly used for internet piracy. Despite this, the percentage of respondents who indicate using a service in this category is greater than the percentage of respondents who indicate price as a reason for self-hosting. The prevalence of internet piracy in the self-hosting community could be subject of further research.

What services do people self-host?: This question is answered by sections 5.7 and 5.9. Section 5.5 answers a subcategory of this question.

The most notable conclusions are the popularity of file serving software, and the popularity of NextCloud especially, as well as the popularity of media streaming software.

What technologies do people use to self-host these services: This question is answered by sections 5.1, 5.2, 5.3, and 5.10.

Of note is the contrast between hardware and operating system. While servers run on a wide variety of different hardware types, a majority of them run Debian-based Linux.

When it comes to containers, there are a few notable conclusions. Firstly, it's notable that 85% of respondents use containers, although it is equally notable that the majority of these respondents run non-containerised services alongside their containerised services. The popularity of Docker over other container systems is also notable. Finally, it's notable that only 35.1% of respondents use a container manager.

Finally, there are a notable conclusions that can be drawn from the relative popularity of different programs that serve the same function. Most notably, Nginx is the most popular webserver, and MySQL is the most popular database. 39.5% of respondents still indicating they host some form of PHP is also quite notable.

Who uses self-hosted services: This question is answered by sections 5.6 and 5.4.

The fact that most respondents have more users than just themselves implies that the amount of people who use self-hosted software is greater than the amount of people who self-host software. In fact, a mean of almost 8 users per respondent suggests the number of people who use self-hosted software is several times larger than the number of people who host it.

As mentioned in section 5.4, the numbers suggest that about one third of respondents are professional programmers, one third are hobby programmers, and one third don't program at all. These results obviously only apply to those who also self-host, and not to those who use self-hosted software that they don't host themselves.

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APPENDIX A
COPY OF THE SURVEY

The following pages will contain a copy of the survey, generated from the Qualtrics "export to Word" option. Note that this copy has it's own page numbering, which does not match the page numbering of the rest of this document.

Survey for people who have their own server.

Survey Flow

Standard: Intro (1 Question)
Block: Environment (2 Questions)
Standard: Containers (3 Questions)
Standard: Own sofware (5 Questions)
Standard: Users (5 Questions)
Standard: Programs (2 Questions)
Standard: Authentication (2 Questions)
Standard: Other (2 Questions)

Page Break

Start of Block: Intro

Q18
You are being invited to participate in a research study. This study is being done by Floris Breggeman from the faculty of Electrical Engineering, Mathematics, and Computer Science at the University of Twente.

Please fill in this survey if you are the administrator of a non-commercial home server. Please complete this survey on a per-server basis; for example, if you administer two servers, it would be appreciated if you complete the survey twice. This survey should take approximately 15 minutes to complete.

The purpose of this research study is to gain insight into what and how people self-host. The data will be used to create an overview the software used for and by home servers, with the eventual goal of creating software that can automate the self-hosting process.

Your participation in this study is entirely voluntary. You are free to omit any question. I believe there are no known risks associated with this research study; however, as with any online related activity the risk of a breach is always possible. To the best of my ability your answers in this study will remain confidential. All answers are stored anonymously, and no information is collected except for the form fields you fill in. The raw data is only stored on qualtrics and the researcher's personal devices.

The (processed) results of this survey will be published on r/selfhosting at the completion of this study, as will the resulting research report.

Study contact details for further information: Floris Breggeman, f.t.breggeman@student.utwente.nl

End of Block: Intro

Start of Block: Environment

Q1 What kind of hardware do you use?

- ○ Used desktop PC (older than 5 years) (1)
- ○ New desktop PC (newer than 5 years) (2)
- ○ Used enterprise hardware (older than 5 years) (3)
- ○ New enterprise hardware (newer than 5 years) (4)
- ○ Low-power x86 device (e.g. Intel NUC) (5)
- ○ Low-power ARM device (e.g. Raspberry Pi) (6)
- ○ I rent my hardware (e.g. hosting, VPS) (7)
- ○ Other: (8) _____

Q3 What operating system does your server use?

- ○ Debian-based Linux (Debian, Ubuntu, etc.) (1)
- ○ Redhat-based Linux (CentOS, Redhat, etc.) (2)
- ○ Other Linux: (3) _____
- ○ BSD (FreeBSD, OpenBSD) (4)
- ○ Windows (including Windows Server) (5)
- ○ Other: (6) _____

End of Block: Environment

Start of Block: Containers

Q4 Do you use containers?

- ○ Yes, **all** my services are containerised (1)
- ○ Partially, I run containerised services along regular services (4)
- ○ No (5)

Skip To: End of Block If Do you use containers? = No

Q7 Which container systems do you use?

- ☐ Docker (1)
- ☐ Podman (2)
- ☐ Other: (3) _____

Q5 Do you use Kubernetes to manage your containers?

- ○ Yes (1)
- ○ No, I manage them manually (2)
- ○ No, I use another manager: (3)

_____

End of Block: Containers

Start of Block: Own sofware

Q19 Do you also program?

- ○ Yes (1)
- ○ No (2)

Skip To: Q22 If Do you also program? = No

Q20 On average, how many days a week do you sit down to program?

	0 1 2 3 4 5 6 7
Click to write Choice 1 ()	

Q21 How much of your software do you host yourself?

- ○ None (1)
- ○ Some (2)
- ○ About half (3)
- ○ Most (4)
- ○ All (5)

Q22 Which version control systems do you host?

- ☐ Gitlab (1)
- ☐ Gitea (2)
- ☐ Other: (3) _____
- ☐ None (4)

Q23 Which CI/CD systems do you host?

- [ ] Gitlab (1)
- [ ] Jenkins (2)
- [ ] CircleCI (3)
- [ ] Other: (4) _____
- [ ] None (5)

End of Block: Own sofware

Start of Block: Users

Q10 How many users do you have (including yourself)

_____

Skip To: End of Block If Condition: How many users do you have ... Is Less Than or Equal to 1. Skip To: End of Block.

Q11 Who are your additional users?

- [ ] Direct Family (1)
- [ ] Indirect Family (2)
- [ ] Association / Club (3)
- [ ] Company (4)
- [ ] Other: (5) _____

Q13 Do any of your users have additional access rights? (e.g. ssh login, administrative panels)?

- ○ Yes (1)
- ○ No (2)

Skip To: End of Block If Do any of your users have additional access rights? (e.g. ssh login, administrative panels)? = No

Q14 What sort of additional access rights do your users have?

- ☐ Root access (1)
- ☐ Terminal login (ssh) (2)
- ☐ Administrative access to software (3)
- ☐ Other: (4) _____

Q16 Do all of your users have extra rights?

- ○ Yes, all of them (1)
- ○ Only a few (2)
- ○ Only one (3)

End of Block: Users

Start of Block: Programs

*

Q6 What end-user services do you host? Please list all services you host that your users can actually interact with, separated by newline. Examples include NextCloud, Matrix, Email,

Samba.

_____

_____

_____

_____

_____

Q6 What backend technologies power your end-user services? Please list all backend technologies you use, separated by newline. Examples include Apache, PHP, Node.js, MySQL, Dovecot

_____

_____

_____

_____

_____

End of Block: Programs

Start of Block: Authentication

Q8 Do you have a centralised authentication service?

- Yes (1)
- No (2)
- Yes, but it doesn't work for everything (3)

Skip To: End of Survey If Do you have a centralised authentication service? = No

Q9 Which mechanisms does your authentication service use?

- [ ] Oauth (1)
- [ ] SAML (2)
- [ ] LDAP (3)
- [ ] PAM (4)
- [ ] Other: (5) _____

End of Block: Authentication

Start of Block: Other

Q25 Why do you self-host?

- [ ] Privacy (1)
- [ ] Self-Reliance (2)
- [ ] "Fun" (3)
- [ ] Unique Software (4)
- [ ] Price (or the lack of it) (5)
- [ ] Other: (6) _____

Q24 Open space If you have any additional information you'd like to share, you can leave it here.

_____

End of Block: Other

APPENDIX B
NORMALISATION LOGS

This section contains the logs of the normalisation process. Normalisation, in this context, means equating answer with another answer; more concretely, it means changing all responses which link to the second answer such that they link to the first answer. Logs are formulated as "Changed p to q", meaning that all responses which indicated answer p now indicate answer q. An answer is shown as "x:ÿ", where x is the numerical database identifier of the answer, and y is it's string value.

In some cases, answers may be split into multiple answers; this is especially prevalent for the services and technologies questions, where not all respondents separated their values be newlines as was requested. In these cases, the log message "Split p into q,r,..." will appear. In rare cases, a respondent entered an answer indicating multiple values into a multiple select field; these splittings are not properly logged. In these cases, the most trivial value was manually assigned, which does not appear in the logs, and the least trivial value was assigned through the reassignment script, which does appear in the logs. I apologise for the lack of transparency; however I would like to point out that these cases are sufficiently rare and visible as to not put into question the accuracy of the response data.

B.1 Normalisation logs for question "What kind of hardware do you use?"

```
Changed 121:"used laptop 5 years old" to 51:"used desktop pc (older than 5 years
)"
Changed 142:"recent synology nas (ds920+)" to 145:"nas"
Changed 141:"all but rent" to 143:"uncategorised"
Changed 140:"used consumer server (lenovo ts-140)" to 49:"used enterprise hardwa
re (older than 5 years)"
Changed 138:"used laptop (older than 5 years)" to 51:"used desktop pc (older tha
n 5 years)"
Changed 139:"variety of hardware" to 143:"uncategorised"
Changed 137:"old enterprise and new consumer hardware" to 143:"uncategorised"
Changed 136:"custom built server using pc parts and small form factor case" to 1
44:"miscellaneous"
Changed 135:"whitebox supermicro build, server components, older than 5 years."
to 144:"miscellaneous"

Changed 134:"homebuilt hardware" to 144:"miscellaneous"
Changed 133:"arm(raspberry pi 4) + used desktop pc(i5 4690k)" to 143:"uncategori
sed"
Changed 132:"dell laptop from 2015" to 51:"used desktop pc (older than 5 years)"
Changed 130:"synology ds220+" to 145:"nas"
Changed 131:"older laptops (older than 5 years)" to 51:"used desktop pc (older t
han 5 years)"
Changed 129:"i have both enterprise gear some newer some older than 5 yearssuper
micro x8 & x9 gear to old hp workstation " to 143:"uncategorised"
Changed 127:"antsle hypervisor" to 143:"uncategorised"
Changed 126:"home built server" to 144:"miscellaneous"
Changed 125:"a mixture of rpis, used desktops and used enterprise hw" to 143:"un
categorised"
Changed 124:"combination between enterprise hardware and consumer hardware put t
ogether" to 143:"uncategorised"
Changed 123:"low-power arm and a used desktop pc. the pc is being replaced with
new new parts." to 143:"uncategorised"
Changed 128:"used (older than 5 years) laptop" to 51:"used desktop pc (older tha
n 5 years)"
Changed 122:"all of the above, except used enterprise hardware" to 143:"uncatego
rised"
Changed 120:"both older enterprise and desktopl, older than 5 years" to 143:"unc
ategorised"
Changed 119:"multiple of that: nuc, pi, vps" to 143:"uncategorised"
Changed 118:"mix of old and new desktops" to 143:"uncategorised"
Changed 117:"nas" to 145:"nas"
Changed 116:"self built x86" to 50:"new desktop pc (newer than 5 years)"
```

```
Changed 115:"multiple new desktop pc’s, an intel nuc and multiple raspberry pi’s
. also a qnap nas.  " to 143:"uncategorised"
Changed 114:"used x86 laptop" to 51:"used desktop pc (older than 5 years)"
Changed 113:"vps and low-power arm cluster" to 143:"uncategorised"
Changed 112:"the gaming laptop i use for everyday activities" to 144:"miscellane
ous"
Changed 111:"multiple: used laptop / used low-power x86 / x86 based nas" to 143:
"uncategorised"
Changed 110:"nuc and vps" to 143:"uncategorised"
Changed 109:"almost all of the hw above. " to 143:"uncategorised"
Changed 108:"nas " to 145:"nas"
Changed 107:"enterprise 19" rack but with desktop hardware (ryzen,...)" to 144:"
miscellaneous"
Changed 106:"1x skylake era pc, 4x raspberry pi 4, 5x hosted virtual machines" t
o 143:"uncategorised"
Changed 105:"mix of raspberry pi and old laptop pc." to 143:"uncategorised"
Changed 104:"2014 mac mini" to 52:"low-power x86 device (e.g. intel nuc)"
Changed 103:"synology nas" to 145:"nas"
Changed 102:"i use a combination of new hardware, and used consumer and enterpri
se gear" to 143:"uncategorised"
Changed 101:"mixture" to 143:"uncategorised"
Changed 100:"self built desktop case with super micro motherboard" to 50:"new de
sktop pc (newer than 5 years)"
Changed 99:"used laptop, *and*  raspberry pi" to 143:"uncategorised"
Changed 98:"old laptop (older than 5 years)" to 51:"used desktop pc (older than
5 years)"
Changed 97:"newer used desktop, used enterprise, vps" to 143:"uncategorised"
Changed 96:"mixture of multiple " to 143:"uncategorised"
Changed 95:"used laptop pc older than 5 years" to 51:"used desktop pc (older tha
n 5 years)"
Changed 94:"most of that" to 143:"uncategorised"
Changed 93:"old laptop" to 51:"used desktop pc (older than 5 years)"
Changed 92:"multi optiplex 5080s" to 50:"new desktop pc (newer than 5 years)"
Changed 91:"mix of new desktop, new enterprise and rasppi" to 143:"uncategorised
"
Changed 90:"qnap nas" to 145:"nas"
Changed 89:"used notebook" to 51:"used desktop pc (older than 5 years)"
Changed 88:"this should be multiple selection, used enterprise &gt; 5 yr, low-po
wer arm, i rent my hardware (heroku, aws)" to 143:"uncategorised"
Changed 87:"used enterprise hardware and low-power arm." to 143:"uncategorised"
Changed 86:"oracle cloud always free" to 54:"i rent my hardware (e.g. hosting, v
ps)"
Changed 85:"used laptop pc (older than 5 years)" to 51:"used desktop pc (older t
han 5 years)"
Changed 84:"all of them" to 143:"uncategorised"
Changed 83:"synology nas (ds918+)" to 145:"nas"
Changed 82:"old laptops and rpis" to 143:"uncategorised"
Changed 81:"i ude vps, synology nas and low power x86" to 143:"uncategorised"
Changed 80:"combination of enterprise hw (older than 5 years) and consumer grade
 hw in custom whitebox server" to 143:"uncategorised"
Changed 79:"used enterprise hardware and new low power arm device and new x86 ba
sed nas" to 143:"uncategorised"
Changed 78:"older x86 laptop" to 51:"used desktop pc (older than 5 years)"
Changed 77:"both used and new enterprise hardware as well as desktops and laptop
s of various ages." to 143:"uncategorised"
Changed 76:"vps, new desktop, used enterprise" to 143:"uncategorised"
Changed 75:"used enterprise, lp arm, used pc" to 143:"uncategorised"
Changed 74:"both new desktop pc and raspberry pi" to 143:"uncategorised"
Changed 73:"raspberry pi and nas hardware" to 143:"uncategorised"
Changed 72:"mix" to 143:"uncategorised"
Changed 71:"all of the above" to 143:"uncategorised"
```

```
Changed 70:"new mac mini (m1 chip)" to 53:"low-power arm device (e.g. raspberry
pi)"
Changed 69:"10 year old laptop" to 51:"used desktop pc (older than 5 years)"
Changed 68:"new desktop pc, used enterprise hardware, low-power arm device" to 1
43:"uncategorised"
Changed 67:"vps in cloud and rpi" to 143:"uncategorised"
Changed 66:"used laptop (8gb ram, gemini lake processor ?~2ghz/quad-core)" to 51
:"used desktop pc (older than 5 years)"
Changed 65:"old desktop pc with parts from the last 5 years, also an rpi4 to aug
ment it " to 51:"used desktop pc (older than 5 years)"
Changed 64:"used laptop" to 51:"used desktop pc (older than 5 years)"
Changed 63:"used laptop older than 5 years" to 51:"used desktop pc (older than 5
 years)"
Changed 62:"sbc, desktops, enterprise" to 143:"uncategorised"
Changed 61:"new pc and 3 synology nas" to 143:"uncategorised"
Changed 59:"used laptop pc" to 51:"used desktop pc (older than 5 years)"
Changed 58:"used enterprise hardware, low-power x86 devices, and low-power arm d
evices" to 143:"uncategorised"
Changed 60:"synology nas (newer than 5 years)" to 145:"nas"
Changed 57:"option 2 + 3 + 5 + 6 + 7" to 143:"uncategorised"
Changed 56:"combination of old pc low power arm and old enterprise" to 143:"unca
tegorised"
Changed 146:"used enterprise, new desktop pc, used desktop pc, low-power x68 dev
ice, low-power arm device" to 143:"uncategorised"
Changed 147:"custom built server (tower)" to 50:"new desktop pc (newer than 5 ye
ars)"
Changed 148:"raspberry pi and rented server" to 143:"uncategorised"
Changed 149:"both used enterprise and desktop hardware." to 143:"uncategorised"
Changed 150:"used desktop, used rack enterprise, and rented" to 143:"uncategoris
ed"
Changed 151:"all of the above" to 143:"uncategorised"
Changed 152:"used laptop" to 51:"used desktop pc (older than 5 years)"
Changed 153:"used enterprise, new enterprise, raspi, and rental" to 143:"uncateg
orised"
Changed 154:"all of the above, minus renting." to 143:"uncategorised"
Changed 155:"custom built server" to 144:"miscellaneous"
Changed 156:"synology diskstation, 2 raspberry pi's and rented vps" to 143:"unca
tegorised"
Changed 157:"i use several pieces of hardware, mostly old pcs. 2 new low-power x
86 for router & viop. " to 143:"uncategorised"
Changed 158:"old laptop" to 51:"used desktop pc (older than 5 years)"
Changed 159:"all of the above" to 143:"uncategorised"
Changed 160:"old enterprise hardware,rasperry pi,intel nuc,modern consumer hardw
are" to 143:"uncategorised"
Changed 161:"synology diskstation" to 145:"nas"
Changed 162:"ask of the above" to 143:"uncategorised"
Changed 163:"kkk_os (xfce)" to 143:"uncategorised"
Changed 164:"hybrid self-build with new consumer and enterprise hardware" to 144
:"miscellaneous"
```

B.2 Normalisation logs for question "What operating system does your server use?"

```
Changed 168:"all but windows" to 169:"uncategorised"
Changed 167:"unraid (slackware based)" to 54:"unraid"
Changed 166:"freenas, proxmox" to 169:"uncategorised"
Changed 165:"truenas and proxmox for baremetal and ubuntu for virtual machines"
to 169:"uncategorised"
Changed 164:"unraid / slackware" to 54:"unraid"
Changed 162:"esxi: debian, ubuntu, windows, redhat" to 77:"esxi"
```

```
Changed 161:"esxi 7.0" to 77:"esxi"
Changed 160:"proxmox debian based" to 48:"proxmox"
Changed 158:"slackware (unraid)" to 54:"unraid"
Changed 163:"illumos (smartos)" to 170:"miscellaneous"
Changed 159:"truenas scale / unraid" to 169:"uncategorised"
Changed 157:"xcp-ng hypervisor, ubuntu server" to 170:"miscellaneous"
Changed 155:"dsm 7" to 170:"miscellaneous"
Changed 153:"unraid " to 54:"unraid"
Changed 152:"unraid, and virtual esxi" to 54:"unraid"
Changed 151:"running proxmox hyperviser for various vms and containers" to 48:"p
roxmox"
Changed 150:"esxi met linux en windows" to 77:"esxi"
Changed 154:"unraid,truenas/freenas &pfsense & a windows server " to 169:"uncate
gorised"
Changed 156:"vmware vsphere 7.0.2" to 171:"vsphere"
Changed 149:"vmware vsphere 7.0" to 171:"vsphere"
Changed 148:"esx" to 77:"esxi"
Changed 147:"freebsd, xcp-ng, various non-deb and rpm distros " to 169:"uncatego
rised"
Changed 145:"mostly debian and it’s derivates and opnsense for a router. windows
 server for an ad lab" to 169:"uncategorised"
Changed 144:"openmediavault" to 42:"debian-based linux (debian, ubuntu, etc.)"
Changed 143:"bsd and arch linux" to 169:"uncategorised"
Changed 142:"ubuntu server, windows server, windows 10" to 169:"uncategorised"
Changed 141:"proxmox, debian, opensuse" to 169:"uncategorised"
Changed 140:"btw i use arch" to 64:"arch"
Changed 139:"debian and redhat " to 169:"uncategorised"
Changed 138:"esxi 6.5" to 77:"esxi"
Changed 137:"arch " to 64:"arch"
Changed 136:"xcp, truenas, ubuntu, centos" to 169:"uncategorised"
Changed 135:"debian and openbsd" to 169:"uncategorised"
Changed 134:"opensuse leap" to 51:"opensuse"
Changed 133:"alpine + debian + whatever flavour of linux my nas runs" to 169:"un
categorised"
Changed 132:"unraid (slackware)" to 54:"unraid"
Changed 131:"proxmox. most vms are debian based" to 48:"proxmox"
Changed 130:"all of the supplied options" to 169:"uncategorised"
Changed 129:"synology dsm (xpenology)" to 170:"miscellaneous"
Changed 128:"openwrt" to 170:"miscellaneous"
Changed 127:"opensuse microos" to 51:"opensuse"
Changed 126:"talos" to 170:"miscellaneous"
Changed 125:"truenas (bsd), proxmox (debian), ubuntu" to 169:"uncategorised"
Changed 124:""debian" (proxmox)" to 54:"unraid"
Changed 123:"dsm" to 170:"miscellaneous"
Changed 122:"mixture" to 169:"uncategorised"
Changed 120:"proxmox (mostly debian vms)" to 48:"proxmox"
Changed 119:"esxi vmware" to 77:"esxi"
Changed 118:"arch linux and opensuse" to 169:"uncategorised"
Changed 117:"debian based proxmox" to 48:"proxmox"
Changed 116:"esxi 6.7" to 77:"esxi"
Changed 115:"proxmox w/ multiple guest oses" to 48:"proxmox"
Changed 114:"darwin" to 121:"macos"
Changed 113:"manjaro, arch based" to 64:"arch"
Changed 112:"debian, truenas scale, truenas core, raspian" to 169:"uncategorised
"
Changed 111:"alpine linux" to 57:"alpine"
Changed 110:"arch linux arm" to 64:"arch"
Changed 109:"fedora" to 44:"redhat-based linux (centos, redhat, etc.)"
Changed 108:"truenas" to 43:"bsd (freebsd, openbsd)"
Changed 106:"proxmox - multiple vms" to 48:"proxmox"
Changed 105:"unraid, slackware based" to 54:"unraid"
```

```
Changed 104:"debian, redhat-based" to 169:"uncategorised"
Changed 103:"debian-based and vmware vsphere" to 169:"uncategorised"
Changed 101:"raspian" to 42:"debian-based linux (debian, ubuntu, etc.)"
Changed 100:"proxmox " to 48:"proxmox"
Changed 99:"unraid (arch)" to 54:"unraid"
Changed 98:"illumos (solaris-based)" to 170:"miscellaneous"
Changed 96:"esxi and redhat-derived" to 169:"uncategorised"
Changed 95:"diskstation manager (synology os)" to 170:"miscellaneous"
Changed 94:"one on centos, the other on bsd(freenas)" to 169:"uncategorised"
Changed 93:"not sure, i use unraid and only host things in docker containers so
i never need to worry about it" to 54:"unraid"
Changed 92:"home assistant os" to 102:"home assistant"
Changed 91:"arch-based linux (manjaro)" to 64:"arch"
Changed 90:"vmware esxi" to 77:"esxi"
Changed 88:"proxmox ve (debian-based distro)" to 48:"proxmox"
Changed 86:"windows, freebsd, and various linux distros" to 169:"uncategorised"
Changed 85:"main freebsd with jails and then linux where bsd does not apply well
" to 43:"bsd (freebsd, openbsd)"
Changed 84:"redhat and bsd" to 169:"uncategorised"
Changed 83:"debian based, windows " to 169:"uncategorised"
Changed 81:"freenas" to 43:"bsd (freebsd, openbsd)"
Changed 80:"mix" to 169:"uncategorised"
Changed 79:"proxmox ve" to 48:"proxmox"
Changed 78:"vmkernel (esxi)" to 77:"esxi"
Changed 76:"slackware-based (unraid)" to 54:"unraid"
Changed 75:"rasbian" to 42:"debian-based linux (debian, ubuntu, etc.)"
Changed 74:"arch or alpine" to 169:"uncategorised"
Changed 73:"synology os" to 170:"miscellaneous"
Changed 72:"i have 2. one windows one ubuntu" to 169:"uncategorised"
Changed 71:"win server as host os and alpine linux, ubuntu and debian as guest o
ss in hyperv" to 169:"uncategorised"
Changed 70:"esxi " to 77:"esxi"
Changed 69:"windows, linux, bsd" to 169:"uncategorised"
Changed 68:"archlinux" to 64:"arch"
Changed 67:"qts (qnap os)" to 170:"miscellaneous"
Changed 66:"esxi, but the virtual machines are all ubuntu" to 77:"esxi"
Changed 65:"synology disk manager" to 170:"miscellaneous"
Changed 63:"photon os" to 170:"miscellaneous"
Changed back all records which match "dsm" or "synology" to 61:"synology dsm"

Changed 60:"arch linux" to 64:"arch"
Changed 59:"diskstation manager 7" to 61:"synology dsm"
Changed 56:"vmware esxi 6.7" to 77:"esxi"
Changed 55:"synology" to 61:"synology dsm"
Changed 53:"proxmox (from debian)" to 48:"proxmox"
Changed 50:"manjaro" to 64:"arch"
Changed 49:"hypervisor (esxi). runs centos and windows vms" to 77:"esxi"
Changed 172:"unraid,  i think slackware based" to 54:"unraid"
Changed 173:"debian, arch, openbsd" to 169:"uncategorised"
Changed 175:"manjaro" to 64:"arch"
Changed 176:"windows and debian" to 169:"uncategorised"
Changed 177:"vmware esxi" to 77:"esxi"
Changed 178:"hassio" to 102:"home assistant"
Changed 179:"all of the above" to 169:"uncategorised"
Changed 180:"voidlinux" to 87:"void linux"
Changed 181:"arch linux" to 64:"arch"
Changed 107:"vmware vsphere esx" to 77:"esxi"
Changed 171:"vsphere" to 77:"esxi"
Changed 174:"yunohost" to 42:"debian-based linux (debian, ubuntu, etc.)"
Changed 182:"vmware " to 77:"esxi"
Changed 183:"disk station manager" to 61:"synology dsm"
```

```
Changed 184:"arch btw" to 64:"arch"
Changed 185:"windows / linux" to 169:"uncategorised"
Changed 186:"solus" to 170:"miscellaneous"
Changed 187:"alpine based" to 57:"alpine"
Changed 188:"synology" to 61:"synology dsm"
Changed 189:"blackarch" to 64:"arch"
Changed 190:"slackware (unraid)" to 54:"unraid"
Changed 191:"ubuntu, raspberry pi os, dsm" to 169:"uncategorised"
Changed 46:"bsd and ubuntu" to 169:"uncategorised"
Changed 45:"proxmox hypervisor" to 48:"proxmox"
Changed 192:"truenas, ubuntu" to 169:"uncategorised"
Changed 193:"vmware esxi" to 77:"esxi"
Changed 194:"all of the above" to 169:"uncategorised"
Changed 195:"esxi 6.7u3" to 77:"esxi"
Changed 196:"synology diskstation manager (dsm)" to 61:"synology dsm"
Changed 197:"debian windows and freebsd" to 169:"uncategorised"
Changed 198:"arch based" to 64:"arch"
Changed 200:"vmware vsphere 7.0" to 77:"esxi"
Changed 201:"debian and redhat" to 169:"uncategorised"
Changed 204:"arch linux" to 64:"arch"
Changed 205:"vmware esxi 6.7" to 77:"esxi"
Changed 206:"proxmox (it’s debian based but not really a debian distro)" to 48:"
proxmox"
Changed 207:"vsphere 7" to 77:"esxi"
```

B.3 Normalisation logs for question “Do you use Kubernetes to manage your containers?”

```
Changed 7:"docker" to 4:"none"
Changed 9:"portainet & docker compose" to 2:"portainer"
Changed 11:"docker compose" to 5:"docker-compose"
Changed 14:"unraid docker manager" to 17:"unraid"
Changed 16:"no need" to 4:"none"
Changed 18:"portainer or manual" to 2:"portainer"
Changed 19:"builtin unraid manager" to 17:"unraid"
Changed 20:"portainer and docker-compose" to 2:"portainer"
Changed 21:"portainer/proxmox" to 79:"uncategorised"
Changed 22:"proxmox, synology dsm" to 8:"proxmox"
Changed 23:"portainer ?" to 2:"portainer"
Changed 24:"k8s are specific to linux. i wrote my own, plugged into smf." to 80:
"miscellaneous"
Changed 25:"portainer & unraid" to 79:"uncategorised"
Changed 26:"unraid/port" to 79:"uncategorised"
Changed 27:"portioned and docker compose" to 80:"miscellaneous"
Changed 28:"vm-bhyve for the vms, manual for the jails" to 79:"uncategorised"
Changed 29:"docker compose + portainer" to 2:"portainer"
Changed 31:"docker, proxmox" to 8:"proxmox"
Changed 32:"unraid built in manager" to 17:"unraid"
Changed 34:"unraid built in docker manager" to 17:"unraid"
Changed 36:"docker compose and portainer" to 2:"portainer"
Changed 37:"compose" to 5:"docker-compose"
Changed 38:"managed via nix" to 4:"none"
Changed 39:"docker-compose, portainer, kubernetes" to 79:"uncategorised"
Changed 40:"custom built solution" to 80:"miscellaneous"
Changed 43:"nomad, consul" to 10:"nomad"
Changed 44:"synology dsm, homeassistant" to 79:"uncategorised"
Changed 45:"unraid webui" to 17:"unraid"
Changed 46:"caprover" to 80:"miscellaneous"
Changed 47:"swarm" to 13:"docker swarm"
Changed 48:"unraid built-in manager" to 17:"unraid"
```

```
Changed 49:"docker swarm/portainer" to 2:"portainer"
Changed 51:"unraid buildin container management" to 17:"unraid"
Changed 52:"portainer (is a docker gui)" to 2:"portainer"
Changed 53:"portainer/compose" to 2:"portainer"
Changed 54:"unraid community apps" to 17:"unraid"
Changed 56:"does cockpit count? if not, manually" to 50:"cockpit"
Changed 57:"unraid interface" to 17:"unraid"
Changed 58:"custom" to 80:"miscellaneous"
Changed 59:"synology docker gui" to 35:"synology docker"
Changed 60:"portainer (im hardcore)" to 2:"portainer"
Changed 61:"proxmox ve" to 8:"proxmox"
Changed 62:"portainer, unraid" to 79:"uncategorised"
Changed 64:"unraid web ui" to 17:"unraid"
Changed 65:"proxmox, along with hashicorp nomad" to 10:"nomad"
Changed 66:"docker swarm with portainer" to 2:"portainer"
Changed 67:"cloudron" to 80:"miscellaneous"
Changed 68:"portainer, ansible" to 2:"portainer"
Changed 69:"proxmox and portainer" to 2:"portainer"
Changed 71:"docker swarm / portainer" to 2:"portainer"
Changed 72:"podman" to 4:"none"
Changed 73:"native unraid" to 17:"unraid"
Changed 74:"proxmox, portainer" to 79:"uncategorised"
Changed 75:"nomad & consul" to 10:"nomad"
Changed 76:"pterodactyl" to 80:"miscellaneous"
Changed 77:"proxmox?" to 8:"proxmox"
Changed 78:"portainer, docker-compose" to 2:"portainer"
Changed 15:"systemd-podman and docker-compose" to 4:"none"
Changed 30:"command line lxc" to 80:"miscellaneous"
Changed 33:"portainer with compose" to 2:"portainer"
Changed 41:"dockercompose and watchtower" to 80:"miscellaneous"
Changed 42:"experiment with k3s but non production" to 3:"kubernetes"
Changed 81:"yes" to 3:"kubernetes"
Changed 82:"no, i manage them manually" to 4:"none"
Changed 83:"docker" to 79:"uncategorised"
Changed 84:"portainet & docker compose" to 2:"portainer"
Changed 85:"docker compose" to 2:"portainer"
Changed 150:"docker compose" to 5:"docker-compose"
Changed 149:"portainet & docker compose" to 2:"portainer"
Changed 148:"docker" to 79:"uncategorised"
Changed 147:"no, i manage them manually" to 4:"none"
Changed 146:"yes" to 3:"kubernetes"
Changed 145:"docker compose?" to 5:"docker-compose"
Changed 144:"portainer, docker-compose" to 2:"portainer"
Changed 143:"proxmox?" to 8:"proxmox"
Changed 141:"nomad & consul" to 10:"nomad"
Changed 139:"native unraid" to 17:"unraid"
Changed 140:"proxmox, portainer" to 79:"uncategorised"
Changed 137:"docker swarm / portainer" to 79:"uncategorised"
Changed 136:"proxmox and portainer" to 79:"uncategorised"
Changed 135:"portainer, ansible" to 2:"portainer"
Changed 133:"docker swarm with portainer" to 2:"portainer"
Changed 132:"proxmox, along with hashicorp nomad" to 10:"nomad"
Changed 131:"unraid web ui" to 17:"unraid"
Changed 130:"portainer, unraid" to 2:"portainer"
Changed 129:"proxmox ve" to 8:"proxmox"
Changed 128:"portainer (im hardcore)" to 2:"portainer"
Changed 127:"synology docker gui" to 35:"synology docker"
Changed 126:"custom" to 80:"miscellaneous"
Changed 125:"unraid interface" to 17:"unraid"
Changed 124:"does cockpit count? if not, manually" to 50:"cockpit"
Changed 123:"unraid community apps" to 17:"unraid"
```

```
Changed 122:"portainer/compose" to 2:"portainer"
Changed 121:"portainer (is a docker gui)" to 2:"portainer"
Changed 120:"unraid buildin container management" to 17:"unraid"
Changed 119:"docker swarm/portainer" to 2:"portainer"
Changed 118:"unraid built-in manager" to 17:"unraid"
Changed 117:"swarm" to 13:"docker swarm"
Changed 115:"unraid webui" to 17:"unraid"
Changed 114:"synology dsm, homeassistant" to 79:"uncategorised"
Changed 113:"nomad, consul" to 10:"nomad"
Changed 112:"experiment with k3s but non production" to 3:"kubernetes"
Changed 110:"custom built solution" to 80:"miscellaneous"
Changed 109:"docker-compose, portainer, kubernetes" to 79:"uncategorised"
Changed 108:"managed via nix" to 79:"uncategorised"
Changed 107:"compose" to 5:"docker-compose"
Changed 106:"docker compose and portainer" to 2:"portainer"
Changed 105:"unraid built in docker manager" to 17:"unraid"
Changed 104:"portainer with compose" to 2:"portainer"
Changed 103:"unraid built in manager" to 17:"unraid"
Changed 102:"docker, proxmox" to 8:"proxmox"
Changed 101:"command line lxc" to 79:"uncategorised"
Changed 100:"docker compose + portainer" to 2:"portainer"
Changed 99:"vm-bhyve for the vms, manual for the jails" to 79:"uncategorised"
Changed 98:"portioned and docker compose" to 79:"uncategorised"
Changed 97:"unraid/port" to 17:"unraid"
Changed 96:"portainer & unraid" to 2:"portainer"
Changed 95:"k8s are specific to linux. i wrote my own, plugged into smf." to 80:
"miscellaneous"
Changed 94:"portainer ?" to 2:"portainer"
Changed 93:"proxmox, synology dsm" to 79:"uncategorised"
Changed 92:"portainer/proxmox" to 2:"portainer"
Changed 91:"portainer and docker-compose" to 2:"portainer"
Changed 90:"builtin unraid manager" to 17:"unraid"
Changed 89:"portainer or manual" to 2:"portainer"
Changed 88:"no need" to 4:"none"
Changed 87:"systemd-podman and docker-compose" to 80:"miscellaneous"
Changed 86:"unraid docker manager" to 17:"unraid"
```

B.4 Normalisation logs for question “Which mechanisms does your authentication service use? ”

```
Changed 23:"ad" to 15:"ldap"
Changed 20:"oidc" to 13:"oauth"
Changed 22:"openid connect" to 13:"oauth"
Changed 24:"don’t really know " to 55:"uncategorised"
Changed 25:"active directory" to 15:"ldap"
Changed 26:"sso and 2fa" to 55:"uncategorised"
Changed 30:"windows active directory" to 15:"ldap"
Changed 31:"caddy auth portal" to 56:"reverse proxy"
Changed 27:"reverse proxy authentication via vouch-proxy" to 56:"reverse proxy"
Changed 32:"proxy forward auth" to 56:"reverse proxy"
Changed 33:"basic auth" to 56:"reverse proxy"
Changed 35:"okta" to 55:"uncategorised"
Changed 34:"authelia (header auth)" to 21:"header"
Changed 37:"bitwarden" to 55:"uncategorised"
Changed 38:"basicauth" to 56:"reverse proxy"
Changed 40:"aws and private keys" to 39:"private keys"
Changed 42:"forward authentication" to 57:"miscellaneous"
Changed 44:"reverse proxy (authelia)" to 56:"reverse proxy"
Changed 19:"authelia" to 55:"uncategorised"
Changed 45:"plex login" to 55:"uncategorised"
```

```
Changed 46:"forward-auth" to 57:"miscellaneous"
Changed 47:"kerberos and apache reverse proxy with basic auth" to 28:"kerberos"
Changed 48:"self written" to 57:"miscellaneous"
Changed 49:"kerberos5" to 28:"kerberos"
Changed 50:"fusionauth" to 55:"uncategorised"
Changed 52:"username/password via synology" to 57:"miscellaneous"
Changed 53:"traefik" to 55:"uncategorised"
Changed 54:"openid" to 13:"oauth"
```

B.5 Normalisation logs for question “Which CI/CD systems do you host?

”

```
Changed 4:"drone, github actions" to 6:"drone"
Changed 8:"currently none" to 3:"none"
Changed 9:"azure devops" to 60:"uncategorised"
Changed 11:"nah" to 3:"none"
Changed 12:"github" to 60:"uncategorised"
Changed 13:"droneci" to 6:"drone"
Changed 16:"none of the above" to 3:"none"
Changed 18:"self wrap" to 55:"aws codepipeline"
Changed 17:"wrote my own lightweight ci attached to gitea" to 61:"miscellaneous"
Changed 21:"github actions" to 60:"uncategorised"
Changed 23:"rpm-triggered makefile" to 61:"miscellaneous"
Changed 25:"none, don’t need them." to 3:"none"
Changed 26:"nothing" to 3:"none"
Changed 27:"drone ci" to 6:"drone"
Changed 28:"n/a" to 3:"none"
Changed 29:"script" to 61:"miscellaneous"
Changed 30:"custom gihooks via gogs" to 61:"miscellaneous"
Changed 31:"dont know what that is" to 3:"none"
Changed 32:"drone " to 6:"drone"
Changed 33:"github action" to 60:"uncategorised"
Changed 34:"devops" to 60:"uncategorised"
Changed 35:"raw git hooks" to 61:"miscellaneous"
Changed 36:"custom solution" to 61:"miscellaneous"
Changed 37:"git" to 60:"uncategorised"
Changed 38:"choice 5" to 60:"uncategorised"
Changed 40:"drone.io" to 6:"drone"
Changed 41:"gibhub actions" to 60:"uncategorised"
Changed 42:"github " to 60:"uncategorised"
Changed 22:"concourse ci" to 43:"concourse"
Changed 44:"planning for jenkins or gitlab" to 3:"none"
Changed 45:"no ci/cd" to 3:"none"
Changed 46:"argo workflows" to 20:"argocd"
Changed 47:"click to write choice 5??? none of them " to 3:"none"
Changed 48:"gitea" to 60:"uncategorised"
Changed 49:"woodpecker-ci(drone fork)" to 14:"woodpecker"
Changed 50:"github local runner" to 61:"miscellaneous"
Changed 51:"/" to 60:"uncategorised"
Changed 52:"other" to 61:"miscellaneous"
Changed 53:"sourcehut" to 60:"uncategorised"
Changed 54:"ansible" to 61:"miscellaneous"
Changed 55:"aws codepipeline" to 61:"miscellaneous"
Changed 56:"build.sr.ht" to 60:"uncategorised"
Changed 57:"still learning " to 60:"uncategorised"
Changed 59:"drone, woodpecker" to 14:"woodpecker"
Changed 5:"uhhh" to 60:"uncategorised"
```

B.6 Normalisation logs for question “Which container systems do you use?”

```
Changed 7:"lxc (proxmox)" to 11:"lxc"
Changed 9:"proxmox lxc" to 11:"lxc"
Changed 13:"kubernetes" to 6:"docker"
Changed 14:"linux containers" to 11:"lxc"
Changed 15:"k3s" to 6:"docker"
Changed 16:"true-nas jails" to 55:"freebsd jails"
Changed 18:"lxc containers in proxmox" to 11:"lxc"
Changed 20:"hyperkit" to 6:"docker"
Changed 21:"lxd" to 11:"lxc"
Changed 22:"container station" to 74:"uncategorised"
Changed 23:"proxmox" to 11:"lxc"
Changed 10:"snap" to 74:"uncategorised"
Changed 26:"docker-compose" to 6:"docker"
Changed 27:"k3s / cri-o" to 6:"docker"
Changed 28:"lxc & qemu kvm" to 74:"uncategorised"
Changed 30:"iocage" to 25:"freebsd jail"
Changed 32:"proxmox, docker" to 11:"lxc"
Changed 33:"lxc mainly along with some docker" to 11:"lxc"
Changed 35:"solaris zones / freebsd jails" to 74:"uncategorised"
Changed 36:"freebsd jails and freebsd bhyve virtual machines" to 76:"bhyve vm"
Changed 37:"cri-o" to 74:"uncategorised"
Changed 38:"unraid docker" to 6:"docker"
Changed 40:"containerd, k3s" to 6:"docker"
Changed 41:"proxmox cts/vms" to 11:"lxc"
Changed 43:"truenas jails" to 25:"freebsd jail"
Changed 44:"proxmox containers" to 11:"lxc"
Changed 47:"kubernetes on containerd" to 29:"containerd"
Changed 48:"ansible" to 74:"uncategorised"
Changed 49:"lxc on proxmox" to 11:"lxc"
Changed 50:"proxmox vm" to 11:"lxc"
Changed 51:"proxmox lxc to containerize os then install services normally" to 11
:"lxc"
Changed 52:"proxmox/lxc" to 11:"lxc"
Changed 53:"snapd" to 74:"uncategorised"
Changed 25:"freebsd jail" to 55:"freebsd jails"
Changed 57:"custom" to 75:"miscellaneous"
Changed 58:"lxc & vms" to 46:"virtual machines"
Changed 60:"lxc/lxd" to 11:"lxc"
Changed 61:"proxmox / lxc" to 11:"lxc"
Changed 62:"proxmox vms" to 11:"lxc"
Changed 63:"bastillebsd" to 55:"freebsd jails"
Changed 64:"bsd jails" to 55:"freebsd jails"
Changed 65:"proxmoxve" to 11:"lxc"
Changed 67:"freenas jails" to 55:"freebsd jails"
Changed 68:"container-rd" to 29:"containerd"
Changed 69:"i’m not sure. whichever comes default with k3s." to 6:"docker"
Changed 70:"proxmox and docker" to 11:"lxc"
Changed 71:"wings" to 74:"uncategorised"
Changed 72:"containernerd" to 29:"containerd"
Changed 42:"virtualbox" to 46:"virtual machines"
Changed 76:"bhyve vm" to 46:"virtual machines"
Changed 79:"proxmox vms" to 11:"lxc"
Changed 81:"vms in proxmox" to 11:"lxc"
Changed 80:"cri-o /w crun" to 6:"docker"
```

B.7 Normalisation logs for question “Why do you self-host?”

```
Changed 21:"support an open web with standard protocols, support the movement to
 more open source software" to 39:"political"
Changed 22:"learning and experimentation with services i’d possibly recommend at
 work" to 19:"learning"
Changed 23:"i work for red hat do it gives me more experience with our applicati
ons" to 19:"learning"
Changed 26:"why is fun in quotes?" to 15:""fun""
Changed 27:"why is "fun" in quotes?" to 15:""fun""
Changed 25:"cloud services destroyed humanity’s ability to build cool stuff" to
39:"political"
Changed 28:"learning.  i work in the sre industry, so having a lab to try new te
chnologies" to 19:"learning"
Changed 29:"learning, more control and stability than the cloud" to 19:"learning
"
Changed 30:"learn new things for my it career" to 19:"learning"
Changed 31:"education" to 19:"learning"
Changed 32:"keep my skills up to date" to 19:"learning"
Changed 33:"learning " to 19:"learning"
Changed 35:"educational" to 19:"learning"
Changed 37:"education since tech job" to 19:"learning"
Changed 24:"offline first, delay tolerant network, self community networks" to 3
9:"political"
Changed 38:"to learn" to 19:"learning"
```

B.8 Normalisation logs for question “What sort of additional access rights do your users have?”

```
Changed 11:"remote desktop access through guac, grocy, and home assistant" to 14
:"remote desktop"
Changed 13:"ssh for sfto" to 9:"terminal login (ssh)"
Changed 15:"pveadmin" to 1:"administrative access to software"
Changed 17:"proxmox web ui access" to 1:"administrative access to software"
Changed 18:"smb share access" to 10:"user access to shared media, documents"
Changed 19:"samba share" to 10:"user access to shared media, documents"
Changed 20:"docker admin" to 1:"administrative access to software"
Changed 16:"none" to 35:"uncategorised"
Changed 21:"it depends on the user? why do you need this?" to 35:"uncategorised"
Changed 22:"kubernetes api" to 1:"administrative access to software"
Changed 23:"their own kubernetes clusters" to 1:"administrative access to softwa
re"
Changed 24:"sftp" to 10:"user access to shared media, documents"
Changed 25:"web ui for admin tasks (restarting services if frozen, etc)" to 1:"a
dministrative access to software"
Changed 27:"chrooted ssh to home directory" to 9:"terminal login (ssh)"
Changed 29:"control panel on as-needed basis" to 1:"administrative access to sof
tware"
Changed 31:"user" to 35:"uncategorised"
Changed 32:"manage organisations within bitwarden password manager " to 1:"admin
istrative access to software"
Changed 34:"restricted access to control panels" to 1:"administrative access to
software"
Changed 26:"torrent download to plex server" to 1:"administrative access to soft
ware"
Changed 37:"access to radarr/sonarr/deluge to fix stuck torrents" to 1:"administ
rative access to software"
```

B.9 Normalisation logs for question “Who are your additional users?”

```
Changed 14:"good friend" to 12:"friends "
Changed 12:"friends " to 10:"friends"
Changed 15:"friend" to 10:"friends"
Changed 16:"close friends" to 10:"friends"
Changed 17:"work" to 13:"company"
Changed 19:"friends, roommates" to 10:"friends"
Changed 20:"friends and my manager at work" to 13:"company"
Changed 21:"roommates" to 10:"friends"
Changed 22:" friends" to 10:"friends"
Changed 24:"sparse peoples" to 66:"uncategorised"
Changed 26:"significant other" to 18:"partner"
Changed 28:"internet strangers " to 27:"web visitors"
Changed 29:"randoms on the internet" to 27:"web visitors"
Changed 30:"some are public facing" to 27:"web visitors"
Changed 31:"friends, interested people" to 10:"friends"
Changed 32:"some techy friends" to 10:"friends"
Changed 33:"a few friends " to 10:"friends"
Changed 34:"girlfriend" to 18:"partner"
Changed 35:"family / friends " to 66:"uncategorised"
Changed 36:"my pathfinder group" to 9:"association / club"
Changed 37:"friend, girlfriend" to 18:"partner"
Changed 38:"other selfhosting friends" to 10:"friends"
Changed 40:"some friends" to 10:"friends"
Changed 42:"housemates/friends" to 10:"friends"
Changed 43:"friends and gaming guild" to 10:"friends"
Changed 45:"spouse" to 18:"partner"
Changed 46:"roommate" to 10:"friends"
Changed 48:"freinds" to 10:"friends"
Changed 51:"friends, public" to 27:"web visitors"
Changed 52:"friends, community" to 10:"friends"
Changed 55:"roommates & friends" to 10:"friends"
Changed 56:"best friend & flatmate" to 10:"friends"
Changed 57:"ff" to 66:"uncategorised"
Changed 58:"friends and friends of friends" to 10:"friends"
Changed 59:"1 friend" to 10:"friends"
Changed 60:"friends and roommates" to 10:"friends"
Changed 63:"public users" to 27:"web visitors"
Changed 49:"so" to 18:"partner"
Changed 50:"frends" to 10:"friends"
Changed 54:"friend (gameserver)" to 10:"friends"
```

B.10 Normalisation logs for question “Which version control systems do you host? ”

```
Changed 8:"github (those are git hosting options, though and not version control
 systems)" to 65:"uncategorised"
Changed 9:"github" to 65:"uncategorised"
Changed 13:"azure devops" to 65:"uncategorised"
Changed 15:"plain git" to 11:"git"
Changed 17:"github " to 65:"uncategorised"
Changed 10:"bit bucket" to 65:"uncategorised"
Changed 16:"bitbucket" to 65:"uncategorised"
Changed 18:"git on github" to 65:"uncategorised"
Changed 20:"direct git" to 11:"git"
Changed 22:"git via ssh user" to 11:"git"
Changed 25:"git over ssh" to 11:"git"
Changed 26:"git (local)" to 11:"git"
Changed 31:"github bitbucket" to 65:"uncategorised"
Changed 32:"github, self-hosted git" to 11:"git"
Changed 33:"fossil " to 24:"fossil"
```

```
Changed 28:"svn" to 36:"subversion "
Changed 37:"linux.io " to 65:"uncategorised"
Changed 38:"gtihub" to 65:"uncategorised"
Changed 39:"github, devops" to 65:"uncategorised"
Changed 40:"raw git+ssh" to 11:"git"
Changed 42:"unraid" to 65:"uncategorised"
Changed 43:"local git server via ssh" to 11:"git"
Changed 44:"those aren't version control systems - they're *providers* of a git
hosting service. use correct terminology in your survey!" to 65:"uncategorised"
Changed 45:"git, github" to 65:"uncategorised"
Changed 46:"bare git repositories" to 11:"git"
Changed 47:"none but i've heavily considered it, both for writing and the fact t
hat i want to get into coding" to 65:"uncategorised"
Changed 48:"plain git over ssh" to 11:"git"
Changed 50:"bare git" to 11:"git"
Changed 51:"vanilla git" to 11:"git"
Changed 53:"git/github" to 65:"uncategorised"
Changed 54:"external drives; sometimes gitlab" to 65:"uncategorised"
Changed 56:"team foundation service (free online version) " to 55:"team foundati
on server"
Changed 57:"sourcehut" to 65:"uncategorised"
Changed 58:"hg.sr.ht" to 65:"uncategorised"
Changed 59:"tfs" to 55:"team foundation server"
Changed 60:"github, bitbucket on prem" to 65:"uncategorised"
Changed 64:"pure git" to 11:"git"
Changed 30:"these aren't vcses. i use git and perforce." to 65:"uncategorised"
Changed 41:"vanilla git over ssh" to 11:"git"
Changed 62:"git+ssh+gitweb" to 11:"git"
```

B.11 Normalisation logs for question "What end-user services do you host?"

```
Changed 24:"numerous my own applications" to 1586:"miscellaneous"
Changed 61:"matrix stack" to 155:"matrix"
Changed 63:"smb" to 21:"samba"
Changed 92:"self-written software" to 1586:"miscellaneous"
Changed 130:"nas (smb)" to 21:"samba"
Changed 110:"personal website" to 1586:"miscellaneous"
Changed 133:"vpn endpoint" to 400:"vpn"
Changed 137:"bedrock-minecraft" to 108:"minecraft bedrock server"
Changed 223:"minecraft with mods and maps" to 85:"minecraft"
Changed 230:"minecraftand other game servers " to 85:"minecraft"
Changed 329:"minecraft servers" to 85:"minecraft"
Changed 436:"minecraft dockerized" to 85:"minecraft"
Changed 518:"minecraft server" to 85:"minecraft"
Changed 632:"minecraft " to 85:"minecraft"
Changed 1174:"teamspeak samba minecraft" to 253:"teamspeak"
Changed 894:"minecraft 1.7.10" to 85:"minecraft"
Changed 1014:"minecraft java" to 85:"minecraft"
Changed 1265:"minecraft servers hosted via docker" to 85:"minecraft"
Changed 1420:"samba iscsi plex minecraft k3's" to 21:"samba"
Changed 158:"nextcloud " to 12:"nextcloud"
Split 207:"nextcloud librephotos jellyfin plex homeassistant" into 12:"nextcloud
", 1053:"librephotos", 17:"jellyfin", 22:"plex", 174:"homeassistant"
Split 417:"nextcloud matrix overseer plex searx" into 12:"nextcloud", 155:"matri
x", 112:"overseer", 22:"plex", 408:"searx"
Split 435:"nextcloud+onlyoffice+talk" into 12:"nextcloud", 257:"onlyoffice", 158
9:"nextcloud_talk"
Changed 1589:"nextcloud_talk" to 750:"nextcloud talk"
Split 612:"smb nextcloud jellyfin ftp photoprism dokuwiki iptv" into 21:"samba",
```

```
 12:"nextcloud", 17:"jellyfin", 179:"ftp", 77:"photoprism", 365:"dokuwiki", 1590
:"iptv"
Changed 680:"nextcloud_maria_db" to 12:"nextcloud"
Split 749:"nextcloud and plex" into 12:"nextcloud", 22:"plex"
Split 893:"nextcloud.photoprism" into 12:"nextcloud", 77:"photoprism"
Split 898:" nextcloud with smb shares" into 1591:"nextcloud,", 21:"samba"
Split 1307:"nextcloud samba plex roon " into 12:"nextcloud", 21:"samba", 22:"ple
x", 1521:"roon"
Split 1315:"nextcloud jellyfin samba" into 12:"nextcloud", 17:"jellyfin", 21:"sa
mba"
Split 1342:"rclone mount. mergerfs. mistborn (wireguard). nextcloud. windows vm
for vdi purposes. truenas vm with pcie passthru sas. network ups tools." into 62
0:"rclone", 1592:"mergerfs", 1593:"mistborn", 12:"nextcloud", 1594:"windows_vm",
 1595:"truenas_vm", 1596:"network_ups_tools"
Split 1377:"pihole plex qb  nextcloud game servers" into 105:"pihole", 22:"plex"
, 1597:"qb", 12:"nextcloud"
Split 1412:"nextcloud home assistant" into 12:"nextcloud", 1598:"home_assistant"
Changed 1526:"nextcloud/nextcloudpi" to 12:"nextcloud"
Changed 1288:"syncthing " to 13:"syncthing"
Changed 1545:"syncthing node" to 13:"syncthing"
Changed 485:"bookstack (docker)" to 14:"bookstack"
Changed 1267:"bookstack (end user instance, theres another thats an admin instan
ce for just myself)" to 14:"bookstack"
Changed 120:"freshrss                " to 15:"freshrss"
Split 131:"jellyfin/plex" into 17:"jellyfin", 22:"plex"
Split 326:"jellyfin pihole" into 17:"jellyfin", 105:"pihole"
Changed 345:" jellyfin" to 17:"jellyfin"
Changed 887:"jellyfin " to 17:"jellyfin"
Split 1086:"media - sonarr radarr jellyfin" into 88:"sonarr", 89:"radarr", 17:"j
ellyfin"
Changed 1152:"jellyfin media server" to 17:"jellyfin"
Changed 1442:"jellyfin (deprecated, moving to plex atm)" to 17:"jellyfin"
Changed 1201:" gitea" to 18:"gitea"
Changed 121:"gitea                   " to 18:"gitea"
Changed 443:"gitea " to 18:"gitea"
Changed 164:"paperless" to 19:"paperless-ng"
Changed 393:"paperlessng" to 19:"paperless-ng"
Changed 733:"paperless ng" to 19:"paperless-ng"
Changed 1096:"paperless_ng" to 19:"paperless-ng"
Changed 321:"bitwarden (vaultwarden)" to 20:"vaultwarden"
Changed 425:"vaultwarden (bitwarden_rs)" to 20:"vaultwarden"
Changed 796:"vaultwarden (bitwarden)" to 20:"vaultwarden"
Changed 1026:"vaultwarden " to 20:"vaultwarden"
Changed 1108:"password management (vaultwarden)" to 20:"vaultwarden"
Changed 1306:"vaultwarden (alternative implementation of the bitwarden server ap
i written in rust)" to 20:"vaultwarden"
Changed 178:"samba " to 21:"samba"
Split 209:"omv (with samba)" into 367:"omv", 21:"samba"
Split 277:"nfs/samba" into 198:"nfs", 21:"samba"
Split 568:" shared via samba/nfs/afp (from a truenas storage server)" into 21:"s
amba", 198:"nfs", 765:"afp"
Changed 811:"mysamba" to 21:"samba"
Changed 828:"samba file share" to 21:"samba"
Changed 863:"samba - network drive" to 21:"samba"
Split 903:"samba through a vpn" into 21:"samba", 400:"vpn"
Split 949:"vpn acces for specific samba shares" into 21:"samba", 400:"vpn"
Changed 976:"samba 4 (active directory)" to 21:"samba"
Changed 1158:"samba file shares" to 21:"samba"
Changed 1160:"samba file storage" to 21:"samba"
Split 1216:"samba / nfs/ sshfs" into 21:"samba", 198:"nfs", 237:"ssh"
Changed 1219:"samba fileserver " to 21:"samba"
```

```
Changed 1258:" samba" to 21:"samba"
Changed 1262:"nas storage (samba)" to 21:"samba"
Split 1414:"samba boinc" into 21:"samba", 640:"boinc"
Changed 1564:"samba shares" to 21:"samba"
Changed 1577:"ssamba" to 21:"samba"
Changed 229:"plex " to 22:"plex"
Changed 260:"plex media server" to 22:"plex"
Changed 290:"plex (shared with about 6 others)" to 22:"plex"
Split 946:"plex/emby/etc" into 22:"plex", 160:"emby"
Changed 1066:"petio (plex requester)" to 285:"petio"
Changed 1072:" plex" to 22:"plex"
Changed 1261:"plex stack" to 22:"plex"
Split 1360:"kodi/plex" into 251:"kodi", 22:"plex"
Changed 1422:"plexplexpass x2" to 22:"plex"
Changed 1453:"mostly plex and plex add ons" to 22:"plex"
Changed 1508:"plex (docker)" to 22:"plex"
Changed 757:"plex reverse proxy," to 22:"plex"
Changed 1165:"tautulli (plex dashboard)" to 151:"tautulli"
Changed 1166:"pasta (plex configuration assistant)" to 1335:"pasta"
Changed 1232:" plex " to 22:"plex"
Changed 481:"transmission server" to 23:"transmission"
Changed 922:"transmission bt" to 23:"transmission"
Changed 1466:"transmissiono" to 23:"transmission"
Changed 399:"email(imappop)" to 62:"email"
Changed 1128:"email stack" to 62:"email"
Changed 1284:"web based email" to 62:"email"
Changed 1338:"email (smtp, imap, webmail, spam and virus prevention)" to 62:"ema
il"
Changed 1407:"email hosting" to 62:"email"
Changed 850:"email " to 62:"email"
Changed 448:"icecast " to 67:"icecast"
Changed 465:"jitsi meetings" to 68:"jitsi"
Changed 911:"jitsii" to 68:"jitsi"
Changed 1089:"jitsi-meet" to 68:"jitsi"
Changed 1411:"kanban boards" to 69:"kanban"
Changed 593:"taiga kanban(s)" to 871:"taiga"
Changed 1475:"kimai2 (time tracking)" to 70:"kimai"
Changed 116:"bitwarden               " to 73:"bitwarden"
Changed 740:"bitwarden " to 73:"bitwarden"
Changed 865:"bitwarden rs" to 73:"bitwarden"
Changed 1000:"bitwardenrs" to 73:"bitwarden"
Changed 1148:"bitwarden/vault warden" to 20:"vaultwarden"
Changed 1405:"bitwarden-rs" to 73:"bitwarden"
Changed 98:"mailcow-dockerized" to 74:"mailcow"
Changed 695:"photoprism " to 77:"photoprism"
Changed 807:"photoprism:latest" to 77:"photoprism"
Split 445:"prometheus/grafana" into 81:"prometheus", 82:"grafana"
Split 1015:"prometheus/grafana/loki/promtail" into 81:"prometheus", 82:"grafana"
, 1601:"loki", 1602:"promtail"
Changed 1542:"grafana for dashboards" to 82:"grafana"
Changed 210:"valheim server" to 84:"valheim"
Changed 216:"game servers (valheim)" to 84:"valheim"
Changed 1300:"valheim game server" to 84:"valheim"
Changed 1528:"valheim (game)" to 84:"valheim"
Changed 767:"minecraft server " to 85:"minecraft"
Changed 174:"homeassistant" to 86:"home assistant"
Changed 477:"home assistant " to 86:"home assistant"
Changed 522:"home-assistant" to 86:"home assistant"
Changed 687:"homeasaistant" to 86:"home assistant"
Changed 954:"homeassistent" to 86:"home assistant"
Changed 1488:"homeassistantcore" to 86:"home assistant"
```

```
Changed 1501:"home assistant (as vm)" to 86:"home assistant"
Changed 1541:"home assitant" to 86:"home assistant"
Changed 1595:"truenas_vm" to 86:"home assistant"
Changed 1598:"home_assistant" to 86:"home assistant"
Changed 487:"sonarr (docker)" to 88:"sonarr"
Changed 692:"sonarr " to 88:"sonarr"
Split 1499:"rr stack (radarr sonarr jackett)" into 89:"radarr", 88:"sonarr", 90:
"jackett"
Changed 1519:" sonarr" to 88:"sonarr"
Changed 693:"radarr " to 89:"radarr"
Changed 809:"radarr:nightly" to 89:"radarr"
Changed 1071:" radarr" to 89:"radarr"
Changed 1504:"radarr (docker)" to 89:"radarr"
Split 1559:"sonnar/radarr etc." into 88:"sonarr", 89:"radarr"
Changed 122:"jackett                    " to 90:"jackett"
Changed 691:"jackett " to 90:"jackett"
Changed 1503:"jackett (docker)" to 90:"jackett"
Changed 141:"wireguard vpn" to 91:"wireguard"
Split 607:"openvpn/wireguard" into 245:"openvpn", 91:"wireguard"
Changed 744:"wireguard server" to 91:"wireguard"
Changed 1252:"wireguard-client" to 91:"wireguard"
Changed 1253:"wireguard-server" to 91:"wireguard"
Split 1369:"pihole over wireguard" into 105:"pihole", 91:"wireguard"
Changed 1444:"wireguard " to 91:"wireguard"
Changed 93:"nzbhydra2" to 977:"nzbhydra"
Changed 844:"qbittorrent-nox" to 95:"qbittorrent"
Split 859:"qbittorrentvpn" into 95:"qbittorrent", 400:"vpn"
Split 1167:"qbittorrent (with vpn client)" into 95:"qbittorrent", 400:"vpn"
Changed 558:"archivebox " to 96:"archivebox"
Changed 156:"pterodactyl " to 99:"pterodactyl"
Changed 1398:"pterodactyl panel" to 99:"pterodactyl"
Changed 162:"uptimekuma" to 100:"uptime kuma"
Changed 288:"uptime-kuma" to 100:"uptime kuma"
Changed 298:"uptime kuma among others." to 100:"uptime kuma"
Changed 437:"kuma uptime" to 100:"uptime kuma"
Changed 1579:"kuma" to 100:"uptime kuma"
Changed 576:"apache" to 263:"apache web server"
Changed 596:"apache guac" to 102:"apache guacamole"
Changed 293:"pihole." to 105:"pihole"
Changed 553:" pihole" to 105:"pihole"
Changed 642:"pihole " to 105:"pihole"
Split 901:"pihole/vpn " into 105:"pihole", 400:"vpn"
Changed 1305:"pihole dns" to 105:"pihole"
Split 1547:"pihole + unbound" into 105:"pihole", 1353:"unbound"
Changed 1397:"mine craft" to 85:"minecraft"
Changed 191:"gitlab ce" to 111:"gitlab"
Changed 475:"gitlab " to 111:"gitlab"
Changed 637:"gitlab-runner" to 111:"gitlab"
Changed 1118:"gitlab runner" to 111:"gitlab"
Changed 1150:"gitlab ci" to 111:"gitlab"
Changed 112:"overseer" to 320:"overseerr"
Changed 1135:"overseerr " to 320:"overseerr"
Changed 113:"factorio game server" to 211:"factorio server"
Changed 211:"factorio server" to 453:"factorio"
Changed 114:"rocket chat" to 80:"rocketchat"
Changed 172:"rocket.chat" to 80:"rocketchat"
Changed 215:"calibre " to 117:"calibre"
Changed 226:"calibre-web" to 117:"calibre"
Changed 360:"calibre web" to 117:"calibre"
Changed 908:"calibreserver" to 117:"calibre"
Changed 1227:"calibreweb" to 117:"calibre"
```

```
Changed 1242:"calibre web " to 117:"calibre"
Changed 365:"dokuwiki" to 118:"dokuwiki                "
Changed 655:"docuwiki" to 118:"dokuwiki                "
Changed 160:"emby" to 119:"emby                      "
Changed 124:"radicale                " to 441:"radicale"
Changed 586:"radicale (for caldav and carddav)" to 441:"radicale"
Changed 125:"searx                    " to 408:"searx"
Changed 126:"shaarli                 " to 875:"shaarli"
Changed 467:"whoogle search" to 127:"whoogle"
Changed 1184:"whoogle " to 127:"whoogle"
Changed 128:"standardnotes" to 243:"standard notes"
Changed 1303:"diy webserver" to 132:"webserver"
Changed 1399:"multiple webservers through nginx" to 376:"nginx"
Changed 1164:"duckdns ddns updater" to 679:"duckdns"
Split 942:"coredns/unbound" into 1603:"coredns", 1353:"unbound"
Changed 1385:"dns(adblock)" to 1511:"dns adblock"
Changed 1511:"dns adblock" to 1565:"dns sinkhole"
Changed 1191:"dns(adguard)" to 1565:"dns sinkhole"
Changed 1418:"dns (local and blocking)" to 1565:"dns sinkhole"
Changed 350:" wikijs " to 135:"wikijs"
Changed 135:"wikijs" to 387:"wiki.js"
Changed 412:"wiki.js " to 387:"wiki.js"
Changed 658:"wiki-js" to 387:"wiki.js"
Changed 1125:"wikijs " to 387:"wiki.js"
Changed 761:"vimwiki (custom container)" to 1275:"vimwiki"
Changed 138:"custom php podcast site" to 614:"custom applications"
Changed 333:"own developed custom software" to 614:"custom applications"
Changed 569:"custom weather webapp" to 614:"custom applications"
Changed 641:"custom web forms" to 614:"custom applications"
Changed 686:"custom python services" to 614:"custom applications"
Changed 723:"custom built journal/blog engine" to 614:"custom applications"
Changed 785:"custom program" to 614:"custom applications"
Changed 792:"a lot of custom applications" to 614:"custom applications"
Changed 866:"various own webapps or customers websites (small businesses)" to 61
4:"custom applications"
Changed 1052:"custom software i wrote" to 614:"custom applications"
Changed 1060:"custom file hosting solution" to 614:"custom applications"
Changed 1063:"a variety of custom-built twitch and discord bots." to 614:"custom
 applications"
Changed 1155:"custom backend software" to 614:"custom applications"
Changed 1199:"custom cryptocurrency trading tools" to 614:"custom applications"
Changed 1210:"custom apps" to 614:"custom applications"
Changed 1218:"custom dashboard app with permissions bashed on authelia (https://
github.com/dgalli1/yetanotherdashboard wip)" to 614:"custom applications"
Changed 1297:"custom bespoke software" to 614:"custom applications"
Changed 1317:"custom chicken coop controller" to 614:"custom applications"
Changed 1349:"a customised version of filebrowser" to 614:"custom applications"
Changed 1423:"custom icons" to 614:"custom applications"
Changed 1496:"2 custom applications" to 614:"custom applications"
Changed 1061:"custom backend api deployment tools" to 614:"custom applications"
Changed 598:"my custom file upload & hosting service" to 614:"custom application
s"
Changed 144:"adguard (indirectly)" to 342:"adguard"
Changed 313:"adguard home" to 342:"adguard"
Changed 678:"adguardhome" to 342:"adguard"
Changed 1502:"adguard (docker)" to 342:"adguard"
Changed 201:"foundryvtt" to 145:"foundry vtt"
Changed 484:"heimdall (docker)" to 146:"heimdall"
Changed 978:""heimdall"" to 146:"heimdall"
Changed 1142:"heimdall " to 146:"heimdall"
Changed 147:"pi-hole" to 105:"pihole"
```

```
Changed 959:"pi hole" to 105:"pihole"
Changed 1130:"prowlrr" to 148:"prowlarr"
Changed 346:" ombi" to 150:"ombi"
Changed 758:"ombi reverse proxy," to 150:"ombi"
Changed 483:"tautulli (docker)" to 151:"tautulli"
Changed 1030:"tautulli " to 151:"tautulli"
Changed 152:"tandoor recipes" to 774:"tandoor"
Changed 1311:"recipe server (eg tandoori)" to 774:"tandoor"
Changed 1540:"tandoorr recipe" to 774:"tandoor"
Changed 153:"changedetection.io" to 396:"changedetection"
Changed 1124:"change detection" to 396:"changedetection"
Changed 154:"guacamole" to 102:"apache guacamole"
Changed 348:" matrix" to 155:"matrix"
Changed 525:"synapse/matrix" to 155:"matrix"
Split 763:"matrix + element" into 155:"matrix", 1001:"element"
Changed 854:"conduit matrix server" to 155:"matrix"
Changed 1256:"matrix synapse" to 155:"matrix"
Changed 1458:"matrix-synapse" to 155:"matrix"
Changed 1515:"matrix (synapse)" to 155:"matrix"
Changed 955:"synapse" to 155:"matrix"
Changed 157:"some game servers" to 330:"game servers"
Changed 225:"mumble" to 330:"game servers"
Changed 281:"games" to 330:"game servers"
Changed 567:"gameserver" to 330:"game servers"
Changed 762:"multiple game servers" to 330:"game servers"
Changed 897:"game servers " to 330:"game servers"
Changed 1027:"dedicated game servers" to 330:"game servers"
Changed 1101:"game server" to 330:"game servers"
Changed 1114:"multiple lgsm game servers" to 330:"game servers"
Changed 1247:"epicgames-freegames" to 330:"game servers"
Changed 1490:"amp (game servers / cube coders)" to 418:"amp"
Changed 1156:"gameservers" to 330:"game servers"
Changed 1552:"misc game servers" to 330:"game servers"
Changed 224:"other gameservers with mods" to 330:"game servers"
Changed 1529:"satisfactory (game)" to 923:"satisfactory"
Changed 165:"l2tp vpn" to 400:"vpn"
Changed 208:"open vpn" to 245:"openvpn"
Changed 571:"openvpn server" to 400:"vpn"
Changed 881:"vpn pivpn" to 540:"pivpn"
Changed 1234:" vpn" to 400:"vpn"
Changed 1286:" vpn routing" to 400:"vpn"
Changed 1326:"site-to-site vpn" to 400:"vpn"
Changed 1391:"pivpn " to 540:"pivpn"
Changed 1443:"openvpn (deprecated, moving to wg atm)" to 245:"openvpn"
Changed 1558:"vpns" to 400:"vpn"
Changed 1561:"full openvpn " to 245:"openvpn"
Changed 1562:"split openvpn" to 245:"openvpn"
Split 684:"trainsmission-openvpn" into 23:"transmission", 245:"openvpn"
Changed 839:"remote access vpn" to 400:"vpn"
Changed 354:"tinc vpn" to 400:"vpn"
Changed 1083:"double vpn " to 400:"vpn"
Changed 742:"synology vpnplus" to 400:"vpn"
Changed 368:"wordpress " to 166:"wordpress"
Changed 867:"static or php-based web hosting including wordpress" to 166:"wordpr
ess"
Changed 1476:"various wordpress websites" to 166:"wordpress"
Changed 347:" freeipa (password reset)" to 570:"freeipa"
Changed 181:"password management" to 534:"password manager"
Changed 353:"synology files" to 325:"synology filestation"
Changed 489:"synology photos. i used it to share select pictures in albums." to
351:"synology photos"
```

```
Changed 561:"xpenology (synology vm for photo gallery)" to 351:"synology photos"
Changed 611:"synology services" to 168:"synology dsm"
Changed 673:"synology disk station" to 168:"synology dsm"
Changed 739:"synology drive" to 355:"synology cloud drive"
Changed 1037:"synology diskstation manager" to 168:"synology dsm"
Split 1204:"synology calendar and photos" into 1604:"synology calendar", 351:"sy
nology photos"
Changed 1304:"synology file sharing" to 325:"synology filestation"
Changed 244:"tt-rss" to 169:"tt rss"
Changed 430:"ttrss" to 169:"tt rss"
Changed 206:"file browser" to 171:"filebrowser "
Changed 171:"filebrowser " to 213:"filebrowser"
Changed 615:"filebrower" to 213:"filebrowser"
Changed 274:"file servers" to 238:"file server"
Changed 363:" fileserver" to 238:"file server"
Changed 442:"seafile " to 240:"seafile"
Changed 584:"fileserver" to 238:"file server"
Changed 842:"smb file share" to 21:"samba"
Changed 1197:"a fileserver" to 238:"file server"
Split 1340:"file services (smb, nfs)" into 21:"samba", 198:"nfs"
Changed 1406:"file hosting" to 238:"file server"
Changed 1513:"fileshares" to 238:"file server"
Changed 790:"file sharing" to 238:"file server"
Changed 255:"meallie" to 173:"mealie"
Changed 1149:"mealy" to 173:"mealie"
Changed 177:"zwave/zigbee container " to 1171:"zigbee"
Changed 552:" sftp" to 179:"ftp"
Changed 921:"sftp (for offsite backups)" to 179:"ftp"
Changed 979:"ftp server" to 179:"ftp"
Changed 474:"ftpgo " to 179:"ftp"
Changed 1480:"sftpgo" to 179:"ftp"
Changed 1536:"sftp to google drive bridge" to 179:"ftp"
Changed 776:"sftp" to 179:"ftp"
Changed 1491:"chia-farmer" to 182:"chia"
Changed 907:"logitech mediaserver" to 186:"logitech media server"
Changed 431:"unifi-controller" to 188:"unifi controller"
Changed 998:"unifi controller " to 188:"unifi controller"
Changed 1012:"unifi" to 188:"unifi controller"
Changed 1425:"unificontroller " to 188:"unifi controller"
Changed 1509:"unifi controller (docker)" to 188:"unifi controller"
Changed 479:"ansible awx " to 192:"ansible awx"
Changed 756:"active directory," to 193:"active directory"
Changed 1070:"owncloud " to 194:"owncloud"
Changed 555:" mail" to 62:"email"
Changed 577:"mail" to 62:"email"
Split 1222:"e-mail hosted on dedicated server with plesk" into 62:"email", 1445:
"plesk"
Changed 1283:"mail " to 62:"email"
Changed 1474:"e-mail" to 62:"email"
Changed 1352:"nfs server" to 198:"nfs"
Split 199:"media automation stack - *arr/sab/deluge" into 88:"sonarr", 89:"radar
r", 323:"lidarr", 1006:"sab", 421:"deluge"
Changed 200:"nginx - various blogs, websites, etc" to 376:"nginx"
Changed 681:"nginx_proxy_manager" to 424:"nginx proxy manager"
Changed 848:"nginx " to 376:"nginx"
Changed 909:"nginx web server" to 376:"nginx"
Changed 1059:"nginxproxymanager" to 424:"nginx proxy manager"
Changed 1120:"nginx rproxy manager " to 424:"nginx proxy manager"
Changed 1313:"nginx-proxy-manager" to 424:"nginx proxy manager"
Changed 1447:"nginx-reverse-proxy" to 376:"nginx"
Changed 1524:"nginx(rev proxy)" to 376:"nginx"
```

```
Changed 447:"some websites via nginx/php/node" to 614:"custom applications"
Changed 745:"nginx reverse proxy + letsencrypt" to 376:"nginx"
Changed 1354:"nginx-proxymanager" to 424:"nginx proxy manager"
Changed 833:"homer dashbord" to 202:"homer"
Changed 861:"homer dashboard" to 202:"homer"
Changed 1403:" homer" to 202:"homer"
Changed 410:"portainer " to 203:"portainer"
Changed 488:"portainer (docker)" to 203:"portainer"
Changed 806:"portainer-ce" to 203:"portainer"
Changed 560:"windows 10 (vm)" to 204:"windows vm"
Changed 1213:"windows vms" to 204:"windows vm"
Changed 1438:"windows ad" to 193:"active directory"
Changed 1594:"windows_vm" to 204:"windows vm"
Changed 1380:"windows folder share" to 831:"windows fileserver"
Changed 1580:"windows server - remote desktop services" to 366:"remote desktop"
Changed 1439:"remote desktop gateway " to 366:"remote desktop"
Changed 1333:"vabene1111/recipes" to 212:"recipes"
Changed 214:"youtubedl-material" to 1007:"youtubedl"
Changed 228:"my own personal website" to 614:"custom applications"
Changed 271:"websites" to 231:"website"
Changed 292:"static webpages" to 231:"website"
Changed 303:"self created websites & applications" to 614:"custom applications"
Changed 536:"various webapps" to 231:"website"
Changed 549:"front-end websites" to 231:"website"
Changed 588:"webapp of my own bachelors thesis" to 614:"custom applications"
Changed 601:"web server" to 132:"webserver"
Changed 647:"standalone websites" to 231:"website"
Changed 819:"websites (various platforms)" to 231:"website"
Changed 829:"personal websites" to 614:"custom applications"
Changed 856:"website " to 231:"website"
Changed 916:"web apps" to 231:"website"
Changed 995:"multiple web servers" to 132:"webserver"
Changed 1062:"person websites" to 231:"website"
Changed 1196:"a couple of websites" to 231:"website"
Changed 1255:"http/php websites" to 231:"website"
Changed 1322:"webhosting " to 231:"website"
Changed 1339:"web hosting" to 231:"website"
Changed 1325:"family picture website" to 614:"custom applications"
Changed 1427:"temperature tracking website (self-created)" to 614:"custom applic
ations"
Changed 1485:"multiple websites" to 231:"website"
Changed 1555:"web host" to 231:"website"
Changed 227:"dsm7" to 168:"synology dsm"
Changed 267:"zone minder" to 232:"zoneminder"
Changed 755:" zone under" to 232:"zoneminder"
Changed 864:"webdav server" to 233:"webdav"
Changed 248:"dlna (gerbera)" to 236:"dlna"
Changed 667:"minidlna" to 236:"dlna"
Changed 1516:"ssh (used for zfs replication)" to 237:"ssh"
Changed 1484:"smb fileserver" to 21:"samba"
Changed 547:"cryptpad wip" to 241:"cryptpad"
Changed 270:"backup server" to 246:"backups"
Changed 735:"backups for servers and desktops and mobiles" to 246:"backups"
Changed 766:"backup location" to 246:"backups"
Changed 917:"backup service" to 246:"backups"
Changed 1362:"backup" to 246:"backups"
Changed 1323:"kodi (tvheadend)" to 251:"kodi"
Changed 1043:"teamspeak3" to 253:"teamspeak"
Changed 254:"trillium" to 457:"trilium notes"
Changed 526:"trilium" to 457:"trilium notes"
Changed 1233:"onlyofficedocument server" to 257:"onlyoffice"
```

```
Changed 564:"proxmox ve" to 264:"proxmox"
Changed 1429:"ldap server" to 265:"ldap"
Split 1473:"phone services (pbx and ldap)" into 714:"pbx", 265:"ldap"
Changed 266:"gaming vm’s" to 330:"game servers"
Changed 1390:"multiple gaming servers" to 330:"game servers"
Changed 1428:"speed test" to 269:"speedtest"
Changed 639:"speedtest-tracker" to 1031:"speedtest tracker"
Changed 273:"git repos" to 585:"git"
Changed 824:"gittea" to 18:"gitea"
Changed 426:"truenas core" to 276:"truenas"
Changed 1103:"truenas shares" to 276:"truenas"
Changed 1211:"truenas (local)" to 276:"truenas"
Changed 1363:"nas storage" to 857:"nas"
Changed 1314:"youtube-dl material" to 965:"youtube dl"
Changed 1435:"youtube-dl-nas" to 965:"youtube dl"
Changed 1292:"youtube-dl" to 965:"youtube dl"
Changed 1007:"youtubedl" to 965:"youtube dl"
Changed 1318:"various other projects i’ve written" to 614:"custom applications"
Changed 1298:"overleaf " to 286:"overleaf"
Changed 287:"next loud" to 12:"nextcloud"
Changed 573:"irc server" to 289:"irc"
Changed 574:"irc client" to 289:"irc"
Changed 646:"tinytinyrss" to 169:"tt rss"
Changed 1055:"tiny tiny rss" to 169:"tt rss"
Changed 1358:"rss bridge" to 810:"rss-bridge"
Changed 294:"afs for time machine" to 1051:"afs"
Changed 1025:"netbootxyz" to 296:"netboot xyz"
Changed 1274:"netboot.xyz" to 296:"netboot xyz"
Changed 297:"vscode server" to 597:"vscode"
Changed 991:"vscode-server" to 597:"vscode"
Changed 1198:"openvscode server" to 597:"vscode"
Changed 1237:"vscode container" to 597:"vscode"
Changed 301:"umami" to 497:"umami analytics"
Changed 509:"monicahq" to 309:"monica"
Changed 1121:"monicacrm" to 309:"monica"
Changed 880:"invoice ninja" to 310:"invoiceninja"
Changed 311:"scanserverjs" to 845:"scanservjs"
Changed 339:"scanservjs (a sane frontend for scanning documents)" to 845:"scanse
rvjs"
Changed 444:"pyload " to 312:"pyload"
Changed 316:"thelounge" to 1054:"the lounge"
Changed 322:"ghost (blog)" to 1039:"ghost blog"
Changed 324:"headphones " to 1065:"headphones"
Changed 176:"rednode" to 331:"nodered"
Changed 331:"nodered" to 682:"node-red"
Changed 1141:"node red" to 682:"node-red"
Changed 432:"next cloud" to 12:"nextcloud"
Changed 602:"nexctcloud" to 12:"nextcloud"
Changed 869:"nexcloud" to 12:"nextcloud"
Changed 872:"own cloud" to 194:"owncloud"
Split 983:"nextcloud (inc. collabora)" into 12:"nextcloud", 603:"collabora"
Changed 1038:"nextccloud" to 12:"nextcloud"
Changed 1080:"nextrcloud" to 12:"nextcloud"
Changed 1402:" next cloud" to 12:"nextcloud"
Changed 1506:"next cloud (docker)" to 12:"nextcloud"
Changed 1591:"nextcloud," to 12:"nextcloud"
Split 336:"elk" into 429:"elasticsearch", 1607:"logstash", 799:"kibana"
Split 1431:"docker-elk_kibana" into 429:"elasticsearch", 1607:"logstash", 799:"k
ibana"
Changed 340:"(private) webservices" to 231:"website"
Changed 344:" codeserver" to 662:"code-server"
```

```
Changed 420:"vs code" to 597:"vscode"
Changed 1109:"vs code server" to 597:"vscode"
Changed 1231:"amp by cubecoders" to 418:"amp"
Changed 1293:"vs-code-server" to 597:"vscode"
Changed 1495:"visual studio code" to 597:"vscode"
Changed 1522:"codeserver" to 662:"code-server"
Changed 1525:"code-server " to 662:"code-server"
Changed 1578:"code server" to 662:"code-server"
Changed 349:" organizr" to 636:"organizr"
Changed 1137:"organizerr " to 636:"organizr"
Changed 1417:"magicmirror" to 357:"magic mirror"
Split 473:"arr stack" into 89:"radarr", 323:"lidarr", 88:"sonarr"
Split 759:"*arr stack" into 89:"radarr", 88:"sonarr", 323:"lidarr"
Split 926:"all the arr stack" into 89:"radarr", 88:"sonarr", 323:"lidarr"
Changed 1058:"bockstack" to 14:"bookstack"
Changed 362:"minceraft" to 85:"minecraft"
Changed 656:"veeam b&r" to 364:"veeam"
Changed 369:"radar" to 89:"radarr"
Changed 370:"paperlees-ng" to 19:"paperless-ng"
Changed 1104:"open media vault." to 372:"openmediavault"
Changed 1368:"open media vault" to 372:"openmediavault"
Changed 373:"photo prism" to 77:"photoprism"
Split 374:"*arr" into 89:"radarr", 323:"lidarr", 88:"sonarr"
Changed 471:"zammad " to 382:"zammad"
Changed 994:"snipeit" to 384:"snipe-it"
Changed 508:"jupyternotebook" to 388:"jupyter"
Changed 545:"personal software" to 614:"custom applications"
Changed 1472:"some personal development stuff" to 614:"custom applications"
Changed 572:"firefly-iii" to 458:"firefly iii"
Changed 1082:"firefly 3" to 458:"firefly iii"
Changed 1214:"fireflyiii" to 458:"firefly iii"
Changed 404:"various apps through http" to 231:"website"
Changed 1310:"music server (eg airsonic but i’m still searching for one that mee
ts all our needs)" to 535:"airsonic"
Changed 411:"jupiter" to 388:"jupyter"
Changed 413:"splunk " to 928:"splunk"
Changed 996:"multiple sql dbs" to 415:"sql "
Changed 982:"mariadb 2x" to 702:"mariadb"
Changed 1168:"amp instance manager" to 418:"amp"
Changed 1482:"pxe server" to 419:"pxe"
Changed 517:"valhiem server " to 84:"valheim"
Changed 1410:"pfsense " to 427:"pfsense"
Changed 1500:"pfsense (as vm with pcie nic passed though)" to 427:"pfsense"
Changed 853:" roundcube" to 428:"roundcube"
Changed 1241:"roundcube " to 428:"roundcube"
Split 446:"ms exchange server / postfix" into 1608:"ms exchange", 779:"postfix"
Changed 1544:"pigplanner (selfprogrammed converts databases and monitors feeding
 systems related to pigbreeding mainly for easier access between buildings and f
or workplanning)" to 614:"custom applications"
Changed 512:"pigallery2" to 449:"pigallery"
Changed 1220:"jacket" to 90:"jackett"
Changed 1294:"some self-developed apps for finances / note taking / bookmarks" t
o 614:"custom applications"
Changed 1188:"minimalist web notepad" to 463:"minimalist-web-notepad"
Changed 516:"revoltchat" to 468:"revolt chat"
Changed 786:"revolt" to 468:"revolt chat"
Changed 619:"mozilla profile sync" to 469:"mozilla syncserver"
Changed 803:"channels-dvr" to 491:"channels dvr"
Changed 546:"jdownloader headless" to 1200:"jdownloader"
Changed 1539:"j-downloader" to 1200:"jdownloader"
Changed 503:"unify controller" to 188:"unifi controller"
```

```
Changed 725:"blueiris" to 504:"blue iris"
Changed 519:"wallbag" to 242:"wallabag"
Changed 520:"mincraft" to 85:"minecraft"
Changed 1505:"bittorrent (docker)" to 652:"bittorrent"
Changed 1507:"shinobi (docker)" to 1192:"shinobi"
Split 527:"*aars" into 89:"radarr", 88:"sonarr", 323:"lidarr"
Changed 920:"xmpp (ejabberd)" to 528:"xmpp"
Changed 1546:"prosody (xmpp)nm" to 1041:"prosody"
Changed 529:"podcast manager i've created" to 614:"custom applications"
Changed 530:"tatutulli" to 151:"tautulli"
Changed 1126:"tatulli" to 151:"tautulli"
Changed 694:"airsonic " to 535:"airsonic"
Changed 563:"ytdl material" to 965:"youtube dl"
Changed 1181:"cups network printing" to 565:"cups"
Changed 579:"sshfs sharing" to 237:"ssh"
Changed 581:"redmin" to 800:"redmine"
Changed 851:" fresh rss" to 15:"freshrss"
Changed 778:"tiny rss" to 169:"tt rss"
Changed 594:"ralph asset manager" to 1136:"ralph"
Changed 600:"rutorrent interface for rtorrent client" to 748:"rtorrent"
Changed 1093:"collabora online" to 603:"collabora"
Changed 613:"self build apps" to 614:"custom applications"
Changed 737:"self created "upload to me" site" to 614:"custom applications"
Changed 738:"self created discord bot" to 614:"custom applications"
Changed 987:"and some self made services" to 614:"custom applications"
Changed 1134:"self developed applications" to 614:"custom applications"
Changed 1543:"solarlogger(selfprogrammed grabber for multiple owned solar system
s converts datatables accesible over ftp to dashboards)" to 614:"custom applicat
ions"
Changed 626:"https" to 231:"website"
Changed 1486:"dsmr-reader" to 630:"dsmr reader"
Changed 644:"shinobinvr" to 1192:"shinobi"
Changed 1415:"shinobi (cctv)" to 1192:"shinobi"
Changed 964:"qbittorent" to 95:"qbittorrent"
Changed 827:"7 days to die server" to 660:"7 days to die"
Changed 1454:"sick chill" to 661:"sickchill"
Changed 1498:"pdf toolbox" to 663:"pdf-toolbox"
Changed 666:"nextcoud" to 12:"nextcloud"
Changed 670:"yt-dlp" to 965:"youtube dl"
Changed 683:"rdesktop" to 366:"remote desktop"
Changed 688:"pi hole " to 105:"pihole"
Changed 1009:"influx" to 700:"influxdb"
Changed 1139:"swag" to 706:"swag "
Changed 707:"telegraf " to 1077:"telegraf"
Changed 710:"various discord bots" to 847:"discord bots"
Changed 1212:"discord-bot" to 847:"discord bots"
Changed 1273:"discord music bot" to 847:"discord bots"
Changed 1400:"discordbot" to 847:"discord bots"
Changed 1092:"discord bot" to 847:"discord bots"
Changed 713:"http(s)" to 231:"website"
Changed 1537:"pbx phone system." to 714:"pbx"
Changed 627:"tor non-exit node" to 721:"tor"
Changed 724:"web-interface-for-home-automation" to 718:"home automation"
Changed 1094:"baby buddy" to 729:"babybuddy"
Changed 743:"dhcp server (isc)" to 720:"dhcp"
Changed 1207:"my own private projects" to 614:"custom applications"
Changed 972:"squid (proxy)" to 780:"squid"
Changed 781:"i build software ... so that software. " to 614:"custom application
s"
Changed 784:"private projects" to 614:"custom applications"
Changed 791:"mastadon" to 956:"mastodon"
```

```
Changed 795:"timemachine" to 1056:"time machine"
Changed 823:"uptimekama" to 100:"uptime kuma"
Changed 814:"tubesync:latest" to 669:"tubesync"
Changed 817:"docker registry ui" to 521:"docker-registry"
Changed 1518:"greylog" to 820:"graylog"
Changed 1205:"drone.io" to 838:"drone ci"
Changed 1467:"drone" to 838:"drone ci"
Changed 879:"iscsi share" to 843:"iscsi"
Changed 862:"transmition" to 23:"transmission"
Changed 1440:"whiteboard website " to 884:"whiteboard"
Changed 886:"pastatool" to 1335:"pasta"
Changed 932:"requestrr" to 895:"requesterr"
Changed 1389:"3cx" to 900:"3cx phonesystem"
Changed 914:"nignx-proxy-manager" to 424:"nginx proxy manager"
Changed 999:"static sites" to 231:"website"
Changed 1497:"psi transfer" to 952:"psitransfer"
Changed 975:"cs go" to 690:"csgo server"
Changed 1424:"sabnzb" to 94:"sabnzbd"
Changed 1187:"health check" to 1011:"healthchecks"
Changed 1016:"various personal projects" to 614:"custom applications"
Changed 1032:"wiregard" to 91:"wireguard"
Changed 1494:"resilio" to 1036:"resilio sync"
Changed 599:"mumble server" to 1057:"mumble "
Changed 1085:"vault warden" to 20:"vaultwarden"
Changed 1087:"synctbing" to 13:"syncthing"
Changed 1123:"sync thing" to 13:"syncthing"
Changed 1100:"myth tv" to 218:"mythtv"
Changed 1115:"nextclou" to 12:"nextcloud"
Changed 1116:"rdp server" to 366:"remote desktop"
Changed 1287:"rdp" to 366:"remote desktop"
Changed 1122:"sonar" to 88:"sonarr"
Changed 1365:"watchtowerr" to 685:"watchtower"
Changed 1146:"smallstep cert management " to 1356:"smallstep"
Changed 1393:"couch potato" to 1147:"couchpotato"
Changed 1170:"plez" to 22:"plex"
Changed 1175:"nothing as of yet" to 1176:"none"
Changed 1272:"openrct2" to 1183:"open rct2"
Changed 1084:"[...]" to 464:"... "
Changed 1223:"i think i'm forgetting something..." to 464:"... "
Changed 1151:"i forgor tbh" to 464:"... "
Changed 1190:"ntopng" to 1382:"ntop"
Changed 478:"ngninx proxy manager" to 424:"nginx proxy manager"
Changed 1044:"ngnix proxy manager" to 424:"nginx proxy manager"
Changed 1195:"ytdl" to 965:"youtube dl"
Changed 1215:"openeats" to 1068:"open eats"
Changed 1260:". .." to 992:"..."
Split 1269:"*rr" into 88:"sonarr", 89:"radarr", 323:"lidarr"
Changed 1277:"no direct interaction" to 1176:"none"
Changed 1280:"embi" to 119:"emby"
Changed 1523:" blocky" to 1282:"blocky"
Changed 1308:"duplocati" to 185:"duplicati"
Changed 476:"duplicacy " to 1576:"duplicacy"
Changed 1324:"jellybin" to 17:"jellyfin"
Changed 1343:"webpages" to 231:"website"
Changed 1350:"a homemade auth-ing reverse proxy" to 614:"custom applications"
Changed 1387:"blender " to 1386:"blender"
Changed 1401:"home automation tools" to 718:"home automation"
Changed 1413:"none.  i am the only user" to 1176:"none"
Changed 1432:"pterodacty" to 99:"pterodactyl"
Changed 1433:"deemix-docker" to 1585:"deemix"
Changed 1449:"nothing yet" to 1176:"none"
```

```
Changed 1450:"smb share" to 21:"samba"
Changed 1457:"not sure exactly what this question means. but i'll take a shot:"
to 992:"..."
Changed 826:"etc" to 992:"..."
Changed 1553:"misc temporary servers for misc testing" to 992:"..."
Split 1557:"*arrs" into 323:"lidarr", 89:"radarr", 88:"sonarr"
Changed 1560:"more to come" to 992:"..."
Changed 1574:"lightweight music service" to 65:"lms"
Changed 1584:"archive box" to 96:"archivebox"
Changed 992:"..." to 1586:"miscellaneous"
```

B.12 Normalisation logs for question "What backend technologies power your end-user services? "

```
Changed 21:"unknown - i haven't looked into how any of the servers i'm hosting a
re implemented i interact with them exclusively through pulled containers." to 2
0:"uncategorised"
Changed 55:"mariasql " to 6:"mariadb"
Changed 58:"mysql/mariadb" to 6:"mariadb"
Changed 155:"maria db" to 6:"mariadb"
Changed 169:"mysql(mariadb)" to 6:"mariadb"
Split 182:"postgresdb mariadb nginx php redis" into 7:"postgresql", 461:"maridb"
, 10:"nginx", 8:"php", 28:"redis"
Changed 221:"mariadb " to 6:"mariadb"
Split 260:"nginx php mariadb openmediavault" into 10:"nginx", 8:"php", 6:"mariad
b", 695:"openmediavault"
Changed 434:"maria.db " to 6:"mariadb"
Split 441:"apache mariadb php js dotnet" into 54:"apache", 6:"mariadb", 8:"php",
 200:"js", 349:"dotnet"
Changed 19:"dovecoat" to 13:"dovecot"
Changed 12:"node" to 32:"node.js"
Changed 34:"asp.net core" to 401:"asp.net"
Changed 35:"postgres" to 7:"postgresql"
Changed 51:"not applicable" to 20:"uncategorised"
Changed 97:"vue" to 44:"vuejs"
Changed 535:"react" to 45:"reactjs"
Split 455:"pgsql and mariadb" into 7:"postgresql", 6:"mariadb"
Changed 497:"mysql (mariadb)" to 6:"mariadb"
Changed 630:" mariadb" to 6:"mariadb"
Changed 123:"postgrese" to 7:"postgresql"
Changed 181:"postgreql" to 7:"postgresql"
Changed 195:"postgresql " to 7:"postgresql"
Changed 219:"postgresdb" to 7:"postgresql"
Changed 345:"postgrsqdl" to 7:"postgresql"
Changed 384:"postgres sql" to 7:"postgresql"
Changed 407:"postgress" to 7:"postgresql"
Changed 474:"postgres " to 7:"postgresql"
Changed 530:"postgrest" to 7:"postgresql"
Changed 341:"postresql" to 7:"postgresql"
Split 93:"msql nginx traefik apache php node postgres" into 26:"mysql", 10:"ngin
x", 62:"traefik", 54:"apache", 8:"php", 32:"node.js", 7:"postgresql"
Changed 465:"no idea. probably very many like php node.js mysql postgresql nginx
 m0n0 python..." to 20:"uncategorised"
Changed 596:"postfix " to 14:"postfix"
Changed 56:"php " to 8:"php"
Changed 153:" php" to 8:"php"
Changed 168:"php8" to 8:"php"
Changed 451:"php-fpm" to 8:"php"
Changed 560:"php 8" to 8:"php"
Split 583:"apache php node mysql" into 54:"apache", 8:"php", 32:"node.js", 26:"m
```

```
ysql"
Changed 609:"php(-fpm)" to 8:"php"
Changed 59:"python3" to 9:"python"
Split 167:"python flask" into 9:"python", 90:"flask"
Split 258:"python (flask)" into 9:"python", 90:"flask"
Changed 391:"python " to 9:"python"
Split 498:"python (django and flask)" into 9:"python", 248:"django", 90:"flask"
Changed 540:"python 3" to 9:"python"
Changed 71:"nginx-proxy" to 10:"nginx"
Changed 76:"nginx " to 10:"nginx"
Changed 88:"nginx proxy" to 10:"nginx"
Split 141:"nginx via nginxproxymanager" into 10:"nginx", 65:"nginx proxy manager
"
Changed 191:"nginx ingress" to 10:"nginx"
Changed 241:"nginx - ingress reverse proxy and static hosting" to 10:"nginx"
Split 289:"nginx/traefik proxy" into 10:"nginx", 62:"traefik"
Changed 400:"nginx for reverse proxy" to 10:"nginx"
Changed 428:"nginx reverse proxy" to 10:"nginx"
Changed 504:"nginx-proxy (jwilder)" to 10:"nginx"
Split 518:"nginx mysql " into 10:"nginx", 26:"mysql"
Split 636:"node.js nginx " into 10:"nginx", 32:"node.js"
Changed 643:"nginx-proxy-manager" to 65:"nginx proxy manager"
Split 660:" nginx (virtualmin/webmin)" into 10:"nginx", 697:"virtualmin", 698:"w
ebmin"
Changed 640:"whatever they come with? nginx reverse proxy." to 10:"nginx"
Changed 595:"java spring" to 11:"spring"
Changed 605:"spring boot" to 11:"spring"
Changed 626:"spring (java)" to 11:"spring"
Split 227:"mailcow (dovecot)" into 63:"mailcow", 13:"dovecot"
Changed 564:" dovecot" to 13:"dovecot"
Split 635:"mailcow-dockerized (dovecot etc) " into 63:"mailcow", 13:"dovecot"
Changed 95:"golang" to 18:"go"
Changed 201:"mysql (docker)" to 26:"mysql"
Split 372:"ms sql & mysql" into 442:"mssql", 26:"mysql"
Changed 389:"mysql " to 26:"mysql"
Changed 667:"not for endusers but mysql" to 26:"mysql"
Changed 656:"probably going to have mysql " to 20:"uncategorised"
Changed 60:"caddy2" to 27:"caddy"
Changed 450:"caddy server" to 27:"caddy"
Changed 452:"caddy " to 27:"caddy"
Changed 73:"redis " to 28:"redis"
Changed 78:"reddis" to 28:"redis"
Changed 213:"redid" to 28:"redis"
Changed 563:"redis server" to 28:"redis"
Changed 411:"mongo db" to 30:"mongodb"
Changed 490:"mongo" to 30:"mongodb"
Changed 36:"nodejs" to 32:"node.js"
Changed 52:"node " to 32:"node.js"
Changed 72:"node.js " to 32:"node.js"
Split 192:"node.js cronjobs" into 32:"node.js", 491:"cron"
Split 257:"node.js & npm" into 32:"node.js", 204:"npm"
Changed 392:"node js" to 32:"node.js"
Changed 393:"node.is" to 32:"node.js"
Changed 664:"nodejs " to 32:"node.js"
Changed 119:"nodered" to 291:"node-red"
Changed 438:"node red" to 291:"node-red"
Changed 114:"sqlite3" to 37:"sqlite"
Changed 146:" sqlite3" to 37:"sqlite"
Changed 569:"sqlitw" to 37:"sqlite"
Changed 653:"sqlite3 " to 37:"sqlite"
Changed 61:"apache2 " to 54:"apache"
```

```
Changed 75:"apache2" to 54:"apache"
Changed 233:"apache2 (sparsely)" to 54:"apache"
Split 125:"ruby and ror" into 39:"ruby", 202:"ruby on rails"
Changed 198:"ruby on rails " to 202:"ruby on rails"
Changed 528:"ruby (not rails)" to 39:"ruby"
Changed 300:"gitlab-ce" to 422:"gitlab"
Changed 688:"windows server - remote desktop services" to 47:"rdp"
Changed 173:"sshd" to 49:"ssh"
Changed 654:" ssh" to 49:"ssh"
Changed 396:"traefik for reverse proxy to containers" to 62:"traefik"
Changed 197:"mailcow stack" to 63:"mailcow"
Split 284:"authelia (/authentik)" into 66:"authelia", 699:"authentik"
Changed 74:"not sure" to 20:"uncategorised"
Changed 356:"influx" to 79:"influxdb"
Changed 520:"influxbd" to 79:"influxdb"
Changed 591:"influxdb2" to 79:"influxdb"
Changed 397:"portainer for container management" to 89:"portainer"
Changed 145:" flask" to 90:"flask"
Split 218:"flask+uwsgi" into 90:"flask", 177:"uwsgi"
Split 245:"c#/.net" into 17:"c#", 91:".net"
Changed 352:".net core" to 91:".net"
Changed 231:"vouch-proxy" to 92:"vouch proxy"
Changed 94:"i do not know" to 20:"uncategorised"
Changed 96:"nginix" to 10:"nginx"
Changed 200:"js" to 98:"javascript"
Changed 311:"plex-media-server" to 99:"plex"
Changed 436:"plex media manager (eisnate12/plex-meta-manager)" to 575:"plex meta
 manager"
Changed 100:"samba (true-nas) " to 269:"samba"
Changed 603:"nfs server (freebsd)" to 107:"nfs"
Changed 386:"nfs v4" to 107:"nfs"
Changed 108:"smb" to 269:"samba"
Changed 174:"smbd" to 269:"samba"
Changed 57:"linux server (ubuntu 20.04)" to 109:"linux"
Changed 220:"wireguard vpn" to 111:"wireguard"
Changed 437:"thrnz/docker-wireguard-pia" to 111:"wireguard"
Changed 622:"wireguard on vps" to 111:"wireguard"
Changed 695:"openmediavault" to 408:"open media vault"
Changed 113:"(docker-compose makes it hard to remember everything one uses in ba
ckend)" to 20:"uncategorised"
Split 454:"lxc and docket" into 115:"lxc", 120:"docker"
Split 456:"lxcs and docker" into 700:"lxcs"
Split 185:"kvm / qemu" into 116:"kvm", 237:"qemu"
Split 196:"kvm qemu " into 116:"kvm", 237:"qemu"
Changed 524:"kvm virtualization" to 116:"kvm"
Split 604:"docker. kvm." into 116:"kvm", 120:"docker"
Changed 665:"i run everything inside of docker containers i have no clue what *a
ll* of the technologies are that power the software inside of the containers" to
 20:"uncategorised"
Changed 229:"whatever my docker container uses" to 20:"uncategorised"
Changed 513:"single purpose docker vms (a vm with docker for just one applicatio
n+dependendecies)" to 120:"docker"
Changed 286:"lighttpd (docker)" to 395:"lighttpd"
Changed 381:"whatever the docker containers use " to 120:"docker"
Changed 414:"docker and i don’t think about what is in each container " to 120:"
docker"
Changed 457:"docker root and rootless" to 120:"docker"
Changed 477:"docker compose" to 208:"docker-compose"
Changed 537:"doesn’t matter everything’s dockerized" to 120:"docker"
Changed 574:"cause of docker doesn’t matter i think" to 120:"docker"
Changed 577:"i don’t even know i just ran the docker container" to 120:"docker"
```

```
Changed 598:"docker " to 120:"docker"
Changed 641:"docker-elk_logstash" to 657:"logstash"
Changed 642:"docker-elk_elasticsearch" to 150:"elasticsearch"
Changed 672:"docker-registry" to 189:"docker registry"
Changed 692:"docker for windows" to 120:"docker"
Changed 137:"letsencrypt" to 121:"let’s encrypt"
Split 637:"swag (letsencrypt)" into 287:"swag", 121:"let’s encrypt"
Changed 122:"too many to count" to 20:"uncategorised"
Split 339:"freebsd/bhyve/zfs" into 702:"freebsd", 703:"bhyve", 127:"zfs"
Split 668:"illumos (dtrace and kstats for grafana zfs for backup and replication
)" into 370:"dtrace", 704:"kstats", 290:"grafana", 127:"zfs"
Changed 130:"whatever the above requires" to 20:"uncategorised"
Changed 131:"whatever the containers use." to 20:"uncategorised"
Changed 205:"spamassasin" to 135:"spamassassin"
Changed 266:"pihole" to 136:"pi-hole"
Changed 543:"pihole " to 136:"pi-hole"
Changed 638:"(sometimes) pi-hole" to 136:"pi-hole"
Changed 367:"ghc (haskell)" to 147:"haskell"
Changed 148:"net core" to 91:".net"
Changed 149:"others... " to 20:"uncategorised"
Changed 473:"opnsense " to 151:"opnsense"
Changed 254:"cloudflare (reverse proxy argo tunneling) " to 152:"cloudflare"
Changed 246:"cloudflared" to 152:"cloudflare"
Changed 426:"cloudflare ddns" to 374:"cloudflare-ddns"
Changed 432:"cloudflare (ddns)" to 374:"cloudflare-ddns"
Changed 154:"none" to 20:"uncategorised"
Changed 156:"podtgresql" to 7:"postgresql"
Changed 158:"bind9" to 171:"bind"
Changed 599:"isc bind" to 171:"bind"
Changed 160:"whatever comes with the docket compare file." to 120:"docker"
Changed 161:"posgresql" to 7:"postgresql"
Changed 162:"the list is too exhaustive" to 20:"uncategorised"
Changed 178:".." to 20:"uncategorised"
Changed 186:"all" to 20:"uncategorised"
Changed 187:"and many others" to 20:"uncategorised"
Changed 199:"ngingx" to 10:"nginx"
Changed 343:"tomcat" to 38:"apache tomcat"
Changed 211:"i don’t know." to 20:"uncategorised"
Changed 212:"it’s all managed by yunohost" to 20:"uncategorised"
Changed 462:"matrix/synapse" to 214:"synapse"
Changed 297:"calibre-web " to 226:"calibre"
Changed 238:"httpd" to 54:"apache"
Changed 240:"various plugins and packages." to 20:"uncategorised"
Changed 663:" truenas" to 242:"truenas"
Changed 243:"mysq" to 26:"mysql"
Changed 244:"*" to 20:"uncategorised"
Changed 252:"a lot" to 20:"uncategorised"
Changed 253:"i have no idea." to 20:"uncategorised"
Changed 261:"hypervisor proxmox" to 67:"proxmox"
Changed 262:"various" to 20:"uncategorised"
Changed 263:"ror" to 202:"ruby on rails"
Changed 267:"(basically everything runs in a container or has a built-in webserv
er so no idea)" to 20:"uncategorised"
Changed 268:"no idea. quite a few i guess. i have no idea what most of the progr
ams use in the background" to 20:"uncategorised"
Changed 272:"whatever jellyfin uses." to 20:"uncategorised"
Changed 274:"ubuntu server" to 612:"ubuntu "
Changed 277:"(everything else is just the services name)" to 20:"uncategorised"
Changed 279:"none." to 20:"uncategorised"
Changed 288:"potgresql" to 7:"postgresql"
Changed 347:"my sql" to 26:"mysql"
```

```
Changed 442:"mssql" to 283:"microsoft sql server"
Changed 632:"ms sql server" to 283:"microsoft sql server"
Changed 677:"adguard" to 293:"adguard-home"
Changed 458:"adguard home" to 293:"adguard-home"
Changed 301:"home-assistant-core" to 329:"home assistant"
Changed 402:"homeassistant" to 329:"home assistant"
Changed 525:"unifi controller" to 317:"unifi-controller"
Changed 318:"wordpress " to 380:"wordpress"
Changed 580:"isc dhcp" to 331:"isc-dhcp-server"
Changed 671:"unraid " to 338:"unraid"
Changed 346:"too many to list" to 20:"uncategorised"
Changed 349:"dotnet" to 91:".net"
Changed 371:"not sure." to 20:"uncategorised"
Changed 373:"readis" to 28:"redis"
Changed 375:"eclipse-mosquitto" to 433:"mosquitto"
Changed 559:"mosquitto (mqtt)" to 433:"mosquitto"
Changed 645:"thecodingmachine/gotenberg" to 506:"gotenberg"
Changed 390:"none-directly. " to 20:"uncategorised"
Changed 403:"cifs" to 269:"samba"
Changed 406:"ngnx" to 10:"nginx"
Split 661:"jvm (various kotlin- and scala-based frameworks)" into 124:"java", 41
2:"kotlin", 33:"scala"
Changed 417:"(other dependencies)" to 20:"uncategorised"
Changed 439:"zabbix monitoring " to 419:"zabbix"
Changed 662:"freereradius" to 440:"freeradius"
Changed 444:"cassandra" to 620:"apache cassandra"
Split 446:"elk" into 150:"elasticsearch", 657:"logstash", 337:"kibana"
Changed 459:"probably others" to 20:"uncategorised"
Changed 461:"maridb" to 6:"mariadb"
Changed 467:"maradb " to 6:"mariadb"
Changed 475:"rabbitmq " to 542:"rabbitmq"
Changed 53:"does the hypervisor (vmware vsphere) count?" to 531:"vmware"
Changed 486:"n/a" to 20:"uncategorised"
Changed 488:"yes" to 20:"uncategorised"
Changed 493:"ngnix" to 10:"nginx"
Changed 494:"no idea" to 20:"uncategorised"
Changed 495:"who knows haha " to 20:"uncategorised"
Changed 496:"[...]" to 20:"uncategorised"
Changed 644:"apache/tika" to 505:"tika"
Split 512:"snap/flatpack" into 666:"snap", 705:"flatpack"
Changed 522:"i'm probably forgetting things." to 20:"uncategorised"
Changed 533:"others" to 20:"uncategorised"
Changed 555:"heterogenous no preference" to 20:"uncategorised"
Changed 561:"not sure!" to 20:"uncategorised"
Changed 562:"probably all of them :)" to 20:"uncategorised"
Changed 565:"..." to 20:"uncategorised"
Changed 567:"pre-requisites from the services stated above" to 20:"uncategorised
"
Changed 571:" " to 20:"uncategorised"
Changed 572:"there's definitely other things inside containers but that's the on
ly one with its own container." to 20:"uncategorised"
Changed 584:"and i don't really now..." to 20:"uncategorised"
Changed 585:"a lot more i don't even really know about.." to 20:"uncategorised"
Changed 590:"ngninx" to 10:"nginx"
Changed 610:"samb" to 269:"samba"
Changed 611:"vmware esxi" to 210:"esxi"
Changed 624:"no" to 20:"uncategorised"
Changed 634:"unkown" to 20:"uncategorised"
Changed 659:"dotnet core" to 91:".net"
Changed 676:"more to come" to 20:"uncategorised"
Changed 685:"aoeu" to 20:"uncategorised"
```

```
Changed 686:"aoeu, aoeu" to 20:"uncategorised"
```

APPENDIX C
RAW RESULTS

The tables in this section contain the raw answers for each question, the amount of times any answer was given, and how much that percentually is given the total amount of times the question was answered.

value	count	fraction
total	1751	1.000
used enterprise hardware (older than 5 years)	364	0.208
used desktop pc (older than 5 years)	358	0.204
new desktop pc (newer than 5 years)	328	0.187
low-power arm device (e.g. raspberry pi)	199	0.114
low-power x86 device (e.g. intel nuc)	168	0.096
i rent my hardware (e.g. hosting, vps)	133	0.076
new enterprise hardware (newer than 5 years)	117	0.067
uncategorised	66	0.038
nas	10	0.006
miscellaneous	8	0.005

TABLE C1: Results for question “What kind of hardware do you use?”

value	count	fraction
total	1751	1.000
debian-based linux (debian, ubuntu, etc.)	1128	0.644
unraid	83	0.047
redhat-based linux (centos, redhat, etc.)	82	0.047
windows (including windows server)	81	0.046
arch	80	0.046
bsd (freebsd, openbsd)	56	0.032
esxi	54	0.031
proxmox	42	0.024
uncategorised	42	0.024
synology dsm	22	0.013
gentoo	13	0.007
miscellaneous	11	0.006
nixos	10	0.006
other linux:	9	0.005
alpine	9	0.005
opensuse	7	0.004
vmware	5	0.003
xcp-ng	4	0.002
slackware	4	0.002
home assistant	4	0.002
macos	3	0.002
void linux	2	0.001

TABLE C2: Results for question “What operating system does your server use?”

value	count	fraction
total	1743	1.000
partially, i run containerised services along regular services	888	0.509
yes, all my services are containerised	593	0.340
no	262	0.150

TABLE C3: Results for question “Do you use containers?”

value	count	fraction
total	1460	1.000
docker	1224	0.838
lxc	123	0.084
podman	73	0.050
containerd	11	0.008
freebsd jails	11	0.008
uncategorised	10	0.007
virtual machines	4	0.003
jails	3	0.002
kvm	2	0.001
chroot jails	1	0.001
nixos provided containers	1	0.001
systemd-nspawn	1	0.001
singularity	1	0.001
bubblewrap	1	0.001
smartos zones (branded and native)	1	0.001
miscellaneous	1	0.001

TABLE C4: Results for question “Which container systems do you use?”

value	count	fraction
total	1427	1.000
no, I manage them manually	926	0.649
portainer	185	0.130
yes	131	0.092
docker-compose	69	0.048
unraid	31	0.022
proxmox	22	0.015
nomad	14	0.010
uncategorised	12	0.008
docker swarm	10	0.007
ansible	7	0.005
miscellaneous	4	0.003
synology docker	2	0.001
cockpit	2	0.001
iocage	2	0.001
caprover	2	0.001
cloudron	2	0.001
truenas	1	0.001
bastillebsd	1	0.001
yacht	1	0.001
dockercompose and watchtower	1	0.001
podman	1	0.001
pterodactyl	1	0.001

TABLE C5: Results for question “Do you use Kubernetes to manage your containers?”

value	count	fraction
total	1719	1.000
yes	1182	0.688

no	537	0.312

TABLE C6: Results for question "Do you also program?"

value	count	fraction
total	1095	1.000
0	40	0.037
1	197	0.180
2	148	0.135
3	104	0.095
4	89	0.081
5	309	0.282
6	113	0.103
7	95	0.087
Average	3.6977	
Median	4	

TABLE C7: Results for question "On average, how many days a week do you sit down to program?"

value	count	fraction
total	1121	1.000
most	372	0.332
some	304	0.271
about half	157	0.140
none	145	0.129
all	143	0.128

TABLE C8: Results for question "How much of your software do you host yourself?"

value	count	fraction
total	1594	1.000
none	794	0.498
gitlab	359	0.225
gitea	325	0.204
uncategorised	115	0.072
git	36	0.023
gogs	8	0.005
subversion	4	0.003
subversion	3	0.002
team foundation server	3	0.002
phabricator	2	0.001
gitolite	2	0.001
fossil	2	0.001
gitbucket	2	0.001
mercurial	2	0.001
cgit	1	0.001
cvs	1	0.001
gerrit	1	0.001
nexus	1	0.001
visualsvn	1	0.001

TABLE C9: Results for question "Which version control systems do you host?"

value	count	fraction
total	939	1.000
none	485	0.517
gitlab	271	0.289
jenkins	128	0.136
uncategorised	37	0.039
drone	36	0.038
miscellaneous	11	0.012
circleci	8	0.009
woodpecker	6	0.006
concourse	4	0.004
argocd	3	0.003
travis	3	0.003
teamcity	2	0.002
bamboo	1	0.001
gocd	1	0.001
octopus	1	0.001
fluxcd	1	0.001

TABLE C10: Results for question "Which CI/CD systems do you host?"

value	count	fraction
total	1584	1.000
1	386	0.244
2	302	0.191
3	199	0.126
4	165	0.104
5	196	0.124
6	61	0.039
7	28	0.018
8	40	0.025
9	8	0.005
10	83	0.052
11	6	0.004
12	12	0.008
13	1	0.001
14	2	0.001
15	20	0.013
16	4	0.003
17	2	0.001
18	1	0.001
20	29	0.018
25	7	0.004
30	9	0.006
40	3	0.002
50	5	0.003
70	1	0.001
88	1	0.001
100	5	0.003
150	1	0.001
200	1	0.001
224	1	0.001
300	1	0.001
500	1	0.001
1000	2	0.001
1500	1	0.001
Average	7.9577	

Median	3	

TABLE C11: Results for question "How many users do you have (including yourself)"

value	count	fraction
total	1201	1.000
direct family	1056	0.879
indirect family	349	0.291
friends	271	0.226
association / club	130	0.108
company	74	0.062
partner	9	0.007
web visitors	6	0.005
uncategorised	3	0.002
clients	1	0.001
school	1	0.001
students	1	0.001
co-developer	1	0.001
freelancers	1	0.001
guests	1	0.001

TABLE C12: Results for question "Who are your additional users?"

value	count	fraction
total	1205	1.000
yes	247	0.205
no	958	0.795

TABLE C13: Results for question "Do any of your users have additional access rights? (e.g. ssh login, administrative panels)?"

value	count	fraction
total	239	1.000
administrative access to software	173	0.724
terminal login (ssh)	136	0.569
root access	70	0.293
user access to shared media, documents	5	0.021
remote desktop	3	0.013
uncategorised	3	0.013
vpn	1	0.004
vm	1	0.004
hw access	1	0.004

TABLE C14: Results for question "What sort of additional access rights do your users have?"

value	count	fraction
total	244	1.000
only a few	115	0.471
only one	95	0.389
yes, all of them	34	0.139

TABLE C15: Results for question "Do all of your users have extra rights?"

value	count	fraction
total	1065	1.000
nextcloud	498	0.468
plex	352	0.331
samba	283	0.266
jellyfin	231	0.217
home assistant	169	0.159
pihole	132	0.124
sonarr	121	0.114
radarr	119	0.112
email	114	0.107
gitea	111	0.104
vaultwarden	89	0.084
matrix	89	0.084
bitwarden	87	0.082
minecraft	75	0.070
grafana	69	0.065
paperless-ng	66	0.062
wireguard	65	0.061
bookstack	61	0.057
photoprism	56	0.053
gitlab	55	0.052
calibre	52	0.049
emby	51	0.048
ombi	51	0.048
transmission	50	0.047
wordpress	46	0.043
game servers	44	0.041
syncthing	43	0.040
vpn	43	0.040
custom applications	43	0.040
nfs	40	0.038
website	39	0.037
qbittorrent	38	0.036
portainer	37	0.035
lidarr	37	0.035
openvpn	36	0.034
freshrss	34	0.032
uptime kuma	34	0.032
jackett	31	0.029
heimdall	30	0.028
mealie	30	0.028
wiki.js	29	0.027
dokuwiki	28	0.026
unifi controller	28	0.026
seafile	28	0.026
overseerr	28	0.026
deluge	26	0.024
ftp	25	0.023
homer	24	0.023
firefly iii	23	0.022
adguard	22	0.021
nginx	21	0.020
navidrome	20	0.019
apache guacamole	19	0.018
filebrowser	19	0.018
grocy	18	0.017
dns	18	0.017
foundry vtt	18	0.017
tautulli	18	0.017

nginx proxy manager	18	0.017
node-red	18	0.017
sabnzbd	17	0.016
prowlarr	17	0.016
tt rss	16	0.015
vscode	16	0.015
valheim	15	0.014
joplin	15	0.014
bazarr	14	0.013
duplicati	14	0.013
teamspeak	14	0.013
mediawiki	14	0.013
searx	14	0.013
librespeed	14	0.013
keycloak	13	0.012
mailcow	13	0.012
owncloud	13	0.012
zabbix	13	0.012
rocketchat	12	0.011
pterodactyl	12	0.011
gotify	12	0.011
openmediavault	12	0.011
youtube dl	12	0.011
miscellaneous	12	0.011
jitsi	11	0.010
ssh	11	0.010
monica	11	0.010
vikunja	11	0.010
trilium notes	11	0.010
octoprint	11	0.010
airsonic	11	0.010
organizr	11	0.010
discord bots	11	0.010
komga	10	0.009
webserver	10	0.009
mattermost	10	0.009
file server	10	0.009
privatebin	10	0.009
active directory	9	0.008
wallabag	9	0.008
backups	9	0.008
kodi	9	0.008
proxmox	9	0.008
truenas	9	0.008
miniflux	9	0.008
authelia	9	0.008
traefik	9	0.008
changedetection	9	0.008
radicale	9	0.008
xmpp	9	0.008
minio	8	0.008
pyload	8	0.008
synology cloud drive	8	0.008
pfsense	8	0.008
hedgedoc	8	0.008
tvheadend	8	0.008
code-server	8	0.008
the lounge	8	0.008
nzbget	8	0.008
podgrab	7	0.007
archivebox	7	0.007

whoogle	7	0.007
zoneminder	7	0.007
dlna	7	0.007
phpmyadmin	7	0.007
netbox	7	0.007
synology photos	7	0.007
remote desktop	7	0.007
elasticsearch	7	0.007
factorio	7	0.007
ghost	7	0.007
peertube	7	0.007
invidious	7	0.007
shinobi	7	0.007
prometheus	6	0.006
synology dsm	6	0.006
onlyoffice	6	0.006
audioserve	6	0.006
petio	6	0.006
kanboard	6	0.006
rancher	6	0.006
jupyter	6	0.006
jenkins	6	0.006
blue iris	6	0.006
freenas	6	0.006
openspeedtest	6	0.006
tandoor	6	0.006
kibana	6	0.006
readarr	6	0.006
drone ci	6	0.006
nzbhydra	6	0.006
ampache	5	0.005
icecast	5	0.005
ubooquity	5	0.005
piwigo	5	0.005
subsonic	5	0.005
webdav	5	0.005
motioneye	5	0.005
ldap	5	0.005
irc	5	0.005
huginn	5	0.005
firefly	5	0.005
amp	5	0.005
cockpit	5	0.005
authentik	5	0.005
umami analytics	5	0.005
filestash	5	0.005
wiki	5	0.005
sickchill	5	0.005
influxdb	5	0.005
adminer	5	0.005
opnsense	5	0.005
mastodon	5	0.005
cyberchef	5	0.005
none	5	0.005
jdownloader	5	0.005
dns sinkhole	5	0.005
lms	4	0.004
kimai	4	0.004
yourls	4	0.004
linkace	4	0.004
lancache	4	0.004

snapdrop	4	0.004
windows vm	4	0.004
planka	4	0.004
rss	4	0.004
n8n	4	0.004
wekan	4	0.004
librenms	4	0.004
mopidy	4	0.004
snipe-it	4	0.004
openproject	4	0.004
roundcube	4	0.004
pigallery	4	0.004
...	4	0.004
revolt chat	4	0.004
password manager	4	0.004
mpd	4	0.004
calendar	4	0.004
cups	4	0.004
freeipa	4	0.004
netdata	4	0.004
collabora	4	0.004
stash	4	0.004
bittorrent	4	0.004
mariadb	4	0.004
redis	4	0.004
rss-bridge	4	0.004
gogs	4	0.004
psitransfer	4	0.004
element	4	0.004
prosody	4	0.004
webtrees	4	0.004
unbound	4	0.004
kanban	3	0.003
caddy	3	0.003
cloudflare-ddns	3	0.003
minecraft bedrock server	3	0.003
caldav	3	0.003
traccar	3	0.003
recipes	3	0.003
web	3	0.003
cryptpad	3	0.003
standard notes	3	0.003
asterisk	3	0.003
apache web server	3	0.003
speedtest	3	0.003
others	3	0.003
kavita	3	0.003
overleaf	3	0.003
metube	3	0.003
netboot xyz	3	0.003
ntp	3	0.003
hammond	3	0.003
invoiceninja	3	0.003
scrutiny	3	0.003
synology filestation	3	0.003
magic mirror	3	0.003
iobroker	3	0.003
veeam	3	0.003
omv	3	0.003
photo gallery	3	0.003
nitter	3	0.003

frigate	3	0.003
woodpecker	3	0.003
freepbx	3	0.003
filerun	3	0.003
pivpn	3	0.003
git	3	0.003
rainloop	3	0.003
storage	3	0.003
papermerge	3	0.003
boinc	3	0.003
7 days to die	3	0.003
tubesync	3	0.003
watchtower	3	0.003
lazylibrarian	3	0.003
pbx	3	0.003
home automation	3	0.003
tor	3	0.003
babybuddy	3	0.003
owncast	3	0.003
afp	3	0.003
libreddit	3	0.003
dozzle	3	0.003
redmine	3	0.003
scanservjs	3	0.003
nas	3	0.003
taiga	3	0.003
shaarli	3	0.003
whiteboard	3	0.003
requesterr	3	0.003
splunk	3	0.003
confluence	3	0.003
photoview	3	0.003
healthchecks	3	0.003
speedtest tracker	3	0.003
ghost blog	3	0.003
afs	3	0.003
time machine	3	0.003
mumble	3	0.003
telegraf	3	0.003
baikal	3	0.003
homebridge	3	0.003
pasta	3	0.003
jira	3	0.003
logstash	3	0.003
docspell	2	0.002
discourse	2	0.002
esphome	2	0.002
chia	2	0.002
logitech media server	2	0.002
ansible awx	2	0.002
unms	2	0.002
mythtv	2	0.002
koel	2	0.002
etherpad	2	0.002
kasm	2	0.002
moodle	2	0.002
kitana	2	0.002
gokapi	2	0.002
cloud storage	2	0.002
vnc	2	0.002
zammad	2	0.002

beehive	2	0.002
chronograf	2	0.002
sql	2	0.002
pxe	2	0.002
gollum	2	0.002
photonix	2	0.002
sonarqube	2	0.002
minimalist-web-notepad	2	0.002
mozilla syncserver	2	0.002
and more	2	0.002
mailhog	2	0.002
channels dvr	2	0.002
snapcast	2	0.002
matomo	2	0.002
pleroma	2	0.002
libreoffice	2	0.002
docker-registry	2	0.002
littlelink	2	0.002
telegram bots	2	0.002
blog	2	0.002
gemini capsule	2	0.002
search engine	2	0.002
tiddlywiki	2	0.002
chevereto	2	0.002
openhab	2	0.002
poste.io	2	0.002
focalboard	2	0.002
shadowsocks	2	0.002
rclone	2	0.002
dsmr reader	2	0.002
papermc	2	0.002
cctv	2	0.002
ansible	2	0.002
ark	2	0.002
pdf-toolbox	2	0.002
octofarm	2	0.002
duckdns	2	0.002
csgo server	2	0.002
diskspeed	2	0.002
goaccess	2	0.002
mongodb	2	0.002
swag	2	0.002
wifi	2	0.002
dhcp	2	0.002
rtorrent	2	0.002
nextcloud talk	2	0.002
postgresql	2	0.002
mysql	2	0.002
shiori	2	0.002
nightscout	2	0.002
postfix	2	0.002
squid	2	0.002
outline	2	0.002
glances	2	0.002
graylog	2	0.002
quassel	2	0.002
windows fileserver	2	0.002
mailinabox	2	0.002
iscsi	2	0.002
youtrack	2	0.002
handbrake	2	0.002

webhosting	2	0.002
owntracks	2	0.002
3cx phonesystem	2	0.002
jabber	2	0.002
satisfactory	2	0.002
terraria	2	0.002
statping	2	0.002
nexus	2	0.002
directus	2	0.002
cocalc	2	0.002
sharry	2	0.002
penpot	2	0.002
docker-mailserver	2	0.002
sab	2	0.002
mqtt	2	0.002
noip	2	0.002
resilio sync	2	0.002
librephotos	2	0.002
databases	2	0.002
headphones	2	0.002
open eats	2	0.002
www	2	0.002
teslamate	2	0.002
backuppc	2	0.002
media server	2	0.002
ralph	2	0.002
couchpotato	2	0.002
smokeping	2	0.002
zigbee	2	0.002
open rct2	2	0.002
hauk	2	0.002
drupal	2	0.002
checkmk	2	0.002
vimwiki	2	0.002
linkding	2	0.002
blocky	2	0.002
harbor	2	0.002
smallstep	2	0.002
ntop	2	0.002
blender	2	0.002
makemkv	2	0.002
plesk	2	0.002
clarkson	2	0.002
roon	2	0.002
duplicacy	2	0.002
deemix	2	0.002
link shortener	1	0.001
kopano	1	0.001
dovecot	1	0.001
windows server 2022 for email migrations for work	1	0.001
xmr miner	1	0.001
bepasty	1	0.001
protonmail-bridge	1	0.001
limesurvey	1	0.001
carddav	1	0.001
ehjortberg/daikin-web	1	0.001
bucket storage for backups	1	0.001
yadms	1	0.001
chart museum	1	0.001
ubitquity	1	0.001
kiddo lullaby (on github)	1	0.001

email relay	1	0.001
usenet	1	0.001
keeweb	1	0.001
convos	1	0.001
wikiless	1	0.001
″startpage″ (html shortcut page for browser startup)	1	0.001
munin	1	0.001
supysonic	1	0.001
rhasspi	1	0.001
taisun	1	0.001
pgadmin	1	0.001
tilt.pi	1	0.001
domaiod	1	0.001
azuracast	1	0.001
omada controller	1	0.001
friendica	1	0.001
ivatar	1	0.001
archisteamfarm	1	0.001
netboot	1	0.001
superset	1	0.001
synology audio station	1	0.001
synology active backup	1	0.001
ff send	1	0.001
ferdi	1	0.001
media management portal	1	0.001
media request portal	1	0.001
bind dns	1	0.001
openldap	1	0.001
certbot	1	0.001
sonatype nexus	1	0.001
mta	1	0.001
dns-query	1	0.001
dns-master	1	0.001
iot	1	0.001
..	1	0.001
hashicorp vault	1	0.001
ad uc	1	0.001
adblock	1	0.001
btcpay	1	0.001
cloudflared	1	0.001
pixel fed	1	0.001
him hub	1	0.001
tf-viewer	1	0.001
ackee	1	0.001
booksing	1	0.001
christmas community	1	0.001
git-ls-remote	1	0.001
h5ai	1	0.001
iredmail	1	0.001
piped youtube	1	0.001
mailtrain	1	0.001
erxes	1	0.001
libarr (docker)	1	0.001
status monitoring	1	0.001
download manager	1	0.001
reddit bot	1	0.001
smart home	1	0.001
planks	1	0.001
polr	1	0.001
excalidraw	1	0.001
openbooks	1	0.001

draw.io	1	0.001
tasmoadmin	1	0.001
simpletask	1	0.001
tellico	1	0.001
file	1	0.001
web hosting panel (centos web panel)	1	0.001
nc	1	0.001
network controller	1	0.001
sia (blockchain cloud storage)	1	0.001
kiwix	1	0.001
monitorss	1	0.001
jmusicbot (for music on discord)	1	0.001
insurgency:sandstorm	1	0.001
spacedeck	1	0.001
storybookui	1	0.001
xeogl & model.viewer	1	0.001
calendso	1	0.001
xbvr	1	0.001
gloomhaven companion	1	0.001
novnc	1	0.001
proxy server for other services	1	0.001
media	1	0.001
rss reader	1	0.001
encodarr	1	0.001
mud	1	0.001
imap	1	0.001
endlessh	1	0.001
sinusbot	1	0.001
h@h	1	0.001
beets	1	0.001
vmware	1	0.001
event ticket system	1	0.001
sip	1	0.001
partkeepr	1	0.001
zulip	1	0.001
linuxgsm	1	0.001
ubuntu-playground	1	0.001
pydio	1	0.001
podman	1	0.001
synology surveillance station	1	0.001
synology moments	1	0.001
photofield	1	0.001
services users interact with:	1	0.001
all current services:	1	0.001
minecraft paper	1	0.001
backblaze-personal-wine	1	0.001
ddclient	1	0.001
multi-scrobbler	1	0.001
unifi-poller	1	0.001
vuegraf	1	0.001
authoritative dns	1	0.001
recursive dns	1	0.001
media player	1	0.001
music player	1	0.001
web cache	1	0.001
ups	1	0.001
konga	1	0.001
teedy	1	0.001
router	1	0.001
internet access	1	0.001
wireless bridge	1	0.001

home server	1	0.001
ultrasonics	1	0.001
vigil	1	0.001
xbackboxe	1	0.001
plausible	1	0.001
too many to name	1	0.001
mycroft	1	0.001
amplipi	1	0.001
simply shorten (url shortener)	1	0.001
esxi	1	0.001
eco server	1	0.001
sismics reader	1	0.001
dashy	1	0.001
elastic stack	1	0.001
storj node	1	0.001
database	1	0.001
visualization	1	0.001
urbit	1	0.001
channels-dvr-plex-xmltv-proxy	1	0.001
docker-aria2-with-webui	1	0.001
kutt	1	0.001
mylar3	1	0.001
pluto-for-channels	1	0.001
samsung-tvplus-for-channels	1	0.001
stirr-for-channels	1	0.001
megatv	1	0.001
vsphere	1	0.001
citrix	1	0.001
xteve	1	0.001
docker	1	0.001
unraid	1	0.001
wger	1	0.001
mango	1	0.001
windows domain controller	1	0.001
media acquisition and management tools	1	0.001
karaoke	1	0.001
tdarr	1	0.001
suitecrm	1	0.001
sshwifty (web ssh)	1	0.001
remotely	1	0.001
rutorrent	1	0.001
melie	1	0.001
iot api backend	1	0.001
passbolt	1	0.001
shlink	1	0.001
yaccy	1	0.001
webmin	1	0.001
servarr	1	0.001
wol service	1	0.001
flask	1	0.001
serviio	1	0.001
bubbleupnp	1	0.001
streaming media	1	0.001
prtg monitoring	1	0.001
irc bots	1	0.001
hastebin	1	0.001
specialized database	1	0.001
openerp	1	0.001
cloud commander	1	0.001
housewrecker/gaps	1	0.001
squeezeserver	1	0.001

media streaming services	1	0.001
ark:survival evolved	1	0.001
apprise	1	0.001
vcenter	1	0.001
omni	1	0.001
agario	1	0.001
avorion	1	0.001
call of duty: world at war	1	0.001
call of duty: united offensive	1	0.001
colony survival	1	0.001
don't starve together	1	0.001
artifactory	1	0.001
v1x1.tv	1	0.001
restic	1	0.001
ipfs	1	0.001
diskover	1	0.001
zeronet	1	0.001
dailynotes	1	0.001
document server	1	0.001
xrdp	1	0.001
tiddlyhost	1	0.001
coinbin	1	0.001
media collection	1	0.001
simplelogin	1	0.001
fathom	1	0.001
gossa	1	0.001
task manager (webact)	1	0.001
stringer	1	0.001
phpvirtualbox (inside of a container)	1	0.001
two reverse proxies	1	0.001
spotweb	1	0.001
gyserver	1	0.001
rpi-nagyszoba	1	0.001
urbackup	1	0.001
rtmp on nginx	1	0.001
osticket	1	0.001
fileshelter	1	0.001
monit	1	0.001
piaware	1	0.001
pinedocs	1	0.001
bluecherry	1	0.001
ccujack	1	0.001
traefik-forward-auth	1	0.001
gotty	1	0.001
gohugo	1	0.001
sonnar	1	0.001
application management panel	1	0.001
mega_nz	1	0.001
infrared proxy	1	0.001
ajenti	1	0.001
cachet	1	0.001
books	1	0.001
diskstation	1	0.001
moments	1	0.001
ors	1	0.001
rds hosted apps	1	0.001
starbound	1	0.001
email backups	1	0.001
(al)pine	1	0.001
dnote	1	0.001
d-note	1	0.001

paperwork	1	0.001
mayan edms	1	0.001
securityspy	1	0.001
smtp4dev	1	0.001
omnidb	1	0.001
qbit	1	0.001
phpipam	1	0.001
cryptofolio	1	0.001
floccus	1	0.001
minetest	1	0.001
mailman	1	0.001
sentry	1	0.001
teddit	1	0.001
docassemble	1	0.001
vdi	1	0.001
rundeck	1	0.001
orangesrum	1	0.001
baserow	1	0.001
erpnext	1	0.001
s3 backup endpoint	1	0.001
distcc	1	0.001
ztncui	1	0.001
so are	1	0.001
streaming services	1	0.001
transcoding services	1	0.001
moonlight	1	0.001
nexterp	1	0.001
hassio	1	0.001
chibisafe	1	0.001
sichchill	1	0.001
watcher	1	0.001
gentoo distcc container	1	0.001
webmail	1	0.001
hypervisor hosting	1	0.001
download station	1	0.001
dsm	1	0.001
wireless printing	1	0.001
reddiscordbot	1	0.001
k3s	1	0.001
too many to list	1	0.001
amcrest nvr	1	0.001
matamo	1	0.001
cronnit	1	0.001
media management	1	0.001
ignition automation	1	0.001
forgery vtt	1	0.001
pinry	1	0.001
engenius ezmaster	1	0.001
proxmox backup server	1	0.001
linx	1	0.001
milvus	1	0.001
droppy	1	0.001
qrls	1	0.001
theia	1	0.001
the subtitle one	1	0.001
saas only	1	0.001
taskwarrior	1	0.001
snikket	1	0.001
rstudio server	1	0.001
shiny server	1	0.001
ml-workspace	1	0.001

jfrog	1	0.001
dying	1	0.001
xpenology for surveillance	1	0.001
monitoring	1	0.001
bitcoind	1	0.001
pelican	1	0.001
smtp	1	0.001
sniproxy	1	0.001
thespaghettidetective	1	0.001
urlshortener	1	0.001
virtual desktops	1	0.001
miscellany	1	0.001
lineage-ota,	1	0.001
minecraft overviewer	1	0.001
odoo	1	0.001
libre speedtest	1	0.001
mesh central	1	0.001
neko & neko-rooms	1	0.001
freetube	1	0.001
lanraragi	1	0.001
hydrus	1	0.001
nodebb	1	0.001
shell accounts	1	0.001
terraforming mars	1	0.001
iis web server	1	0.001
prawlarr	1	0.001
synology stack office drive	1	0.001
funkwhale	1	0.001
i librarian	1	0.001
visual studio	1	0.001
aria2ng	1	0.001
photo slideshow	1	0.001
borg backup	1	0.001
weewx	1	0.001
git (klaus + git user)	1	0.001
buildbot	1	0.001
keepass	1	0.001
vault	1	0.001
pypi	1	0.001
hoppscotch	1	0.001
sensu	1	0.001
jupyterhub	1	0.001
cleanarr	1	0.001
posterr	1	0.001
personal cloud	1	0.001
media services	1	0.001
simpletorrent	1	0.001
pepperminty wiki	1	0.001
several bgp daemons w/ full tables	1	0.001
several mikrotik chr	1	0.001
xowa	1	0.001
rustdesk	1	0.001
named	1	0.001
ulogger	1	0.001
freeradius	1	0.001
flaresolverr	1	0.001
remmina (guacamole remote management server)	1	0.001
netatalk	1	0.001
nagios	1	0.001
pistar	1	0.001
zerotier	1	0.001

perforce	1	0.001
openstreetmap	1	0.001
open source routing machine	1	0.001
wazuh	1	0.001
subversion	1	0.001
cifs	1	0.001
torrserver	1	0.001
softwarr (auto media downloader)	1	0.001
imessage	1	0.001
dns (next dns + knot)	1	0.001
dyndns	1	0.001
pwm	1	0.001
manager accounting	1	0.001
mstream	1	0.001
lan streaming	1	0.001
krusader	1	0.001
photo server	1	0.001
docker-cura	1	0.001
iperf-server	1	0.001
static-site	1	0.001
radius-wifi auth	1	0.001
hdhomerun	1	0.001
vps	1	0.001
letsencrypt-companion	1	0.001
croc	1	0.001
ubnt controller	1	0.001
chronos	1	0.001
jami	1	0.001
cowyo	1	0.001
ete server	1	0.001
myflix	1	0.001
julia	1	0.001
docusaurus	1	0.001
booksonic-air	1	0.001
dashmachine	1	0.001
qnap nas	1	0.001
teamcity	1	0.001
caprover	1	0.001
development environment	1	0.001
wsus	1	0.001
pufferpanel	1	0.001
iscsi targets	1	0.001
virtualized pc systems	1	0.001
dsmr-mariadb	1	0.001
sonos-api	1	0.001
clarkson-mysql	1	0.001
github-action-runner	1	0.001
tachidesk	1	0.001
voip	1	0.001
bots/automation scripts	1	0.001
rsync (fallback for when replicating data from a non-zfs enabled peer)	1	0.001
metabase	1	0.001
website-portfolio	1	0.001
http	1	0.001
phabricator	1	0.001
msgsync	1	0.001
znc	1	0.001
cops	1	0.001
simpleid	1	0.001
torrent	1	0.001
libretranslate	1	0.001

horahora	1	0.001
arkime	1	0.001
flood	1	0.001
web hosting panel	1	0.001
virtual workstations	1	0.001
wolfenstein enemy territory server	1	0.001
phoscon	1	0.001
slurm	1	0.001
shairport (airplay)	1	0.001
sharex server	1	0.001
a variety of music servers	1	0.001
aoeu	1	0.001
bible	1	0.001
framadate	1	0.001
observium	1	0.001
iptv	1	0.001
mergerfs	1	0.001
mistborn	1	0.001
network_ups_tools	1	0.001
qb	1	0.001
loki	1	0.001
promtail	1	0.001
coredns	1	0.001
synology calendar	1	0.001
ms exchange	1	0.001

TABLE C16: Results for question "What end-user services do you host?"

value	**count**	**fraction**
total	880	1.000
nginx	396	0.450
php	348	0.395
mysql	287	0.326
apache	258	0.293
postgresql	241	0.274
mariadb	238	0.270
uncategorised	224	0.255
node.js	203	0.231
python	131	0.149
redis	87	0.099
docker	70	0.080
dovecot	64	0.073
traefik	55	0.062
postfix	50	0.057
go	50	0.057
sqlite	48	0.055
caddy	46	0.052
mongodb	38	0.043
java	30	0.034
.net	27	0.031
wireguard	27	0.031
influxdb	26	0.030
pi-hole	21	0.024
proxmox	20	0.023
haproxy	19	0.022
samba	19	0.022
bind	18	0.020
nginx proxy manager	17	0.019
flask	17	0.019

portainer	15	0.017
openvpn	14	0.016
rust	12	0.014
zfs	12	0.014
ruby	11	0.013
sonarr	11	0.013
radarr	11	0.013
elasticsearch	11	0.013
c#	10	0.011
nfs	10	0.011
authelia	9	0.010
kvm	9	0.010
django	9	0.010
microsoft sql server	9	0.010
plex	8	0.009
ansible	8	0.009
ruby on rails	8	0.009
mosquitto	8	0.009
spamassassin	7	0.008
fail2ban	7	0.008
prometheus	7	0.008
grafana	7	0.008
node-red	7	0.008
vuejs	6	0.007
ssh	6	0.007
telegraf	6	0.007
javascript	6	0.007
freeipa	6	0.007
openldap	6	0.007
esxi	6	0.007
mqtt	6	0.007
spring	5	0.006
c	5	0.006
c++	5	0.006
apache tomcat	5	0.006
mailcow	5	0.006
rspamd	5	0.006
transmission	5	0.006
linux	5	0.006
lxc	5	0.006
unbound	5	0.006
let's encrypt	5	0.006
certbot	5	0.006
mono	5	0.006
home assistant	5	0.006
lighttpd	5	0.006
pfsense	5	0.006
git	4	0.005
minio	4	0.005
docker-compose	4	0.005
rsync	4	0.005
qemu	4	0.005
qbittorrent	4	0.005
truenas	4	0.005
perl	4	0.005
adguard-home	4	0.005
cloudflare-ddns	4	0.005
watchtower	4	0.005
jackett	4	0.005
iis	4	0.005
rabbitmq	4	0.005

ubuntu	4	0.005
zerotier	3	0.003
dns	3	0.003
dhcp	3	0.003
sabnzbd	3	0.003
etc	3	0.003
ceph	3	0.003
borg	3	0.003
cloudflare	3	0.003
uwsgi	3	0.003
nomad	3	0.003
npm	3	0.003
synapse	3	0.003
lidarr	3	0.003
calibre	3	0.003
tor	3	0.003
swag	3	0.003
unifi-controller	3	0.003
unraid	3	0.003
bash	3	0.003
ffmpeg	3	0.003
sendmail	3	0.003
ldap	3	0.003
wordpress	3	0.003
asp.net	3	0.003
zabbix	3	0.003
freeradius	3	0.003
cron	3	0.003
keycloak	3	0.003
logstash	3	0.003
scala	2	0.002
reactjs	2	0.002
rdp	2	0.002
vouch proxy	2	0.002
haskell	2	0.002
opnsense	2	0.002
dnsmasq	2	0.002
memcached	2	0.002
docker registry	2	0.002
freenas	2	0.002
prowlarr	2	0.002
fastapi	2	0.002
laravel	2	0.002
openssh	2	0.002
prosody	2	0.002
freepbx	2	0.002
active directory	2	0.002
html	2	0.002
nzbget	2	0.002
powerdns	2	0.002
asterisk	2	0.002
squid	2	0.002
isc-dhcp-server	2	0.002
kibana	2	0.002
elixir	2	0.002
sogo	2	0.002
dtrace	2	0.002
k3s	2	0.002
unifi	2	0.002
open media vault	2	0.002
kotlin	2	0.002

gitlab	2	0.002
ombi	2	0.002
pterodactyl	2	0.002
kubernetes	2	0.002
phpmyadmin	2	0.002
tika	2	0.002
gotenberg	2	0.002
percona	2	0.002
podman	2	0.002
vmware	2	0.002
ufw	2	0.002
lxd	2	0.002
plex meta manager	2	0.002
roundcube	2	0.002
apache cassandra	2	0.002
snap	2	0.002
own container registry	1	0.001
drone ci	1	0.001
various databases	1	0.001
various webservers	1	0.001
ntp	1	0.001
chef	1	0.001
vnc	1	0.001
email stack	1	0.001
torrentor	1	0.001
qumine	1	0.001
k8s-dns-api	1	0.001
nxfilter	1	0.001
heimdall	1	0.001
mine-os	1	0.001
exchange 2016	1	0.001
xcp-ng	1	0.001
virtual io server	1	0.001
hardware management console	1	0.001
libvirt	1	0.001
mediawiki	1	0.001
unrealircd	1	0.001
mit kerberos	1	0.001
ll::ng	1	0.001
hashicorp vault	1	0.001
borgmatic	1	0.001
opendkim	1	0.001
opendmarc	1	0.001
infrared (minecraft reverse proxy)	1	0.001
etcd	1	0.001
readarr	1	0.001
nmbd	1	0.001
tcpsvd	1	0.001
terraform	1	0.001
varnish	1	0.001
postgrey	1	0.001
couchdb	1	0.001
syncthing	1	0.001
cockroschdb	1	0.001
univention ucs	1	0.001
tomahawk	1	0.001
agate	1	0.001
opensmtpd	1	0.001
gmid	1	0.001
pass	1	0.001
flood	1	0.001

jfa-go	1	0.001
searx	1	0.001
exim	1	0.001
hugo	1	0.001
json	1	0.001
siad docker	1	0.001
openwrt	1	0.001
nix	1	0.001
jenkins	1	0.001
dbeaver for all sql	1	0.001
caldav	1	0.001
mordormud	1	0.001
psad	1	0.001
attendize	1	0.001
shinobi	1	0.001
ca	1	0.001
kms	1	0.001
binhex-qbittorrentvpn	1	0.001
blueiris	1	0.001
bookstack	1	0.001
dozzle	1	0.001
filebrowser	1	0.001
komga	1	0.001
maloja	1	0.001
minecraft-server	1	0.001
mylar3	1	0.001
n8n	1	0.001
openeats	1	0.001
muximux	1	0.001
photostructure	1	0.001
red-discordbot	1	0.001
speedtest	1	0.001
snippet-box	1	0.001
tautulli	1	0.001
terraria-server	1	0.001
mailavenger	1	0.001
nfs ganesha	1	0.001
tinc	1	0.001
sshfs	1	0.001
hostapd	1	0.001
kodi	1	0.001
ejabberd	1	0.001
mpd	1	0.001
rtorrent	1	0.001
openntpd	1	0.001
network ups tools	1	0.001
rclone	1	0.001
sqli	1	0.001
discord.js	1	0.001
amavis	1	0.001
cuda	1	0.001
v4l	1	0.001
vtun	1	0.001
otp	1	0.001
erlang vm	1	0.001
openhttpd	1	0.001
relayd	1	0.001
oracledb	1	0.001
goland	1	0.001
java enterprise	1	0.001
lucee	1	0.001

glassfish	1	0.001
pandoc	1	0.001
imagemagick	1	0.001
yacht	1	0.001
addy-docker-proxy	1	0.001
ngircd	1	0.001
phoenix	1	0.001
rust rocket	1	0.001
go server	1	0.001
rocket server	1	0.001
mail in a box (separate server aggregating dns and all mail services)	1	0.001
nsd	1	0.001
smtp	1	0.001
bazarr	1	0.001
deno	1	0.001
openjdk	1	0.001
steam	1	0.001
saltstack	1	0.001
dnsdist	1	0.001
knot resolver	1	0.001
sonatype nexus	1	0.001
emby	1	0.001
nedb	1	0.001
esphome	1	0.001
zigbee2mqtt	1	0.001
mysql/vitess	1	0.001
minotar	1	0.001
zookeeper	1	0.001
argo	1	0.001
objectpascal	1	0.001
ftp	1	0.001
nas	1	0.001
k8s	1	0.001
c# (kestrel)	1	0.001
c# (http.sys)	1	0.001
ddclient	1	0.001
solr	1	0.001
rds with apps	1	0.001
hlds	1	0.001
vmware vcenter	1	0.001
noip	1	0.001
offlineimap	1	0.001
imapsync	1	0.001
samba-vfs-modules	1	0.001
afp	1	0.001
pho	1	0.001
custom reverse proxy	1	0.001
gatsbyjs	1	0.001
yunohost	1	0.001
smallstep ca	1	0.001
tailscale	1	0.001
web	1	0.001
cyrus	1	0.001
vmware horizon	1	0.001
vmware vsan	1	0.001
backblaze b2	1	0.001
iptables	1	0.001
promtail	1	0.001
consul	1	0.001
vault	1	0.001
mode.	1	0.001

fastcgi	1	0.001
duplicati	1	0.001
frappe	1	0.001
mailman	1	0.001
wat	1	0.001
oracle enterprise	1	0.001
coldfusion	1	0.001
deluge	1	0.001
shell	1	0.001
openstack	1	0.001
phpipam	1	0.001
courier email server	1	0.001
ampache	1	0.001
traefik-forward-auth	1	0.001
dockerproxy	1	0.001
bitwarden_backup	1	0.001
home-assistant_appdaemon	1	0.001
home-assistant_deconz	1	0.001
code-server	1	0.001
containous/whoami	1	0.001
various db containers	1	0.001
snmp	1	0.001
cloudflare tunnel	1	0.001
nextjs	1	0.001
iredmail	1	0.001
restic	1	0.001
postures	1	0.001
mergerfs	1	0.001
snapraid	1	0.001
librenms	1	0.001
mino3	1	0.001
gitea	1	0.001
borg backup	1	0.001
apdaemon	1	0.001
maddy (email server)	1	0.001
rancher	1	0.001
dnsrobocert	1	0.001
duckdns	1	0.001
wireshark	1	0.001
nextcloud	1	0.001
clamav	1	0.001
frp	1	0.001
spring webflux	1	0.001
spring cloud gateway	1	0.001
procmail	1	0.001
sniproxy	1	0.001
bird	1	0.001
perforce	1	0.001
apache spark	1	0.001
apache kafka	1	0.001
eclipse hono	1	0.001
apache guacamole	1	0.001
sql db	1	0.001
rocket	1	0.001
express	1	0.001
sequelize orm	1	0.001
pve	1	0.001
lightttp	1	0.001
(sometimes) open media server	1	0.001
uptime-kuma	1	0.001
deep-stacks	1	0.001

jupyter-notebook	1	0.001
nzbhydra2	1	0.001
iperf-server	1	0.001
cupsd	1	0.001
windows server roles(terminal services, network policy, active directory)	1	0.001
containerized	1	0.001
julia	1	0.001
postgis	1	0.001
timescaledb	1	0.001
dnscrypt-proxy	1	0.001
nftables	1	0.001
cvmengine	1	0.001
loki	1	0.001
reverse proxy	1	0.001
zigbee	1	0.001
debian	1	0.001
raspbian	1	0.001
centos	1	0.001
typescript	1	0.001
frida	1	0.001
azure active directory	1	0.001
windows server dns and dhcp	1	0.001
windows 10 pro	1	0.001
virtualmin	1	0.001
webmin	1	0.001
authentik	1	0.001
lxcs	1	0.001
freebsd	1	0.001
bhyve	1	0.001
kstats	1	0.001
flatpack	1	0.001

TABLE C17: Results for question "What backend technologies power your end-user services?"

value	count	fraction
total	1225	1.000
no	908	0.741
yes, but it doesn't work for everything	174	0.142
yes	143	0.117

TABLE C18: Results for question "Do you have a centralised authentication service?"

value	count	fraction
total	306	1.000
ldap	180	0.588
oauth	156	0.510
saml	59	0.193
pam	40	0.131
uncategorised	17	0.056
reverse proxy	10	0.033
kerberos	4	0.013
miscellaneous	4	0.013
header	3	0.010
private keys	2	0.007
totp	1	0.003
ssh keys	1	0.003

freeradius	1	0.003
https client certificate	1	0.003
cloudflare	1	0.003

TABLE C19: Results for question "Which mechanisms does your authentication service use?"

value	count	fraction
total	315	1.000
"fun"	281	0.892
privacy	257	0.816
self-reliance	243	0.771
price (or the lack of it)	164	0.521
unique software	128	0.406
learning	20	0.063
political	3	0.010
career development	1	0.003
data security	1	0.003
avoid censorship	1	0.003
it's the field i'm in	1	0.003

TABLE C20: Results for question "Why do you self-host?"

APPENDIX D
CATEGORISATION

The following table showcases to which services a category has been assigned. The first column shows the service name. The second column shows how many respondents indicate hosting the service. The third column shows what percentage of respondents who indicate hosting a service of this category indicate hosting this specific service. The fourth column shows what percetage of total respondents indicate hosting this service.

Rows printed in bold are not services, but the category itself. All services below a category name are assigned to that category.

Service	count	fraction within	fraction total
Adblocker	**155**	**1.000**	**0.146**
pihole	132	0.852	0.124
adguard	22	0.142	0.021
adblock	1	0.006	0.001
Bookmarking	**31**	**1.000**	**0.029**
wallabag	9	0.290	0.008
archivebox	7	0.226	0.007
linkace	4	0.129	0.004
shaarli	3	0.097	0.003
linkding	2	0.065	0.002
shiori	2	0.065	0.002
dashmachine	1	0.032	0.001
xowa	1	0.032	0.001
floccus	1	0.032	0.001
kiwix	1	0.032	0.001
Communication	**394**	**1.000**	**0.370**
email	114	0.289	0.107
matrix	89	0.226	0.084
teamspeak	14	0.036	0.013
mailcow	13	0.033	0.012
rocketchat	12	0.030	0.011
gotify	12	0.030	0.011
jitsi	11	0.028	0.010
mattermost	10	0.025	0.009
xmpp	9	0.023	0.008

the lounge	8	0.020	0.008
peertube	7	0.018	0.007
mastodon	5	0.013	0.005
irc	5	0.013	0.005
revolt chat	4	0.010	0.004
roundcube	4	0.010	0.004
prosody	4	0.010	0.004
element	4	0.010	0.004
nitter	3	0.008	0.003
asterisk	3	0.008	0.003
freepbx	3	0.008	0.003
rainloop	3	0.008	0.003
pbx	3	0.008	0.003
owncast	3	0.008	0.003
mumble	3	0.008	0.003
docker-mailserver	2	0.005	0.002
discourse	2	0.005	0.002
mailhog	2	0.005	0.002
mailinabox	2	0.005	0.002
jabber	2	0.005	0.002
3cx phonesystem	2	0.005	0.002
quassel	2	0.005	0.002
postfix	2	0.005	0.002
pleroma	2	0.005	0.002
nextcloud talk	2	0.005	0.002
poste.io	2	0.005	0.002
zulip	1	0.003	0.001
sip	1	0.003	0.001
imap	1	0.003	0.001
ms exchange	1	0.003	0.001
znc	1	0.003	0.001
msgsync	1	0.003	0.001
voip	1	0.003	0.001
teamcity	1	0.003	0.001
simplelogin	1	0.003	0.001
jami	1	0.003	0.001
mailtrain	1	0.003	0.001
iredmail	1	0.003	0.001
mta	1	0.003	0.001
friendica	1	0.003	0.001
convos	1	0.003	0.001
email relay	1	0.003	0.001
smtp	1	0.003	0.001
protonmail-bridge	1	0.003	0.001
windows server 2022 for email migrations for work	1	0.003	0.001
dovecot	1	0.003	0.001
kopano	1	0.003	0.001
mailman	1	0.003	0.001
webmail	1	0.003	0.001
snikket	1	0.003	0.001
neko & neko-rooms	1	0.003	0.001
imessage	1	0.003	0.001
Cryptocurrency	**7**	**1.000**	**0.007**
chia	2	0.286	0.002
xmr miner	1	0.143	0.001
bitcoind	1	0.143	0.001
btcpay	1	0.143	0.001
cryptofolio	1	0.143	0.001
coinbin	1	0.143	0.001
DevOps	**254**	**1.000**	**0.238**

gitea	111	0.437	0.104
gitlab	55	0.217	0.052
node-red	18	0.071	0.017
vscode	16	0.063	0.015
code-server	8	0.031	0.008
drone ci	6	0.024	0.006
jenkins	6	0.024	0.006
jupyter	6	0.024	0.006
gogs	4	0.016	0.004
splunk	3	0.012	0.003
git	3	0.012	0.003
sonarqube	2	0.008	0.002
git-ls-remote	1	0.004	0.001
storybookui	1	0.004	0.001
smtp4dev	1	0.004	0.001
distcc	1	0.004	0.001
gentoo distcc container	1	0.004	0.001
rstudio server	1	0.004	0.001
shiny server	1	0.004	0.001
ml-workspace	1	0.004	0.001
visual studio	1	0.004	0.001
arkime	1	0.004	0.001
git (klaus + git user)	1	0.004	0.001
jupyterhub	1	0.004	0.001
subversion	1	0.004	0.001
github-action-runner	1	0.004	0.001
development environment	1	0.004	0.001
julia	1	0.004	0.001
Document Manager	**82**	**1.000**	**0.077**
paperless-ng	66	0.805	0.062
papermerge	3	0.037	0.003
scanservjs	3	0.037	0.003
docspell	2	0.024	0.002
docassemble	1	0.012	0.001
i librarian	1	0.012	0.001
synology stack office drive	1	0.012	0.001
mayan edms	1	0.012	0.001
paperwork	1	0.012	0.001
document server	1	0.012	0.001
yadms	1	0.012	0.001
teedy	1	0.012	0.001
ERP/CRM	**66**	**1.000**	**0.062**
firefly iii	23	0.348	0.022
grocy	18	0.273	0.017
firefly	5	0.076	0.005
snipe-it	4	0.061	0.004
invoiceninja	3	0.045	0.003
kitana	2	0.030	0.002
ralph	2	0.030	0.002
partkeepr	1	0.015	0.001
suitecrm	1	0.015	0.001
erxes	1	0.015	0.001
openerp	1	0.015	0.001
nexterp	1	0.015	0.001
fathom	1	0.015	0.001
erpnext	1	0.015	0.001
manager accounting	1	0.015	0.001
odoo	1	0.015	0.001
File Server	**1043**	**1.000**	**0.979**
nextcloud	498	0.477	0.468

samba	283	0.271	0.266
syncthing	43	0.041	0.040
nfs	40	0.038	0.038
seafile	28	0.027	0.026
ftp	25	0.024	0.024
owncloud	13	0.012	0.012
openmediavault	12	0.012	0.011
file server	10	0.010	0.009
truenas	9	0.009	0.008
synology cloud drive	8	0.008	0.008
freenas	6	0.006	0.006
synology dsm	6	0.006	0.006
filestash	5	0.005	0.005
psitransfer	4	0.004	0.004
pigallery	4	0.004	0.004
storage	3	0.003	0.003
synology filestation	3	0.003	0.003
filerun	3	0.003	0.003
omv	3	0.003	0.003
nas	3	0.003	0.003
unms	2	0.002	0.002
resilio sync	2	0.002	0.002
gokapi	2	0.002	0.002
cloud storage	2	0.002	0.002
iscsi	2	0.002	0.002
windows fileserver	2	0.002	0.002
rclone	2	0.002	0.002
rsync (fallback for when replicating data from a non-zfs enabled peer)	1	0.001	0.001
ff send	1	0.001	0.001
sia (blockchain cloud storage)	1	0.001	0.001
pydio	1	0.001	0.001
photofield	1	0.001	0.001
citrix	1	0.001	0.001
ipfs	1	0.001	0.001
gossa	1	0.001	0.001
fileshelter	1	0.001	0.001
diskstation	1	0.001	0.001
chibisafe	1	0.001	0.001
dsm	1	0.001	0.001
droppy	1	0.001	0.001
personal cloud	1	0.001	0.001
netatalk	1	0.001	0.001
iscsi targets	1	0.001	0.001
qnap nas	1	0.001	0.001
croc	1	0.001	0.001
cifs	1	0.001	0.001
bucket storage for backups	1	0.001	0.001
Games	**183**	**1.000**	**0.172**
minecraft	75	0.410	0.070
game servers	44	0.240	0.041
foundry vtt	18	0.098	0.017
factorio	7	0.038	0.007
7 days to die	3	0.016	0.003
minecraft bedrock server	3	0.016	0.003
open rct2	2	0.011	0.002
terraria	2	0.011	0.002
satisfactory	2	0.011	0.002
csgo server	2	0.011	0.002
ark	2	0.011	0.002
papermc	2	0.011	0.002

ark:survival evolved	1	0.005	0.001
colony survival	1	0.005	0.001
insurgency:sandstorm	1	0.005	0.001
don't starve together	1	0.005	0.001
gloomhaven companion	1	0.005	0.001
artifactory	1	0.005	0.001
linuxgsm	1	0.005	0.001
infrared proxy	1	0.005	0.001
starbound	1	0.005	0.001
minetest	1	0.005	0.001
moonlight	1	0.005	0.001
minecraft paper	1	0.005	0.001
eco server	1	0.005	0.001
call of duty: united offensive	1	0.005	0.001
forgery vtt	1	0.005	0.001
minecraft overviewer	1	0.005	0.001
terraforming mars	1	0.005	0.001
agario	1	0.005	0.001
avorion	1	0.005	0.001
wolfenstein enemy territory server	1	0.005	0.001
call of duty: world at war	1	0.005	0.001
IoT	**294**	**1.000**	**0.276**
home assistant	169	0.575	0.159
unifi controller	28	0.095	0.026
homer	24	0.082	0.022
zoneminder	7	0.024	0.007
shinobi	7	0.024	0.007
blue iris	6	0.020	0.006
motioneye	5	0.017	0.005
homebridge	3	0.010	0.003
iobroker	3	0.010	0.003
home automation	3	0.010	0.003
frigate	3	0.010	0.003
nightscout	2	0.007	0.002
mqtt	2	0.007	0.002
cctv	2	0.007	0.002
dsmr reader	2	0.007	0.002
openhab	2	0.007	0.002
zigbee	2	0.007	0.002
esphome	2	0.007	0.002
teslamate	2	0.007	0.002
ccujack	1	0.003	0.001
tilt.pi	1	0.003	0.001
bluecherry	1	0.003	0.001
iot api backend	1	0.003	0.001
vigil	1	0.003	0.001
securityspy	1	0.003	0.001
vuegraf	1	0.003	0.001
unifi-poller	1	0.003	0.001
hassio	1	0.003	0.001
synology surveillance station	1	0.003	0.001
tasmoadmin	1	0.003	0.001
amcrest nvr	1	0.003	0.001
smart home	1	0.003	0.001
iot	1	0.003	0.001
ehjortberg/daikin-web	1	0.003	0.001
ubitquity	1	0.003	0.001
xpenology for surveillance	1	0.003	0.001
docker-cura	1	0.003	0.001
dsmr-mariadb	1	0.003	0.001

phoscon	1	0.003	0.001
Media Gathering	**671**	**1.000**	**0.630**
sonarr	121	0.180	0.114
radarr	119	0.177	0.112
ombi	51	0.076	0.048
transmission	50	0.075	0.047
qbittorrent	38	0.057	0.036
lidarr	37	0.055	0.035
jackett	31	0.046	0.029
overseerr	28	0.042	0.026
deluge	26	0.039	0.024
prowlarr	17	0.025	0.016
bazarr	14	0.021	0.013
youtube dl	12	0.018	0.011
organizr	11	0.016	0.010
tvheadend	8	0.012	0.008
nzbget	8	0.012	0.008
pyload	8	0.012	0.008
podgrab	7	0.010	0.007
petio	6	0.009	0.006
nzbhydra	6	0.009	0.006
readarr	6	0.009	0.006
jdownloader	5	0.007	0.005
sickchill	5	0.007	0.005
stash	4	0.006	0.004
bittorrent	4	0.006	0.004
requesterr	3	0.004	0.003
lazylibrarian	3	0.004	0.003
tubesync	3	0.004	0.003
metube	3	0.004	0.003
couchpotato	2	0.003	0.002
mythtv	2	0.003	0.002
headphones	2	0.003	0.002
deemix	2	0.003	0.002
channels dvr	2	0.003	0.002
rtorrent	2	0.003	0.002
encodarr	1	0.001	0.001
mylar3	1	0.001	0.001
xbvr	1	0.001	0.001
media acquisition and management tools	1	0.001	0.001
servarr	1	0.001	0.001
spotweb	1	0.001	0.001
sonnar	1	0.001	0.001
qbit	1	0.001	0.001
sichchill	1	0.001	0.001
download station	1	0.001	0.001
the subtitle one	1	0.001	0.001
prawlarr	1	0.001	0.001
aria2ng	1	0.001	0.001
usenet	1	0.001	0.001
cleanarr	1	0.001	0.001
posterr	1	0.001	0.001
simpletorrent	1	0.001	0.001
torrserver	1	0.001	0.001
softwarr (auto media downloader)	1	0.001	0.001
media request portal	1	0.001	0.001
torrent	1	0.001	0.001
piped youtube	1	0.001	0.001
libarr (docker)	1	0.001	0.001
qb	1	0.001	0.001

download manager	1	0.001	0.001
Media Streaming	**880**	**1.000**	**0.826**
plex	352	0.400	0.330
jellyfin	231	0.263	0.217
calibre	52	0.059	0.049
emby	51	0.058	0.048
navidrome	20	0.023	0.019
tautulli	18	0.020	0.017
sabnzbd	17	0.019	0.016
airsonic	11	0.013	0.010
komga	10	0.011	0.009
kodi	9	0.010	0.008
tvheadend	8	0.009	0.008
invidious	7	0.008	0.007
audioserve	6	0.007	0.006
subsonic	5	0.006	0.005
ubooquity	5	0.006	0.005
icecast	5	0.006	0.005
ampache	5	0.006	0.005
mopidy	4	0.005	0.004
mpd	4	0.005	0.004
lms	4	0.005	0.004
kavita	3	0.003	0.003
koel	2	0.002	0.002
snapcast	2	0.002	0.002
handbrake	2	0.002	0.002
roon	2	0.002	0.002
plesk	2	0.002	0.002
media server	2	0.002	0.002
logitech media server	2	0.002	0.002
stirr-for-channels	1	0.001	0.001
myflix	1	0.001	0.001
rutorrent	1	0.001	0.001
tdarr	1	0.001	0.001
megatv	1	0.001	0.001
xteve	1	0.001	0.001
serviio	1	0.001	0.001
samsung-tvplus-for-channels	1	0.001	0.001
synology audio station	1	0.001	0.001
squeezeserver	1	0.001	0.001
books	1	0.001	0.001
streaming media	1	0.001	0.001
media	1	0.001	0.001
supysonic	1	0.001	0.001
bubbleupnp	1	0.001	0.001
azuracast	1	0.001	0.001
media collection	1	0.001	0.001
streaming services	1	0.001	0.001
transcoding services	1	0.001	0.001
lanraragi	1	0.001	0.001
funkwhale	1	0.001	0.001
media services	1	0.001	0.001
mstream	1	0.001	0.001
hdhomerun	1	0.001	0.001
media streaming services	1	0.001	0.001
openbooks	1	0.001	0.001
booksonic-air	1	0.001	0.001
sonos-api	1	0.001	0.001
tachidesk	1	0.001	0.001
pluto-for-channels	1	0.001	0.001

horahora	1	0.001	0.001
shairport (airplay)	1	0.001	0.001
a variety of music servers	1	0.001	0.001
iptv	1	0.001	0.001
channels-dvr-plex-xmltv-proxy	1	0.001	0.001
amplipi	1	0.001	0.001
konga	1	0.001	0.001
music player	1	0.001	0.001
media player	1	0.001	0.001
Miscellaneous	**840**	**1.000**	**0.789**
wordpress	46	0.055	0.043
custom applications	43	0.051	0.040
website	39	0.046	0.037
nginx	21	0.025	0.020
filebrowser	19	0.023	0.018
dns	18	0.021	0.017
duplicati	14	0.017	0.013
librespeed	14	0.017	0.013
searx	14	0.017	0.013
keycloak	13	0.015	0.012
miscellaneous	12	0.014	0.011
discord bots	11	0.013	0.010
monica	11	0.013	0.010
octoprint	11	0.013	0.010
webserver	10	0.012	0.009
privatebin	10	0.012	0.009
changedetection	9	0.011	0.008
traefik	9	0.011	0.008
authelia	9	0.011	0.008
radicale	9	0.011	0.008
active directory	9	0.011	0.008
backups	9	0.011	0.008
minio	8	0.010	0.008
pfsense	8	0.010	0.008
elasticsearch	7	0.008	0.007
whoogle	7	0.008	0.007
remote desktop	7	0.008	0.007
dlna	7	0.008	0.007
ghost	7	0.008	0.007
openspeedtest	6	0.007	0.006
kibana	6	0.007	0.006
ldap	5	0.006	0.005
huginn	5	0.006	0.005
webdav	5	0.006	0.005
cyberchef	5	0.006	0.005
authentik	5	0.006	0.005
none	5	0.006	0.005
amp	5	0.006	0.005
influxdb	5	0.006	0.005
...	4	0.005	0.004
windows vm	4	0.005	0.004
calendar	4	0.005	0.004
snapdrop	4	0.005	0.004
cups	4	0.005	0.004
freeipa	4	0.005	0.004
lancache	4	0.005	0.004
webtrees	4	0.005	0.004
unbound	4	0.005	0.004
kimai	4	0.005	0.004
mariadb	4	0.005	0.004

redis	4	0.005	0.004
logstash	3	0.004	0.003
apache web server	3	0.004	0.003
boinc	3	0.004	0.003
tor	3	0.004	0.003
baikal	3	0.004	0.003
veeam	3	0.004	0.003
magic mirror	3	0.004	0.003
babybuddy	3	0.004	0.003
afp	3	0.004	0.003
caddy	3	0.004	0.003
cloudflare-ddns	3	0.004	0.003
scrutiny	3	0.004	0.003
caldav	3	0.004	0.003
hammond	3	0.004	0.003
ntp	3	0.004	0.003
time machine	3	0.004	0.003
netboot xyz	3	0.004	0.003
others	3	0.004	0.003
traccar	3	0.004	0.003
libreddit	3	0.004	0.003
afs	3	0.004	0.003
speedtest	3	0.004	0.003
ghost blog	3	0.004	0.003
speedtest tracker	3	0.004	0.003
web	3	0.004	0.003
gemini capsule	2	0.002	0.002
sharry	2	0.002	0.002
blog	2	0.002	0.002
sab	2	0.002	0.002
noip	2	0.002	0.002
search engine	2	0.002	0.002
telegram bots	2	0.002	0.002
makemkv	2	0.002	0.002
mongodb	2	0.002	0.002
nexus	2	0.002	0.002
kasm	2	0.002	0.002
owntracks	2	0.002	0.002
webhosting	2	0.002	0.002
squid	2	0.002	0.002
mysql	2	0.002	0.002
wifi	2	0.002	0.002
moodle	2	0.002	0.002
pdf-toolbox	2	0.002	0.002
blender	2	0.002	0.002
and more	2	0.002	0.002
clarkson	2	0.002	0.002
mozilla syncserver	2	0.002	0.002
databases	2	0.002	0.002
postgresql	2	0.002	0.002
www	2	0.002	0.002
backuppc	2	0.002	0.002
octofarm	2	0.002	0.002
duplicacy	2	0.002	0.002
vnc	2	0.002	0.002
duckdns	2	0.002	0.002
diskspeed	2	0.002	0.002
hauk	2	0.002	0.002
drupal	2	0.002	0.002
blocky	2	0.002	0.002
harbor	2	0.002	0.002

pxe	2	0.002	0.002
dhcp	2	0.002	0.002
sql	2	0.002	0.002
beehive	2	0.002	0.002
smallstep	2	0.002	0.002
dns-query	1	0.001	0.001
dns-master	1	0.001	0.001
..	1	0.001	0.001
xbackboxe	1	0.001	0.001
ad uc	1	0.001	0.001
certbot	1	0.001	0.001
openldap	1	0.001	0.001
bind dns	1	0.001	0.001
cloudflared	1	0.001	0.001
ferdi	1	0.001	0.001
coredns	1	0.001	0.001
him hub	1	0.001	0.001
tf-viewer	1	0.001	0.001
synology active backup	1	0.001	0.001
christmas community	1	0.001	0.001
superset	1	0.001	0.001
netboot	1	0.001	0.001
archisteamfarm	1	0.001	0.001
ivatar	1	0.001	0.001
reddit bot	1	0.001	0.001
planks	1	0.001	0.001
domaiod	1	0.001	0.001
rhasspi	1	0.001	0.001
”startpage” (html shortcut page for browser startup)	1	0.001	0.001
mergerfs	1	0.001	0.001
aoeu	1	0.001	0.001
kiddo lullaby (on github)	1	0.001	0.001
file	1	0.001	0.001
nc	1	0.001	0.001
virtual workstations	1	0.001	0.001
flood	1	0.001	0.001
libretranslate	1	0.001	0.001
carddav	1	0.001	0.001
jmusicbot (for music on discord)	1	0.001	0.001
spacedeck	1	0.001	0.001
xeogl & model.viewer	1	0.001	0.001
calendso	1	0.001	0.001
simpleid	1	0.001	0.001
cops	1	0.001	0.001
proxy server for other services	1	0.001	0.001
mud	1	0.001	0.001
endlessh	1	0.001	0.001
sinusbot	1	0.001	0.001
h@h	1	0.001	0.001
limesurvey	1	0.001	0.001
vmware	1	0.001	0.001
event ticket system	1	0.001	0.001
http	1	0.001	0.001
ubuntu-playground	1	0.001	0.001
podman	1	0.001	0.001
website-portfolio	1	0.001	0.001
services users interact with:	1	0.001	0.001
all current services:	1	0.001	0.001
metabase	1	0.001	0.001
backblaze-personal-wine	1	0.001	0.001
ddclient	1	0.001	0.001

bots/automation scripts	1	0.001	0.001
clarkson-mysql	1	0.001	0.001
virtualized pc systems	1	0.001	0.001
wsus	1	0.001	0.001
multi-scrobbler	1	0.001	0.001
docusaurus	1	0.001	0.001
authoritative dns	1	0.001	0.001
recursive dns	1	0.001	0.001
ete server	1	0.001	0.001
web cache	1	0.001	0.001
chronos	1	0.001	0.001
letsencrypt-companion	1	0.001	0.001
ups	1	0.001	0.001
vps	1	0.001	0.001
radius-wifi auth	1	0.001	0.001
router	1	0.001	0.001
internet access	1	0.001	0.001
wireless bridge	1	0.001	0.001
home server	1	0.001	0.001
ultrasonics	1	0.001	0.001
novnc	1	0.001	0.001
too many to name	1	0.001	0.001
mycroft	1	0.001	0.001
esxi	1	0.001	0.001
static-site	1	0.001	0.001
iperf-server	1	0.001	0.001
krusader	1	0.001	0.001
dashy	1	0.001	0.001
lan streaming	1	0.001	0.001
elastic stack	1	0.001	0.001
storj node	1	0.001	0.001
database	1	0.001	0.001
visualization	1	0.001	0.001
urbit	1	0.001	0.001
dyndns	1	0.001	0.001
dns (next dns + knot)	1	0.001	0.001
docker-aria2-with-webui	1	0.001	0.001
vsphere	1	0.001	0.001
docker	1	0.001	0.001
unraid	1	0.001	0.001
mango	1	0.001	0.001
windows domain controller	1	0.001	0.001
karaoke	1	0.001	0.001
open source routing machine	1	0.001	0.001
sshwifty (web ssh)	1	0.001	0.001
remotely	1	0.001	0.001
yaccy	1	0.001	0.001
flask	1	0.001	0.001
openstreetmap	1	0.001	0.001
zerotier	1	0.001	0.001
irc bots	1	0.001	0.001
housewrecker/gaps	1	0.001	0.001
apprise	1	0.001	0.001
omni	1	0.001	0.001
v1x1.tv	1	0.001	0.001
restic	1	0.001	0.001
pistar	1	0.001	0.001
diskover	1	0.001	0.001
zeronet	1	0.001	0.001
xrdp	1	0.001	0.001
flaresolverr	1	0.001	0.001

freeradius	1	0.001	0.001
phpvirtualbox (inside of a container)	1	0.001	0.001
two reverse proxies	1	0.001	0.001
gyserver	1	0.001	0.001
rpi-nagyszoba	1	0.001	0.001
urbackup	1	0.001	0.001
rtmp on nginx	1	0.001	0.001
piaware	1	0.001	0.001
named	1	0.001	0.001
traefik-forward-auth	1	0.001	0.001
gotty	1	0.001	0.001
gohugo	1	0.001	0.001
mega_nz	1	0.001	0.001
rustdesk	1	0.001	0.001
several mikrotik chr	1	0.001	0.001
several bgp daemons w/ full tables	1	0.001	0.001
ors	1	0.001	0.001
rds hosted apps	1	0.001	0.001
email backups	1	0.001	0.001
(al)pine	1	0.001	0.001
hoppscotch	1	0.001	0.001
pypi	1	0.001	0.001
weewx	1	0.001	0.001
borg backup	1	0.001	0.001
teddit	1	0.001	0.001
vdi	1	0.001	0.001
iis web server	1	0.001	0.001
shell accounts	1	0.001	0.001
s3 backup endpoint	1	0.001	0.001
so are	1	0.001	0.001
watcher	1	0.001	0.001
hypervisor hosting	1	0.001	0.001
wireless printing	1	0.001	0.001
reddiscordbot	1	0.001	0.001
k3s	1	0.001	0.001
too many to list	1	0.001	0.001
nodebb	1	0.001	0.001
hydrus	1	0.001	0.001
cronnit	1	0.001	0.001
ignition automation	1	0.001	0.001
proxmox backup server	1	0.001	0.001
freetube	1	0.001	0.001
linx	1	0.001	0.001
milvus	1	0.001	0.001
theia	1	0.001	0.001
saas only	1	0.001	0.001
taskwarrior	1	0.001	0.001
jfrog	1	0.001	0.001
dying	1	0.001	0.001
libre speedtest	1	0.001	0.001
monitoring	1	0.001	0.001
pelican	1	0.001	0.001
sniproxy	1	0.001	0.001
thespaghettidetective	1	0.001	0.001
virtual desktops	1	0.001	0.001
miscellany	1	0.001	0.001
lineage-ota,	1	0.001	0.001
Notetaking	**36**	**1.000**	**0.034**
joplin	15	0.417	0.014
trilium notes	11	0.306	0.010

standard notes	3	0.083	0.003
minimalist-web-notepad	2	0.056	0.002
outline	2	0.056	0.002
d-note	1	0.028	0.001
dnote	1	0.028	0.001
dailynotes	1	0.028	0.001
Office Tools	**35**	**1.000**	**0.033**
hedgedoc	8	0.229	0.008
onlyoffice	6	0.171	0.006
collabora	4	0.114	0.004
overleaf	3	0.086	0.003
cryptpad	3	0.086	0.003
cocalc	2	0.057	0.002
swag	2	0.057	0.002
libreoffice	2	0.057	0.002
etherpad	2	0.057	0.002
baserow	1	0.029	0.001
excalidraw	1	0.029	0.001
draw.io	1	0.029	0.001
Organisational Database	**207**	**1.000**	**0.194**
bookstack	61	0.295	0.057
mealie	30	0.145	0.028
wiki.js	29	0.140	0.027
dokuwiki	28	0.135	0.026
mediawiki	14	0.068	0.013
tandoor	6	0.029	0.006
wiki	5	0.024	0.005
whiteboard	3	0.014	0.003
recipes	3	0.014	0.003
directus	2	0.010	0.002
gollum	2	0.010	0.002
tiddlywiki	2	0.010	0.002
open eats	2	0.010	0.002
vimwiki	2	0.010	0.002
media management	1	0.005	0.001
pepperminty wiki	1	0.005	0.001
pinedocs	1	0.005	0.001
cowyo	1	0.005	0.001
bible	1	0.005	0.001
synology calendar	1	0.005	0.001
tiddlyhost	1	0.005	0.001
booksing	1	0.005	0.001
specialized database	1	0.005	0.001
hastebin	1	0.005	0.001
wikiless	1	0.005	0.001
melie	1	0.005	0.001
wger	1	0.005	0.001
beets	1	0.005	0.001
simpletask	1	0.005	0.001
media management portal	1	0.005	0.001
tellico	1	0.005	0.001
bepasty	1	0.005	0.001
Password Manager	**191**	**1.000**	**0.179**
vaultwarden	89	0.466	0.084
bitwarden	87	0.455	0.082
dns sinkhole	5	0.026	0.005
password manager	4	0.021	0.004
hashicorp vault	1	0.005	0.001
passbolt	1	0.005	0.001
keepass	1	0.005	0.001

vault	1	0.005	0.001
keeweb	1	0.005	0.001
pwm	1	0.005	0.001
Photo Gallery	**87**	**1.000**	**0.082**
photoprism	56	0.644	0.053
synology photos	7	0.080	0.007
piwigo	5	0.057	0.005
photo gallery	3	0.034	0.003
photoview	3	0.034	0.003
photonix	2	0.023	0.002
chevereto	2	0.023	0.002
librephotos	2	0.023	0.002
pixel fed	1	0.011	0.001
synology moments	1	0.011	0.001
moments	1	0.011	0.001
pinry	1	0.011	0.001
photo slideshow	1	0.011	0.001
photo server	1	0.011	0.001
sharex server	1	0.011	0.001
RSS reader	**71**	**1.000**	**0.067**
freshrss	34	0.479	0.032
tt rss	16	0.225	0.015
miniflux	9	0.127	0.008
rss	4	0.056	0.004
rss-bridge	4	0.056	0.004
stringer	1	0.014	0.001
sismics reader	1	0.014	0.001
rss reader	1	0.014	0.001
monitorss	1	0.014	0.001
Server Management	**410**	**1.000**	**0.385**
grafana	69	0.168	0.065
portainer	37	0.090	0.035
uptime kuma	34	0.083	0.032
heimdall	30	0.073	0.028
apache guacamole	19	0.046	0.018
nginx proxy manager	18	0.044	0.017
valheim	15	0.037	0.014
zabbix	13	0.032	0.012
pterodactyl	12	0.029	0.011
ssh	11	0.027	0.010
proxmox	9	0.022	0.008
netbox	7	0.017	0.007
phpmyadmin	7	0.017	0.007
prometheus	6	0.015	0.006
rancher	6	0.015	0.006
opnsense	5	0.012	0.005
cockpit	5	0.012	0.005
adminer	5	0.012	0.005
umami analytics	5	0.012	0.005
netdata	4	0.010	0.004
librenms	4	0.010	0.004
n8n	4	0.010	0.004
watchtower	3	0.007	0.003
woodpecker	3	0.007	0.003
dozzle	3	0.007	0.003
healthchecks	3	0.007	0.003
telegraf	3	0.007	0.003
matomo	2	0.005	0.002
docker-registry	2	0.005	0.002
ansible	2	0.005	0.002

goaccess	2	0.005	0.002
ansible awx	2	0.005	0.002
glances	2	0.005	0.002
graylog	2	0.005	0.002
statping	2	0.005	0.002
chronograf	2	0.005	0.002
smokeping	2	0.005	0.002
checkmk	2	0.005	0.002
ntop	2	0.005	0.002
network controller	1	0.002	0.001
omada controller	1	0.002	0.001
loki	1	0.002	0.001
network_ups_tools	1	0.002	0.001
promtail	1	0.002	0.001
mistborn	1	0.002	0.001
observium	1	0.002	0.001
sonatype nexus	1	0.002	0.001
pgadmin	1	0.002	0.001
taisun	1	0.002	0.001
munin	1	0.002	0.001
ackee	1	0.002	0.001
h5ai	1	0.002	0.001
chart museum	1	0.002	0.001
status monitoring	1	0.002	0.001
slurm	1	0.002	0.001
web hosting panel	1	0.002	0.001
pufferpanel	1	0.002	0.001
web hosting panel (centos web panel)	1	0.002	0.001
caprover	1	0.002	0.001
ubnt controller	1	0.002	0.001
wazuh	1	0.002	0.001
nagios	1	0.002	0.001
remmina (guacamole remote management server)	1	0.002	0.001
plausible	1	0.002	0.001
ulogger	1	0.002	0.001
sensu	1	0.002	0.001
buildbot	1	0.002	0.001
mesh central	1	0.002	0.001
qrls	1	0.002	0.001
engenius ezmaster	1	0.002	0.001
matamo	1	0.002	0.001
rundeck	1	0.002	0.001
sentry	1	0.002	0.001
phpipam	1	0.002	0.001
omnidb	1	0.002	0.001
cachet	1	0.002	0.001
webmin	1	0.002	0.001
wol service	1	0.002	0.001
prtg monitoring	1	0.002	0.001
cloud commander	1	0.002	0.001
ajenti	1	0.002	0.001
vcenter	1	0.002	0.001
application management panel	1	0.002	0.001
task manager (webact)	1	0.002	0.001
monit	1	0.002	0.001
Team Collaboration	**60**	**1.000**	**0.056**
vikunja	11	0.183	0.010
kanboard	6	0.100	0.006
openproject	4	0.067	0.004
planka	4	0.067	0.004

wekan	4	0.067	0.004
kanban	3	0.050	0.003
redmine	3	0.050	0.003
taiga	3	0.050	0.003
jira	3	0.050	0.003
pasta	3	0.050	0.003
confluence	3	0.050	0.003
penpot	2	0.033	0.002
zammad	2	0.033	0.002
youtrack	2	0.033	0.002
focalboard	2	0.033	0.002
osticket	1	0.017	0.001
orangesrum	1	0.017	0.001
perforce	1	0.017	0.001
phabricator	1	0.017	0.001
framadate	1	0.017	0.001
URL shortener	**12**	**1.000**	**0.011**
yourls	4	0.333	0.004
littlelink	2	0.167	0.002
polr	1	0.083	0.001
simply shorten (url shortener)	1	0.083	0.001
link shortener	1	0.083	0.001
kutt	1	0.083	0.001
shlink	1	0.083	0.001
urlshortener	1	0.083	0.001
VPN	**150**	**1.000**	**0.141**
wireguard	65	0.433	0.061
vpn	43	0.287	0.040
openvpn	36	0.240	0.034
pivpn	3	0.020	0.003
shadowsocks	2	0.013	0.002
ztncui	1	0.007	0.001

TABLE D1: Assignment of services to categories