



COMS32300 Coursework



Sustainable Technology Proposal (version 1.0)

Sustainability Improvement at openSUSE with USB Flash Drives

Date: 21 December 2018
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Project Title
<i>Sustainability Improvement at openSUSE with USB Flash Drives</i>
Project Leader
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Project Summary
<p>I am a Board Member of the Linux Distributor openSUSE. The main sponsor is SUSE and the elected openSUSE Board has bi-weekly meetings to discuss important topics from the SUSE Management and the community about openSUSE to decide/ communicate then. The openSUSE Board comprises the Chairman (SUSE employee) and 5 elected openSUSE Members (max. 2 employees of the same company). We have Board Members from Germany, the United Kingdom, Spain, the Netherlands and Australia. The community is more international (until China and India). We provide Sustainability with a public packaging infrastructure (Open Build Service) for most used Linux distributions, reusing server hardware via Hardware Sponsorship as a possibility to sponsor us and our Travel Support Program to sponsor travels to conferences for further education/ to representing us for Community Contributors (incl. Sponsorship of conferences). I want to improve the Sustainability of openSUSE with ecological improvement with USB flash drives instead of DVDs as marketing material. We are offering DVDs with openSUSE Leap at conferences and expos at the moment. We have to order new ones with every release. It would be better for Sustainability to use USB flash drives instead of DVDs because they are reusable and don't create so much waste. DVDs are produced with plastic. USB flash drives are electronic stuff and recyclable. openSUSE users can rewrite their USB flash drives with the latest release for upgrades or new installations. So we can save money with a lower production after the first years, too.</p>
Primary SDG target
<p>SDG12.5: We offer DVDs with openSUSE Leap as giveaways at open source events at the moment. It is an ecological improvement to buy USB flash drives instead of DVDs because these are reusable and users can burn them with the latest version again. If the latest version of openSUSE Leap is released, all users with USB flash drives can rewrite his own one with the latest release. DVDs would be dumped after the expiration date of the special release. In the end, we can save additional money because we don't have to buy so many new installation media as before.</p>
Other SDG targets
<p>SDG4.4: USB flash drives should be shared everywhere on the world by our Community Members. Students and professors can teach Linux at universities with these installation mediums. Some Contributors give workshops in Linux User Groups or at open source events. So newbies can learn basic skills how to use Linux. USB flash drives are easy to use. You can achieve relevant technical skills for employments with such knowledge.</p> <p>SDG6.3: Using USB flash drives instead of DVDs is a reduction of the pollution because USB flash drives are reusable. DVDs have been disposed after the end of life. So that was a pollution. USB flash drives have a longer life time about many releases and are recyclable.</p>

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So that is a contribution to better water quality.

SDG15.9: We integrate an ecosystem into the development process with USB flash drives instead of DVDs. USB flash drives are reusable and recyclable. In addition, openSUSE users download latest releases for their installation medium. So that is an ecological benefit for all.

Trial location

openSUSE is one of the most well known Linux distribution projects in the world. We are an international community found in Nuremberg (Germany). All USB flash drives should be ordered, written and sent by our Marketing Consultant in the headquarter by SUSE. He is responsible for all the orders of marketing material. So we have one place to receive all new USB flash drives. Bills of delivery provide important information about the count of USB flash drives and these can be sent to Community Members for different events. So the trial location should be the SUSE headquarter in Nuremberg (Germany).

Trial approach

Our openSUSE Marketing Consultant is an employee by our main sponsor SUSE Linux GmbH. He is responsible for all orders of marketing material. In addition, he forwards those to Community Members for open source events. So we can count how much will be sent to which country. So the location should be the SUSE headquarter in Nuremberg. A SUSE Trainee has written a script for automated image writing (imagewriter)[1] for USB flash drives for his examination. So this can be used to burn the latest openSUSE release automatically with a robot. In the past, many thousand DVDs were produced and sponsored by our partner Open Source Press. In the first year, the estimation would be 3/4 of the count of DVDs.

Logotech Inc.[2] and KM-Werbemittel GmbH (laprinta.de)[3] are offering USB flash drives of recycled plastic and electronic. So test versions with the openSUSE logo should be enquired.

Following, every order should contain 500 flash drives with the size about 8GB by the USB flash drive manufacturer and the Marketing Consultant should look how much would be needed. Our Community Members will have the task to say that USB flash drives should be reused for next releases and everybody is only allowed to receive one of them. Such methods are tested with manually created USB flash drives at the conference FrOSCon in the last 2 years. Many openSUSE users are reusing their presents and are showing their upgraded systems. The primary audience for these presents is openSUSE newbies without big knowledge in Computer Science. They are receiving all important knowledge at these open source events and with using openSUSE then.

Some of the saved money will be invested in new hardware with many USB slots. That should be running together with the robot if new USB sticks are needed. The robot and the hardware are connected. A test script should run over different USB slots after burning if all USB flash drives would not be damaged. Damaged USB flash drives have a separate box for sending back to the manufacturer. So those can be recycled. The hardware will be shut down the rest of the time.

At the end of every year bills of delivery are counted. After the first 2 years, a reduction of 50% of requests for USB flash drives at open source events is expected. The number of downloads will increase with 80% because openSUSE users can download the iso image and don't have to wait for the next open source event.

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Estimated benefits

This project contributes to the reduction of pollution. DVDs are composed of plastics which can be used only for one image of our openSUSE Leap release. USB flash drives can be reused with every release. In addition, these mediums can be recycled and you can buy those produced with recycled material. A decreasing number about 50% for orders are expected after 2 years. Download numbers will suitable increase.

USB flash drives are handy sized and so easy to utilise that this project improves the IT education worldwide. New users can learn relevant technical skills with Linux for possible employment in technology. Finally, money can be saved because of a lower number of orders for installation mediums and low-level forwarding costs for marketing material.

Measurement of outcome

Our Release Management Team has installed Grafana[4][5] to monitor download numbers with access metrics in Apache log files. So you can receive an overview about download data of different releases on our metrics monitoring page.

An increasing number of downloads (min. quadruple) is expected with the distribution of USB flash drives because openSUSE users can reuse their USB flash drives. So the number of needed mediums will decrease. Finally, new USB flash drives are mostly ordered for Linux newbies without the knowledge about our infrastructure.

Bills of delivery for USB flash drives can give an overview of the orders compared to DVDs before. So we can compare the number of DVDs versus the number of USB flash drives and download numbers.

Potential risks to project

- SUSE Management does not support those ideas. We are receiving most money by our main sponsor SUSE Linux GmbH. So the SUSE Management has to accept our ideas.
- Potential openSUSE users want to use USB flash drives for other data than openSUSE. So there can arise expanding costs.

Sources

1. Package for imagewriter:

https://software.opensuse.org/package/imagewriter?search_term=imagewriter

2. Recycled USB flash drive by Logotech Inc.:

<https://www.logotech.com/recycled-plastic-flash-drive-fdpl275.html>

3. Recycled USB flash drive via laprinta.de by KM-Werbemittel GmbH:

<https://www.laprinta.de/recycling-usb-stick-twister>

4. Article "Announcing download.o.o access metrics" by Jimmy Berry (openSUSE, 2018):

<http://release-tools.opensuse.org/2018/06/22/download.o.o-access-metrics.html>

5. Grafana with download metrics for all openSUSE releases:

https://metrics.opensuse.org/d/osrt_access/osrt-access?orgId=1