

Regional networks for the reuse of electronic equipment

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ReUse-Computer

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Abstract

Around 90% of the environmental burden of computers is connected with their production. The lifetime of a commercially used computer is often only around three years. On the other hand, many standard computer applications such as office programs haven't been much improved in the last five years. For these reasons, the reuse of computers is ecologically and socially advantageous and favourable for reasons of efficiency. [1]

Keywords:

reuse of computers, innovative services , network co-operation,

1 PROJECT REUSE-COMPUTER

An aim of the project is to establish and expand the reuse of computers. Networks of companies for repairing, maintaining and upgrading used equipment are to be built up in two regions, namely Hamburg and Berlin. The reuse project will deal with technical, organisational and legal questions. Obstacles in acceptance will be identified to find a way of overcoming them. The networks will be designed to make the reuse of computers attractive and to improve the whole service that is connected with this.

2 GOALS

The status quo for computer reuse will be analysed for Hamburg, Berlin and several European Countries. Companies showing interest are to be offered the opportunity to be integrated in the reuse network. Rules and contracts for this co-operation, based on fair principles, will be developed. The practical reuse will begin in parallel to the build up of the network. Suppliers of used equipment will be integrated. Forms of practise for the work flow and co-operating transactions will be developed and tested. A marketing concept and a sales and distribution concept will be tested. A network for computer components will also be designed. The project team will seek

solutions for software suitable for these reused computers. Qualification modules will be worked out for interested companies and users, and a logistic system will be designed. The different environmental impacts of new and reused computers will be compared, especially in terms of logistics. Ideas for new products built up from reuse computers will be worked out and tested. [2]

3 NETWORK RESEARCH

The implementation of the local network system for reuse computers is to be accompanied by scientific research concerning the acceptance of the project and investigations about possible hindrances, conflicts and ways of co-operation and procedure. Network research is important because of prejudices against networking coming from small and medium-sized enterprises (SME). As a network supporting task to ensure durable economic success, it is necessary to elaborate practicable methods for quality guarantee and a quality management system (QMS). Furthermore, on an internet platform, network partners need to be capable of dealing with information and exchange. Combined with the long-term financial

concept, the results of practical working are to lead to an independent, neutral and economically viable co-ordination centre - the nodal point of reuse networking.

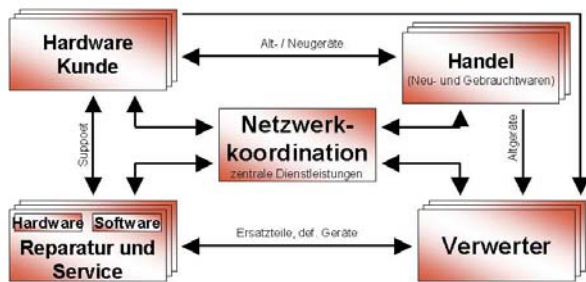


Figure 1: Structure of network

4 HARD- AND SOFTWARE PRODUCTCONCEPTS FOR THE REUSE OF ELECTRONIC EQUIPMENT

4.1 Introduction

The computer user of our days is used to buy a new computer because of the aim to link hardware and software. The hardware has to be faster because software has to be bigger and slower. Mostly there's no growing in functionality. It's the "money making" philosophy of Microsoft & Intel. We try to break through by considering hardware/software constellations for several network environments with the open software OS *Linux*.

Linux matches the following points (for ReUse)

- its free
- individual configurable
- full network capabilities
- secure
- need of min. hardware resources

4.2 Project FD Router/Firewall

The connection between the Internet and the local area network is done by a *Router*. It's responsible for directing several Internet requests from the LAN to the Internet by one Internet connection. The *Firewall* secures the traffic in and out the LAN.

Every network service uses an own port. One of the *Firewalls* job is to forward or deny this port in each direction. We tested a floppy disk solution called `fli4L`.

It provides the following services:

- router
- firewall/masquerade

- far administration (ssh, telnet, ftp)
- individual cost control
- dynamic DNS-Service
- secure Datatransfer via ipsec
- individual extendable
- user friendly configuration
- ISDN&DSL support

The main advantage in comparison to commercial offers is the flexible (Software-) extensibility. Hardware requirements:

- PC >= 486DX
- 8 MB RAM
- 2 NW-cards (DSL)
- 1NW-card+1ISDN-card
- Floppy-drive

The configuration is done with a graphic oriented tool on a Windows or Linux based computer.

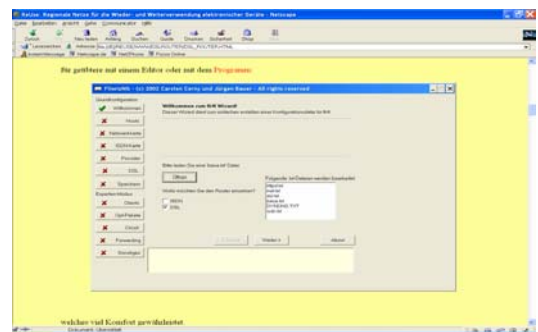


Figure 2: Configuration tool.

4.3 Project Terminalserver

At the beginning of the project we considered solutions for very slow computer hardware.

Modern software requires too much resources for this hardware.

The idea to run software on a fast server and redirect the screen output to slow clients is realized under the "Linux terminalserver project".

The clue is that the whole software "running" from users on clients in reality runs on the server.

The clients are booting from floppy-disk or PROM on nw-card starting a special Linux-kernel, connecting to the server. Then control is given to the server.

Features:

- minimal administration

- High security (no device on clients necessary)
- Hardware requirements at clients low
- Hardware requirements at server high
- complex installation procedure
- more than 5 clients require fast network links.

5 RESULT

As a result of the project, networks in Hamburg and Berlin will be established. Service and quality principles will contribute to an attractive offer for reuse computer. The resulting advantages for the network partners will be the basis of durable economic success of the networks. The networks will then contribute to the improvement of the local economy since local services will be required and more people will get access to the use of computers.

6 PROJECT PARTNERS

The Technische Universität Berlin for the build up of the network in Berlin, for ecological research and linux solutions, the i.p.f.Hamburg for the build up of the network in Hamburg, the KVA eG - Kreislauf- und Verwertungsagentur for research concerning the networks, the consulting company BfU for the development of rules for cooperation, the ARGUS - GmbH for the integration of suppliers of used PCs, the JAW and the Nutzmüll e.V. for the practical performance of reuse, the GDW Nord eG for logistical questions and the JAW and the Mook Wat e.V. for the development of qualification modules. The project is financed by the Federal Ministry of Education and Research (BMBF) by funding possibilities of sustainable consumption and new strategies of product use (e.g. re-use, joint use) in regional projects.



7 SUMMARY

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production. The lifetime of a commercially used computer is often only around three years. On the other hand, many standard computer applications such as office programs haven't been much improved in the last five years. For these reasons, the reuse of computers is ecologically and socially advantageous and favourable for reasons of efficiency.

An aim of the project is to establish and expand the reuse of computers. Networks of companies for repairing, maintaining and upgrading used equipment are to be built up in two regions, namely Hamburg and Berlin.

Companies showing interest are to be offered the opportunity to be integrated in the reuse network.

As a network supporting task to ensure durable economic success, it is necessary to elaborate practicable methods for quality guarantee and a quality management system (QMS).

The results of practical working are to lead to an independent, neutral and economically viable co-ordination centre - the nodal point of reuse networking.

Productconcepts for the reuse of electronic equipment will be developed, for example the Router/Firewall and the Terminalserver. A special service, "Rent-a-ReUse Laptop" is also being developed.

Service and quality principles will contribute to an attractive offer for reuse computer. The networks will contribute to the improvement of the local economy since local services will be required and more people will get access to the use of computers.

8 ACKNOWLEDGMENTS

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9 REFERENCES

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