

Documentation of the project

Network documentation and integrate clients into the network

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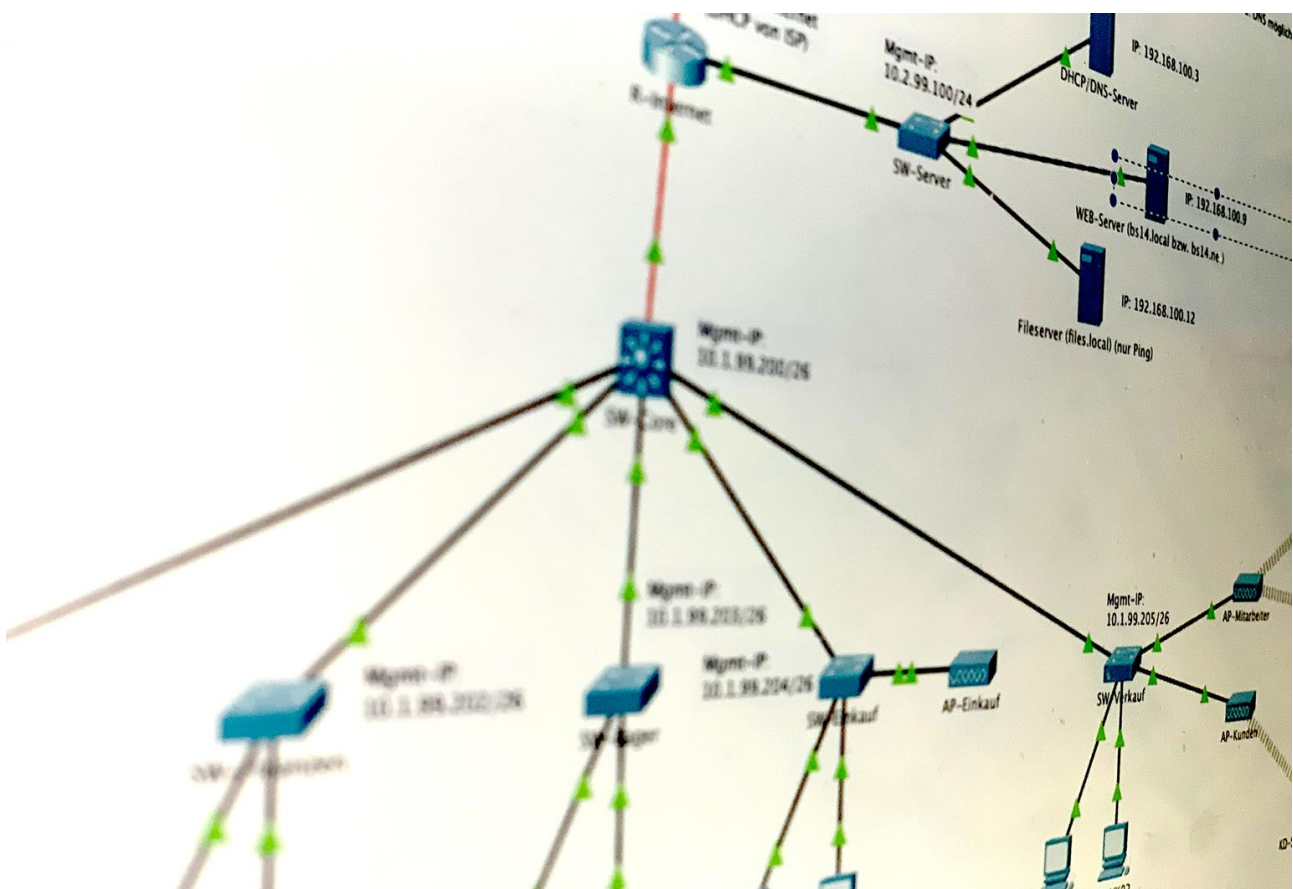
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for the **Geek-Fitness** company



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1. Introduction

This documentation is about a network simulation and a network planning for the Geek-Fitness company.

The Geek-Fitness is bought from Genisus Ltd international company. The Geek-Fitness should become a new structure. We as SUPER IT-Solution Company have this pleasure to help them and make them this project easier.

All departments from the Geek-Fitness Houses are already connected with each other. The Departments should have their own computer workplaces. Before we get start with this, we have to know how the network of Geek-Fitness are built. The customer wants to have a network documentation. This is our documentation as SUPER IT-Solution teams.

In this scenario we got some requirement from the customer. At first, he wants a network documentation about his old Network simulation, which is made by another Network service company. After that we had to add a new computer, for a new employee, into the network plan. And we gave him the same permission just like his with employee. For this new employee, we made a new user profile and home file on the server.

It was also an issue on the server. One of the employees from the warehouse department could see the salary from another employees. Even though that was only allowed for the personal department. We solved this issue also. We made sure that only the employees from personal department should see this secret documents.

The customer wants to automatist his system. Then we solved this automatization with a simple and compatible program, which wrote with python programming language. After that we connected the Active Directory from the server to this Python program. With this program the costumer can add a new employee user to the server, and he can also delete it.

We searched also for a good solution for the costumer. Because he wants to update all of computer system from sale department. We are going to explain about that in this document, if it is better to buy the systems or to least them. This will be shown on page 9.

We have also made sure that the whole network from the customer is already work.

In this documentation we often will see **Current-Standing** and **Future-Standing**. IST-Standing is the old version of the network. The SOLL-Standing is the newest version of the network.

Our goal is to make the customer satisfied and give him the best results from our sides for his requirements.

2. Network documentation

We going to explain how the network is designed and how it works with the help of tables and different figures.

2.1 IP-addresses-management (current status)

In this part we can see the whole ip-adresses from all the computer, switches, routers and servers. This visualisation is only the old version of the network. What we have changed will be shown on page 7.

1.Table IP-Core

In this table we are going to see the core structure on the network.

IP	Subnetmask	VLAN	Category	Description
10.1.10.1	/28	10	Zugangsnetz	Geschäftsführung
10.1.11.8	/28	11	Zugangsnetz	Verwaltung
10.1.20.10	/27	20	Zugangsnetz	Verwaltung
10.1.20.11	/27	20	Zugangsnetz	Finanzen
10.1.30.100	/24	30	Zugangsnetz	Lager
10.1.30.101	/24	30	Zugangsnetz	Lager
10.1.40.101	/24	40	Zugangsnetz	Einkauf
10.1.40.102	/24	40	Zugangsnetz	Einkauf
10.1.50.100	/24	50	Zugangsnetz	Verkauf
10.1.50.101	/24	50	Zugangsnetz	Verkauf
10.1.60.100	/24	60	Zugangsnetz	WLAN-MA
10.1.60.101	/24	60	Zugangsnetz	WLAN-MA
10.1.70.10	/23	70	Zugangsnetz	WLAN-KD
10.1.80.1	/24	80	Zugangsnetz	WLAN-GA
10.1.99.1	/24	99	Zugangsnetz	Management

2.Table IP-Purchasing

In this table we are going to see the structure of the purchasing department with the user computers.

IP	Subnetmask	VLAN	Category	Description
10.1.40.0	/24	40	Zugangsnetz	Einkauf
10.1.99.0	/24	99	Zugangsnetz	Management

3. Table IP-Administration

In this table we are going to see the administrators IP address in the different departments.

IP	Subnetmask	VLAN	Category	Description
10.1.10.0	/24	10	Zugangsnetz	Geschäftsführung
10.1.11.0	/24	11	Zugangsnetz	Verwaltung
10.1.80.0	/24	80	Zugangsnetz	WLAN-Gäste
10.1.99.0	/24	99	Zugangsnetz	Management

2.2 Port-Table

In this part we can see the different departments and their computer workplaces. We can also see which switchport they are used and which VLAN.

4. Table Departments

In this table we are going to see the devices information in different departments.

Devices	Switchport	VLAN	Departments
Laptop-PT Management	Gig0/2	99	Verwaltung
PC-GF01	Fa0/1	10	Verwaltung
PC-VW01	Fa0/10	11	Verwaltung
AC-AP-Gäste	Fa0/20	80	Verwaltung
PC-FI01	Fa0/1	20	Finanzen
PC-FI02	Fa0/2	20	Finanzen
PC-LA01	Fa0/1	30	Lager
PC-LA02	Fa0/2	30	Lager
PC-EK01	Fa0/1	40	Einkauf
PC-EK02	Fa0/2	40	Einkauf
AC-AP-Einkauf	Fa0/24	80	Einkauf
PC-VK01	Fa0/1	50	Verkauf
PC-VK02	Fa0/2	50	Verkauf
AC-AP-Kunden	Fa0/21	70	Verkauf
AC-AP-Mitarbeiter	Fa0/21	60	Verkauf

5.Table Core

In this table we are going to see the different switch information.

Device	Switchport	Department
SW-Verwaltung	Gig1/0/1	Verwaltung
SW-Finanzen	Gig1/0/2	Finanzen
SW-Lager	Gig1/0/3	Lager
SW-Einkauf	Gig1/0/4	Einkauf
SW- Verkauf	Gig1/0/5	Verkauf

6.Table Router

In this table we are going to see information about different internet router.

Device	Switchport	Department
Core	Gig0/0/0	Core
SW-Server	Gig0/1	Server

7.Table Internet

In this table we are going to see the router target.

Device	Switchport	Target
Router	Gig0/1/0	Internet

2.3 Networkplan

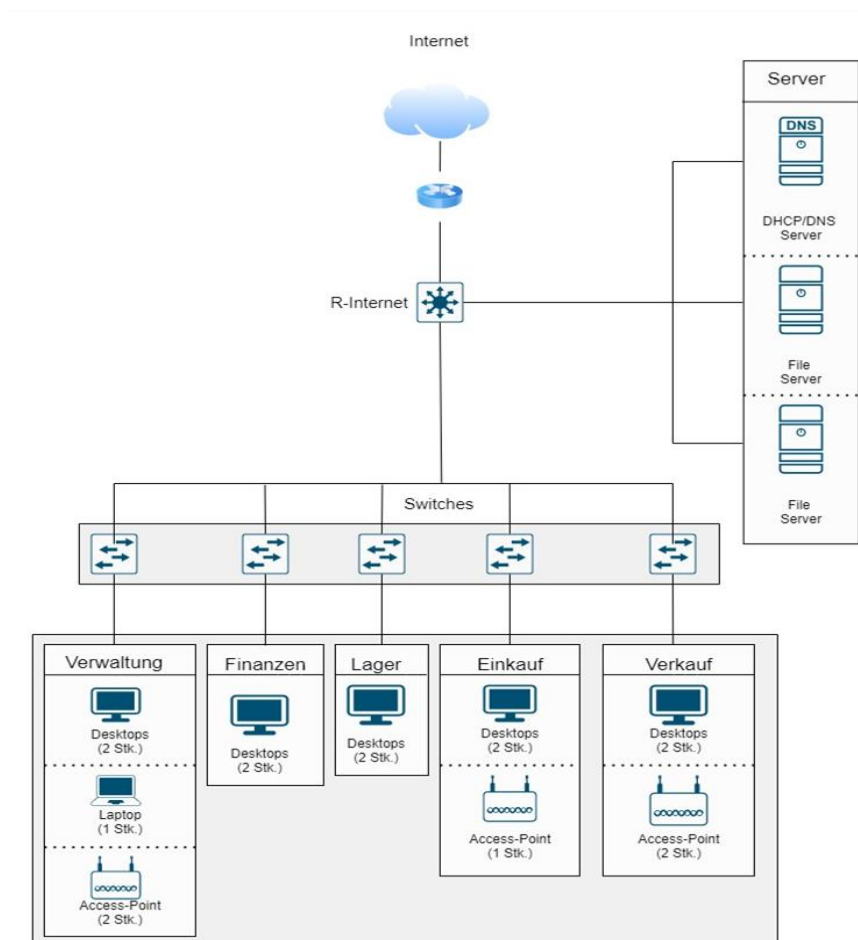
The network is divided into three sections: servers, departments and internet. All three sections are attached to the router(R-Internet). On the one end of the router is connected with the devices in the different departments. This works as follows. The router is connected to a switch (SW-Core). The switch splits into 5 different switches for the individual departments.

Department-switches:

1. SW-Verwaltung: administration department - connected to the management-laptop, an access point for guests and two desktop PCs.
2. SW-Finanzen: financial department. On this switch are two Desktop PCs attached.
3. SW-Lager: warehouse department – connected to two Desktop PCs
4. SW-Einkauf: shopping Department – connected to three Desktop PCs and an access point.
5. SW-Verkauf: sales department – connected to two Desktop PCs and two access points. The first access point (AP-Mitarbeiter) is for the employees and the second access point(AP-Kunden) is for the customers.

The router is also connected with the server-section. Which are the WEB-Server, the Fileserver and the DHCP/DNS-Server. All three servers are connected via a switch (SW-Server). The router can also be used to access the Internet from the network.

1.Figure Network Plan



3.Future standing

In this part of documentation, we are going to explain what we add to the network. There is one new employee in the department Einkauf "Mr.Schön". We have furnished a workplace with a computer for him in the network-plan and we have also made him a new user in the server, which he can sing in on the server. He has also already on profile file and his own home file to. We can see the changes in bottom.

3.1 IP-addresses-management (Future)

In the IP-Table we added the Ip-Address of the new computer. It marked yellow.

8.Table IP-Core

In this table we are going to see the wanted structure of network.

IP	Subnetmask	VLAN	Category	Description
10.1.10.1	/28	10	Zugangsnetz	Geschäftsführung
10.1.11.8	/28	11	Zugangsnetz	Verwaltung
10.1.20.10	/27	20	Zugangsnetz	Verwaltung
10.1.20.11	/27	20	Zugangsnetz	Finanzen
10.1.30.100	/24	30	Zugangsnetz	Lager
10.1.30.101	/24	30	Zugangsnetz	Lager
10.1.40.101	/24	40	Zugangsnetz	Einkauf
10.1.40.102	/24	40	Zugangsnetz	Einkauf
10.1.40.103	/24	40	Zugangsnetz	Einkauf
10.1.50.100	/24	50	Zugangsnetz	Verkauf
10.1.50.101	/24	50	Zugangsnetz	Verkauf
10.1.60.100	/24	60	Zugangsnetz	WLAN-MA
10.1.60.101	/24	60	Zugangsnetz	WLAN-MA
10.1.70.10	/23	70	Zugangsnetz	WLAN-KD
10.1.80.1	/24	80	Zugangsnetz	WLAN-GA
10.1.99.1	/24	99	Zugangsnetz	Management

At next we can see that the name of the new computer is also added to the purchasing department and it is marked in yellow.

9. Table Departments

In this table we are going to see devices information in different departments with the new computer from the new employee.

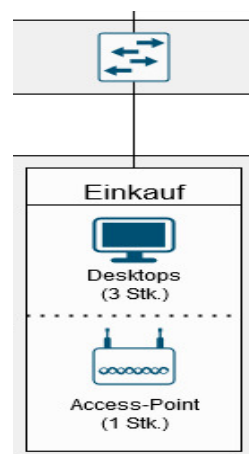
Devices	Switchport	VLAN	Description
Laptop-PT Management	Gig0/2	99	Verwaltung
PC-GF01	Fa0/1	10	Verwaltung
PC-VW01	Fa0/10	11	Verwaltung
AC-AP-Gäste	Fa0/20	80	Verwaltung
PC-FI01	Fa0/1	20	Finanzen
PC-FI02	Fa0/2	20	Finanzen
PC-LA01	Fa0/1	30	Lager
PC-LA02	Fa0/2	30	Lager
PC-EK01	Fa0/1	40	Einkauf
PC-EK02	Fa0/2	40	Einkauf
PC-EK03	Fa0/3	40	Einkauf
AC-AP-Einkauf	Fa0/24	80	Einkauf
PC-VK01	Fa0/1	50	Verkauf
PC-VK02	Fa0/2	50	Verkauf
AC-AP-Kunden	Fa0/21	70	Verkauf
AC-AP-Mitarbeiter	Fa0/21	60	Verkauf

3.2 New network-plan for purchasing department

In the following we will summaries the wonted configuration for the purchasing department of the company.

2. Figure Networkschematic

In this figure we are going to see that the New computer was added to the department Network.



10. Table Port-Management

In this table we are going to see the added computer. It is yellow marked.

Device	Switchport	VLAN	
PC-EK01	Fa0/1	40	Einkauf
PC-EK02	Fa0/2	40	Einkauf
PC-EK03	Fa0/3	40	Einkauf
AC-AP-Einkauf	Fa0/24	80	Einkauf

11. Table P-Address-management

In this table we are going to see the new computer IP address. It is also yellow marked.

IP	Subnetmask	VLAN	Category
10.1.40.101	/24	40	PC
10.1.40.102	/24	40	PC
10.1.40.103	/24	40	PC

3. Figure Switch-Configuration

In this figure we can see the switch configuration from purchasing department.

```
interface FastEthernet0/1
 switchport access vlan 40
!
interface FastEthernet0/2
 switchport access vlan 40
!
interface FastEthernet0/3
 switchport access vlan 40
```

The new PC is now connected to the Switch in Department to the Port 0/3.

We added the new PC to the Department and gave it the IP-Adress 10.1.40.103

With all these Setup done, Helmut Schöne now begin his Work at the Company.

4. Leasing and financing

Lease or Buy?

A Lease is a contract specifying the terms under which the owner of some property transfers the right to use the property to someone else, without transferring legal ownership.

Lessee: Company using the leased asset enjoys flexibility, and reduced risk through leasing rather than buying.

Lessor: company that owns the leased asset uses attractiveness of leasing to increase sales and to establish long-term relationships with customers.

In fact, leasing is just a creative, alternative way to finance the acquisition of the right to use an asset.

Another attraction of the lease is a lower monthly payment. (cost)

You can lease a car for a lower amount that you would have to pay on a monthly payment to buy the same car.

When buying a car for example, you are buying not only the car but also the whole life or right of the car and of you have to pay for all of that. If instead you lease a car, you only buy for the time of his acquisition and not for all those years that you are not going to use.

If you plan to keep your product for five years or more, buying will certainly cost you less than a series of leases. If you plan to constantly upgrade to a new car, say every two or three years, then leasing may give you total lower monthly payments.

Advantages of leasing

1. No down payment: Most debt-financed purchases of property require a portion of the purchase price to be paid immediately by the borrower. Lease agreements instead are frequently structured so that 100% of the value of the property is financed through the lease. Which makes the lease attractive for company that don't have sufficient cash for down payments or that wishes to use available capital for other operating or investing purposes.
2. Avoid risks of ownership
 - Casualty loss
 - Obsolescence
 - Changing economic conditions
 - Physical deterioration
3. Once you no longer need it, you end the agreement and no need to pay anything anymore.
4. Flexibility: It is the primary reason for the popularity of automobile leasing
5. Simplicity

Disadvantages of leasing

1. Additional insurance coverage is necessary
2. Potential for extra fees (early termination, and a range of other unexpected costs in the fine print)
3. The need to get a new Device at the end of the term

Advantages of loan

1. It is cheaper than leasing
2. At the end of the rate the product belongs to you without paying any extra fees
3. You can break for a while to paying when you have not enough money sometime

Disadvantages of loan

1. Outdated Devices
2. When devices have problems, you have pay it by your self
3. It is possible that the fees increase

Finance and Leasing offer Comparison robot

In the following we can see the different calculation of the possible ways to finance the new project.

12.Table loan

In this table we are going to see the loan calculation.

Jahre	Schuld Anfang d.j.in €	Zinsen 5%, p.a.in €	Tilgung Ende d.j.in €	Kreditrate in €	Restschuld Ende d. j. in e
1	240.000	12.000	60.000	72.000	180.000
2	180.000	9000	60.000	69.000	120.000
3	120.000	6000	60.000	66.000	60.000
4	60.000	3000	60.000	63.000	0
Gesamt		30.000	240000	270000	

13.Table Leasing

In this table we are going to see the leasing calculation.

Jahre	Leasingrate in €	Restwert Nach 4 Jahre	Gesamte Leasingkos- ten in €
1	72.000	304.000	232.000
2	72.000	232.000	160.000
3	72.000	160.000	88.000
4	72.000 + 16000	88.000	0
Gesamt	304.000		

Our suggestion

We can see that the Darling is the best choice for the Geek-Fitness company. It is 34.000 € cheaper than the Leasing. The Difference in percent is ca. 11.2 %.

5.Conclusion

We come to the result that the network has at the beginning some kind of issues. In this project we solved these problems. Generally, we made sure that the network is working in all department from the company.

We furnished a new workplace computer for a new employee in the Einkauf department in the network simulation and we made him also a user profile and a user home file. That mean he can sing in his self on the server and start his job without any problem. On the server he has the same permissions just like his with employees.

We looked also if the employees could see only the document from his department and not from another department. That was a case with one of the warehouse employees. This employee was Berti Vogts. We solved this issue. We solved this problem on the server with his user account.

The customer wants to update the computer systems in the Einkauf department. We explained in this documentation on page 8 if a leasing is better or if the customer buys the systems. We made a good list with the pros and contras of leasing. We came to the result if the customer wants to save up some money by this project than it is better to by the systems with a Darleen. If the customer wants often to support and when he wants to make sure if it is something for his company then the leasing is better.

Because of the administration of the users from the company with a simple program is much easier, we automatized this for the customer. The benefits of the automatization are:

- Save up the times.
- Minimalize the over permissions. When an employee changes his department, then he will be deleted from the last department group and he will be added in the new department group. With that he gets the permissions from the new department.
- Clearly permissions
- Better overview. That mean we can always see who is in which group and what kind of permission has this person.

We automatize the system with a python program. With this program the customer could make a new user, when he has a new employee, and he can delete it also, when an employee leaves the company.

5.1 Teamwork

Every day we made a daily scrum and discussed about what we have to do, and we asked if someone has a problem or when someone not coming further. Then we worked in peer. At the end of the day, we meet again and present our solutions of the tasks. We made a Trello board and put on our tasks and decided who wants to find a solution for the task. We had every second day a sprint. In this day we looked back what we have already done, what was a blockade for us, and we looked also what we have to done until the next sprint. When it was a conflict about some tasks then we looked for the best way.

Source Directory

Accounting-foundation-leases by Jim Stice and Kay Stice

15.12.2020

<https://www.linkedin.com/learning/accounting-foundations-leases/the-importance-of-lease-accounting?u=26131458>

Checkliste-Dokumentation from School

16.12.2020

<https://moodle.itech-bs14.de/mod/page/view.php?id=57449>

IP Adressen erklärt - IPv4, IPv6, Subnetmaske, Präfix, Subnetting by Takiry

14.12.2020

<https://www.youtube.com/watch?v=5KdEc4Dto9Y>

The Network plan would made with draw.io

17.12.2020

<https://app.diagrams.net/>

Introduction to packet tracer by Takiry

05.01.2021

<https://www.youtube.com/watch?v=yLPgyct9tYE>

General information about network from wikipedia

05.01.2021

<https://de.wikipedia.org/wiki/Network>

The Automatization with VFX pipeline on youtube

05.01.2021

<https://www.youtube.com/watch?v=zjTkIgU8Teo&list=PLYf4Vz9V1ESqob7r-nme7dOruKD-NS9lw>

Windows Server Tutorial Playlist - Einführung und Erstellung des Active Directory by Tobias Wrzal

17.01.2020

<https://www.youtube.com/watch?v=AuK-kK1lh9k&list=PLIxBouBNlpgoefkspMwiDN0YdOleTtoRp>