REPUBLIQUE TUNISIENNE
*****
Le ministère de l'Enseignement Supérieur
Et de la Recherche Scientifique
*****
DIRECTION GENERALE DES ETUDES TECHNOLOGIQUES
*****
INSTITUT SUPERIEUR DES ETUDES TECHNOLOGIQUES DE SOUSSE
Département Technologies de l'Informatique

Higher Institute of Technological Studies of Sousse

Internship Report

PROXYM-GROUP

Written by: Hichem Fantar

From 13th January to 12th March

University Year: 2019-2020

Table of Contents

General Introduction

The internship experience is designed to provide students with an opportunity to develop insight into the practical application of academic knowledge. Through observing the work activities of the members of an organization and by working under supervision, students will be better prepared to assess their own interest and potential for a career in whatever it is they want.

The purpose of the internship is:

1. To enrich classroom learning through exposure to related on-the-job experiences.
2. To assist in the determination of career goals.
3. To provide experience in the field for those just entering their chosen field.
4. Become familiarized with the way a company runs and experience a business environment

What is Proxym and how did it start?

Proxym Group is an international IT group operating in Europe, Middle East, and Africa with offices in Dubai, Paris, and Sousse. They help their customers leverage IT innovation and mobile-enable and upgrade their organizations by providing competitive and innovative IT Know-how, solutions, and services.

Proxym-Group was founded by an IT engineer who had the chance to experience working for IT multinationals and in the Silicon Valley.

Proxym-Group was created in 2006 in Sousse, the first Tunisian touristic city and was then the first IT company to settle in the region. Tunisia has been along its history a cultural and business gateway between Europe, Middle East and Africa and Proxym Group was built to be in line with this DNA of openness and proximity.

Proxym-Group was built around 4 core values: Proximity to customer needs, Commitment to success, Challenge mindset and Innovation.

Since its inception, Proxym-Group had dedicated the mobile team together with Web and Information System team as anticipation for the coming convergence between Web, Information Systems and Mobile.

Despite poor infrastructure in 2006-2008, perseverance and lobbying made Proxym the nucleus of growing eco-system of IT companies and startups in the Technopole of Sousse.

From 2006 to 2011, Growth was achieved through Win-Win relationships with partners in Europe. 70% of Proxym customers have been recommended by existing customers. The sales strategy consisted of up-selling to existing customers, leveraging past successes and focusing on innovative solutions.

In 2010, Twelve Proxym project managers and team leaders were certified on the SCRUM agile methodology. Since then, agility was considered as a straightforward means to implement proximity to their customers' needs.

Starting from 2011, entrepreneurship helped Proxym create 4 spin-offs in areas of Healthcare, Retail, Fleet Management and Digital Education. This allowed the group to position itself both as system integrator and provider of off-the-shelf solutions to help customers succeed their business and digital transformation.

In 2013, the company partnered with IBM and expanded into a new Middle East market targeting two main industries: Smart Government and Banking. Entry to the market was achieved by relocating a team of 5 engineers in UAE in 2013 for 6-months with the objective to develop and deploy on-time what was IBM's largest worldwide mobility deployment in the public sector.

This expansion to the Middle East has fueled the rapid growth of Proxym for the last 5 years.

With more than 400 successful Digital Projects and Satisfied Customers since 2006 and more than 170 IT engineers spread across Europe, Africa and the Middle East, Proxym

Group has proven its positioning at the heart of innovation and has been rewarded as one of the most innovative IBM business partners.

Innovation at Proxym concretely means first continuously having Fresh graduates working on testing and detecting the next big technology or business trend; to leverage first mover advantage and second learning from failures and adapting to changes.

Proxym Group is one the rare IT players to succeed in both European and Middle Eastern markets. These complementary markets helped Proxym span its skills to user-experience, graphical design, business analysis, designing enterprise solutions, banking expertise, etc.

The main challenge of Proxym is to stay faithful to its values with the growth in headcount. For this Proxym Group has started its internal corporate university “Proxym-U” that equally provides steady talents pool to sustain growth.

Today Proxym is preparing its new expansion plan (2018-2020) for Africa in areas of Banking, e-Health and Smart Government. This gives Proxym an ideal geographical mix between Highly demanding mature European Market, fast growing Middle eastern region and promising Africa. This will make Proxym a digital gateway for its customers between Africa, Europe, and the Middle East.

Detailed Information

Company name: Proxym-GROUP

Address: Techno pole Sousse

Articles of associations: Société anonyme (corporation)

Company size: Around 200 employees

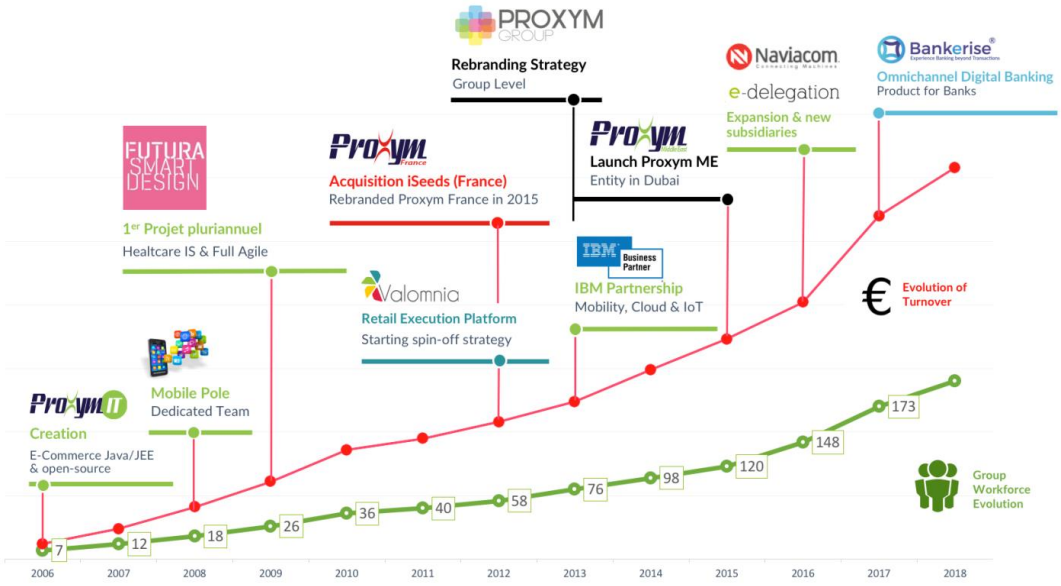
Equipment and Infrastructure: Very high-end equipment Apple computers targeted for IOS development & Windows machines which are targeted for nonIOS oriented projects.

Biggest client: IBM

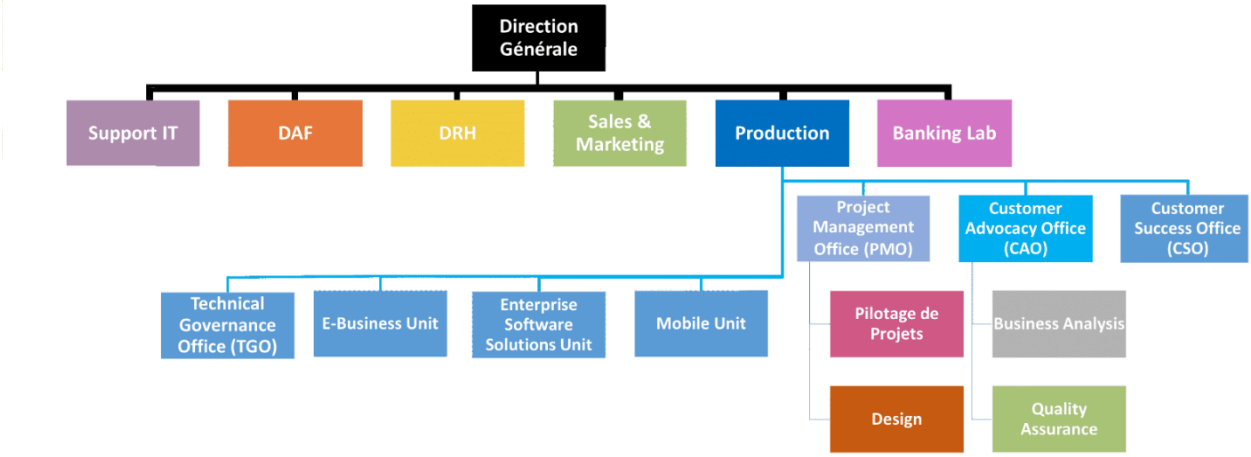
Sector: Technology

Subsidiaries: Proxym IT, Proxym France, Proxym Middle East, Valomnia, Chifco and Calys-IT

Timeline:



Organizational chart:



Departments

Direction Générale (CEO):

Is the most senior corporate, executive, or administrative officer in charge of managing an organization – especially an independent legal entity such as a company or nonprofit institution. The marketing and sales department is in charge of marketing, customer communication, product sales and customer service.

IT Department:

Is responsible for providing the infrastructure for automation. It implements the governance for the use of network and operating systems, and it assists the operational units by providing them the functionality they need.

The Financial affairs department (DAF):

Is responsible for coordinating the various structures of the company in terms of budget preparation and execution, monitoring of investment projects and the completion of acquisitions.

The production manager:

Participates in the implementation of production methods and in the development of new ranges and products

A project management office (PMO):

Is a group or department within a business, government agency, or enterprise that defines and maintains standards for project management within the organization.

Quality assurance:

Is a way of preventing mistakes and defects in manufactured products and avoiding problems when delivering products or services to customers.

Design:

Makes all the visual decisions and develops an intuitive user experience to make sure that the user feels at ease when using and navigating the product.

Technical Governance Office (TGO):

Are experts in their field of activity who will diagnose, research, and propose solutions to improve the functioning of the company.

E business:

Handles the creation of web applications.

Mobile unit:

Handles the creation of android and iOS applications.

Customer advocacy office (CAO):

Is a specialized form of customer service in which companies focus on what is deemed to be best for the customer. It is a change in a company's culture that is supported by customer-focused customer service and marketing techniques.

Customer success office (CSO):

Is the business methodology of ensuring customers achieve their desired outcomes while using your product or service.

Business analysis:

Is a research discipline of identifying business needs and determining solutions to business problems. Solutions often include a software-systems development component, but may also consist of process improvement, organizational change or strategic planning and policy development. The person who carries out this task is called a business analyst or BA.

Human-resources department (HR):

Performs human resource management, overseeing various aspects of employment, such as compliance with labor law and employment standards, administration of employee benefits, organizing of employees' files with the required documents for future reference, and some aspects of recruitment and employee offboarding.

Enterprise Software Solutions unit (ESS):

Handles the creation of hybrid applications which work both as native apps on mobile devices and web applications.

References:


LA ROCHE POSAY
LABORATOIRE DERMATOLOGIQUE


SOFTWAY
EDICAL


orange™


SOCIETE GENERALE


LYON
CAPITALE


ACCOR HOTELS
Feel Welcome


FEDERAL AUTHORITY FOR
GOVERNMENT HUMAN RESOURCES


medecindirect
à vos côtés, où que vous soyez


www.calystene.com
Calystene


Allianz


GBM


JURATOYS


LEFOODING.COM


RTA
هيئة الطرق والمواصلات
ROADS & TRANSPORT AUTHORITY


Netquarks


betterise
health tech


AGB
بنك الخليج الجزائر

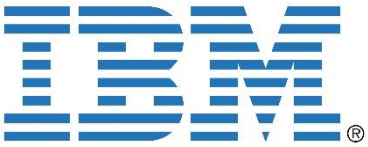

البنك العربي
ARAB BANK


5
EME
GAUCHE


JUMFIL
CRÉATEUR FABRICANT


scientipôle
initiative


ABInBev


IBM


THUASNE


tessi
toujours une donnée d'avance


Bemobee


QIIB
الدولي الإسلامي


CyberCartes

Technologies used

Virtualization

Virtualization is changing the mindset from physical to logical.

What virtualization means is creating more logical IT resources, called virtual systems, within one physical system. That's called system virtualization. It most commonly uses the hypervisor for managing the resources for every virtual system. The hypervisor is a software that can virtualize the hardware resources.

There are two types of hypervisors:

Type 1 hypervisor:

Hypervisors run directly on the system hardware, installs directly on to hardware You use Management Software installed on a different computer to manage a Type 1 Hypervisor box.

(VMware ESX and ESXi, Microsoft Hyper-V, Citrix XenServer, Oracle VM)

Type 2 hypervisor:

Called Hosted Hypervisor Type 2 Hypervisors are installed onto an Operating System such as Windows 10, OSX or Linux. (VMware Workstation/Fusion/Player, Microsoft Virtual PC, Oracle VMVirtualBox, Red Hat Enterprise Virtualization)

Different monitoring tools:

There are many different tools that we could use to monitor all kinds of systems, some of these tools are: Solarwinds Network Performance Monitor, PRTG Network Monitor from Paessler, ManageEngine OpManager, WhatsUp Gold, Nagios XI, Zabbix, Incinga, Datadog, ConnectWise Automate, Logic monitor.

Different monitoring types:

- Availability/Uptime Monitoring
- Performance monitoring
- Resource monitoring
- Error monitoring
- Database monitoring
- Security monitoring

Why did we choose Zabbix?

Zabbix is a great free monitoring tool that has many pros such as:

- Customizable dashboards

- Custom and scheduled reports

- Alerting system (Email and SMS)

- Templates are good out of the box

- Graphs and history are quite useful when consulting with devs over performance issues.

- Solid performance

- The monitoring system can keep a check on hard drive utilization, network utilization, CPU, RAM, SAN volume utilization, as well as any other metrics I choose to configure across Windows & Linux.

Zabbix architecture:

Zabbix server is the central component to which agents report availability and integrity information and statistics. The server is the central repository in which all configuration, statistical and operational data are stored.

All configuration information as well as the data gathered by Zabbix is stored in a database.

For an easy access to Zabbix from anywhere and from any platform, the web-based interface is provided. The interface is part of Zabbix server, and usually (but not necessarily) runs on the same physical machine as the one running the server.

Zabbix proxy can collect performance and availability data on behalf of Zabbix server. A proxy is an optional part of Zabbix deployment; however, it may be very beneficial to distribute the load of a single Zabbix server.

Zabbix agents are deployed on monitoring targets to actively monitor local resources and applications and report the gathered data to Zabbix server.

Tasks performed

I have learned how to Monitor different devices on my network using a monitoring software called Zabbix.

Zabbix is an open-source monitoring software tool for diverse IT components, including networks, servers, virtual machines, and cloud services. Zabbix provides monitoring metrics, among others network utilization, CPU load and disk space consumption.

In my case I have managed to setup different virtual machines in VMware then Installed Zabbix Server on the main machine which will monitor the other virtual machines using Zabbix agent.

Zabbix agent is deployed on a monitoring target to actively monitor local resources and applications (hard drives, memory, processor statistics etc.). The agent gathers operational information locally and reports data to Zabbix server for further processing. In case of failures (such as a hard disk running full or a crashed service process), Zabbix server can actively alert the administrators of the machine that reported the failure.

I have configured this piece of software to monitor the host machine and all the different virtual machines connected to it.

First, I have installed a hypervisor called VMware Workstation Pro then I setup a virtual machine running Kubuntu 18.04.4 LTS and another running Windows Server 2012, I have also managed to monitor a printer with Zabbix using SNMP (simple network management protocol).

Install and configure Zabbix server for your platform

a. Install Zabbix repository

wget https://repo.zabbix.com/zabbix/4.4/ubuntu/pool/main/z/zabbix-release/zabbix-release_4.4-1+bionic_all.deb

dpkg -i zabbix-release_4.4-1+bionic_all.deb

apt update

b. Install Zabbix server, frontend, agent

apt install zabbix-server-mysql zabbix-frontend-php zabbix-apache-conf zabbix-agent

c. Create initial database

mysql -uroot -p

Password

mysql> create database zabbix character set utf8 collate utf8_bin;

mysql> grant all privileges on zabbix.* to zabbix@localhost identified by 'password';

mysql> quit;

On Zabbix server host import initial schema and data. You will be prompted to enter your newly created password.

zcat /usr/share/doc/zabbix-server-mysql*/create.sql.gz | mysql -uzabbix -p Zabbix

d. Configure the database for Zabbix server

Edit file /etc/zabbix/zabbix_server.conf

DBPassword=password

e. Configure PHP for Zabbix frontend

Edit file /etc/zabbix/apache.conf, uncomment and set the right timezone for you.

php_value date.timezone Europe/Riga

f. Start Zabbix server and agent processes

Start Zabbix server and agent processes and make it start at system boot.

systemctl restart zabbix-server zabbix-agent apache2

systemctl enable zabbix-server zabbix-agent apache2

g. Configure Zabbix frontend

Connect to your newly installed Zabbix frontend:

http://server_ip_or_name/zabbix

Zabbix agent installation on Windows and Linux

a. Linux guide:

apt-get install zabbix-agent

Now agent is ready to be started by:

service zabbix-agent start

Zabbix Agent Configuration

As Zabbix agent has been successfully installed on our remote system.

Now we just need to configure Zabbix agent by adding Zabbix server IP to

the configuration file /etc/zabbix/zabbix_agentd.conf

```
#Server=[zabbix server ip]
#Hostname=[ Hostname of client system ]

Server=192.168.1.100
Hostname=Server1
```

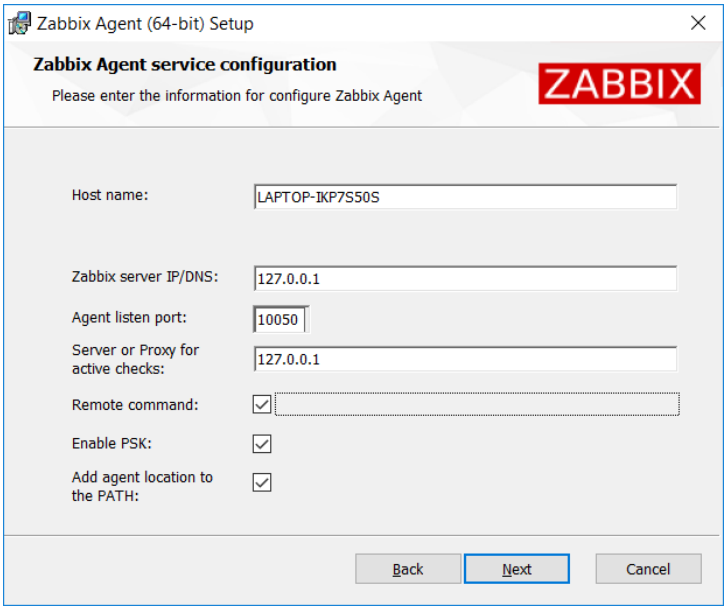
After adding Zabbix server IP to the configuration file, now restart agent service to reload the new settings, using the following command.

service zabbix-agent restart

b. Windows guide:

double-click the downloaded MSI file.

Fill the required fields with the necessary information then continue the installation.



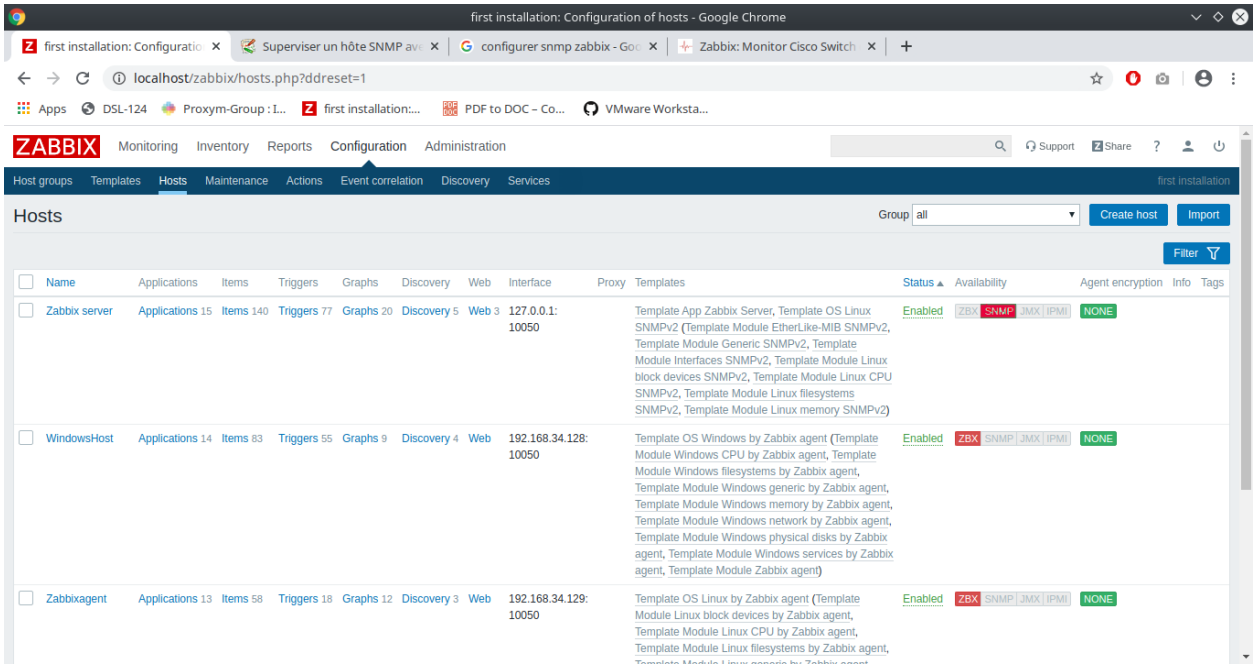
Once the installation finishes, Zabbix components along with the configuration file will be installed in a Zabbix Agent folder in Program Files. zabbix_agentd.exe will be set up as Windows service with automatic startup.

Zabbix SNMP Agent Installation and configuration (server monitoring)

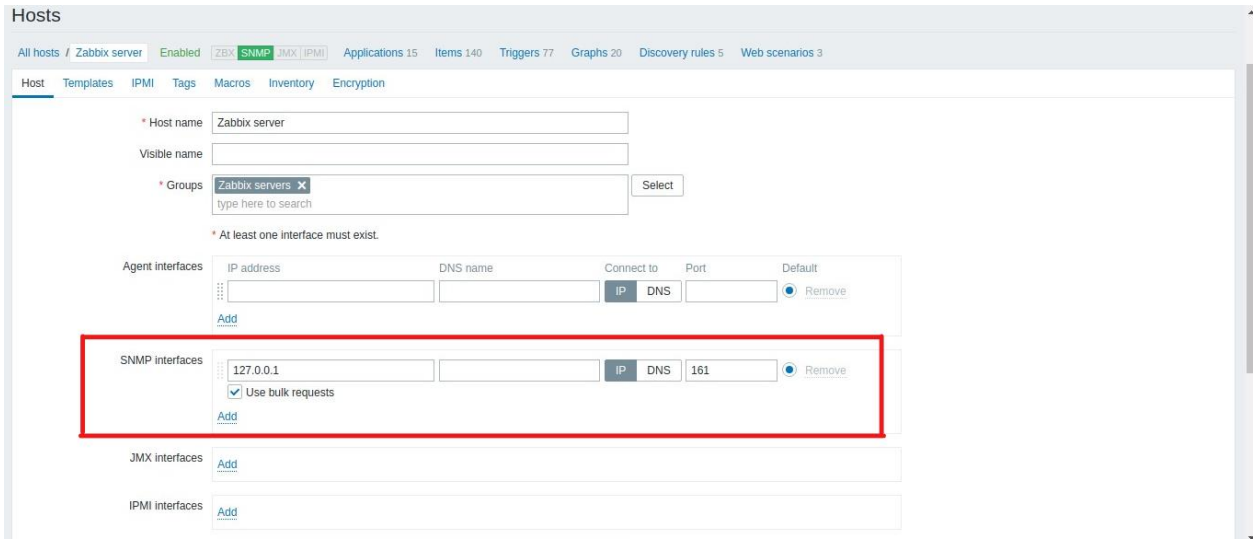
SNMP which is an acronym for Simple Network Management Protocol is the protocol that will allow Zabbix to connect to the hosts on the network and retrieve their information.

We will activate the SNMP agent on the current Zabbix server (monitoring machine).

To configure our host to use SNMP, first we must enable it in the host's settings:

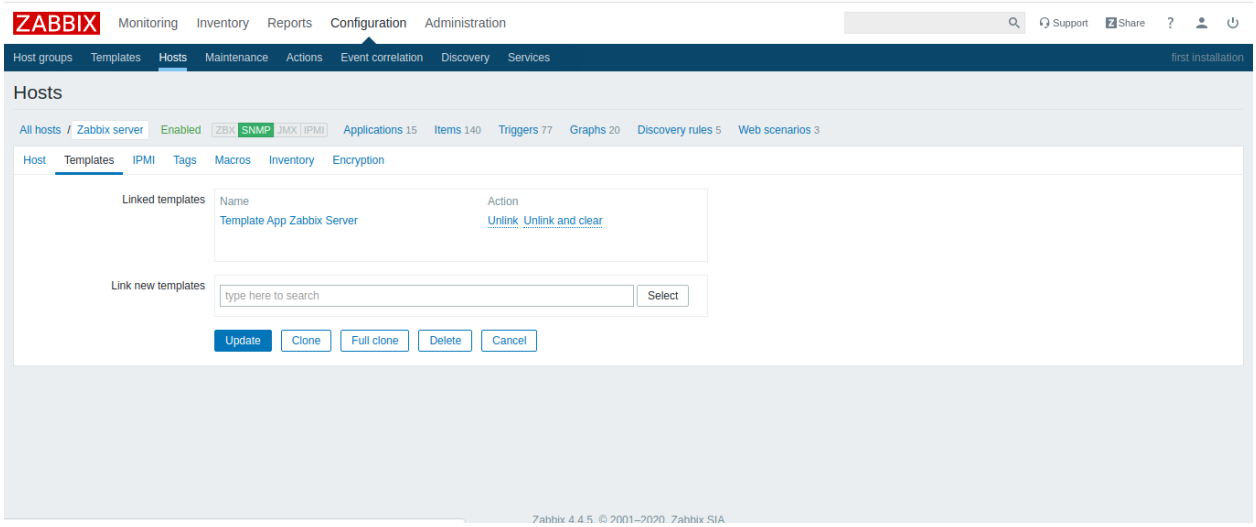


We will now add an SNMP interface by filling the box with the ip address of the host we wish to monitor:

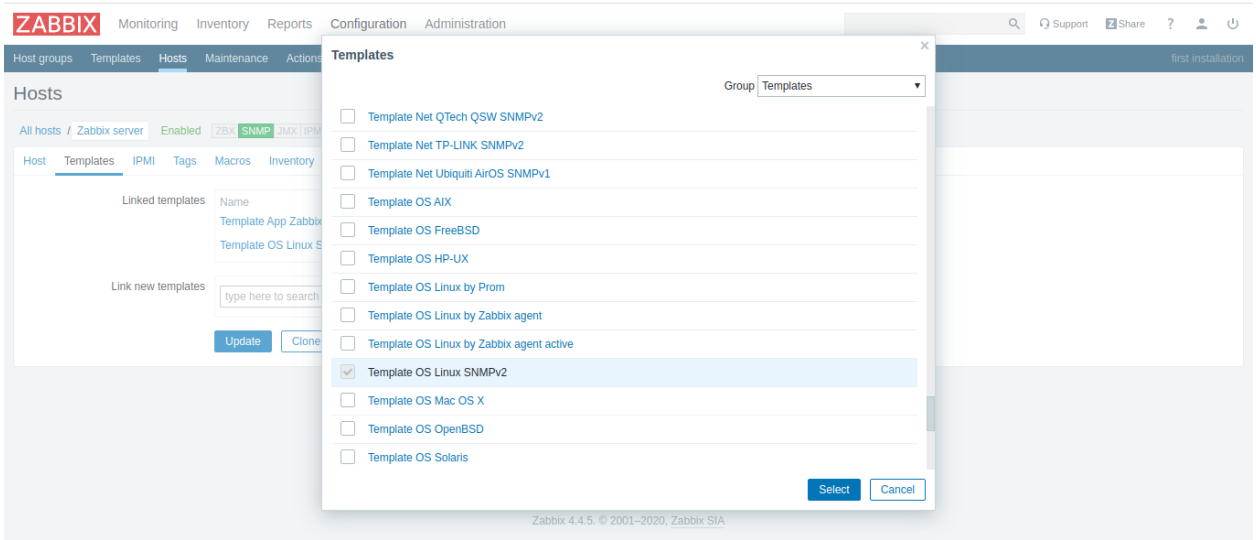


Now that the SNMP interface is enabled, we will add a template which allow us to extract different kinds of information from the host we wish to monitor:

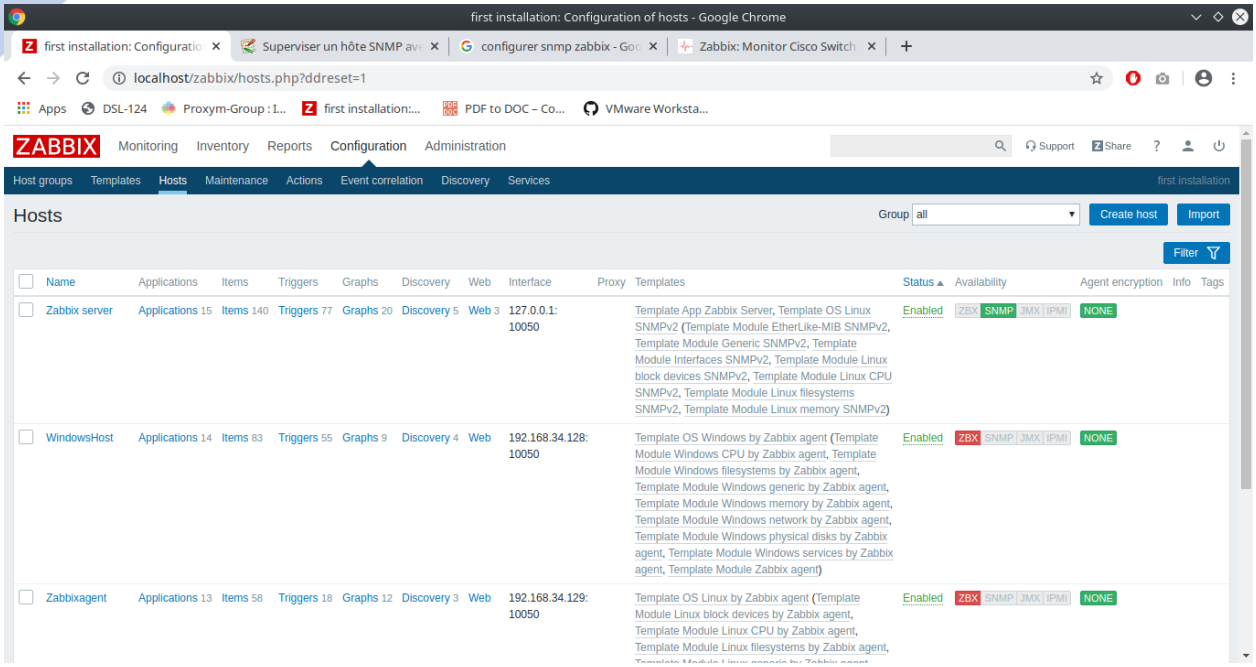
Click select like in the picture below:



Now Choose the template OS Linux SNMPv2 from the list

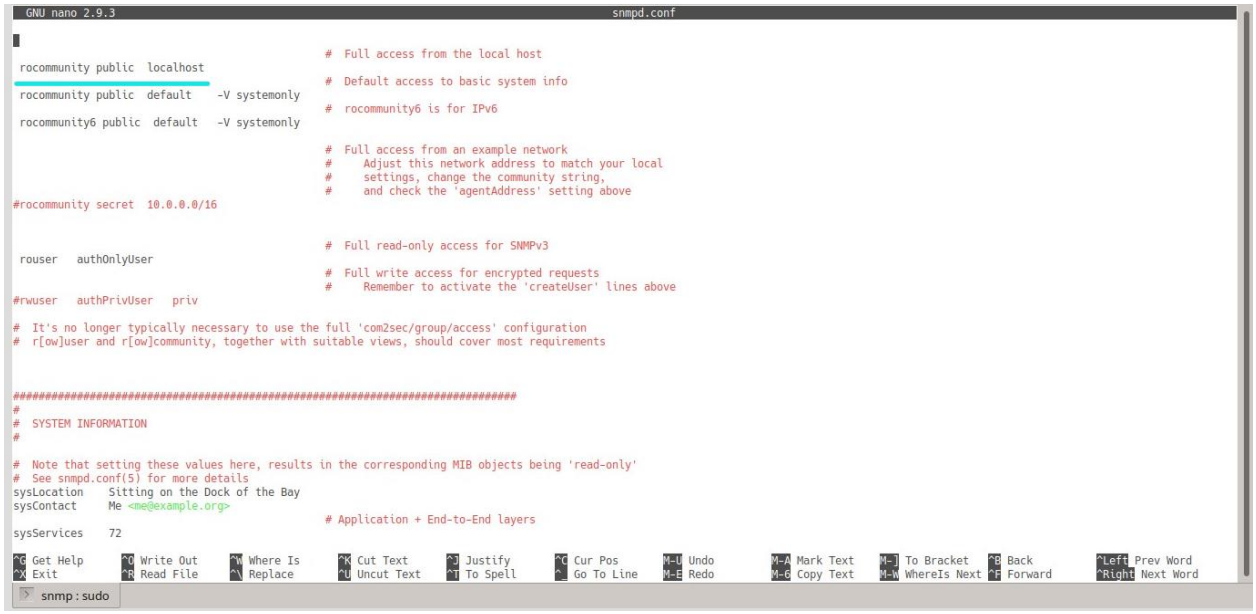


Now You can see that the SNMP icon is now green which means that interface is active and ready to display data:



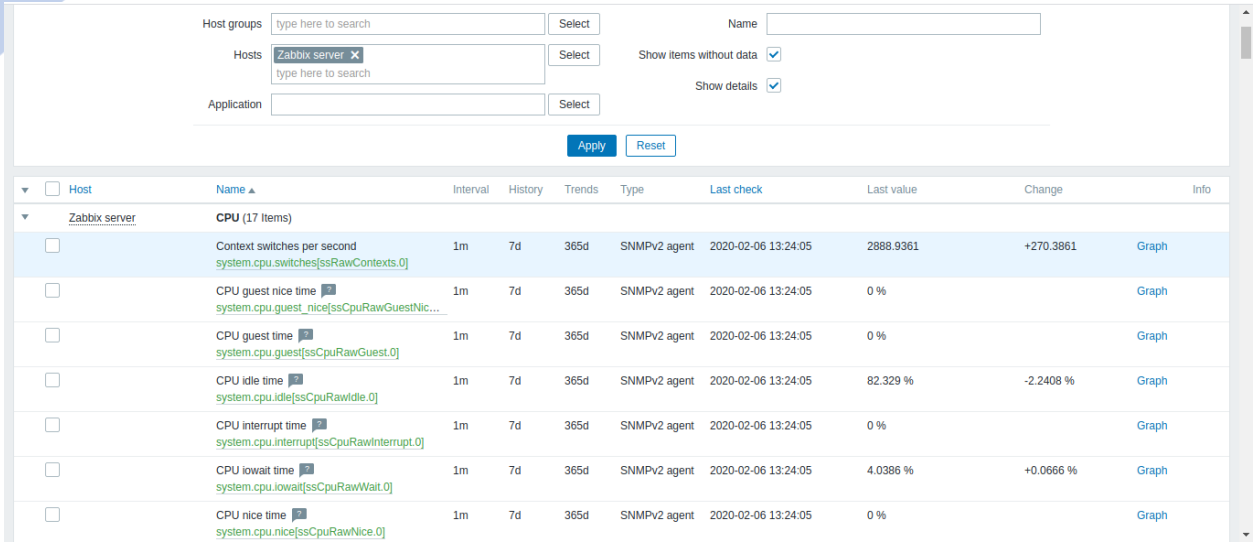
However right now the data we receive will be very limited and to remove that limit there is a line that needs to be activated in the SNMP config file which can be found in this directory “/etc/snmp/snmpd.conf” You can access this file through the file manager or through the terminal.

Now you must activate the underlined command.



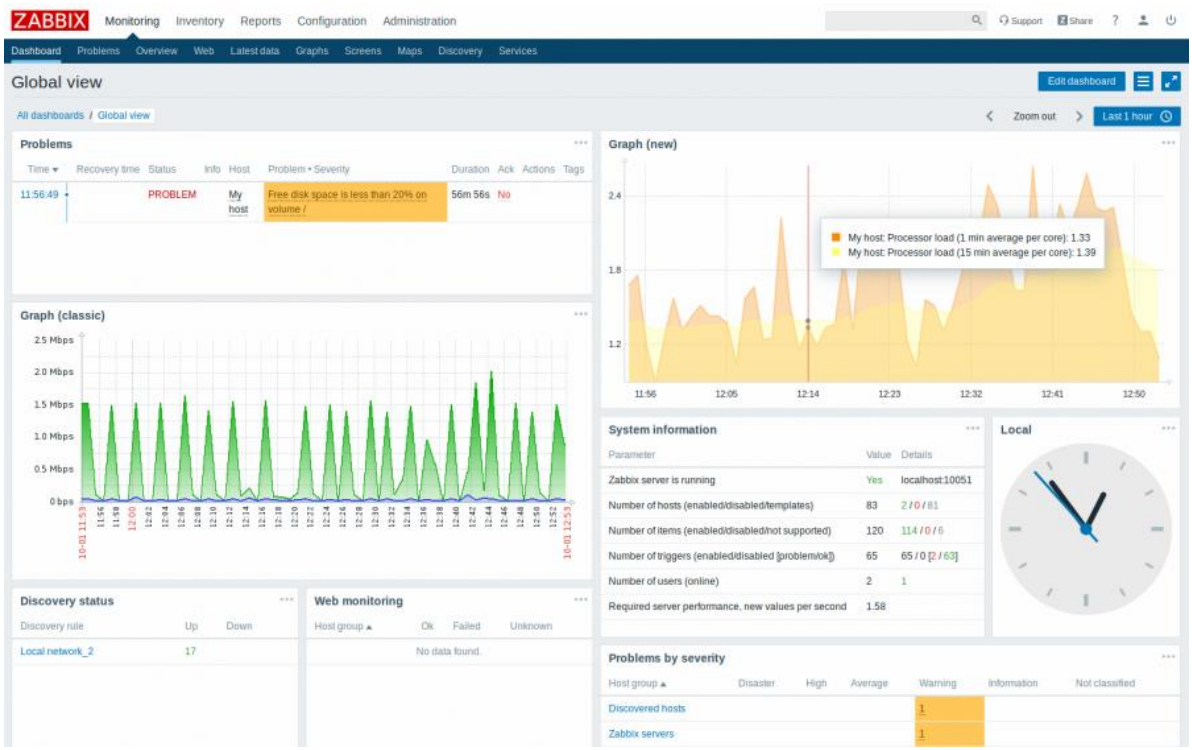
Now we can see all the data that is available on the monitored host.

Now if we head to Monitoring tab then select Latest data and add the host, we will monitor to the host list we will be able to view all the data that is being pulled by SNMP agent:

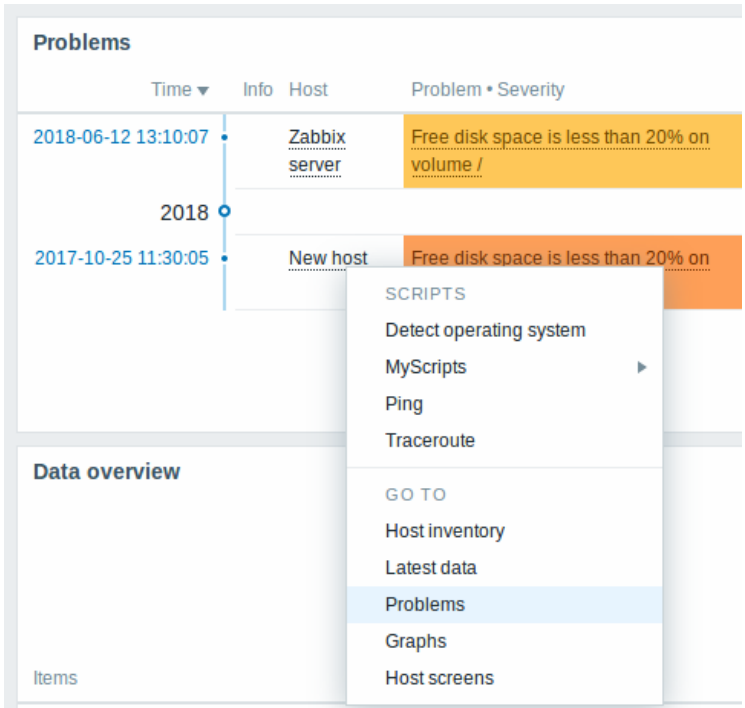


We can see that we are receiving CPU related information and if we continue to scroll down, we will find data on memory and many other things.

Overview: Here you can see the dashboard that I have setup which gives me a summary of the monitored devices:

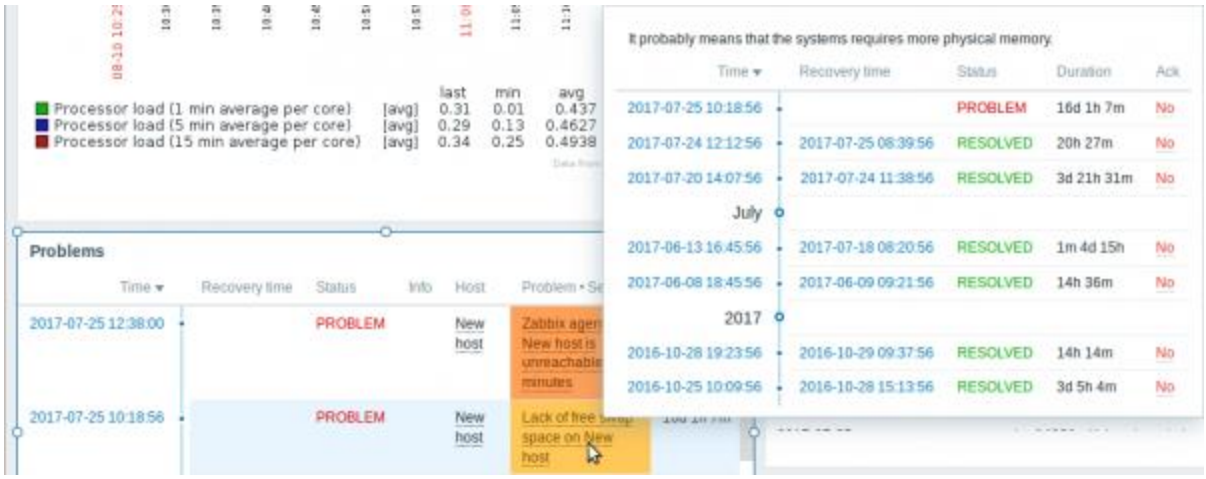


Host menu:

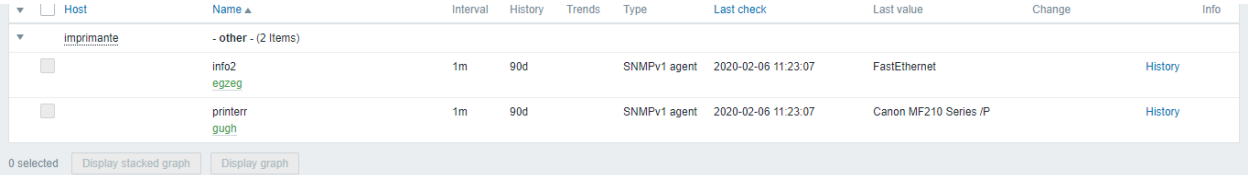


Problem event popup:

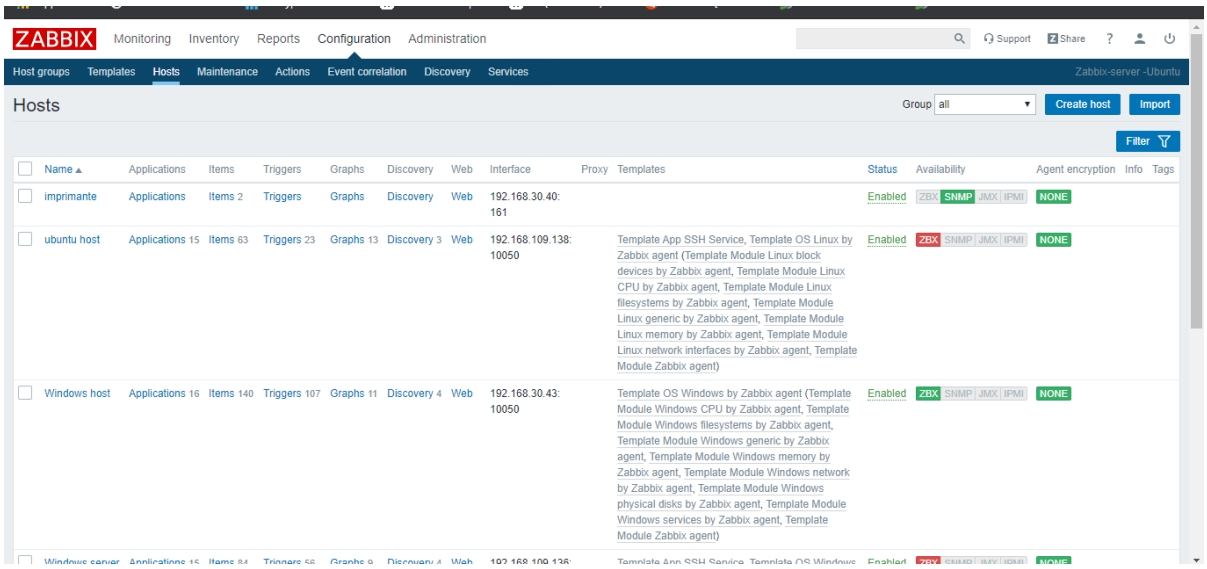
The problem event popup includes the list of problem events for this trigger (Alert) and, if defined, the trigger description and a clickable URL.



These are some of the information that we have been able to retrieve by connecting a Canon Printer to the Zabbix server:



Here is a list of the several hosts that we have been able to monitor using the Zabbix software: Imprimante, Ubuntu Host and Windows Host



Conclusion

Throughout my internship, I have been exposed to an IT technician's working life. I could understand more about the definition of an IT technician and prepare myself to become a responsible and innovative technician in future.

Along my training period, I realized that observation is an important element to find out the root cause of a problem. Not only for my project but daily activities too. During my internship, I worked with my colleagues to determine all sorts of problems and come up with appropriate solutions.

Moreover, the project indirectly helps me to learn independently, discipline myself, be considerate/patient, take initiative and develop the ability to solve problems. Besides, my communication skills have strengthened as well.

During my training period, I have received criticism and advice from engineers and technicians when mistakes were made. However, those advice are useful guidance for me to change myself and avoid making the same mistakes again.

In sum, the activities that I have learned during the internship will be extremely useful for me in future to face challenges in a working environment.

Throughout the internship, I discovered that several things that are important which are:

-Critical and Analytical Thinking

-Time management

-Goal management

-Colleague interactions

My experience with Proxym was crucial in increasing my understanding of how a corporation works. I will take the lessons and skills I learned and apply them to my next position.