T8 - Network & Sys Admin

T-NSA-800

SLA

Bootstrap

1.2

Infrastructure discovery

Connect to the different machines of the infrastructure and understand the different services:

1. a machine contains the entire database part with a PostgreSQL service and a Redis service.
2. a second machine contains the application, with a vote page, a result page and a worker executed in the form of Docker services, behind a Traefik service.
3. a third machine only has a docker daemon. This machine is at your disposal to install your administration, backup and monitoring tools.

Make sure you are comfortable with **Docker**, **Traefik** and all the tools mentionned in this document.

Understand the interactions: the vote page communicates with redis, worker transfers information from redis to postgresql, and the result page gets data from postgresql.
The whole process is important!

Using the SSH key provided, and the ***admusr*** with *sudo* rights, access the applications hosted on your infrastructure and understand how services interact with each other, and how to access the logs of each component.

Prometheus, Grafana, AlertManager, NodeExporter

Prometheus is a system allowing you to store metrics. These metrics can come from server (system information) or various applications.
They are retrieved from *targets* via HTTP.

If you do not know Prometheus, refer to your peers, Google or JARVISS.

You can deploy Prometheus on Docker, via a *docker-compose stack* for example.

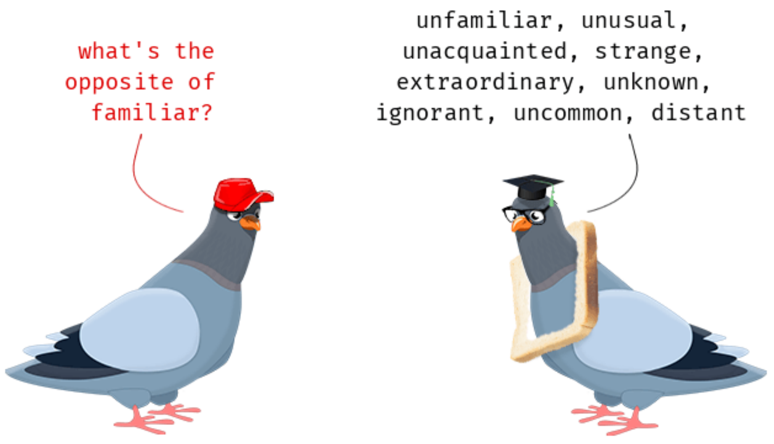
We suggest you to deploy this way:

- **Prometheus** to recover and store metrics,
- **AlertManager** to define rules that trigger alerts,
- **Grafana** to build visualization dashboards,
- **NodeExporter** to bring up the metrics of the current node.

Once Prometheus is deployer on the spare machine containing only a Docker daemon, add NodeExporter and retrieve the metrics from the local machine exposed by NodeExporter.

They should appear in the Prometheus *targets*. TO monitor them, you need to build a dashboard on Grafana.

Get familiar with this tool set by making your own tests and experimentations.


what's the opposite of familiar?
unfamiliar, unusual, unacquainted, strange, extraordinary, unknown, ignorant, uncommon, distant

Other server system metrics

You now need to get some data from your database and application.

Deploy the proper tools to do so on the corresponding servers, and collect the metrics that seem most relevant to you to ensure the availability of your services, and the good governance of your system.

Finding the most relevant metrics deserves a big deal of thinking!

Also build dashboards and alerts that allow you to be responsive on your systems.

You may want to simplify thing using Ansible for Promotheus deployment automation.

On your application server, activate the metrics and add a Prometheus collector to collect directly the HTTP statistics of your application.

This should allow you to anticipate a possible error 500 for example, or any other access or response time concerns.

Traefik can directly expose metrics if it's activated

Find a way to also expose metrics concerning, for example, your PostegreSQL or Redis databases.

Add and visualize as many metrics and alerts as possible to your infrastructure.

Create Ansible playbooks in order to easily deploy all this configuration / tools if ever you have to recover a virtual machine from initial state...

Don't forget to document your work

DATABASE BACKUP

To restart your application in the event of a database crash, we recommend that you regularly make backups of your PostgreSQL database.
These backups could be made on your administration server, however, it is safer to export them regularly outside the infrastructure.

Automate your backup by doing it several times a day between 10am and 6pm.

Be careful with the system you choose, you must make sure to keep a retention on the server low enough as not to overload it.

Get familiar with Logrotate.
It is a relevant way to backup while ensuring that there is file rotation and good retention.

MICROSOFT AZURE

The infra is based on Microsoft Azure.
You have acess to a lot of teaching material about it on Microsoft Learn.

You may want to check this link, or more likely this one.