11

Central Administration Guide

This chapter aims to describe in detail how to configure and maintain an i3-MARKET central instance.

11.1 Cloud Management

In this section, an approach is presented for successfully deploying, configuring, and monitoring centralized core services of i3-MARKET. This approach is based on the usage of Ansible Tower[1] as a key pillar for managing the cloud resources. With Ansible Tower, we can control the i3-MARKET central infrastructure (see Figure 11.1) with a visual dashboard, role-based access
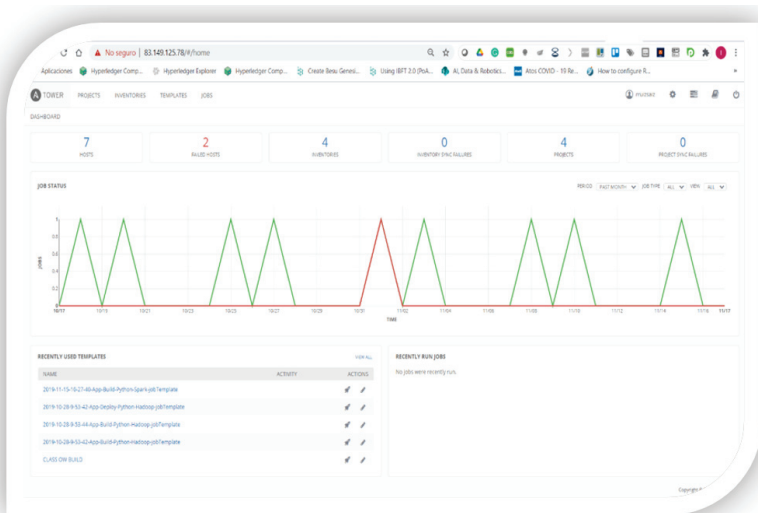

Figure 11.1   Ansible Tower dashboard view.

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[1] Ansible tower: https://www.ansible.com/products/tower

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control, job scheduling, integrated notifications, and graphical inventory management. The Ansible Tower dashboard is shown in Figure 11.1.

Regarding the last version of i3-MARKET, the proposed approach is based on the definition of a physical resource inventory in Ansible, in order to be able to automate the deployments of central artifacts. In line with the i3-MARKET Docker Deployment, the i3-MARKET physical inventory is composed of physical resources, whose nomenclature is based on allocated physical resources as it is shown in the Figure 11.2 and explained

- I3M-PH-Node1, I3M-PH-Node2, and I3M-PH-Node3: These three nodes contain three different instances of i3-MARKET that act as development environments and testing purposes for the i3-MARKET developers.
- I3M-PH-Node4: Physical node 4 contains master Besu node, Cockroach data base which hosts the "Seed Index" for federating queries, Rocks data base central instance of the blockchain, security services for allowing authentication and authorization capabilities to the central node and notification manager.

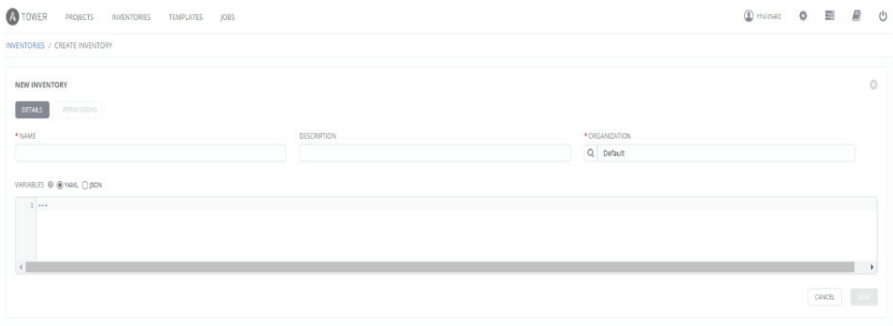Finally, the publication of a new resource inventory is shown in Figure 11.2.

Figure 11.2   Ansible resource inventory definition view.

11.2 Infrastructure Monitoring

As part of the i3-MARKET deployment management plan, a monitoring approach based on the integration of Prometheus and Grafana with Ansible as

the official configuration management tool for the i3-MARKET infrastructure was proposed.

The idea behind this was to take advantage of the Ansible Tower and the metrics provided via the API and feed them into Grafana by using Node Exporter and Prometheus.

Following the approach explained in [5], Ansible Tower must be configured to provide metrics for Prometheus to be viewed via Grafana. In addition to that, Node Exporter is used to export the operating system metrics to an operating system (OS) dashboard in Grafana. The data flow is outlined in Figure 11.3.
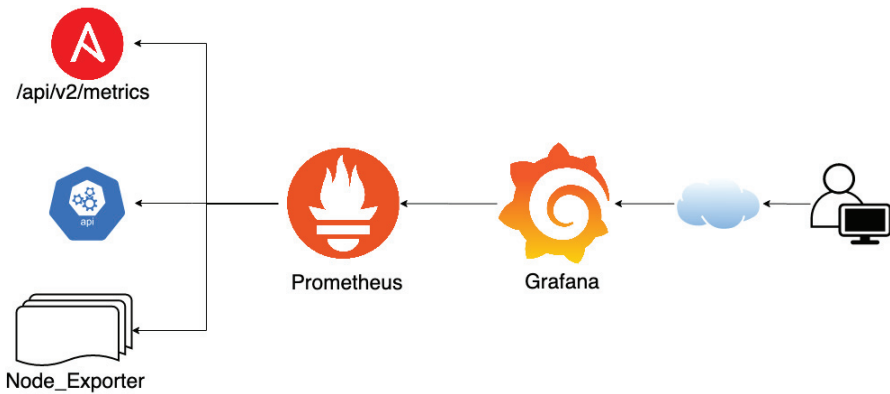

Figure 11.3 Ansible Tower metrics data flow.

As it is reflected in the diagram, Grafana looks for data in Prometheus. Prometheus itself collects the data in its database by importing them from Node Exporters and from the Ansible Tower APIs.

Figure 11.4 shows an updated approach based on Zabbix that was proposed at M15 and adopted as official approach for i3-MARKET monitoring.

Zabbix[2] is an open-source monitoring software tool for diverse IT components, including networks, servers, virtual machines (VMs) and cloud services. Zabbix provides monitoring metrics, among others network utilization, CPU load, and disk space consumption.

Zabbix is used to monitor the following in i3-MARKET common infrastructure:

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[2] Zabbix: https://www.zabbix.com/

Figure 11.4   i3-MARKET Zabbix instance.

- Simple checks to verify the availability and responsiveness of back-plane and other public endpoints associated with core centralized i3-MARKET services.
- A Zabbix agent was installed in each one of the i3-MARKET cluster physical nodes to monitor statistics such as CPU load, network utilization, disk space, etc.
- Docker container monitoring using the Zabbix agent type 2 deployed in i3-MARKET physical nodes.