Computing environment

The WE1S cloud runs in containers. Each container has its own operating system, with RAM and storage from the container host. That host runs on virtual hardware, which in turn runs on dedicated physical hardware.

Hardware host (Hyper-V): "superhype"
A Dual Intel Xeon physical machine with 96GB RAM and 18 TB storage. The OS is Windows Server 2012 R2. It runs Windows Hyper-V virtual hardware manager, which defines the container host.

Container host (Docker): "harbor"
The container host, "harbor", has 49GB of dynamic RAM, 2 virtual processors, and 4 TB storage. The OS is CentOS Linux 7 (x86_64). It runs Docker container engine 19.03.8. Docker is configured with the devicemapper storage driver on the xfs backing file system, with a base device size of 10.74GB. The deployed container count varies from 10-25 depending on project activities. Dockers swarm stacks and services are managed through Portainer.

Containers draw on the resources of the host (within limits--some Java / R processes may only use 2-4GB RAM). Each container is configured with 10GB of non-persistent root drive space, plus large persistent external drive mounts for data. Any container can access up to 47GB shared memory + 8GB swap.

A container: "workspace" (JupyterLab)
The OS is Ubuntu 18.04 LTS. It runs Jupyter 4.4.0 / notebook 5.6.0 and mounts volumes for data (collector-data) processing (notebook-data), & publishing (viewer-data).
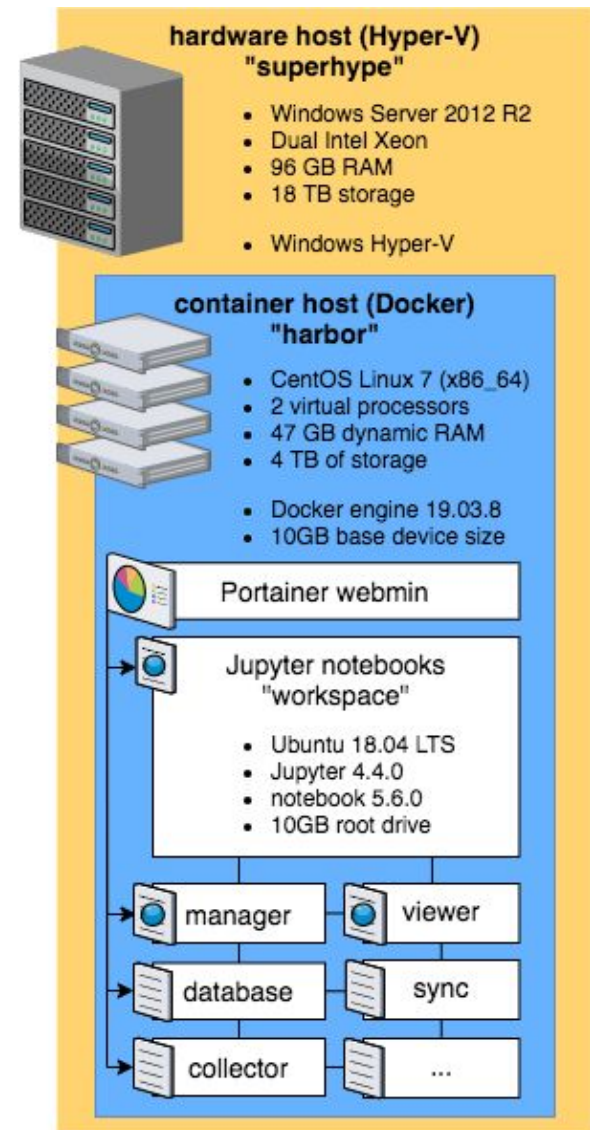
Architecture of virtualization / container environment for the WE1S cloud. Some containers not pictured.

Further Information: WE1S's Key Software cards