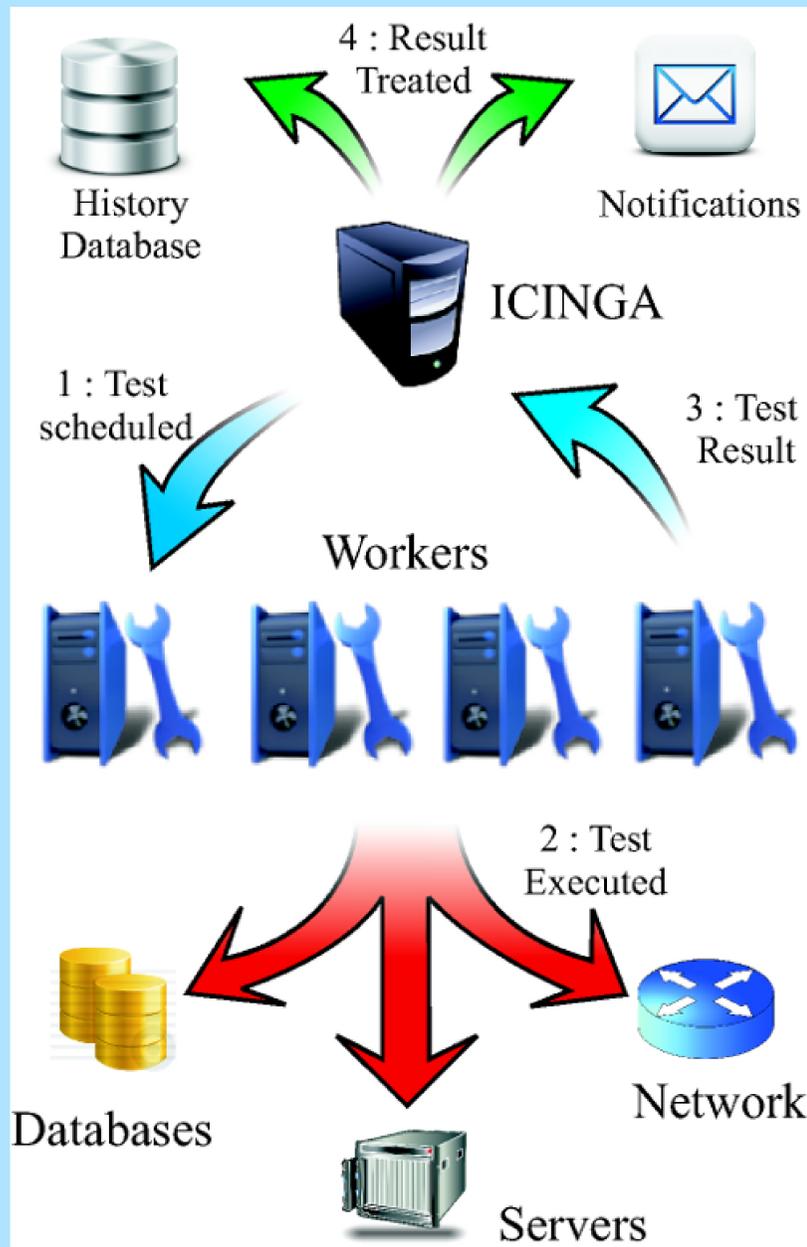


Abstract

The LHCb online system relies on a large and heterogeneous I.T. infrastructure: it comprises more than 2000 servers and embedded systems and more than 200 network devices. While for the control and monitoring of detectors, PLCs, and readout boards an industry standard SCADA system PVSSII has been put in production, we use a low level monitoring system to monitor the control infrastructure itself. While our previous system was based on a single central NAGIOS server, our current system uses a distributed ICINGA infrastructure.

Monitoring Infrastructure

- ▶ **1 central Icinga server:** scheduling of the checks, and processing results
- ▶ **50 distributed workers** (our farm nodes): fetching the check in a queue on the central server, executing the check, pushing the result in another queue on the central server.
- ▶ Icinga checks distributed to the workers via NFS share
- ▶ **Oracle database backend:** a deadlock found in the core software made it unusable. A ticket is open.
- ▶ **Email aggregated** to avoid spam: using NAN. NAN is a Nagios/Icinga plugin which is used to concatenate and reformat the email.



Why Icinga

- ▶ Better support from Icinga community
- ▶ Extra features: in particular database backend support
- ▶ Compatible configuration files: easy migration

Old performances

Checks latency with Nagios:

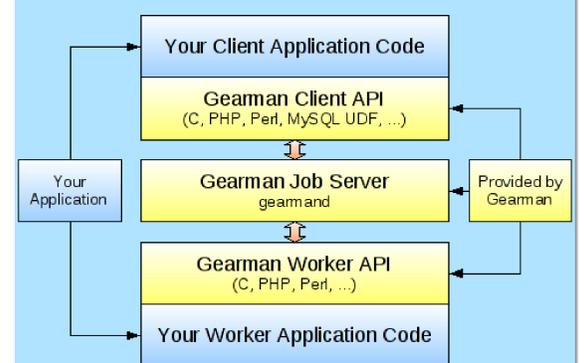
	Min.	Max.	≈
Service	320 sec	578 sec	328 sec
Host	0 sec	401 sec	318 sec

New performances

Checks latency with distributed icinga:

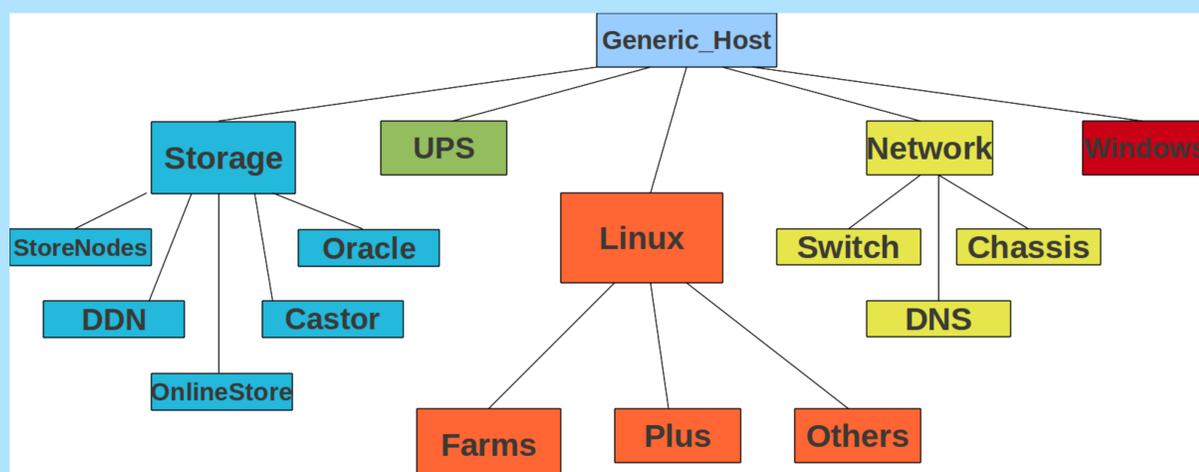
	Min.	Max.	≈
Service	0.03 sec	57 sec	14 sec
Host	0 sec	35 sec	12 sec

Mod Gearman Workers



Mod gearman is a module based on Gearman framework, which can be added to Nagios or Icinga. Gearman is a generic framework to distribute applications. It is based on a client/server model. The server manages queues that clients use to get their tasks and give their results. Mod gearman manages queues where it puts the checks that have to be executed by the workers, and one where the workers will put the result, so that Mod gearman can give them to Icinga core.

Monitoring Infrastructure



Keeping a tree structure of the hosts and hostgroups by using inheritance and membership permits to:

- ▶ monitor a new host the same way than other similar machines by very small modification
- ▶ change the way a functional group of machine (e.g. our farm nodes) is monitored is done by changing a single configuration file.