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

<table>
<thead>
<tr>
<th>Checks latency with Nagios:</th>
<th>Min.</th>
<th>Max.</th>
<th>≃</th>
</tr>
</thead>
<tbody>
<tr>
<td>Service</td>
<td>320  sec</td>
<td>578  sec</td>
<td>328  sec</td>
</tr>
<tr>
<td>Host</td>
<td>0  sec</td>
<td>401  sec</td>
<td>318  sec</td>
</tr>
</tbody>
</table>

New performances

<table>
<thead>
<tr>
<th>Checks latency with distributed icinga:</th>
<th>Min.</th>
<th>Max.</th>
<th>≃</th>
</tr>
</thead>
<tbody>
<tr>
<td>Service</td>
<td>0.03 sec</td>
<td>57 sec</td>
<td>14 sec</td>
</tr>
<tr>
<td>Host</td>
<td>0 sec</td>
<td>35 sec</td>
<td>12 sec</td>
</tr>
</tbody>
</table>

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.

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.