Type of Incident: Cooling Outage

Warning: At the time of writing, all necessary information for an exhaustive post-mortem is still being processed given the severity and complexity of the incident.

Location: IN2P3-CC

Duration: 1 Day and 20 hours

Date: May 3rd 2009 21:00 – May 5th 17:30

Description: Cooling Outage and Consequences on IN2P3-CC Services Availability

Impact: Almost all IN2P3-CC services

The entire batch system and the front-end services to our MSS have namely been out of service Sunday evening. Progressive restart of the services was done from Monday May 4th on, as the cooling system was back to operational state during the night of Sunday.

Timeline of the Incident

On Saturday May 2nd, temperature increased in the machine room due to a combination of weather conditions and heavy computing load; the situation was assessed as non-critical.

Sunday May 3rd
11:00-15:00 Temperature alarms alerted both computer and technical on-duty officers. Assessment of the situation was done by IN2P3-CC staff: criticality was rated identical to the day before. Despite the fact that the situation was expected to go back to normal along with day's end, worker nodes (around 200) were taken out of production out of caution.
19:00 Temperature level nevertheless triggered a chiller outage and a chain reaction in the cooling system induced that all the chillers went down.
20:30 Temperature continued to increase rapidly; Electrical computer shutdown started.
21:30 Electrical shutdown of almost all IN2P3-CC services completed.

Monday May 4th
13:00 Grid services operational: LFC, FTS, VOMS, Top BDII
15:30 Progressive restart of services: Oracle, interactive job submission (batch still to be enabled)
18:15 T0-T1 transfers and access to MSS -through dCache- operational
Tuesday May 5th
12:00 Batch restart in degraded mode with 244 worker nodes
14:00 Batch in operational mode with 40% of nominal computer capacity
16:00 CEs in operational state - end of unscheduled downtime

Announcements to end-users

8 news posted on to:http://cc.in2p3.fr between 21:00 May 3rd and – 17:30 on May 5th
2 mails on May 4th sent to wlcg-operations including one from D. Boutigny, director.

Analysis and Follow-up

Temperature went up very fast in the computer room before electrical shutdown of machines could occur on Sunday evening. Cooling system was restored on Sunday night and progressive restart of services led to 40% of batch operational as of Tuesday May 5th 14:00.

The production then went up to 75% of computing nominal rate on Wednesday May 6th mid-afternoon, when we underwent a similar incident. The shut-down of some worker nodes was nevertheless sufficient to handle this incident and to prevent further damages on service availability.

D.Boutigny announced May 6th a reinforcement of our cooling system early June, which is the earliest some extra cooling power can be installed. In the mean time, in order to prevent a similar incident during the week-end, the CC-IN2P3 computing capacity is in degraded mode.

Marc HAUSARD/Hélène CORDIER – May 8th 2009