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Load-Shed Plan for GCC Computing

If Needed

Matt Crawford

2012-05-07

Background

GCC Computer Room B suffered cooling incidents in summers of 2010, 2011, some with computing impact.

- 2010: some reboots. 2011: shut down all of Computer Room B.
- On later dates in 2011, we proactively reduced heat load and took other steps.

Causes

Direct cause:

- Failure of the condensers to return sufficiently cool, low-pressure, liquified circulating fluid to the computer room air conditioners (CRACs).

Root cause:

- Placement of condensers leads to too-hot intake in bad weather conditions.

☞ http://bit.ly/docdb-4366

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Mitigations 2011

To get through hot days last summer ...

- Partial shutdowns were performed,
- The concrete pads were soaked with water,
- Mobile cooling units were added.

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Mitigations 2012

Mitigations 2012

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Prospects for 2012

Consulting engineers estimate P≈0.65 that removing the berm will be enough. No other mitigations planned for 2012.

Just in case, we have a load-shed plan at the ready: 30%, 50%, 99% reductions in power & heat. Plan, including racks affected, decided in consultation with computing liaisons & service operators.

☞ http://bit.ly/docdb-4719

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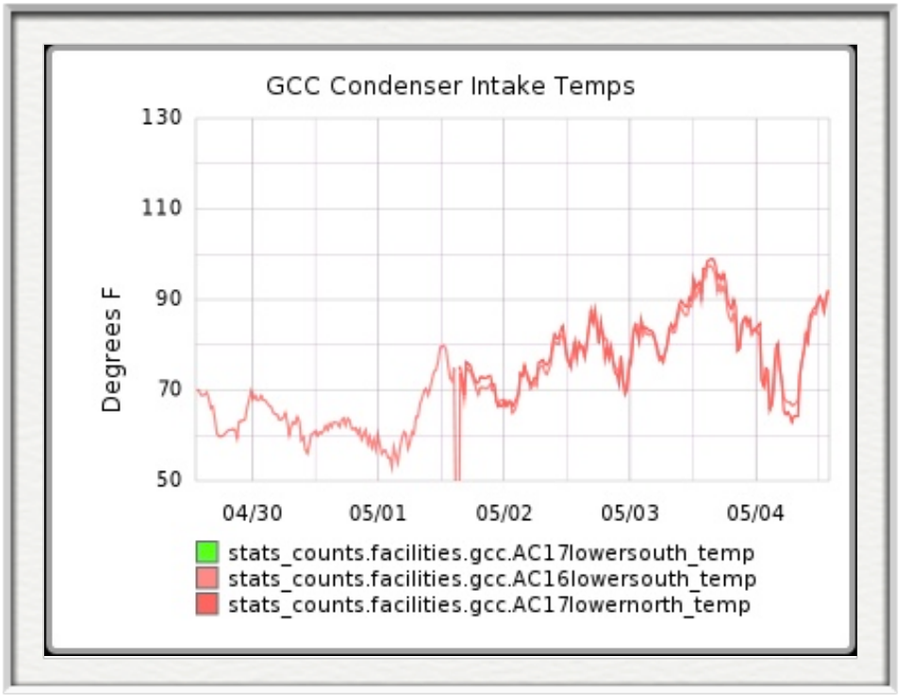
Invoking load-shed

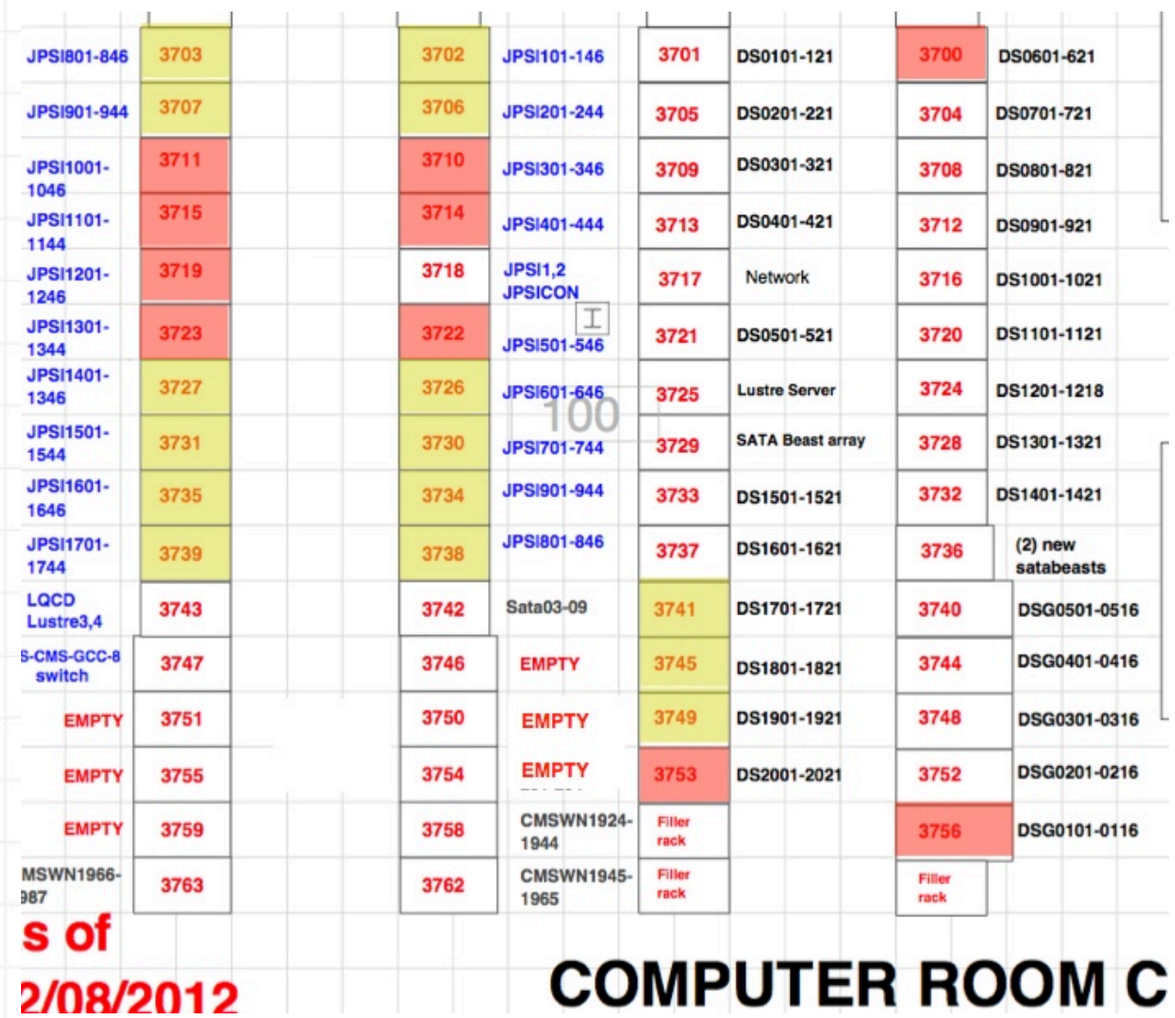
- Decisions made by Computing's Facilities Operations Department.
- Primary criterion: projected temperature of condenser intake air.



- Need post-berm operating experience.
- Notification through Service Desk.
- Response target 30/60/90 minutes.
- Rack lists can be altered as computing needs change.
- More detail ☞ http://bit.ly/docdb-4719

Affected Racks

Off in phase 1 (30%) | Off in phase 2 (50%) | On in phase 3 (99%)



*LQCD: Or clock reduction

Impact on Computing

	GCC-A,B,C: Full Load			GCC-A,B,C: **30%** Reduction			% Remaining		
	Systems	Cores	Benchmark	Systems	Cores	Benchmark	Systems	Cores	Benchmark
CDF	555	4904	38.66	463	4168	35.10	83	85	91
CMS	1449	12360	114.44	1069	9320	98.96	74	75	86
D0	1023	8412	63.29	908	7492	58.84	89	89	93
GenPurpose	335	4952	51.69	231	4120	42.08	69	83	81
Total	3362	30628	268.08	2671	25100	234.98	79	82	88

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	Systems	Cores	Benchmark	Systems	Cores	Benchmark	Systems	Cores	Benchmark
CDF	555	4904	38.66	402	3680	32.74	72	75	85
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D0	1023	8412	63.29	797	6532	51.86	78	78	82
GenPurpose	335	4952	51.69	131	3032	30.21	39	61	58
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Introductions

Rick Snider—new Availability & Service Continuity Manager.

Tammy Whited—Service Manager.

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