Computing Operations Roadmap

Kaushik De

University of Texas At Arlington

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Introduction

- Expect first data to arrive end of summer

- After 6+ years of preparing computing facilities and software systems – are we really ready?

- In this talk, I will review what is ready, but more importantly what remains to be done

- I will review summer plans (alas, not vacation plans!)

Some Recent Achievements

- ❑ **Excellent MC production capacity and availability**
  - ❑ Good completion rates recently (when jobs available!) – typically 0.5M fully simulated events/day (~5k CPU's)
  - ❑ Many Tier 3's ready – more joining soon
- ❑ **Impressive throughput during CCRC08 tests**
  - ❑ Tier 1 and Tier 2's demonstrated prompt transfers
- ❑ **Analysis sites ready**
  - ❑ But not much data availability at Tier 2's
  - ❑ Need more users!
- ❑ **Overall, U.S. facilities in good shape**
  - ❑ Production hardened, analysis ready, SRM v2.2 (in record time)
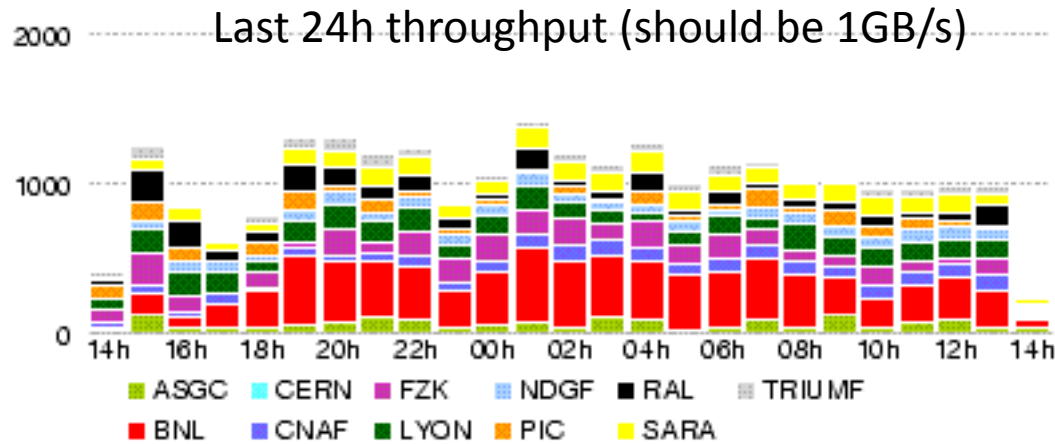 - ❑ But need to complete 2008 procurement
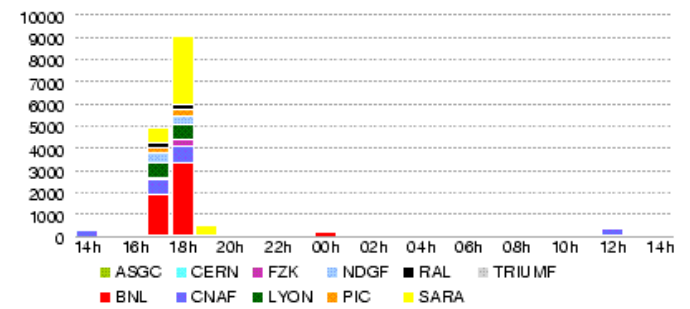
PanDA production (few weeks ago)

World Wide - running - week
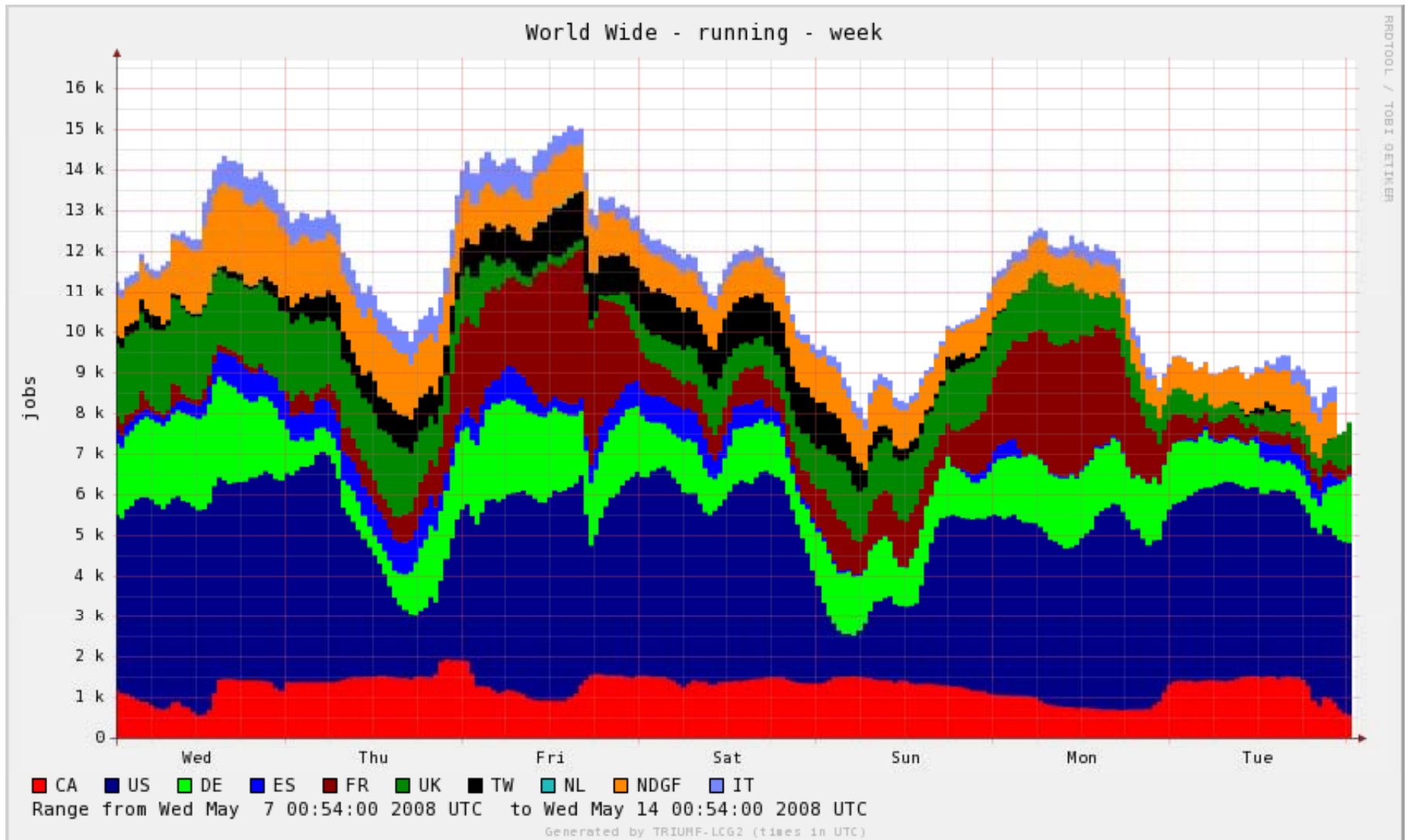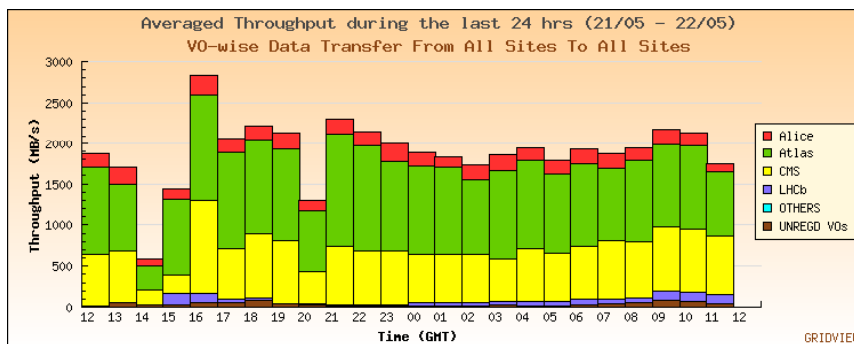
Production – This Year

World Wide - running - year
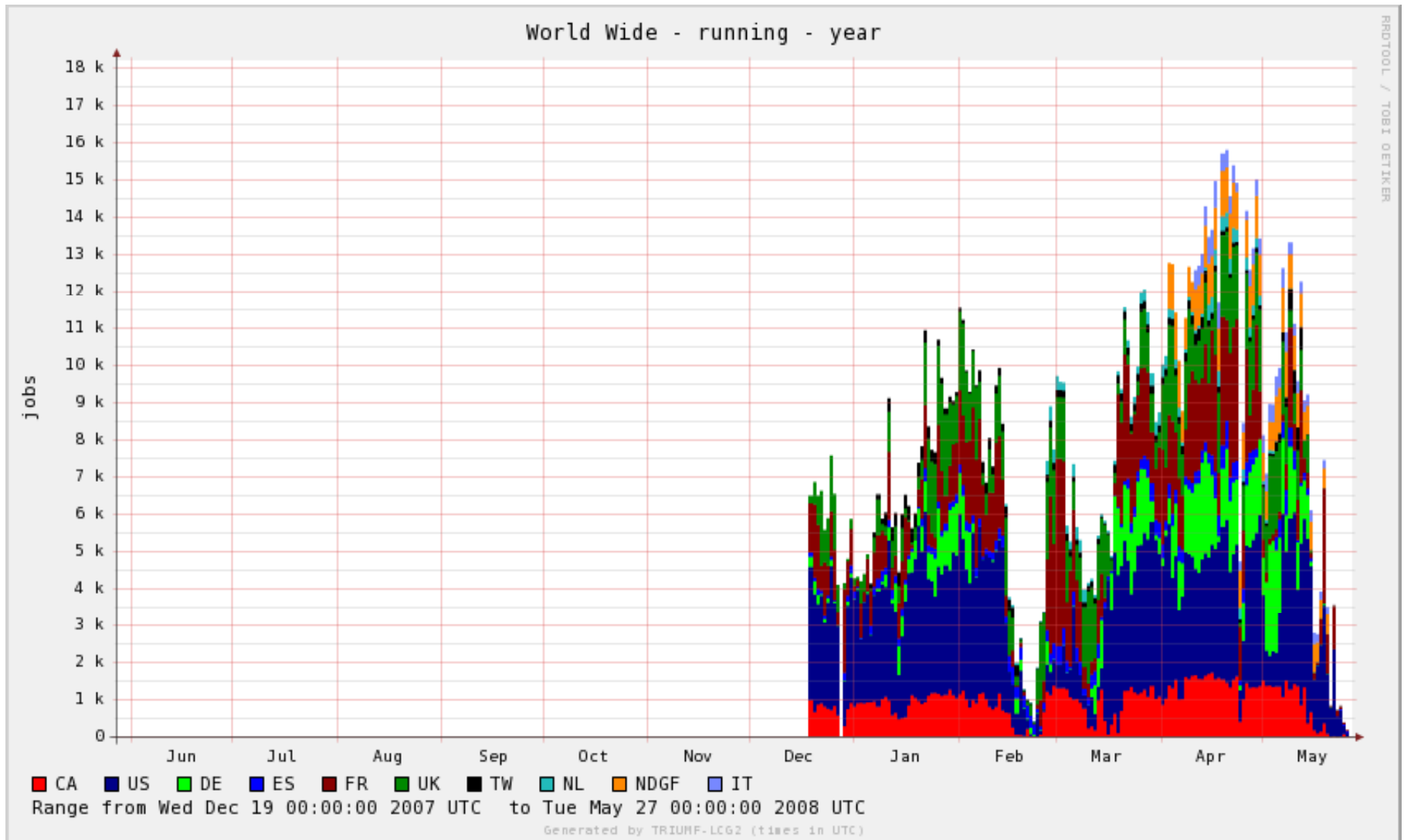
CCRC Data Transfers – on May 21

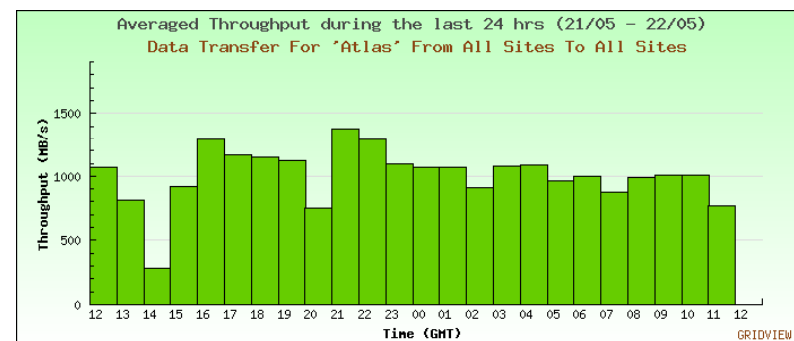Last 24h throughput (should be 1GB/s)

Last 24 errors

Last 24h CCRC throughput

Last 24h throughput (should be 1GB/s)

From Simone Campana

Throughput Details

❑ The rate is almost what one would expect

Cloud	Efficiency	Transfers Throughput
ASGC	94%	51 MB/s
BNL	64%	319 MB/s
CERN	0%	0 MB/s
CNAF	55%	77 MB/s
FZK	85%	118 MB/s
LYON	71%	120 MB/s
NDGF	63%	67 MB/s
PIC	75%	60 MB/s
RAL	84%	92 MB/s
SARA	43%	106 MB/s
TRIUMF	79%	48 MB/s

Rates(MB/s)	TAPE	DISK	Total
BNL	79.63	218.98	298.61
IN2P3	47.78	79.63	127.41
SARA	47.78	79.63	127.41
RAL	31.85	59.72	91.57
FZK	31.85	59.72	91.57
CNAF	15.93	39.81	55.74
ASGC	15.93	39.81	55.74
PIC	15.93	39.81	55.74
NDGF	15.93	39.81	55.74
Triumf	15.93	39.81	55.74
Sum	318.5	696.76	1015.28

From Simone Campana

CCRC08 Tier 2 Netmon – Past Week
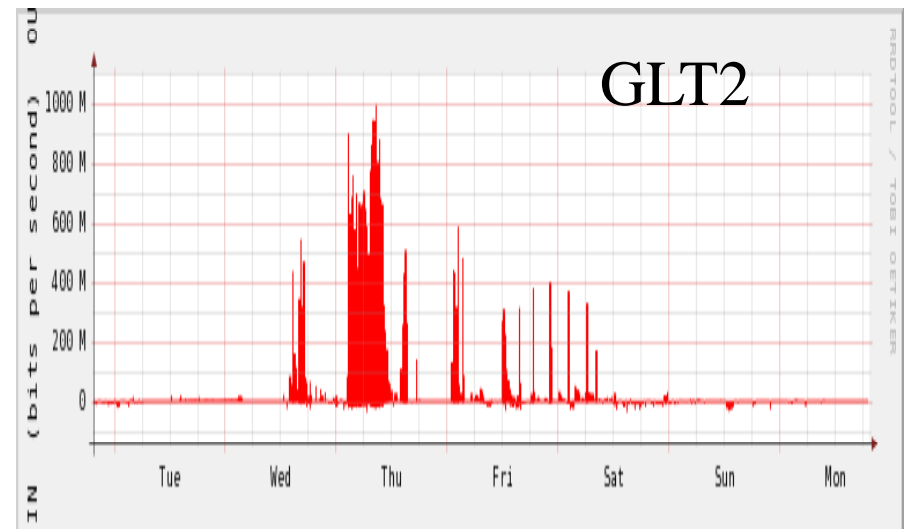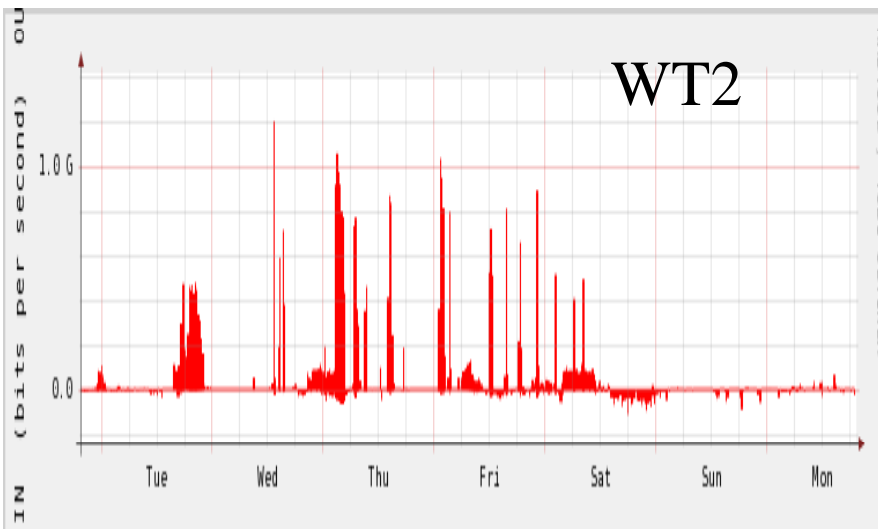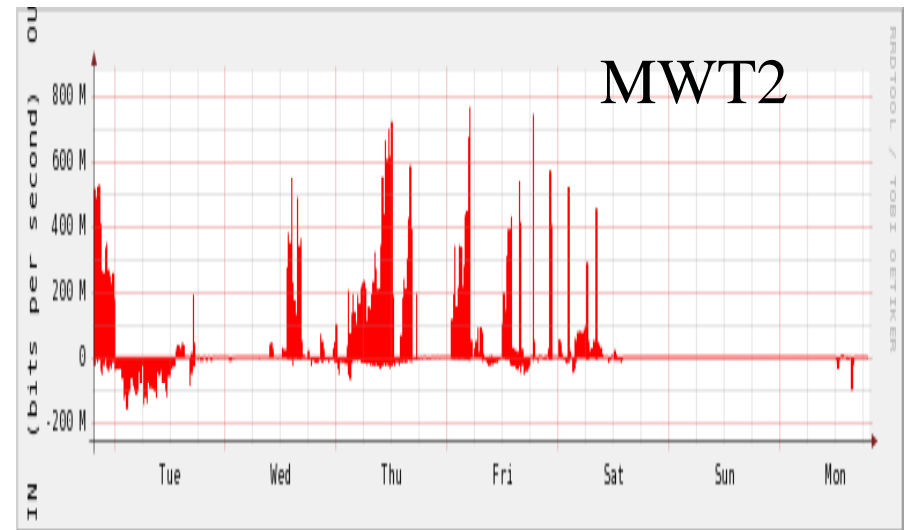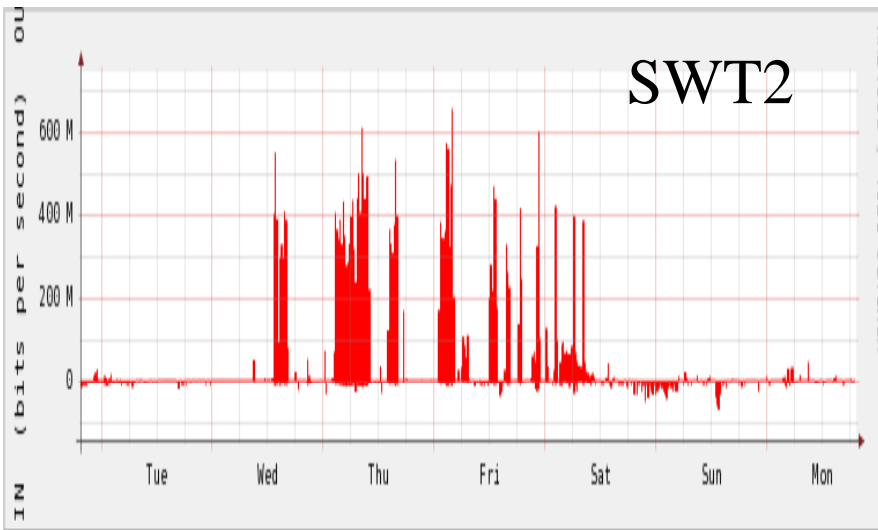
CCRC Plans – This Week

❑ Plan for realistic data taking exercise

    ❑ Data transfers T0->T1->T2, assuming 14h run

    ❑ Simultaneous MC production – all week

    ❑ Simultaneous reprocessing from tape (M5, M6, FDR data)

    ❑ Also involve T1->T1 transfers end of week

    ❑ Software validation & FDR-2 mixing will continue during this period!

❑ Finally, full scale exercise

    ❑ Except for distributed analysis load – chaotic but low so far

❑ Need help from everyone!

Operating Facilities

❑ **Mixture of Global and Local approach**

❑ **Global Operations**

   ❑ Production shifts – many years of experience

   ❑ Works well – now integrated ATLAS-wide

   ❑ Primarily monitor and escalate

   ❑ Distributed Analysis support – being organized

   ❑ Task support – being organized at global ATLAS level (Nevski, Yu)

❑ **Local Operations**

   ❑ Tier 1 facilities support – primarily through global support

   ❑ Tier 1 support for Tier 2's

   ❑ Tier 2 support – proactive site monitoring

   ❑ Communication works well within U.S. among various teams

Are We Ready?

❑ Everything looks good – thanks to hard work by many of you

❑ But are we ready – not quite!

   ❑ Distributed analysis – never exercised at scale

   ❑ Distributed Data Management – still on critical path (more details in next talk)

   ❑ Reprocessing – critical test this week

   ❑ Core software – delayed and understaffed

   ❑ Several other areas are still understaffed – transformations, job definition, Panda core …

   ❑ LRC vs LFC – need resolution quickly

Distributed Analysis

❑ All US sites are ready – but user demand not very high

❑ Need to implement load based brokering – now most jobs go to BNL (in computing model, most jobs go to Tier 2)

❑ Data management issues not fully resolved

  ❑ Storage quotas/data archiving/data lifetime issues

  ❑ Storage allocation for DA

❑ Have no experience (actually, no clue) what the scale will be – urgently need to plan for larger exercise

❑ Need work this summer

Tier 3 Integration
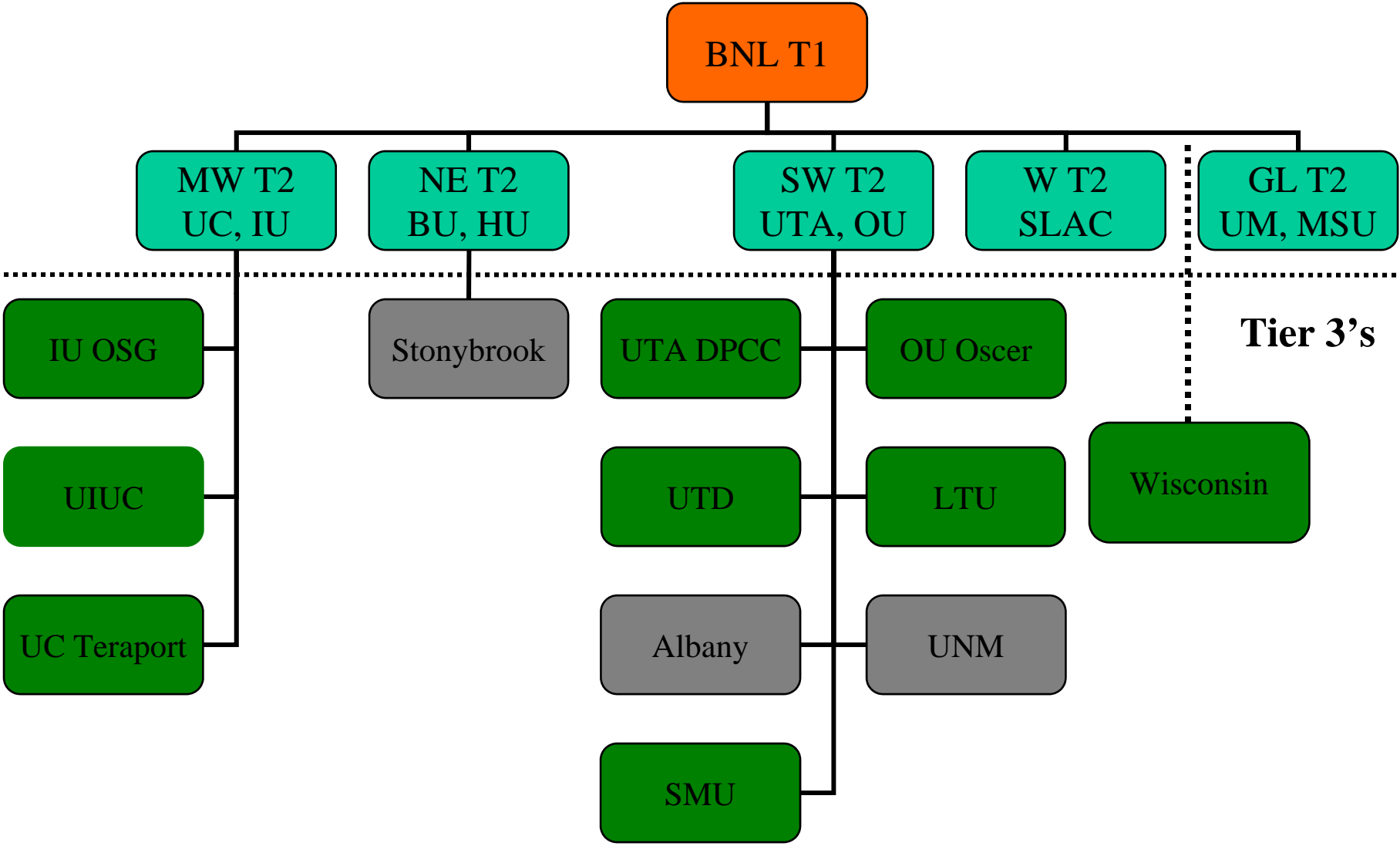
Distributed Data Management

❑ We can get data efficiently from T0 (mostly!)

❑ We can get data from some Tier 1's – and send data

❑ Tools to manage data hierarchy within US not ready

  ❑ We recently decided not to rely on central operations

  ❑ U.S. cloud will be managed by us

  ❑ ATLAS-wide tools not fully ready – need new U.S. development

  ❑ This will be major activity during summer

❑ Many storage related issues

  ❑ Data distribution policies

  ❑ Data deletion strategies

  ❑ Allocation among various activities

  ❑ Proper mixture between central vs local management …

Reprocessing

❑ **Stand-alone tests at BNL & Triumf worked well**

    ❑ But many steps manual – not final configuration

    ❑ Used pandamover for prestaging

❑ **New tests past two weeks somewhat successful**

    ❑ At all Tier 1's – but few test jobs

    ❑ Trying to use DQ2 (pandamover still at BNL)

❑ **Big tests planned this week**

    ❑ New conditiondDB tarball

    ❑ Schema changes in Panda

    ❑ Much higher rate planned

    ❑ Tier 2's will also participate

❑ **Still on critical path**

Organization Issues

- ❏ **I started as Operations Coordinator in April**
  - ❏ Main goal – better integration of applications and operations
  - ❏ Hope to spend more time on planning, this summer!
  - ❏ Need input from all of you!
- ❏ **Deputy Operations Coordinator**
  - ❏ Armen Vartapetian – recently returned from CERN (after >2 years setting up ATLAS control room operations)
  - ❏ Will start in new role, as my deputy, next week!
  - ❏ Will be stationed at BNL
- ❏ **I also plan to spend 5 weeks at BNL this summer**
  - ❏ Review overall operations organization and staffing

Summary

❑ The glass is more than half full

❑ But we are not fully ready

❑ DDM, DA, software … some of the unknowns

❑ Expect busy summer

❑ And then finally data!