

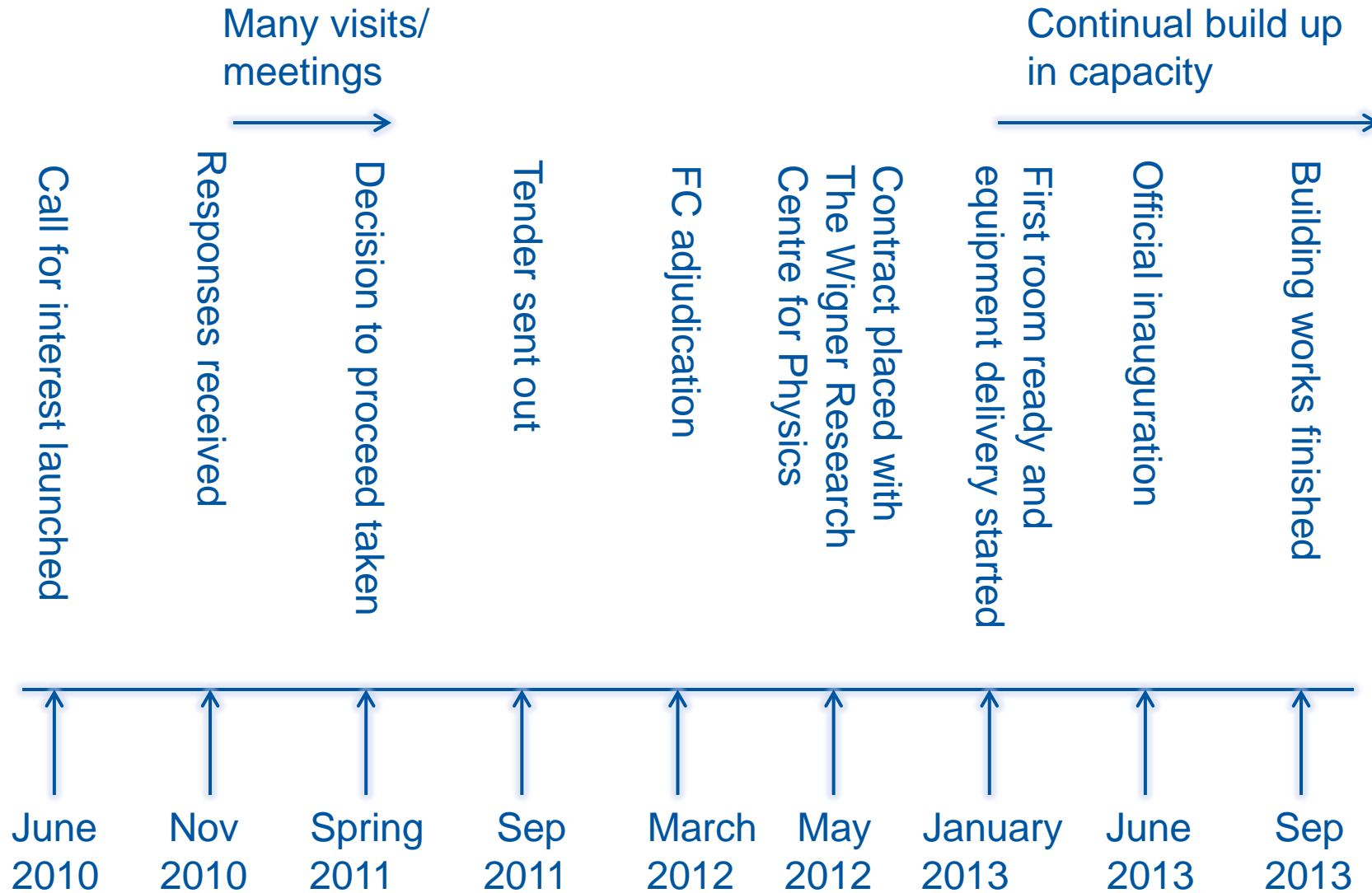


CERN@Wigner – Remote Hosting Experiences

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Brief History*



*timeline not to scale

Brief History in pictures



Installation Status

- Three rooms are in operation for CERN with 184 racks used
- 2644 CPU servers – 661 2U quads (47104 cores, 173056 GB RAM, 11376 TB disk)
- 784 external storage units – 4U JBODs each with 24 disks
(73344 TB in total - 1920 TB on 3TB drives and 16896 on 4TB drives)
- Network equipment: 8 high end routers, 55 10GbE and 91 1GbE switches, 1 management router and 183 management switches
- No further large deliveries expected in 2015
- Investigating possibility of having a 3rd 100Gbps link

Experience - General

- On the whole good – generally works well
 - Remote operation and monitoring works well
 - No out of hours support for CERN equipment
- Teams visiting each other was very useful
 - Help given with initial setups
- Over reliance on one person
- Reporting
 - Regular bi-weekly operational telecom
 - Monthly reports (since 2014)
 - Operations and Billing
- Can be time consuming dealing with new requirements, e.g. Russian Tier 1 link

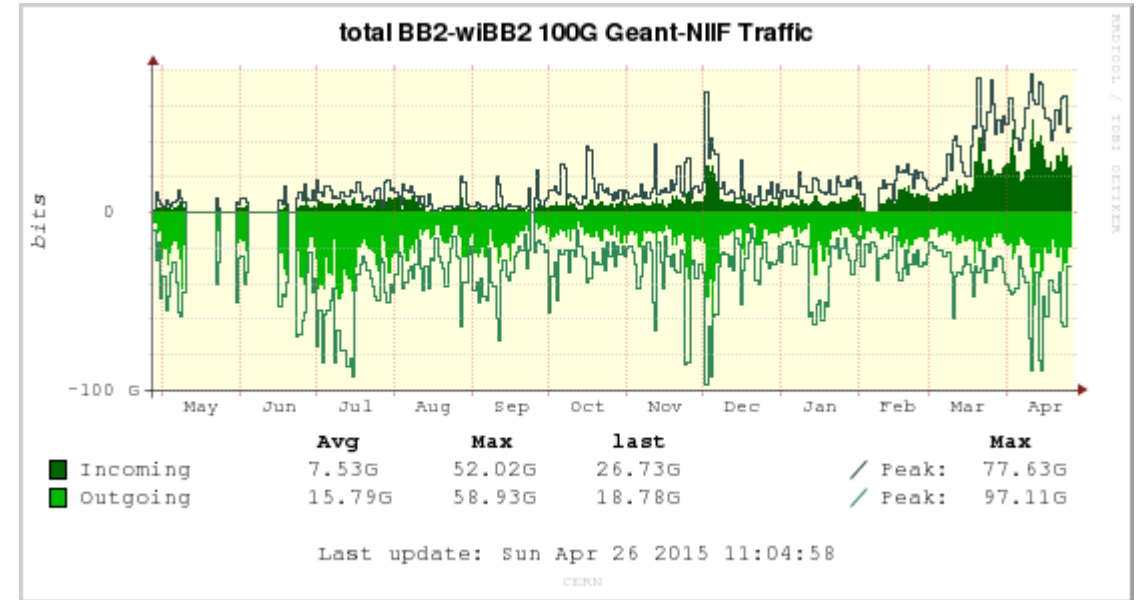
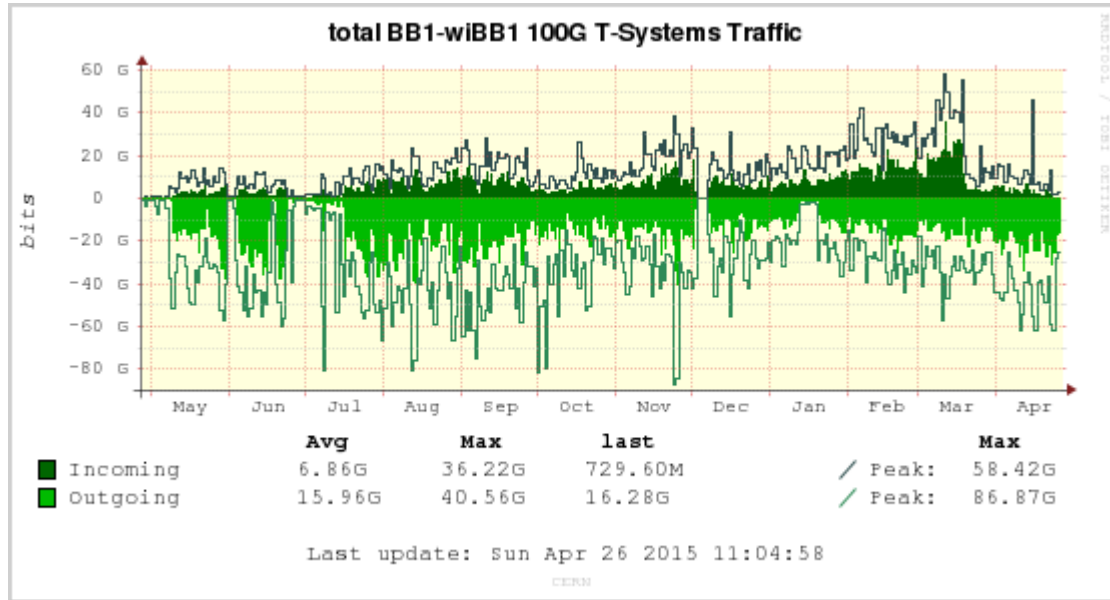
Experience - Networking



Experience - Networking

- Long discussions on initial network setup in the rooms
- Takes longer to solve simple problems/lot of mail exchange/no out-of-hours support
 - Required changes to operational approach
 - Wigner now has access to SPECTRUM monitoring
- Less time for deployment of new equipment (for CERN)
- Availability of 100Gbps links less than expected
 - Frequent incidents and planned maintenances
 - But, never had both links down at the same time!
 - Automated trouble-tickets sent to NOCs if link outage detected
 - Link utilization is good (see next slide)
- Broken equipment takes longer to be replaced by manufacturer
 - Try to minimize the number of shipments
 - Shipments must come via CERN

Link Usage



- % Up Time 97.178%
- % Degraded Time 2.808%
- % Loss Of Management Time 0.015%



Lessons Learnt

- New facility and hence some teething problems as well as one design issue
- Lack of experience on both sides
 - but due to collaborative and flexible approach issues have generally been resolved quickly
- Personal contact is VERY important
 - Help with first installations
 - Teams meeting each other
 - Regular telecoms
- Good communication is important
- Good documentation helps a LOT
 - Still need to improve SLA and other formal arrangements
- Things always take longer than foreseen

Conclusions

- In general everything is running smoothly
- Issues have arisen
 - But in general have been resolved quickly due to flexibility and good relations on both sides
 - VAT and insurances have taken longer due to external parties
- 100Gbps links have not been as stable as expected
- Some questions raised regarding job efficiency
- Full power capacity usage will not be possible due to lower power density than expected
- With experience it should be possible to produce more detailed formal documents next time (....)
- Still waiting to implement more extensive Business Continuity
- Contract due to run until end of 2019

Questions?

