

# LHCOPN update

LHCOPN meeting in Abingdon

6<sup>th</sup> March 2018

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LHCOPN



# Latest news

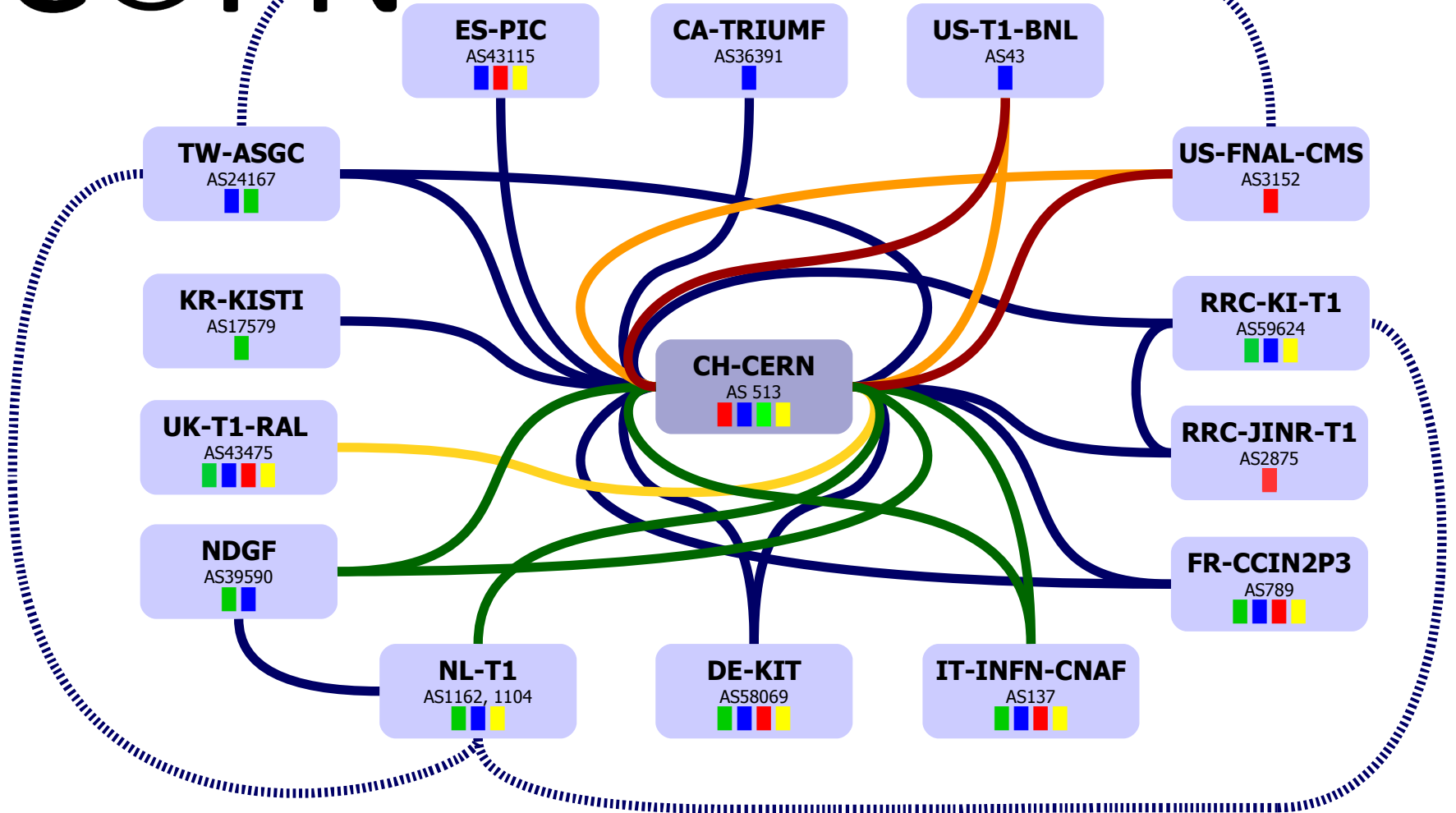
## CH-CERN

- Started installation of Juniper QFX routers. Brocade Datacentre routers will be phased out in 2018 and 2019
- 2<sup>nd</sup> network hub in Preveessin (FR) site:
  - construction completed
  - two routers in production
  - right now validating firewall with 100G IPv4-v6 bypass
  - preparing for REN installations (GEANT, ESnet, SURFnet, NORDUnet)

# Latest news

[Input from Tier1s in the audience]

# LHCOPN



— T0-T1 and T1-T1 traffic  
- - - T1-T1 traffic only  
■ = Alice ■ = Atlas ■ = CMS ■ = LHCb  
 edoardo.martelli@cern.ch 20171030

<span style="color: blue;">—</span>	10Gbps
<span style="color: green;">—</span>	20Gbps
<span style="color: yellow;">—</span>	30Gbps
<span style="color: orange;">—</span>	40Gbps
<span style="color: red;">—</span>	100Gbps

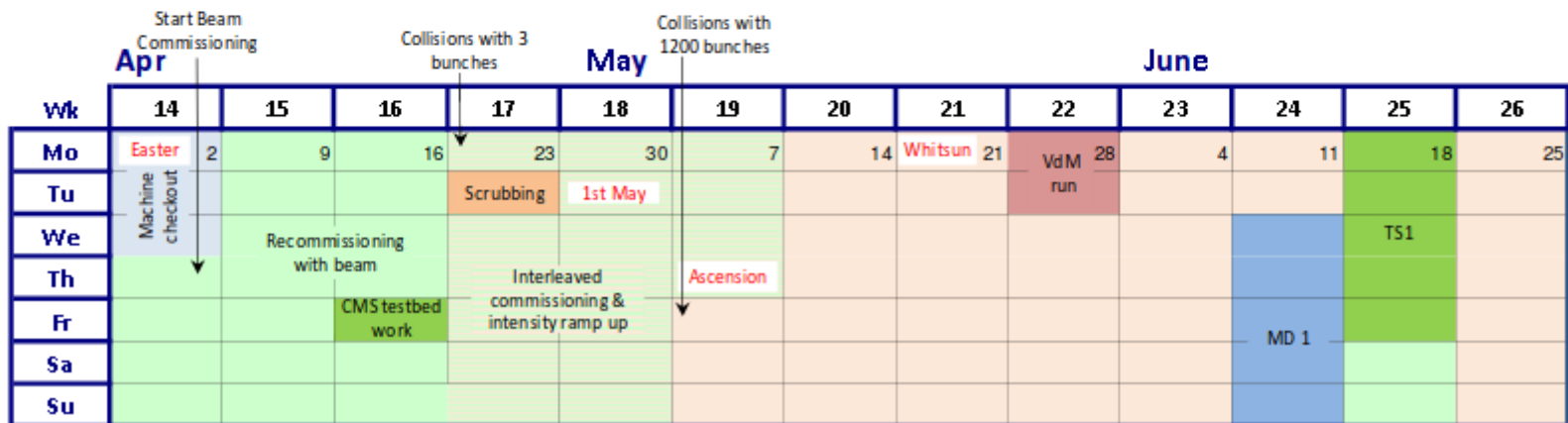
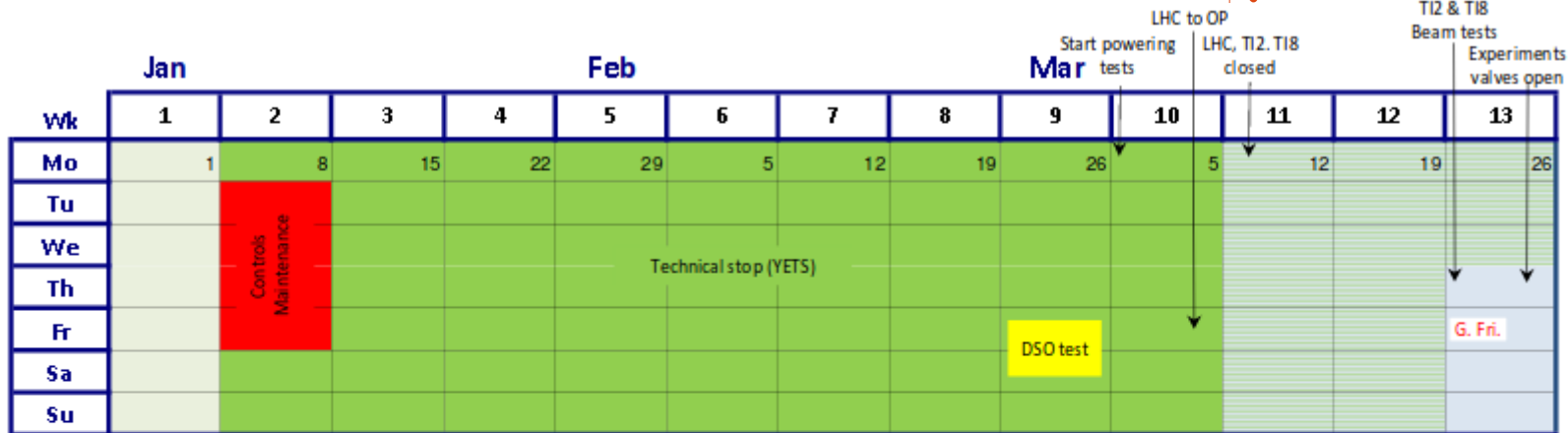
# T1-T1 routing policies

From \ To	CA-T	CH-C	DE-K	ES-P	FR-I	IT-C	KR-K	NDGF	NLT1	RRCK	RRCJ	TW-A	UK-R	US-F	US-B
CA-TRIUMF		OPN	1	OPN	OPN	OPN	OPN	OPN	OPN	OPN	OPN	OPN	OPN	n/a	1
CH-CERN	OPN		OPN	OPN	OPN	OPN	OPN	OPN	OPN	OPN	OPN	OPN	OPN	OPN	OPN
DE-KIT	1	OPN		OPN	1	1	OPN	OPN	OPN	OPN	OPN	OPN	OPN	1	OPN
ES-PIC	OPN	OPN	OPN		OPN	OPN	OPN	OPN	OPN	OPN	OPN	OPN	OPN	OPN	OPN
FR-CCIN2P3	OPN	OPN	1	OPN		1	OPN	OPN	OPN	OPN	OPN	OPN	OPN	1	OPN
IT-INFN-CNAF	OPN	OPN	1	OPN	1		OPN	OPN	OPN	OPN	OPN	OPN	OPN	OPN	OPN
KR-KISTI		OPN													
NDGF	OPN	OPN	OPN	OPN	OPN	OPN	OPN		OPN	OPN	OPN	OPN	OPN	OPN	OPN
NL-T1	OPN	OPN	OPN	OPN	OPN	OPN	OPN	OPN		OPN	OPN	OPN	OPN	OPN	OPN
RRC-KI-T1		OPN													
RRC-JINR-T1		OPN													
TW-ASGC	OPN	OPN	OPN	OPN	OPN	OPN	1	OPN	OPN	OPN	OPN		OPN	1	1
UK-T1-RAL	OPN	OPN	OPN	OPN	OPN	OPN	OPN	OPN	OPN	OPN	OPN	OPN		OPN	OPN
US-FNAL-CMS	OPN	OPN	1	OPN	1	OPN	OPN	OPN	OPN	OPN	OPN	1	OPN		1
US-T1-BNL	1	OPN	OPN	OPN	OPN	OPN	1	OPN	OPN	OPN	1	1	OPN	1	

<https://twiki.cern.ch/twiki/bin/view/LHCOPN/RoutingPolicies>

# LHC Schedule 2018 Q1-Q2

Here today



[https://beams.web.cern.ch/sites/beams.web.cern.ch/files/schedules/LHC\\_Schedule\\_2018.pdf](https://beams.web.cern.ch/sites/beams.web.cern.ch/files/schedules/LHC_Schedule_2018.pdf)

# LHC Schedule 2018 Q3-Q4

	July			Aug				Sep					
Wk	27	28	29	30	31	32	33	34	35	36	37	38	39
Mo	2	9	16	23	30	6	13	20	27	3	10	17	24
Tu				MD 2									
We												TS2	
Th										Jeune G.			
Fr											MD 3		
Sa													
Su													

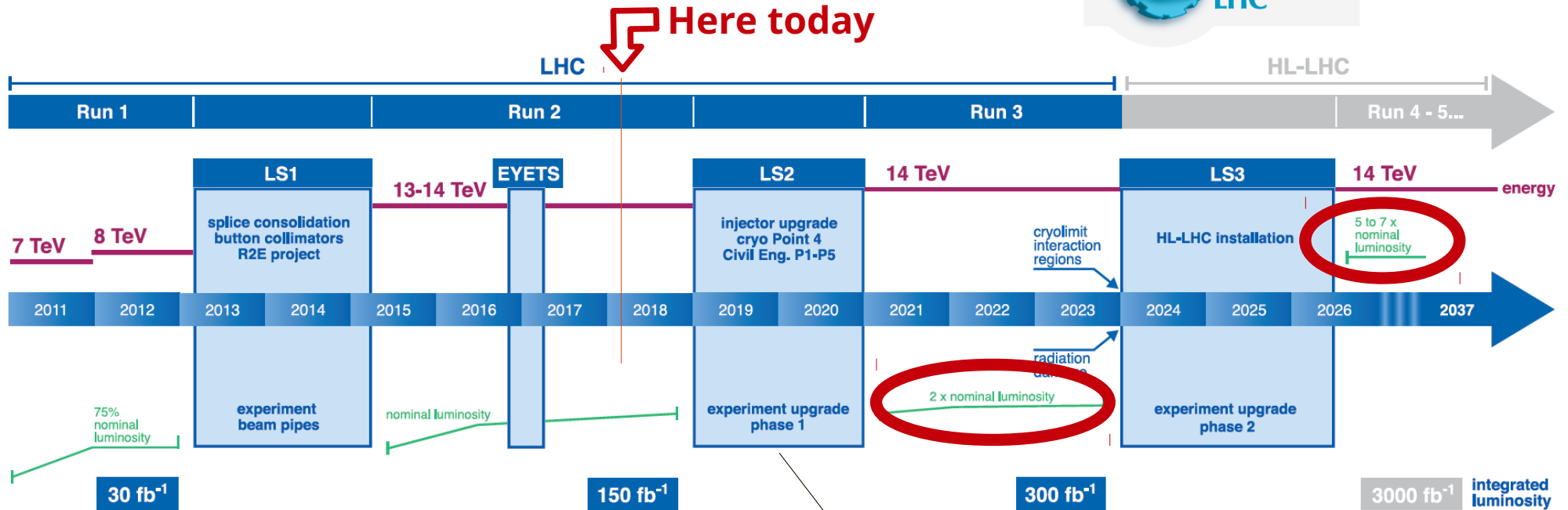
  

	Oct			Nov				Dec					
Wk	40	41	42	43	44	45	46	47	48	49	50	51	52
Mo	1	8	15	22	29	5	12	19	26	3	10	17	Xmas 24
Tu					MD 4	Ion setting up		MD 5					
We		Special physics run											
Th					TS3								
Fr							LHC Pb- Pb Ion run			Powering Tests Magnet Training			
Sa				MD 4									
Su													

End of run  
(00:00)

[https://beams.web.cern.ch/sites/beams.web.cern.ch/files/schedules/LHC\\_Schedule\\_2018.pdf](https://beams.web.cern.ch/sites/beams.web.cern.ch/files/schedules/LHC_Schedule_2018.pdf)

# HL-LHC plan



**LS2 (Long Shutdown #2)**

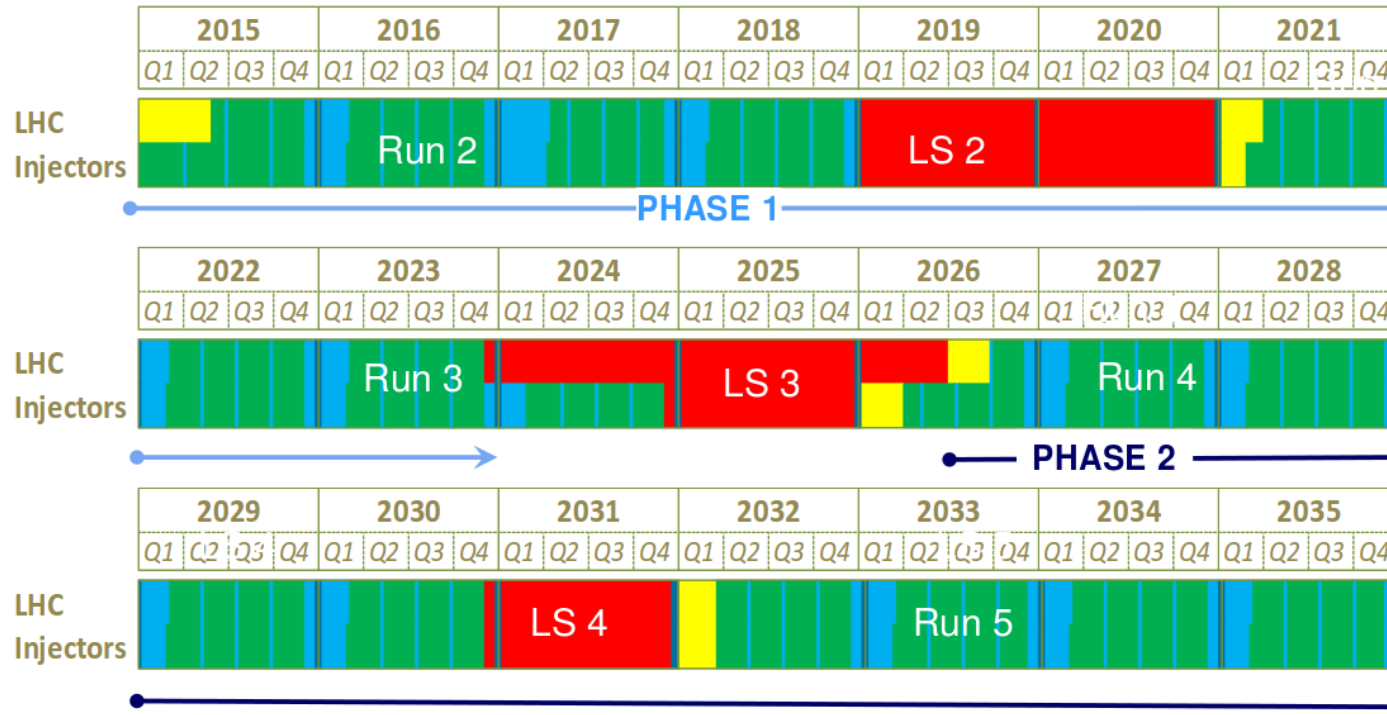
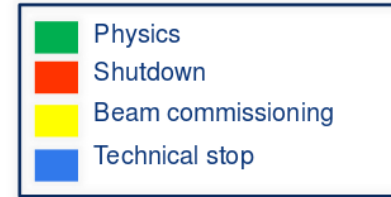
- Perform major maintenance and consolidation
- Increase injector reliability and lifetime to cover HL-LHC run until ~2035
- Increase intensity in the injectors to match HL-LHC requirements
- Anticipate HL-LHC work



# Long term planning

## LHC roadmap: according to MTP 2016-2020 V2

LS2 starting in 2019 => 24 months + 3 months BC  
 LS3 LHC: starting in 2024 => 30 months + 3 months BC  
 Injectors: in 2025 => 13 months + 3 months BC

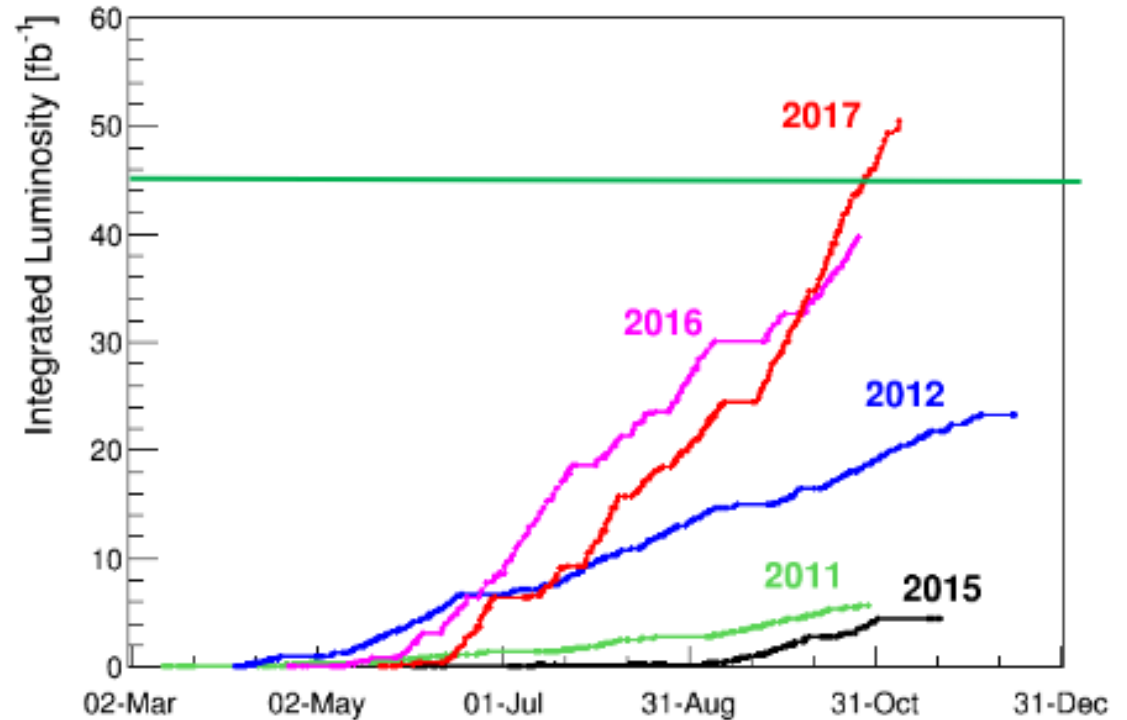


<https://lhc-commissioning.web.cern.ch/lhc-commissioning/schedule/LHC-long-term.htm>

[https://lhc-commissioning.web.cern.ch/lhc-commissioning/schedule/LHC%20schedule%20beyond%20LS1%20MTP%202015\\_Freddy\\_June2015.pdf](https://lhc-commissioning.web.cern.ch/lhc-commissioning/schedule/LHC%20schedule%20beyond%20LS1%20MTP%202015_Freddy_June2015.pdf)

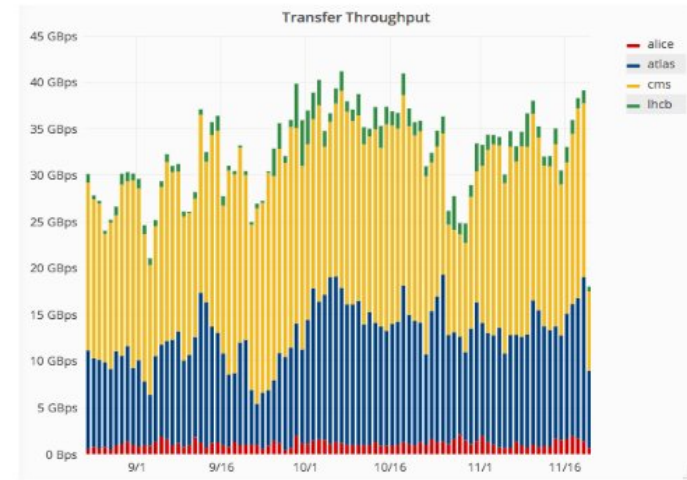
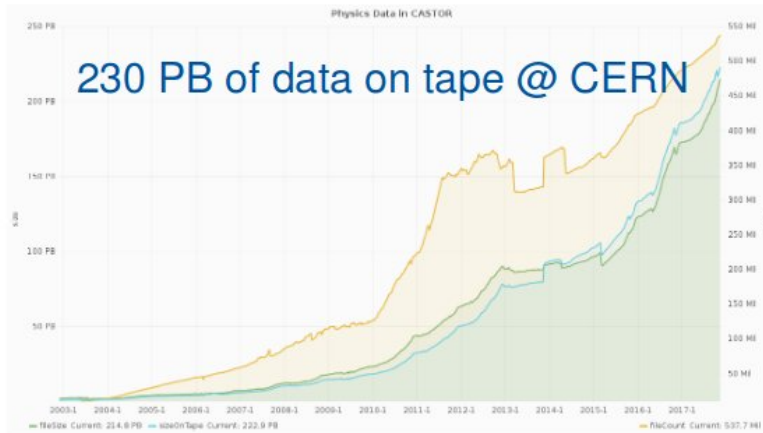
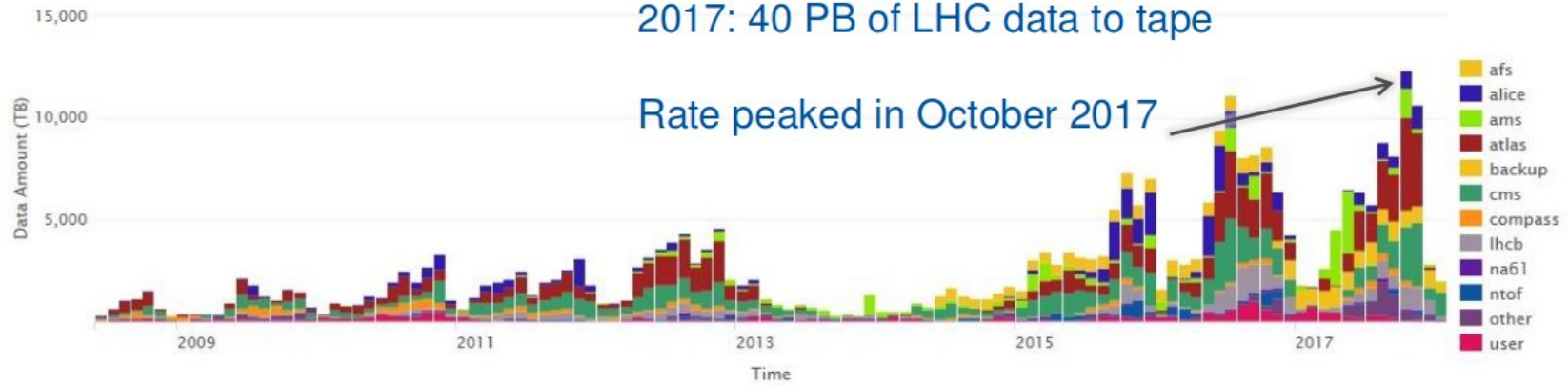
# LHC performances in 2017

Record integrated luminosity of  $50 \text{ fb}^{-1}$  in 2017 (goal was  $45 \text{ fb}^{-1}$ ), regardless of some operational issues and shorter running time



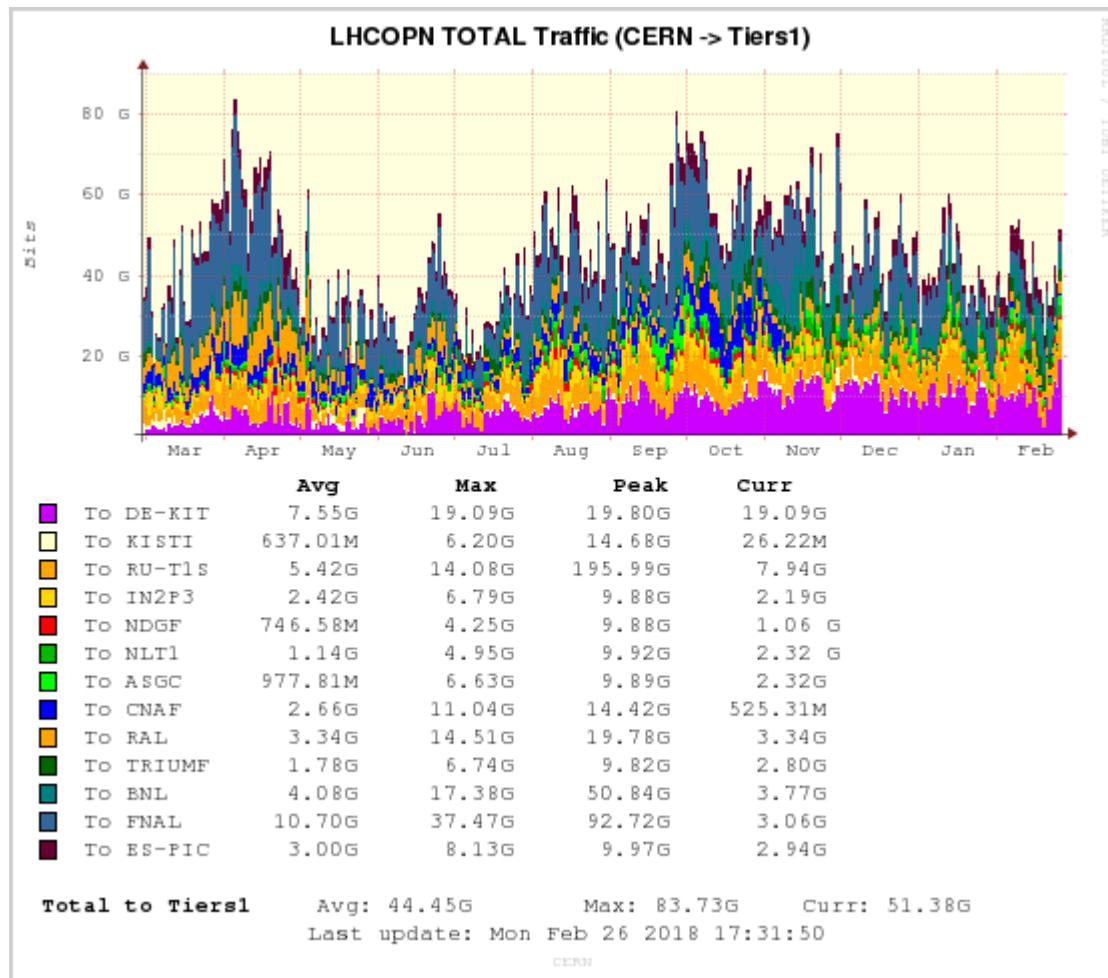
# WLCG performance in 2017

Transferred Data Amount per Virtual Organization for WRITE Requests

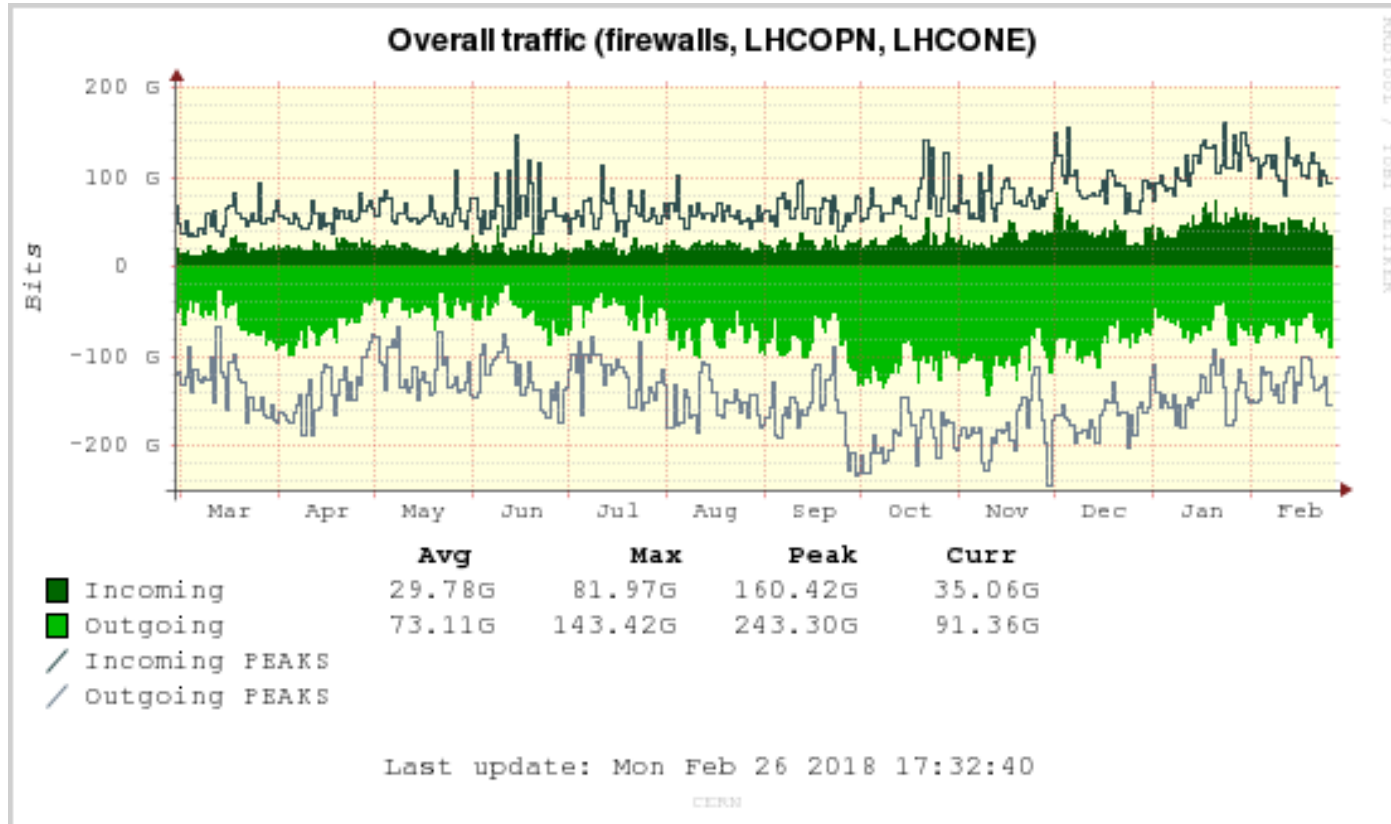


Steady transfer rate in WLCG

# LHCOPN traffic - last 12 months



# CERN traffic - last 12 months



*Questions?*

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