

# LHCOPN update

Helsinki, 19th of September 2016

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**LHCOPN**

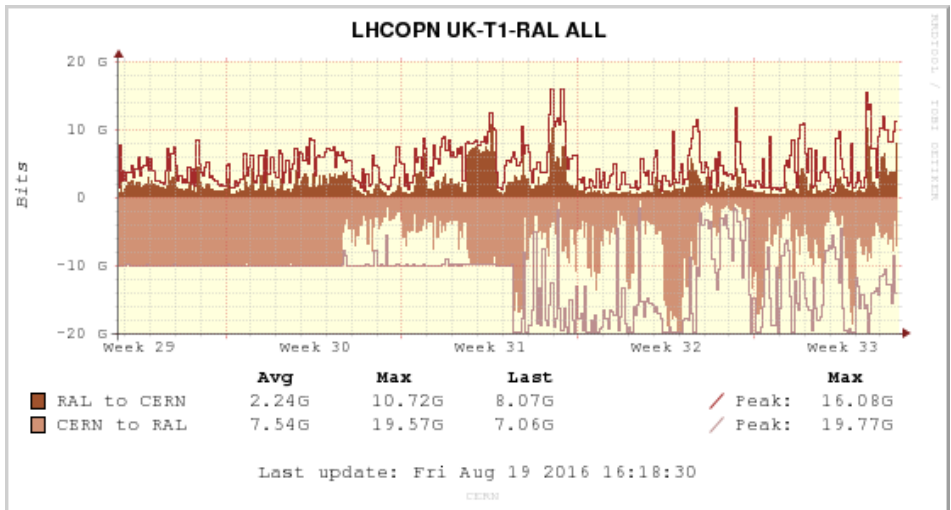
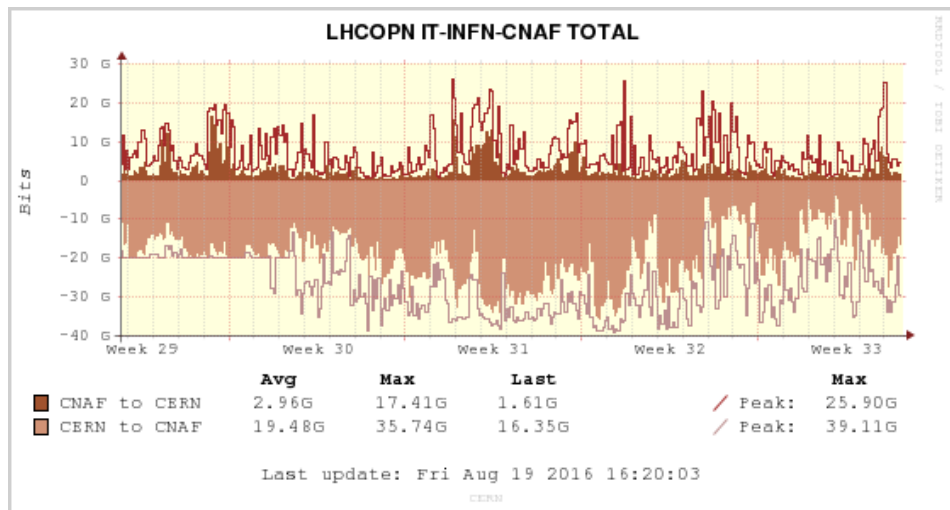
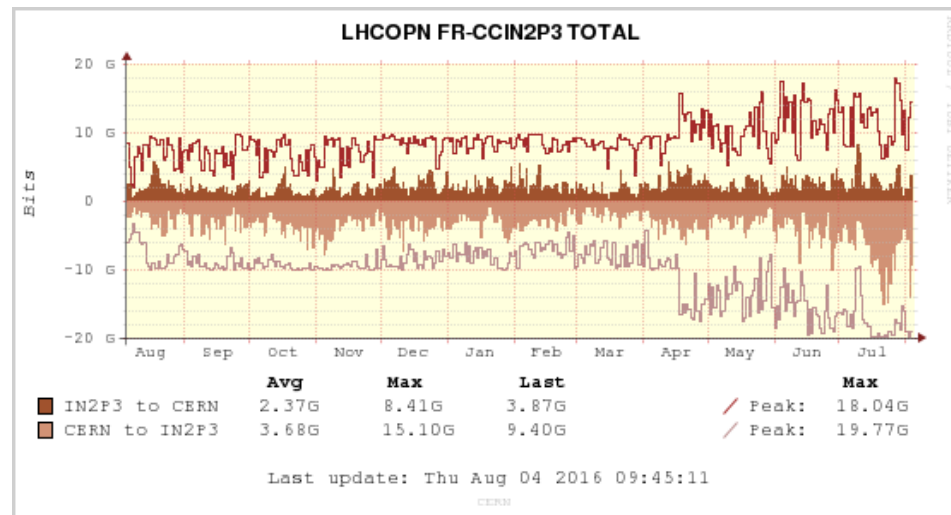
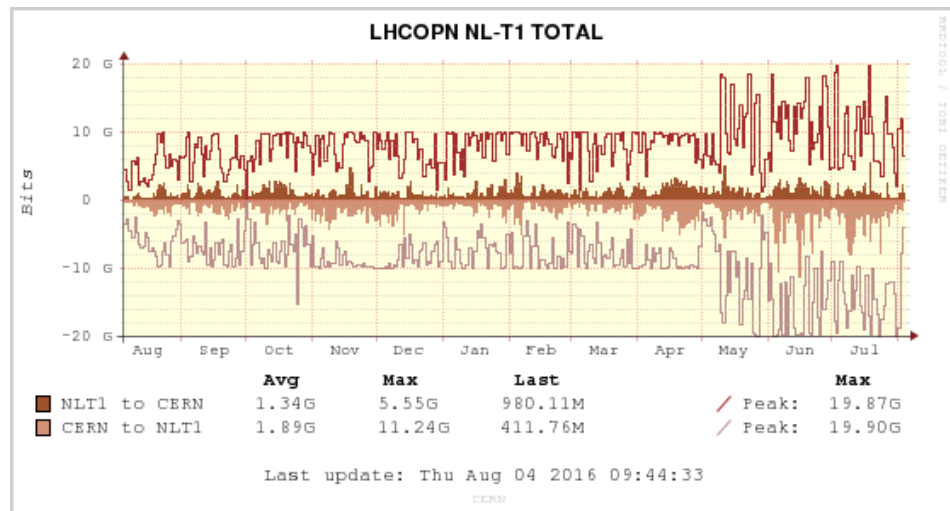


# Latest news

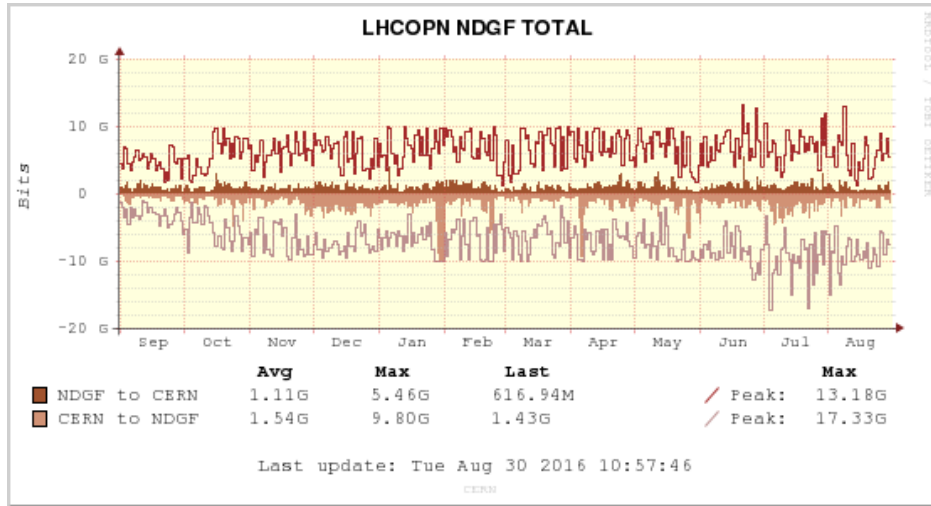
## **Doubled link capacity:**

- NL-T1 (2x10G)
- FR-IN2P3 (2x10G)
- NDGF (2x10G)
- IT-INFN-GARR (4x10G)
- UK-T1-RAL (2x10G, load balancing on existing backup link)

# Doubled links utilization



# Doubled links utilization



# Latest news

## **CH-CERN**

- added one prefix /20 for VMs (batch nodes) in Wigner

## **US-T1-BNL**

- IPv6 BGP peerings with CERN

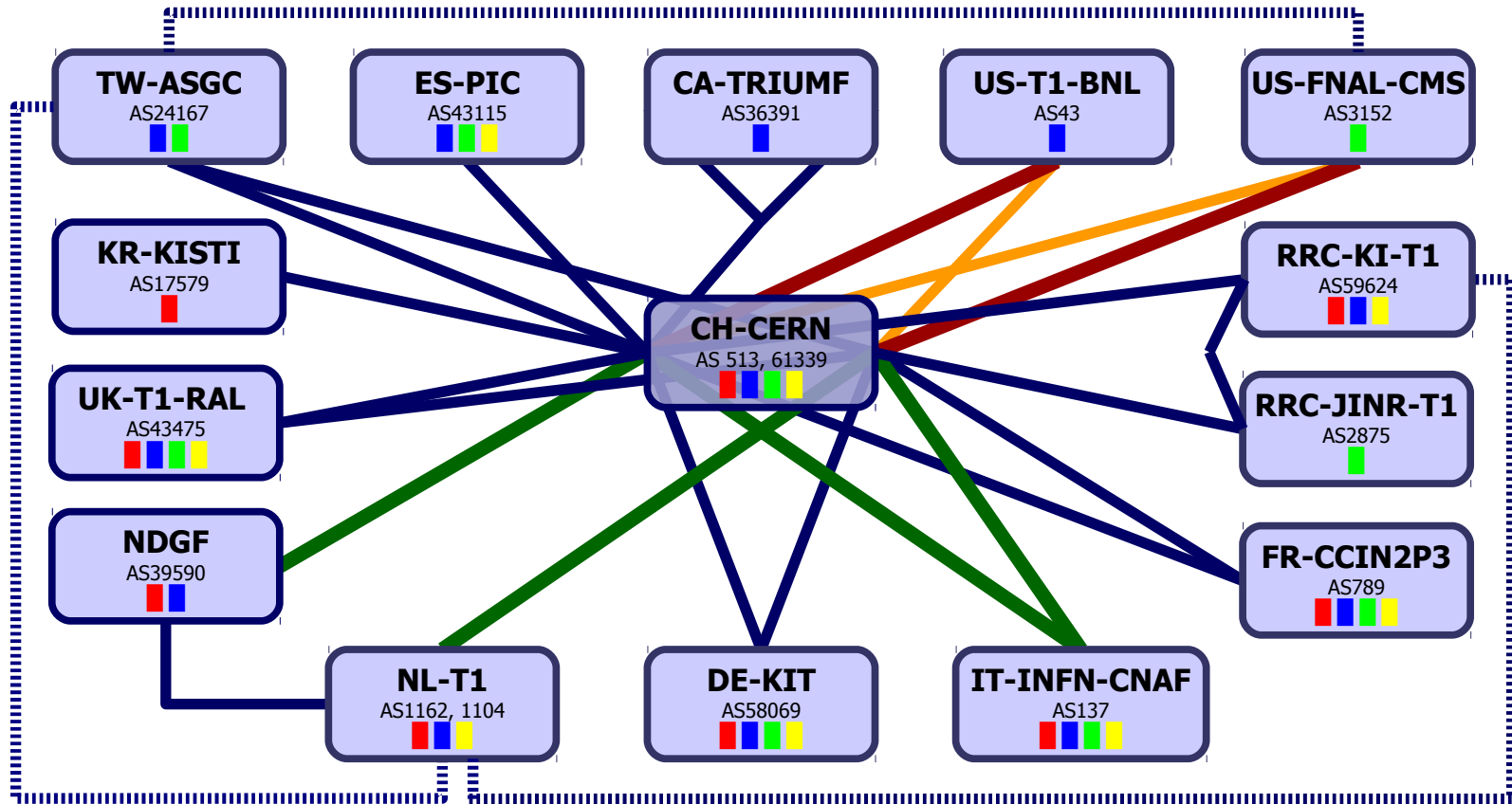
## **CA-TRIUMF**

- IPv6 BGP peerings with CERN

# Latest news

[Input from Tier1s in the audience]

# Map



— T0-T1 and T1-T1 traffic  
⋯ T1-T1 traffic only  
■ = Alice ■ = Atlas ■ = CMS ■ = LHCB  
— 10Gbps  
— 20Gbps  
— 40Gbps  
— 100Gbps

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# LHC Schedule 2016 Q3-Q4

|    | July |    |    |                   | Aug |    |    |                   | Sep |         |     |    |    |
|----|------|----|----|-------------------|-----|----|----|-------------------|-----|---------|-----|----|----|
| Wk | 27   | 28 | 29 | 30                | 31  | 32 | 33 | 34                | 35  | 36      | 37  | 38 | 39 |
| Mo | 4    | 11 | 18 | 25                | 1   | 8  | 15 | 22                | 29  | 5       | 12  | 19 | 26 |
| Tu |      |    |    |                   |     |    |    | MD 2              |     |         |     |    |    |
| We |      |    |    |                   |     |    |    |                   |     |         | TS2 |    |    |
| Th |      |    |    | MD 1              |     |    |    |                   |     | Jeune G |     |    |    |
| Fr |      |    |    |                   |     |    |    | beta* 2.5 km dev. |     |         |     |    |    |
| Sa |      |    |    |                   |     |    |    |                   |     | MD 3    |     |    |    |
| Su |      |    |    | beta* 2.5 km dev. |     |    |    |                   |     |         |     |    |    |

|    | Oct  |    |    | Nov |      |     | Dec        |    |                |       |    |      |          |
|----|------|----|----|-----|------|-----|------------|----|----------------|-------|----|------|----------|
| Wk | 40   | 41 | 42 | 43  | 44   | 45  | 46         | 47 | 48             | 49    | 50 | 51   | 52       |
| Mo | 3    | 10 | 17 | 24  | 31   | 7   | 14         | 21 | 28             | 5     | 12 | 19   | 26       |
| Tu | MD 4 |    |    |     |      |     | ions setup |    |                |       |    |      |          |
| We |      |    |    |     |      | TS3 |            |    |                |       |    |      |          |
| Th |      |    |    |     |      |     |            |    | ion run (p-Pb) |       |    |      |          |
| Fr |      |    |    |     | MD 5 |     |            |    |                |       |    |      |          |
| Sa |      |    |    |     |      |     |            |    |                |       |    |      |          |
| Su |      |    |    |     |      |     |            |    |                | Pb MD |    | Xmas | New Year |

End of run  
[00:00]

- Technical Stop
- Machine development
- Recommissioning with beam
- Special physics runs
- Scrubbing

[https://espace.cern.ch/be-dep/BEDepartmentalDocuments/BE/LHC\\_Schedule\\_2016.pdf](https://espace.cern.ch/be-dep/BEDepartmentalDocuments/BE/LHC_Schedule_2016.pdf)



# Draft LHC Schedule 2017 Q1-Q2

|    | Jan |   |   | Feb |    |    |   | Mar |    |    |    |    |    |    |
|----|-----|---|---|-----|----|----|---|-----|----|----|----|----|----|----|
| Wk | 1   | 2 | 3 | 4   | 5  | 6  | 7 | 8   | 9  | 10 | 11 | 12 | 13 |    |
| Mo |     | 2 | 9 | 16  | 23 | 30 | 6 | 13  | 20 | 27 | 6  | 13 | 20 | 27 |
| Tu |     |   |   |     |    |    |   |     |    |    |    |    |    |    |
| We |     |   |   |     |    |    |   |     |    |    |    |    |    |    |
| Th |     |   |   |     |    |    |   |     |    |    |    |    |    |    |
| Fr |     |   |   |     |    |    |   |     |    |    |    |    |    |    |
| Sa |     |   |   |     |    |    |   |     |    |    |    |    |    |    |
| Su |     |   |   |     |    |    |   |     |    |    |    |    |    |    |

Technical stop (EYETS)

|    | Apr |    |    | May              |    |              |    | June |    |    |           |    |    |    |
|----|-----|----|----|------------------|----|--------------|----|------|----|----|-----------|----|----|----|
| Wk | 14  | 15 | 16 | 17               | 18 | 19           | 20 | 21   | 22 | 23 | 24        | 25 | 26 |    |
| Mo |     | 3  | 10 | Easter Mon<br>17 | 24 | 1st May<br>1 | 8  | 15   | 22 | 29 | Whit<br>5 | 12 | 19 | 26 |
| Tu |     |    |    |                  |    |              |    |      |    |    |           |    |    |    |
| We |     |    |    |                  |    |              |    |      |    |    |           |    |    |    |
| Th |     |    |    |                  |    |              |    |      |    |    |           |    |    |    |
| Fr |     |    |    |                  |    |              |    |      |    |    |           |    |    |    |
| Sa |     |    |    |                  |    |              |    |      |    |    |           |    |    |    |
| Su |     |    |    |                  |    |              |    |      |    |    |           |    |    |    |

Scrubbing

Machine checkout

Recommissioning with beam

Special physics run

- Technical Stop
- Recommissioning with beam
- Scrubbing (indicative - dates to be established)
- Machine development
- Special physics runs (indicative - schedule to be established)

[https://lhc-commissioning.web.cern.ch/lhc-commissioning/schedule/2017/2017-LHC-schedule\\_v0.3.pdf](https://lhc-commissioning.web.cern.ch/lhc-commissioning/schedule/2017/2017-LHC-schedule_v0.3.pdf)



# Draft LHC Schedule 2017 Q3-Q4

|    | July |    |    | Aug               |    |    |    | Sep               |    |         |     |    |    |
|----|------|----|----|-------------------|----|----|----|-------------------|----|---------|-----|----|----|
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| Tu |      |    |    |                   |    |    |    | MD 2              |    |         |     |    |    |
| We |      |    |    |                   |    |    |    |                   |    |         | TS2 |    |    |
| Th |      |    |    | MD 1              |    |    |    |                   |    | Jeune G |     |    |    |
| Fr |      |    |    |                   |    |    |    | beta* 2.5 km dev. |    |         |     |    |    |
| Sa |      |    |    |                   |    |    |    |                   |    | MD 3    |     |    |    |
| Su |      |    |    | beta* 2.5 km dev. |    |    |    |                   |    |         |     |    |    |

|    | Oct  |    |    | Nov |      |     | Dec        |    |                |       |    |      |          |
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| Tu | MD 4 |    |    |     |      |     | ions setup |    |                |       |    |      |          |
| We |      |    |    |     |      | TS3 |            |    |                |       |    |      |          |
| Th |      |    |    |     |      |     |            |    | Ion run (p-Pb) |       |    |      |          |
| Fr |      |    |    |     | MD 5 |     |            |    |                |       |    |      |          |
| Sa |      |    |    |     |      |     |            |    |                |       |    |      |          |
| Su |      |    |    |     |      |     |            |    |                | Pb MD |    | Xmas | New Year |

End of run  
(00:00)

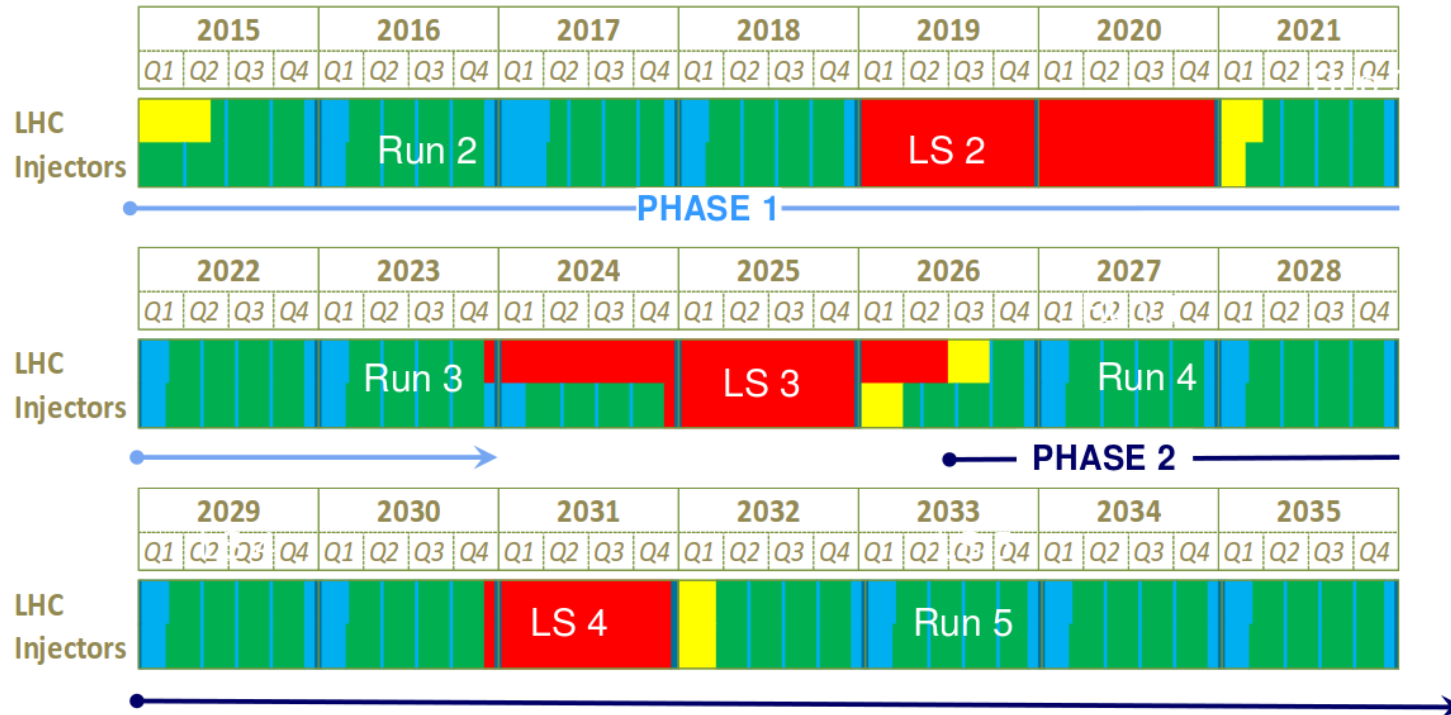
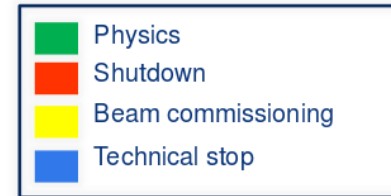
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[https://lhc-commissioning.web.cern.ch/lhc-commissioning/schedule/2017/2017-LHC-schedule\\_v0.3.pdf](https://lhc-commissioning.web.cern.ch/lhc-commissioning/schedule/2017/2017-LHC-schedule_v0.3.pdf)

# Long term planning

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

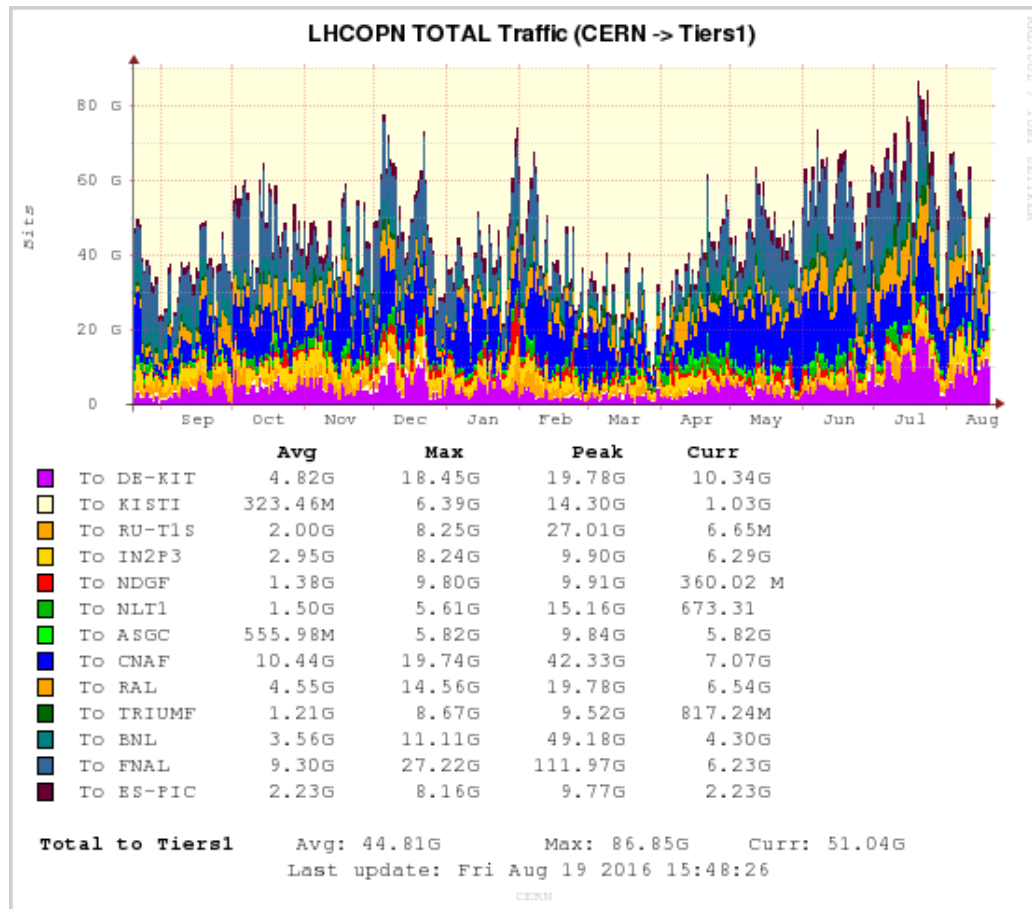
LS2 starting in 2019 => 24 months + 3 months BC  
 LS3 LHC: starting in 2024 => 30 months + 3 months BC  
 Injectors: in 2025 => 13 months + 3 months BC



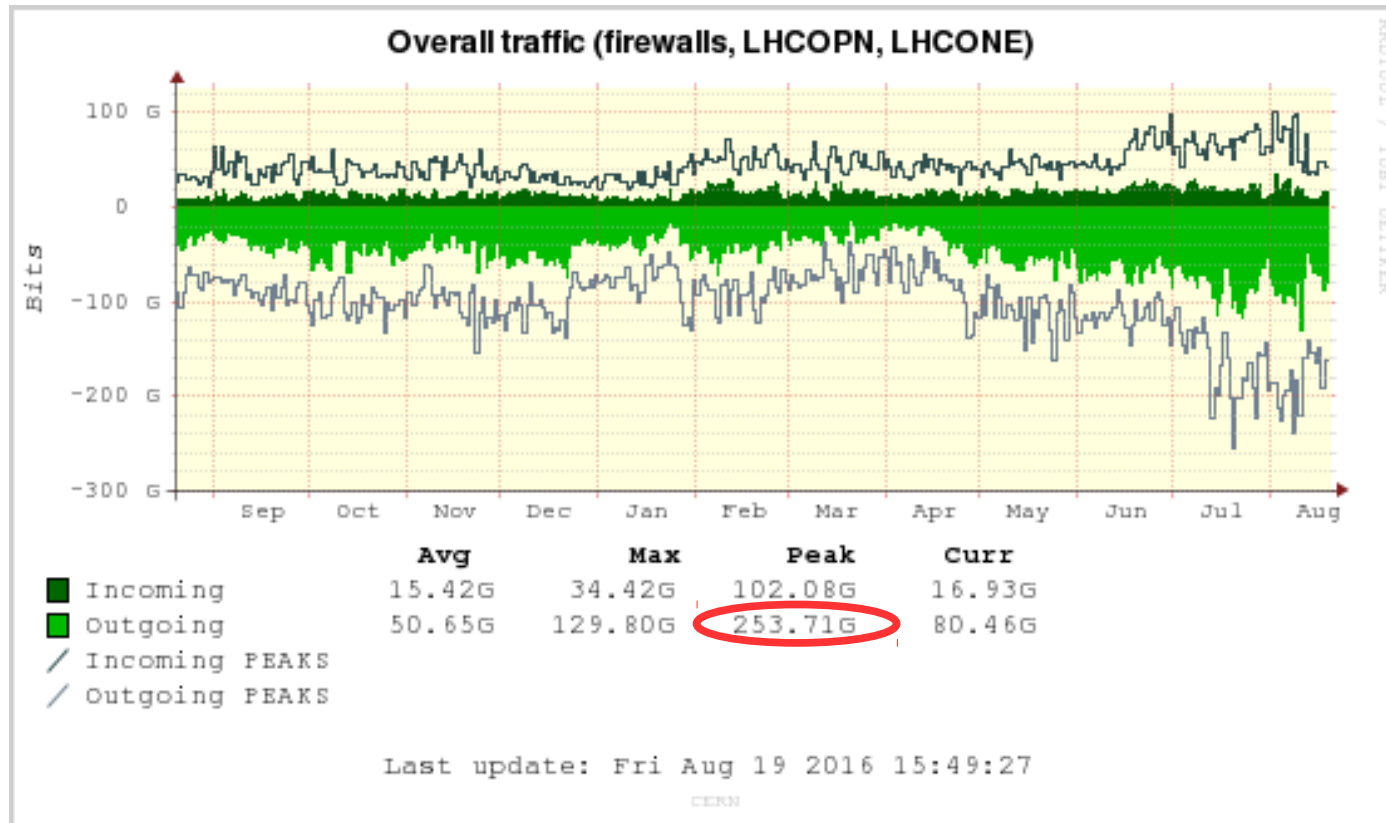
<https://lhc-commissioning.web.cern.ch/lhc-commissioning/schedule/LHC-long-term.htm>

[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)

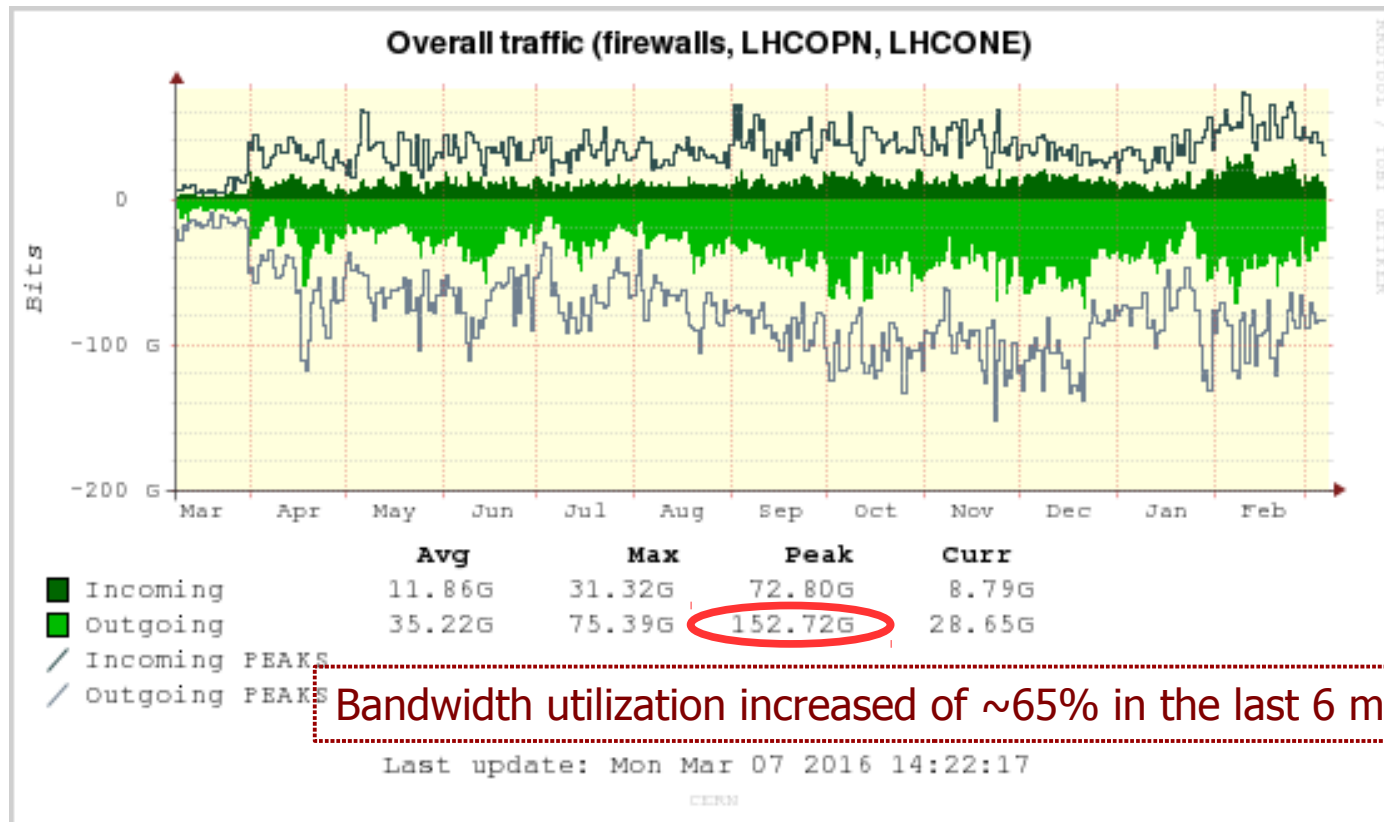
# LHCOPN traffic – last year



# CERN traffic – last 12 months



# previous graph (March 2016)



*Questions?*

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