Estimated Network Bandwidth for LCG-France sites

Fabio Hernandez

fabio@in2p3.fr

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Introduction

- ## Goal
  - Identify the network bandwidth needs for LHC data exchange for LCG-France sites

- ## Source
  - Chris Eck's estimated required resource table

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Summary of Requested Bandwidth

Inbound [MB/sec]

Site	ALICE	ATLAS	CMS	LHCb	Total
CC-IN2P3	61	197	59	23	340
GRIF	9	20	38	0	67
LPC	4	1	0	0	5
Subatech	10	0	0	0	10

Outbound [MB/sec]

Site	ALICE	ATLAS	CMS	LHCb	Total
CC-IN2P3	64	59	163	0	286
GRIF	5	21	3	0	29
LPC	2	5	0	0	7
Subatech	5	0	0	0	5

These figues DO NOT INCLUDE the traffic inter Tier-1s. According to Chris' table it is estimated to be « T1⇔ T1 498 MB/sec »

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**CC-IN2P3: Estimated Network Bandwidth for a Nominal Year per Experiment**
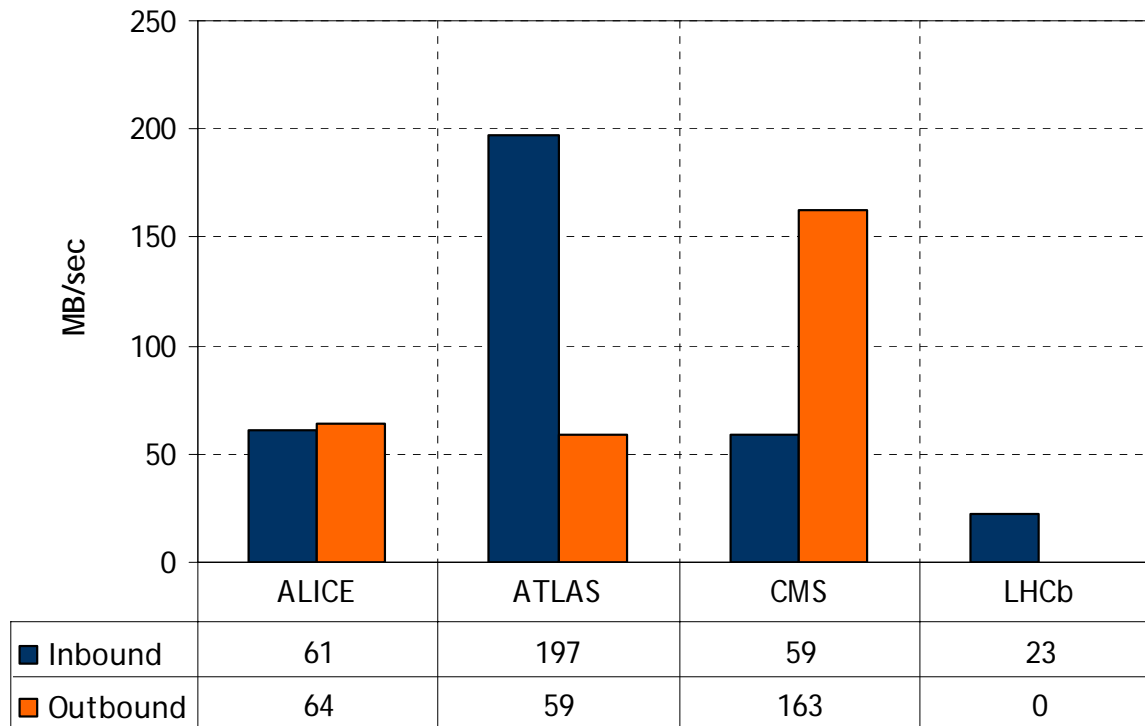
Number of unique sites to exchange data with CC-IN2P3:
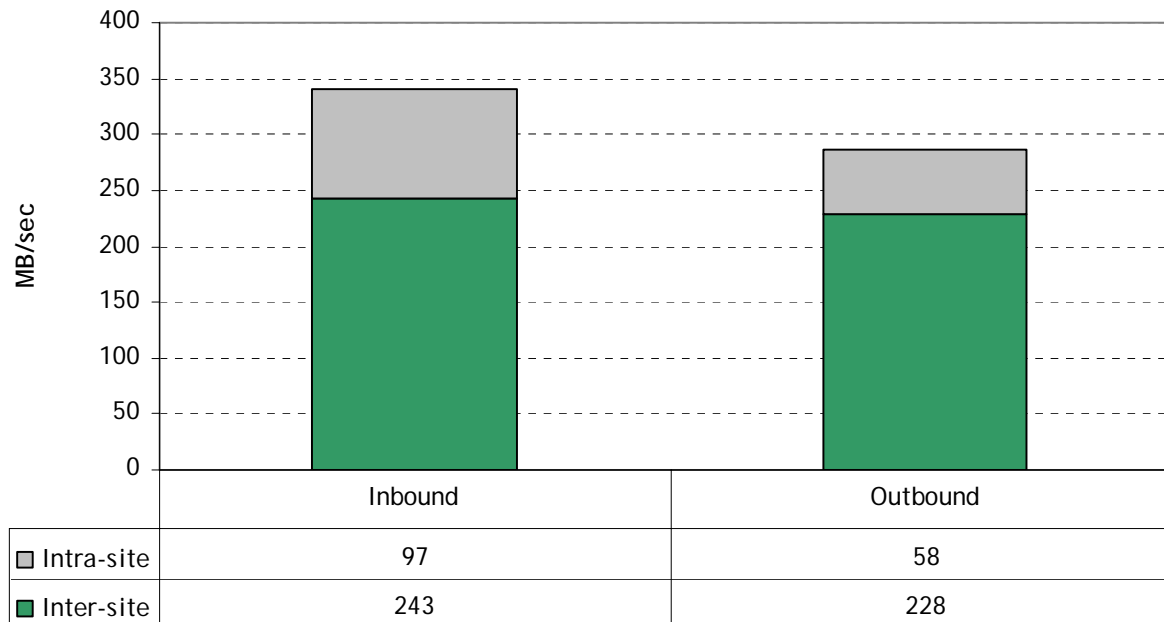
Inbound: 9 sites
Outbound: 32 sites

	ALICE	ATLAS	CMS	LHCb
■ Inbound	61	197	59	23
■ Outbound	64	59	163	0

CC-IN2P3: Detailed View (2/3)

CC-IN2P3: Estimated Network Traffic for a Nominal Year per Site Category

	Tier-0	Tier-1s	Tier-2s
■ Inbound	169		171
■ Outbound	0		286
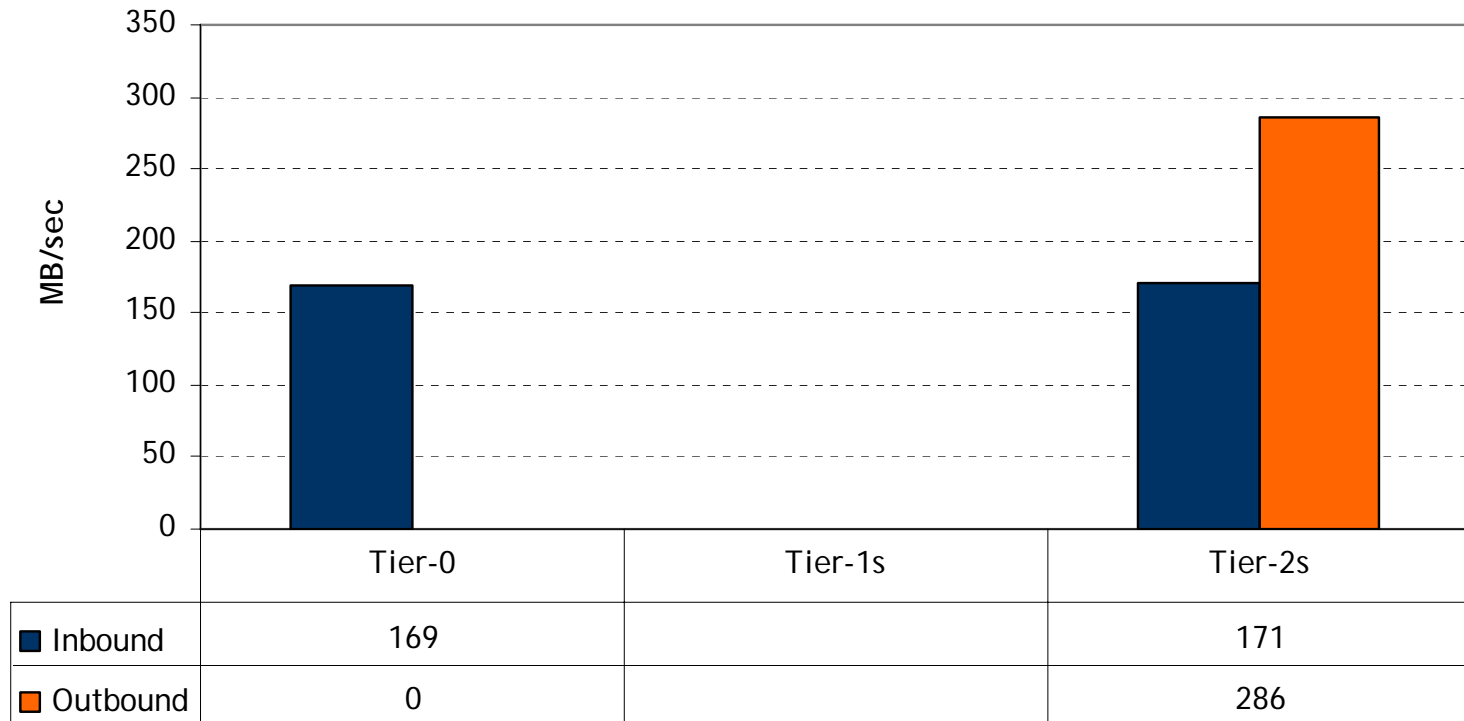
CC-IN2P3: Detailed View (3/3)

CC-IN2P3: Estimated Network Traffic Intra- and Inter-site

	Inbound	Outbound
☐ Intra-site	97	58
☐ Inter-site	243	228

This graph shows the fraction of the traffic internal to the site: between the Analysis Facility and the Tier-1.

From the network point of view, the difference is WAN vs. LAN.

From the storage point of view, we must consider the aggregate requested bandwidth

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Conclusions

- We have now some estimated bandwidth requirements for LCG-France sites
  - Figures for Tier-1 are pretty worrying
  - Figures for Tier-2s sound reasonable
  - No figures for Tier-3s, but the ones for Tier-2s may be used for planning purposes
- What's next
  - All experiments, in particular CMS, are reviewing these figures, so expect some changes
  - Identify the inbound and outbound bandwith for inter Tier-1 traffic
    - As detailed as possible (to/from disk, to/from MSS)
  - Use these estimates to start planning for the network links needed to absord this traffic
    - Take into account the link efficiency
- See details in https://edms.in2p3.fr/document/I-008769

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CC-IN2P3