IT at the IIHE

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The IT team

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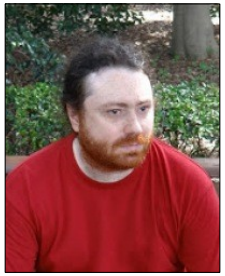
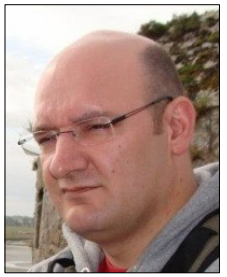


Romain Rougny

Olivier Devroede

Shkelzen Rugovac

Cluster



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Cloud

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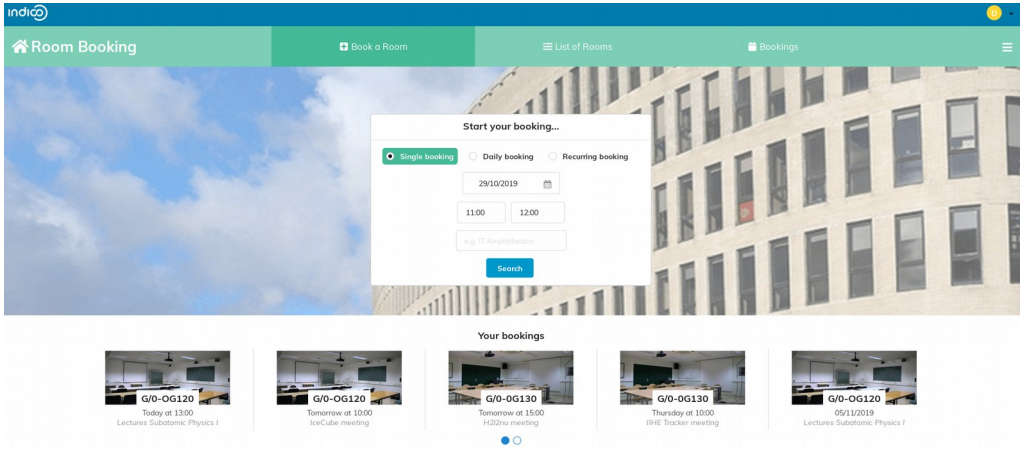
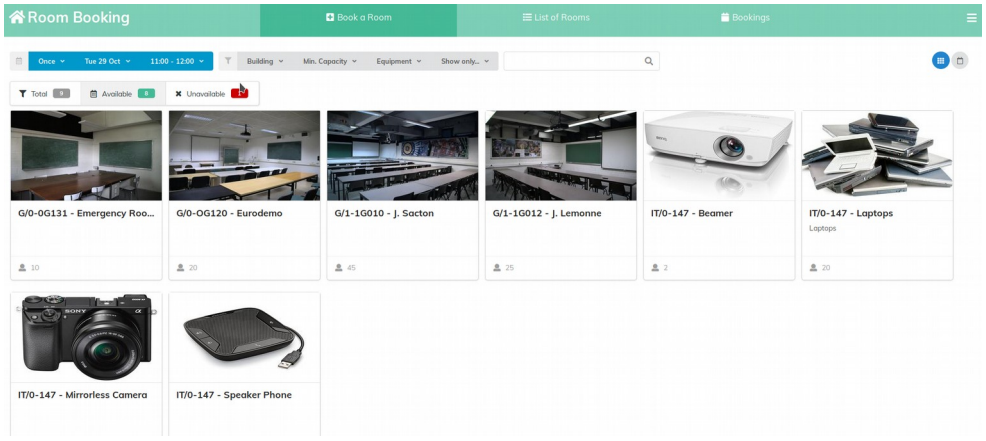
Support Activities

Booking on Indico

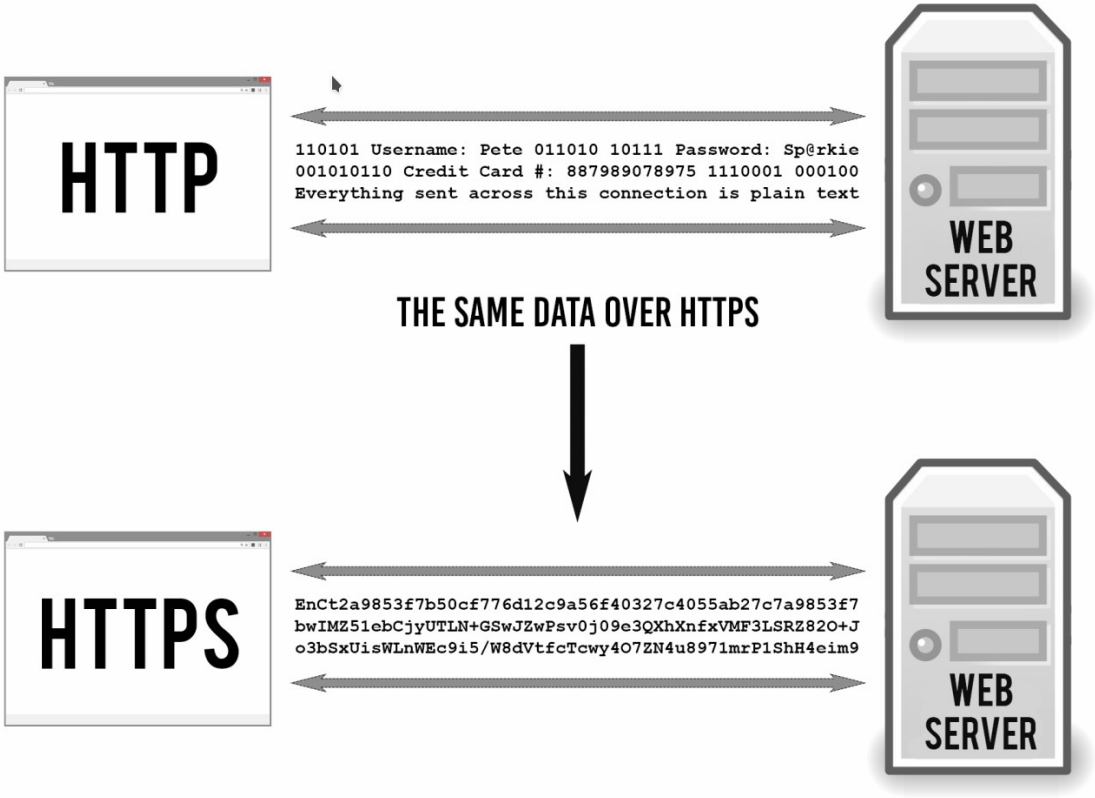
- Booking devices & rooms unified
- More intuitive UI
- Easier room & devices identification





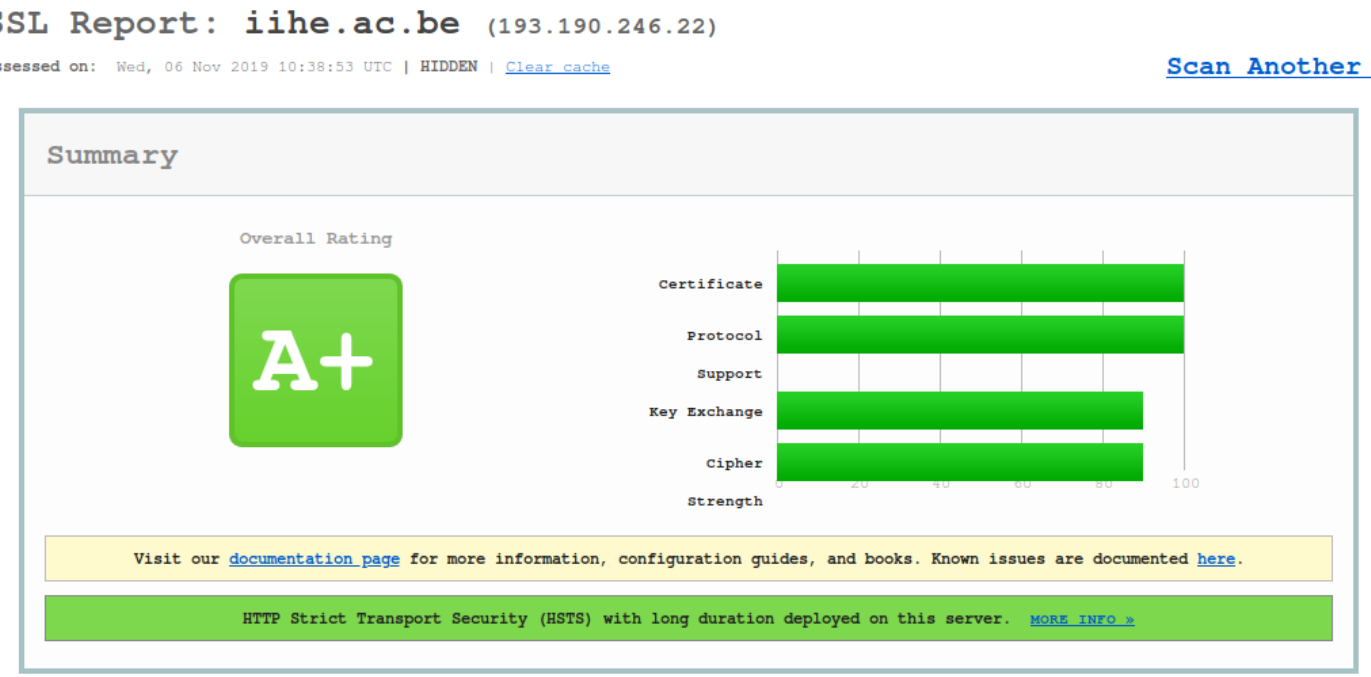
HTTPS on our websites

- HTTPS is the new web standard
- S stands for secure



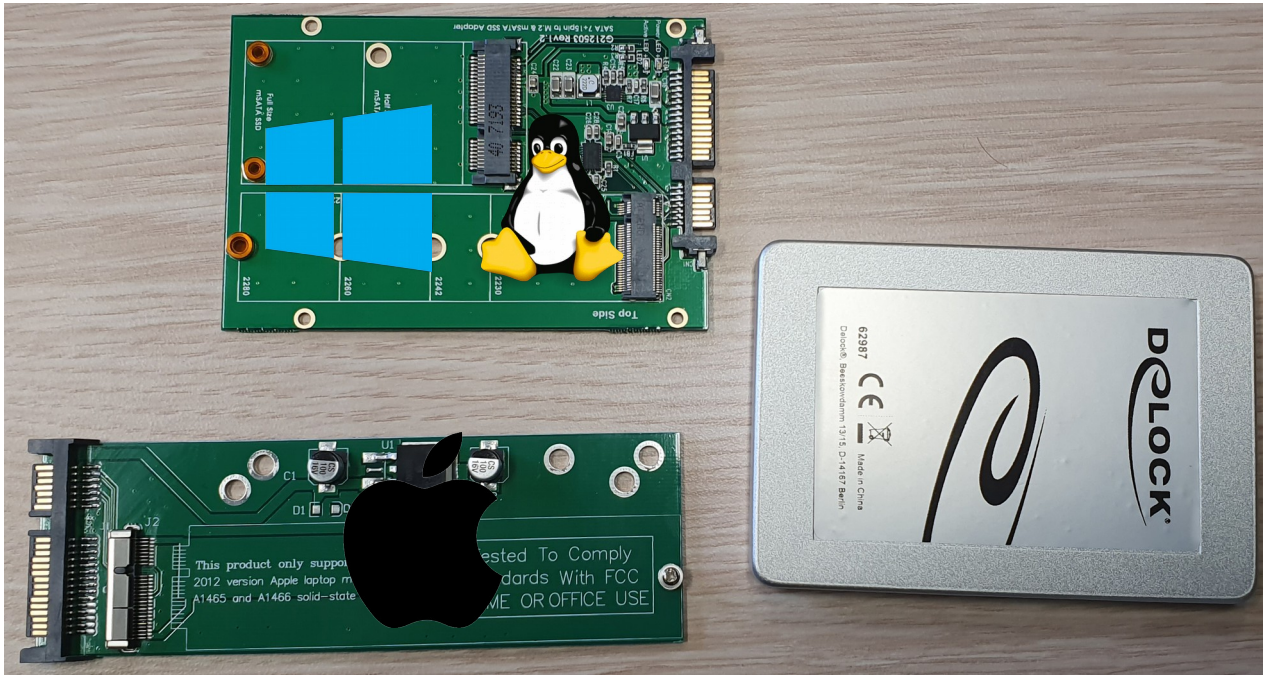
HTTPS on our websites

- Major IIHE websites are secured with HTTPS
- Auditing of our setup…



Data recovery for users

- New devices to recover hard drive data
- Improved compatibility
- Extract information from any kind of computer



Purchases

	ULB	VUB
Generic configuration	BECHTLE Priminfo	hp
Custom configuration	Where you want...	
Apple devices	swatch Premium Reseller	

T2B Activities

Grid Cluster: Figures and facts

- From 1st Sept 2018 to 1st Sept 2019:
  - Integrated computation time: 6515 years
    - Increase of 10% since last meeting
  - Cluster filled at 91 %
- Mass storage [/pnfs] as of now:

Used Storage

Username	2019-11-03	Delta	2018-08-26
auger	496.0 GB	496.0 GB	
beapps	918.0 GB		918.0 GB
betest	117.0 GB		117.0 GB
cms	5821.0 TB	1844.0 TB	3977.0 TB
dteam	4.0 TB	4.0 TB	
hone	16.0 GB		16.0 GB
icecube	887.0 GB	680.0 GB	207.0 GB
radar	20.0 GB	20.0 GB	
solid	447.0 TB	136.0 TB	310.0 TB
ztotal	6276.0 TB	1986.0 TB	4289.0 TB

New Data Storage Servers

- Storage nodes : +4 nodes, +2096TB

  Total: 6980 TB

- Dense solution made of

  60 x 12TB disks per node (previously: 36 x 6TB per node)

New Computing Power

- Worker nodes: +28 nodes, +1312 slots

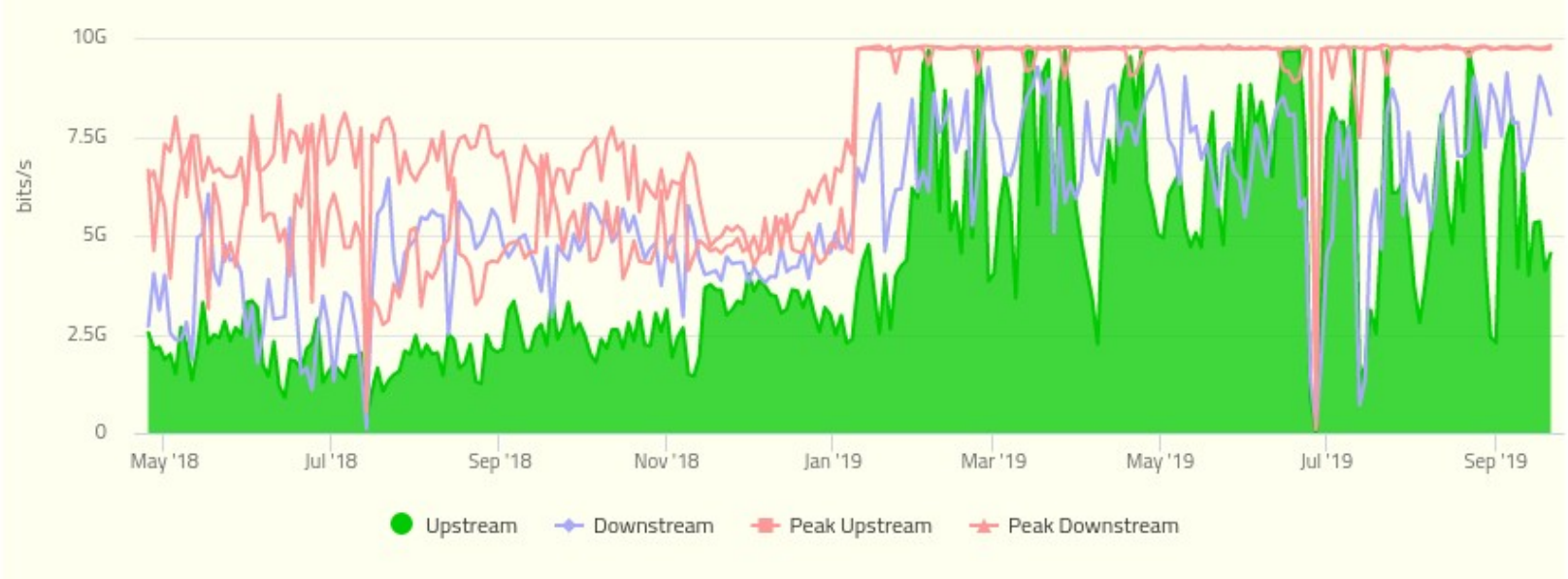
  Total: 8300 slots
- Intel Xeon Scalable Silver/Gold CPU
- Solution per node
  - Between 40-56 HT CPU-cores
  - Between 160-224 GB RAM
  - 10Gbps Ethernet ports

New 10Gbps Switch

- 48 x 10Gbps ports + 6 x 100Gbps ports
- Required to connect all the new WNs to the internal network
- Firewalling functionalities

External Network (WAN)

- Users were suffering from bad connections to and from the T2B infrastructure
- Use of our 10Gbps switch for more efficient firewalling than our old dedicated server
  - Can achieve 10Gbps in both up and down!
  - No more packet drops
  - Now, the bottleneck is our 10Gbps line



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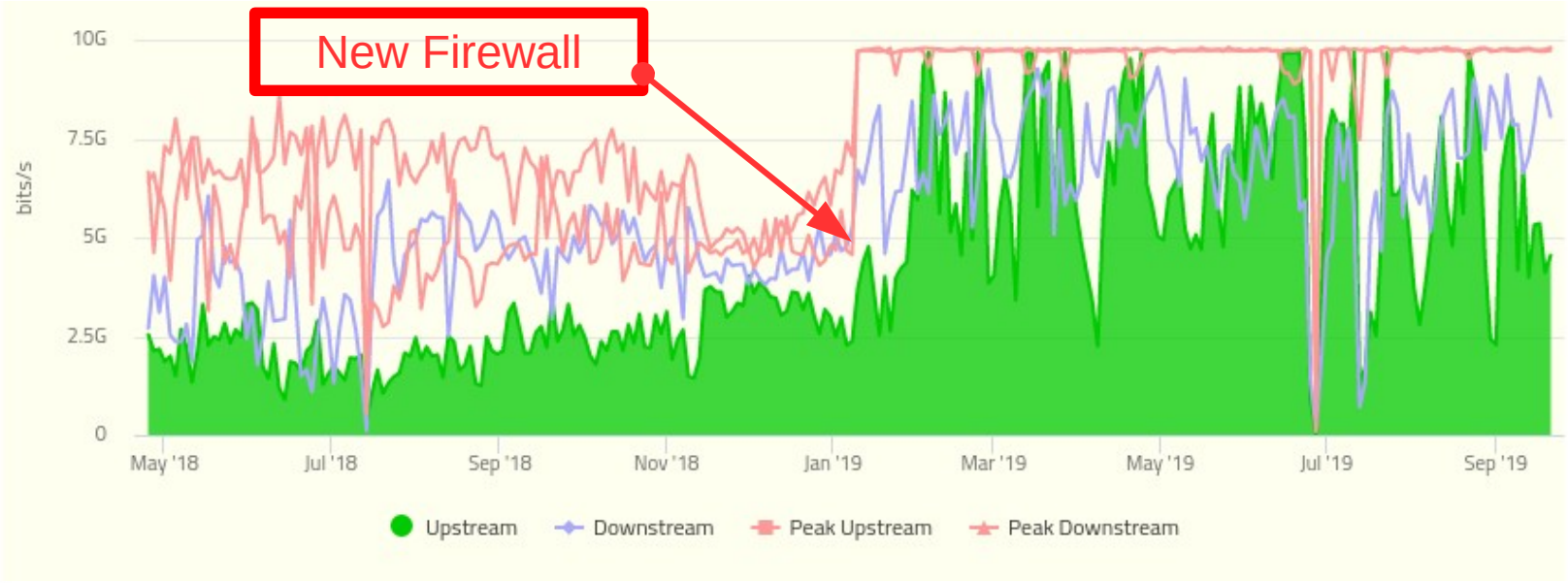
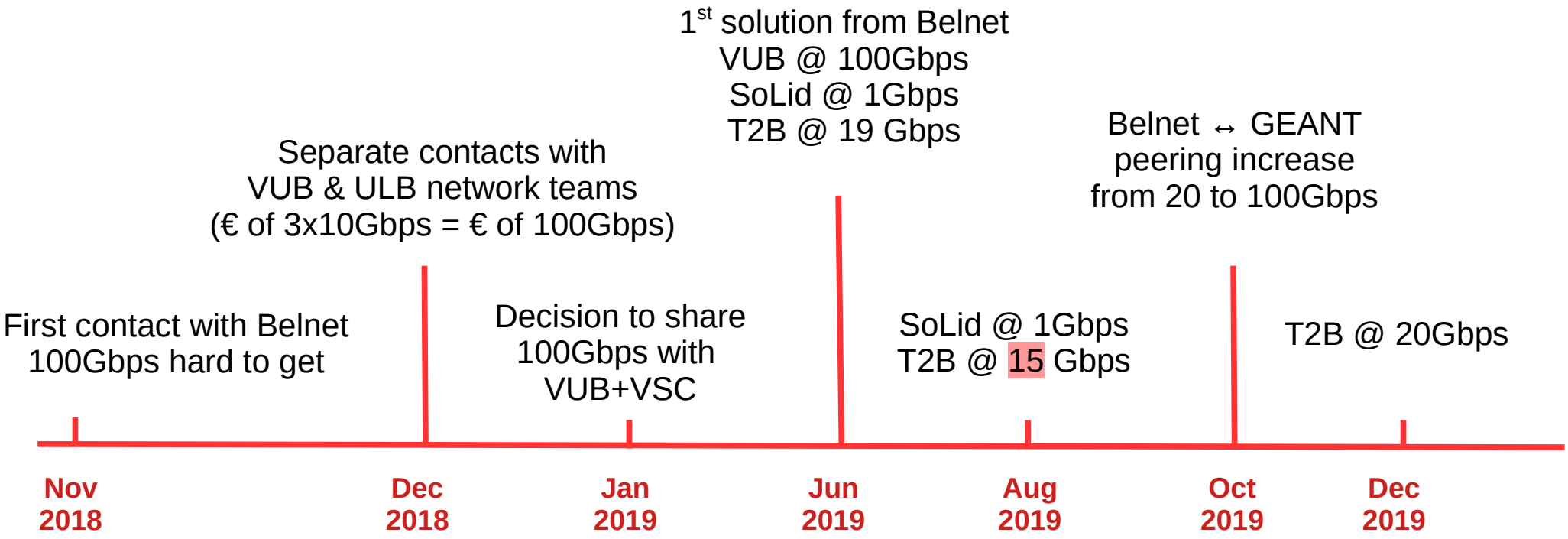


Long and Winding Road to a 100Gbps Line



Also plan to connect our server room (G0@VUB) to the T2B@ULB via a new 10Gbps line to efficiently host backup & critical services at the VUB

News

- We upgraded dCache:
  - Latest dCache version
  - Migration of Storage Element (maite) to new hardware
    - Use of SSD
    - More RAM

    => No more crashes
- Puppet
  - We need a tool to automate installation and maintenance of all our machines
    - We are currently using Quattor
  - We started to use Puppet and we already have a prototype
    - Puppet comes with a wide community of users (many Tier2 sites & CERN)
    - Lots of modules are ready (batch system, EL7 migration)

Replacing
Batch System + Grid Computing Element (CE)

- Currently Torque/Maui (qsub) + CreamCE
  - Not scalable
  - CreamCE end-of-life 12/2020
- Will go for HTCondor + HTCondorCE

  - Adds scalability
  - Used by most users in other Tier2 sites, CERN & Madison
    - Comes with lots of features (can handle complex workflows)
    - New syntax, python bindings and well documented

Transition to EL7

- Singularity container solution
  - Documented in our wiki
    - Feedbacks are welcome
  - We made it easy
    - From UIs: **`sl7 bash`**
    - In the jobs on the WNs: **`sl7 /user/$USER/MYSCRIPT.sh`**
- New HTCondor cluster will be EL7
  - Puppet will help here too
  - Possibility to use EL6 containers
  - And also EL8 containers!

Improvements at the data center

- The new cold containment works well
  - But, in summer we had to stop equipment
  - And,... still not enough!

Future works at the data center

- The new cold containment works well
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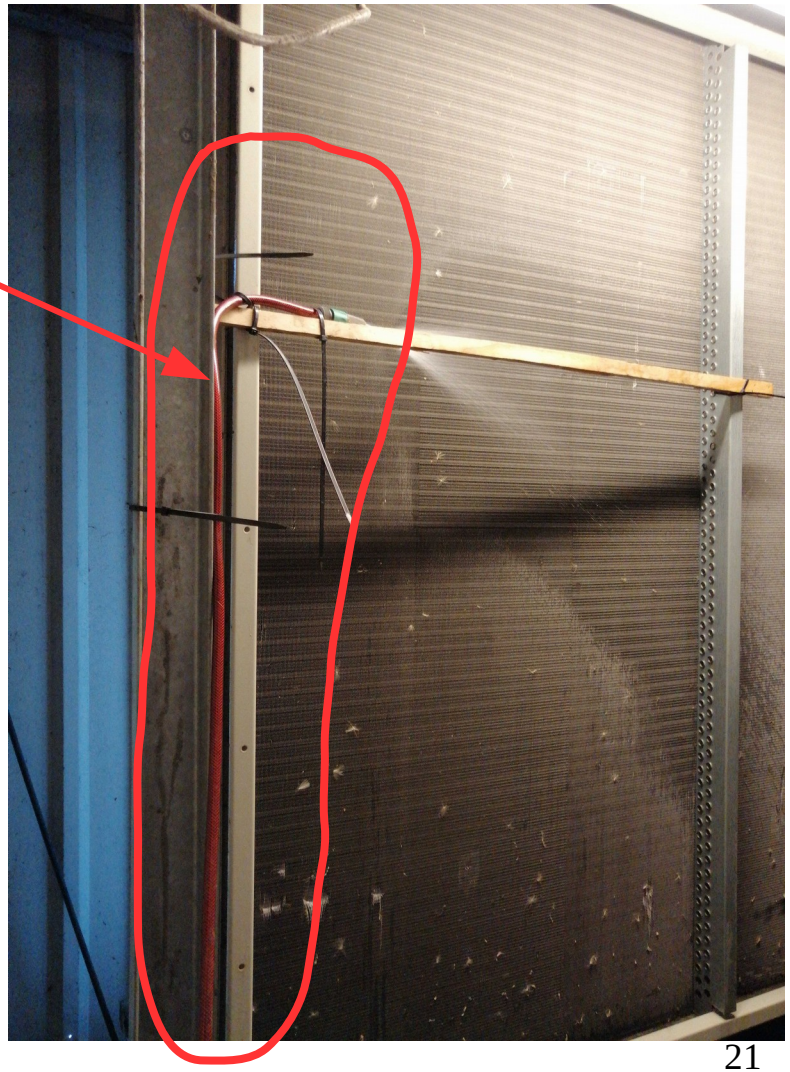
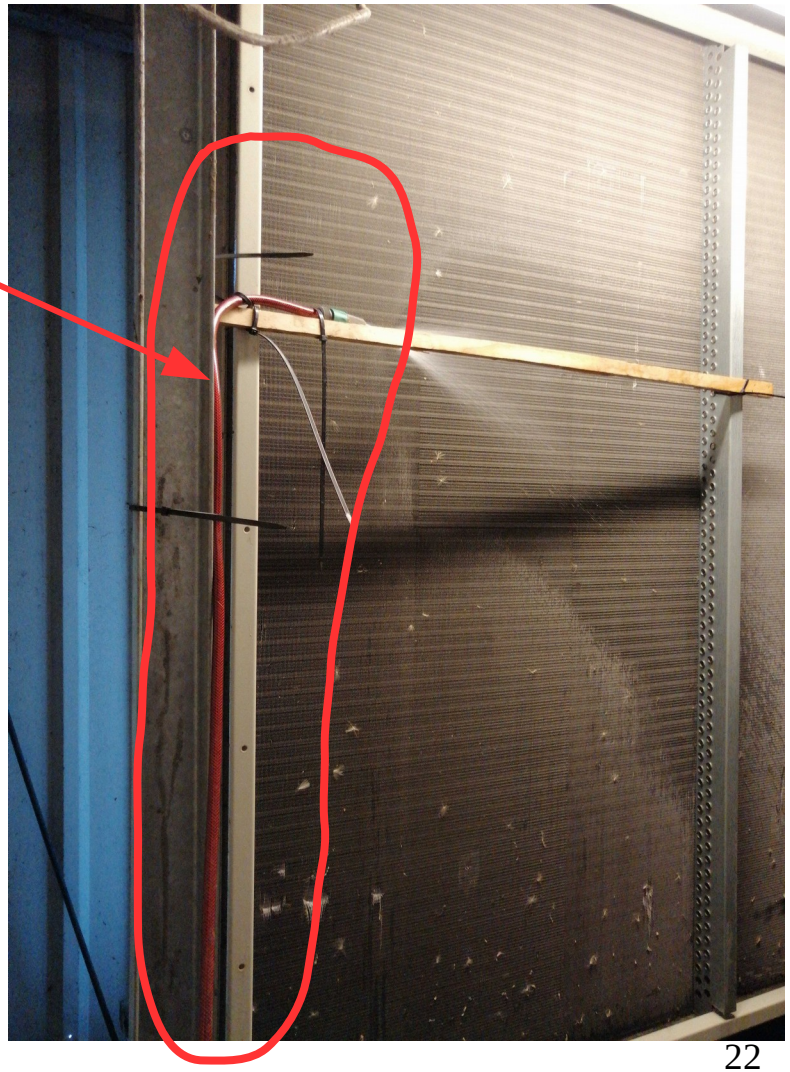
  - And,... still not enough!
  - Had to hose the cooling unit



Future works at the data center

- The new cold containment works well
  - But, in summer we had to stop equipment
  - And,... still not enough!
  - Had to hose the cooling unit
- More work is needed
  - Optimize hot & cold air flow
  - Will add more cooling capacity
  - Will be done in 2020



Thanks !
Questions ?