

# Short report on the GOP EPN data centre

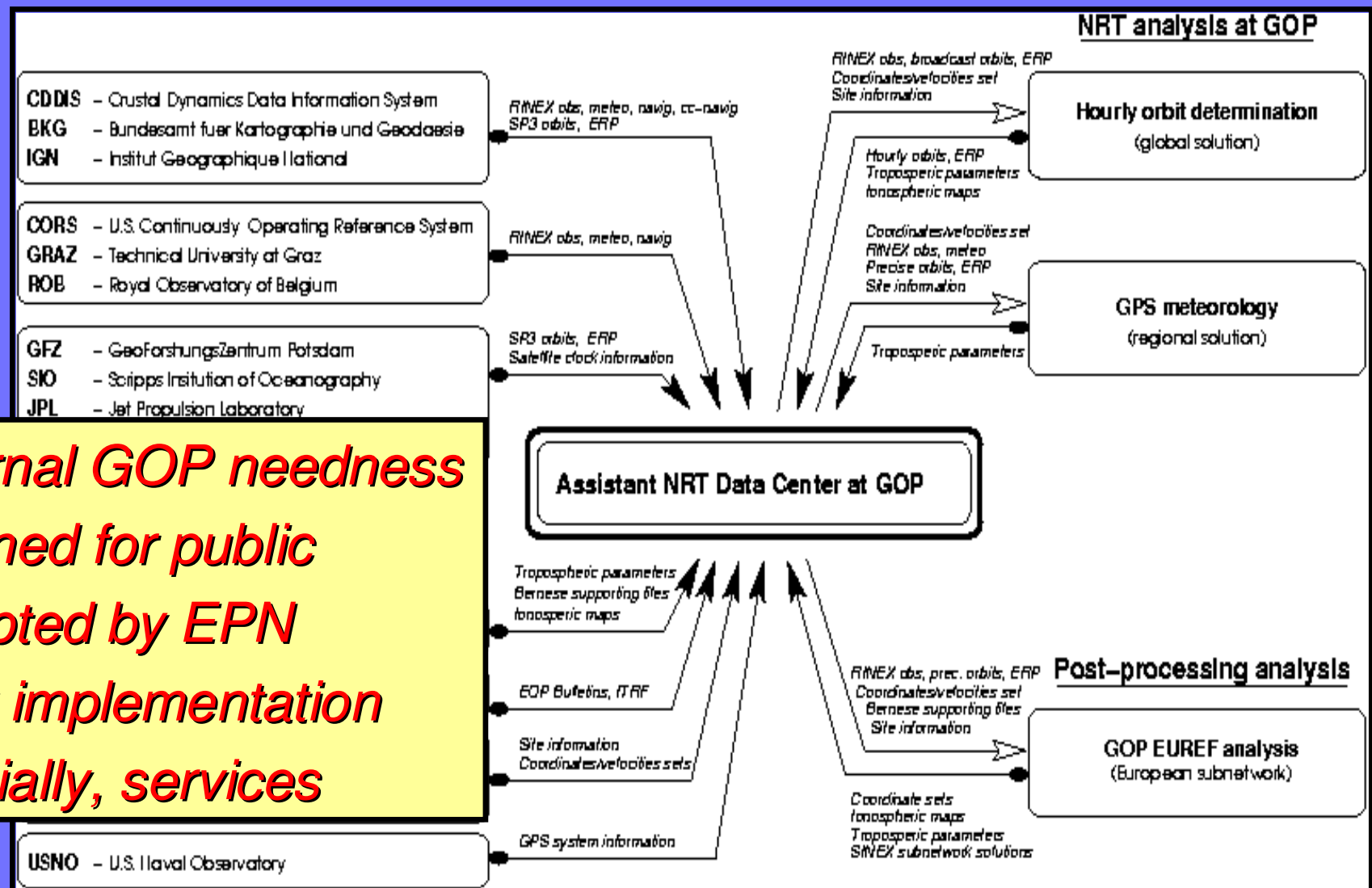
*Jan Douša*

*EUREF TWG, Prague, Nov 2004*

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# data centre at GOP (nrt data)



**2000: internal GOP needness**

**2001: opened for public**

**2002: adopted by EPN**

**2003: new implementation**

**2004: officially, services**

# GPS data & product content

## Data :

- hourly RINEX data
    - EUREF sites
    - IGS sites
    - Czech/Slovak sites
    - special projects
- (COST-716, TOUGH)*

## (- daily RINEX data)

- concatenated

## Products :

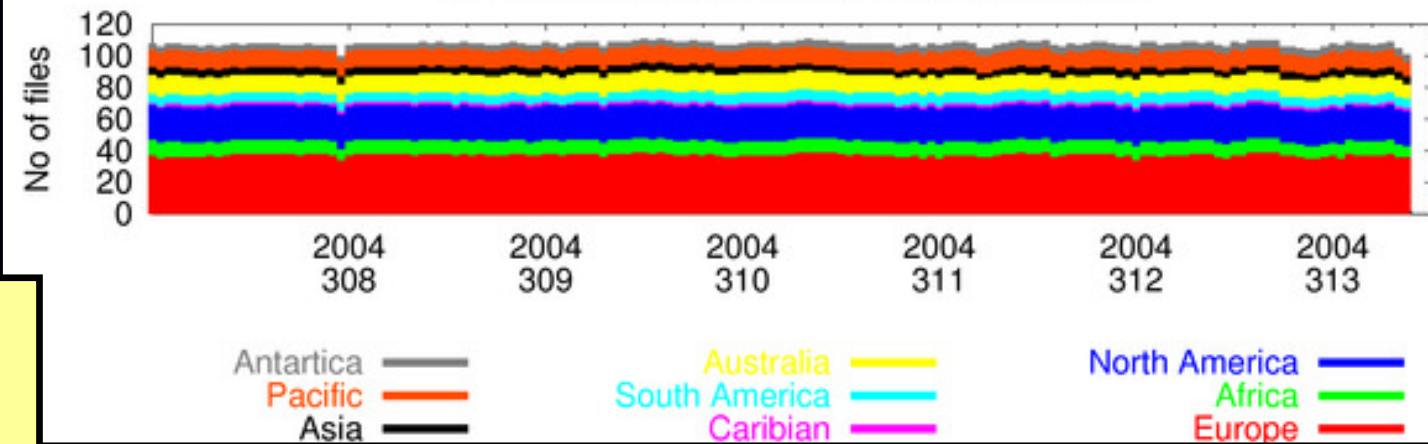
- IGS orbits/EOP, clocks...
- GOP orbits, ZTD, CRD...

## Informations :

- site extractions, GPS, ...
- RINEX quality, availability

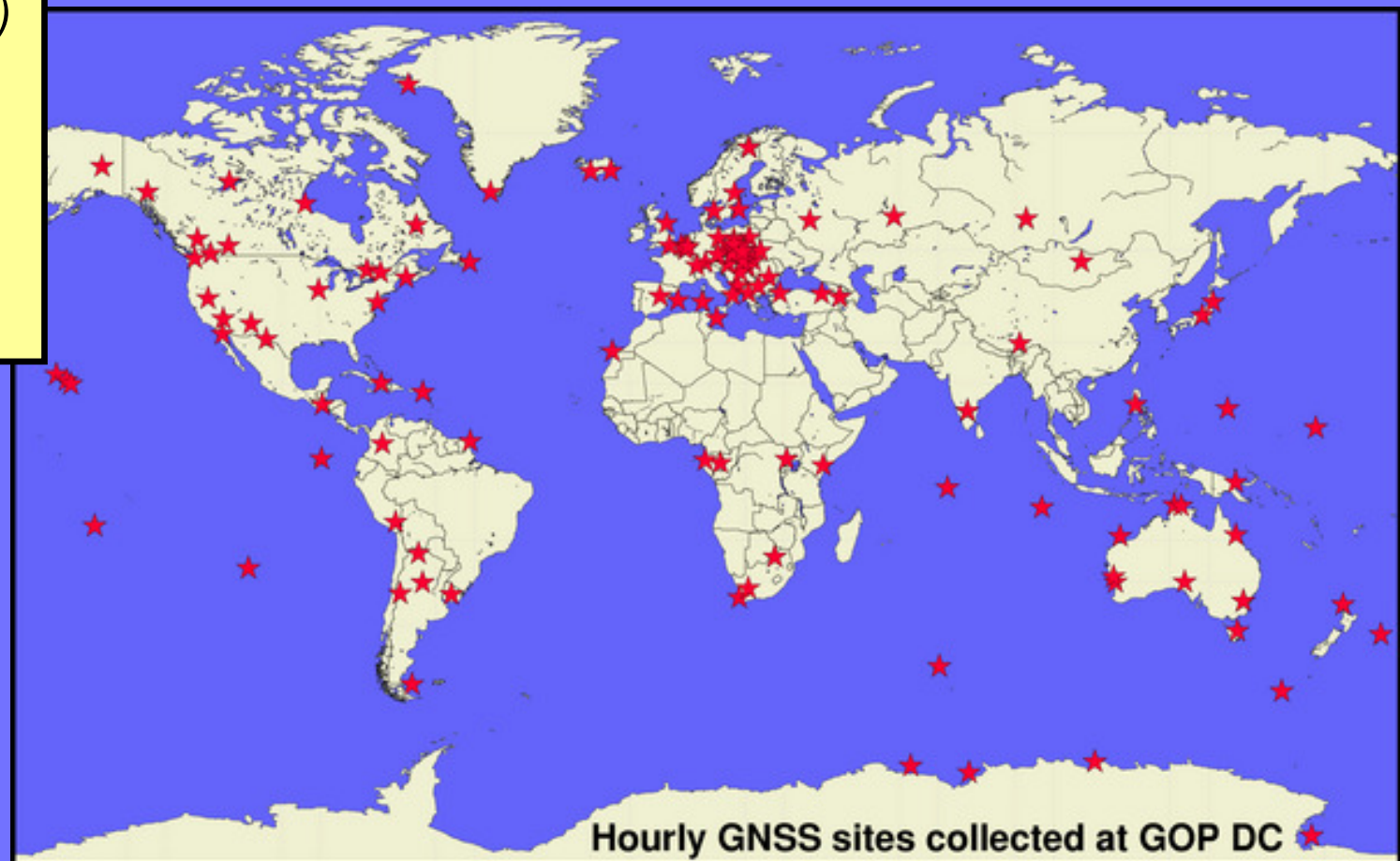


Monitoring hourly RINEX files based on regions

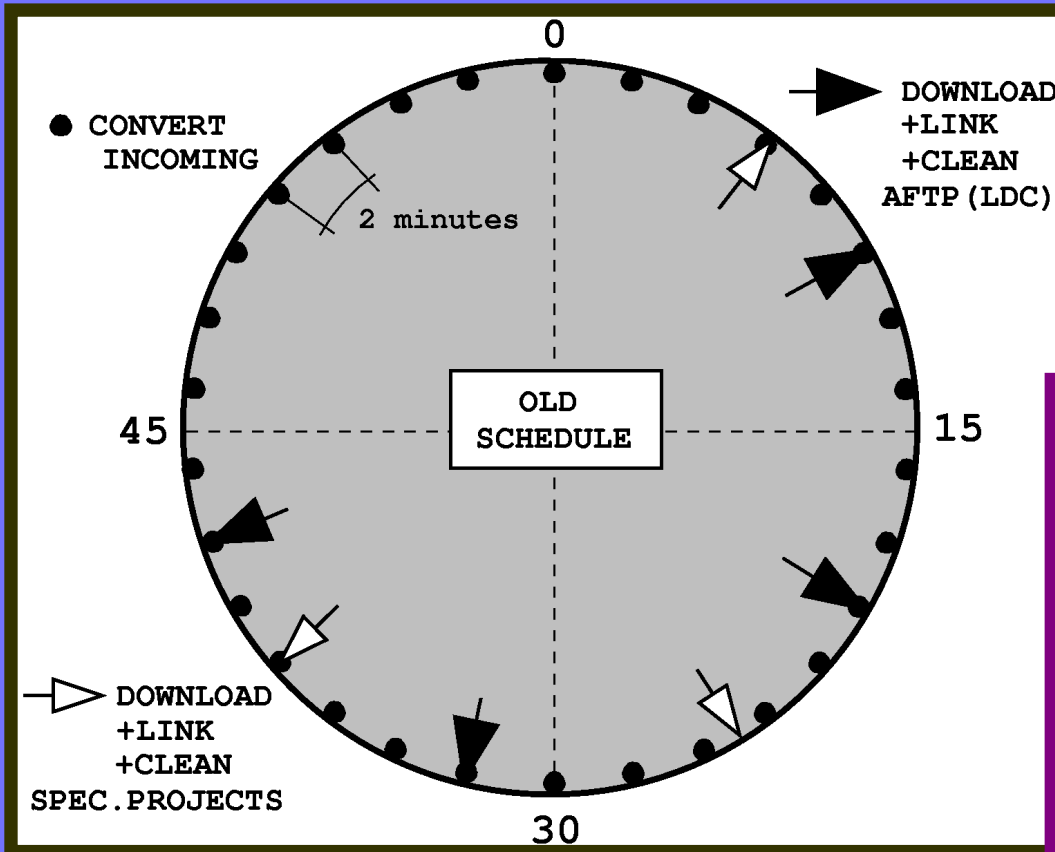


## Basic inputs :

- mirroring  
(part of directories)
- incoming data  
(actually 14 sites)
- extra-downloads  
(missing files)

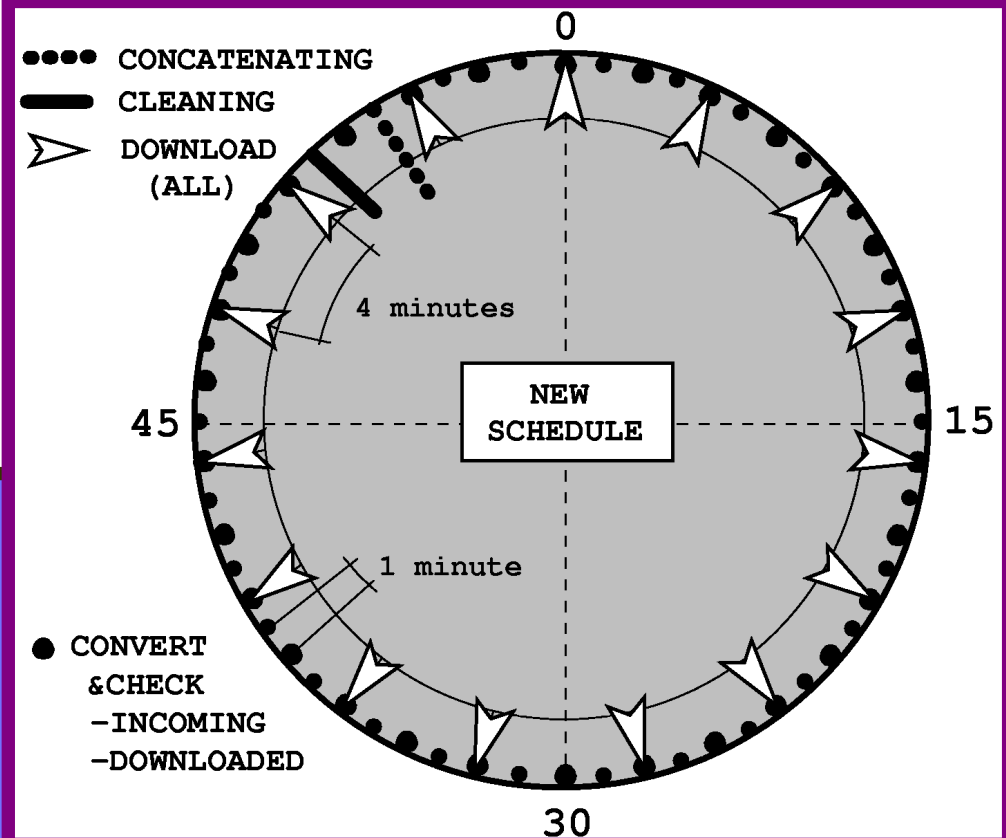


# aims for a new implementation



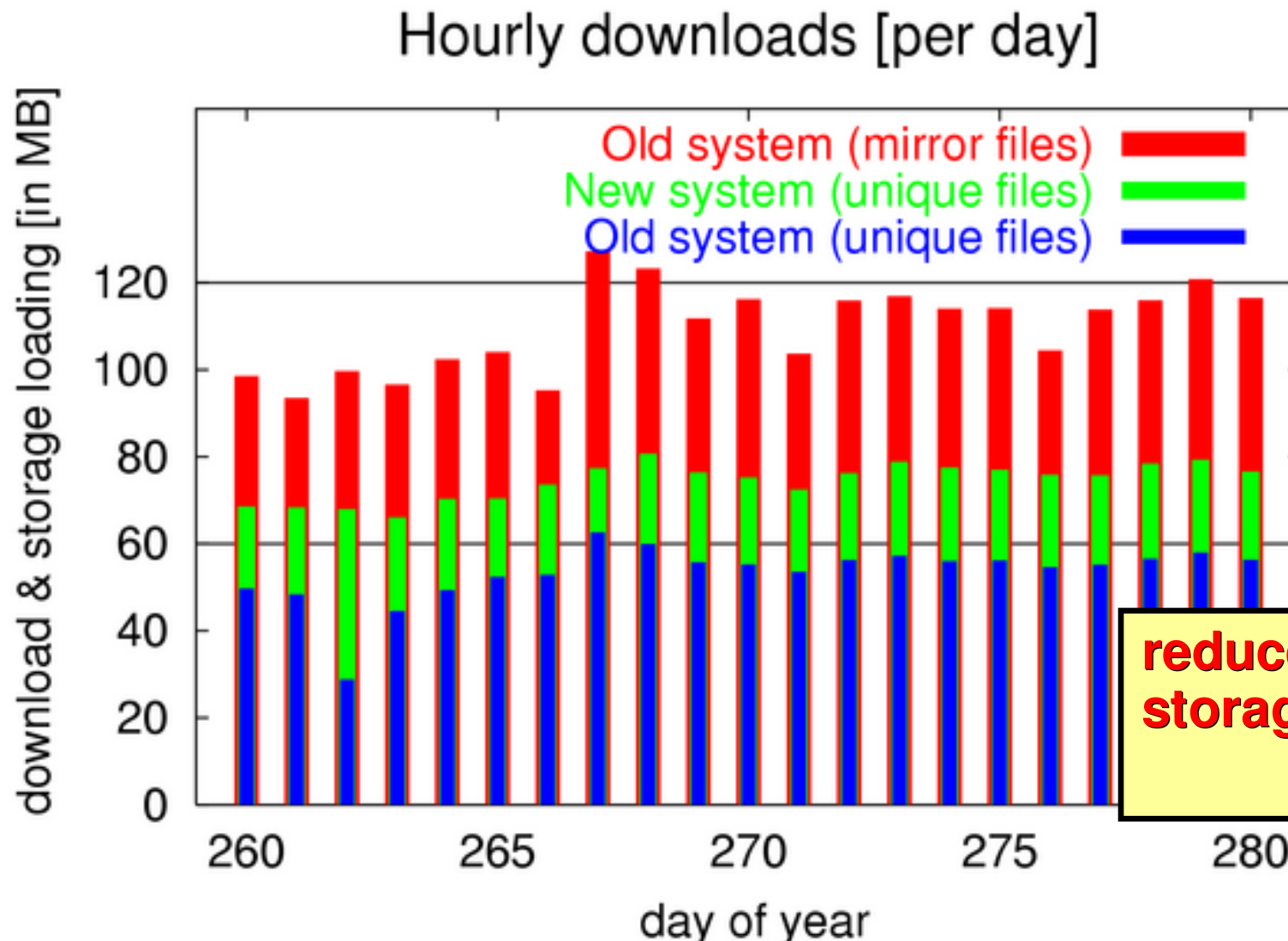
- more frequent run
- non-redundancy in getting
- extensive parallelizing
- dynamic source switching

- easier configuration
- monitoring & maintenance
- support additional services





# new implementation - results (1)

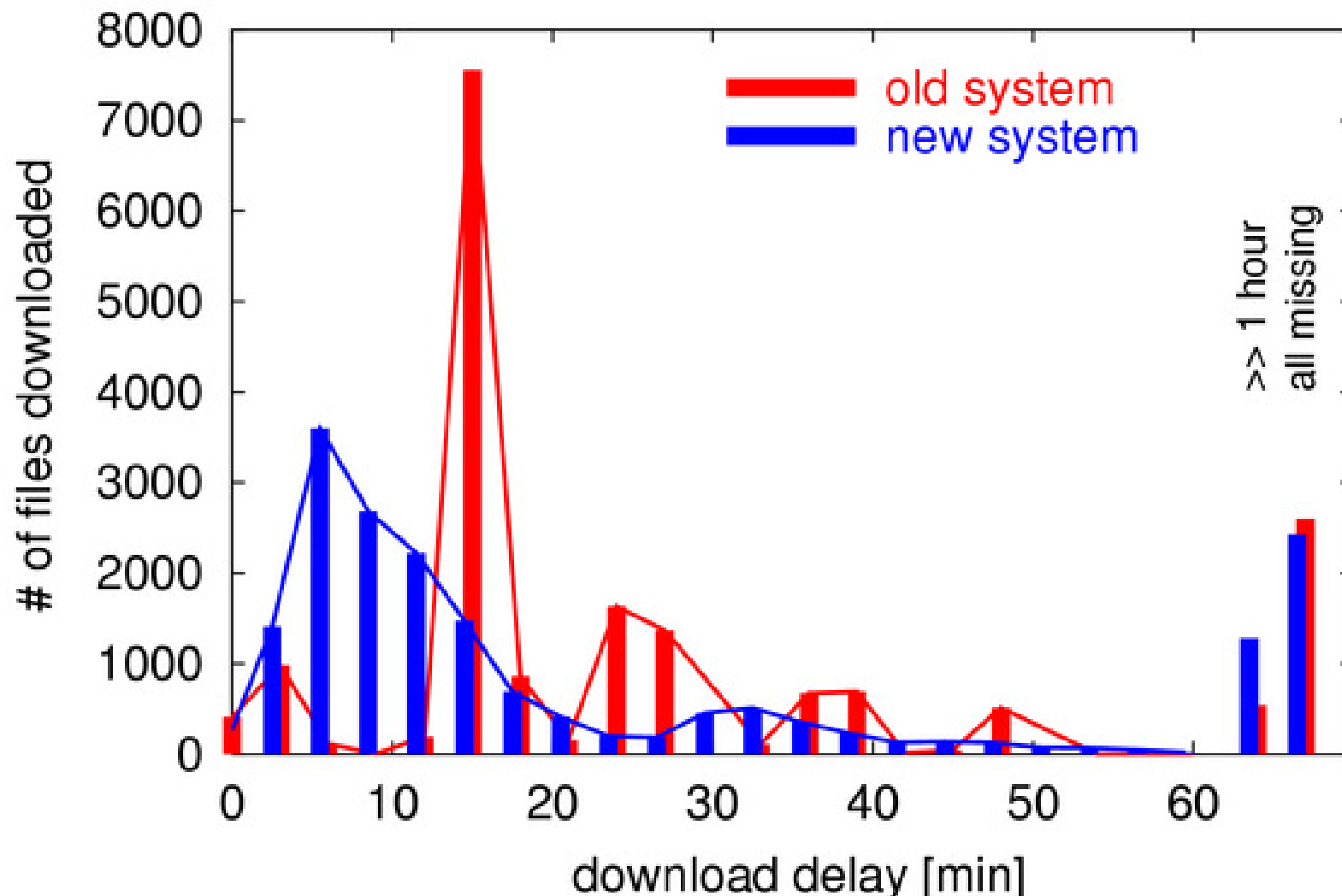


**reduced traffic AND  
storage requirements  
(40 - 50 %)**

## new implementation - results (2)

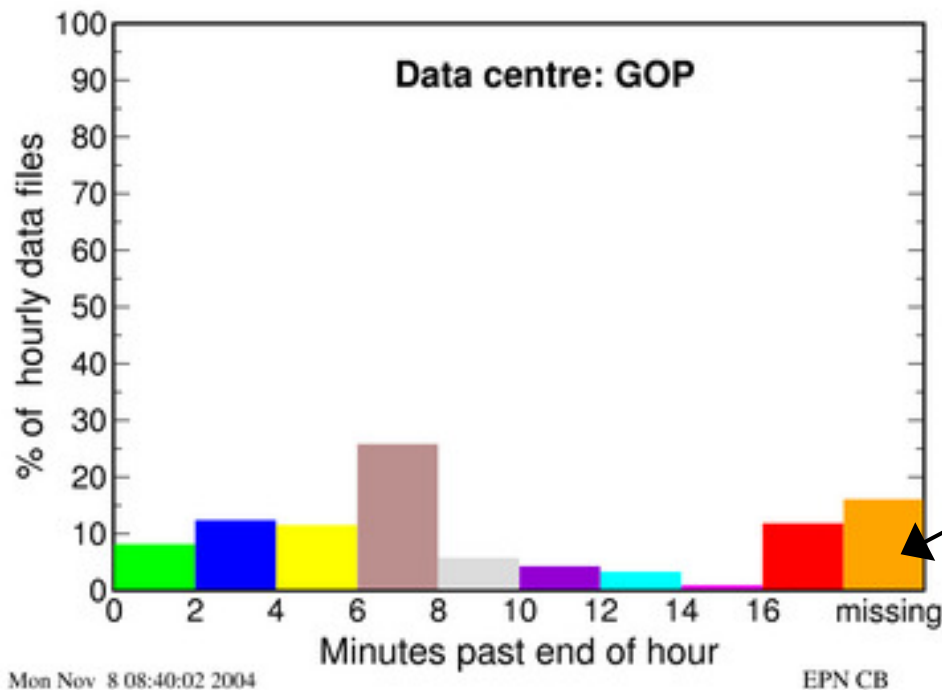
Hourly donload statistics

**better data NRT availability**

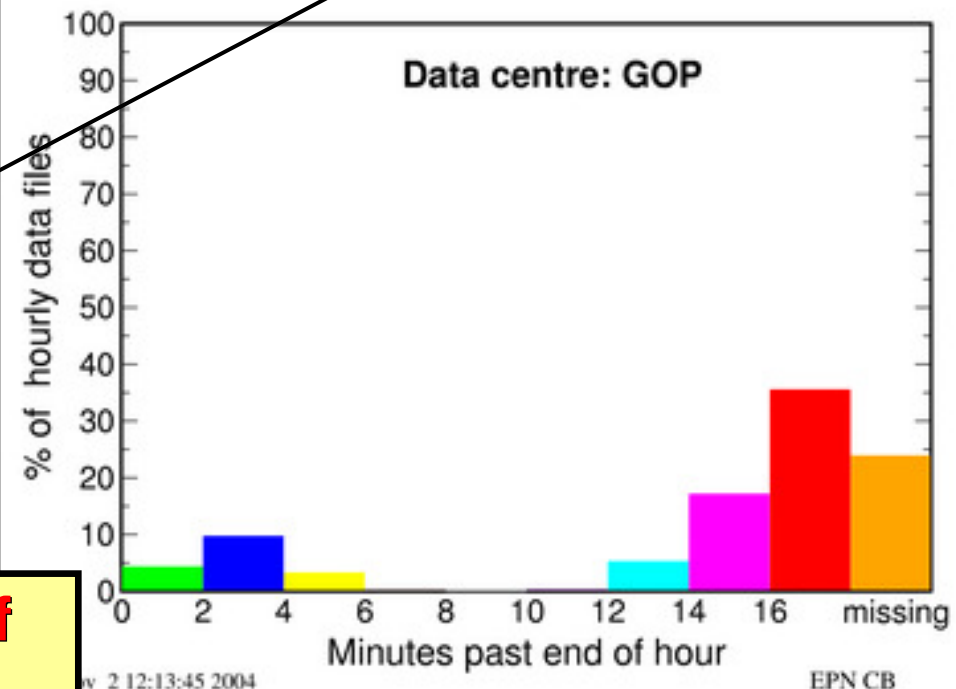


# EPN / CB monitoring

**official monitoring of the new system**



**mostly inactive stations**



**official monitoring of the old system**





# daily RINEX files

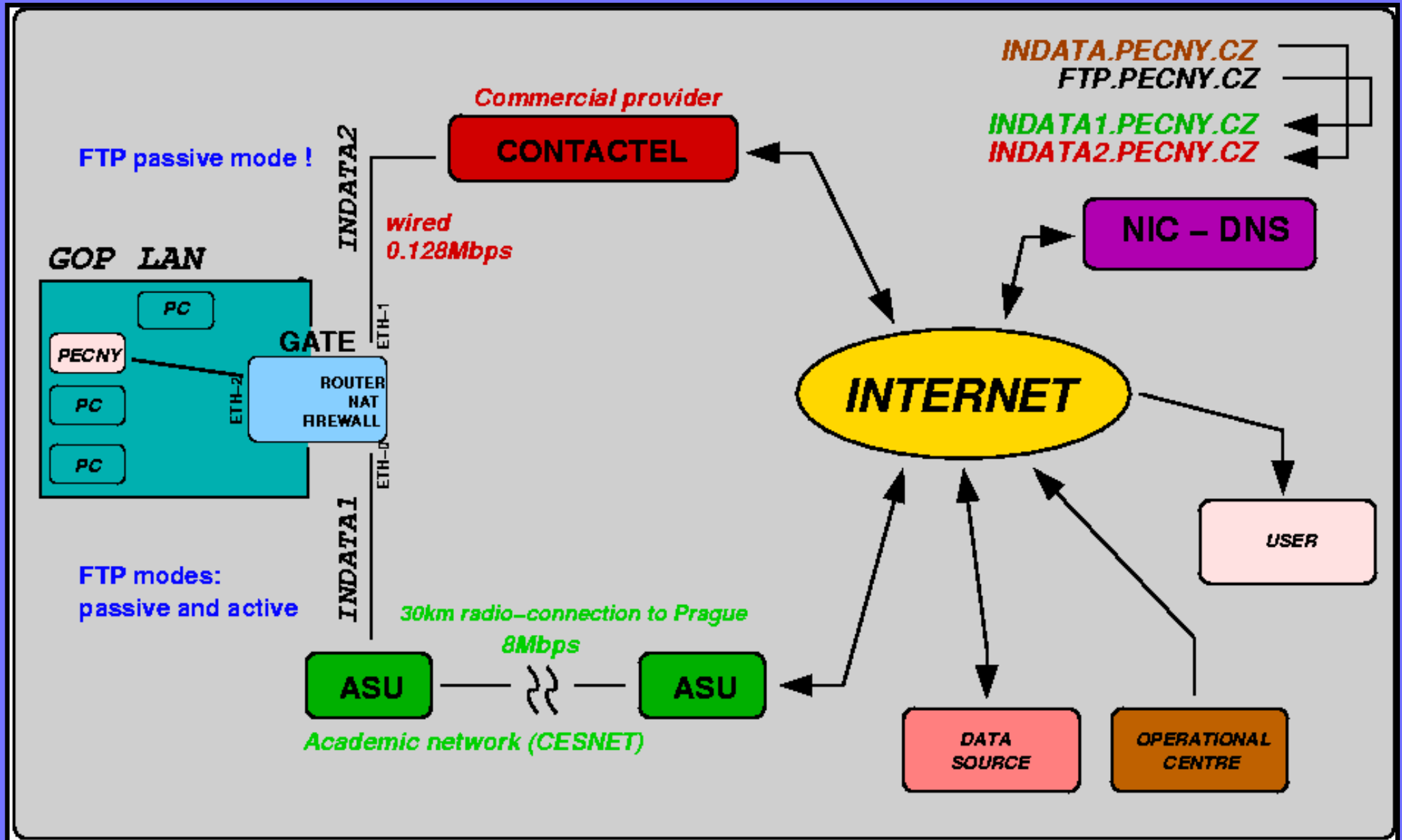
cc-teqc\_day: 2004:311 [20041106000000-20041106235930] at 11/07/04 03:40:02

|      |          |    |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |      |
|------|----------|----|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|------|
| ALBH | 2004/311 | 24 | : | A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | S | T | U | V | W | X | = | 3110 |
| ALGO | 2004/311 | 24 | : | A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | S | T | U | V | W | X | = | 3110 |
| AQUI | 2004/311 | 0  | : | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | = | minF |
| AREQ | 2004/311 | 24 | : | A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | S | T | U | V | W | X | = | 3110 |
| ARTU | 2004/311 | 24 | : | A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | S | T | U | V | W | X | = | 3110 |
| AUCK | 2004/311 | 24 | : | A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | S | T | U | V | W | X | = | 3110 |
| BAN2 | 2004/311 | 23 | : | A | B | C | D | E | - | G | H | I | J | K | L | M | N | O | P | Q | R | S | T | U | V | W | X | = | minF |
| BBYS | 2004/311 | 23 | : | A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | S | T | U | V | W | - | = | minF |
| BOR1 | 2004/311 | 24 | : | A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | S | T | U | V | W | X | = | 3110 |
| BRUS | 2004/311 | 24 | : | A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | S | T | U | V | W | X | = | 3110 |
| CHAT | 2004/311 | 0  | : | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | = | minF |
| CHUR | 2004/311 | 24 | : | A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | S | T | U | V | W | X | = | 3110 |

cc-teqc\_day: 2004:311 [20041106000000-20041106235930] at 11/08/04 03:46:41

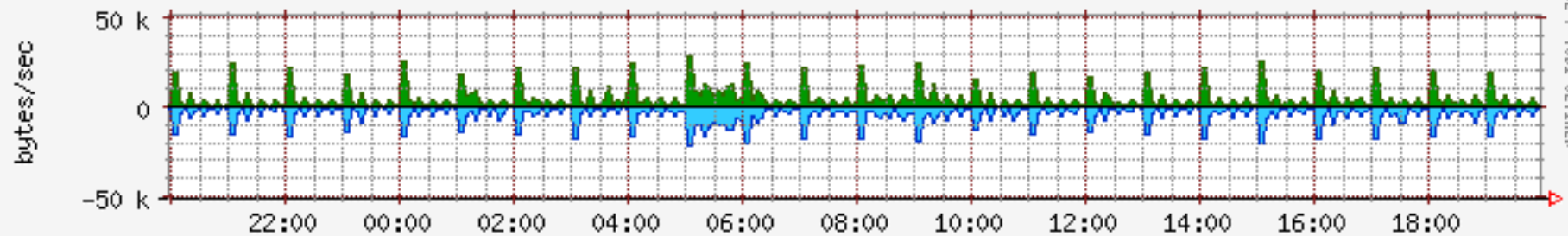
|      |          |    |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |      |   |                |           |        |
|------|----------|----|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|------|---|----------------|-----------|--------|
| ALBH | 2004/311 | 0  | : |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |      |   | albh3110.04d.Z | .. exists | = .ok. |
| ALGO | 2004/311 | 0  | : |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |      |   | algo3110.04d.Z | .. exists | = .ok. |
| AQUI | 2004/311 | 0  | : | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | -    | - | -              | = minF    |        |
| AREQ | 2004/311 | 0  | : |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |      |   | areq3110.04d.Z | .. exists | = .ok. |
| ARTU | 2004/311 | 0  | : |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |      |   | artu3110.04d.Z | .. exists | = .ok. |
| AUCK | 2004/311 | 0  | : |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |      |   | auck3110.04d.Z | .. exists | = .ok. |
| BAN2 | 2004/311 | 23 | : | A | B | C | D | E | - | G | H | I | J | K | L | M | N | O | P | Q | R | S | T | U | V | W | X | = | 3110 |   |                |           |        |
| BBYS | 2004/311 | 23 | : | A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | S | T | U | V | W | - | = | 3110 |   |                |           |        |
| BOR1 | 2004/311 | 0  | : |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |      |   | bor13110.04d.Z | .. exists | = .ok. |
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| CHAT | 2004/311 | 0  | : | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | -    | - | -              | = minF    |        |
| CHUR | 2004/311 | 0  | : |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |      |   | chur3110.04d.Z | .. exists | = .ok. |

# IT alternatives, FTP passive × active



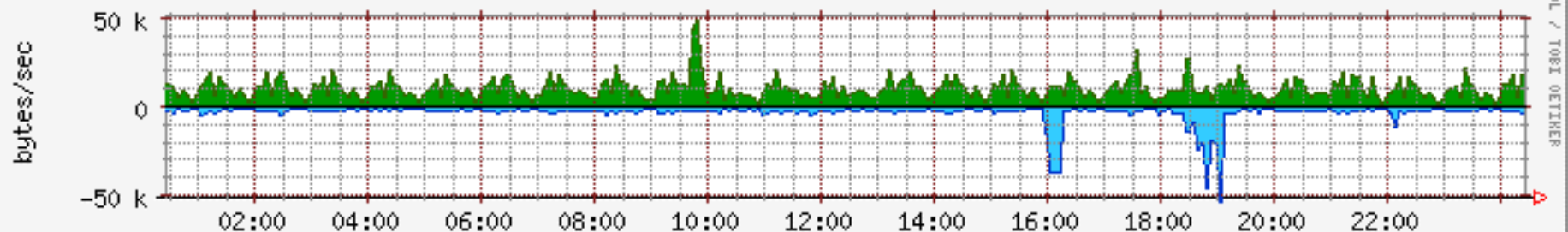
# monitoring system at GOP

traffic on eth0 - Pecny - main station



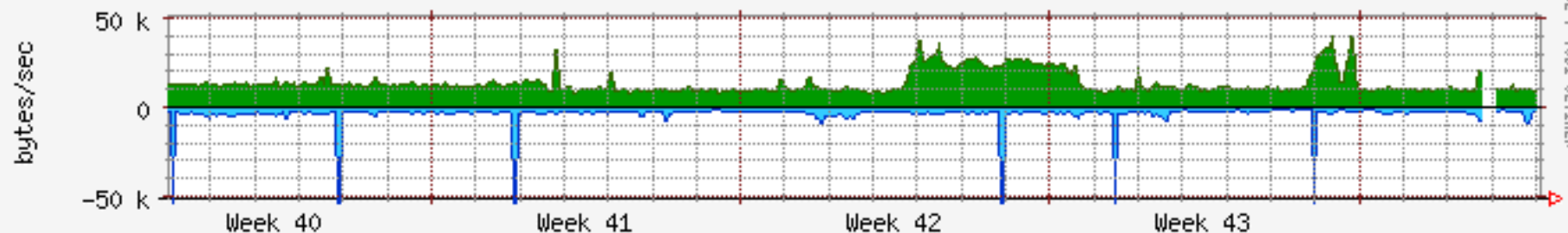
■ Incoming  
■ Outgoing

traffic on eth0 - Gate -



■ Incoming Max: 48.2 k Avg: 10.1 k Current: 18.0 kbytes/sec

traffic on eth0 - Gate -



■ Incoming Max: 40.1 k Avg: 13.5 k Current: 9.5 kbytes/sec  
■ Outgoing Max: 436.7 k Avg: 7.4 k Current: 2.8 kbytes/sec

## summary

### current status and developments:

- ❖ new implementation - reduced storage, traffic and latency!!!
- ❖ new services - daily files, data checking and monitoring, ...
- ❖ web-based monitoring system of the GOP AC/DC activities:
  - ❖ quality, availability, requirements, ...
  - ❖ input data & products; output products
  - ❖ HW, SW, internet

### future:

- ❖ collecting new sites from Czech (? Slovak) permanent GPS networks (at least from 'research/academic' GPS sites)
  - ❖ integrated collecting the data from available RT streams ?
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