

Technical Operations, R&D



JIVE

Joint Institute for VLBI
ERIC

Current hardware

1 100 Gbps

17 FlexBuff

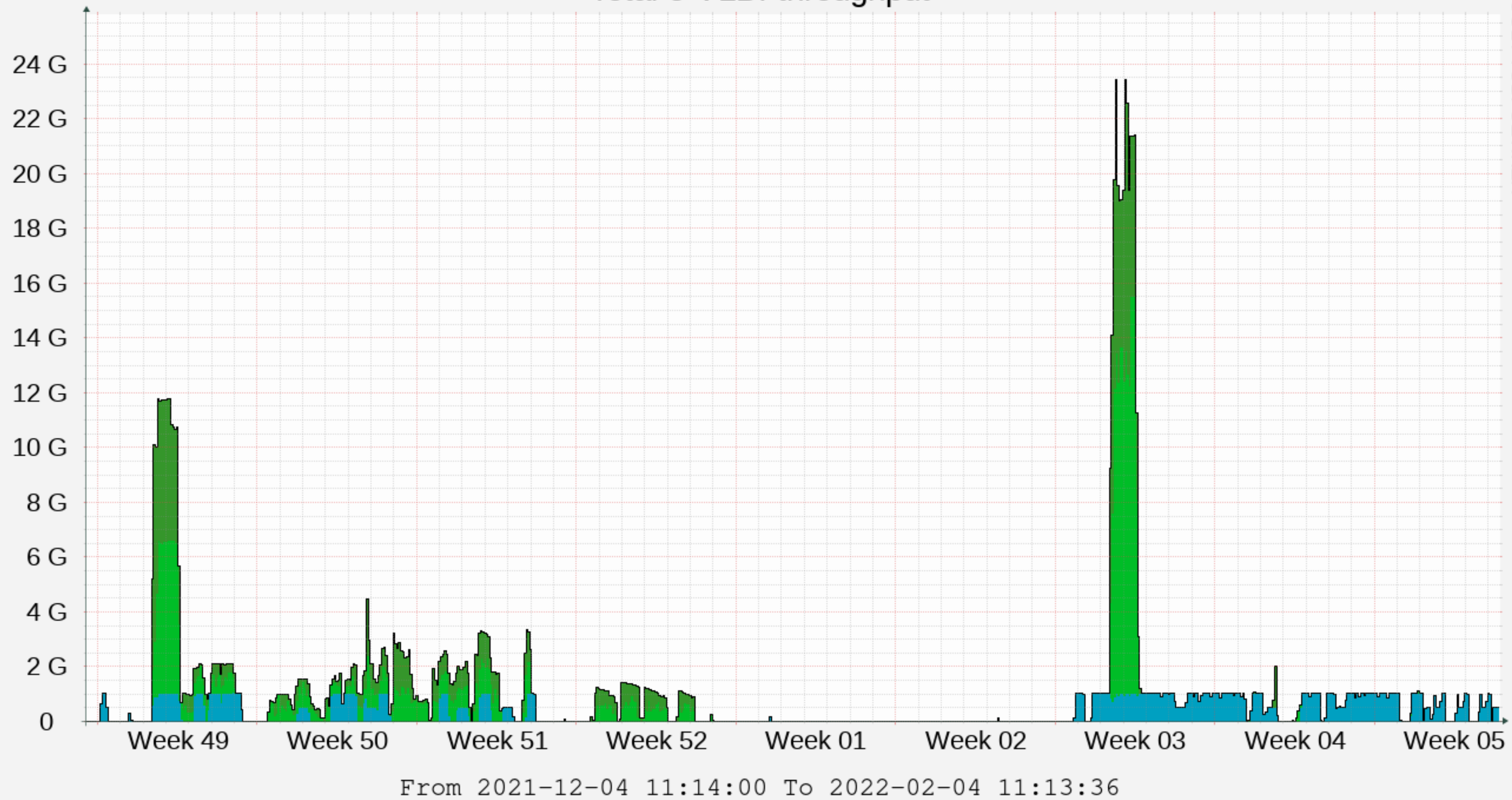
3 Mark6

25 Mark5

1012 SFXCcores

Current hardware

Total e-VLBI throughput



■ WSRT ■ SN8 (spine-l) ■ SN8 (spine-r)

Total e-VLBI throughput, Current: 517.95 M

Max: 23.45 G

Current hardware

0.8 100 Gbps

19 FlexBuff 

3 Mark6

25 Mark5

1012 SFXCcores

Ef, Ys

~~Current~~ in progress hardware

On, Sr, Mc, Nt

Current in progress hardware

On, Sr, Mc, Nt

90x2.5" or 3.5"
SAS3/SATA3
Hot-swap drives



Node control panel

Initially: 72 x 18 TB, after RAID 900+ TB

~~Current~~ in progress hardware

0.8 100 Gbps

19 FlexBuff

3.x Mark6

25 Mark5

1012 SFXCcores

Kunming:

- import from outside EU
- expensive list price (30k€)
- investigate tax exemption

JIVE Correlator* room rebuild



(*) *Maybe EVN Data Centre hosted at JIVE would be more accurate these days*

JIVE Correlator* room rebuild



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OPBOUW: Type: IV1260 Installatievloer

- Voet: Verzinkte voetplaat.
- Staanders: Verzinkte gasbuis*
- Verbindingen: Kopplaat M20 voorzien van hamerkop-schroeven
- Draagprofiel: C-profiel 60x60x2mm
- Afwerking: Vloerpaneel naar keuze
- Frames: C-profiel 100x60x2mm

VERBINDINGEN:

Middels hamerkopschroeven worden de C-profielen op een centreerplaat (kopplaat) elektrisch geleidend verschroefd. Op deze wijze gemonteerd, vormt de onderconstructie één geheel en kan zodanig in het galvanisch opgenomen worden (een meetrapport aardingspotentieel opgenomen en kan desgewenst worden van de KEMA is voorhanden en kan desgewenst worden getoond).

RASTERMATEN:

- Raster: 1200x600mm:
- 600x600mm:

of aangepast aan vloerindeling of vloerbelasting.

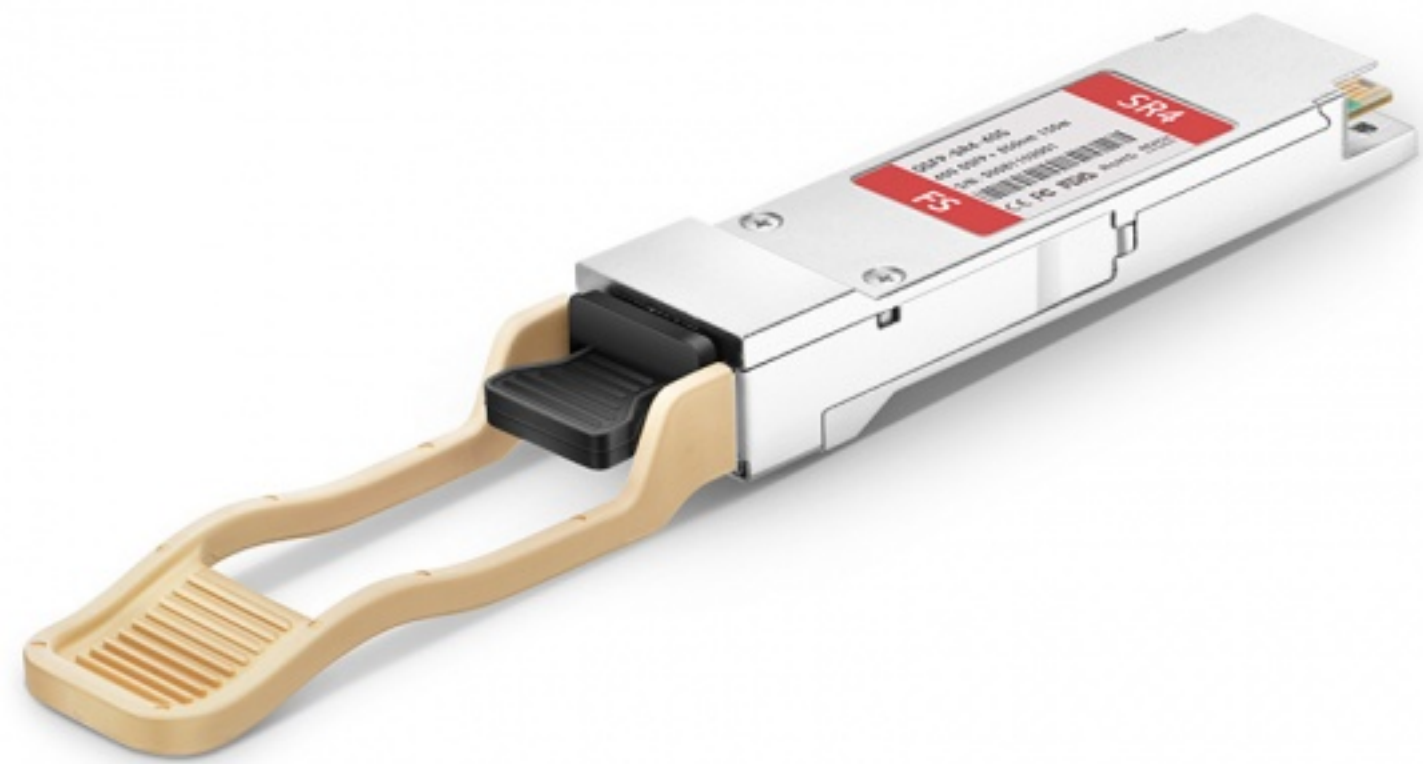
Maximale toegestane belasting:
 $\leq 20 \text{ kN/m}^2$ (veiligheidsfactor 1,35 NEN-EN 1993)
 $\geq 30 \text{ kN/m}^2$ (veiligheidsfactor 2 NEN - EN 12825)

**Maximale toelating
 $\leq 20 \text{ kN/m}^2$**

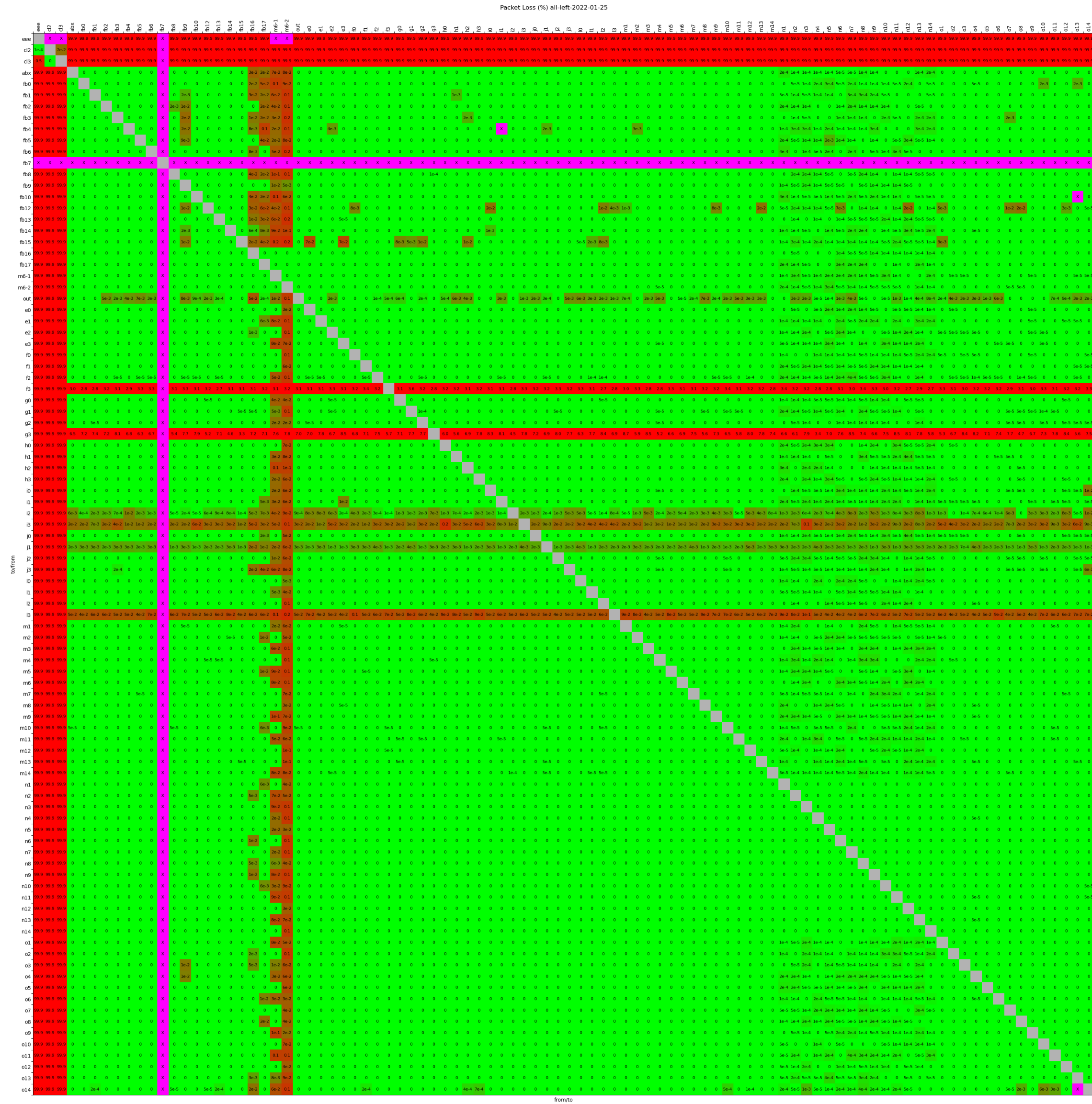
(*) Maybe EVN Data Centre hosted at JIVE would be more accurate these days

Cheap hardware :- (

"no brand" 40 Gbps transceiver



Cheap hardware :- (



all-to-all network test system

- based on iperf
- measures packet loss

© Paul Boven, Des Small

Cheap hardware :- (

out	fb5	fb6	fb7	fb8	fb9	fb10	fb12	fb13	fb14	fb15	fb16	fb17	m6-1	m6-2	out	e0	e1	e2	e3	f0	f1	f2	f3	...
99.9	99.9	99.9	X	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	X	X	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9
99.9	99.9	99.9	X	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9
99.9	99.9	99.9	X	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9
0	0	0	X	0	0	0	0	0	0	0	3e-2	2e-2	7e-2	8e-2	0	0	0	0	0	0	0	0	0	0
0	0	0	X	0	0	0	0	0	0	0	2e-2	5e-2	0.1	9e-2	0	0	0	0	0	0	0	0	0	0
0	0	0	X	0	2e-3	0	0	0	0	0	3e-2	2e-2	6e-2	0.1	0	0	0	0	0	0	0	0	0	0
0	0	0	X	2e-3	1e-2	0	0	0	0	0	0	2e-2	4e-2	0.1	0	0	0	0	0	0	0	0	0	0
0	0	0	X	0	2e-2	0	0	0	0	0	1e-2	2e-2	3e-2	0.2	0	0	0	0	0	0	0	0	0	0
0	0	0	X	0	2e-2	0	0	0	0	0	8e-3	0.1	2e-2	0.1	0	0	0	4e-3	0	0	0	0	0	0
0	0	0	X	0	9e-3	0	0	0	0	0	0	4e-2	2e-2	8e-2	0	0	0	0	0	0	0	0	0	0
0	0	0	X	0	0	0	0	0	0	0	8e-3	0	5e-2	0.2	0	0	0	0	0	0	0	0	0	0
X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
0	0	0	X		0	0	0	0	0	0	4e-2	2e-2	1e-1	0.1	0	0	0	0	0	0	0	0	0	0
0	0	0	X	0		0	0	0	0	0	0	0	1e-2	5e-3	0	0	0	0	0	0	0	0	0	0
0	0	0	X	0	0		0	0	0	0	4e-2	2e-2	0.1	6e-2	0	0	0	0	0	0	0	0	0	0
0	0	0	X	0	1e-2	0		0	0	0	3e-2	6e-2	4e-2	0.1	0	0	0	0	0	8e-3	0	0	0	0
0	0	0	X	0	0	0		0	0	0	1e-2	3e-2	6e-2	0.2	0	0	0	0	5e-5	0	0	0	0	0
0	0	0	X	0	2e-3	0		0	0	0	6e-4	8e-3	9e-2	1e-1	0	0	0	0	0	0	0	0	0	0
0	0	0	X	0	1e-2	0		0	0	0	2e-2	4e-2	0.2	0.2	0	7e-2	0	0	7e-2	0	0	0	0	8e-2
0	0	0	X	0	0	0		0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	X	0	0	0		0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0

all-to-all network test system

- based on iperf
- measures packet loss

© Paul Boven, Des Small

Cheap hardware :- (

fb5	fb6	fb7	fb8	fb9	fb10	fb12	fb13	fb14	fb16	fb17	m6-1	m6-2	e0	e1	e2	e3	f0	f1	f2	f3	
99.9	99.9	99.9	X	99.9	99.9	99.9	99.9	99.9	99.9	99.9	X	X	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9
99.9	99.9	99.9	X	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9
0	0	0	X	0	0	0	0	0	3e-2	2e-2	7e-2	8e-2	0	0	0	0	0	0	0	0	0
0	0	0	X	0	0	0	0	0	2e-2	5e-2	0.1	9e-2	0	0	0	0	0	0	0	0	0
0	0	0	X	0	2e-3	0	0	0	3e-2	2e-2	6e-2	0.1	0	0	0	0	0	0	0	0	0
0	0	0	X	2e-3	1e-2	0	0	0	0	2e-2	4e-2	0.1	0	0	0	0	0	0	0	0	0
0	0	0	X	0	2e-2	0	0	0	1e-2	2e-2	3e-2	0.2	0	0	0	0	0	0	0	0	0
0	0	0	X	0	2e-2	0	0	0	8e-3	0.1	2e-2	0.1	0	0	4e-3	0	0	0	0	0	0
0	0	0	X	0	9e-3	0	0	0	0	4e-2	2e-2	8e-2	0	0	0	0	0	0	0	0	0
0	0	0	X	0	0	0	0	0	8e-3	0	5e-2	0.2	0	0	0	0	0	0	0	0	0
X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
0	0	0	X	0	0	0	0	0	4e-2	2e-2	1e-1	0.1	0	0	0	0	0	0	0	0	0
0	0	0	X	0	0	0	0	0	0	0	1e-2	5e-3	0	0	0	0	0	0	0	0	0
0	0	0	X	0	0	0	0	0	4e-2	2e-2	0.1	6e-2	0	0	0	0	0	0	0	0	0
0	0	0	X	0	1e-2	0	0	0	3e-2	6e-2	4e-2	0.1	0	0	0	8e-3	0	0	0	0	0
0	0	0	X	0	0	0	0	0	1e-2	3e-2	6e-2	0.2	0	0	0	5e-5	0	0	0	0	0
0	0	0	X	0	2e-3	0	0	0	6e-4	8e-3	9e-2	1e-1	0	0	0	0	0	0	0	0	0
0	0	0	X	0	1e-2	0	0	0	2e-2	4e-2	0.2	0.2	7e-2	0	0	7e-2	0	0	0	0	8e-2
0	0	0	X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

- Clear problems with
- flexbuff 16, 17
 - mark6-1, mark6-2

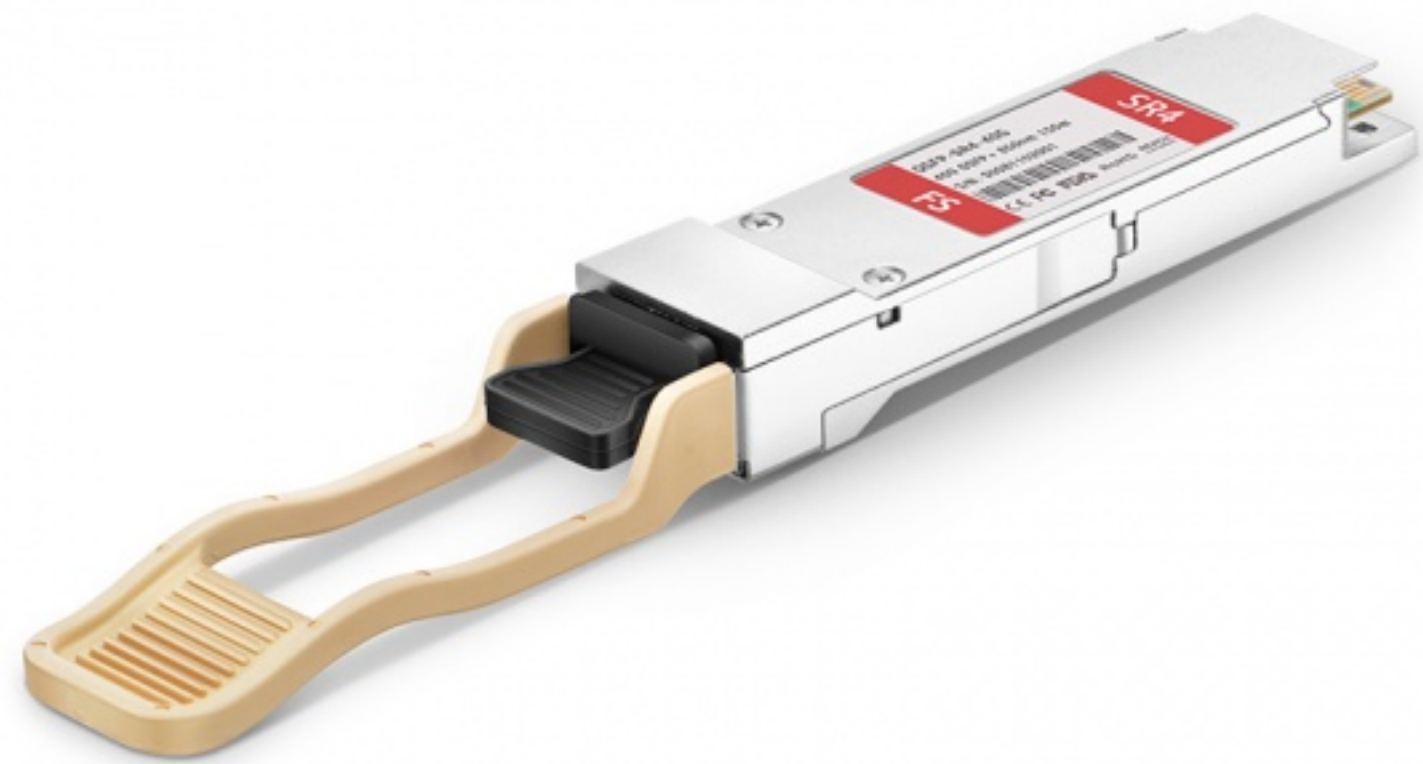
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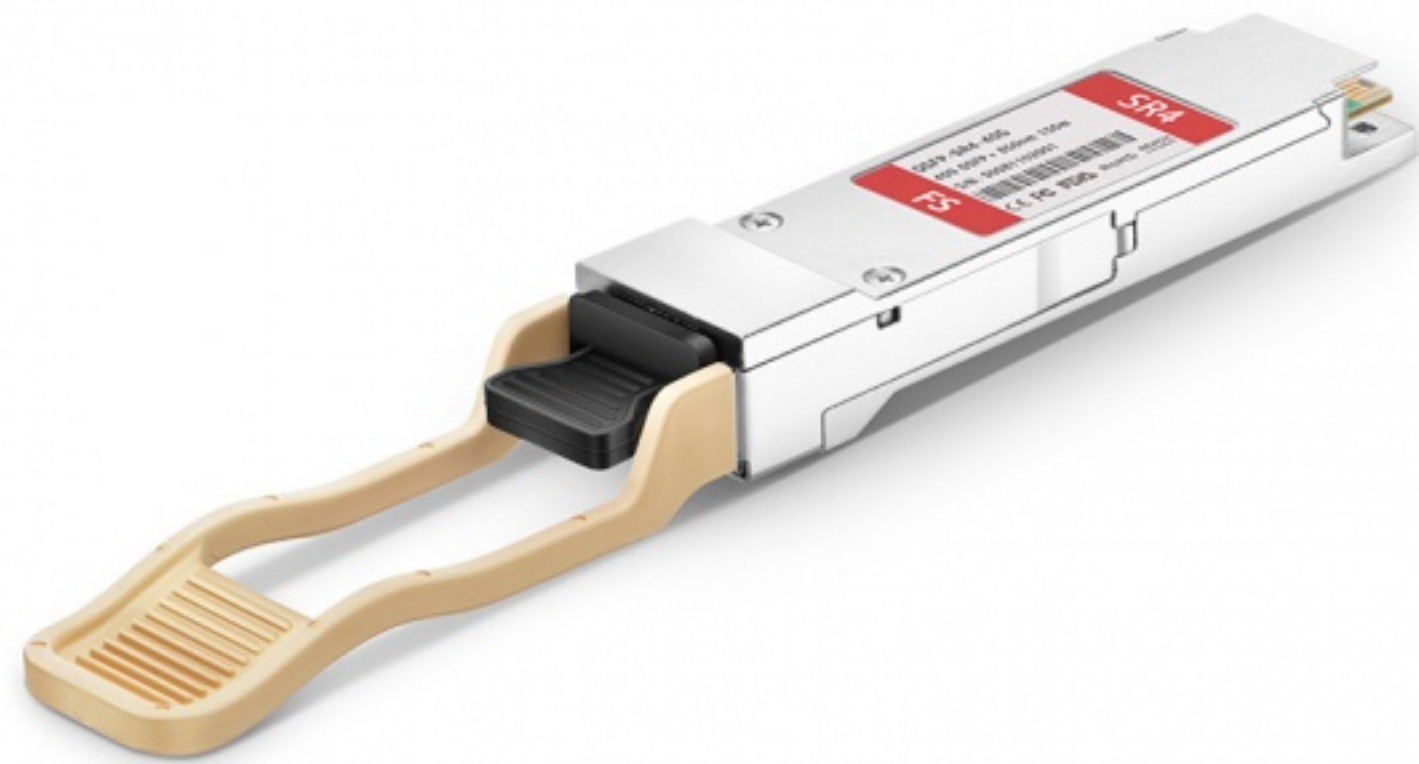
Cheap hardware :- (

"no brand" 40 Gbps transceiver



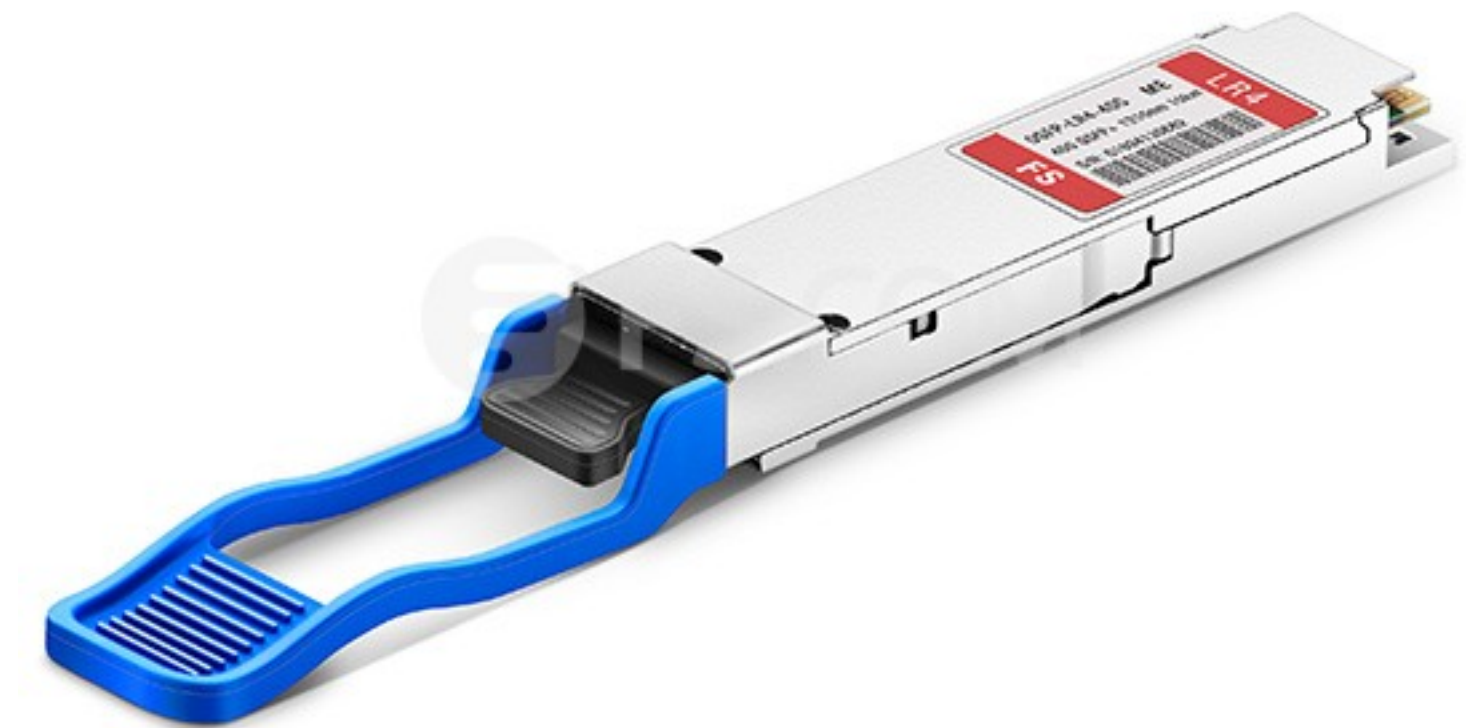
Cheap hardware :- (

"no brand" 40 Gbps transceiver



32€

Mellanox (NVIDIA) 40 Gbps transceiver



200€

We need 30-40 of these

Cheap hardware :- (

Current state and future steps

- 12 out of 32 identified bad
- Replacement under warranty, if possible
 - send to China, repair, send back = **2 month**
 - no spares = no data centre
- Purchase intermediate product at ~100€ / item
- Worst case replace all with those (still €€€€)

Firmware bugs!

SNMP monitoring on microblade w/ dual 10 Gbps connection

- incorrect SNMPv3 implementation
 - cannot monitor bond (2x 10 Gbps into 20 Gbps)
- memory leak in that implementation
 - either prevent console login, or
 - break bond

• convinced supplier not our fault after debug f/w
• released new production f/w!



New hardware :-)

The screenshot shows a web browser window with the address bar displaying 'archive.jive.nl/scripts/portal.php'. The page title is 'The EVN MkIV Data Processor at JIV X'. The main content area features a red heading 'EVN Data Archive at JIVE'. Below the heading, there is a paragraph of text describing the archive. To the left, there is a dropdown menu for 'Select EVN experiment' with 'EN010C' selected. To the right, there is a table titled 'Select a sourceposition from EVN experiment EN010C' with columns for Ra, Dec, Source, Image, and Image. Below the table, there are two sections: 'Access to EVN archive' with four bullet points and 'Access to VO archives' with two bullet points. At the bottom left, there is an 'Info' section with two bullet points.

EVN Data Archive at JIVE

The [EVN](#) Data Archive at [JIVE](#) contains correlated data associated with [EVN](#) observations processed at [JIVE](#). The archive includes a growing database of VLBI observations that have entered the public domain.

In addition, the archive makes available various correlator and pipeline products that give an impression of the data quality. In some cases, preliminary images of calibrators and target sources are also available. The archive allows these to be combined with external VO resources in a natural way.

Select EVN experiment

EN010C ▾

Select a sourceposition from EVN experiment EN010C

Ra	Dec	Source	Image	Image
59.6258	56.1124	J0358+5606	sdss	evn
59.7238	54.2205	B0355+54	sdss	evn
72.3471	63.5360	J0449+6332	sdss	evn
74.0000	63.3833	R5	sdss	

Access to EVN archive

- [Show experiment EN010C](#)
- [Show catalogue of experiments](#)
- [Search archive by sourcename or position](#)
- [The Bologna archive of EVN observations.](#)

Access to VO archives

- [Aladin Sky Atlas](#)
- [Sloan Digital Sky Survey](#)

Info

- [Increase of data since 2000](#)
- [Web statistics](#) since June 2004

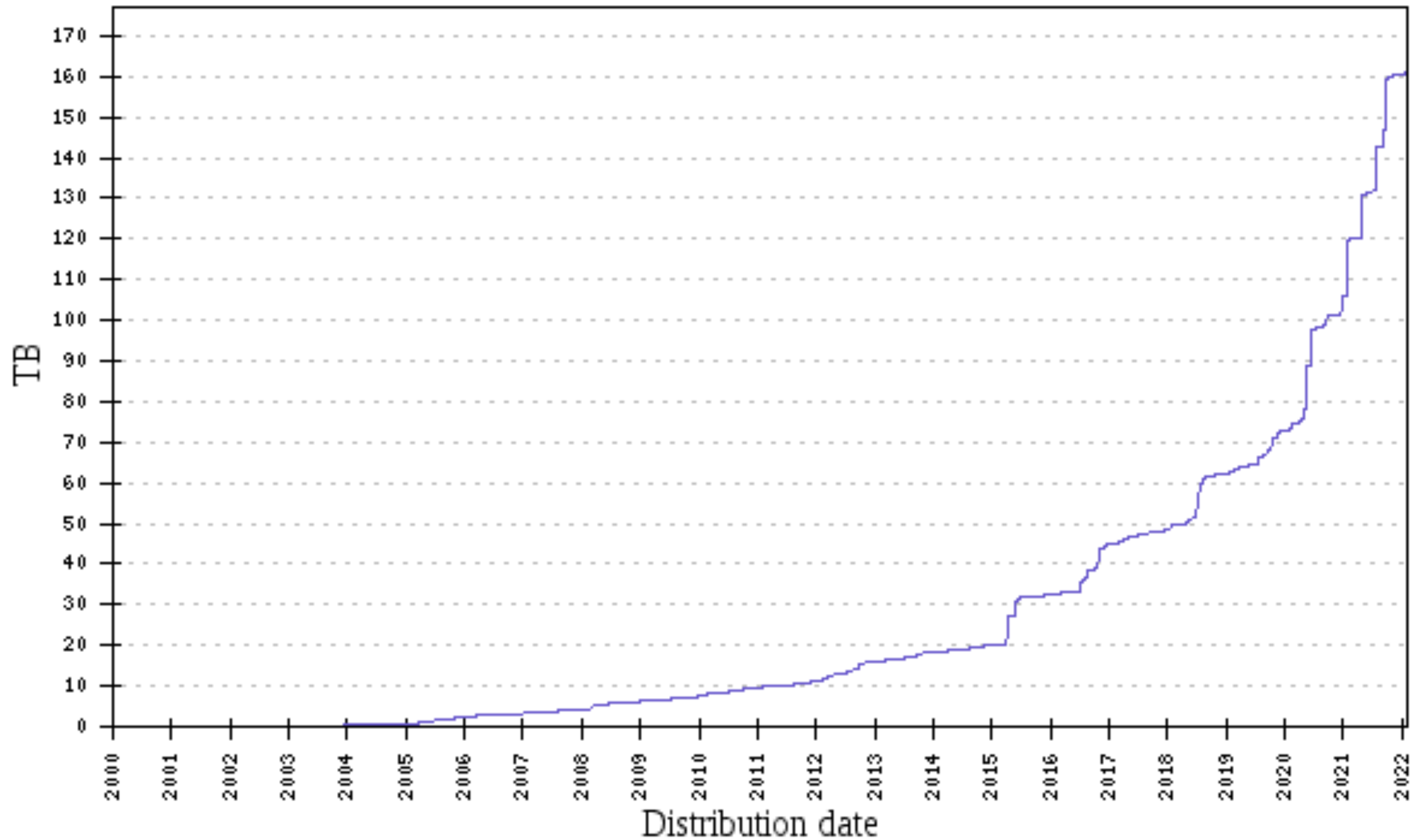
New hardware :-)

EVN Archive server replacement

- **Current:**
 - 2012 machine
 - ~180 TB accumulated (mix of 2TB .. 10TB HDDs)

New hardware :-)

EVN Data Archive at JIVE
contents: 160.8 TB, last update: 2022-02-05



New hardware :-)

EVN Archive server replacement

- **Current:**
 - 2012 machine
 - ~180 TB accumulated (mix of 2TB .. 10TB HDDs)
- **New:**
 - new chassis, 64 GB RAM, dual 10-core Xeon, 2x25 Gbps eth
 - 21 x 18 TB HDD (≥ 260 TB after RAID)
 - many HDD slots free in external JBOD chassis for expansion
 - can reuse batch of latest HDD upgrade for even more space

New software :-)

EVN Archive server upgrade

- **New:**
 - newer O/S, tooling
 - towards more modern web interface
 - preparing for integration of EVN data DOIs ⇔ EVN archive

see <https://www.doi.org/>



Persistent identifiers

DOIs for EVN data sets (citable!)

Progressing:

- can issue DOIs in test environment
 - e.g. **10.82017/e3gm-f192** (does not resolve; is test!)

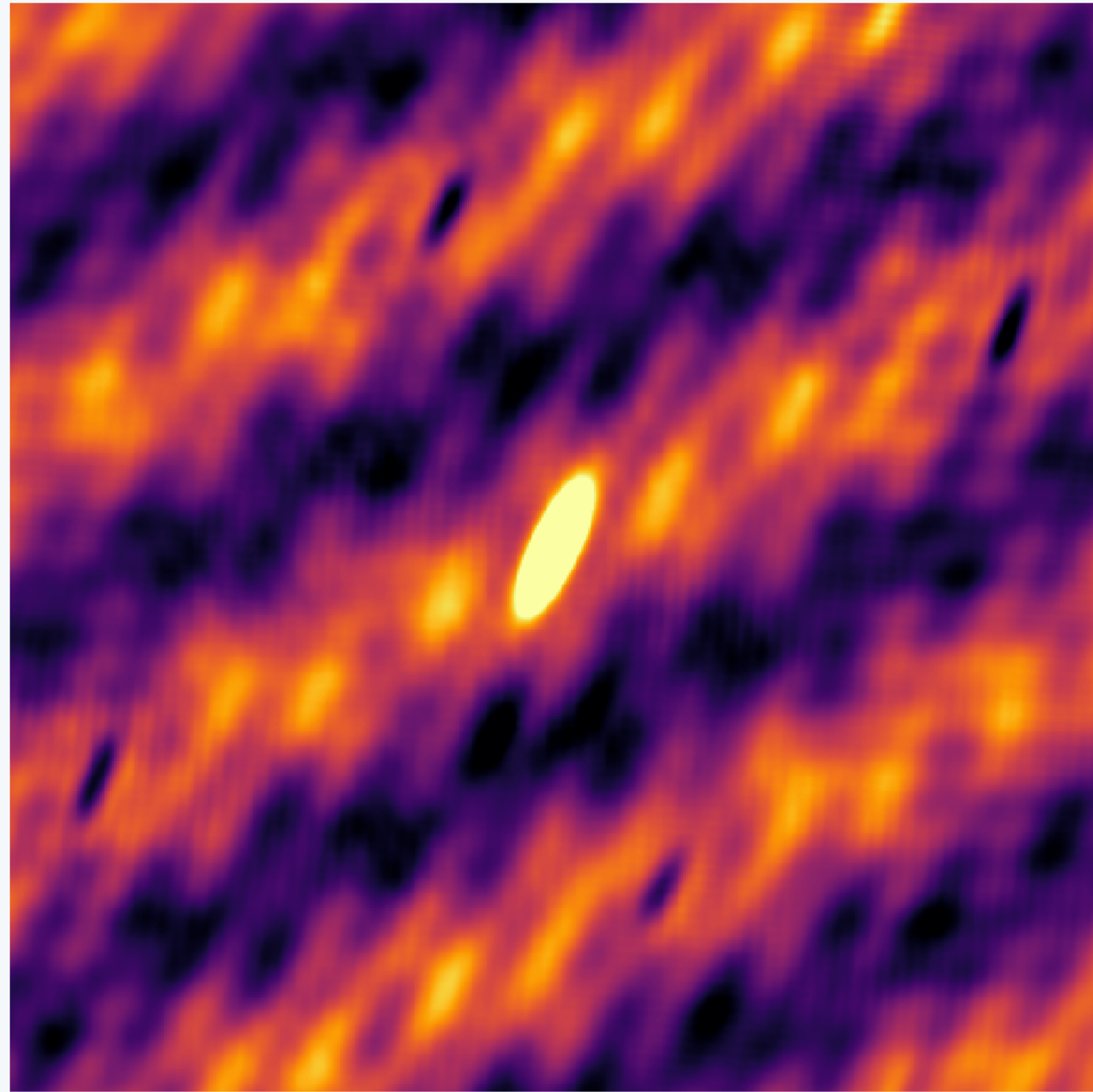
Linked to other relevant persistent identifiers:

- JIVE GRID* identifier **<https://grid.ac/institutes/grid.425539.c>**
- EVN Archive's re3data identifier **10.17616/R3Z197**

Put that in <https://dx.doi.org/> 😊

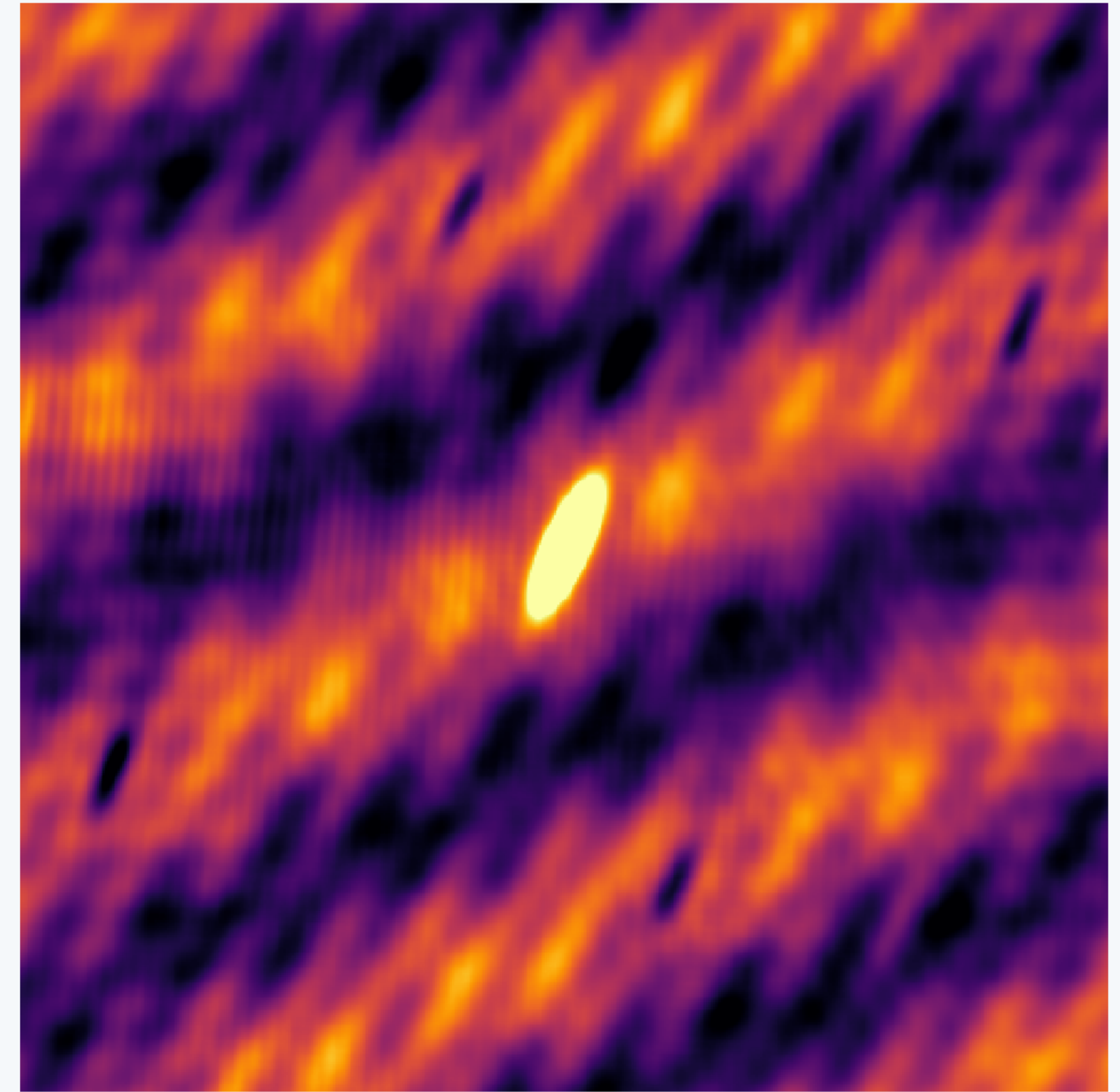
(*) *Global Research Identifier Database*

N14C2



AIPs

N14C2



CASA

Other ESCAPE funded

The screenshot shows the ESA EuroVO Registry interface. The browser address bar displays 'registry.euro-vo.org/evor/#myresources'. The page header includes the ESA logo and 'jive.eu'. The main content area is titled 'MY RESOURCES' and shows 'Results (2)'. A table lists two resources, with the second one, 'EVN TAP', circled in red. A yellow callout box points to the 'Status' column of this entry.

Short Name	IVOID	Status	Title	Resource Type	Capabilities	Compliance	#t
	ivo://jive.eu	active	JIVE Naming Authority	vg:Authority			
EVN TAP	ivo://jive.eu/tap	active	EVN Data Archive TAP service	vs:CatalogService	tr:tableaccess1.1, undefined, undefined, undefined	Partially Compliant(C-), not applicable, not applicable, not applicable	

Status: waiting for it to be published in the global registry ...

Page 1 of 1 | Page size: 100 | Displaying 1-2 of 2

Thanks for your
attention!