

Operational Data Transport in the IVS

Part 2

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Bonn Correlator

Outline

- Prerequisites for e-transfers
- e-transfer protocols & command lines
- Transfer web page
- Module shipment with PACKTRACK

Prerequisites for e-transfers

- Which correlator process the session?

(Bonn, WACO, Haystack, Wettzell, Vienna, GSI, SHAO etc.)

Please check masterfile change in short notice!

- Are your IP address(es) and the correlator IPs whitelisted on both side?

If not, contact correlator.

- Pull the data? Push the data?

- Correlator allowed to access to the station server?

Bonn provides its public key to be able to log in without password.

- Not allowed? Send filelist to correlator for m5copy or data location for etransfer client/demon.

- Data transfer related issues for Bonn,

please contact [geodesy\(at\)mpifr-bonn.mpg.de](mailto:geodesy(at)mpifr-bonn.mpg.de) using **subject [e-transfer]**.

Prerequisites for e-transfers

```
r11021_ys_291-1740
r11021_ys_291-1742b
r11021_ys_291-1746a
r11021_ys_291-1748
r11021_ys_291-1751
r11021_ys_291-1754
r11021_ys_291-1756b
r11021_ys_291-1800
r11021_ys_291-1801
r11021_ys_291-1804b
r11021_ys_291-1806
r11021_ys_291-1810
r11021_ys_291-1813
r11021_ys_291-1816
r11021_ys_291-1818
r11021_ys_291-1820a
r11021_ys_291-1823
r11021_ys_291-1826
r11021_ys_291-1828
r11021_ys_291-1831
r11021_ys_291-1834
r11021_ys_291-1837
r11021_ys_291-1839
r11021_ys_291-1842
r11021_ys_291-1846
```

```
[vlbi] [e-transfer] m25125 ISHIOKA data ready
Message preview
From 農澤 健太郎 <nozawa-k96xd@mlit.go.jp> Date Fri 03:46

Dear colleagues,

Comment:
May 5 is a substitute holiday, we will contact you ahead of time.
We do not observe scans where AZ is in the -5 to 5 degree range.
This is because AZ encoder errors may occur.
Scans that will not be observed are as follows 3scans : 125-0549, 125-0601, 125-0617

The M25125 data will be automatically put at 08:00 UT.
A list of vdif files for m25125_vdif.list is placed in the following directory.

IP 202.223.161.
etd -m 3 -f --command tcp://:2641 --data udt://:2643 --udt-mss 9000 /export/vlbi/m25125is/

Band-A H *_0.m5a
CH1 3480.4
CH2 3448.4
CH3 3384.4
CH4 3320.4
CH5 3224.4
CH6 3096.4
CH7 3064.4
CH8 3032.4
Band-A V *_1.m5a
CH1 3480.4
CH2 3448.4
```

e-transfer Protocols

- File Transfer Protocols:
 - FTP/FTPS, HTTP/HTTPS, RCP, SCP
 - Tsunami (UDP based transfers with TCP control)
 - UDP-based Data Transfer Protocol (UDT)

★ [jive5ab/m5copy](#)

★ [etransfer server/client system](#)

e-transfer protocols and command lines

Jive5ab/m5copy

- <https://github.com/jive-vlbi/jive5ab>
 - The VLBI data recorder software, enabling fast and flexible VLBI data transfers as well as high-speed VLBI data recording.
 - Start jive5ab on COMMAND port (default port: 2620) on both sides
 - Transfer with m5copy via DATA port
 - In Bonn, DATA ports are restricted from 2630 - 2800.
 - m5copy does not allow wildcards (*) for remote transfers
- > needs “filelist” from station

e-transfer protocols and command lines

Jive5ab/m5copy

- Copy VLBI data from SRC to DST.
- Usage: /cluster/jive5ab/latest/m5copy [options] SRC DST
- Example:

```
> m5copy vbs://:2622/r11204_* file://89.1.14.227/data/r11204/on/ -udt -r 1000M -p 2662 -t=120 --resume
```

- Options:
 - udt use UDT as protocol (default: tcp)
 - p <port> use this port number for data channel (default: 2630)
 - r <rate> limit transmit data rate to <rate> bits per second.
 - resume appends missing bytes in case of interruption (--ignore_existing/--allow_overwrite)
- SRC format: mk5, mk6, vbs, file

e-transfer protocols and command lines

Jive5ab/m5copy

- m5copy does not allow wildcards (*) for remote transfers

> needs “filelist” from station

```
#!/cluster/jive5ab/latest/m5copy vbs://193.146.252.24/{0} file://89.1.14.227/data/t2167/ys/ -udt -r 900M -p 2647 --resume  
t2167_ys_107-1730b  
t2167_ys_107-1733  
t2167_ys_107-1737  
t2167_ys_107-1746  
t2167_ys_107-1750  
t2167_ys_107-1756  
t2167_ys_107-1800  
t2167_ys_107-1811a  
t2167_ys_107-1823b  
t2167_ys_107-1826  
t2167_ys_107-1831a  
t2167_ys_107-1834
```

e-transfers protocols and command lines

etransfer server/client system

- <https://github.com/jive-vlbi/etransfer>
- The etransfer server/client system allows the client program to initiate server to server transfers, just by specifying two remote locations.
- Remote side needs to start daemon
- must have at least one command and one data channel specified
- client is used to perform the actual transfer
- allows the client program to initiate server to server transfers without login to remote server
- natively supports remote wildcards

e-transfers protocols and command lines

etransfer server/client system

- Usage: etc [--buffer <unsigned long>...] [--display-format <display_format>] [-h] [--help] [--list <URL>] [-m <int>] [--max-conn-retry <unsigned int>] [--max-retry <unsigned int>] [--mode <file copy mode>] [--overwrite] [--resume] [--retry-conn-delay <duration (s)>] [--retry-delay <duration (s)>] [-s --silent] [--skipexisting] [--udt-bw <int (bytes per second)>] [--udt-mss <int (bytes)>] [--version] <URL>...
- Options:
 - m: Message level
 - udt-bw: Set UDT maximum bandwidth.
 - udt-mss: Set UDT maximum segment size in bytes.
 - resume: Existing target file(s) will be appended to, if the source file is larger

e-transfers protocols and command lines

etransfer server/client system

- Example:

- etd running in Ishioka

> **etd -m 3 -f --command tcp://:2641 --data udt://:2643 --udt-mss 9000**

- pulling the data from Bonn using etc

> **etc -m 5 --udt-bw 1000Mbps --udt-mss 1500 'tcp://202.223.161.20#2641:/export/vlbi/r11205is/*' /data/r11205/is/ --resume**

- checking file list remotely

> **etc --list 141.74.6.203#2623:/exchange/wds300b/m25125ws/**

Transfer Web page

<http://www3.mpifr-bonn.mpg.de/cgi-bin/showtransfers.cgi>

Transfer Web Page for VLBI Stations and Correlators

Transfer Priority		
Correlator	Experiment(+Station)	Bandwidth (when indicated)
BONN	r11205	-
BONN	vo5120	-

Available transfer rates for BONN		Available transfer rates for RZ-BONN		Available transfer rates for WACO		Available transfer rates for VIEN	
TO Bonn:	-1700m	TO RZ-Bonn:	950m	TO WACO:	7800m	TO VIEN:	10000m
FROM Bonn:	10000m	FROM RZ-Bonn:	0m	FROM WACO:	2000m	FROM VIEN:	2000m

List of Active Data Transfers

Started at	Sent from	Sent to	Raid	Experiment Name	Preset Transfer Rate	Port	Serial Number
2025-05-02 08:24:09	gs	Bonn	data	vo5120	1200m	2676	20250502082409
2025-05-02 00:00:00	kv	bonn	data	r11205	700m	default	20250502000000
2025-05-01 02:38:47	hb	bonn	data	r11205	1000m	2654	20250501023847
2025-04-30 23:59:59	nn	bonn	data	vo5120	1500M	2697	20250430235959
2025-04-30 14:10:04	nn	waco	data	r41204	1200M	46243	20250430141004
2025-04-30 12:52:23	Kc	Bonn	data	c251a	1000M	2635	20250430125223
2025-04-30 12:41:15	Kt	Bonn	data	c251a	1000M	2634	20250430124115
2025-04-30 12:37:56	Ku	Bonn	data	c251a	1000M	2633	20250430123756
2025-04-30 12:33:48	Ky	Bonn	data	c251a	1000M	2632	20250430123348

Default tsunami port 46224

Default m5copy port 2630

Bonn Storage Information					Haystack Storage Information					WACO Storage Information				
Raid	Via Server	Size	Free	Note	Raid	Via Server	Size	Free	Note	Raid	Via Server	Size	Free	Note
/data	bonn/rzbonn	2.8 PB	209.1 TB		/data-st10	evlbi1	36.2 TB	2.2 TB		/data0	data0	1.9 PB	796.3 TB	
					/data-st11	evlbi1	54.4 TB	3.1 TB						
					/data-st13	evlbi1	54.4 TB	3.9 TB						
					/data-st12	evlbi1	54.4 TB	15.3 TB						

Hosted by the [Geodesy VLBI Group](#) of the [Bonn VLBI correlator centre](#).
Written by Frederic Jaron.
Maintained by Simone Bernhart.

Transfer Web page

- Start message form: 20250430095300_r11205_is_bonn_1000m_2641_data_start
serial number [yyymmddhhmmss in UT]_session code_data
origin_destination_transfer rate_port__raid_start
- Stop message form: 20250430095300_is_stop
serial number [yyymmddhhmmss in UT]_sent from_stop
- Transfer Start/Stop messages(empty files) to the Bonn correlator server
(89.1.14.226) under /data/transfers

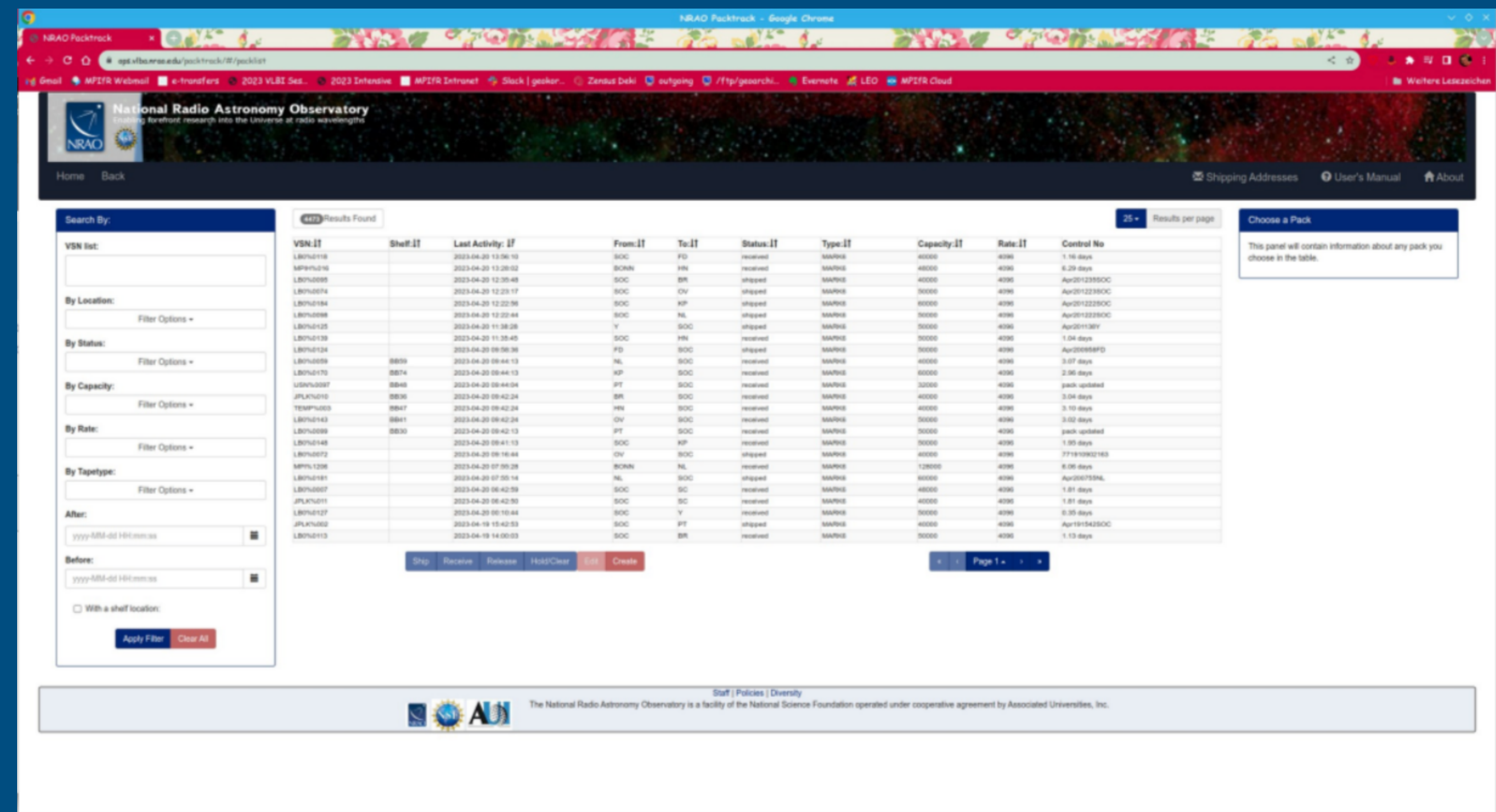
Summary for e-transfers to Bonn

http://www3.mpifr-bonn.mpg.de/div/vlbi/geodesy/Docs/etransfer_how-to.txt



Shipment with PACKTRACK

- <https://ops.vlba.nrao.edu/packtrack/#/>
- To get an account, contact Cynthia Thomas:
cynthia.c.thomas@nasa.gov
- Receiving AND shipping modules via input of VSN/MSN and location (station/correlator)
- specify VSN/MSN in IVS ops message (stop)



The screenshot displays the NRAO Packtrack web application interface. The header includes the NRAO logo and navigation links. The main content area shows a table of modules with columns for VSN, Shelf, Last Activity, From, To, Status, Type, Capacity, Rate, and Control No. The table is filtered to show 410 results. The footer contains the NRAO logo and a statement about the facility's operation.

VSN	Shelf	Last Activity	From	To	Status	Type	Capacity	Rate	Control No
LB010118		2023-04-20 13:06:10	SOC	PD	received	MAFNS	40000	4096	1.16 days
MB010119		2023-04-20 13:26:02	SOC	HN	received	MAFNS	40000	4096	6.29 days
LB010120		2023-04-20 13:35:48	SOC	BR	shipped	MAFNS	40000	4096	Apr201235SOC
LB010121		2023-04-20 13:23:17	SOC	OV	shipped	MAFNS	30000	4096	Apr201223SOC
LB010122		2023-04-20 13:22:36	SOC	RP	shipped	MAFNS	30000	4096	Apr201223SOC
LB010123		2023-04-20 13:22:36	SOC	NL	shipped	MAFNS	30000	4096	Apr201223SOC
LB010124		2023-04-20 11:38:28	V	SOC	shipped	MAFNS	30000	4096	Apr201138V
LB010125		2023-04-20 11:38:40	SOC	HN	received	MAFNS	30000	4096	1.04 days
LB010126		2023-04-20 09:56:36	PD	SOC	shipped	MAFNS	30000	4096	Apr200956PD
LB010127		2023-04-20 09:44:13	NL	SOC	received	MAFNS	40000	4096	3.07 days
LB010128		2023-04-20 09:44:13	RP	SOC	received	MAFNS	30000	4096	2.46 days
LB010129		2023-04-20 09:44:04	PT	SOC	received	MAFNS	32000	4096	pack updated
JPLA1010	0036	2023-04-20 09:42:24	BR	SOC	received	MAFNS	40000	4096	3.04 days
TE010103	0047	2023-04-20 09:42:24	HN	SOC	received	MAFNS	40000	4096	3.10 days
LB010143	0041	2023-04-20 09:42:24	OV	SOC	received	MAFNS	30000	4096	3.02 days
LB010108	0030	2023-04-20 09:42:13	PT	SOC	received	MAFNS	30000	4096	pack updated
LB010148		2023-04-20 09:41:13	SOC	RP	received	MAFNS	30000	4096	1.99 days
LB010152		2023-04-20 09:16:48	OV	SOC	shipped	MAFNS	40000	4096	271910902163
MB011206		2023-04-20 07:00:28	SOC	NL	received	MAFNS	120000	4096	6.06 days
LB010181		2023-04-20 07:00:14	NL	SOC	shipped	MAFNS	40000	4096	Apr200700NL
LB010107		2023-04-20 06:42:59	SOC	SC	received	MAFNS	40000	4096	1.81 days
JPLA1011		2023-04-20 06:42:50	SOC	SC	received	MAFNS	40000	4096	1.81 days
LB010127		2023-04-20 06:16:44	SOC	V	received	MAFNS	30000	4096	6.35 days
JPLA1012		2023-04-19 15:42:53	SOC	PT	shipped	MAFNS	40000	4096	Apr191542SOC
LB010113		2023-04-19 14:00:03	SOC	BR	received	MAFNS	30000	4096	1.13 days

Questions? Comments?

Let's start “Real Transfers!”